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Imperial Oil Limited

Site Assessment and Closure Documents

Former Imperial Oil Bulk Plant Facility, 64 Mill Lake Road, Hubbards, Nova Scotia

Prepared by:

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Date: September, 2020

Project #: 60438249

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September 18, 2020

Jesse McLean Nova Scotia Environment – Inspector Specialist 81 Logan Road Bridgewater, Nova Scotia B4V 3T3

Dear Mr. McLean:

Project No: 60438249 – IOL Canada East Cost to Closure

Regarding: Site Assessment and Closure Documents, 64 Mill Lake Road, Hubbards, Nova Scotia

AECOM Canada Ltd. is pleased to submit the Closure Report for the above noted site. Should you have any questions, or require additional information, please contact me at 416-712-9327.

Sincerely, AECOM Canada Ltd.

John Fairclough, P.Geo. Senior Project Manager John.Fairclough@aecom.com

JF:lm Encl. cc: Jennifer Hood

Imperial Oil Limited Closure Report Former Imperial Oil Bulk Plant Facility, 64 Mill Lake Road, Hubbards, Nova Scotia

Quality Information

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Report Reviewed By:

Jennifer Hood Project Manager, Environment

Executive Summary

AECOM Canada Limited (AECOM) was retained by Imperial Oil Limited (Imperial Oil) to bring the property at 64 Mill Lake Road, Hubbards, Nova Scotia (Property Identifier Number – PID 60082138), to closure under full property remediation conditions within the Nova Scotia Environment (NSE) Contaminated Sites Regulations. The above noted subject site is hereafter referred to as the Site.

The Site has undergone several environmental investigations dating back from 2003 to 2020. Previous environmental site assessments (ESAs) and environmental monitoring reports have been completed at the Site to investigate, treat, and monitor historical petroleum hydrocarbon impacts to soil and groundwater. The environmental site assessment reports provided by Imperial Oil to AECOM include the following:

- Phase I Environmental Site Assessment Dillon 2003
- Phase II Environmental Site Assessment Dillon 2003
- Groundwater Monitoring Reports Dillon 2005-2006
- Updated Tier II Criteria and Soil Volume Estimates Report Dillon 2007
- Risk Management Plan Dillon 2007
- Groundwater Monitoring Reports CRA 2010-2013
- Phase II Environmental Site Assessment CRA 2013
- Groundwater Monitoring Reports CRA 2014-2015

Between 2015 and 2020, AECOM completed additional soil and groundwater investigations and remedial work at the Site. In July 2016, AECOM completed a test-pit program in order to investigate historical exceedances that were currently present at the Site.

A Remedial Action Plan (RAP) was prepared by AECOM in 2016 which summarized the remedial plan for the Site which was excavation and disposal of impacted soils.

During October-December 2016 AECOM completed additional soil and groundwater work at the Site to investigate Potential Contaminants of Concern (PCOCs) and Areas of Potential Environmental Concern (APECs). The work included soil sampling, borehole delineation and groundwater monitoring well installation. The areas that were investigated included the Former Office / Warehouse, Former Waste Oil Storage Tank Area, and the Former Tank Farm Area.

Between October 2016 and August 2018 AECOM completed remedial excavations at the Site. Historical and recent petroleum hydrocarbon exceedances identified at the Site were removed from the Site. Confirmatory wall and floor samples were collected in accordance with the NSE Confirmation of Remediation Protocol (PRO-700). Confirmatory samples were collected and analyzed for petroleum hydrocarbon analysis and analytical results showed concentrations below the applicable NSE Tier I Environmental Quality Standards (EQS) criteria (2013).

In June 2020 AECOM returned to Site to collect additional confirmatory samples from one of the completed excavations. Samples were collected and analyzed for Polycyclic aromatic hydrocarbons (PAHs) as there was a historical PAH exceedance that was not accounted for during previous excavations. Results showed concentrations below the applicable NSE Tier I Environmental Quality Standards (EQS) criteria (2013).

The Site has been assessed and has undergone full property remediation to applicable NSE Tier I Environmental EQS for a commercial property with potable groundwater and coarse-grained soils. Supporting NSE checklists are provided within the report.

The Site meets the requirements for NSE Tier I unconditional closure.

Table of Contents

1.	Introduction								
	1.1 1.2 1.3	Site Setting Physical Features 1.2.1 Topography 1.2.2 Surficial and Bedrock Geology 1.2.3 Surface Water and Hydrogeological Setting Applicable Regulatory Standards	5 6 6 6 7						
2.	NSE	Contaminated Sites Regulations Summary	8						
3.	Histo	orical Reports	9						
	3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 3.10 3.11	Phase I Environmental Site Assessment (Dillon 2003) Phase II Environmental Site Assessment (Dillon 2003) Groundwater Sample Results (Dillon 2005) Groundwater Monitoring Report (Dillon 2006) Updated Tier II Criteria & Impacted Soil Volume Estimates (Dillon 2007) Groundwater Monitoring (CRA 2010) Groundwater Monitoring (CRA 2012) Phase II ESA (CRA 2013) Groundwater Monitoring (CRA 2014) Groundwater Monitoring (CRA 2015) Summary of Historical Groundwater Exceedances	9 10 11 12 12 13 13 14 14 14						
4.	AEC	OM Phase II ESA (2015-2017)	.15						
	4.1 4.2 4.3 4.4 4.5	Groundwater Monitoring: October 2015 Test-Pit Program: July 2016 PCOC Soil Investigation: October 2016 - November 2017 4.3.1 Former Office / Warehouse 4.3.2 Former Waste Oil Storage Tank Area 4.3.2.1 Borehole Delineation and Monitoring Well Construction: July 2017 4.3.2.2 Iron in Soil Delineation: October / November 2017 Former Tank Farm Area Investigation: October / December 2016 Phase II Conclusions	16 16 16 17 17 17 17 18 19						
5.	Rem	edial Action Plan (2016)	.21						
6.	Rem	edial Excavations (2016 and 2020)	.22						
	6.1	 Remedial Excavations and Confirmatory Sampling	22						

Refe	erences	29
Dec	laration of Property Condition	28
Con	firmation of Remediation	27
7.4	Groundwater Monitoring (August 2020)	26
7.3	Groundwater Monitoring (June 2019)	26
7.2	Groundwater Monitoring (May 2019)	26
7.1	Groundwater Monitoring (February 2019)	26
Pos	t Remedial Groundwater Monitoring Events	26
6.3	Post Remedial Monitoring Well Installation	25
	6.2.3 Former Waste Oil Storage Tank Area Excavation - 2018	25
	2016/2020	24
	6.2.1 Former Loading Rack / Product Dispenser (Excavation 1) – 2016	24
6.2	Soil Sampling Analytical Results	
	6.1.4 Confirmatory Sampling	23
	6.1.3 Former Waste Oil Storage Tank Area Excavation - 2018	23
	6.2 6.3 Pos 7.1 7.2 7.3 7.4 Con Dec Refe	 6.1.3 Former Waste Oil Storage Tank Area Excavation - 2018

List of Tables

Table A: Rationale for Subsurface Investigation – Areas of Actual Environmental Concern	.15
Table B: Rationale for Subsurface Investigation – Areas of Potential Environmental Concern	.15
Table C: Summary of PHC and PAH Exceedances in Soil	.19

Appendices

Appendix A. Figures

- Figure 1: Historical PHC and PAH in Soil Results
- Figure 2: Phase II ESA PHC and IRON in Soil Results
- Figure 3: Phase II ESA PHC in Groundwater Results
- Figure 4: 2016/2020 Remedial PHC and PAH in Soil Results
- Figure 5: 2018 Remedial PHC in Soil Results
- Figure 6: Post Remedial PHC in Groundwater Results

Appendix B. Regulatory Checklists

- CHK-400 Phase II ESA
- CHK-600 Confirmation of Remediation
- CHK-701 Declaration of Property Condition

Appendix C. Historical Reports

- C1: Phase I ESA (Dillon 2003)
- C2: Phase II ESA (Dillon 2003)
- C3: Groundwater Sample Results (Dillon 2005)
- C4: Groundwater Monitoring Report (Dillon 2006)
- C5: Updated Tier II Criteria & Impacted Soil Volume Estimates (Dillon 2007)
- C6: Risk Management Plan (Dillon 2007)
- C7: Groundwater Monitoring Report (CRA 2010)
- C8: Groundwater Monitoring Report (CRA 2012)
- C9: Notification of Free Product or Contamination (CRA 2013)
- C10: Phase II ESA (CRA 2013)
- C11: Groundwater Monitoring Report (CRA 2014)
- C12: Inspection Report (NSE 2014)
- C13: Data Recast (CRA 2014)
- C14: Assessment Cover Letter (Imperial Oil 2014)
- C15: Groundwater Monitoring Report (CRA 2015)

Appendix D. Analytical Tables

- Table 1: Historical Analytical Soil Testing Summary
- Table 2: 2016 Phase II Soil Assessment Results
- Table 3: 2016/2020 Remedial Soil Assessment Results
- Table 4: 2017 Phase II Soil Assessment Results
- Table 5: 2018 Remedial Soil Assessment Results
- Table 6: 2015-2020 Groundwater Testing Summary

Appendix E. Laboratory Certificates of Analysis and Data Quality Review Checklists

- Appendix F. Quality Assurance and Quality Control
- Appendix G. Borehole / Test Pit / Monitoring Well Logs
- Appendix H. Field Methodologies
- Appendix I. Remedial Action Plan (AECOM 2016)
- Appendix J. Remediation Photo Log
- Appendix K. Remediation Waste Slips

1. Introduction

AECOM Canada Limited (AECOM) was retained by Imperial Oil Limited (Imperial Oil) to bring the property at 64 Mill Lake Road, Hubbards, Nova Scotia (Property Identifier Number – PID 60082138), to closure under full property remediation conditions within the Nova Scotia Environment Contaminated Sites Regulations. The above noted subject site is hereafter referred to as the Site. **Figure 1** (Appendix A) illustrates the Site property boundaries.

The Site has undergone several environmental investigations dating from 2003 to 2020. Previous environmental site assessments (ESAs) and environmental monitoring reports have been completed at the Site to investigate, remediate, and monitor historical impacts to soil and groundwater. The environmental site assessment reports provided by Imperial Oil to AECOM include the following:

- Phase I Environmental Site Assessment Dillon 2003
- Phase II Environmental Site Assessment Dillon 2003
- Groundwater Monitoring Reports Dillon 2005-2006
- Updated Tier II Criteria and Soil Volume Estimates Report Dillon 2007
- Risk Management Plan Dillon 2007
- Groundwater Monitoring Reports CRA 2010-2013
- Phase II Environmental Site Assessment CRA 2013
- Groundwater Monitoring Reports CRA 2014-2015

Between 2016 and 2020, AECOM completed additional soil and groundwater investigations at the Site. The recent investigations targeted the historical petroleum hydrocarbon (PHC) (comprised of Benzene, Toluene, Ethylbenzene, Xylene (BTEX), and modified total petroleum hydrocarbons (mTPH)) and polycyclic aromatic hydrocarbons (PAH) exceedances at the Site, as well as investigated Areas of Potential Environmental Concern (APECs) that were not previously investigated during the historical work completed at the Site.

A summary of historical work, supplemented by recent AECOM investigations, is provided in the following sections to establish that the APECs have been investigated and remediated with respect to the applicable Nova Scotia Environment (NSE) Tier I criteria.

1.1 Site Setting

The Site is located in a residential / commercial area. The Site was previously used as a bulk plant and operated from 1971 to when it was decommissioned in 2002. The office/warehouse building, loading rack, pumps, eight (8) underground storage tanks (USTs), and eleven (11) aboveground storage tanks (ASTs) were removed between 1986 and 2002. Since 2002, the Site has been vacant, with the exception of monitoring wells, and secured from entry with a rigid chain link fence. There are no known subsurface utilities entering the Site.

The Site is identified by Service Nova Scotia and Municipal Relations (SNSMR) with Property identification (PID) 60082138 and covers approximately 1.19 acres. The Site is zoned as a commercial property.

A description of the Site is provided in Section 2.1, page 4 of the Phase I ESA (Dillon 2003) (Appendix C).

Historic land use activities are summarized in **Section 2.1**, **page 4** and **Section 3.6**, **pages 10-11** of the Phase I ESA (Dillon 2003) **Appendix C**. Currently, the Site shares property boundaries with three (3) properties that are of residential land use. The surrounding property uses are as follows:

- Immediately north of the Site: the lands owned by Margaret Des Roche (forested land);
- Immediately east of the Site: the lands are owned by Carol Westhaver (residential);
- South of the Site (across Mill Lake Road): the lands are owned by James Maclean and Darlene Harnish (residential); and
- West of the Site: The land is owned by Margaret Des Roche (forested land). Highway No. 103 is located to the west beyond the forested land.

There are no buildings currently located on the Site. The residential building associated with the property east of the Site and the closest residential building south of the Site are approximately 10 metres and 30 metres, respectively, away from the Site property boundaries. The Site is not located within a protected wellfield or watershed area (Phase I ESA, CRA 2013) (**Appendix C**). Adjacent properties are not currently used for livestock and/or crop producing related activities.

The surrounding sites are serviced with private wells and septic. The Site is located outside the municipal water and sewer service area. The Site contained a private potable drinking water well and septic tank field which were decommissioned. Adjacent properties are supplied potable water via private potable water wells. The nearest potable well is located on the residential property east of the Site while a second potable well is located at a residential property south of the Site.

1.2 Physical Features

1.2.1 Topography

The topography of the Site and adjacent properties is relatively flat. Regionally the area slopes gently to the east towards Hubbards Cove, located approximately 1 kilometer (km) from the Site (Phase I ESA, Dillon 2003) (**Appendix C**).

The Site ground surface is mainly grass covered with minor trees and shrubs, as well as areas of gravel from previous remedial excavations. Sediment and surface water bodies are not present on the Site.

1.2.2 Surficial and Bedrock Geology

The Site is underlain by stony till and drumlins (Surficial Geology of The Province of Nova Scotia Map 92-3). The surficial geology of the area generally consists of sandy stony till (Phase I ESA, Dillon 2003) (**Appendix C**). Bedrock geology is defined as middle to late Devonian aged rock belonging to the Liscomb complex consisting of undivided material and biotite monzogranite (Geological Map of Nova Scotia, 2000).

1.2.3 Surface Water and Hydrogeological Setting

Surface water bodies are not located on the Site. The nearest surface water bodies to the Site include: an unnamed brook located approximately 230 metres (m) west of the Site; Maple Lake located approximately 300 m west of the Site, Sawier Lake located approximately 500 m north of the Site, and Hubbards Cove, located approximately 1 km east of the Site. Based on an environmental investigation completed at the Site (AECOM 2017) groundwater flow was calculated to be towards the northeast. During the sampling event completed on July 27, 2017, the depth to groundwater ranged from 2.11 to 2.41 metres below ground surface (mbgs). The depth to groundwater ranged from 1.63 (MW17-05) to 2.94 mbgs (MW16-02) during the recent sampling event on February 19, 2019. The horizontal gradient is approximately 0.02, and the hydraulic conductivities in overburden soils were calculated to range from 1×10^{-4} cm/sec to 6×10^{-4} cm/sec (Phase II ESA, Dillon 2003).

Regional groundwater flow is anticipated to follow regional topography which is east towards Hubbards Cove.

1.3 Applicable Regulatory Standards

The 2013 Nova Scotia Environment (NSE) Contaminated Site Regulations are the applicable remediation criteria for the Site, as per client project objectives. NSE Tier I Environmental Quality Standards (EQS) criteria specified in Table 1A (NSE 2013) provide the applicable guidelines for the Site. Site characteristics that are used to determine the NSE Tier I EQS (NSE-EQS) are as follows: **commercial land use**, **potable water supply** and **coarse-grained soils**.

2. NSE Contaminated Sites Regulations Summary

Previous reports have been submitted to NSE along with the Notification of Free Product Contamination FRM-100, Environmental Site Assessment Checklists CHK-200, CHK-300 and CHK-400.

On February 7, 2014 NSE issued an Inspection Report and directives to Imperial Oil relating to site closure at the Site.

On October 25, 2015, a second Inspection Report was issued in response to an FRM-400 request for extension with updated compliance dates for a Remedial Action Plan and Record of Site Condition or Declaration of Property Condition to be submitted on or before October 4, 2017. A Remedial Action Plan report was sent to NSE on January 6, 2016.

The FRM-400 request for time extension was submitted to NSE on September 29, 2017 and a Compliance Update was provided by NSE requesting that the Record of Site Condition or Declaration of Property Condition be submitted by October 4, 2019, applicable in accordance with Ministerial Protocol(s).

A second FRM-400 request for time extension was submitted to NSE and a Compliance Update was provided by NSE requesting that the Record of Site Condition or Declaration of Property Condition be submitted by October 4, 2021, applicable in accordance with Ministerial Protocol(s).

With the submission of this report, AECOM is submitting the Phase II ESA checklist (CHK-400), a Remedial Action Plan checklist (CHK-600), a Confirmation of Remediation Checklist (CHK-700), and a Declaration of Property Condition (FRM-701), all of which are provided in **Appendix B**.

3. Historical Reports

Previous ESA programs that were executed at this Site are included in **Appendix C**. The historical reports listed below can be found in the referenced appendices below:

- Phase I Environmental Site Assessment Dillon 2003
- Phase II Environmental Site Assessment Dillon 2003
- Groundwater Monitoring Reports Dillon 2005-2006
- Updated Tier II Criteria and Soil Volume Estimates Report Dillon 2007
- Groundwater Monitoring Reports CRA 2010-2013
- Phase II Environmental Site Assessment CRA 2013
- Groundwater Monitoring Reports CRA 2014-2015

Historical sampling locations are shown on Figure 1, Appendix A.

A summary of the historical soil analytical results compared to applicable NSE Tier I EQS is provided in **Table 1**, **Appendix D**.

A summary of the historical groundwater analytical results, collected from 2005 (October) to 2015, compared to the applicable NSE Tier I EQS, are shown on **Figure 4** of the 2015 Groundwater Monitoring Report (CRA 2015) (**Appendix C**). The remainder of the historical groundwater results collected from 2003 to 2005 (April) were compared to the applicable criteria for the Site and the results are described in **Section 3.11** below.

3.1 Phase I Environmental Site Assessment (Dillon 2003)

A Phase I ESA was conducted by Dillon in 2003, with the objective to identify APECs and Potential Contaminants of Concerns (PCOCs) associated with each APEC on the Site, arising from present and past activities on the Site and surrounding properties. The Phase I ESA assessment was conducted in conjunction with Site decommissioning and a Phase II ESA intrusive program at the Site. At the time the property infrastructure was partially dismantled and consisted of a concrete apron and a drum storage concrete slab and concrete debris.

The Phase I ESA involved a review of aerial photographs, topographic and geological maps, information provided by provincial agencies, interviews, and a Site visit. Based on the information gathered and the observations made during the Site visit, the Phase I ESA concluded the following evidence of potential environmental concerns with the Site:

- Due to the historic use of the Site as a bulk plant, as well as potential impacts from historic use of a petroleum UST on the adjacent property to the east, intrusive assessment was recommended to confirm the presence/absence of PHC impacts to soil and groundwater on-Site; and
- Records found in the Environmental Registry indicated that twelve (12) petroleum storage tanks were installed between 1970 and 1989 on the Site and that nine (9) of the tanks were currently in use. Since the tanks were reportedly removed in 2002, it is assumed that the record is incorrect and should be updated. Due to the age of the Site, the volume of the product stored, and the risks associated with loading the offloading PHCs into the storage tanks, there is a possibility of contamination being present.

3.2 Phase II Environmental Site Assessment (Dillon 2003)

A Phase II ESA was conducted by Dillon between July 24 and August 15, 2003. The scope of work included the collection of soil samples during the installation of test-pits and boreholes to characterize soil conditions, as well as the installation of monitoring wells to characterize groundwater conditions.

- Advancement of twenty (20) test-pits (TP1-TP20) and six (6) boreholes (MW1-MW6), all of which were completed as monitoring wells;
- Soil samples were collected during test-pit advancement and select samples were submitted for one or more of the following analyses: BTEX/mTPH, TPH fraction analysis, metals, lead, (PAHs, fraction of organic carbon, and grain size analysis; and
- Groundwater samples were collected from the newly installed monitor wells on the Site and were submitted for BTEX/mTPH analysis.

The assessment findings included the following:

In total, seventeen (17) surface soil samples, including one (1) field duplicate, were submitted for BTEX/mTPH analysis. The following showed exceedances to the Atlantic PIRI Tier I criteria for commercial, potable, coarse-grained soil:

- Toluene concentrations of two (2) samples TP 3/1 (0-0.5m): 0.211 mg/kg and TP 9/1 (0-0.5m): 0.308 mg/kg exceeded the Tier I criteria of 0.10 mg/kg.
- Ethyl benzene concentrations of three (3) samples TP 5/2 (0.5-1.0m): 0.211 mg/kg, Dup B (FD of TP 5/2 (0.5-1.0m)): 0.181 mg/kg, and TP 9/1 (0-0.5m): 0.157 mg/kg exceeded the Tier I criteria of 0.02 mg/kg.
- Xylene concentrations of two (2) samples TP 5/2 (0.5-1.0m): 2.43 mg/kg and TP 9/1 (0-0.5m): 7.20 mg/kg exceeded the Tier I criteria of 2.4 mg/kg.
- mTPH concentrations of six (6) samples TP 2/1 (0-0.5m): 1500 mg/kg, TP 5/2 (0.5-1.0m): 6700 mg/kg, Dup B (0.5-1.0m): 6400 mg/kg, TP7/2 (0.5-1.0m): 230 mg/kg, TP 9/1 (0-0.5m): 810 mg/kg, and TP 11/2 (0.4-0.9m): 510 mg/kg exceeded the Tier I criteria for fuel oil of 185 mg/kg.
- TP2 and TP3 were located in the eastern portion of the Site near the former oil/water separator.
- TP5, TP7, TP9 and TP11 were located in the south-central portion of the Site near the former oil/water separator, the former underground storage tanks, and the former loading rack.

In total, twenty-nine (29) subsurface soil samples, including four (4) field duplicates, were submitted for BTEX/mTPH analysis. The following showed exceedances to the Atlantic PIRI Tier I criteria for commercial, potable, coarse-grained soil:

- Ethyl benzene concentrations of seven (7) samples TP 2/3 (1.0-1.5m): 2.14 mg/kg, Dup A (FD of TP 2/3 (1.0-1.5m)): 2.47 mg/kg, TP 2/3 (TPH Frac): 2.14 mg/kg, TP 5/4 (2.0-3.0m): 1.83 mg/kg, TP 11/5 (2.0-2.5m): 0.383 mg/kg, Dup C (FD of TP 11/5 (2.0-2.5m)): 0.048 mg/kg, and TP 11/5 (TPH Frac): 0.357 mg/kg exceeded the Tier I criteria of 0.02 mg/kg
- Xylene concentrations of six (6) samples TP 2/3 (1.0-1.5m): 11.0 mg/kg, Dup A (1.0-1.5m): 12.9 mg/kg, TP 2/3 (TPH Frac): 11.0 mg/kg, TP 5/4 (2.0-3.0m): 15.9 mg/kg, TP 11/5 (2.0-2.5m): 2.44 mg/kg, and TP 11/5 (TPH Frac): 2.72 mg/kg exceeded the Tier I criteria of 2.4 mg/kg.
- mTPH concentrations of six (6) samples TP 1/3 (1.2m): 420 mg/kg, TP 2/3 (1.0-1.5m): 6000 mg/kg, Dup A (1.0-1.5m): 7100 mg/kg, TP 2/3 (TPH Frac): 5710 mg/kg, TP 5/4 (2.0-3.0m): 510 mg/kg, and ST E-Wall (1.0-3.0m): 1400 mg/kg exceeded the Tier I criteria of 185 mg/kg for fuel oil.
- mTPH concentration of three (3) samples TP 11/5 (2.0-2.5m): 490 mg/kg, Dup C (2.0-2.5m): 290 mg/kg, and TP 11/5 (TPH Frac): 380 mg/kg, exceeded the Tier I criteria of 80 mg/kg for gasoline.
- TP1 was located in the northern portion of the Site near the former slop storage tank location.
- ST E-Wall was collected from the east wall of the septic tank excavation.

In total, four (4) samples were submitted for PAH analysis. The following showed exceedances to the CCME criteria for commercial, potable, coarse-grained soil:

• Naphthalene concentration of 23 mg/kg in TP 2/3 (1.0-1.5m) exceeded criteria of 22 mg/kg.

In total, two (2) samples were submitted for metals analysis and two (2) for lead only analysis. Results indicated no exceedances to the CCME criteria for commercial, potable, coarse-grained soil.

In total, six (6) groundwater samples were submitted for BTEX/mTPH analysis. The following showed exceedances to the Atlantic PIRI Tier I criteria for commercial, potable, coarse-grained soil:

- MW-5 showed an ethyl benzene concentration of 0.005 mg/L that exceeded the Tier I criteria of 0.0024 mg/L; and
- MW-6 showed an mTPH concentration of 16.1 mg/L that exceeded the Tier I criteria of 1.8 mg/L for fuel oil.

3.3 Groundwater Sample Results (Dillon 2005)

Dillon completed a groundwater sampling event at the Site on April 6, 2005. Groundwater samples were collected from six (6) on-Site monitoring wells (MW-1 to MW-6) and were analyzed for methyl tert-butyl ether (MTBE) analysis. Groundwater sample results were compared to the Atlantic PIRI Tier I criteria (2003) and the Atlantic PIRI Tier II Site Specific Target Levels (SSTLs) (2004).

All samples analyzed indicated no detectable MTBE concentrations.

It should be noted that the groundwater results table included in the report ishowed groundwater samples collected on the following dates: April 19, 2004, and October 28, 2004. The results indicated that all samples collected for those dates were non-detect, with the exception of the detectable concentrations in mTPH, however they were all within the applicable guidelines for the Site. AECOM did not receive the groundwater monitoring reports for the samples taken in 2004.

3.4 Groundwater Monitoring Report (Dillon 2006)

Dillon completed a groundwater monitoring event at the Site on November 30, 2006, as part of ongoing monitoring being undertaken at the Site.

- The depth to groundwater ranged from 1.293 (MW-6) meters below ground surface (mbgs) to 1.925 mbgs (MW-5), indicating groundwater direction to be to the northeast;
- Groundwater samples were collected from six (6) on-Site monitoring wells (MW-1 to MW-6) and were analyzed for BTEX/mTPH analysis;
- Results indicated no detectable BTEX or mTPH concentrations in five (5) of the six (6) well locations sampled;
- MW-6, while exhibiting no detectable BTEX concentrations, showed an mTPH concentration of 13 mg/L. This
 value was below the applicable Atlantic PIRI Tier I RBSLs for a commercial site with potable water and coarsegrained soil. However, it exceedanced the Atlantic RBCA Tier II SSTLs protective of an off-Site, residential,
 potable land use scenario guideline of 2.3 mg/L; and
- It is noted that the groundwater sample from MW-4, which is located near the property boundary between MW-6 and the neighbouring residence, exhibited no detectable PHC concentrations.

It should be noted that the groundwater results table included in the report showed groundwater samples collected on October 13, 2005. The results showed that all samples collected on this date were non-detect. AECOM did not receive the groundwater monitoring report for the samples collected on October 13, 2005.

3.5 Updated Tier II Criteria & Impacted Soil Volume Estimates (Dillon 2007)

Dillon completed an updated impacted soil volume estimate report based on the updated risk-based corrective action (RBCA) criteria that took place during October 2003. Given the regulatory change, the report was intended to present previous soil and groundwater analytical data, in comparison to the current Atlantic PIRI RBSLs, as well as update the Tier II SSTLs utilizing RBCA version 2.1 software.

- Numerous soil and groundwater samples were collected at the Site during assessment activities (Dillon 2003).
- Initially, analytical results were compared with Atlantic PIRI Tier I Look Up Table Criteria (1999) for a commercial site with potable groundwater and coarse-grained soils.
- Tier II site specific target levels (SSTLs) were developed for two (2) different land use scenarios, the current vacant lot scenario and commercial slab on grade intended for development purposes, both with a residential potable off-Site receptor.
- In October 2003, Atlantic RBCA process and software was updated with version 2.1, which included replacement of the Atlantic PIRI Tier I Look Up Table Criteria (1999) with Atlantic PIRI Tier I risk based screening levels (RBSL) criteria (2003).
- Existing analytical results were compared to the Atlantic PIRI Tier I RBSLs for a commercial site with potable groundwater and coarse-grained soils. PHC impacts, in excess of the guidelines stated, were identified in soil and groundwater on the Site.
 - Soil exceedances in ethylbenzene, xylene, and mTPH were located in the eastern portion of the Site near the former oil/water separator (TP2, ST E-Wall) and exceedances in ethylbenzene and mTPH were located in the south central portion of the Site near the former oil/water separator, the former underground storage tanks, and the former loading rack (TP5, TP9, TP11).
 - Groundwater exceedances in mTPH were found in MW-6.
- Based on the results of the new Tier II criteria derived, a potential unacceptable risk was identified for the Site based on off-Site migration of impacted groundwater.
 - As there were no exceedances of Tier I RBSLs or Tier II SSTLs at those locations closest to the property boundary, and assuming that current site conditions and land-use remain the unchanged, the risk would be managed through continued groundwater monitoring at the Site.

3.6 Groundwater Monitoring (CRA 2010)

CRA conducted a groundwater monitoring event at the Site on March 31, 2010 that included the collection of groundwater samples from the six (6) monitor wells on the Site and the collection of groundwater elevational data and headspace vapour readings.

- The depth to groundwater ranged from 1.171 mbgs (MW-6) to 1.811 mbgs (MW-5). Free product was not identified in any of the wells accessed during the site visit;
- Samples from the six (6) monitor wells were analyzed for BTEX/mTPH;
- BTEX concentrations for all monitoring wells sampled were below applicable Atlantic PIRI Tier I guidelines for a commercial site with potable water and coarse-grained soil; and
- MW-6 and its field duplicate showed an mTPH concentration of 37.0 mg/L and 33.0 mg/L respectively, which exceeded the Tier I criteria of 15.0 mg/L for fuel oil for a commercial site, and 3.2 mg/L for a residential site with potable water and coarse-grained soil.

3.7 Groundwater Monitoring (CRA 2012)

CRA conducted a groundwater monitoring event at the Site on November 22, 2012 that included the collection of groundwater samples from the six (6) monitor wells on the Site and the monitoring of all wells for subsurface vapour concentrations, water levels, and the presence or absence of light non-aqueous phase liquids (free product).

- The depth to groundwater ranged from 1.401 metres below top of casing (mbtoc) in MW-6 to 1.925 mbtoc in MW5. Based on this information, relative groundwater elevations were calculated, and a groundwater potentiometric surface elevations diagram was generated. The inferred principal direction of groundwater flow was to the east;
- Measurable free product was not detected in any of the monitor wells. The subsurface vapour concentrations measured in all accessible monitor wells were non-detectable;
- Samples from the six (6) monitor wells were analyzed for BTEX/mTPH; and
- All groundwater analytical results were below the Atlantic RBCA Tier I RBSLs for a commercial site with potable
 water and coarse-grained soil. Results were also compared to and were below the Atlantic RBCA Tier I
 Ecological Screening Levels for Plant and Invertebrate Direct Contact with Shallow Groundwater (applicable
 only if groundwater levels are within 3 m of ground surface).

3.8 Phase II ESA (CRA 2013)

A Phase II ESA was conducted by CRA between November 14 and 22, 2012. The objective of the Phase II was to characterize the soil and groundwater conditions with respect to PCOCs associated with areas of potential environmental concern (APECs) from the current and historical activities of the Site and adjacent properties, as detailed in the Phase I and II ESAs completed for the Site. Work completed at the Site included the following:

- Advancement of four (4) test-pits (TP21-TP24);
- Soil samples were collected during test-pit advancement and select samples were submitted for BTEX/mTPH and TPH fraction analyses; and
- Groundwater samples were collected from the monitor wells on-Site and were submitted for BTEX/mTPH analysis.

The assessment findings included the following:

- The stratigraphic profile encountered in the test pits generally consisted of sand with trace silt and some cobbles and boulders throughout to depths ranging from 4.0 to 4.1 mbgs. Bedrock was not intersected during the Phase II ESA work completed in November 2012;
- On November 22, 2012, the depth to groundwater ranged from 0.591 mbgs (MW-6) to 1.425 mbgs (MW-5). The inferred principal direction of groundwater flow was to the east. No free product was identified in any of the monitor wells;
- The soil hydrocarbon results were within the applicable guidelines with the exception of samples collected from TP24 (former product dispenser/pump location);
- Ethylbenzene concentrations in TP24(0.5-1.0m): 0.54 mg/kg and TP24(1.0-1.5m): 0.57 mg/kg were in exceedance to the guideline value of 0.065 mg/kg for Atlantic RBCA Tier I RBSLs for a commercial property with coarse textured soil and potable groundwater;
- mTPH fractions C6-C10 in TP24(1.0-1.5m): 520 mg/kg and TPH fractions in C10-C16 TP24(0.5-1.0m): 1100 mg/kg and TP24(1.0-1.5m): 400 mg/kg exceeded the Atlantic RBCA Ecological Screening Levels for the protection of plants and soil invertebrates; Direct Soil Contact (only applicable for sample depths 0-1.5m);
- mTPH levels ranging from <15 mg/kg to 2,600 mg/kg were reported for the soil samples analyzed. The mTPH results were compared to the guidelines for gasoline, fuel oil or lube oil fractions;

- Generally, exceedances of the 2012 Tier I RBSLs and ESLs were observed in the area of the former product dispenser/pump slab which was removed in 2002; and
- All groundwater analytical results were below the Atlantic RBCA Tier I RBSLs for a commercial property with potable groundwater usage and coarse-grained soil and the Atlantic RBCA Tier I Ecological Screening Levels for Plant and Invertebrate Direct Contact with Shallow Groundwater (only if groundwater levels are within 3m of ground surface).

3.9 Groundwater Monitoring (CRA 2014)

CRA conducted groundwater monitoring and sampling activities at the Site on November 20, 2013.

- All accessible monitor wells were monitored for subsurface vapour concentrations, water levels, and the presence or absence of free product.
- Samples were collected from all accessible monitor wells and submitted for BTEX/mTPH analysis.
- The depth to groundwater ranged from 1.11 mbtoc (MW-6) to 1.68 mbtoc (MW-5). Based on this information, relative groundwater elevations were calculated, and a groundwater potentiometric surface elevations diagram was generated the inferred principal direction of groundwater flow was to the east.
- Measurable free product was not detected in any of the monitoring wells. The subsurface vapour concentrations measured in the monitoring wells were all <5 parts per million by volume (ppmv).
- The groundwater analytical results were all below the NSE 2013 Tier I Environmental Quality Standards (EQSs) for a commercial property with potable groundwater use and coarse-grained soil.

3.10 Groundwater Monitoring (CRA 2015)

CRA conducted groundwater monitoring and sampling activities at the Site on May 1, 2015.

- All accessible monitor wells were monitored for subsurface vapour concentrations, water levels, and the presence or absence of free product.
- Samples were collected from all accessible monitor wells and submitted for one or more of the following: BTEX/mTPH, PAHs, and select metals analysis.
- The depth to groundwater ranged from 1.10 mbtoc (MW6) to 1.62 mbtoc (MW5). Based on this information, relative groundwater elevations were calculated, and a groundwater potentiometric surface elevations diagram was generated the inferred principal direction of groundwater flow was to the east.
- Measurable free product was not detected in any of the monitoring wells. The subsurface vapour concentrations measured in the monitoring wells were all <5 parts per million by volume (ppmv).
- The groundwater analytical results were all below the NSE 2013 Tier I Environmental Quality Standards (EQSs) for a commercial property with potable groundwater use and coarse-grained soil.

3.11 Summary of Historical Groundwater Exceedances

The remainder of the historical groundwater results collected from 2003 to 2005 (April) were within the applicable NSE Tier I EQS guidelines for the Site, with the exception of the following results collected from MW-5 and MW-6:

- MW-5 (August 15, 2003): Ethylbenzene: 0.005 mg/L
- MW-6 (August 15, 2003): mTPH: 16.1 mg/L (fuel)
- MW-6 (April 19, 2004): mTPH: 13 mg/L (fuel); FD: 11 mg/L (fuel)
- MW-6 (October 28, 2004): mTPH: 12 mg/L (fuel)
- MW-6 (April 6, 2005): mTPH: 13 mg/L (fuel); FD: 12 mg/L (fuel)

4. AECOM Phase II ESA (2015-2017)

Between October 2015 and July 2017, AECOM completed subsurface investigations and groundwater sampling with the overall objective of delineating previously identified soil and/or groundwater impacts at the Site. The investigation activities included: site reconnaissance, hand augering, borehole drilling, groundwater monitoring well installation, test pit excavation, and soil and groundwater sampling. All activities are summarized in the following sections. The rationale for each investigation location is summarized in **Table A** and **Table B** below.

Table A below represents the areas of Actual Environmental Concern (AECs) associated with historic exceedances identified at the Site and the rationale for the sampling locations completed by AECOM to address each historic exceedance.

Table A: Rationale for Subsurface Investigation – Areas of Actual Environmental Concern

Area of Actual Environmental Concern (AEC)	Phase II Sample Location	Media	Rationale
Area near former catch basin / oil/water separator	TP16-09	Soil	Investigate and delineate soil guideline exceedance for ethylbenzene, xylenes and mTPH at historical soil sample location TP2 (2003).
Area near former product dispenser/pump location	TP16-03 to TP16-06	Soil	Investigate and delineate soil guideline exceedances for ethylbenzene, xylenes and mTPH at historical soil sample locations TP5 (2003) and TP24 (2012).
Area near former aboveground fuel storage tank	TP16-01	Soil	Investigate and delineate soil guideline exceedance for ethylbenzene at historical soil sample location TP9 (2003).
Former loading rack	TP16-02	Soil	Investigate and delineate soil guideline exceedance for ethylbenzene at historical soil sample location TP11 (2003).
Former septic tank pumping chamber	TP16-10	Soil	Investigate and delineate soil guideline exceedance for mTPH at historical soil sample location ST E-WALL (2003).

Table B below represents the APECs identified at the Site and the rationale for each investigation / sampling location completed by AECOM to address each APEC.

Table B: Rationale for Subsurface Investigation – Areas of Potential Environmental Concern

Areas of Potential Environmental Concern (APECs)	Phase II Sample Location	Media	Rationale
Former Office / Warehouse	FA1 to FA12 FA1-X, FA4-X, FA6-X, FA7-X, FA10-X	Soil	Collected soil samples for analysis of one or more of the following: BTEX/mTPH, Volatile Organic Compounds (VOCs), PAHs, Metals (iron), Polychlorinated Biphenyl (PCBs), and glycol.
Former Waste Oil Storage Area	FWO-1 to FWO-8 BH17-05 to BH17-07	Soil Groundwater	Collected soil samples for analysis of one or more of the following: BTEX/mTPH, VOCs, PAHs, Metals, PCBs, and glycol.

Areas of Potential Environmental Concern (APECs)	Phase II Sample Location	Media	Rationale
	MW16-03 MW17-04, MW17-05		
Former Tank Farm Area	EX2-1 to EX3-12	Soil	Collected soil samples for analysis of BTEX/mTPH
	BH16-01, BH16-02*, BH16-03*		

* Note: BH16-02 and BH16-03 were not submitted for analysis.

4.1 Groundwater Monitoring: October 2015

AECOM completed groundwater monitoring for the Site on October 14, 2015. Samples were collected from monitoring wells on-Site (MW-1 to MW-6) and were submitted for BTEX/mTPH analysis.

Results showed the following exceedances to the applicable guideline for mTPH (Fuel): 3.2 mg/L:

• MW-6: mTPH: 6.6 mg/L (Fuel)

4.2 Test-Pit Program: July 2016

AECOM completed a test-pit program for the Site from July 27-28, 2016. The objective of this program was to delineate previously identified soil impacts at the Site. A total of ten (10) test-pits (TP16-01 to TP16-10 – including one (1) field duplicate) were completed and select samples were analyzed for BTEX/mTPH analysis, and TP16-09 was submitted for PAH analysis.

Results from the test-pit program showed the following exceedances to the applicable guidelines for ethylbenzene (0.0.065 mg/kg) and mTPH (Fuel): 1,800 mg/kg:

- TP16-03 (0-1m) E: 0.072 mg/kg, mTPH: 5,000 mg/kg (Fuel)
- TP16-03 (3-4m) mTPH: 12,000 mg/kg (Fuel)
- TP16-05 (1-2m) E: 0.36 mg/kg, mTPH: 7,800 mg/kg (Fuel)
- TP16-06 (2-3m) E: 0.22 mg/kg
- TP16-06 (2-3m) (DUP) E: 0.17 mg/kg

4.3 PCOC Soil Investigation: October 2016 - November 2017

4.3.1 Former Office / Warehouse

On October 18, 2016 AECOM completed a soil investigation for PCOCs related to the Former Office / Warehouse location on-Site. A total of thirteen (13) soil samples (FA1 to FA12 – including one (1) field duplicate) and four (4) stock-pile samples (STP-FA1 to STP-FA4) were collected and submitted for BTEX/mTPH analysis.

On November 3, 2016 AECOM returned to Site and collected an additional five (5) samples (FA1-X, FA4-X, FA6-X, FA7-X, FA10-X) from the Former Office / Warehouse location. Samples were submitted for the following analysis: VOCs, PAHs, metals, PCBs, glycols.

Analytical results showed no exceedances to the applicable guidelines for the Site.

4.3.2 Former Waste Oil Storage Tank Area

On November 3, 2016 AECOM also investigated the Former Waste Oil Storage Tank Area. A total of five (5) soil samples (FWO-1 to FWO-5) were collected and submitted for one or more of the following analysis: BTEX/mTPH, VOCs, PAHs, metals, PCBs, glycols.

Results from the soil investigations showed the following exceedances in mTPH (Fuel): 1,800 mg/kg, mTPH (Lube): 10,000 mg/kg; iron (11,000 mg/kg):

- FWO-1(0.2-0.35m): mTPH: 25,000 mg/kg (Fuel/Lube)
- FWO-5(0.2-0.35m): Iron: 15,000 mg/kg

On December 13, 2016, AECOM installed monitoring well MW16-03 in the vicinity of the Former Waste Oil Storage Tank Area with the purpose of investigating the groundwater conditions in the area. No soil sample was submitted for analysis.

AECOM completed groundwater monitoring for the Site on December 15, 2016. Samples were collected from monitoring wells on-Site (MW1 to MW6, MW16-01 to MW16-03) and were submitted for BTEX/mTPH analysis. Results showed the following exceedances:

- MW6: mTPH: 10 mg/L (Fuel)
- MW16-01: Ethylbenzene: 0.0038 mg/L, mTPH: 7.3 mg/L (Fuel)
- MW16-01 (FD): Ethylbenzene: 0.0037 mg/L, mTPH: 7.1 mg/L (Fuel)

4.3.2.1 Borehole Delineation and Monitoring Well Construction: July 2017

Between July 19-20, 2017 AECOM completed a borehole investigation in order to delineate the PHC impacts in soil that were identified during the PCOC Former Waste Oil Storage Tank investigation in 2016 (FWO-1). Five (5) boreholes (BH17-05, BH17-06, BH17-07, MW17-04, MW17-05) were drilled and two (2) were completed as monitoring wells (MW17-04 and MW17-05).

Soil samples were collected and analysed for BTEX/mTPH. Results showed no exceedances to the applicable guidelines for the Site.

Groundwater sampling was also completed for the Site on July 27, 2017. The results from this monitoring event are outlined in **Section 7.4**.

4.3.2.2 Iron in Soil Delineation: October / November 2017

On October 26, 2017 AECOM returned to Site to investigate an iron exceedance (FWO-5) that was identified during the PCOC investigation in 2016. Four (4) soil samples (FWO-2 to FWO-5) were collected from various depths intervals and were submitted for iron analysis. All results submitted were found to be in exceedance to the applicable guideline value for iron (11,000 mg/kg):

- FWO-2(0.20-0.35m): Iron: 23,000 mg/kg
- FWO-2(0.35-0.50m): Iron: 23,000 mg/kg
- FWO-3(0.20-0.35m): Iron: 25,000 mg/kg
- FWO-3(0.35-0.50m): Iron: 27,000 mg/kg
- FWO-4(0.20-0.35m): Iron: 30,000 mg/kg
- FWO-4(0.35-0.50m): Iron: 27,000 mg/kg
- FWO-5(0.30-0.50m): Iron: 23,000 mg/kg

On November 22, 2017 AECOM returned to Site to collect additional samples for iron analysis. Four (4) soil samples (FWO-5 to FWO-8) were collected from various depth intervals and were submitted for iron analysis. Results showed the following exceedances to the applicable guideline value for iron (11,000 mg/kg):

- FWO-6(0.20-0.35m): Iron: 24,000 mg/kg
- FWO-6(0.35-0.50m): Iron: 13,000 mg/kg
- FWO-7(0.20-0.35m): Iron: 21,000 mg/kg
- FWO-8(0.20-0.35m): Iron: 13,000 mg/kg

The iron in soil concentrations identified at the Site are considered to be representative of background soil conditions as elevated iron concentrations in granite bedrock (parent material) is anticipated for this region (Boner, Finck and Graves, 1990) (Health Canada, 2014). Therefore, iron concentrations in excess of the NSE criteria are not required to be remediated.

4.4 Former Tank Farm Area Investigation: October / December 2016

On October 27, 2016 AECOM completed a soil investigation surrounding the former Tank Farm Area. The purpose of the field program was to complete a data gap by investigating the area of former underground tanks/concrete apron pads that are now backfilled with gravel. The former tank investigation work involved the removal and stockpiling of soils, and the screening/sampling of soils to investigate soil conditions in the former tank areas. Samples (EX3-1 to EX3-12) were collected from various depth intervals and were submitted for analysis of BTEX/mTPH.

On December 13, 2016 AECOM returned to Site to complete a borehole investigation in the area of former tank farm area. Three (3) boreholes were completed (BH16-01 to BH16-03) and one (1) sample (BH16-01) was submitted for analysis of BTEX/mTPH. BH16-01 sample was collected from a layer of sand that was found beneath the concrete slab that lay on top of the gravel layer.

Analytical results from both investigations showed no exceedances to the applicable guidelines for the Site. No soils/gravel from this area were found to be impacted and no soil was removed from this area for disposal.

4.5 Phase II Conclusions

Table C below summarizes exceedances that have been investigated with follow up sampling to identify if the existing soil quality exceeds applicable criteria.

Table C: Summary of PHC and PAH Exceedances in Soil

Sample ID (Year)	AEC	Depth (mbgs)	Parameter concentration exceeding criteria (mg/kg)	Confirmatory sample ID (year)	Depth (mbgs)	Parameter concentration (mg/kg)	Guideline concentration (mg/kg)	Remediation required		
	PHC EXCEEDANCES									
TP2 (2003)	Area near former catch basin / oil/water separator	1-1.5	E: 2.14 mTPH: 6,000 (F)	TP16-09 (2016)	0-1	E: <0.025 mTPH: 110 (F/L)	E: 0.065 mTPH: 1,800 (Fuel) mTPH: 10,000 (Lube)	Yes – vertical delineation not achieved		
TP5 (2003)	Area near former product dispenser / pump location	0.5-1	E: 2.11 mTPH: 6,700 (F)	TP16-03 (2016)	0-1, 3-4	(0-1m): E: 0.072, mTPH: 5,000 (F) (3-4m): E: 0.050, mTPH: 12,000 (F)	E: 0.065 mTPH: 1,800 (Fuel)	Yes		
				TP16-05 (2016)	1-2, 2-4	(1-2m): E: 0.36, mTPH: 7,800 (F) (2-4m): E: <0.025, mTPH: 660 (F)	E: 0.065 mTPH: 1,800 (Fuel)			
TP9 (2003)	Area near former abovegrou nd fuel storage tank	0.5-1	E: 0.157	Rem	ediation I	Required	E: 0.065	Yes		
TP11 (2003)	Former loading rack	2-2.5	E: 0.383	TP16-02 (2016)	2.5-3	E: <0.025	E: 0.065	Yes – vertical delineation not achieved		
ST-E WALL (2003)	Former septic tank pumping chamber	1-3	mTPH: 1,400 (G)	Rem	ediation I	Required	mTPH: 870 (Gas)	Yes		
TP24 (2012)	Area near former product dispenser / pump location	0.5-1, 1-1.5, 3-3.5	(0.5-1m): E: 0.54 mTPH: 1,700 (G) (1-1.5m): E: 0.57	TP16-03 (2016)	0-1, 3-4	(0-1m): E: 0.072, mTPH: 5,000 (F) (3-4m): E: 0.050,	E: 0.065 mTPH: 870 (Gas) mTPH: 1,800 (Fuel)	Yes		

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Sample ID (Year)	AEC	Depth (mbgs)	Parameter concentration exceeding criteria (mg/kg)	Confirmatory sample ID (year)	Depth (mbgs)	Parameter concentration (mg/kg)	Guideline concentration (mg/kg)	Remediation required
			mTPH: 1,100 (G)			mTPH: 12,000 (F)		
			(3-3.5m):					
			mTPH: 3,500 (F)					
				TP16-05 (2016)	1-2,	(1-2m):	E: 0.065	
					2-4	E: 0.36,	mTPH: 870 (Gas)	
						mTPH: 7,800 (F)	mTPH: 1,800 (Fuel)	
						(2-4m):		
						E: <0.025,		
						mTPH: 660 (F)		
EWO-1	Former	0.2-	mTPH: 25,000 (F/L)	Pom	ediation I	Pequired	mTPH: 1.800 (Fuel)	Ves
(2016)	Waste Oil	0.2-	1111 11. 23,000 (17L)	item	eulation	Vequired	mTPH: 10 000	163
(2010)	Storage	0.55					(Lubo)	
	Area						(Lube)	
				PAH E	XCEEDA	NCES		
				r				
TP2 (2003)	Area near	1-1.5	Methylnaphthalene,	TP16-09 (2016)	0-1	Methylnaphthalene,	Methylnaphthalene,	Yes – vertical
	former		1-			1-: 0.014	1-: 30	delineation not
	catch		Methylnaphthalene,			Methylnaphthalene,	Methylnaphthalene,	achieved
	basin /		2-			2-: < 0.010	2-: 30	
	oil/water							
	separator							

PHC, and PAH impacts in soil exceeding the applicable criteria were identified on-Site. The historical and recently identified exceedances are shown above in **Table C**. It was recommended that a remedial action plan be created for the PHC and PAH in soil impacted areas.

Groundwater PHC impacts exceeding the applicable criteria were identified on-Site at monitoring well MW-6. It was recommended within AECOM's Remedial Action Plan (2016) that further PHC in groundwater assessment be completed at the Site.

Phase II soil sampling locations and Phase II groundwater sampling results are shown respectively on Figure 2 and Figure 3, Appendix A. Soil sample analytical results from 2016 are provided in Table 2, soil sample analytical results from 2017 are provided in Table 4, and groundwater analytical results are provided in Table 6, Appendix D. Laboratory Certificates of Analysis (COAs) and Data Quality Review Checklists (DQRs) are provided in Appendix E. Quality Assurance and Quality Control (QAQC) reports are provided in Appendix F. Borehole, test pit, and monitoring well logs are provided in Appendix G. Field methodologies are provided in Appendix H.

Free product was not found in soil or groundwater during the Phase II work completed by AECOM.

5. Remedial Action Plan (2016)

AECOM completed a remedial action plan (RAP) for the Site in January 2016. The RAP developed a plan to address PHC and PAH impacts in soil on-Site, PHC impacts in groundwater on-Site, identified the remedial objectives for the Site, and described the remediation activities selected to meet the remedial objective.

An evaluation of existing soil analytical data available to AECOM was completed and compared to NSE Tier I EQS applicable criteria to identify areas of exceedances prior to remediation.

Two (2) areas of PHC impacted soils were identified, and one (1) of these areas also had PAH impacted soils identifiedThe RAP outlined a plan to excavate the soils that were in exceedance of NSE Tier I EQS and dispose of the soils at an off-Site waste disposal facility approved to accept PHC and PAH impacted soils. During the excavation, confirmatory sampling of side walls and excavation floors was planned to satisfy the requirements of the NSE Confirmation of Remediation Protocol (PRO-700) and Imperial Oil requirements for confirmatory sampling. The RAP indicated that the excavated areas were to be backfilled with imported clean material or excavated overburden that had been verified by analytical sampling, and that were below applicable criteria.

Historical groundwater analytical results indicated that exceedances of the applicable 2013 NSE Tier I EQSs for groundwater at a commercial, potable, coarse grained site existed at MW6. The groundwater elevations at the Site typically ranged between 0.5 and 1.5 m below ground surface. The impacted soils at the Site are present in depths from the surface to 3.5 m below ground surface. The soils at the Site are composed primarily of sand with trace silt and some cobbles and boulders throughout. The relatively coarse-grained texture of the soils and the depths of the planned excavations in relation to the groundwater elevations indicated the excavations would have infiltration of groundwater. The infiltration of groundwater would require de-watering of the excavations during Site remediation activities.

To prevent possible impact to groundwater or the municipal storm water system, a waste water management plan for surface, groundwater and dewatering would be implemented. The plan for physical management of water included containment structures to ensure surface runoff that encountered excavated soils would be retained on-Site. Any groundwater infiltrating the excavations was planned to be removed using dedicated pumps stored on-Site prior to treatment or disposal. The water removed from the excavations was planned to be treated on-Site and discharged to the municipal storm-water system. The RAP indicated that discharged wastewater would be sampled at regular intervals to ensure the discharge is compliant with applicable laws and regulations. As an alternative to on-Site treatment of waste water, collection and disposal of waste water at a facility approved to accept petroleum hydrocarbon impacted water was considered as an option.

A copy of the RAP report prepared by AECOM is provided in Appendix I.

6. Remedial Excavations (2016 and 2020)

6.1 Remedial Excavations and Confirmatory Sampling

Between 2016 and 2020, AECOM completed remedial soil excavations at the Site to target PHC exceedances previously identified during the Phase II ESAs and PCOC investigations completed by AECOM, as well as remaining historical PHC and PAH exceedances previously identified at the Site.

6.1.1 Former Loading Rack / Product Dispenser (Excavation 1) - 2016

In 2016, AECOM completed an excavation in the area of the former loading rack / product dispenser pump pad. Soils in the vicinity of the three (3) recent exceedances identified by AECOM in 2016 (TP16-03, TP16-05 and TP16-06) and previously identified historical exceedances (TP5, TP9, TP11, and TP24) were excavated and impacted soils were removed and transported to an Imperial Oil approved facility – Colchester Soil Recycling Facility, Mingo Road, Kemptown, NS.

This remedial excavation is referred to as Excavation 1 (Figure 4, Appendix A).

6.1.2 Former Office / Warehouse and Oil Water Separator (Excavation 2) – 2016 and 2020

In 2016, AECOM completed an excavation in the area between former office / warehouse and the former oil water separator). Soils in the vicinity of previously identified historical exceedances (TP2, STE-Wall) were excavated and impacted soils were removed and transported to an Imperial Oil approved facility – Colchester Soil Recycling Facility, Mingo Road, Kemptown, NS.

On June 2, 2020 AECOM returned to Site to collect additional confirmatory samples from Excavation 2, in order to target a historical PAH exceedance that was not accounted for during the remedial excavation in 2016:

- TP2 (1-1.5m): Methylnaphthalene, 1-: 37 mg/kg; Methylnaphthalene, 2-: 56 mg/kg. Therefore no additional excavation work was required or completed.
- •

This remedial excavation is referred to as Excavation 2 (Figure 4, Appendix A).

In 2016, a total of 281.67 tonnes of impacted soil, taken from Excavation 1 and Excavation 2, was disposed of at the facility mentioned above. Both excavations were backfilled with imported surge rock and gravel; therefore, no samples were collected from the backfill. Compaction of the backfill was completed using the excavation equipment so the Site was properly graded and would not result in settling and/or ponding of surface water following completion of the excavation. There was no soil disposed of during the 2020 Excavation 2 work.

Groundwater was encountered during the remediation in 2016, which was pumped out of the excavation into a frac tank located on the Site. A tanker truck operated by Envirosystems transported the holding tank water to Envirosystems 660 MacElmon Rd, Debert, Nova Scotia for off-Site disposal. A total of 31,000 L of water was disposed of at this facility. There was no groundwater encountered during the 2020 Excavation 2 work.

6.1.3 Former Waste Oil Storage Tank Area Excavation - 2018

In August 2018, AECOM completed a remedial excavation at the Site to target a recent exceedance identified during the PCOC investigation (Former Waste Oil Storage Tank Area) completed by AECOM in 2017. The PHC exceedance (FWO-1(0.2-0.35m): mTPH: 25,000 mg/kg (Fuel/Lube)) was excavated and impacted soils were removed and transported to an Imperial Oil approved facility – CleanEarth Technologies, 203 Aerotech Drive, Enfield, NS. A total of 25.7 tonnes of impacted soil was disposed of at the facility.

The excavation was backfilled with a combination of non-impacted stocked-piled soils and imported clean fill. Samples were collected from the fill and analyzed to verify that the fill used was below applicable criteria for the Site. Compaction of the backfill was completed using the excavation equipment to ensure the Site was properly graded and would not result in settling and/or ponding of surface water following completion of the excavation.

Groundwater was not encountered during this excavation.

6.1.4 Confirmatory Sampling

Confirmatory samples were collected from all the side walls and bases from all remedial excavations completed by AECOM. All confirmatory samples were completed in accordance with the NSE Confirmation of Remediation Protocol (PRO-700) and the Imperial Oil Guidance Document for Remedial Excavation Programs at Sites in Canada

The Imperial Oil guidance document states the following requirements for confirmatory sampling based on the surface area:

Floor samples:

- for excavations with an anticipated surface area of <50 square metres (m²), at least two confirmatory floor samples should be submitted to the laboratory. These confirmatory floor samples should be taken from the grid locations that field screening indicated had the highest concentration of the contaminants of concern.
- for excavations with an anticipated surface area of 50-1000 m², one additional confirmatory sample should be submitted to the laboratory per every additional 25-100 m² of surface area that is >50 m². The additional confirmatory floor samples should be collected from the grid location in the additional 25-100 m² of floor area that field screening indicated had the highest concentration of the contaminants of concern. The density of confirmatory floor sampling required for this size excavation (chosen from the 25-100 m² range) should be determined in consultation with the Environmental Services Execution Project Manager, prior to starting the remedial excavation.
- for excavations with an anticipated surface area of >1000 m², the Consultant should develop a site-specific remedial excavation floor sampling plan, in consultation with the Environmental Services Execution Project Manager, prior to starting the remedial excavation.

Wall samples:

- a location for a wall profile is established every 2-5 metres along the excavation wall, using the grid that has been set out for the site. Locations for these wall profiles should correspond to ""worst-case" conditions along the wall. Locations of these wall profiles should not be selected in a biased manner, to ensure that a clean wall is achieved.
- at every wall profile, field screening by physical observation and field screening measurements (i.e. OVM or Quantabs) is performed on discrete samples at a maximum 1.0 m interval (from the top to the bottom of the wall). This is performed at each wall profile along the excavation.
- the preferred practice is that the field screening sampling grid should diamond shaped, not rectangular. If one
 wall profile takes samples at 1.0, 2.0 and 3.0 mbgs, then the next wall profile will take samples at 0.5, 1.5, 2.5
 and 3.5 mbgs. This pattern then repeats for subsequent wall profiles. This methodology provides better areal
 coverage of the wall and makes it less likely that horizontal seams of impacted soil will be missed in the field
 screening process.

- at a minimum, the most highly contaminated sample (based upon physical observation and field screening measurements) from each wall profile is sent to a laboratory for confirmation testing. Additional samples may be submitted for laboratory analysis, to improve areal coverage of the wall with confirmatory samples.
- for larger excavations, the frequency of wall sampling can be decreased. This is easily accomplished by selecting distances between the wall profiles that are at the higher end of the recommended 2-5 m range. Note that a spacing larger than 5 m can be chosen for larger excavations.

All soil samples collected were placed in laboratory-supplied glass jars with no headspace and stored in an icefilled cooler. Soil characteristics (soil types, odours and/or staining) were logged in the field by qualified AECOM environmental staff.

Excavated soils were stockpiled on-Site during remedial activities and segregated based on physical observations (i.e. visual / olfactory condition of the soil). Discrete confirmatory samples were collected from stockpiled soil to confirm petroleum hydrocarbon concentrations. If stockpiled material was found to be contaminated it was directly loaded onto trucks for off-Site disposal.

The 2016/2020 remedial excavation boundaries and confirmatory samples are illustrated on **Figure 4**, and the 2018 remedial excavation boundaries and confirmatory samples are illustrated on **Figure 5**, **Appendix A**. Analytical results from the 2016/2020 excavation are provided in **Table 3**, and analytical results from the 2018 excavation are provided in **Table 5**, **Appendix D**. Laboratory COAs and DQRs are provided in **Appendix E**. QAQC reports are provided in **Appendix F**. Field methodologies are provided in **Appendix H**. A remedial photo log is provided in **Appendix J** and remediation waste slips are provided in **Appendix K**.

6.2 Soil Sampling Analytical Results

6.2.1 Former Loading Rack / Product Dispenser (Excavation 1) – 2016

Between October 20-27, 2016 a total of twenty (20) confirmatory wall soil samples (including duplicates) and five (5) confirmatory base soil samples were collected and submitted for analysis of BTEX/mTPH. A total of seven (7) samples were collected from the stockpiled material on-Site and were submitted for analysis of BTEX/mTPH.

Four (4) interim samples (EX1-1, EX1-3, EX1-9, EX1-10) that were collected during the excavation were in exceedance to the applicable guidelines for ethylbenzene or mTPH. These samples were removed, and the impacted soil was disposed of at the approved facility:

- EX1-1(3-4m): Ethylbenzene: 0.16 mg/kg
- EX1-3(2-3m): mTPH: 3,200 mg/kg (Fuel)
- EX1-9(1-2m): Ethylbenzene: 0.31 mg/kg; mTPH: 1,900 mg/kg (Fuel)
- EX1-10(1.5-2.5m): Ethylbenzene: 0.16 mg/kg; mTPH: 2,600 mg/kg (Fuel)

All other samples collected as part of this excavation were within the applicable guidelines for the Site.

6.2.2 Former Office / Warehouse and Oil Water Separator (Excavation 2) – 2016/2020

<u>2016</u>

Between October 21-December 13, 2016 a total of five (5) confirmatory wall soil samples (including duplicates) and two (2) confirmatory base soil samples were collected and submitted for analysis of BTEX/mTPH. A total of two (2) samples were collected from the stockpiled material on-Site and were submitted for analysis of BTEX/mTPH.

All samples collected as part of this excavation were within the applicable guidelines for the Site.

The 2016 remedial excavation boundaries and confirmatory samples are illustrated on **Figure 4**, **Appendix A**. Analytical results from the 2016 excavation are provided in **Table 3**, **Appendix D**.

<u>2020</u>

On June 2, 2020, AECOM returned to Site to collect a total of five (5) confirmatory wall soil samples (including duplicates) and two (2) confirmatory base soil samples were collected and submitted for analysis of PAHs.

All samples collected were within the applicable guidelines for the Site.

The 2020 confirmatory samples are illustrated on **Figure 4**, **Appendix A**. Analytical results are provided in **Table 3**, **Appendix D**.

6.2.3 Former Waste Oil Storage Tank Area Excavation - 2018

Between August 2-7, 2018, a total of four (4) confirmatory wall samples and one (1) confirmatory base sample were collected and submitted for analysis of BTEX/mTPH. One (1) sample was collected from the backfill material to be used on-Site and was submitted for analysis of BTEX/mTPH, VOC, PAH, and metals analysis.

All samples collected during the 2018 excavation were within the applicable guidelines for the Site.

The 2018 remedial excavation boundaries and confirmatory samples are illustrated on **Figure 5**, **Appendix A**. Analytical results from the 2018 excavation are provided in **Table 5**, **Appendix D**.

6.3 Post Remedial Monitoring Well Installation

On December 20, 2016, AECOM installed two (2) post-remedial monitoring wells within the remedial excavation area that took place in October 2016. One (1) monitoring well (MW16-01) was installed in Excavation 1 (area of the former loading rack and product dispenser pump pad), and the second monitoring well (MW16-02) was installed in Excavation 2 (area between former office / warehouse and the former oil water separator).

Between July 20-21, 2017, AECOM installed additional post-remedial monitoring wells to assess groundwater conditions post remedial activities. On July 20, 2017 AECOM decommissioned MW6, which had been showing exceedances in mTPH in recent sampling completed by AECOM. As a replacement to this well, AECOM installed MW17-03 which is located within 2 m of MW-6. On July 21, AECOM installed an additional two (2) post-remedial monitoring wells, as a replacement to the wells that were initially installed in December 2016. MW17-01 was installed in Excavation 1 and MW17-02 was installed in Excavation 2.

On May 1, 2019, AECOM installed MW19-01 with the purpose of concluding that there are no impacts that could affect the off-Site property. Monitoring well locations are shown on **Figure 6**, **Appendix A**. Monitoring well logs are provided in **Appendix G**.

7. Post Remedial Groundwater Monitoring Events

AECOM completed several post-remedial groundwater monitoring events between 2019-2020 for select wells on-Site. Monitoring well locations are shown on **Figure 6**, **Appendix A**. Analytical results are provided in **Table 7.0**, **Appendix D**. Laboratory COAs and DQRs are found in **Appendix E**. QAQC reports are provided in **Appendix F**. Field Methodologies are provided in **Appendix H**.

The final groundwater monitoring events that confirm compliance for the wells on-Site are presented below. Free product was not detected while sampling.

7.1 Groundwater Monitoring (February 2019)

AECOM completed groundwater monitoring for the Site on February 6, 2019. Samples were collected from monitoring wells on-Site (MW17-01 and MW17-03).

AECOM returned to Site on February 19, 2019 to complete additional groundwater monitoring. Samples were collected from monitoring wells on-Site (MW1 to MW5, MW16-01 to MW16-03, MW17-02, MW17-05) and were submitted for BTEX/mTPH analysis.

Results from both sampling evens showed no exceedances to the applicable guidelines for the Site.

7.2 Groundwater Monitoring (May 2019)

AECOM completed groundwater monitoring for the Site on May 6, 2019. Samples were collected from monitoring wells on-Site (MW1 to MW5, MW16-01 to MW16-03, MW17-01 to MW17-03, MW17-05, MW19-01). Results showed the following exceedances:

- MW19-01: Ethylbenzene: 0.0045 mg/L
- MW19-01 (FD): Ethylbenzene: 0.0047 mg/L

7.3 Groundwater Monitoring (June 2019)

AECOM completed groundwater monitoring for the Site on June 26, 2019. Samples were collected from monitoring well on-Site (MW19-01).

Results showed no exceedances to the applicable guidelines for the Site.

7.4 Groundwater Monitoring (August 2020)

AECOM completed groundwater monitoring for the Site on August 14, 2020. Samples were collected from monitoring well on-Site (MW19-01).

Results showed no exceedances to the applicable guidelines for the Site.

8. Confirmation of Remediation

For confirmatory work completed by AECOM, please refer to **Section 6.0** and **Section 7.0** within this report, as well as **Figures 4** and **5**, **Appendix A** and **Tables 3** and **5**, **Appendix D**.

When confirmation of remediation groundwater objectives have been met and Site closure has been given, AECOM will decommission the monitoring wells on-Site under the supervisor of the Site Professional.

9. Declaration of Property Condition

The Site has been assessed and all on-Site impacted soil has been remediated to applicable NSE Tier I Environmental Quality Standards (EQS) for a commercial property with potable groundwater and coarse-grained soils.

The Declaration of Property Condition (DPC) and other associated NSE checklists are provided within **Appendix B**. The Site meets the requirements for NSE Tier I unconditional closure.

10. References

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- Keppie J.D. (2000). Nova Scotia Department of Natural Resources Minerals and Energy Branch Legend for the Geological Map of the Province of Nova Scotia. Map ME 2000-1.

- NS Environment. Contaminated Site Regulations, Revised July 6, 2013.
- NS Environment. Phase II Environmental Site Assessment Protocol PRO-400, Revised July 6, 2013.
- NS Environment. Confirmation of Remediation Protocol PRO-700, Revised July 6, 2013.
- Stea R.R, Conley H., Brown Y. (1992). Surficial Geology of the Province of Nova Scotia. Nova Scotia Department of Mines and Energy. Map 92-3. 1:500,000.




ameter	В	Т	ш	Х	>C6-C10	>C10-C21	>C21- <c32< td=""><td>MTPH</td></c32<>	MTPH
Туре								
Ν	< 0.025	< 0.025	< 0.025	< 0.025	21.2	1100	280	<u>1400 (</u> 1)

ameter	В	Т	Е	Х	>C6-C10	>C10-C21	>C21- <c32< th=""><th>MTPH</th></c32<>	MTPH
Туре								
Ν	< 0.025	< 0.025	<u>0.383</u>	2.44	209	260	21	490
Ν	< 0.025	< 0.025	<u>0.357</u>	2.72	105.6	274.3	< 15	380

ameter	В	Т	E	Х	>C6-C10	>C10-C21	>C21- <c32< td=""><td>MTPH</td></c32<>	MTPH
Туре								
FD	< 0.05	< 0.2	<u>2.47</u>	<u>12.9</u>	722	5700	620	<u>7100</u> (2)
Ν	0.008	0.054	<u>2.14</u>	11	434	5000	520	<u>6000</u> (2)
Ν	< 0.025	0.055	<u>2.14</u>	11	382	4872	450	<u>5710</u> (2)

ameter	В	Т	Е	Х	>C6-C10	>C10-C21	>C21- <c32< th=""><th>MTPH</th></c32<>	MTPH
Туре								
FD	< 0.05	< 0.2	<u>0.181</u>	2.13	268	5700	460	<u>6400</u> (2)
Ν	< 0.025	< 0.025	<u>0.211</u>	2.43	280	6000	480	<u>6700</u> (2)
Ν	< 0.05	< 0.05	<u>1.83</u>	<u>15.9</u>	420	93	< 15	510

ameter	В	Т	E	Х	>C6-C10	>C10-C21	>C21- <c32< th=""><th>MTPH</th></c32<>	MTPH
Туре								
Ν	< 0.025	0.308	<u>0.157</u>	7.2	52.3	670	82	810

ameter	В	Т	E	Х	>C6-C10	>C10-C16	>C16-C21	>C21- <c32< th=""><th>MTPH</th></c32<>	MTPH
Туре									
Ν	< 0.025	< 0.025	<u>0.54</u>	2.2	230	1100	310	63	<u>1700</u> (1)
Ν	< 0.025	< 0.025	<u>0.57</u>	4.8	520	400	110	29	<u>1100</u> (1)
FD	<0.025	<0.025	<0.025	<0.05	3	2600	730	150	<u>3500</u> (2)

ameter	Methylnaphthalene, 1-	Methylnaphthalene, 2-
Туре		
Ν	<u>37</u>	<u>56</u>

¹ Nova Scotia Environment Table 1A Tier I Environmental Quality Standards for Soil at a Potable Site, Coarse, Commercial

					m				
			ΔΞζ	MO					
		CLIENT NAME:		PROJECT L	OCATION:				
		IMPERIAL OIL		64 MILL LAK	E ROAD NO. 2				
				HUBBARDS, NOVA SCOTIA					
		HISTORICAL	PHC AND	PAH IN	SOIL RESULTS				
		DRAWN BY: SC	SCALE:1:500		FIGURE No. 1				
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в	Т	Е	Х	F1 (C6-C10) - BTEX	F2 (C10-C16)	C16-C21	C21-C32	MTPH	HC Resemblance
.025	< 0.025	0.072	0.36	64	3600	1100	290	5000	Fuel
.025	< 0.025	0.05	0.41	48	9200	2400	440	12000	Fuel
.025	< 0.025	0.36	0.83	200	5500	1700	380	7800	Fuel
.025	< 0.025	0.22	1.5	120	490	200	46	860	Fuel
.025	< 0.025	0.17	0.99	260	180	86	19	550	Fuel
.025	< 0.025	< 0.025	0.21	130	6700	4600	13000	25000	Fuel/Lube

		Iron
epth	Туре	
0.35 m	Ν	23000
-0.5 m	N	23000
0.35 m	Ν	25000
-0.5 m	N	27000
0.35 m	Ν	30000
-0.5 m	Ν	27000
-0.5 m	Ν	23000
0.35 m	FD	15000
0.35 m	N	24000
-0.5 m	Ν	13000
0.35 m	N	21000
0.35 m	N	13000

	AECOM							
		CLIENT NAME: IMPERIAL OIL		PROJECT LOCATION: 64 MILL LAKE ROAD NO. 2 HUBBARDS, NOVA SCOTIA				
		2016 AND 2	017 PHAS SOIL RE	E II PHC SULTS	AND IRON IN			
		DRAWN BY: SC	SCALE:1:350		FIGURE No. 2			
BY	CHK	CHECKED BY: JS	DATE: 2019-11-26		REVISION 0			



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1:	3			15) 15) EX1-12 (25) 10)	× (× (× ($ \begin{array}{cccc} 20) \\ EX1-11 \\ (30) \\ 30) \\ 10) \\ \end{array} $ (20) (21) (22) (23) (23) (24) (24) (25) (25) (25) (25) (25) (25) (25) (25	5) × (1-14 × (5) ×	EX1-18 (35) (25) (25) (20)		2	C EX1-7 (310) < (65) < (45) < (45)
						10m					
E(1 1	X1-5 15) 0) 0)		D	×(10 ×(15 ×(5)	(1-4))	×(10) EX1-17 (55) ×(20) EX1-17 (60)	×(0) ×(0) ×(2) €×1-16 ×(25)	A			
2 (! E	5) EX2-3 10)	3	×	EX2-4 (10) (5)	A					0 1 	2 4 r
		В	Т	Е	x	F1 (C6-C10) - BTEX	F2 (C10-C16)	C16-C21	C21-C32	MTPH	HC Resemblance
	N N	< 0.02	5 < 0.025	< 0.025	< 0.050	< 2.5	< 10	< 10	< 15	< 15	NA
-	Ν	< 0.02	5 < 0.025	< 0.025	< 0.050	11	22	13	< 15	46	Fuel
_	FD	< 0.02	5 < 0.025	< 0.025	0.12	10	110	51	< 15	170	Fuel
	Ν	< 0.02	5 < 0.025	< 0.025	< 0.050	< 2.5	60	110	32	200	Fuel
	Ν	< 0.02	5 < 0.025	< 0.025	< 0.050	< 2.5	< 10	< 10	< 15	< 15	NA
	Ν	< 0.02	5 < 0.025	< 0.025	0.2	54	190	76	< 15	320	Fuel
	N	< 0.02	5 < 0.025	< 0.025	0.076	12	230	76	17	330	Fuel
	N	< 0.02	5 < 0.025	< 0.025	< 0.050	3.7	290	110	24	430	Fuel
ı	N	< 0.02	5 < 0.025	< 0.025	0.13	18	56	28	< 15	100	Fuel
	N	< 0.02	5 < 0.025	< 0.025	< 0.050	< 2.5	14	15	< 15	29	Fuel
1	N	< 0.02	5 < 0.025	< 0.025	< 0.050	< 2.5	< 10	< 10	< 15	< 15	NA
	N	< 0.02	5 < 0.025	< 0.025	< 0.050	< 2.5	< 10	< 10	< 15	< 15	NA
	FD	< 0.02	5 < 0.025 5 < 0.025	< 0.025	< 0.050	< 2.5	< 10	< 10	< 15	< 15	NA
1	Ν	< 0.02	5 < 0.025	< 0.025	< 0.050	< 2.5	17	18	< 15	35	Fuel
	Ν	< 0.02	5 < 0.025	< 0.025	< 0.050	< 2.5	< 10	15	< 15	< 15	NA
	Ν	< 0.02	5 < 0.025	< 0.025	< 0.050	< 2.5	25	23	< 15	45	Fuel
	N	< 0.02	5 < 0.025	< 0.025	< 0.050	< 2.5	< 10	23	30	53	Fuel/Lube
	N FD	< 0.02	5 < 0.025 5 < 0.025	< 0.025	< 0.050	< 2.5	< 10 < 10	< 10 < 10	< 15 < 15	< 15 < 15	NA NA
	N	< 0.02	5 < 0.025	< 0.025	< 0.050	< 2.5	< 10	< 10	< 15	< 15	NA
	N	< 0.02	5 < 0.025	< 0.025	< 0.050	< 2.5	< 10	< 10	< 15	< 15	NA
	N	< 0.02	5 < 0.025	< 0.025	< 0.050	< 2.5	< 10	< 10	< 15	< 15	NA
	Ν	< 0.02	5 < 0.025	< 0.025	< 0.050	< 2.5	< 10	< 10	< 15	< 15	NA
		CL	.IENT N PERIAI	IAME: L OIL		A	PRC 64 M			DN:	. 2
-							HUE	BARDS	S, NOVA	SCO	TIA

2016/2020 REMEDIATION PHC AND PAH IN SOIL RESULTS

		DRAWN BY: SC	SCALE: 1:250	FIGURE No. 4
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Phase 2 Environmental Site Assessment Checklist

This checklist is for all sites undergoing Full Property Remediation and sites undergoing L3 Limited Remediation.



🗹 New submission 🛛 Updated checklist

NSE file number (mandatory) 33000-	35-BRI-2801218
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Instructions for completing this checklist

- All relevant sections of this checklist must be completed and must accompany the Phase 2 Environmental Site Assessment Report.
- The signature required on this checklist is from the managing site professional.
- All regulatory protocols must be followed, and all forms/checklists must be completed separately for each property. This means that a source property and an impacted third-party property must have all documents filed separately. Once the source property or impacted third-party property is identified by the check box below, all subsequent reference on this form/checklist are to that site owner.
- Each checklist item corresponds to a requirement in the Regulations or Protocols. It is not acceptable to check a field and refer to justification of why a minimum requirement was not completed.
- · Forms/checklists must be complete before filing.

1 - Site Location and Contact Information

Details provided on this form are applicable to 🛛 🖬 Source	e Property or 🖵 Impacte	ed Third-Party Property
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	Site Address 64 Mill Lake Road, Hubbards, NS	_ City Hubbards, NS
Site Location	Parcel Identification Number (PID) 60082138	_ Postal Code <u>B0J 1T0</u>
Mandatory must	GPS (NAD83 UTM coordinates, source central point) Easting	Northing
be completed.	Zone (select one) 🔲 19 🗹 20 🖵 21	
	Description (optional)	
	Name Edouard Hamel	Phone 476-2249
	Email edouard.hamel@esso.ca	Fax
Property Owner	Recognized Agent (if applicable)	
Mandatory must	Company Name (if applicable) Imperial Oil Limited	City <u>Calgary</u> , AB
oo oompiotoai	Mailing Address 505 Quarry Park Blvd., SE	Postal Code 72C 5N1
	Preferred method of correspondence (select one) 🛛 Letter or 🗹 Email	
	Name Janice Shea	_ Phone (902) 428-2054
	Email janice.shea@aecom.com	Fax (902) 428-2031
Contact for	Recognized Agent (if applicable)	
If different than above	Company Name (if applicable) AECOM Canada Ltd.	City <u>Halifax</u> , NS
	Mailing Address 1701 Hollis Street, SH400	Postal Code <u>B3J 3M8</u>
	Preferred method of correspondence (select one) 🗅 Letter or 🗹 Email	
	Name_John Fairclough	Phone(905) 747-7648
	Email john.fairclough@aecom.com	Fax
Site Professional	Company Name <u>AECOM</u> Canada Ltd.	City <u>Markham, OH</u>
Mandatory must	Mailing Address 105 Commerce Valley Dr. W	Postal Code <u>L3T 7W3</u>
	Professional Registration Number LP 140	_
	Preferred method of correspondence (select one) 🛛 Letter or 🗹 Email	

Phase 2 Environmental Site Assessment Checklist

This checklist is for all sites undergoing Full Property Remediation and sites undergoing L3 Limited Remediation.

2 - Site Assessment Requirements



Site Assessment Requirements Supporting							
Confirm ALL the following information has been submitted to the Department. Indicate report and page number where information is documented. It is not acceptable to provide		provided	Refer	ence Docu	ment		
just all v	ification for not completing a minimum requirement. The site professional must ensure vork has been completed in accordance with the PRO-400, Phase 2 Environmental Site				Page		
Ass	essment Protocol.	Yes	Report	Section	Number		
Int	rusive Investigation						
1	Soil sampling conducted at each potential source area	\mathbf{A}	001	3, 4	9, 15		
2	Groundwater flow direction, velocity, hydraulic gradient, and elevation has been evaluated by the placement of at least 3 drilled boreholes and the installation of monitoring wells within the boreholes.	Ń	001	1.2.3, 3	6, 9		
3	Determination has been made whether free product in soil or groundwater exist at the site	V	001	3, 4	9, 15		
4	Horizontal extent of soil contamination on and off the property, for each contaminant has been determined and described in text and on a graphical site plan	A	001	3, 4	9, 15		
5	The vertical extent of soil contamination on and off the property has been determined, including the maximum depth at which contamination was identified, and confirmation that the vertical depth of contamination has been determined, using site profiles as appropriate	М	001	3,4	9, 15		
6	The estimated area of soil contamination exceeding applicable environmental quality standards on and off the property have been calculated for each contaminant	A	001	3,4	9,15		
7	The horizontal and vertical extent of groundwater contamination, exceeding applicable environmental quality standards has been determined, on and off the property for each contaminant, and is described in text and on a graphical site plan	Ń	001	3,4	9,15		
8	Sediment and surface water have not been impacted,	V	001	1.2.1, 3	6, 9		
	or						
	where sediment or surface water contamination, exceeding applicable environmental quality standards has been determined, contamination is described on a graphical site plan						
9	Laboratories that have performed analysis are accredited to ISO/IEC 17025 standards (and subsequent revisions) by the Standards Council of Canada (SCC) or the Canadian Association of Laboratory Accreditation Inc. (CALA)	V	001	3, Ap.E	9, -		
10	All sampling and analysis has been conducted in accordance with laboratory-approved recommendations concerning sample containers, storage and preservation	V	001	3, Ap.H	9, -		
11	Appropriate laboratory analytical methods have been used to ensure adequate conformance to data quality objectives, assessment endpoints (ecological or human health) and method/ reportable detection limits	A	001	3, Ap.H	9, -		
Re	porting						
12	A cover page title that identifies the site location, and report title	Ţ	001	CP, Ap.C	-		
13	Project background description	Ţ	001	1.1, 3	5, 9		
14	Basic site information, including physical address, PID and/or GPS coordinates	\checkmark	001	1, 3	5,9		

Phase 2 Environmental Site Assessment Checklist

This checklist is for all sites undergoing Full Property Remediation and sites undergoing L3 Limited Remediation.



Sit	e Assessment Requirements continued	Supporting			
Con repo	firm ALL the following information has been submitted to the Department. Indicate ort and page number where information is documented. It is not acceptable to provide ification for not completing a minimum requirement. The site professional must ensure	Information provided	Refer	ence Docu	ment
all v	vork has been completed in accordance with the PRO-400, Phase 2 Environmental Site essment Protocol.	Yes	Report	Section	Page Number
15	Summary of the results and findings of the Phase 1 ESA	<u> </u>	001	3.1	9
16	Summary of all preliminary work and field activities conducted at the site as part of the Phase 2 ESA program	A	001	3, 4	9, 15
17	Conceptual site model which represent an understanding of the site characteristics, including expected locations of contaminants, likely contaminant transport mechanisms, and the existence of potentially preferential pathways for contaminant transport to receptors	Ţ	001, 002	3, 4	9, 2
18	A description of local and regional geological, hydrogeological and hydrological information this protocol	Ţ	001	1.2, 3	6, 9
19	The choice and rationale for the sampling program, including a technical summary of areas and compounds of concern resulting from the Phase 1 ESA	শ	001	3.1, 4	9, 15
20	Site plans showing the site location, location of sample points, groundwater elevation maps, and location(s) of samples exceeding the applicable regulatory criteria. Locations where contaminant concentrations exceed background values should also be identified. All spatial information must be represented on a scaled diagram	Ţ	001	Ap.A&C	-
21	Results of all analyses conducted must be displayed in a table and compared to relevant environmental quality standards, with exceedance values/data highlighted	A	001	Ap.D &	Ap. C-15
22	Interpretation and evaluation of the findings from the site investigation, which identify and describe any contaminants found at the site including concentrations, locations, possible sources, potential pathways and receptors of concern	Ŋ	001	3, 4	9, 15
23	Clear and concise conclusions of the Phase 2 ESA, including a summary of risks posed by contaminants remaining on site and potential risk to receptor(s) both on and off the property	Ŋ	001	3, 4.5	9, 19
24	A list of any references and supporting documentation used in the preparation of the Phase 2 ESA report	N	001	3, 10	9, 29
25	Complete test pit, borehole stratigraphic, and monitoring well installation logs	N	001	3, Ap.G	9, -
26	Borehole drilling practices	\mathbf{A}	001	3, 4	9, 15
27	Excavation Practices 🗹 Not Applicable				
28	Soil sampling procedures used for each contaminant	\mathbf{A}	001	3, Ap. H	9, -
29	Monitoring well installation, development and groundwater sampling procedures	N	001	3, 4	9, 15
30	QA/QC procedures	\checkmark	001	3, Ap. F	9, -
31	Copies of laboratory analytical data sheets	\checkmark	001	Ap.C&E	-
32	Site professional sign-off, with original or electronic signatures, and a stamp/seal confirming the findings and conclusions contained in the report	Ŋ	001	Ap.C&b	-

This checklist is for all sites undergoing Full Property Remediation and sites undergoing L3 Limited Remediation.



3 - Declaration

Site Professional Declaration

I acknowledge it is an offence under Section 158 of the Environment Act to provide false or misleading information and confirm to the best of my knowledge and belief the information provided in this form and supporting documentation is true and accurate and complies with the relevant provisions of the Environment Act and Contaminated Sites Regulations. By signing below, I confirm my qualifications and liability insurance as a site professional as prescribed within the regulations.

Q Reports and forms/checklists have been provided to the affected property owner.

Name (print	John Fairclough	Professional Registration Number/Stamp LP-140
Signature	Fairclough, John DN: cn=Fairclough, John, ou=CATRT3 Date: 2020.09.16 15:10:26 -04'00'	Date
	Site Professional	YYYY/MM/DD

Report Title	3 Digit Report ID
Site Assessment and Closure Documents, Former Imperial Oil Bulk Facility, Hubbards (AECOM 2020)	001
Remedial Action Plan, 64 Mill Lake Road No.2, Hubbards (AECOM 2016)	002

Return completed form and associated documents to your local Nova Scotia Environment office.

Find office locations online novascotia.ca/nse/dept/regional-office-locations.asp or call 1-877-936-8476.



✓ New submission Updated checklist

NSE file number (mandatory) **33000-** 35-BRI-280121

Instructions for completing this form

- All relevant sections of this checklist must be completed and must accompany the Confirmation of Remediation Report.
- If there are no impacts to third-party properties Section 4 must not be completed.
- The Confirmation of Remediation Checklist should be submitted in conjunction with any other documentation for site closure; such as, FRM-700, Record of Site Condition or FRM-701, Declaration of Property Condition.
- The signature required on this checklist is from the managing Site Professional.
- · Separate checklists are required to be submitted for each impacted property.
- All forms/checklists must be completed separately for each property. This means that a source property and an impacted third-party property must have all documents filed separately. Once the source property or impacted third-party property is identified by the check box below, all subsequent reference on this form/checklist are to that site owner.
- Each checklist item corresponds to a requirement in the Regulations or Protocols. It is not acceptable to check a field and refer to justification of why a minimum requirement was not completed.
- Forms/checklists must be complete before filing.

1 - Site Location and Contact Information

Details provided on this form are applicable to	\checkmark	Source Property o	or 🗌	Impacted Third Party Property
---	--------------	-------------------	------	-------------------------------

Site Location	Site Address 64 Mill Lake Road, Hubbards, N	City Hubbards, NS			
Mandatory must	Parcel Identification Number (PID) 60082138	Postal Code B0J 1T0			
	GPS (NAD83 UTM coordinates, source central point) Easting	Northing			
	Zone (select one) 19 20 21				
Description (optional)					
Property Owner	Name Imperial Oil Limited	Phone (587) 476-2249			
Mandatory must be completed.	Email edouard.hamel@esso.ca	Fax			
	Recognized Agent (if applicable) Edouard Hamel				
	Company Name (if applicable) Imperial Oil Limited	City Calgary, AB			
Mailing Address 505 Quarry Park Blvd S.E.		Postal Code T2C 5N1			
Preferred method of correspondence (select one) Letter or I Email					
Contact for	Name Janice Shea	Phone (902) 428-2054			
If different than above.	Email janice.shea@aecom.com	Fax (902) 428-2031			
	Recognized Agent (if applicable)				
Company Name (if applicable) AECOM Canada Ltd.		City Halifax, NS			
	Mailing Address 1701 Hollis Street, SH400	Postal Code B3J 3M8			
	Preferred method of correspondence (select one)				

This checklist is for all sites undergoing Limited Remediation and Full Property Remediation.



Site Professional	Name John Fairclough	Phone (905) 747-7648	
Mandatory must be completed.	Email john.fairclough@aecom.com	Fax	
	Company Name AECOM Canada Ltd.	City Markham, ON	
	Mailing Address 105 Commerce Valley Dr. W	Postal Code L3T 7W3	
	Professional Registration Number LP 140		
	Preferred method of correspondence (select one)		

2 - Remediation Types

Remediation Type 🔲 Limited **or** 📝 Full Property Remediation Selection

Limited Remediation Type Identify category of Limited Remediation and confirm required documentation has been provided								
L1	L2	🗌 L3						
Limited ESA Checklist (CHK-200) Report number *	Limited ESA Checklist (CHK-200) Report number	Limited ESA Checklist (CHK-200) Report number						
 RAP Checklist (CHK-600) Report number * Confirmation of Remediation Report number * Record of Site Condition (FRM-700) * All L1 reports have been compiled into a single document. Yes No Report number * 	 RAP Checklist (CHK-600) Report number Risk Assessment (where applicable) Risk Management Plan (where applicable) Confirmation of Remediation Report number Record of Site Condition (FRM-700) 	 Phase 1 ESA Checklist (CHK-300) Report number Phase 2 ESA Checklist (CHK-400) Report number RAP Checklist (CHK-600) Report number Risk Assessment (where applicable) Risk Management Plan (where applicable) Confirmation of Remediation Report number 						
		Record of Site Condition (FRM-700)						
or Full Property Remediation	·	·						
Phase 1 ESA Checklist (CHK-300)	Report number $\frac{001 - located in}{1000}$	Appendix C (C14)						
Phase 2 ESA Checklist (CHK-400)	Report number 001 - Appendix	Report number 001 - Appendix B & Appendix C (C14)						
Remedial Action Plan Checklist Checklis	t (CHK-600) Report number 001 - located in	Appendix I						
Confirmation of Remediation Report	Report number 001							
Declaration of Property Condition (FRM-7	(01) submitted							
Unconditional Closure criteria have been	met (If Conditional closure is sought, Limited	Remediation must be followed.)						

Confirmation of Remediation Checklist

This checklist is for all sites undergoing Limited Remediation and Full Property Remediation.



Select one

✓	Un (ex	conditional (EQS, PSS, SSRA using Atlantic RBCA toolkit to generate Tier 2 Modelled SSTL's) posure management not permitted)
	\checkmark	Tier 1 EQS
		Tier 2 PSS (including soil vapour, sub-slab or indoor air sampling)
		Tier 2 SSRA (Development of SSTL's using the Atlantic RBCA toolkit; Appropriate default parameters as described in the Remediation Levels Protocols, have been applied)
	Co	onditional (PSS, SSRA using Atlantic RBCA toolkit, Tier 2 Modelled SSTL's) Tier 2 PSS (including exposure management)
		Tier 2 SSRA (Development of SSTL's using the Atlantic RBCA toolkit; Conditional closure of sites requires exposure management and is only allowable under Limited Remediation; Complete minimum confirmation requirements for Conditional closure in Section 5 of this form
	Sit	te Specific Risk Assessment (Other than Atlantic RBCA risk assessment model) (conditional or unconditional)

Describe

4 - Third Party Impacts

If "Impacted Third-Party" is selected in Section 1, Section 4 must not be completed.

Were there any third-party properties related to the source site.

If No, the remainder of Section 4 must not be completed

Is there third-party site(s) submitted for conditional closure?

If Yes, has written consent been obtained for conditional third-party site(s)?

🗌 Yes	🗌 No
🗌 Yes	🗌 No

🗌 Yes 🔽 No

Impacted Third-Party Property Information This section must be completed for each 3rd party property

Contact	Name	Phone
Information	Email	Fax
	Recognized Agent (if applicable)	
	Company Name (if applicable)	City
	Mailing Address	Postal Code
Site Location	Site Address	City
Mandatory must	Parcel Identification Number (PID)	Postal Code
be completed.	GPS (NAD83 UTM coordinates, source central point) Easting	Northing
	Zone (select one) 19 20 21	
	Description (optional)	



This checklist is for all sites undergoing Limited Remediation and Full Property Remediation.



Impacts identified on third-party property has been addressed to meet the requirements outlined in the applicable Ministerial Protocols (PRO-200, Environmental Site Assessment for Limited Remediation, PRO-400, Phase 2 Environmental Site Assessment and PRO-600, Remedial Action Plan Protocols), pursuant to the Contaminated Sites Regulations	🗌 Yes 🔲 No
Third-Party property closure is: Image: Unconditional If conditional, has written agreement been signed by the third-party property owner and provided to the Minister?	Conditional



5 - Confirmation of Remediation Requirements

5a – Minimum Confirmation Requi

The following checklist items are require Remediation Protocol. Verify all require provided by completing the checklist a supporting information is documented acceptable to provide justification for r professional must ensure all work has Confirmation of Remediation Protocol.

5a – Minimum Confirmation Requi

The following checklist items are requi Remediation Protocol. Verify all require provided by completing the checklist ar supporting information is documented acceptable to provide justification for r professional must ensure all work has Confirmation of Remediation Protocol.

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5a – Minimum Confirmation Regu

The following checklist items are require Remediation Protocol. Verify all require provided by completing the checklist a supporting information is documented acceptable to provide justification for r professional must ensure all work has Confirmation of Remediation Protocol.

- All requirements outlined in the Co 1 to filing the Confirmation of Remed
- 2 Work has been completed in accord and criteria established in the remedial action plan have been achieved

irements (all Sites)				
rements presented within PRO-700, Confirmation of ments have been met and supporting documentation nd providing the section and page number where in confirmation of remediation report. It is not not completing a minimum requirement. The site been completed in accordance with the PRO-700,	Supporting Information Provided	Refe	rence Docu	iment Page
	res	кероп	Section	Number
irements (all Sites)				
rements presented within PRO-700, Confirmation of ments have been met and supporting documentation nd providing the section and page number where in confirmation of remediation report. It is not not completing a minimum requirement. The site been completed in accordance with the PRO-700,	Supporting Information Provided	Refei	rence Docu	ıment Page
······································	Yes	Report	Section	Number
irements (all Sites)				
rements presented within PRO-700, Confirmation of ments have been met and supporting documentation nd providing the section and page number where in confirmation of remediation report. It is not not completing a minimum requirement. The site	Supporting Information Provided	Refe	ence Doci	ument
been completed in accordance with the PRO-700,	Yes	Report	Section	Page Number
irements (all Sites)				
rements presented within PRO-700, Confirmation of ments have been met and supporting documentation nd providing the section and page number where in confirmation of remediation report. It is not not completing a minimum requirement. The site	Supporting Information Provided	Refe	ence Doci	ument
been completed in accordance with the PRO-700,	Ves	Renort	Section	Page Number
irements (all Sites)				
rements presented within PPO-700 Confirmation of				
ments have been met and supporting documentation ad providing the section and page number where in confirmation of remediation report. It is not not completing a minimum requirement. The site	Supporting Information Provided	Refe	ence Doci	Iment
	Yes	Report	Section	Number
ntaminated Sites Regulations have been met prior liation Report	\checkmark	001	8	27
dance with the remedial action plan objectives	-	001	5.6	21.22



5a – Minimum Confirmation Requirements (all Sites)

The Rer pro sup	e following checklist items are requirements presented within PRO-700, Confirmation of nediation Protocol. Verify all requirements have been met and supporting documentation vided by completing the checklist and providing the section and page number where porting information is documented in confirmation of remediation report. It is not	Supporting Information			
acc	eptable to provide justification for not completing a minimum requirement. The site	Provided	Refe	ence Docu	Iment Page
Cor	firmation of Remediation Protocol.	Yes	Report	Section	Number
3	A clear description of sample locations and methods used to obtain the confirmatory samples	\checkmark	001	6	22
4	Appropriate laboratory analysis as outlined PRO-700, Confirmation of Remediation Protocol have been followed for samples collected	\checkmark	001	6, Ap E	22, -
5	Field observations and monitoring data, where appropriate to support conclusions	✓	001	6	22
6	Scaled site map which includes pre and post-remediation conditions including land use, relevant structures found on site, and the boundaries of all areas of environmental concern	\checkmark	001	App. A	-
7	Printed copies of all analytical laboratory results used in the study	✓	001	App. E	-
8	Has a remedial excavation or site disturbance been undertaken? Yes No If Yes, complete the remaining questions. If No, go to next section.	\checkmark	001	6	22
9	Discreet samples have been collected in accordance with Table 1 'Minimum Verification of Sampling Requirements for Excavation Floor and Sidewalls' presented in PRO-700, Confirmation of Remediation Protocol		001	6.1.4	22
10	Samples have been collected within a depth of 0.25 meter from excavation faces and excavation floor	\checkmark	001	6.1.4	22
11	Clear distinction between interim and final confirmatory samples	✓	001	6.1.4	22
12	Scaled site map(s) showing final confirmatory sampling locations and corresponding analytical results that confirms all contamination has been remediated, for all relevant media	<	001	Ap.A&D	-
13	Tabulated analytical data for confirmatory samples compared with applicable remediation standards	\checkmark	001	App. D	-
14	Field methodologies and controls used to manage materials on site and prevent dilution of wastes have been followed	✓	001	6	22
15	Measures taken to ensure stockpiled soils for disposal have been adequately characterized and appropriately managed	\checkmark	001	6.1.4	24
16	Materials have not been discharged from the site, or where materials have been discharged from the site (e.g., excavation dewatering) a description of any control measures taken to address materials being discharged from the site	V	001	6.1	22
17	Volume, source and environmental quality of any backfill material used on site		001	6.1	22
18	Manifests or manifest summaries from the receiving facility for all materials transported off-site. The manifest summaries describe the type of materials received, origin (location), volume or tonnage, date received, and transporter identification	✓	001	App. K	-
19	Site photos, including photos showing the site, remediation progress, and any methods applied in the remediation of the site	\checkmark	001	App. J	-

Confirmation of Remediation Checklist

This checklist is for all sites undergoing Limited Remediation and Full Property Remediation.



5b	 Minimum Confirmation Requirements for Groundwater Assessment 	Supporting Information	Reference Document		
Ma L3	ndatory for all sites under Limited Remediation that have undergone L2 and ESAs and sites under Full Property Remediation.	Provided Yes	Report	Section	Page Number
5b	 Minimum Confirmation Requirements for Groundwater Assessment 	Supporting	Defe		
Ма	ndatory for all sites under Limited Remediation that have undergone L2 and	Provided	Kererence Docum		ment Page
L3	ESAs and sites under Full Property Remediation.	Yes	Report	Section	Number
5b	 Minimum Confirmation Requirements for Groundwater Assessment 	Supporting Information	Refer	ence Docu	Iment
Ma L3	ndatory for all sites under Limited Remediation that have undergone L2 and ESAs and sites under Full Property Remediation.	Provided Yes	Report	Section	Page Number
1	A sufficient number of monitoring wells to confirm groundwater conditions in all directions relative to areas remediated have been installed	\checkmark	001	6.3	25
2	All monitoring wells have been installed in drilled boreholes		001	6.3	25
3	All monitoring wells have been monitored for water levels and the presence of any phase separated or free hydrocarbon product floating on the water surface. If liquid product has been present its thickness has been measured using an interface probe. Whenever possible, the free product has been removed, its volume recorded, and additional monitoring conducted to determine recovery rates.	7	001	6.3, 7	25, 26
4	A minimum of one groundwater sampling event has been conducted during a dry period (low water table) and one sampling event during a recharge period (high water table), which are characteristic of different seasonal conditions following remediation.	✓	001	7	26
5	All confirmatory groundwater sample results meet the criteria established in the site remedial action plan. Sufficient post-remediation groundwater data has been acquired to demonstrate steady state or decreasing concentrations of potential contaminants.	\checkmark	001	7	26
6	When confirmation of groundwater remediation objectives have been met, closure has been acknowledged and monitoring wells are no longer required, these will be decommissioned immediately under the supervision of a site professional	\checkmark	001	8	27
5c	- Minimum Confirmation Requirements for Soil Vapour, Sub-Slab or	Supporting			
	Indoor Air Sampling	Information	Refer	ence Docu	ment
Site	es where Soil Vapour, Sub-Slab, or Indoor Air Sampling has been conducted.	Yes	Report	Section	Page Number
1	Confirmatory soil vapour, sub-slab or indoor air sampling has been conducted.	es 🔽 No			
	If yes, complete the remaining questions. If no, go to next section.				
2	Documentation has been provided to ensure the requirements, as outlined in the latest version of the Atlantic RBCA Guidance for Soil Vapour and Indoor Air Monitoring Assessments have been met.				
3	Measurement of soil vapours or indoor air concentrations have been conducted over a minimum one-year period with sampling conducted in the winter heating season as well as the summer months.				
4	Sufficient data has been collected to demonstrate concentrations consistently below applicable criteria.				

This checklist is for all sites undergoing Limited Remediation and Full Property Remediation.



5d	- Minimum Confirmation Requirements for Conditional Closure	Supporting Information	Reference Document		
Lim	Limited Remediation (L2 and L3 only)		Report	Section	Page Number
1	Changes made to the Tier 2 SSRA Default Data Parameters for the site, as listed in Table 2 of the PRO-500, Remediation Levels Protocol, and provide a copy of the changes made. If yes, a copy of all changes to the Tier 2 SSRA Default Data Parameters provided				
2	Confirmation that any exposure management controls (engineering or physical controls and/or administrative controls) to be used have been implemented and are performing as designed, meeting the RAP objectives has been documented.				
3	Conditions associated with the maintenance of exposure management controls and monitoring where required have been documented in a risk management plan (RMP) appended to and referenced within FRM-700, Record of Site Condition (RSC).				

6 - Recommendation for Site Closure by Site Professional

Based on the Remediation/Site Management actions conducted and summarized in this submission checklist, site closure recommendation by the site professional is provided below.

Site closure recommendation:	Unconditional	🗌 Con	ditional
If conditional closure, written agreement from property owner attached.		🗌 Yes	🗌 No

7 - Declaration

Site Professional Declaration

I acknowledge it is an offence under Section 158 of the Environment Act to provide false or misleading information and confirm to the best of my knowledge and belief the information provided in this form and supporting documentation is true and accurate and complies with the relevant provisions of the Environment Act and Contaminated Sites Regulations. By signing below, I confirm my qualifications and liability insurance as a site professional as prescribed within the regulations

Reports and forms/checklists have been provided to the affected property owner.

Name (prin	t) John Fairclough		Professional Registration Number/Stamp LP-140
Signature	×-	Digitally signed by John Fairclough DN: cn-John Fairclough on-AECOM, ou, email-John Fairclough@acom.com, c=CA Date: 2020.003 18:40:00 -0410	Date 2020/09/03
-	Site Pro	ofessional	YYYY/MM/DD

Reports Applicable to Checklist			
Report Title	3 Digit Report ID		
Site Assessment and Closure Documents, Former Imperial Oil Bulk Facility, Hubbards(AECOM	001		



Add Row Delete Row

Return completed form and associated documents to your local Nova Scotia Environment Office.

Find office locations online <u>novascotia.ca/nse/dept/regional-office-locations.asp</u> or call 1-877-936-8476.

Declaration of Property Condition

This form is for all sites that have undergone Full Property Remediation as specified in Section 15, and meet the requirements of Section 16, of the Contaminated Sites Regulations.



✓ New submission Updated checklist

NSE file number (mandatory) 33000-35-BRI-2801218

Imported Third Darty Droparty

Instructions for completing this form

- All relevant sections of this form are to be completed.
- The signature required on this form is the managing site professional.
- All regulatory protocols must be followed, and all forms/checklists must be completed separately for each property. This means that a source property and an impacted third-party property must have all documents filed separately, including a Declaration of Property Condition. Once the source property or impacted third-party property is identified by the check box below, all subsequent reference on this form/checklist are to that site owner.
- The Declaration of Property Condition must be complete before filing.

Details provided on this form are applicable to 17 Source Property or

1 - Site Location and Contact Information

		0. H 11 1 NG
Mandatory must	Site Address 64 Mill Lake Road, Hubbards, NS	City Hubbards, NS
be completed.	Parcel Identification Number (PID) 60082138	_ Postal Code B0J 1T0
	GPS (NAD83 UTM coordinates, source central point) Easting	Northing
	Zone (select one) 19 🗹 20 🗌 21	
	Description (optional)	
Property Owner	Name Imperial Oil Limited	Phone (587) 476-2249
Mandatory must	Email edouard.hamel@esso.ca	Fax
	Recognized Agent (if applicable) Edouard Hamel	
	Company Name (if applicable) Imperial Oil Limited	City Calgary, AB
	Mailing Address 505 Quarry Park Blvd S.E.	Postal Code T2C 5N1
	Preferred method of correspondence (select one) Letter or Email	
Contact for	Name Janice Shea	Phone (902) 428-2054
If different than above.	Email janice.shea@aecom.com	Fax (902) 428-2031
	Recognized Agent (if applicable)	
	Company Name (if applicable) AECOM Canada Ltd.	City Halifax, NS
	Mailing Address 1701 Hollis Street, SH400	Postal Code B3J 3M8
	Preferred method of correspondence (select one)	
Site Professional	Preferred method of correspondence (select one) Letter or Email Name John Fairclough	Phone (905) 747-7648
Site Professional Mandatory must be completed.	Preferred method of correspondence (select one) Letter or Email Name John Fairclough Email Email	Phone (905) 747-7648 Fax
Site Professional Mandatory must be completed.	Preferred method of correspondence (select one) Letter or Email Name John Fairclough Email Email Email john.fairclough@aecom.com Company Name AECOM Canada Ltd.	Phone (905) 747-7648 Fax City Markham, ON
Site Professional Mandatory must be completed.	Preferred method of correspondence (select one) Letter or Email Name John Fairclough Email Email Email john.fairclough@aecom.com Company Name AECOM Canada Ltd. Mailing Address 105 Commerce Valley Dr. W Email	Phone (905) 747-7648 Fax City Markham, ON Postal Code L3T 7W3
Site Professional Mandatory must be completed.	Preferred method of correspondence (select one) Letter or Email Name John Fairclough Email Email Email john.fairclough@aecom.com Company Name AECOM Canada Ltd. Mailing Address 105 Commerce Valley Dr. W Professional Registration Number LP 140	Phone (905) 747-7648 Fax City Markham, ON Postal Code L3T 7W3

Declaration of Property Condition

This form is for all sites that have undergone Full Property Remediation as specified in Section 15, and meet the requirements of Section 16, of the Contaminated Sites Regulations.



2 - Type of Contamination remediated or managed in Soil, Sediment, Surface Water, or Groundwater

Type of Contamination Check all applicable.	Soil	Sediment	Surface Water	Groundwater	Volume of release (not vol. of media impacted)
Inorganic Parameters (metals)					
Petroleum Hydrocarbon Parameters	\checkmark			\checkmark	
Polycyclic Aromatic Hydrocarbon (PAH) Parameters					
Volatile Organic Compound (VOC) Parameters					
Pesticides					
PCBs					
Dioxins and Furans					
Pentachlorophenol					
Organotins					
Glycols					
Phenol					
PFAS compounds					
Other (describe)					
Add Row Delete Row					
2a - Site Characteristics					

□ Agricultural □ Commercial □ Residential/Parkland □ Industrial	Most sensitive land use	
Residential/Parkland Industrial	Agricultural	Commercial
	Residential/Parkland	Industrial
Groundwater potability of site (potable or non-potable according to Appendix 1, Figure 3 of Notification Protocol)		
Potable Non-potable		

3 - Contents of Declaration of Property Condition

Numerical Remediation Levels and Site Exposure Management Describe the numerical remediation levels and any ongoing site management measures as indicated below.					
Individual Contaminant Substance Remediated or Managed	Affected Media (soil, sediment, groundwater, surface water)	Applicable Numerical Remediation Level (with units)	Maximum Known Concentration of Contaminant Substance Remaining (with units/NAPL)		
PAH: Methylnaphthalene, 1-: 37 mg/kg	Soil	30 mg/kg	1.1 mg/kg		
PAH: Methylnaphthalene, 2-: 56 mg/kg	Soil	30 mg/kg	1.1 mg/kg		
Ethylbenzene: 2.47 mg/kg	Soil	0.065 mg/kg	< 0.025 mg/kg		
Xylenes: 15.9 mg/kg	Soil	11 mg/kg	1.4 mg/kg		
Modified TPH (Fuel): 7,100 m/kg	Soil	1,800 mg/kg	1,500 mg/kg		

Declaration of Property Condition

This form is for all sites that have undergone Full Property Remediation as specified in Section 15, and meet the requirements of Section 16, of the Contaminated Sites Regulations.



Modified TPH (Gas): 1,400 mg/kg	Soil	870 mg/kg	No Gas Resemblance
Benzene: 0.0098 mg/l	Groundwater	0.005 mg/l	< 0.0010 mg/l
Ethylbenzene: 0.0047 mg/l	Groundwater	0.0024 mg/l	< 0.0010 mg/l
Modified TPH (Fuel): 27 mg/l	Groundwater	3.2 mg/l	3.0 mg/l
Add Row Delete Row			

Briefly describe any remediation carried out in relation to the contaminant substances listed above: Three remedial excavations took place between 2016-2018. Remediated for BTEX/MTPH and PAHs. Went back to site in 2020 to collect PAH confirmatory samples.

Required Reports

The following report(s) and checklists have been completed for the site and have been filed with the Minister in accordance with Section 15 of the Contaminated Sites Regulations, following the applicable Ministerial Protocols.

Checklist for Phase 1 Environmental Site Assessment (specify reports) Site Assessment and Closure Documents, Former Imperial C

Checklist for Environmental Site Assessment (specify reports) Site Assessment and Closure Documents, Former Imperial Oil Bulk

Checklist for Remedial Action Plan (specify reports) Site Assessment and Closure Documents, Former Imperial Oil Bulk Facility, F

Checklist for Confirmation of Remediation (specify reports) Site Assessment and Closure Documents, Former Imperial Oil Bulk Fac

Risk Assessment (where applicable) (specify reports)

4 - Declaration

Site Professional Declaration

I acknowledge it is an offence under Section 158 of the Environment Act to provide false or misleading information and confirm to the best of my knowledge and belief the information provided in this form and supporting documentation is true and accurate and complies with the relevant provisions of the Environment Act and Contaminated Sites Regulations. By signing below, I confirm my qualifications and liability insurance as a site professional as prescribed within the regulations.

All of the above substances identified on the site were cleaned up to the applicable remediation criteria.

Reports and forms/checklists have been provided to the affected property owner.

Name (print) John Fairclough			Professional Registration Number/Stamp		
Signature	J.	Digitally signed by John Fairclough Digitally signed by John Fairclough Digitally signed by John Fairclough @accom.com, c=CA Digital 2020.09.03 18:40-07.40400	Date 2020/09/03		
		Site Professional	YYYY/MM/DD		

Return completed form and associated documents to your local Nova Scotia Environment Office. Find Office locations online novascotia.ca/nse/dept/regional-office-locations.asp or call 1-877-936-8476.



Phase I Environmental Site

Assessment 64 Mill Lake Road Hubbards, Nova Scotia Final Report November 2003

Submitted to:

Imperial Oil Limited

03-2088-0100

Submitted by:

Dillon ConsultingLimited Halifax, Nova Scotia November 21, 2003

IMPERIAL OIL LIMITED 3597 Strawberry Hill Street P. O. Box 8117 Halifax, Nova Scotia B3K 5A8

ATTENTION: Mr. David O'Carroll Associate Site Remediation Specialist

Phase I Environmental Site Assessment Report 64 Mill Lake Road, Hubbards, Nova Scotia

Dillon Consulting Limited is pleased to provide you with a final Phase I Environmental Site Assessment report for the property located at 64 Mill Lake Road, Hubbards, Nova Scotia.

Should you have any further questions or comments upon review of this document, please contact the undersigned at your convenience.

Yours truly,

DILLON CONSULTING LIMITED

Patricia Power, BA., CET Project Technologist

Brent Cox, B.Sc., P.Geo. Project Manager

PAP:jep Enclosure Our File: 03-2088-0100

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Executive Summary

Dillon Consulting Limited completed a Phase I Environmental Site Assessment (ESA) of the property located at 64 Mill Lake Road, Hubbards, Nova Scotia. The property assessment was completed on behalf of Imperial Oil Limited (IOL). This Phase I ESA assessment was conducted in conjunction with site decommissioning and Phase II ESA intrusive program at the subject property. The property had been partially dismantled and currently consists of a concrete apron and a drum storage concrete slab. It should be noted that concrete debris was also observed on-site. The subject property consists of one lot which is zoned as commercial.

The Phase I ESA has identified a number of environmental concerns that may represent potential liabilities. These issues are outlined in Table 1.

Potential Environmental Issues	Comments and Observations
Historical Use	The site had been used as a bulk plant between the 1971 and 2002. Prior to this the site was undeveloped.
Regulatory Review	No records of Ministerial Orders or past prosecution with NSDEL for the subject property. Tank registry information indicated that two steel 22,700 litre and one steel 59,000 litre gasoline USTs installed in 1970, were removed. One of the 22,700 litre USTs was removed in 1989. The date of removal of the other two tanks is unknown. Four steel 59,000 litre and one steel 90,900 litre fuel oil ASTs were installed in 1970. One fibreglass 15,900 litre UST was installed in 1986, one fibreglass 2,270 litre gasoline USTs were installed in 1988 and two fibreglass 22,300 litre gasoline USTs were installed in 1989. According to registry records, with the exception of the three previously removed tanks, all of the tanks are currently in use. However, at the time of the site visit, all petroleum storage tanks had been removed from the site.
Air Emissions	AST's, USTs and associated infrastructure have been removed. No other sources of air emissions observed on-site
Radon Emissions	Due to site geology, radon emissions are expected at this site. As there are currently no structures on-site, there are no environmental issues of concern. If the property is developed with underground living accommodations, ensure proper ventilation.
Water Management	Serviced by on-site drilled well, septic tank and disposal field. Catch basin located on drum storage pad remains in place on-site.
Solid and Hazardous Waste	Construction debris (i.e., concrete debris) observed on-site.
Material Storage and Management	None observed or suspected.
Polychlorinated Biphenyls (PCBs)	None observed or suspected.
Asbestos Containing Materials (ACM)	None observed or suspected.
Urea Formaldehyde Foam Insulation (UFFI)	None observed or suspected.
Storage Tanks	A tank removal program was conducted in 2002. Samples were not collected at the time of the tank removals.
Solid Fill Observations	Fill material was used in the northern section of the property.
Pesticides/Herbicides	None observed or suspected.
Ozone Depleting Substances	None observed or suspected.
Lead-Containing Materials	None observed or suspected.
Radioactive Materials	None observed or suspected.
Soil and Groundwater Quality	USTs and AST's have been removed the site. No obvious staining was observed at the time of the site visit.

TABLE 1: SUMMARY OF FINDINGS AND RECOMMENDATIONS

Potential Environmental Issues	Comments and Observations
Surrounding Property Usage	Adjacent properties located south and east of the site are residential. The area to the north is wooded. A narrow wooded area separates to subject property from Highway No. 103 located to the west. Drilled wells were observed on two of the three residential properties. Environmental Registry records indicate that one steel 2,273 litre fuel oil UST, installed in 1978, is currently in use at civic number 60 Mill Lake Road, located immediately east of the subject property.
Other Potential Concerns	None observed or suspected.

Table of Contents

		Page <u>No.</u>
Exec	utive S	ummary
1.0	Intr	ODUCTION
	1.1	Purpose
	1.2	Scope of Work & Objectives
	1.3	Limiting Conditions
2.0	Site	Description
	2.1	Site Location and Description4
	2.2	Topography
	2.3	Geological and Hydrological Setting7
	2.4	Surface Water Hydrology
3.0	HIST	ORICAL REVIEW
	3.1	Aerial Photographs Review
	3.2	City Directory Review
	3.3	Fire Insurance Maps
	3.4	Historic Maps
	3.5	Interviews
	3.6	Property Titles Information
	3.7	Past Environmental Reports 11
	3.8	Historic Tank Information
	3.9	Federal Records
	3.10	Provincial
	3.11	Municipal
	3.12	Discussion of Findings
4.0	SITE	INSPECTION
	4.1	Site Land Use & Surrounding Land Use
	4.2	Potential Hazardous Materials
5.0	Conc	CLUSIONS

Dillon Consulting Limited

6.0	STATEMENT OF LIMITATIONS		19
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List of Tables:

Table 1	Summary of Findings and Recommendations	Π
Table 2	Site Description	4
Table 3	Summary of Surrounding Land Use	7
Table 4	Aerial Photograph Review Summary	8
Table 5	List of Interviewees	0
Table 6	Property Deeds Summary	0
Table 7	Historic Tank Summary Information	2

List of Figures:

Figure 1	Site Location	3
Figure 2	Surrounding Properties	5
Figure 3	Site Plan	5

Appendices:

- Appendix A Site Photographs and Aerial Photographs
- Appendix B Historic Mapping
- Appendix C Regulatory Agency Records
- Appendix D Deed Search Documentation

1.0 INTRODUCTION

1.1 Purpose

Dillon Consulting Limited (Dillon) was retained by Imperial Oil Limited (IOL) to conduct a Phase I Environmental Site Assessment (ESA) of the property located at 64 Mill Lake Road, Hubbards, Nova Scotia (Figure 1).

1.2 Scope of Work & Objectives

The scope of work included the following activities:

- Activity 1) Historical Review
- Activity 2) Title Search
- Activity 3) Regulatory Agency Contact
- Activity 4) Facility Inspection and Interview
- Activity 5) Preparation of Report

The investigation was conducted and coordinated by Patricia Power, BA., CET. The report was reviewed by Brent Cox, B.Sc., P.Geo.

1.3 Limiting Conditions

This Phase I ESA was performed in accordance with the intent of the Phase I ESA guideline document produced by the Canadian Standards Association (CSA Z768-01). As such, this report is based on limited visual observations made during a site visit, interviews were conducted with Municipality of the County of Lunenburg and Imperial Oil personnel, a review of historical records concerning the current and past use of the Property, and requests for information filed with regulatory agencies.

Dillon Consulting Limited

This ESA did not include any sample gathering, analysis, or measurements, and is not intended to be a definitive investigation of contamination or other environmental concerns at the Property.



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2.0 SITE DESCRIPTION

2.1 Site Location and Description

A detailed site description is provided in **Table 2**. A summary of surrounding land usage is provided in **Table 3**. The Property is located at 64 Mill Lake Road in Hubbards, Nova Scotia as shown on **Figure 1**. The Property, which is owned by Imperial Oil Limited and consists of one lot that is approximately 1.9 acres and is occupied by a concrete apron and drum storage slab (Photos 1 and 2, **Appendix A**). Residential properties are located on the adjacent property to the east and to the south across Mill Lake Road. The areas immediately north and west of the site are wooded. Highway No. 103 is located to the west beyond the wooded area as shown on **Figure 2** (Photos 2 through 4, **Appendix A**). With the exception of the concrete apron and drum storage slab, the remainder of the site appears to be gravel. The office/warehouse, above and underground petroleum storage tanks and associated infrastructure and an underground oil/water separator appear to have been removed prior to the site visit. The on-site septic system also appears to remain in place. The former locations of these structures is shown on **Figure 3**.

	-	
Civic Address	64 Mill Lake Road, Hubbards, Nova Scotia	
Legal Description	PID # : 60082138	
Registered Owner	Imperial Oil Limited	
Land Zoning	Commercial	
Property Size/Area	1.19 acres	
Facilities	Concrete apron and drum storage slab Serviced by on-site water and sewer system	
Age of Structure	Constructed in 1970.	

Table 2 Site Description




PID No.	Civic Address	Boundary Side of Site	Current Activity
60082088	Mill Lake No. 2 Rd	West and North	Undeveloped
60082120	60 Mill Lake No. 2 Rd	East	Residential
60082112	65 Mill Lake No. 2 Rd	South	Residential
60082146	75 Mill Lake No. 2 Rd	Southwest	Residential
60082104	Mill Lake No. 2 Rd	Southeast	Residential

 Table 3

 Summary of Surrounding Land Use

2.2 Topography

The topography of the subject and adjacent properties is relatively flat. Regionally the area slopes gently to the east towards Hubbards Cove, located approximately 1 km from the subject property.

2.3 Geological and Hydrological Setting

The surficial geology of the area generally consists of sandy stoney till. The bedrock geology map for the area indicates the site is underlain by granite and granodiorite. The regional topographic gradient suggests that the groundwater flow direction is east towards Hubbards Cove.

2.4 Surface Water Hydrology

The Property is occupied by two concrete slabs with the remainder of the property gravel. Surface runoff at the Property is collected by drainage ditches along Mill Lake Road which eventually drain into Hubbards Cove. The Property is no longer an active site. The surrounding properties are serviced by on-site water and septic systems.

3.0 HISTORICAL REVIEW

illon reviewed the following information regarding the past uses of the Property:

- Available historical aerial photographs of the area;
- Municipal/provincial records including directories and land title papers;
- Available historic land use mapping and fire insurance plans;
- Interviews with site personnel regarding the site's history; and,
- Past environmental reports.

3.1 Aerial Photographs Review

Aerial photographs were obtained from Service Nova Scotia and Municipal Relations. Photographs for the years1960, 1973, 1981, 1992 and 1997 were reviewed. Copies of select aerial photographs are presented in **Appendix A**. A summary of the review of the available aerial photographs is presented in Table 4. Review of the photographs indicated that the subject property was undeveloped prior to the 1960's. Aboveground storage tanks, a loading rack and the office/warehouse are visible in aerial photographs between 1973 and 1997 for the subject property. With the exception of the property located immediately east of the subject property the remaining properties remained undeveloped prior to 1992.

Year	Photo No.	Observations
1960	NS-A18351-176	The subject and adjacent properties appear to be undeveloped along Mill Lake Road. Several residential structures are visible further northwest along Mill Lake Road.
1973	NSA30675-47	The loading rack, three ASTs and the office/warehouse are visible on the subject property. A residential dwelling is visible immediately to the east. The residential property formerly located further north along Mill Lake Road has been removed and Highway 103 has been constructed. The remaining surrounding properties appear to be undeveloped.

Table 4Aerial Photograph Review Summary

Year	Photo No.	Observations
1981	81327 46	Five ASTs, the loading rack, office/warehouse and several fuel trucks are visible on the subject property. No significant changes were visible to the adjacent properties.
1992	92350-97	There appears to be a small shed located on-site near the west property boundary. A residential dwelling is located to the southwest across Mill Lake Road. No significant changes were visible to the remaining adjacent properties.
1997	970004-2	With the exception of the construction of the drum storage pad, there are no significant changes to the subject property. A residential dwelling has been constructed to the south across Mill Lake Road. No other significant changes were visible to the subject or adjacent properties.

Table 4Aerial Photograph Review Summary

3.2 City Directory Review

City Directories were not available from the Public Archives of Nova Scotia. Directories for this area.

3.3 Fire Insurance Maps

Fire insurance plans were not available from the Public Archives of Nova Scotia for this area.

3.4 Historic Maps

A. F. Church mapping (1865) shows structures to the east of the subject property along Mill Lake Road (formerly known as Post Road). No structures are shown on the subject property or the immediately adjacent lots to the north, south and west (Appendix B).

Drawing number 32B0265 (2-BA-944-A) dated March 18, 1985 provided by Imperial Oil Limited indicated that five aboveground storage tanks, three underground storage tanks, a concrete slab for the slop tanks, a pump slab, a dispensing pump and an office/warehouse were located on-site. The figure also shows an earthen dyke surrounding the five above ground storage tanks.

3.5 Interviews

Discussions were conducted with the IOL Territory Manager for this area, Mr. Tony Webb. Mr. Webb indicated that the site had operated for approximately thirty years prior to the site closure approximately two years prior to site dismantling in 2002. Discussion were also conducted with Municipality of the District of Chester personnel. Results of this discussion are presented in Section 3.11. A summary list of interviewees is presented in Table 5.

Table 5List of Interviewees

Name	Position/Agency	Location	Phone No.
Mr. Tony Webb	IOL Territory Manager	Halifax, Nova Scotia	(902) 453-4847
Mr. Bruce Forest	Public Works Department, Mun. Dist. of Chester	Chester, Nova Scotia	(902) 275-1312

3.6 Property Titles Information

A legal property title search of civic number 64 Mill Lake Road was conducted by Deed Diggers (Southshore) Inc. The researcher was unable to account for the interest of Annie Sophia Lough (Dauphinee). Copies of all title search documents are presented in **Appendix D**. A summary of the review of the available title search documents is presented in Table 6.

Table 6Property Deeds Summary

Date	Property Owner	Deed Number
Mar.19, 1968	Last Will and Testament of Susie Ellen Lough appoints Edward Colbourne Dauphnee as executor. Devises her personnel estate to Margaret Matilda Lough McLean	30/63
May 31,1968	Last Will and Testament of Matilda Barkhouse, (formerly Matilda Lough McLean) appoints Charles C. McLean as executor and Susie Ellen Lough as executrix . Devises to her two daughters (Susie Ellen Lough and Annie Sophia Lough) all real and personnel estate.	30/128

Date	Property Owner	Deed Number
July 18, 1968	Mr. Fenley McLean et ux to Matilda McLean	Warranty Deed 30/168
	Conveys land of unspecified acreage or dimension at Hubbards Cove - see copy (Appendix D)	
Mar. 17, 1971	Margaret Matilda Lough McLean, et vir. to Imperial Oil Limited Conveys 50, 955 square feet on northeast Mill Lake Road - see plan (Appendix D)	Warranty Deed 34/570

Table 6Property Deeds Summary

3.7 Past Environmental Reports

No previous environmental reports were found for the subject property. Results of a search of the NSDEL Environmental Registry for the subject and adjacent properties is be discussed in Section 4.0.

3.8 Historic Tank Information

One 90,900 litre fuel oil AST, four 59,000 litre fuel oil ASTs, one 59,000 litre gasoline UST and two 22,700 litre USTs were installed in 1970. One of the 22,700 litre USTs was removed in 1989. The other two USTs installed in 1970 were removed prior to the 2002 tank removal program. One 15,900 litre UST (substance stored is unknown) was installed in 1986, one 2,270 litre gasoline UST was installed in 1988 and two 22,300 litre gasoline UST were installed in 1989. One 1135 litre waste oil tank, one 11135 litre miscellaneous fuel storage tank, two 908 litre vapour recovery tanks, one 908 litre additives tank and one 908 litre furnace oil storage tank were removed in 2002. There were no records found in the Environmental Registry for the smaller tanks. A summary of the historic tank information is presented in Table 7.

Year	Type of	Status	Construction	Protection	Capacity	Product	Pipe	Pipe
Installed	Iank		Material		(1)	Stored	Type	Frotection
Unknown	AST	Removed	Steel	Unknown	1,135	Slop Tank	Unknown	Unknown
Unknown	AST	Removed	Steel	Unknown	1,135	Misc. Fuel	Unknown	Unknown
Unknown	AST	Removed	Steel	Unknown	908	Vapour Recovery	Unknown	Unknown
Unknown	AST	Removed	Steel	Unknown	908	Vapour Recovery	Unknown	Unknown
Unknown	AST	Removed	Steel	Unknown	908	Additives	Unknown	Unknown
Unknown	AST	Removed	Steel	Unknown	908	Furnace Oil	Unknown	Unknown
Unknown	UST	Removed	Steel	Unknown	15,600	Oil/Water	Unknown	Unknown
1970	AST	Removed	Steel	Yes	90,900	Fuel Oil	Black Bare Steel	Unknown
1970	AST	Removed	Steel	Yes	59,000	Fuel Oil	Black Bare Steel	Unknown
1970	AST	Removed	Steel	Yes	59,000	Fuel Oil	Black Bare Steel	Unknown
1970	AST	Removed	Steel	Yes	59,000	Fuel Oil	Black Bare Steel	Unknown
1970	AST	Removed	Steel	Yesa	59,000	Fuel Oil	Black Bare Steel	Unknown
1970	UST	Removed	Steel	Unknown	59,000	Gasoline	Galvanized	Unknown
1970	UST	Removed	Steel	None	22,700	Gasoline	Black Bare Steel	Unknown
1970	UST	Removed	Steel	None	22,700	Gasoline	Black Bare Steel	Unknown
1986	UST	Removed	Fibreglass	Yes	15,900	Other	Other	Unknown
1988	UST	Removed	Fibreglass	None	2,270	Gasoline	Fibreglass	Unknown
1989	UST	Removed	Fibreglass	None	22,300	Gasoline	Fibreglass	Unknown
1989	UST	Removed	Fibreglass	None	22,300	Gasoline	Fibreglass	Unknown

Table 7 Historic Tank Summary Information

3.9 Federal Records

The Environmental Protection Branch of Environment Canada maintains records relating to compliance with the *Canadian Environmental Protection Act* and the pollution provisions of the *Fisheries Act*, as well as notification of PCB storage, compliance inspections and/or of reported spills on private properties in Canada. A search of their files was not requested as the site is not located on federal land.

3.10 Provincial

Results of a search of the Nova Scotia Department of the Environment and Labour Environmental Registry indicated that one record was found for the subject property. The record indicated that five petroleum AST's (1-90,900 L and 4- 59,000 L) and three petroleum USTs (1-59,000 L and 2- 22,700 L) were installed in 1970. The three USTs installed in 1970 were reported to have been removed. One 15,900 litre UST was installed in 1986, one 2,270 L UST was installed in 1988 and two 22,300 L USTs were installed in 1989. According to NSDEL records all of the tanks are currently in use.

One record was found in the NSDEL environmental registry for one adjacent property. Tank registry information indicated that one 2,273 litre UST was installed in 1978 at civic number 60 Mill Lake Road. The record shows that the tank is currently in use.

3.11 Municipal

The Public Works Department Municipality of the District of Chester was contacted to determine whether or not there are any environmental concerns associated with the Property noted in their municipal files. Results of a search of the municipal files indicated that there were no records on file for this area (pers. comm., Mr. Bruce Forest).

3.12 Discussion of Findings

Based on present available information, historical references indicate that a bulk plant has been located on the subject property at civic number 64 Mill Lake Road since 1971. Previously, the property was owned by Margaret Matilda Lough McLean. Imperial Oil Limited took ownership of the property in 1971. Mill Lake road was formerly known as Post Road A summary of the historic land use for the subject and surrounding properties is presented in Table 8.

Results of a search of the Nova Scotia Department of the Environment and Labour Environmental Registry indicated that two records were found at the Registry. The records indicated that five ASTs and seven USTs were installed at the subject property between 1970 and 1989. Records indicated that three USTs were removed, one of these in 1989. Records also show that one UST was installed at civic number 60 Mill Lake Road in 1978. Results of discussions with Municipality of the District of Chester personnel indicated that they were not aware of any environmental issues of concern with the subject or adjacent properties (pers. comm., Mr. Bruce Forest, Mun. of the Dist. of Chester).

PID No.	Period/Date	Land Use	Potential Environmental Concerns	Source
6008213	1971 to 2002	Commercial (Bulk Plant)	Petroleum Hydrocarbons	Air Photos Site Observations
60082120	1973 - Present	Residential	Petroleum Hydrocarbons	Air Photos Site Observations
60082112	1997 - Present	Residential	None	Air Photos Site Observations
60082146	1992 - Present	Residential	None	Air Photos Site Observations
60082088	Present	Undeveloped (Area Bordering Subject Property)	None	Air Photos Site Observations
60082104	1960 - Present	Residential	None	Air Photos Site Observations

Table 8 Historic Land Use Summary

Dillon Consulting Limited

4.0 SITE INSPECTION

Dillon performed a site inspection on July 14, 2003 to identify visual or other physical evidence of potential impacts from historical site land uses, as well as surrounding land uses.

4.1 Site Land Use & Surrounding Land Use

The Property is located at 64 Mill Lake Road in Hubbards, Nova Scotia as shown on Figure 1. The Property is approximately 1.19 acres and is occupied by two concrete pads and construction debris (Photos 1 and 2, **Appendix A**). With the exception of the two pads, the remainder of the site is gravel.

Residential properties border the property to the east, south and southeast along Mill Lake Road and to the west and north by a wooded lot. Highway 103 is also located to the west (Photos 2 through 4, Appendix A).

4.2 **Potential Hazardous Materials**

4.2.1 Air Emissions

The bulk plant is no longer operational and in the process of being decommissioned, therefore no environmental issues associated with air quality were identified.

4.2.2 Radon Emissions

Due to the local geology (i.e., granite, granodiorite), a potential source of radon gas is suspected. Since there are no structures on site, currently there are no environmental issues of concern. However, should the site be development with below ground living accommodations (i.e., basement), ensure proper ventilation.

4.2.3 Water Management

The subject and adjacent properties are serviced by individual on-site water and septic systems. The on-site water and septic systems appeared to have been in place at the time of the site visit.

4.2.4 Solid and Hazardous Waste Management

The bulk plant is no longer operational and with the exception of the concrete construction debris, no other debris or waste was observed on-site.

4.2.5 Materials Storage and Management

The bulk plant is no longer operational and no materials were observed stored on-site.

4.2.6 Polychlorinated Biphenyls (PCBs)

PCBs are commonly associated with dielectric fluids within electrical equipment manufactured in Canada prior to approximately 1977. No PCB's were observed to exist on-site. The power supply to the site had been disconnected prior to the site visit. Power transformers were observed off-site along Mill Lake Road.

4.2.7 Asbestos-Containing Materials

None observed or suspected.

4.2.8 Urea Formaldehyde Foam Insulation (UFFI)

None observed or suspected.

4.2.9 Storage Tanks

All petroleum USTs and ASTs were removed prior to the site visit.

4.2.10 Solid Fill Material

It is expected that clean fill materials was used during the installation of the septic field in the northeast corner of the property.

4.2.11 Pesticides/Herbicides

None observed or suspected.

4.2.12 Ozone Depleting Substances (ODS)

None observed or suspected.

4.2.13 Lead-Containing Materials

None observed or suspected.

4.2.14 Radioactive Materials

No potentially radioactive materials were observed during the site visit.

4.2.15 Soil and Groundwater Quality

Minor iron stains were observed on the drum storage pad during the site visit (Photo 2, Appendix A). All USTs and ASTs had been removed prior to the site visit. No analytical data was available for review to determine condition of soil and groundwater quality.

4.2.16 Surrounding Property Usage

Residential properties are located on the adjacent properties to the east, south and southeast along Mill Lake Road. Undeveloped wooded areas are located immediately north and west of the subject property as shown on **Figure 2** (Photos 2 through 4, **Appendix A**). Highway 103 is located further to the west of the site.

5.0 CONCLUSIONS

The assessment has identified potential environmental concerns. The issues are briefly stated below:

- Prior to the construction of the bulk plant on the subject property in 1971, the subject and adjacent properties were undeveloped. The adjacent property to the east has been residential since the early 1970's and the properties to the south and southeast have been developed as residential lots since the early 1990's. Highway 103 located west of the subject property was constructed between the late 1960's or early 1970's.
- Due to the historic use of the site as a bulk plant, as well as potential impacts from historic use of a petroleum UST on the adjacent property to the east, intrusive assessment is recommended to confirm the presence/ absence of petroleum hydrocarbon impacts to soil and groundwater on site; and
- Records found in the Environmental Registry indicated that twelve petroleum storage tanks were installed between 1970 and 1989 on the subject property and that nine of the tanks are currently in use. Since the tanks were reportedly removed in 2002 It is assumed that the record is incorrect and should be updated.

6.0 STATEMENT OF LIMITATIONS

This report has been prepared and the work referred to in this report has been undertaken by Dillon Consulting Limited for Imperial Oil Limited. It is intended for the sole and exclusive use of Imperial Oil Limited, its affiliated companies and partners and their respective (insurers), agents, employees and advisors (collectively, "Imperial Oil"). Any use, reliance on or decision made by any person other than Imperial Oil and Dillon Consulting Limited make no representation or warranty to any other person with regard to this report and the work referred to in this report and they accept no duty of care to any other person or any liability or responsibility whatsoever for any losses, expenses, damages, fines, penalties or other harm that may be suffered or incurred by any other person as a result of the use of, reliance on, any decision made or any action taken based on this report or the work referred to in this report.

The investigation undertaken by Dillon Consulting Limited with respect to this report and any conclusions or recommendations made in this report reflect Dillon Consulting Limited's judgement based on the site conditions observed at the time of the site inspection on the date(s) set out in this report. This report has been prepared for specific application to this site and it is based, in part, upon visual observation of the site, subsurface investigation at discrete locations and depths, and specific time interval, all as described in this report. Unless otherwise stated, the findings cannot be extended to previous or future site conditions, portions of the site which were unavailable for direct investigation, subsurface locations which were not investigated directly, or chemical parameters, materials or analysis which were not addressed. Substances other than those addressed by the investigation may exist in areas of the site not investigated and concentrations of substances addressed which are different that those reported may exist in areas other that the locations form which samples were taken.

If site conditions or applicable standards change or if any additional information becomes available at a future date, modifications to the findings, conclusions and recommendations in this report may be necessary.

Other than by Imperial Oil, copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted without the express written permission of Dillon Consulting Limited. Nothing in this report is intended to constitute or provide a legal opinion.

Appendix A Site Photographs and Aerial Photographs

SITE PHOTOGRAPHS



Photo 1. View looking northeast towards concrete loading rack pad and concrete debris.



Photo 3. View looking southwest towards drum storage slab, concrete debris and loading rack pad (residential property in background).



Photo 2. View looking east towards adjacent residential property (60 Mill Lake Road).



Photo 4. View looking south toward residential property.











Appendix B Historic Mapping



Appendix C Regulatory Agency Records



PO Box 697 5151 Terminsl Rd., 5th floor Halifax, Novs Scotis B3J 2T8

> ph: (902) 424-2549 fax: (902) 424-6925

July 22, 2003

Fax: 450 - 2008

Patricia Power Dillon Consulting Ltd 137 Chain Lake Drive Halifax, NS B3S 1B3

Dear Ms Dillon,

Re: 60, 65, 75 Mill Lake No 2 Road Mill Lake No 2 Road (Margaret L. Esta D. Roche) Mill Lake No 2 Road (Lionel Jr & Helen MacLean) 64 Mill Lake Road

I refer to your enquiry of the Environmental Registry received July 10, 2003. We acknowledge receipt of payment for six properties. Enclosed is the information that has been located in the Environmental Registry with regard to 60 Mill Lake No 2 Road and 64 Mill Lake Road. No information was located in the Environmental Registry with regard to 65, 75 Mill Lake No 2 Road, Mill Lake No 2 Road (Margaret L.Esta D. Roche), or Mill Lake No 2 Road (Lionel Jr & Helen MAcLean).

NS Environment and Labour makes no representations or warranties on the accuracy or completeness of the information provided.

Yours Truly,

Carla Heggie, Manager, Information Access & Privacy

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Petroleum Storage Tank Reg	istration Certific	ate	August 26, 1998
OWNERSHIP OF TANKS		LOCATION OF	TANKS
Name: HUSKINS, CAROL MRS Addr.: P. O. 40, 60 MILL County: HAL Commun: HUBBARDS Prov: NS P Code: B0J 1T0 Phone: 857-9988	LAKE ROAD	HUSKINS, CA P. O. 40, 6 HAL HUBBARDS NS BOJ 1TO 857-9988	ROL O MILL LAKE ROAD
Type of installation: Resi	dence		
	Tank 1		
Registration #	781828 - 1		
Status of Tank Type of Tank Dyke Number Est. Total Capacity (L) Construction Material External Protection Internal Protection Piping Secondary Containment Substance Stored Est. Date Last Used	Currently in Use Underground 2273 Steel Unknown Unknown Black/Bare Steel Copper Fuel Oil		
Filled with Inert Material Installation Year	, no 1978		
TUREATTEL LOL Jank T:			

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June 15, 1995

PETROLEUM STORAGE TANK REGISTRATION

REGISTRATION # 1180

OWNER OF TANKS

LOCATION OF TANKS

IMPERIAL OIL LTD IMPERIAL OIL LTD 64 MILL LAKE ROAD P. O. BOX 1010 HUBBARDS, LUNENBURG CO., NS DARTMOUTH, NS B0J 1T0 B2Y 4R1 857-9579 420-6911

TYPE OF INSTALLATION: Bulk Plant

	TANK NO. 1	TANK NO. 2	TANK NO. 3
INSTALLATION YEAR	1970	1970	1970
STATUS OF TANK	Current	Current	Current
TYPE OF TANK	Aboveground	Aboveground	Aboveground
DYKE NUMBER	1	1	1
EST. CAPACITY (L)	90900	59000	59000
CONST MATERIAL	Welded steel	Welded steel	Welded steel
EXTERNAL PROTECTION	Other	Other	Other
INTERNAL PROTECTION	None	None	None
PIPING	Black/bare steel	Black/bare steel	Elack/bare steel
SECONDARY CONTAINMENT SUBSTANCE STORED	Fuel oil	Fuel oil	Fuel oil

EST, DATE LAST USED EST, QUANTITY REMAINING FILLED WITH INERT MAT

DATE OF REMOVAL ANY CONTAMINATION HOW MUCH DISPOSAL SITE

TANK INSTALLER

Unknown

PAGE.03

- 2 -

Registration 1180 (cont.)

DISPOSAL SITE

TANK INSTALLER

	TANK NO 4	TANK NO. 5	TANK NO. 6
INSTALLATION YEAR STATUS OF TANK TYPE OF TANK DYKE NUMBER EST. CAPACITY (L) CONST MATERIAL EXTERNAL PROTECTION INTERNAL PROTECTION PIPING SECONDARY CONTAINMENT SUBSTANCE STORED	1970 Current Aboveground 1 59000 Welded steel Other None Black/bare steel Fuel oil	1970 Current Aboveground 1 59000 Welded steel Other None Black/bare steel Fuel oil	1970 Removed Underground 59000 Steel Unknown None Galvanized Gasoline
EST. DATE LAST USED EST. QUANTITY REMAINING FILLED WITH INERT MAT			
DATE OF REMOVAL ANY CONTAMINATION HOW MUCH DISPOSAL SITE			
TANT INFOTATI DO	Unknown		
I AINA INO I ALLER			
TANK INSTALLLA	TANK NO. 7	TANK NO. 8	TANK NO. 9
INSTALLATION YEAR STATUS OF TANK TYPE OF TANK	TANK NO. 7 1970 Removed Underground	TANK NO. 8 1970 Removed Underground	TANK NO. 9 1986 Current Underground
INSTALLATION YEAR STATUS OF TANK TYPE OF TANK DYKE NUMBER EST. CAPACITY (L) CONST MATERIAL EXTERNAL PROTECTION	TANK NO. 7 1970 Removed Underground 22700 Steel None	TANK NO. 8 1970 Removed Underground 22700 Steel None	TANK NO. 9 1986 Current Underground 15900 Fibreglass Cathodic/ Sacfifical anode
INSTALLATION YEAR STATUS OF TANK TYPE OF TANK DYKE NUMBER EST. CAPACITY (L) CONST MATERIAL EXTERNAL PROTECTION INTERNAL PROTECTION PIPING	TANK NO. 7 1970 Removed Underground 22700 Steel None None Black/bare steel	TANK NO. 8 1970 Removed Underground 22700 Steel None Black/bare steel	TANK NO. 9 1986 Current Underground 15900 Fibreglass Cathodic/ Sacfifical anode None Other
INSTALLATION YEAR STATUS OF TANK TYPE OF TANK DYKE NUMBER EST. CAPACITY (L) CONST MATERIAL EXTERNAL PROTECTION INTERNAL PROTECTION PIPING SECONDARY CONTAINMENT SUBSTANCE STORED	TANK NO. 7 1970 Removed Underground 22700 Steel None None Black/bare steel Gasoline	TANK NO. 8 1970 Removed Underground 22700 Steel None Black/bare steel Gsaoline	TANK NO. 9 1986 Current Underground 15900 Fibreglass Cathodic/ Sacfifical anode None Other Other
INSTALLATION YEAR STATUS OF TANK TYPE OF TANK DYKE NUMBER EST. CAPACITY (L) CONST MATERIAL EXTERNAL PROTECTION INTERNAL PROTECTION PIPING SECONDARY CONTAINMENT SUBSTANCE STORED EST. DATE LAST USED EST. QUANTITY REMAINING FILLED WITH INERT MAT	TANK NO. 7 1970 Removed Underground 22700 Steel None None Black/bare steel Gasoline	TANK NO. 8 1970 Removed Underground 22700 Steel None Black/bare steel Gsaoline	TANK NO. 9 1986 Current Underground 15900 Fibreglass Cathodic/ Sacfifical anode None Other Other

.

Unknown

07/23/2003 15:10 902-424-6925

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Registration 1180 (cont.)		- 3 -		
	TANK NO. 10	TANK NO. 11	TANK NO. 12	
INSTALLATION YEAR STATUS OF TANK TYPE OF TANK DYKE NUMBER EST. CAPACITY (L) CONST MATERIAL EXTERNAL PROTECTION INTERNAL PROTECTION NITERNAL PROTECTION PIPING SECONDARY CONTAINMENT SUBSTANCE STORED EST. DATE LAST USED EST. QUANTITY REMAINING FILLED WITH INERT MAT DATE OF REMOVAL ANY CONTAMINATION HOW MUCH DISPOSAL SITE	1988 Current Underground 2270 Fibreglass None Fibreglass Gasoline	1989 Current Underground 22300 Fibreglass None Fibreglass Gasoline	1989 Current Underground 22300 Fibreglass None None Fibreglass Gasoline	
TANK INSTALLER	Unknown			
DYKE NUMBER LENGTH (M)	WIDTH (M) 5.2	HEIGHT (M) CAPACITY 1.0 231.0	(M) NUMBER DYKED S	

Appendix D Deed Search Documentation

FAX TRANSMITTAL		DILLON
то:	Jo Novak	CONSULTING
ORGANIZATION:	Deed Diggers (Southshore) Inc.	137 Chain Lake Drive
FAX No.:	(902)685-2263	Suite 100
FROM:	Pat Power	Hallfax Nova Scotla
OUR FILE #:	Former Imperial Oil Bulk Plant-Hubbards	Canoda B3S 1B3
DATE:	July 7, 2003	Telephone (902) 450-4000
SUBJECT:	Title Search	Fax (902) 450-2008
TOTAL PAGES (Including This Page):	4	ISO 9001 Registered
IF YOU DO NOT REC	EIVE ALL PAGES OF THIS FAX, PLEASE CALL:	
CONFIDENTIALITY WAR information. If you are not the disclosure, copying, or distrib	NING: This transmission may reatain confidential documents and/or Intended recipient, please notify us immediately and beadvised that any juition of this factimile or its contents is strictly prohibited by law.	

SUBJECT/MESSAGE:

Jo,

Please conduct a title search for a property owned by Imperial Oil Ltd. located at 64Mill Lake Road, Hubbards, NS. This is the location given by the client. However, SNS&MR lists it as 64 Mill Lake No.2 Road, Simms Settlement, NS. Please find attached additional information relating to this site. Please confirm that your rate is \$250/day plus disbursements and mileage as per your fax dated February 17, 2003. If you have any questions regarding this site, please contact myself or Brent Cox, the project manager.

Regards, Pat

LAPROJECTS\Draft\semplaide search fix 2.wpd

Dillon Consulting Limited

Let. Here are the fille notes up Nrequested. This is pretty straight friend that I'm welle to account for t po there is the oretically at least, an int ptanking 1/2 interest

Susii Gelen Lauge 30/63 4.1959 19,1968 will a dispositions ner 4221 at dell le executor lan 1. Naya marc de * et dontil <u>ae e</u> ~ $\boldsymbol{\alpha}$ <u>allen teli</u>j . 1. (M68-1971) Out & doarquet dontilde Leuf dose Lead Decel in re: 30/128 over altreet 0.52au. mee fr Re Ytrno 33/1143 t Dependere D 34/570

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FROM : DEED DIGGERS SOUTH SHORE INC FAX NO. : 902 685 2263 Aug. 11 2023 08:15AM P6

2922 289 206 70.30A9 ł - ? not subject - property on re: Dole to lad um of Stall, Dec! Drain Road at the age 30128 44 27, 1968 1 31. 1968 tim goragenet Fracke e, La. re Y Leuf and De (see copy attacked)

AUG 11 2003 09:16
UNC 11 5062 03:14 50.3359 Page 102 200. Denley Doc Leg law W. Deed Alivoochen 30 168 Som . 1901 Tratilde For Leon, unger 468 y 16 Agreed Doce Len. 360.17. peripera acreage or demension Concerp lada in herio y Schwartz Tokert Kolevard. Haceh Jogele Drain Prat Road ; - and deculed in copy attacked) Que docclieda ma Lon Bullanse (1901-1965) Where Fretelda Buthand see aftered 30/128

£922 \$89 Z06

Industrial Latatos Ltd. Recorded July 18, 1968 at 1.45 o'clock P.M.

This Debenture is not copied in the Record Book but is deposited

in the Records in Printed Form.

Lese m. Lee. Registrar.

(G.R. JULLY PROSIDENT)

Fenlay HcLean Recorded July 18, 1968 at 2.35 o'clock P.H.

) THIS INDENTURE, made this twenty second day of December in the year of Our Lord, Frederick W. Kelley et ux to) One Thousand Eight Hundred and Minety Seven BETWEEN: Frederick W. Kelley of Ches-) ter in the County of Lunenburg and Province of Nova Scotia Nedical Doctor and Cec-) clia A. his wifs of the One Part, and Penkay McLean of Mubbards Cove in the County) of Malifax and Province of Nova Ecotia aforenaid Yeesan of the Other Part, WITNESS-ETH, that the said Frederick W. Kolley and Geolia A. his wife for and in consider-

ion of the sum of Sixty four dollars and Seventeen cents of lawful money of Canada to the said Frederick W. Kelley Id Cecelia A. his wife farmericarcarcherestarcarte the warmer in hand well and truly paid by the said Fonlay Kilsan or before the onscaling and delivery of the Presents, the receipt whereof is hereby acknowledged, hath granted, bar-: or before the onsealing and delivery of the Presents, the receipt whereof is hereby acknowledged, hath granted, bar-inso, cold, enfectively, released and confirmed, and by These Presents do grant, bargain, Bell, release and confirm unto is aski Fenlay McLean his heirs and assigns forever: <u>ALL</u> that certain lot of land situate lying and ing at Kargaret's Bay in the County of Luneaburg bounded and described as follows: that is to may Northwardly lands of the heirs of David Schwartz, Eastwardly by land of Robert Hornich, Southwardly by the Hain Post Road uning along the Shore of St Margaret's Bay, and Westwardly by land of Edward Langille Together with all the build-uning along the Shore of St Margaret's Bay, and Westwardly by land of Edward Langille Together with all the build-uning along the Shore of st Margaret's Bay, and Westwardly by land of Edward Langille Together with all the build-uning along the Shore or St Margaret's Bay, and Westwardly by To HAVE AND TO HOLD the same unto the said Fredercik Kelley and Cecelia A. his wife into and upon the same. TO HAVE AND TO HOLD the same unto the said Fenlay McLean is heirs and assigne forever, peaceably and quietly, without let, molectation, wriction or disturbance from or by any irsons whatgoward claising the same or any part thereof, and the said Frederick W. Kelley and Cecelia A. his wife d their heirs the said Land and premisee hereby conveyed, and every part and parcet thereof, with the appurtensnees,

irsons whatgovery cialking the same or any part thereof, and the bala frederics w. Asing and technic at a file with id their heirs the said land and premises hereby conveyed, and every part and parcel thereof, with the appurtemances, its the said Fenlay Helsen and his heirs egainst the lastul claims and demands of all and every persons or persons isomeover shall and will by these presents WARANT and forever DIFIND. IN WITNISS WHEREOF the parties to these pre-ints have hereunts set their hands and coals the day and year first within written. gned, Scaled and Delivered in the presence of) Frederick W. Kelloy (L.S.) gned, Sealed and Delivered in the presence of

gned, Sealed and Deliveron in the presence of frequence of the deliveron in the presence of the Cocoling A. Kelley (L.S.) Chao. A. Soith (L.S.) RECEIVED on the day of the date of the foregoing Indenture, from the within maned Fonlay McLean the sum of xty four dollare and Seventeen conts being the consideration money within mentioned.) Frederick W. Kelley (Chao. L. S. (Constant) (Chao. Constant) (Constant) (Cons Chas A. Smith WITNESS :-

OVINCE OF NOVA SCOTIA) Be it Remembered, that on this twenty second day of December in the year of Cur Lord, One UNIT OF LINEMEURG SS) Thousand Eight Hundred and Minety Seven before me the subscriber, personally came and app-<u>UNITY OF LINENEURG SS</u>] Thousand Light Hundred and Hinety Seven before us the subscriber, personally case and apprived Cocolis A. Kelley wife of the within named Frederick W. Kolley who having been examined separate and apart red Cocolis A. Kelley wife of the within named Frederick W. Kolley who having been examined separate and apart on her said husband, declared that she did of her own free will, and without any fear, threat or compulsion of, from, on her said husband, declared that she did of her own free will, and without any fear, threat or compulsion of, from, by her said husband execute the within a foregoing Indenture, for the purpose therein sentioned, and as a full lease of all her right, title or claim to the within described land and presides in right of dower or otherwise. Allow of all her right, to claim to the within 10 on this 22 day of December A.D., 1897 bofore me the subscriber per-

COUNTY OF LUNENBURG SS) conally came and appeared Chap. A. Smith the subscribing without e foregoing Indenture, who having been by me duly sworn, made outh and said that Frederick W. Kelley and Cecelia A. e foregoing indenture, who having been by me duly sworn, made oath and said that Frederick W. Kelley and tecolik X. Licy the parties thereto signed and dolivered the same in his presence. Charles E. Williams J. P. cortify that the within Instrument having been proved by certified oath of Charles A. Saith, subscribing Witness s thereon registered in the Registry of Deeds at Kalifax, N.S. at 12.30 o'Clock P.M. of the Ziet day of January, D. 1898 in Book 323, Page 139 & 140. E. Montgomery Vieth Deputy Reg², of Deeds in Co Mx N.S.

No. 350 DED	
Fenlay McLean at ux to	
Matilda McLean	
Recorded July 18, 1960	
at 2.36 o'clock P.M.	

) THIS INDENTURE Made this Sixth day of July in the year of our Lord One Thousand Nine Hundred and one BETWEEN Fonlay McLean of Boston U. States And Julia His Wife of the one part, and Matilda McLean of Kubberds Cove in the County of Halifax Wife) of Kenneth McLean of the other part, WITNESSFIE, that the said Fenlay McLean and) Julia his wife for and in consideration of the sum of Sixty Dollars Seventeen Cents

at 2.36 o'clock P.M.) Julia his wife for and in consideration of the sum of Sixty Dollars Seventeen Cents of lawful money of the Dominion of Ganada, to the maid Fenlay McLean and Julia his livery of THESE PRESENTS, the receipt whereof is hereby acknowledged, hath granted, bargained, acid, aliened, en-offad, released, remised, coursyed and confirmed; and by these Presents, do grant, bargain, cell, alien, enfect, lease, remise, convoy and confirm, unto the said Matilda McLean her Hoirs and Acaigns. <u>ALL</u> that cert-ion of any the sain denormal the said Argarets Bay in the County of Halifax bounded and denorm bed follows that is to say Northwardly by lands of heirs of Francis Swarts Easterly by lands of Robert Marmish South-rdly by the main poet Road running from Halifax to Cheeter and Westwardly by lands of Edward Langille togethor the aliend singular, the Expensents, Temesents, Hereditaments, and Appurtenances to the mase, belonging, or in yrise appertaining, with the reversion and reversions, remainder and remainders, rents leaves and profits thereof, ywise apportaining, with the reversion and reversions, remainder and remainders, rents issues and profits thereof, d all the estate, right, title, interest, claim, property and demand, both at Law and in Equity, of Fanlay HeLean d Julia his wife of, in, to, or out of the game, or any part thereof: TO HAVE AND TO HOLD, the said Land and Previews th the appurtenances, and every part thereof, unto the said Matilda McLean her Heirs and Assigns, hor and their is use, benefit and behoof forever. And the said Fenlay McLean and and Julia his Wifefor themselves Heirs, Execuis use, benefit and behoof forever. And the said Fenlay McLean and and Julia his Wifefor themselves Heirs, Execu-rs and Administrators, horeby covenant, promise and agree to, and with the said Matilda McLean Heirs and Assigns, maner following, that is to may: That it shall be lawful for the said Matilda McLean Heirs and Assigns, from \$X or to time, and at all times hereafter, peaceably and quietly to enter into the said land and premises, and to we, hold, occupy, possess and enjoy the same, without the lawful lst, suit, hindrance, eviction, denial, or dis-bance, of, from, or by the said Jenlay NoLean and Julia his wife or any person or persons whomsever, lawfully rbance, of to claim the same. And also that the said Fenlay McLean and Julia his Wife have a good, sure, perfect aiming, or to claim the same. And also that the said Fenlay McLean and Julia his Wife have a good, sure, perfect d indefeasible estate of inhoritance, in fee simple in the said Land and Premises, and good right, full power and wful authority, to sell and convey the came, in manner and form as they are hereby cold. and conveyed, or mentwful authority, to sell and convey the same, in mannar and form as they are hereby cold, and conveyed, or ment-ned, or intended so to be, And lastly that the said Fenlay McLean and his wife Julia Heira, the said Land and ! ealees, and every part thereof, unto the said Matilda McLean Heirs and Assigns, against the lawful claims of all rooms whomscover, shall and will by these presents warrant and forever defend. IN WINNESS WHEREOF, the parties these Presents have hereunto their Hands and Seals sot and affixed the Day and Year first above written. (L.S.) (L.S.) gned, Sealed and delivered in the presence of Jenlay McLean

Fred E. Fay) Julia Shoa McLean (L.S.) ATE OF MASS :) BE IT REMEMBEND, That on this Sixth day of July in the year of our Lord One Thousand Mine FNOK CO. B.S.) Hundred and one before me, the subscriber, personally came and appeared, Julia Shea McLean fe of the within named Fenlay McLean who having been by me examined separate and apart from her maid husband, clared that she did of her own free will, and without any fear, threat or compulsion of from or by her said shand, execute the within and foregoing Indenture, for the purpose therein centioned, and as a full release of 1 her right, title, or claim to be within described Land and premises in Tight of dowor or otherwise. ATE OF MASS : how she for the set of the set

NUS U. CHARTA NUME, LARAN day of JULY A.D. 1901, before me, the subscriber personally case and appeared ATE OF MASS); ON this 6th day of JULY A.D. 1901, before me, the subscriber personally case and appeared Frolk CO. S.S. Fred F. Fav the subscribing witness to the foregoing Indenture, who having been by me duly sword,

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maynet matilda Lauf mited W. Deed 34 570 Imperial Dec Linited mar. 6.1971_ Jog. 17. 1971 51.00 Conneyp) 50,955 square feed on mle Driee Loke Road - percel and described at heading about (l.u.s.) See flor ad attacked to dead. aty offerere are Linital : (1971-2003) Clother ali Lutheren Church Branes D 57 50 Cluster als Luckern deuch Genner gr. Z3 53 Cleater Almerly O. Sicas Se a generary 86 39 to conder (Store Released 96 4a4 en re: Deel 14.15 au. Robenson's aner Clevelod D. 426 Charter pli Lacher and Clanes ag 11a 11 all at street Esso Jetroleum le bat Conquerele Brok Chanter di Ratherm Chanse 133 574 606 848 Lase Har Rejees Level Brend 637 205 L # 4208

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and truly paid by the Grantee , at or before the ensealing and delivery of THESE PRESENTS, the receipt whereof is hereby acknowledged, the Grantor hereby convey^B and grant^B to the Grantee

ALL and singular that certain parcel or tract of land and premises situate, lying and being at Hubbards, in the County of Lunenburg, Province of Nova Scotia, Canada, which can be more particularly described as follows:

BEGINNING at a point marked by an iron bolt with an aluminum identification cap driven into the ground on the Northeastern sideline (33' from the centro of the travelled surface) of Public Highway known as Mill Lake Road which said point marks the Western corner of the lot hereby under description and is located One Hundred Two and Twelve one hundredths feet (102.12') measured along a line having a Magnetic bearing South Fifty degrees Fourteen minutes Six seconds East (S50° 14' 06" E) (Magnetic Meridian 1971) from the point of intersection of the said Northeastern sideline of Mill Lake Road with a line having a perpendicular distance of One Hundred Eighty feet (180.0') measured Southeastwardly from the centre line of Provincial Highway No. 103 now under construction as by reference to a Plan of Survey hereinafter named will more fully appear;

THENCE from said point so located North Forty-five degrees Fifty-two minutes East (N45° 52'E) along property of Margaret Matilda Lough MacLean et vir Three Hundred feet (300.0') more or less, to a point marked by an iron bolt with an aluminum identification cap driven into the ground; THENCE South Seventy-six degrees Thirty-six seconds East (S76°00° 36°E) along said property of Margaret Matilda Lough MacLean et vir Two Hundred Feet (200.0') more or less, to a point marked by an iron bolt with an aluminum identification cap driven into the ground; THENCE South Forty-five degrees Fifty-two minutes West (S45° 52'W) along said property of Margaret Matilda Lough MacLean et vir Three Hundred feet (300.0') more or less, to a point marked by an iron bolt with an aluminum identification cap driven into the ground on the Northeastern sideline of the aforesaid Public Highway; THENCE North Seventy-six degrees Thirty-six seconds West (N76° 00' 36°W) along the Northeastern sideline of the aforesaid Public Highway Two Hundred feet (200.0') more or less, to the point marking the place of beginning.

The herein described lot of land contains an approximate area of Fifty Thousand Nine Hundred and Fifty-five feet (50,955 sq. ft.) and is shown on a Plan of Survey showing property of Margaret Matilda Lough MacLean at vir at Hubbards, Lunenburg Co., N.S. under conveyance to Imperial Oil Limited dated at Bridgewater, N.S. the 5th day of February, A.D., 1971 by Errol B. Hebb, Nova Scotia Land Surveyor No. 7.

SUBJECT HOWEVER to a Right of way and Easement for the electric power line which crosses the above described lot as shown on the aforesaid Plan of Survay.





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POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS that Imperial Oil Limited (hereinafter referred to as the "Corporation"), a body corporate, having its head office in the City of Toronto and Province of Ontario, does hereby nominate, constitute and appoint those individuals occupying the following positions in the division known as Esso Petroleum Canada, namely:

> Manager - Retail Services Retail - Operations Manager Retail - Environmental Operations Manager Consumer - Business Manager Automotive - Business Manager Legal Co-ordinator Support Services Manager

as its true and lawful Attorneys with any two having full power to sign under their seals, from time to time, on behalf of Imperial Oil Limited, doing business under the business name and style of Esso Petroleum Canada, all documents or instruments of any kind whatsoever to be used in the Provinces of Newfoundland, New Brunswick, Nova Scotia or Prince Edward Island which the said Attorneys may consider to be necessary or proper for the purposes of:

- 1. to discharge, release and withdraw, or partially discharge, release and withdraw, by any instrument suitable for that purpose all judgments, lien notes, mortgages, liens or charges recovered by, made or assigned or that shall hereafter be recovered by, made or assigned to or in favour of the Corporation or in which the Corporation may be or hereafter shall be interested in the Provinces of Newfoundland, New Brunswick, Nova Scotla or Prince Edward Island, and also to grant, assign, transfer and convey to any person or persons or coproorations all or any such judgments, lien notes, mortgages, liens or charges or any interest therein, and for the said purposes to sign, seal, execute and deliver all such instruments as may be necessary including, without limiting the generality of the foregoing, discharges, releases and withdrawals, or partial discharges, releases and withdrawals, satisfaction pieces, assignments, transfers and conveyances, and in any such instrument, if the said Attorneys shall think proper, to covenant for and in the name of the Corporation that it has not previously assigned or encumbered the premises or any part thereof affected by such instrument;
- to negotiate, sign and execute construction contracts relating to new premises or to alterations, additions or improvements to land or buildings owned or leased by the Corporation in the Provinces of Newfoundland, New Brunswick, Nova Scotia and Prince Edward Island;
 - 3. to file or register all caveats, cautions or instruments necessary or proper for protecting or enforcing the Corporation's interest or rights in any land now owned or in which the Corporation has any interest or in any

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29,33085

land hereafter acquired or in which the Corporation shall acquire any interest in the Provinces of Newfoundland, New Brunswick, Nova Scotia or Prince Edward Island, and also to withdraw or partially withdraw by any instrument suitable for that purpose all caveats, cautions or instruments that have heretofore or that shall hereafter be filed or registered by the Corporation or in which the Corporation is now or hereafter shall be interested, and for the purposes aforesaid to sign, seal and execute all such instruments as may be necessary including, without limiting the generality of the foregoing, caveats, cautions or withdrawals or partial withdrawals of caveats or cautions;

4. to postpone the rights of the Corporation under any caveat, judgment, execution, mortgage, lien or charge now or hereafter registered as provided by law in the Provinces of Newfoundland. New Brunswick, Nova Scotia or Prince Edward Island to the rights of any other person or corporation in and to the land affected by any such caveat, judgment, execution, mortgage, lien or charge, and for the said purpose to sign, seal, execute and deliver such postponement of registration as may be necessary;

; .

:

- 5. to sign, seal, acknowledge and deliver all such leases and agreements for leases as shall be requisite or as the said Attorneys shall deem necessary or proper in the care and management of the estate of the Corporation, or for the purposes of the Corporation, in the Provinces of Newfoundland, New Brunswick, Nova Scotia or Prince Edward Island, and all renewals, surrenders, cancellations, variations or amendments, or any such leases and agreements for leases or of any leases or agreements for leases presently existing in the said Provinces, and to do all such further acts and to execute all such further writings or deeds as may be necessary or incidental thereto;
- 6. to commence, institute, prosecute and do all proceedings, actions, matters and things necessary for the purpose of bringing any lands or interests in lands now owned or hereafter acquired or the title or titles thereto under the operation of the Land Titles Act or similar Act applicable to the Provinces of Newfoundland, New Brunswick, Nova Scotia or Prince Edward Island, or of any Act or Acts which may hereafter be in force in said Provinces in lieu of or in substitution of said Act, or which may in any way affect the titles to lands in said Provinces; and also to commence, institute and prosecute and do all proceedings, actions, matters and things necessary for the purpose of transmitting to the Corporation under the said Acts, or any of them, the title to any of its lands, or interests in lands or lands which it may hereafter acquire or in which it may acquire any interest, including land acquired or hereafter acquired at tax sale or by tax sale certificate; and for all the herein stated purposes to make, sign, seal, deliver and file all such applications, documents or writings or any kind as may be necessary or proper, and to give all notices and insert all advertisements in newspapers;

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- 3 -

- 7. to give, sign, seal, execute and deliver consents to or requests for the regsitration of maps or plans affecting, or that may hereafter affect, any portion of any lands or interests in lands in the Provinces of Alberta, British Columbia, Manitoba, Northwest Territories or Saskatchewan now owned or hereafter acquired by the Corporation or for the subdivision of any portion of said lands into lots, blocks, streets and lands, or otherwise howsoever, and generally to sign and seal all instruments and do all acts necessary for the purpose of such registration; and also to make, give, sign, seal, execute and do all petitions, covenants, documents, papers and acts whatever requisite or advisable for the purpose of varying, cancelling, altering, annulling or removing, either wholly or in part, plans or maps that have been registered or hereafter shall be registered affecting said subjects and premises or mortgages, liens or charges, or subjects thereby affected, or any of them;
- 8. to give, sign, seal, execute and deliver all documents or writings of any kind as may be necessary or proper for the purpose of transferring to third parties the title to any property, real or personal, tangible or intangible, or interest in any such property acquired by the Corporation pursuant to a realization of security for any loan, advance, debt or liability;

AND the Corporation declares that the execution of all deeds, assignments. transfers, conveyances, releases, discharges, withdrawals, cessation of charges, satisfaction pieces, application caveats, cautions, postponements or registration, leases, agreements for leases, renewals, surrenders, cancellations, variations or amendments of leases or of agreements for leases, petitions, instruments, documents, contracts and writings hereby authorized to be executed shall be complete in all respects and shall bind the Corporation if signed by and sealed (in cases where seal is required) with the seal of the said Attorneys, it being declared hereby that the documents executed hereunder shall in no case require the corporate seal of the Corporation to make them valid and binding, and the Corporation hereby ratifies and confirms and agrees to ratify and confirm whatever the said Attorneys may lawfully do by virtue of these presents in the premises.

THE POWER OF ATTORNEY dated in	, the
day of	19 made by the said Corporation in
faxour of	ts hereby revoked.
DATED this <u>with</u> day of	<u>XUNE</u> , 1988
	IMPERIAL OIL LIMITED
	Per: KTollon
	MANAGER - RETAR
	CON PERCEEUM CANADA
	Per: flandeuten

Title: ARCHIETART DECRETARY

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PROVINCE OF ONTARIO

JUDICIAL DISTRICT OF YORK

AFFIDAVIT

Mississauga I, Margaret Elizabeth Gordon, of the City of Forceste in the Regional Municipality of Peel, Province of Ontario, , make oath and say that I was present and did see the Corporate Seal of Imperial Oil Limited duly affixed to the within instrument in the presence of two of its authorized aigning officers, Richard T. Dobson and Nicholas C. Lawrence

who affixed their names thereto and that I am the subscribing witness to such execution.

Angal Elizabet Dorda

<u>SWORN</u> to before me at Toronto aforesaid

this 17th day of June,

A.D. 1988

for

A Notary Public in and f. the Province of Ontario



Province of Nova Scotia County 1 Lunenburg,

Thereby a tity that the within instrument was recorded in t. Repulsive of Deeds Office at Chestar, in the County of Lumenburg, N.S. at 9:00 office M. M., on Miomo. the 2512 May 81 MUUU A. D. 1988 in Book Number /33 at Pizzes 574 - 577 + 1071

Elacine Amuth Registre of the registration District of the County of Lorenburg.

55:60 E665 II DUP 205 682 5563 98.30A9 Julymente . ----Depense des Lymited ____ S003 · £ to #4578 . . .

Phase II Environmental Site

Assessment 64 Mill Lake Road, Hubbards, Nova Scotia Final Report

November 2003

Imperial Oil Limited

03-2088-0200

Submitted by:

Dillon Consulting Limited

November 20, 2003

IMPERIAL OIL LIMITED 3597 Strawberry Hill Street P. O. Box 8117 Halifax, Nova Scotia B3K 5L8

ATTENTION: Mr. David O'Carroll, P.Eng. Associate, Site Remediation Specialist

Final Phase II Environmental Site Assessment, Former Imperial Oil Limited Bulk Plant, 64 Mill Lake Road, Hubbards, Nova Scotia.

We are pleased to submit the following Phase II Environmental Site Assessment Final Report for the former Imperial Oil Limited Bulk Plant property, located at 64 Mill Lake Road in Hubbards, Nova Scotia.

We trust this report is sufficient for your present requirements. If you have questions or comments, please contact us at your convenience.

Yours truly,

DILLON CONSULTING LIMITED

Brent J. Cox, B.Sc., P.Geo. Senior Project Manager

KGM:ked Attachment Our File: 03-2088-0200

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Executive Summary

An Environmental Site Assessment (ESA) was conducted on the former Imperial Oil Limited Bulk Plant property, located at 64 Mill Lake Road in Hubbards, Nova Scotia. The scope of work (SOW) for this project included the collection of soil samples during the installation of test pits and boreholes to characterize soil conditions, as well as the installation of monitor wells to characterize groundwater conditions.

Dillon Consulting Limited conducted a Phase I Environmental Site Assessment (ESA) in August 2003. The Phase I ESA identified potential petroleum hydrocarbon impacts to soil and groundwater due to the historic operations at the site. No previous ESAs for the site were identified during the Dillon Phase I. The subject property, under Atlantic PIRI criteria, is classified as a commercial property with potable groundwater usage and sandy soil conditions.

This ESA consisted of the advancement of twenty (20) test pits (TP1-TP20) and six (6) boreholes (MW1-MW6), all of which were completed with monitor well installations. Soil samples were collected during test pit advancement and select samples were submitted for analysis. Groundwater samples were collected from all monitor wells and submitted for analysis.

In total, seventeen (17) surface soil samples were submitted for petroleum hydrocarbon analysis. Two (2) samples (TP 3/1 (0-0.5 m) and TP 9/1 (0-0.5 m)) exhibited toluene concentrations, three (3) samples (TP 5/2 (0.5-1.0 m), Dup B (field duplicate of TP 5/2 (0.5-1.0 m)) and TP 9/1 (0-0.5 m)) exhibited ethyl benzene concentrations, two (2) samples (TP 5/2 (0.5-1.0 m) and TP 9/1 (0-0.5 m)) exhibited xylene concentrations, and six (6) samples (TP 2/1 (0-0.5 m), TP 5/2 (0.5-1.0 m), Dup B (0.5-1.0 m), TP 7/2 (0.5-1.0 m), TP 9/1 (0-0.5 m) and TP 11/2 (0.4-0.9 m)) exhibited Modified TPH concentrations in excess of Atlantic PIRI Tier I criteria. TP2 and TP3 were located in the eastern portion of the site near the former oil/water separator. TP5, TP7, TP9 and TP11 were located in the south central portion of the site near the former slop tank, the former underground storage tanks and the former loading rack.

In total, twenty-nine (29) subsurface soil samples were submitted for petroleum hydrocarbon analysis. Seven (7) samples (TP 2/3 (1.0-1.5 m), Dup A (field duplicate of TP 2/3 (1.0-1.5 m)), TP 2/3 (TPH Frac), TP 5/4 (2.0-3.0 m), TP 11/5 (2.0-2.5 m), Dup C (field duplicate of TP 11/5 (2.0-5.2 m)) and TP 11/5 (TPH Frac)) exhibited ethyl benzene concentrations, six (6) samples (TP 2/3 (1.0-1.5 m), Dup A (1.0-1.5 m), TP 2/3 (TPH Frac), TP 5/4 (2.0-3.0 m), TP 11/5 (2.0-2.5 m) and TP 11/5 (TPH Frac)) exhibited xylene concentrations, and nine (9) samples (TP 1/3 (1.2 m), TP 2/3 (1.0-1.5 m), Dup A (1.0-1.5 m), TP 2/3 (TPH Frac), TP 5/4 (2.0-3.0 m), TP 11/5 (2.0-2.5 m), Dup C (field duplicate of TP 11/5 (2.0-2.5 m)), TP 11/5 (TPH Frac) and ST E-Wall (1.0-3.0 m)) exhibited Modified TPH concentrations in excess of Atlantic PIRI Tier I criteria. TP1 was located in the northern portion of the site near the former slop storage tank location. TP2 was located in the southern portion of the site near the former slop tank and the former loading rack. ST E-Wall was collected from the east wall of the septic tank excavation.

The results of the Phase II ESA also identified naphthalene concentration in TP 2/3 (1.0-1.5 m), located south of the former oil/water separator, to be in excess of CCME commercial criteria.

The Phase II ESA did not identify any metals concentrations in excess of CCME commercial criteria.

In total, seven (7) groundwater samples were submitted for petroleum hydrocarbon analysis. One (1) groundwater sample (MW5) exhibited an ethyl benzene concentration and one (1) groundwater sample (MW6) exhibited a Modified TPH concentration in excess of the Atlantic PIRI Tier I criteria. MW5 and MW6 are located in the south central portion of the site near the former loading rack and the former underground storage tanks.

The results of an ecological receptor screening did not identify a habitat of potential concern within 150 metres of the site.

Table of Contents

1.0	INTRODUCTION1										
2.0	BAC	KGROUND INFORMATION									
	2.1	Site Description									
	2.2	Historical Records Review									
3.0	Envi	IRONMENTAL ASSESSMENT METHODOLOGY									
	3.1	Test Pit/Borehole Program									
	3.2	Soil Sampling Program									
	3.3	Monitor Well Installation									
	3.4	Groundwater Sampling									
	3.5	QA/QC									
4.0	Envi	RONMENTAL ASSESSMENT RESULTS									
	4.1	Site Geology									
	4.2	Hydrogeology									
	4.3	Criteria Selection									
	4.4	Soil Quality									
	4.5	Groundwater Quality									
	4.6	QA/QC Results									
	4.7	Ecological Receptors									
5.0	Conc	CLUSION									
6.0	Stat	EMENT OF LIMITATIONS									

List of Tables:

Table 4-1	Groundwater Elevational Data
Table 4-2	Surface Soil Hydrocarbon Results
Table 4-3	Subsurface Soil Hydrocarbon Results
Table 4-4	Soil Fractionation Results
Table 4-5	Soil PAH Results
Table 4-6	Soil Metals Results
Table 4-7	Groundwater Hydrocarbon Results
Table 4-8	Groundwater Fractionation Results

List of Figures:

Figure 1-1	Site Location	2
Figure 2-1	Surrounding Properties	4
Figure 3-1	Test Pit and Borehole/Monitor Well Locations	8
Figure 4-1	Groundwater Flow	2

Appendices:

- Appendix I Site Photographs
- Appendix II Test Pit, Borehole/Monitor Well Logs
- Appendix III Grain Size Analysis
- Appendix IV Hydraulic Conductivity Plots
- Appendix V Headspace Analysis
- Appendix VI Atlantic PIRI Ecological Receptors Checklist
- Appendix VII Laboratory Certificates

1.0 INTRODUCTION

The following report details the results of a Phase II Environmental Site Assessment (ESA) conducted on the former Imperial Oil Limited Bulk Plant property located at 64 Mill Lake Road in Hubbards, Nova Scotia (see Figure No. 1-1, Site Location). The purpose of this ESA was to identify the presence or absence of petroleum hydrocarbon impacts in soil and groundwater within the property boundaries. The property identification number (PID) for the subject property is 60082138.

The Phase II ESA field work was conducted between July 24th and August 15th, 2003, by Dillon Consulting Limited (Dillon) personnel. The assessment consisted of the advancement of twenty (20) test pits and six (6) boreholes across the property. All boreholes were completed with monitor well installations for the recovery of groundwater samples.

The following sections of this report detail the site description, background, field investigation, results and conclusions. Site photographs are presented in Appendix I. Test pit, borehole/monitor well logs are presented in Appendix II. Grain size analysis is presented in Appendix III. Hydraulic conductivity plots are presented in Appendix IV. Head space analysis results are presented in Appendix V. A completed Atlantic PIRI Ecological Receptors Checklist is presented in Appendix VI. Laboratory Analytical Certificates of Analysis are presented in Appendix VII.



2.0 BACKGROUND INFORMATION

2.1 Site Description

The subject property is located at civic address 64 on the north side of Mill Lake Road in Hubbards, Nova Scotia, and is in a commercial/residential area. Currently, the lot comprises an area of 0.4815778 ha (4815.8 m²) and is vacant. At the time of the assessment, two concrete pads, a concrete septic tank and construction debris remained at the site and have subsequently been removed. All other associated bulk plant infrastructure had been removed during previous decommissioning activities.

Land use of properties adjacent to the subject property are as follows:

- > immediately to the east is a residential property;
- > immediately to the south is Mill Lake Road, beyond which is a residential property;
- > immediately to the southeast is Mill Lake Road, beyond which is a residential property;
- > immediately to the southwest is Mill Lake Road, beyond which is a residential property; and
- > immediately to the north and west is undeveloped land.

A site plan of the subject property and surrounding properties is provided on Figure 2-1. Photographs of the subject and adjacent properties are included in Appendix I.

The site and surrounding area is relatively flat. Regionally, the area slopes gently to the east towards Hubbards Cove located approximately one (1) kilometre from the site. Surface runoff and regional groundwater flow is east towards Hubbards Cove. The adjacent properties are serviced with onsite potable water supplies and septic systems.



2.2 Historical Records Review

In August 2003, Dillon personnel conducted a Phase I ESA of the property which identified potential for soil and groundwater impacts as a result of historic operations at the site. At the time of the Phase I ESA, no previous environmental reports for the subject site were found.

3.0 Environmental Assessment Methodology

3.1 Test Pit/Borehole Program

Dillon personnel supervised the excavation of twenty (20) test pits between July 24th and August 1st, 2003. A borehole/monitor well installation program was initiated on August 14th, 2003, which involved the installation of six (6) boreholes across the property.

During the test pit program, soil samples were collected in duplicate with a portion of the sample being placed in an air-tight plastic bag and the remaining portion of the sample placed in laboratory supplied containers. The bagged portion of the samples were allowed to stabilize for approximately thirty (30) minutes at which time organic vapour headspace readings were taken using a Gastech model 1238 organic vapour analyzer operated in methane elimination mode. The soil filled laboratory containers were immediately placed on ice in a cooler and delivered to the laboratory for possible analysis.

Soil stratigraphy was continuously logged with respect to soil type, colour and visual evidence of petroleum hydrocarbon impact. Soil sample collection focussed on obtaining representative samples from both surface (<1 m) and subsurface (>1 m) to accommodate Atlantic PIRI protocols. Test pit and borehole/monitor well logs are included in Appendix II. Soil samples were selected for analysis based on field observations and VOC headspace results. At locations where vapour headspace results were low throughout the sample profile, the sample closest to the water table was typically selected for analysis.

A CAEAL certified laboratory, PSC Analytical Services in Bedford, Nova Scotia, provided analytical services.

3.2 Soil Sampling Program

In total, seventeen (17) surficial (0 to 1.0 mbgs) samples, including one (1) field duplicate, and twenty-seven (27) subsurface (greater than 1.0 mbgs) samples, including four (4) field duplicates,

were submitted to PSC Analytical Services in Bedford, Nova Scotia for Benzene, Toluene, Ethyl Benzene, Xylene (BTEX) and Modified Total Petroleum Hydrocarbons (Modified TPH) analysis. In addition, two (2) soil samples exhibiting the highest Modified TPH concentrations were selected for TPH fractionation analysis. Additional soil samples were also submitted for available metals (2), lead only (2), PAH (4), fraction of organic carbon (4), and grainsize analysis (2). Test pit and borehole/monitor well locations are shown on Figure 3-1.

3.3 Monitor Well Installation

Monitor wells were installed in all six (6) boreholes (MW1-MW6) to facilitate the collection of samples for groundwater characterization and evaluation of presence/absence of non-aqueous phase liquid (NAPL). Monitor well locations are shown on Figure 3-1. Monitor well depths ranged from 4.6 to 6.1 metres depth with the bottom 3.05 metres consisting of PVC screen. All monitor wells were completed with locking aboveground steel protective casings and J-plugs.

3.4 Groundwater Sampling

Following the drilling program on August 14th, 2003, an elevation survey was completed on all six (6) monitor wells (MW1-MW6). The monitor wells were then developed by removing at least three (3) casing volumes of water with groundwater samples collected on August 15th, 2003, using dedicated waterra tubing and foot valves. Where possible, each monitor well was allowed to recover to 80% of the static water level before sampling.

All six (6) monitor well samples, including one (1) field duplicate, were submitted to PSC Analytical Services in Bedford, Nova Scotia for BTEX and Modified TPH analysis. Bail-down/recovery tests were undertaken on two (2) monitor wells (MW3 and MW6) on August 15th, 2003. Data collected was used to calculate estimated hydraulic conductivity.



3.5 QA/QC

Sample collection, handling and storage require set procedures to ensure that representative and reliable data are obtained during the field program. Standard operating procedures were used during the field program which covered the following:

- 1. The use of specific supplies and equipment including:
 - laboratory supplied bottles and jars;
 - containers for collecting samples for measuring VOC;
 - appropriate labels and chain of custody forms;
 - containers and cold packs for transporting samples to the laboratory;
 - preservatives;
 - required equipment such as split spoons and other samplers (if required);
 - decontamination liquids (clean water, soap, if necessary solvents), and paper towels;
 - personnel protective equipment (gloves, goggles, etc.); and
 - field portable monitoring meters (water level, hydrocarbon detector, etc.).
- 2. Decontamination of equipment;
- 3. Sample preservation and storage, including sample handling, temperature control, holding times;
- 4. Sample labelling; each label included sample identification number, location of the sample, date and time of collection, sampler and required analysis;
- 5. Chain of custody forms; each identifying the sample, analyses required, sample matrix, sample bottles/jars, client, date of sampling and receiving, including a laboratory signature to indicate sample receipt;
- 6. Field records and marking sample locations;

- 7. Field quality control samples (including collection of 10% blind field duplicate samples for both soil and groundwater and upon submission of sample to the lab, the lab selected an additional 10% of the sample for lab duplicates); and
- 8. Calibration and maintenance of the field equipment.

4.0 ENVIRONMENTAL ASSESSMENT RESULTS

4.1 Site Geology

The surficial geology of the area generally consists of silty sandy glacial till. The bedrock geology map for the area indicates the site is underlain by granite and granodiorite. Bedrock was not encountered during the intrusive investigation. Grain size analysis results support field observations. The grain size analysis from sample TP 15/3 (1.5-2.0 m) indicates a grain size gradation as follows: gravel 14.4%, sand 47.7%, silt 28.6% and clay 9.3% resulting in a silty sand with some gravel and clay classification. The grain size analysis from TP 19/7 (3.0-3.5 m) indicates a grain size gradation as follows: gravel 13.8%, sand 43.1%, silt 32.8% and clay 10.2% resulting in a silty sand with some gravel and clay classification. Soils from these two (2) test pits are representative of soils encountered throughout the site. Test pit and borehole/monitor well logs are presented in Appendix II. The results of the grain size analysis are included in Appendix III.

4.2 Hydrogeology

Static groundwater levels measured in all on site monitor wells on August 15th, 2003, ranged from 1.2 (MW6) to 2.15 (MW5) metres below the top of the PVC casing. Upon completion of monitor well installations on August 14th,2003, a survey of the newly installed monitor wells was undertaken by Dillon personnel. Top of casing elevations and ground surface elevations were surveyed. Subsequently, groundwater elevation data was calculated based on the August 15th static water levels. Generalized groundwater flow direction was determined to be to the east as shown in Figure 4-1. Groundwater elevation data is presented in Table 4-1.

Based on the groundwater elevational data, the calculated hydraulic gradient is approximately 0.02. Hydraulic conductivities in overburden soils were calculated to range from 1×10^{-4} cm/sec to 6×10^{-6} cm/sec. Hydraulic conductivity plots are presented in Appendix IV.



TABLE 4-1	
GROUNDWATER ELEVATION DATA	
64 MILL LAKE ROAD, HUBBARDS, NOVA SCOTIA	L

Monitoring Well	Ground Surface	Top of PVC Casing	Dopth to Water (mbgs)	Organization El 1
Designation		Top of the Casing	Deptil to water (impgs)	Groundwater El.
Designation	Elevation*	Elevation* Elevation*		15-Aug-03
				· · · · · · · · · · · · · · · · · · ·
MW1	100.165	100.870	0.725	99,440
MW2	100.075	100 995	0.805	00.270
	1001070	100.000	0.000	99.210
3 63170	00 530	400 500		
MW3	99.730	100.520	1.000	98.730
MW4	99.470	100.120	1.280	98.190
MW5	99.700	100.200	1.650	98.050
MW6	99 840	100.650	0.390	00.450
		100.000	0.090	99.450
* Elevations referenced from a	a temporary benchmark with a	an assumed elevation of 100.	000m.	
mhaa matraa halayy araysid				1

mbgs - metres below ground surface.

4.3 Criteria Selection

The site and surrounding area is serviced by onsite potable water supplies and septic systems. Grain size analysis indicates a sandy soil type. As such, the subject property, under Atlantic PIRI criteria, is classified as a commercial property with potable groundwater usage and sandy soil conditions.

In comparing PAH and metal analytical results to applicable guideline criteria, Canadian Council of Ministers of the Environment (CCME) 1999 guidelines for a commercial site were used.

4.4 Soil Quality

Petroleum Hydrocarbon Analysis (BTEX/TPH)

Seventeen (17) surface soil samples from the intrusive investigations, including one (1) field duplicate, were submitted for hydrocarbon analysis. The results of analytical testing did not identify any benzene concentrations which exceeded the Atlantic PIRI Tier I criteria. The toluene concentration of 0.211 mg/kg in TP 3/1 (0-0.5 m) and 0.308 mg/kg in TP 9/1 (0-0.5 m) exceeded the Tier I criteria of 0.10 mg/kg. Ethyl benzene concentrations, in excess of the Tier I criteria of 0.02 mg/kg, were detected in TP 5/2 (0.5-1.0 m), Dup B (field duplicate of TP 5/2 (0.5-1.0 m)) and TP 9/1 (0-0.5 m), which yielded concentrations of 0.211 mg/kg, 0.181 mg/kg and 0.157 mg/kg, respectively. The xylene concentration of 2.43 mg/kg in TP 5/2 (0.5-1.0 m) and 7.20 mg/kg in TP 9/1 (0-0.5 m) exceeded the Tier I criteria of 2.4 mg/kg. Modified TPH concentrations exceeded the Tier I criteria for fuel oil (185 mg/kg) in TP2/1 (0-0.5 m), TP 5/2 (0.5-1.0 m), Dup B (0.5-1.0 m), TP 7/2 (0.5-1.0 m), TP 9/1 (0-0.5 m) and TP11/2 (0.4-0.9 m), which yielded concentrations of 1500 mg/kg, 6700 mg/kg, 6400 mg/kg, 230 mg/kg, 810 mg/kg and 510 mg/kg, respectively. Surface soil analytical results are provided in Table 4-2. Laboratory Certificates of Analysis are presented in Appendix VII.

Twenty-nine (29) subsurface soil samples, including four (4) field duplicates, were submitted for hydrocarbon analysis. The results of analytical testing did not identify any benzene or toluene concentrations which exceeded the Atlantic PIRI Tier I criteria. The ethyl benzene concentration of 2.14 mg/kg in TP 2/3 (1.0-1.5 m), 2.47 mg/kg in Dup A (field duplicate of TP 2/3 (1.0-1.5 m)), 2.14

					TABLE 4	1-2					
			64	SURFACE S	OIL HYDROC	CARBON RES	SULTS				
		<u> </u>	V7 .		RUAD, HUBB	ARDS, NOVA	A SCOTIA				
Sample	Sample	Sample		BTEX Conc	entration (ppm)		1	Petroleum	Undrosorbore (
Location	Date	Depth (m)	Benzene	Toluene	E. Benzene	Xylenes	C6 - C10	C10 - C21	C21 - C32	m) T Tata	
		t			1		T		021-032		
<u>TP 1/1</u>	July 28/03	0-0.5	ND	ND	ND	ND	ND	36	52	QQ**	EI
TP 2/1	Iuly 28/03	0.05								00**	r,L
	July 20/03	C-0-0	ND	ND	ND	0.155	25.0	1100	430	1500**	F
TP 3/1	July 28/03	0-0.5	ND	0.211							
	+						ND	ND	29	ND	L
TP 4/1	July 28/03	0-0.5	ND	ND							
						ND	ND	ND	ND	ND	-
TP5/2	July 28/03	0.5-1.0	ND	ND	0.211	242					
Dup B (F/D)	July 28/03	0.5-1.0	ND (0.05)	ND (0.2)	0 1 8 1	2.40	280	6000	480	6700**	F
						2.13	268	5700	460	6400**	F
TP7/2	July 28/03	0.5-1.0	ND	ND	ND	ND	ND	200	22	00044	
Atlantic PIRI Tier	I Criteria		Î j		<u>t</u> t			200	<u>د ک</u>	230**	F
	· · · · · · · · · · · · · · · · · · ·		Î T		h			<u></u>			
Commercial, Potal	ble, Sand		0.01 0.10	0.02	2.4		Gasoine	l	80*		
Surface (<1.0 m)				L′				#6 Oil		185**	•
Pecidential Poteb	1- C			1		I		Gasoline	<u></u>	2000.	
Surface (<1.0 m)	le, Sana		0.01	0.10	0.02	2.4		Fuel Oil		110**	
Estimoted Quantit			<u> </u>	[#6 Oil			840***	k
Estimated Quanne	ation Limit		0.025	0.025	0.025	0.050	2.5	15	15	32	
ND - Not detected G - Resembles Ga	coline		ND (0.05) - Analy	te was not detecter	d aboved the EQL;	raised EQL listed	in parenthesis.				
F - Resembles Fue	al Oil		TP - Test Pit								
L - Resembles Lut	oe Oil		F/D - Field Duplic:	ate							
Bold	- Exceeds Atlantic	PIRI Tier I Guid	alizer (commorcial	4-11 t							
® .	- Compared to Res	idential Criteria (based on adjacent l	potable, sand)							
	Evceeds Resident	tial Cuitania (haas		nd use)							
Note: For the purp	ose of comparison	to applicable mi	1 on adjacent landus	se)							
specific to each sar	mple result was bas	ed on laboratory	recemblance data a	lodified TPH hydr	rocarbon range assu	med to be most					
				Id Atiantic PIRL K	.eference Document	tation (April 1999)).				

TABLE 4-2 (CONT'D) SURFACE SOIL HYDROCARBON RESULTS 64 MILL LAKE ROAD, HUBBARDS, NOVA SCOTIA												
Sample Sample PTEV Concentration (num)												
Sample Location	Date	Sample	Bannana	BTEX Conce	E Democration (ppm)	Vederee	C(010	Petroleum I	Tydrocarbons (ppr	n)		
Location	Daic		Belizelle	Toluene	D. Delizene	Aylenes		C10-C21	021-032	10121		
TP 9/1	July 28/03	0-0.5	ND	0.308	0.157	7.20	52.3	670	82	810**	F	
TP 10/1	July 28/03	0-0.5	ND	ND	ND	ND	ND	43	28	70**	F	
TP 11/2	July 28/03	0.4-0.9	ND	ND	ND	ND	10.6	420	84	510**	F	
TP 12/2	July 31/03	0.3-0.8	ND	ND	ND	ND	ND	ND	17	ND	L	
TP15/1 ® Lab Dup ®	July 31/03 July 31/03	0.0-0.6 0.0-0.6	ND ND	ND ND	ND ND	ND ND	ND ND	ND ND	ND ND	ND ND	-	
TP16/2 ®	July 31/03	0.4-1.0	ND	ND	ND	ND	ND	ND	46	46***	L	
Atlantic PIRI Tier	r I Criteria											
Commercial, Pota Surface (<1.0 m)	ble, Sand		0.01	0.10	0.02	2.4	Gasoline Fuel Oil #6 Oil			80* 185** 2800***		
Residential, Potal Surface (<1.0 m)	ole, Sand		0.01	0.10	0.02	2.4		Gasoline Fuel Oil #6 Oil			55* 110** 840***	
Estimated Quanti	tation Limit		0.025	0.025	0.025	0.050	2.5	15	15	32		
ND - Not detected G - Resembles Ga F - Resembles Fu L - Resembles Lu	ND - Not detected ND (0.05) - Analyte was not detected aboved the EQL; raised EQL listed in parenthesis. G - Resembles Gasoline TP - Test Pit F - Resembles Fuel Oil F/D - Field Duplicate											
Bold	- Exceeds Atlanti	c PIRI Tier I Guid	elines (commercia	l, potable, sand)								
®	- Compared to Re	sidential Criteria	(based on adjacent	land use)								
	- Exceeds Resider	ntial Criteria (base	d on adjacent land	luse)								
Note: For the pur	u pose of comparisor	n to applicable gu	ideline criteria, the	Modified TPH hy	drocarbon range as	sumed to be most						
specific to each s	ample result was b	ased on laboratory	v resemblance data	and Atlantic PIRI	Reference Docume	ntation (April 19	99).					

1				· · · · · · · · · · · · · · · · · · ·	TABLE 4-2 (C'	ONT'D)			······································			
	SURFACE SOIL HYDROCARBON RESULTS											
ł	64 MILL LAKE ROAD, HUBBARDS, NOVA SCOTIA											
					, 						J	
Sample	Sample	Sample		BTEX Conc	entration (ppm)		T	Petroleum	Uvdrocarbone (ppr			
Location	Date /	Depth (m)	Benzene	Toluene	E. Benzene	Xylenes	C6 - C10	C10-C21	C21 - C32	a) Tot		
	, i	, ···· ,		T	T		1	T		<u> </u>	<u></u>	
TP17/2	Aug 1/03	0.8-1.0	ND	ND	ND	ND	ND	ND	ND /		-	
	· · ·	1			T	(<u>├</u> /			
TP18/2	Aug 1/03	0.4-1.0	ND	ND	ND	ND	ND	ND	18	ND	L	
77010/1	1 1/02				- I	1			· · · · · · · · · · · · · · · · · · ·			
11719/1	Aug 1/03	<u>(0.0-0.5</u>)	ND	ND	ND	ND	ND	ND	ND	ND	'	
TP20/2	Aug 1/03	0307		1.175		1		[
Atlantic PIRI Tie	T I Criteria	0.3-0.7			ND	ND	ND	ND	ND	ND		
[·	<u> </u>	<u> </u>	<u></u>						
Commercial, Pot	ahle. Sand	,			1	1 '		Gasoline		80*		
Surface (<1.0 m)		1	0.01	0.10	0.10 0.02	2.4		Fuel Oil			-*	
	<u> </u>		<u> </u>	1	<u></u>]	i'		#6 Oil		2800*	**	
Residential, Potal	ble, Sand	1	0.01	010		1		Gasoline		55*	······	
Surface (<1.0 m)		/	0.01	0.10	0.02	2.4	Fuel Oil			110*	*	
Estimated Quanti	tation Limit		0.025	1 0.025	1 0.025		<u> </u>	#6 Oil		840**	\$* 	
ND - Not detecte			ND (0.05) - Anal			0.050	2.5	15	15	32		
G - Resembles Gr	asoline		TP - Test Pit	Te was not detecte	od aboved the EQL;	raised EQL listed	l in parenthesis.					
F - Resembles Fu	el Oil		F/D - Field Dunli	icate							ļ	
L - Resembles Lu	ıbe Oil		the transmitter	Jaio								
Bold	- Exceeds Atlantic	¢ PIRI Tier I Guid∉	elines (commercia!	I, potable, sand)							I	
®	- Compared to Re	sidential Criteria (based on adjacent	land use)							ļ	
/ /	- Exceeds Resider	ntial Criteria (base	d on adjacent land	mee)							ļ	
Note: For the pur	pose of comparisor	a to applicable gui	deline criteria, the	Modified TPH hv	drocarbon range acc	mont to be mont						
specific to each sr	ample result was be	ased on laboratory	resemblance data	and Atlantic PIRI	Deference Docume		(A)					
<u></u>				mu Anannie i mu /	Reference Documer	itation (April 1995	9).					

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mg/kg in TP 2/3 (TPH Frac), 1.83 mg/kg in TP 5/4 (2.0-3.0 m), 0.383 mg/kg in TP 11/5 (2.0-2.5 m), 0.048 mg/kg in Dup C (field duplicate of TP 11/5 (2.0-2.5 m)) and 0.357 mg/kg in TP 11/5 (TPH Frac) exceeded the Tier I criteria of 0.02 mg/kg. Xylene concentrations, in excess of the Tier I criteria of 2.4 mg/kg, were detected in TP 2/3 (1.0-1.5 m), Dup A 1.0-1.5 m), TP 2/3 (TPH Frac), TP 5/4 (2.0-3.0 m), TP 11/5 (2.0-2.5 m) and TP 11/5 (TPH Frac), which yielded concentrations of 11.0 mg/kg, 12.9 mg/kg, 11.0 mg/kg, 15.9 mg/kg, 2.44 mg/kg and 2.72 mg/kg, respectively. Modified TPH concentrations of 420 mg/kg in TP 1/3 (1.2 m), 6000 mg/kg in TP 2/3 (1.0-1.5 m), 7100 mg/kg in Dup A (1.0-1.5 m), 5710 mg/kg in TP 2/3 (TPH Frac), 510 mg/kg in TP 5/4 (2.0-3.0 m) and 1400 mg/kg in ST E-Wall (1.0-3.0 m), exceeded the Tier I criteria of 185 mg/kg for fuel oil. Modified TPH concentrations on 490 mg/kg in TP 11/5 (2.0-2.5 m), 290 mg/kg in Dup C (2.0-2.5 m) and 380 mg/kg in TP 11/5 (TPH Frac), exceeded the Tier I criteria of 80 mg/kg for gasoline. Subsurface soil analytical results are provided in Table 4-3. Laboratory Certificates of Analysis are presented in Appendix VII.

TPH Fractionation Analysis

Two (2) soil samples, TP 2/3 (1.0-1.5 m) and TP 11/5 (2.0-2.5 m) were submitted for TPH fractionation analysis. The results of analytical testing, discussed in the previous section, are presented in Table 4-4. Laboratory Certificates of Analysis are presented in Appendix VII.

PAH Analysis

Four (4) soil samples, TP 2/3 (1.0-1.5 m), TP 3/6 (2.5-3.0 m), TP 15/1 (0-0.6 m) and TP 16/2 (0.4-1.0 m) were submitted for PAH analysis. The results of analytical testing, provided in Table 4-5, indicate that the naphthalene concentration of 23 mg/kg in TP 2/3 (1.0-1.5 m), exceeded CCME criteria of 22 mg/kg for commercial land use. All other PAH parameters indicated concentrations below applicable CCME criteria. Laboratory Certificates of Analysis are presented in Appendix VII.

Metals Analysis

Two (2) soil samples were submitted for metals analysis and two (2) for lead only analysis. The results of metals analysis, provided in Table 4-6, indicated no exceedances of CCME criteria for commercial land use. The results of the metals and lead only analysis are contained in the Laboratory Certificates of Analysis presented in Appendix VII.
TABLE 4-3											
	SUBSURFACE SOIL HYDROCARBON RESULTS										
			64 M	ILL LAKE R	OAD, HUBBA	RDS, NOVA	SCOTIA				
<u> </u>		·····									
Sample	Sample	Sample		BTEX Conce	entration (ppm)		[Petroleum	Hydrocarbons (nn		
Location	Date	Depth (m)	Benzene	Toluene	E. Benzene	Xylenes	C6 - C10	C10-C21	C21 - C32	Total	
770 1/2	T 1 00/00								0.1+0.52	10(2)	
11 1/3	July 28/03	1.2	ND	ND	ND	ND	5.5	250	170	420**	F
TTD 1/0									·		<u> </u>
IP 1/9	July 28/03	4.0-4.3	ND	ND	ND	ND	ND	ND	ND	ND	
Τ Ρ ウ/2	Tubu 00/02							· · · · · · · · · · · · · · · · · · ·			
	July 28/03	1.0-1.5	0.008	0.054	2.14	11.0	434	5000	520	6000**	F
Dup A (F/D)	July 28/03	1.0-1.5	ND (0.05)	ND (0.2)	2.47	12.9	722	5700	620	7100**	r
TPH Frac	July 28/03	1.0-1.5	ND	0.055	2.14	11.0	382	4872	450	5740**	r
								1072	430	5710	
TP 3/6	July 28/03	2.5-3.0	ND	ND	ND	ND	ND	ND		100	ſ
Lab Dup	July 28/03	2.5-3.0	ND	ND	ND	ND	ND			ND	-
									ND		
<u>IP 5/4</u>	July 28/03	2.0-3.0	ND (0.05)	ND (0.05)	1.83	15.9	420	93	ND	510**	F
TR (16 A						······································					
Atlantic PIPI Tier I C	July 28/03	2.0-2.5	ND	ND	ND	ND	ND	ND	ND	ND	_
Commercial Potable	Sand				l T		· · · · · · · · · · · · · · · · · · ·	Gasoline	·······	80*	
Subsurface (>1.0 m)	San		0.01	0.10	0.02	2.4		Fuel Oil		185**	
								#6 Oil		10000**	
Residential Potable (Fand							Gasoline		45*	
Subsurface (>1.0 m)	Sanu		0.01	0.10	0.02	2.4		Fuel Oil		110**	
Eatimated Oracticus	· · · ·							#6 Oil		840***	
Estimated Quantitatio	n Limit		0.025	0.025	0.025	0.050	2.5	15	15	32	
NU - Not detected	ma		ND (0.05) - Analy	te was not detecte	d above the EQL; ra	aised EQL listed i	n parenthesis.		<u></u>		
F - Resembles Fuel O	1		TP - Test Pit								
L - Resembles Lube C	ni Dit		F/D - Field Dupli	cate							
Rold	Bold Eveneda Atlantia BIBL Tim I (c. i.i. i)										
6	- Exceeds Atlantic	PIRI Tier I Guide	lines (commercial	, potable, sand)							
	- Compared to Res	adential Criteria (l	based on adjacent l	and use)							
	- Exceeds Resident	tial Criteria (based	l on adjacent landu	ise)							
Note: For the purpose	of comparison to ap	oplicable guideline	criteria, the Modi	fied TPH hydroca	rbon range assumed	to be most					
specific to each sampl	e result was based o	n laboratory resen	nblance data and A	tlantic PIRI Refer	ence Documentatio	n (April 1999).					
	And the state of fatoratory resemplance data and Atlantic PIRI Reference Documentation (April 1999).										

TABLE 4-3 (CONT'D) SUPSUBEACE SOLUTY DOCADBON DESULTS													
			50B 64 Mi	ILL LAKE R	OIL HYDROC OAD, HUBBAI	ARBUN RES RDS. NOVA (SULIS						
Sample	Sample	Sample		BTEX Conce	entration (ppm)			Petroleum I	Hydrocarbons (ppr	n)			
Location	Date	Depth (m)	Benzene Toluene E. Benzene Xylenes C6 - C10 C10 - C21 C21 - C32					Tota	1				
770.0/2	T 1 20/02	1015	100										
IP 8/3	July 28/03	1.0-1.5	ND	ND		ND	ND	ND	ND				
TP 9/5	July 28/03	2.5-3.0	ND	ND	ND	ND	ND	ND	ND	ND	-		
TP 10/5	July 28/03	2.0-2.5	ND	ND	ND	ND	ND	ND	ND	ND	-		
TP 11/5	July 28/03	2.0-2.5	ND	ND	0.383	2.44	209	260	21	490*	G,F		
Lab Dup	July 28/03	2.0-2.5	ND	ND	0.302	2.10	181	250	20	450*	G,F		
Dup C (F/D)	July 28/03	2.0-2.5	ND	ND	0.048	0.346	67.6	200	20	290*	G,F		
TPH Frac	July 28/03	2.0-2.5	ND	ND	0.357	2.72	105.6	274.3	ND	380*	G,F		
TPH Frac (L/D)	July 28/03	2.0-2.5	ND	ND	0.296	2.30	97.3	273.8	ND	371*	G,F		
ST Base	July 28/03	3.0	ND	ND	ND	ND	ND	19	30	49**	F.L		
Atlantic PIRI Tier I C	riteria	<u>.</u>				,	I		A	<u> </u>			
				[Î	Gasoline		80*	t		
Commercial, Potable,	Sand		0.01	0.10	0.02	2.4		Fuel Oil		185*	2 1 4		
Subsurface (>1.0 m)								#6 Oil		10000	***		
								Gasoline		45*	:		
Residential, Potable, 2	Sand		0.01	0.10	0.02	2.4		Fuel Oil		110*	:#r		
Subsurface (>1.0 m)			I				<u> </u>	#6 Oil	1	840**	**		
Estimated Quantitation	n Limit		0.025	0.025	0.025	0.050	2.5	15	15	32			
ND - Not detected			ND (0.2) - Analy	te was not detecte	ed above the EQL; r	aised EQL listed i	in parenthesis.						
F - Resembles Gason	11C		TP - Test Pit	1 ¹ 4									
L - Resembles Lube C	r - Resembles Fuel Oil F/D - Field Duplicate												
Bold - Exceeds Atlantic PIRI Tier I Guidelines (commercial, potable, sand)													
R	- Compared to Re	esidential Criteria	(based on adjacent	land use)									
	T Evanda Basida	ntial Critaria (haa	d on adjacent land	huan)									
Note: For the purpose	of comparison to	annlicable onideli	the criteria, the Mov	dified TPH hydro	carbon range assum	ed to be most							
specific to each sample	voie: For the purpose of comparison to applicable guideline criteria, the Modified 1PH hydrocarbon range assumed to be most												
1 · · · · · · · · · · · · · · · · · · ·					see								

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TABLE 4-3 (CONT'D)										
	SUI	BSURFACE S	OIL HYDROC	ARBON RES	SULTS					
	64 M	ILL LAKE R	OAD, HUBBA	RDS, NOVA	SCOTIA					
Sample Sample Sample		BTEX Conce	entration (ppm)			Petroleum 1	Hydrocarbons (ppr	n)		
Location Date Depth (m)	Benzene	Toluene	E. Benzene	Xylenes	C6 - C10	C10 - C21	C21 - C32	Tota	1	
ST S-Wall July 28/03 1.0-3.0	ND	ND	ND	ND	ND	ND	ND	ND	-	
ST E-Wall July 28/03 1.0-3.0	ND	ND	ND	ND	21.2	1100	280	1400*	G,F	
TP 12/6 July 31/03 2.0-2.5	ND	ND	ND	ND	ND	ND	ND	ND		
TP13/5 ® July 31/03 2.0-3.0	ND	ND	ND	ND	ND	ND	ND	ND	-	
TP 14/3 ® July 31/03 1.0-2.0	ND	ND	ND	ND	ND	ND	ND	ND	-	
TP15/6 ® July 31/03 2.5-3.5	ND	ND	ND	ND	ND	ND	ND	ND	-	
Atlantic PIRI Tier I Criteria			ND	ND	ND	ND	ND	ND	-	
Commercial Potable Sand	0.01					Gasoline		80*		
Subsurface (>1.0 m)	10.0	0.10	0.02	2.4		Fuel Oil		185*	*	
		<u> </u>				#6 Oil		10000*	**	
Residential, Potable, Sand	0.01	0.10				Gasoline		45*		
Subsurface (>1.0 m)	0.01	0.10	0.02	2.4		Fuel Oil		110*	*	
Estimated Quantitation Limit	0.025	0.025	0.025	0.050	25	#6 Oil	15	840**	*	
ND - Not detected	ND (0.2) - Analy	te was not detected	above the FOL : ra	ised EQL listed in		1.0	15	32		
G - Resembles Gasoline	TP - Test Pit		1 40010 ale LQL, 14	ised EQL listed i	n parendiesis.					
F - Resembles Fuel Oil	F/D - Field Dupl	icate								
L - Resembles Lube Oil L/D - Lab Duplicate										
Bold - Exceeds Atlantic PIRI Tier I Guidelines (commercial, potable, sand)										
 Compared to Residential Criteri 	a (based on adjacent	land use)								
- Exceeds Residential Criteria (based on adjacent landuse)										
Note: For the purpose of comparison to applicable guideline criteria, the Modified TPH hydrocarbon range assumed to be most										
specific to each sample result was based on laboratory re	semblance data and	Atlantic PIRI Refe	rence Documentatio	on (April 1999).						

TABLE 4-3 (CONT'D) SUBSURFACE SOIL HYDROCARBON RESULTS 64 MILL LAKE ROAD, HUBBARDS, NOVA SCOTIA											
Sample	Sample	Sample		BTEX Conce	entration (ppm)			Petroleum I	Hydrocarbons (ppn	1)	
Location	Date	Depth (m)	Benzene	Toluene	E. Benzene	Xylenes	C6 - C10	C10 - C21	C21 - C32	Total	
TP 16/4 ®	July 31/03	2.0-2.5	ND	ND	ND	ND	ND	ND	ND	ND	
TP17/6	Aug 1/03	3.0-3.2	ND	ND	ND	ND	ND	ND	ND	ND	
TP18/5	Aug 1/03	2.75-3.0	ND	ND	ND	ND	ND	ND	ND	ND	-
TP19/5	Aug 1/03	2.0-2.5	ND	ND	ND	ND	ND	ND	ND	ND	-
TP20/6 Dup E (F/D) Atlantic PIRI Tier I C	Lab Dup Aug 1/03 2.0-2.5 ND - TP20/6 Aug 1/03 2.5-3.5 ND ND ND ND ND ND ND - -										
Commercial, Potable, Subsurface (>1.0 m)	Sand		0.01	0.10	0.02	2.4	Gasoline Fuel Oil #6 Oil			80* 185* 10000*	*
Residential, Potable, S Subsurface (>1.0 m)	and		0.01	0.10	0.02	2.4		Gasoline Fuel Oil #6 Oil		45* 110* 840**	*
Estimated Quantitation	n Limit		0.025	0.025	0.025	0.050	2.5	15	15	32	
ND - Not detected G - Resembles Gasoli F - Resembles Fuel O L - Resembles Lube C	VD - Not detected ND (0.2) - Analyte was not detected above the EQL; raised EQL listed in parenthesis. J - Resembles Gasoline TP - Test Pit 7 - Resembles Fuel Oil F/D - Field Duplicate L - Resembles Lube Oil L/D - Lab Duplicate										
Compared to Residential Criteria (based on adjacent land use) Exceeds Residential Criteria (based on adjacent landuse) Note: For the purpose of comparison to applicable guideline criteria, the Modified TPH hydrocarbon range assumed to be most											
specific to each sampl	e result was based	on laboratory rese	mblance data and	Atlantic PIRI Ref	erence Documentat	ion (April 1999).					

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TABLE 4-4 SOIL FRACTION ATION DESULTS											
	64 MILL LAKE ROAD, HUBBARDS, NOVA SCOTIA										
Paramatar	Linita	EOI	TIDD IX	THE IS	(T) (2)						
i diameter	Outs	EQL	TIER I*	(aubourfree)	1P2/3	1711/5	TP11/5				
			(surface)	(subsurface)	1.0-1.5m	2.0-2.5 m	2.0-2.5 m				
		<u> </u>			July 28/03	July 20/03					
Aromatics	× .					:					
>C8-C10	ppm	0.1	-	-	41.4	7.1	69				
>C10-C12	ppm	4.0	-	-	569	20.8	28.2				
>C12-C16	ppm	15.0	-	-	1400	41.9	50				
>C16-C21	ppm	15.0	-	-	1120	38	40.4				
>C21-C32	ppm	15.0	-	-	224	ND	ND				
Aliphatics											
>C6-C8	ppm	0.1	-	-	10.6	43.4	36				
>C8-C10	ppm	0.4	-	-	330	55.1	54.4				
>C10-C12	ppm	8.0	-	-	480	46.4	42.4				
>C12-C16	ppm	15.0	-	-	649	79.3	70.4				
>C16-C21	ppm	15.0	-	-	654	47.9	42.4				
>C21-C32	ppm	15.0	-	-	226	ND	ND				
Modified TPH - Tier II	ppm	103	**	***	5710	380	371				
Benzene	ppm	0.025	0.01	0.01			- JT				
Toluene	ppm ppm	0.025	0.10	0.10	0.055						
Ethylbenzene	ppm	0.025	0.02	0.02	2.14	0.357	0.296				
Xylenes	ppm	0.050	2.4	2.4	11.0	2.72	2.30				
Resemblance	-	-	-	-	F	G, F	G, F				

ND - Not detected

G - Resembles Gasoline

F - Resembles Fuel Oil

L - Resembles Lube Oil

Bold

- Exceeds Atlantic PIRI Tier I Guidelines (commercial, potable, sand)

* Atlantic PIRI Tier I Criteria (commercial, potable, sand)

** Modified TPH - Tier I (surface <1.0 m) Gasoline = 80ppm, Fuel Oil = 185ppm, #6 Oil = 2,800ppm

*** Modified TPH - Tier I (subsurface >1.0 m) Gasoline = 80ppm, Fuel Oil = 185ppm, #6 Oil = 10,000ppm

Note: For the purpose of comparison to applicable guideline criteria, the Modified TPH hydrocarbon range assumed to be most

specific to each sample result was based on laboratory resemblance data and Atlantic PIRI Reference Documentation (April 1999).

SOIL PAH RESULTS									
		64 M	ILL LAKE RO	OAD, HUBBA	RDS, NOVA	SCOTIA			
		<u> </u>	<u> </u>	TP 2/3	TP 3/6	TP 3/6	TP15/1	TP15/1	TP16/2
Daramater	Unite	FOI	COME	(1.0-1.5)	(25-30m)	(25-30m)	(0.0.06)	(00.06)	(0.4.1.0)
* 44 (11)(10)	01813	242	Criteria*	July 28/03	July 28/03	Lab Dup	July 31/03	Lab Dup	July 31/03
Naphthalene	ppm	0.05	22	23	ND	ND	ND	ND	ND
2-Methylnaphthalene	ppm	0.05	-	56	ND	ND	ND	ND	ND
1-Methyinaphthalene	ppm	0.05	- 1	37	ND	ND	ND	ND	ND
Acenaphthylene	ppm	0.05	-	ND	ND	ND	ND	ND	ND
Acenaphthene	ppm	0.05	•	3.0	ND	ND	ND	ND	ND
Fluorene	ppm	0.05	-	6.7	ND	ND	ND	ND	ND
Phenathrene	ppm	0.05	50	13	ND	ND	ND	ND	ND
Anthracene	ppm	0.05	-	0.61	ND	ND	ND	ND	ND
Fluoranthene	ppm	0.05	-	0.32	ND	ND	ND	ND	ND
Pyrene	ppm	0.05	100	0.58	ND	ND	ND	ND	ND
Benz(a)anthracene	ppm	0.05	10	0.08	ND	ND	ND	ND	ND
Chrysene	ppm	0.05	-	0.13	ND	ND	ND	ND	ND
Benzo(b)flouranthene	ppm	0,05	10	0.07	ND	ND	ND	ND	ND
Benzo(k)flouranthene	ppm	0.05	10	0.07	ND	ND	ND	ND	ND
Benzo(a)pyrene	ppm	0.05	0.7	0.08	ND	ND	ND	ND	ND
Perylene	ppm	0.05	-	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ppm	0.05	10	ND	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	ppm	0.05	10	ND	ND	ND	ND	ND	ND
Benzo(ghi)perylene	ppm	0,05	-	ND	ND	ND	ND	ND	ND

TABLE 4-5

- Not specified

Γ

ND - Not detected

* CCME Canadian Soil Quality Guidelines, 1999 (commercial land use)

Bold - Exceeds CCME Canadian Soil Quality Guideline, 1999 (commercial land use)

TABLE 4-6											
		SOIL M	1ETALS RES	ULTS							
	64 MIL	L LAKE ROA	D, HUBBAR	DS, NOVA SC	OTIA						
				,							
				TP 2/3	TP 3/6	TP 3/6					
Parameter	Units	EQL	CCME	(1.0-1.5 m)	(2.5-3.0 m)	(2.5-3.0 m)					
			Criteria*	July 28/03	July 28/03	Lab Dup					
Aluminum	mg/kg	10	-	9500	4300	3700					
Antimony	mg/kg	2	- 1	ND	ND	ND					
Arsenic	mg/kg	2	12	5	7	5					
Barium mg/kg 5 2000 24 11 9											
Beryllium mg/kg 2 - ND ND ND											
Boron mg/kg 5 - ND ND ND											
Cadmium mg/kg 0.3 22 ND ND ND											
Chromium mg/kg 2 87 6 4 3											
Cobalt	mg/kg	1	-	2	1	1					
Copper	mg/kg	2	91	6	5	4					
Iron	mg/kg	50	-	7100	4600	4000					
Lead	mg/kg	0.5	260	12	5.1	3.8					
Manganese	mg/kg	2	-	150	100	81					
Molybdenum	mg/kg	2	-	ND	ND	ND					
Nickel	mg/kg	2	50	5	3	2					
Selenium	mg/kg	2	-	ND	ND	ND					
Silver	mg/kg	0.5	-	ND	ND	ND					
Strontium	mg/kg	5	-	ND	ND	ND					
Thallium	mg/kg	0.1	1	0.1	ND	ND					
Uranium	mg/kg	0.1	-	0.8	1.2	0.9					
Vanadium	mg/kg	2	130	9	6	5					
Zinc mg/kg 5 360 30 61 53											
Guideline not established											
D - Not detected											
CCME Canadian Soil Quality Guidelines, 1999 (commercial land use)											
Bold - Exceeds	CCME Canadia	n Soil Quality Gui	deline, 1999 (comr	nercial land use)							

Fraction of Organic Carbon Analysis

Four (4) soil samples were submitted for organic carbon analysis, TP 8/4 (1.5-2.0 m), TP 8/7 (3.0-3.75 m), TP 20/4 (1.0-1.5 m) and TP 20/6 (2.5-3.5 m). The reported results for fraction of organic carbon were 2.9 g/kg for TP 8/4, 0.3 g/kg for TP 8/7, 1.1 g/kg for TP 20/4 and below the laboratory equipment detection limit for TP 20/6. Laboratory Certificates of Analysis are presented in Appendix VII.

4.5 Groundwater Quality

Petroleum Hydrocarbon Analysis (BTEX/TPH)

Groundwater samples were collected from six (6) monitor wells (MW1-MW6) on August 15th, 2003. The results of analytical testing did not identify any benzene, toluene or xylene concentrations which exceeded the Atlantic PIRI Tier I criteria. The ethyl benzene concentration of 0.005 mg/L in MW5 exceeded the Tier I criteria of 0.0024 mg/L. The Modified TPH concentration of 16.1 mg/L in MW6 exceeded the Tier I criteria of 1.8 mg/L for fuel oil. All remaining Modified TPH concentrations were below the applicable Tier I criteria and ranged from below laboratory equipment detection limits in MW1, MW2, MW3, MW4 and Dup F (field duplicate of MW4) to 0.3 mg/L in MW5. Analytical groundwater results are provided in Table 4-7. Laboratory certificates are included in Appendix VII.

TPH Fractionation Analysis

One (1) groundwater sample, MW6 was submitted for TPH fractionation analysis. The results of analytical testing, discussed in the previous section, are presented in Table 4-8. Laboratory Certificates of Analysis are presented in Appendix VII.

	TABLE 4-7 GROUNDWATER HYDROCARBON RESULTS									
			64 MILL	LAKE ROAD	, HUBBARDS	, NOVA SCO	TIA			
Sample	Sample		BTEX Conce	ntration (ppm)	· ·	ľ	Datus I			
Location	Date	Benzene	Toluene	E. Benzene	Xvlenes	C6 - C10	C10 - C21	C21 - C32	n) Total	
MW1	Aug 15/03	ND	ND	ND	ND	ND	ND	ND	ND	-
MW2	Aug 15/03	ND	ND	ND	ND	ND	ND	ND	ND	_
MW3	Aug 15/03	ND	ND	ND	ND	ND	0.05	ND	ND	F
MW4 Dup F (F/D)	Aug 15/03 Aug 15/03	ND ND	ND ND	ND ND	ND ND	ND ND	ND ND	ND ND	ND ND	-
MW5 Lab Dup	Aug 15/03 Aug 15/03	ND ND	ND ND	0.005 0.005	0.008 0.008	0.07 0.07	0.22	ND ND	0.3** 0.3**	F
MW6 Lab Dup	Aug 15/03 Aug 15/03	ND ND	ND ND	ND ND	0.006 0.006	0.2 0.17	15.04 17.18	0.85	16.1** 18.4**	F
Atlantic PIRI Tier Commercial, Potable, Sand	I Criteria	0.005	0.024	0.0024	0.30		Gasoline Fuel Oil #6 Oil	L	2.8* 1.8** 8.4***	• ••••
Estimated Quantit	mated Quantitation Limit 0.001 0.001 0.001 0.002 0.01 0.05 0.1 0.2									

ND - Not detected

F/D - Field duplicate

G - Resembles Gasoline

F - Resembles Fuel Oil

L - Resembles Lube Oil

Bold - Exceeds Atlantic PIRI Tier I Guidelines (commercial, potable, sand)

Note: For the purpose of comparison to applicable guideline criteria, the Modified TPH hydrocarbon range assumed to be most

specific to each sample result was based on laboratory resemblance data and Atlantic PIRI Reference Documentation (April 1999).

TABLE 4-8 GROUNDWATER FRACTIONATION RESULTS 64 MILL LAKE ROAD, HUBBARDS, NOVA SCOTIA									
Parameter	Units	EQL	TIER I*	MW6 Aug 15/03	MW6 Lab Dup				
Aromatics									
>C8-C10	mg/L	0.01	-	0.12	0.11				
>C10-C12	mg/L	0.01	-	1.05	1.16				
>C12-C16	mg/L	0.05		3.44	4.10				
>C16-C21	mg/L	0.05	_	1.90	2.34				
>C21-C32	mg/L	0.10	-	0.46	0.59				
Aliphatics									
>C6-C8	mg/L	0.01	-	0.02	0.02				
>C8-C10	mg/L	0.01	- 1	0.06	0.04				
>C10-C12	mg/L	0.01	-	1.72	1.87				
>C12-C16	mg/L	0.05	-	4.92	5.51				
>C16-C21	mg/L	0.05		2.01	2.20				
>C21-C32	mg/L	0.10	-	0.39	0.46				
Modified TPH - Tier I	mg/L	0.45	**	16.1	18.4				
Benzene	mg/L	0.001	0.005	ND	ND				
Toluene	mg/L	0.001	0.024	ND	ND				
Ethylbenzene	mg/L	0.001	0.0024	ND	ND				
Xylenes	mg/L	0.002	0.30	0.006	0.006				
Resemblance		-	-	F	F				
ND - Not detected		and a second a second secon							

F - Resembles Fuel Oil

G - Resembles Gasoline

Bold

L - Resembles Lube Oil

- Exceeds Atlantic PIRI Tier I Guidelines (commercial, potable, sand)

* Atlantic PIRI Tier I Criteria (commercial, potable, sand)

** Modified TPH - Gas = 2.8ppm, Diesel /#2 = 1.8ppm, #6 Oil = 8.4ppm

4.6 QA/QC Results

Field and laboratory duplicate samples were analyzed as part of the soil and groundwater analytical program which included BTEX/TPH, TPH fractionation, PAH and available metals analysis. With the exception of the ethyl benzene and xylene concentrations reported for the field duplicate soil sample (Dup C), the analytical soil and groundwater results from this assessment were within the acceptable tolerance of 50% (based on laboratory duplicate tolerances adopted by PSC Analytical Services). It should be noted that the field duplicate (Dup C) of the soil sample collected from TP 11/5 (2.0-2.5 m) had a ethyl benzene concentration of 0.048 mg/kg and a xylene concentration of 0.346 mg/kg and the original sample had a toluene concentration reported for Dup C was below applicable Tier I criteria whereas the xylene concentration from the original sample (TP 11/5 (2.0-2.5 m)) was in excess of the applicable Tier I guidelines.

Soil samples are not homogenized as standard protocol, either in the field during collection or within the laboratory. As such, duplicate samples can often indicate different results from the original, depending on soil consistency, grain size, moisture content, etc. Such is the case with Dup C. The ethyl benzene and xylene concentrations detected in the original sample is greater than seven (7) times the concentration of the field duplicate sample. The discrepancy between the two samples is most likely attributable to field collection techniques and/or laboratory extraction methods.

4.7 Ecological Receptors

The results of an ecological receptor screening did not identify a habitat of potential concern within 150 m of the property. The results of the ecological receptors checklist is included in Appendix VI.

5.0 CONCLUSION

The subject site is a former Imperial Oil Limited Bulk Plant property, located at 64 Mill Lake Road in Hubbards, Nova Scotia. The property is currently vacant. The property, under Atlantic PIRI criteria, is classified as a commercial property with potable groundwater usage with sandy soil conditions.

Between July 24th and August 15th, 2003, a Phase II Environmental Site Assessment was conducted by Dillon personnel. The assessment consisted of:

- the installation of twenty (20) test pits;
- the recovery of soil samples;
- the installation of six (6) boreholes, all of which were completed as monitor wells; and
- the recovery of groundwater samples from the monitor wells.

Seventeen (17) surface soil samples, including one (1) field duplicate, were submitted for petroleum hydrocarbon analysis. Two (2) samples identified toluene concentrations, three (3) samples identified ethyl benzene, two (2) samples identified xylene, and six (6) samples identified Modified TPH concentrations exceeding Atlantic PIRI Tier I criteria. None of the surface soil samples identified benzene concentrations in excess of the applicable Tier I criteria. Twenty-nine (29) subsurface soil samples were submitted for petroleum hydrocarbon analysis, including four (4) field duplicates. Neither of the subsurface soil samples identified benzene or toluene concentrations in excess of the applicable Tier I criteria, six (6) samples identified xylene, and nine (9) samples identified Modified TPH concentrations in excess of Atlantic PIRI Tier I criteria.

Results of soil sample PAH analysis, undertaken on four (4) samples, indicated one (1) naphthalene concentration in excess of CCME commercial criteria.

Results of soil sample metals analysis, undertaken on two (2) samples, and lead only analysis, undertaken on two (2) samples, indicated no exceedances of CCME commercial criteria.

The presence of petroleum hydrocarbons in groundwater was detected in three (3) of the six (6) groundwater monitor wells. The ethyl benzene concentration in one (1) sample and the Modified TPH in one (1) sample exceeded the applicable Atlantic PIRI Tier I criteria. Analytical results indicated that all remaining reported BTEX and Modified TPH concentrations were within the Tier I criteria. Non-aqueous phase liquid (NAPL) was not detected in any of the monitor wells.

Results of the ecological receptor screening did not identify a habitat of potential concern within 150 m of the property.

6.0 STATEMENT OF LIMITATIONS

This report has been prepared and the work referred to in this report has been undertaken by Dillon Consulting Limited for Imperial Oil Limited. It is intended for the sole and exclusive use of Imperial Oil Limited, its affiliated companies and partners and their respective (insurers), agents, employees and advisors (collectively, "Imperial Oil"). Any use, reliance on or decision made by any person other than Imperial Oil and Dillon Consulting Limited make no representation or warranty to any other person with regard to this report and the work referred to in this report and they accept no duty of care to any other person or any liability or responsibility whatsoever for any losses, expenses, damages, fines, penalties or other harm that may be suffered or incurred by any other person as a result of the use of, reliance on, any decision made or any action taken based on this report or the work referred to in this report.

The investigation undertaken by Dillon Consulting Limited with respect to this report and any conclusions or recommendations made in this report reflect Dillon Consulting Limited's judgement based on the site conditions observed at the time of the site inspection on the date(s) set out in this report. This report has been prepared for specific application to this site and it is based, in part, upon visual observation of the site, subsurface investigation at discrete locations and depths, and specific time interval, all as described in this report. Unless otherwise stated, the findings cannot be extended to previous or future site conditions, portions of the site which were unavailable for direct investigation, subsurface locations which were not investigated directly, or chemical parameters, materials or analysis which were not addressed. Substances other than those addressed by the investigation may exist in areas of the site not investigated and concentrations of substances addressed which are different that those reported may exist in areas other that the locations form which samples were taken.

If site conditions or applicable standards change or if any additional information becomes available at a future date, modifications to the findings, conclusions and recommendations in this report may be necessary.

Other than by Imperial Oil, copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted without the express written permission of Dillon Consulting Limited. Nothing in this report is intended to constitute or provide a legal opinion.

Appendix I Site Photographs

SITE PHOTOGRAPHS



Photo 1. Catch basin (inverted) from former loading rack.



Photo 3. Concrete manhole which was previously placed at inlet to o/w separator encountered lving on its side.



Photo 2. Breaking concrete in area of former loading rack.



Photo 4. Concrete septic tank access in foreground with pumping chamber access in background.

SITE PHOTOGRAPHS



Photo 5. Removing concrete chamber for pumping of septic liquids to septic field.



Photo 7. Drilling monitoring well MW6 at former loading rack.



Photo 6. Discharge pipe from former o/w separator.



Photo 8. View of monitoring wells MW5 & MW4 (background) as well as adjacent residential property to the east

Appendix II

Test Pit, Borehole/Monitor Well Logs



Log of Test Pit: TP1 Project No.: 03-2088-0200

Project: Phase II ESA

Dillon Consulting Limited Halifax, Nova Scotia

Client: Imperial Oil Limited

Location: 64 Mill Lake Rd., Hubbards, NS Supervisor: Todd Baker

Date: July 28, 2003

		SUBSURFACE PROFILE			S	AMPLE
Depth (m)	Symbol	Description	Elevation	Sample #	Gastech ppm	Comments
		Ground Surface	0.00			
0.0-		Sand and Gravel		1	75	
1 0-		Red brown sand and gravel, some organics, damp and compact.		2	100	
1.0-			-1.20	3	150	
-		Sand and Gravel Red brown sand and gravel, some organics, intermixed with clear stone, wet and compact,	-1.40	4	100	
2.0-		Sand and Gravel Red brown sand and gravel, scattered cobbles,		5	110	
2.0		abundant bouiders, debris, compact and damp.	-2.30	6	200	
-		Silty Sand Black silty sand, some gravel and organics, damp,		-		
		Diack sity sund, some graver and ergames, amp	-2.90			
3.0-		<i>Silty Organics</i> Black silty organics, possible original ground surface.		7	175	
	. ≛_≛_ 		-3.90			
4.0-		Sand and Gravel		8	100	
		Light brown sand and gravel, occasional coddle, wet and compact.	-4.30	9	100	
-	Excava	ation Contractor: R. Fraser Construction				L

Excavation Method: Excavator



Dillon Consulting Limited Halifax, Nova Scotia

Log of Test Pit: TP2
Project No.: 03-2088-0200

Project: Phase II ESA

Client: Imperial Oil Limited

Date: July 29, 2003

Location: 64 Mill Lake Rd., Hubbards, NS

Supervisor: Todd Baker

		SUBSURFACE PROFILE			S	AMPLE			
Depth (m)	Symbol	Description	Elevation	Sample #	Gastech ppm	Comments			
0.0-		Ground Surface	0.00						
-				1	3%				
1.0-		Sand and Gravel Dark brown sand and gravel, damp to moist, compact. Petroleum hydroleum staining on surface.		2	375				
			-1.50	3	6%				
2.0-		<i>Silty Sand</i> Black silty sand, intermixed with orange brown silty sand, some gravel, trace clay, moist.	-2.00	4	200				
				5	75				
3.0-		Yellowish brown to grey brown sand and silt, some gravel, trace clay, scattered cobbles and occasional boulder. Water infiltration at 3.2 metres.	-3.50	6	60				
4.0-		Sandy Silt Light brown sandy silt with gravel, occasional boulder.	-4.00	7	50				
E	Excavation Contractor: R. Fraser Construction								

Excavation Method: Excavator

	•••	DILLON	Log of Test Pit: TP3 Project No.: 03-2088-0200 Project: Phase II ESA							
	Dillo H	on Consulting Limited	Client: Imperial Oil Limited			Date: Ju	uly 29, 2003			
			Location: 64 Mill Lake Rd.,	, Hubbard	s, NS	Superv	isor: Todd Baker			
	1 1	SUBSURFAC		.		S				
Depth (m)	Symbol	Desc	ription	Elevation	Sample #	Sample # Gastech ppm Comments				
0.0-			Ground Surface	0.00			-			
_		<i>Silty Sand</i> Dark brown silty sand and g	<i>and Gravel</i> gravel, scattered cobbles,		1	275				
1.0-		organics.		-1.00	2	250				
-		Siltv Sand	and Gravel		3	175				
2.0-		Dark brown silty sand and g organics thoughout, intermi sand and gravel.	ravel, scattered cobbles, xed with light brown silty		4	150				
				-2.50	5	200				
3.0-		Silty Sand Yellowish brown silty sand a cobbles, moist.	and Gravel and gravel, scattered	-3.00	6	150				
	3.0 Sand and Silt Light reddish brown sand and silt, some gravel, trace clay, scattered cobbles, wet and compact. Water infiltration at 3.0 metres.									
4.0-										
E	Excavation Contractor: R. Fraser Construction Excavation Method: Excavator Checked by: GTB									



Log of Test Pit: TP4 Project No.: 03-2088-0200

Project: Phase II ESA

Dillon Consulting Limited Halifax, Nova Scotia

Client: Imperial Oil Limited

Date: July 29, 2003

Location: 64 Mill Lake Rd., Hubbards, NS Supervisor: Todd Baker

	SUBSURFACE PROFILE			SAMPLE		
Depth (m)	Symbol	Description	Elevation	Sample #	Gastech ppm	Comments
0.0-		Ground Surface	0.00			
	•	Sand and Gravel Sand and gravel intermixed with dark brown clayey silt, stiff and damp.	-0.30	1	100	
-		Silty Sand and Gravel Light brown silty sand and gravel, scattered cobbles, occasional boulder, moist.	-1.00	2	70	
1.0		Silty Sand and Gravel Dark brown silty sand and gravel, scattered cobbles, wet and soft.	-1.50	3	100	
20-		<i>Silty Sand</i> Black silty sand, some gravel, trace clay, roots throughout, soft and wet.	-2.00	4	400	
2.0		<i>Silty Sand and Gravel</i> Light brown silty sand and gravel, scattered cobbles, occasional boulder, moist.	-3.00	5	120	
5.0-		Sand and Silt Light reddish brown sand and silt, some gravel, trace clay, scattered cobbles, wet and stiff. Water infiltration at 3.0 metres	-3.75	6	50	
4.0- -	xcava	tion Contractor: R Fraser Construction				

Excavation Method: Excavator

	Ĩ		Log Project No.: 03-2088-0200	of Te	est F	Pit: TF	25
	Dill		Project: Phase II ESA				
		Halifax, Nova Scotia	Client: Imperial Oil Limited			Date: J	luly 29, 2003
			Location: 64 Mill Lake Rd.	, Hubbard	ls, NS	Superv	/isor: Todd Baker
	1	SUBSURFAC	E PROFILE	T	ļ		SAMPLE
Depth (m)	Symbol	Desci	iption	Elevation	Sample #	Gastech ppm	Comments
0.0-			Ground Surface	0.00			-
-		<i>Silty Sand</i> Dark brown silty sand and g damp and compact.	and Gravel ravel, scattered cobbles,		1	100	
				-0.75	2	10%	
1 0-					-	1070	
2.0-		Silty Sand a Grey brown silty sand and gr seepage at 2.6 metres, shee	and Gravel avel, moist to wet. Water n on side of test pit.		3	250	
3.0				-3.00	4	45%	
5.0		Sand ar Light reddish brown sand and clay, scattered cobbles, stiff.	n d Silt I silt, some gravel, trace	-3.75	5	40	
40							
-							
Ex	cavat	tion Contractor: R. Fraser Con	nstruction				
Ex	cavat	ion Method: Excavator	Checked by: GT	ГВ			



Log of Test Pit: TP6 Project No.: 03-2088-0200

Project: Phase II ESA Dillon Consulting Limited

Halifax, Nova Scotia

Client: Imperial Oil Limited

Date: July 29, 2003

Location: 64 Mill Lake Rd., Hubbards, NS Supervisor: Todd Baker

SAMPLE

	SUBSURFACE PROFILE				SAMPLE		
Depth (m)	Symbol	Description	Elevation	Sample #	Gastech ppm	Comments	
0.0-		Ground Surface	0.00				
		Silty Sand and Gravel Dark brown and orange brown silty sand and gravel, black silty organics at 0.6 to 1.0 metres, damp and		1	100		
1.0-		compact. Concrete debris.	-1.00	2	125		
		Silty Sand Light brown silty sand, some gravel, trace clay, scattered cobbles, occasional boulder, moist to wet, minimal water seepage at 2.0 metres.		3	120		
2.0-			-2.00	4	50		
		Sand and Silt Red brown sand and silt, some gravel, trace clay, scattered cobbles, wet at 3.0 metres, water seepage at		5	75		
3.0-				6	50		
-		o.o meneo, ann.	-3.75		-		
4.0-							
E	xcava	tion Contractor: R. Fraser Construction		I	t.		

Excavation Method: Excavator

	``		Log Project No.: 03-2088-0200	of Te	st P	it: TP	7
			Project: Phase II ESA				
	Dille	on Consulting Limited	Client: Imperial Oil Limited	Client: Imperial Oil Limited Date:			uly 29, 2003
	Г	alliax, Nova Scolla	Location: 64 Mill Lake Rd.,	Hubbard	s, NS	Superv	isor: Todd Baker
		SUBSURFAC	CE PROFILE			S	AMPLE
Depth (m)	Description				Sample #	Gastech ppm	Comments
0.0-		0:14-1	Ground Surface	0.00			
		Light brown silty sand, som damp and compact.	-0.50	1	60		
	<i>Silty Sand</i> Light brown silty sand, some gravel, scattered cobbles, intermixed with clear stone, damp; compact.				2	75	
1.0-	Silty Sand						
-	Silty Sand Orange brown silty sand, black organics throughout. Silty Sand Light brown silty sand, some gravel, trace clay, water flowing in from adjacent tank pit. Abandoned test pit at 2.0 metres.			-2.00	3	100	
3.0-							
4.0-							
E	ixcava ixcava	ation Contractor: R. Fraser C ation Method: Excavator	onstruction Checked by: G	тв			



Log of Test Pit: TP8 Project No.: 03-2088-0200

Project: Phase II ESA

Dillon Consulting Limited Halifax, Nova Scotia

Client: Imperial Oil Limited

Date: July 30, 2003

Location: 64 Mill Lake Rd., Hubbards, NS Supervisor: Todd Baker

	SUBSURFACE PROFILE				SAMPLE		
Depth (m)	Symbol	Description	Elevation	Sample #	Gastech ppm	Comments	
0.0-		Ground Surface	0.00				
0.0		Sandy Gravel Dark brown sandy gravel, compact and damp.	-0.20	1	75		
-	•	Light brown silty sand and gravel, scattered cobbles, occasional boulder, compact and damp.	-1.00	2	125		
1.0-		Silty Sand and Gravel Dark brown and black silty sand and gravel, damp.	-1.30	_	005		
-		Silty Sand	-1.50	3	225		
		compact.		4	100		
2.0-		<i>Silty Sand</i> Light brown silty sand, some gravel, trace clay, occasional cobble and boulder, moist at 2.0 metres.		5	60		
			-2.75	6	60		
3.0-		<i>Sand and Silt</i> Red bown sand and silt, some gravel, trace clay, occasional cobble and boulder, stiff and wet.	-3.75	7	60		
4.0							
		tion Contractory D. Encode Construction					

Excavation Contractor: R. Fraser Construction

Excavation Method: Excavator



Log of Test Pit: TP9 Project No.: 03-2088-0200

Project: Phase II ESA

Dillon Consulting Limited Halifax, Nova Scotia

Client: Imperial Oil Limited

Date: July 30, 2003

Location: 64 Mill Lake Rd., Hubbards, NS Supervisor: Todd Baker

	SUBSURFACE PROFILE					SAMPLE		
Depth (m)	Symbol	Description	Elevation	Sample #	Gastech ppm	Comments		
		Ground Surface	0.00					
		Silty Sand and Gravel Red brown silty sand and gravel, damp, compact.	-0.50	1	7%			
1.0-		<i>Silty Sand</i> Dark brown and black silty sand, some gravel, organics throughout, stiff and damp.	-1.00	2	275			
		Silty Sand and Gravel Orange brown to yellow brown silty sand and gravel, scattered cobbles and boulders. Water flowing in from tank pit.	-1.50	3	125			
2.0-		<i>Silty Sand</i> Red brown silty sand, some gravel, trace clay, abandoned tank pit sides sloughing badly, water ponding at 1.8 metres.		4	75			
3.0-			-3.00	5	75			
4.0-								
E	xcava	ation Contractor: R. Fraser Construction		_				
E	xcava	ntion Method: Excavator Checked by: G	тв					
1						1		



Log of Test Pit: TP10 Project No.: 03-2088-0200

Project: Phase II ESA

Dillon Consulting Limited Halifax, Nova Scotia

Client: Imperial Oil Limited

- Date: July 30, 2003

Location: 64 Mill Lake Rd., Hubbards, NS Supervisor: Todd Baker

	SUBSURFACE PROFILE				SAMPLE		
Depth (m)	Symbol	Description	Elevation	Sample #	Gastech ppm	Comments	
0.0-		Ground Surface	0.00				
		Sand and Gravel Grey brown sand and gravel, compact and damp.	-0.30	. 1	100		
-		<i>Silty Sand and Gravel</i> Dark brown silty sand and gravel, scattered cobbles, occasional boulder, damp to moist, compact. Drainage pipe at 0.7 metres.	-1.00	2	120		
-		<i>Silty Sand</i> Orange brown silty sand, some gravel, trace clay,		3	120		
2.0-		scattered cobbles and boulders, compact.		4	120		
		Silty Sand and Gravel Grey brown silty sand and gravel, scattered cobbles		5	140		
3.0-		and boulders, compact and wet. Water seepage at 2.6 metres.		6	100		
0.0		Sand and Silt Red brown sand and silt, some gravel, trace clay, scattered cobbles and boulders, stiff and moist.	-3.50		-		
4.0-							
E	xcava	tion Contractor: R. Fraser Construction					

Excavation Method: Excavator

	>	DILLON	Log Project No.: 03-2088-0200 Project: Phase II ESA	of Te	st P	it: TP	11
	Dillo	on Consulting Limited	Client: Imperial Oil Limited			Date: Ju	ıly 30, 2003
	ŀ	łalifax, Nova Scotia	Location: 64 Mill Lake Rd.,	Hubbard	s, NS	Supervi	sor: Todd Baker
		SUBSURFA				S	AMPLE
Depth (m)	Description			Elevation	Sample #	Gastech ppm	Comments
0.0-			Ground Surface	0.00			
	• •	Sand ar Light brown sand and grave	nd Gravel el, compact and damp.	-0.40	1	40	
_		Silty Black silty sand with organi damp.	Sand cs throughout, compact and	-0.90	2	3%	
1.0-		Silty Sand Orange brown silty sand ar damp.	and Gravel Id gravel, compact and	-1.20	3	3%	
-		<i>Silty</i> Grey brown silty sand, som	Sand e gravel, trace clay.	-2.00	4	175	
2.0-		Silty Sand Grey silty sand and gravel, boulders, moist to wet at 2.	<i>and Gravel</i> scattered cobbles and 5 metres, compact.	-2 75	5	100%	
3.0		<i>Silty</i> Red brown silty sand with g stiff and wet.	Sand ravel, scattered cobbles,	-3.25	6	200	
4.0-							

Excavation Method: Excavator



Dillon Consulting Limited Halifax, Nova Scotia

Log of Test Pit: TP12
Project No.: 03-2088-0200

Project: Phase II ESA

Client: Imperial Oil Limited

Date: July 31, 2003

Location: 64 Mill Lake Rd., Hubbards, NS Supervisor: Todd Baker

	SUBSURFACE PROFILE				SAMPLE		
Depth (m)	Symbol	Description	Elevation	Sample #	Gastech ppm	Comments	
0.0-		Ground Surface	0.00				
	•	Sand and Gravel Dark brown sand and gravel, compact and damp.	-0.30	1	40		
-		Silty Sand and Gravel Light brown silty sand and gravel, scattered cobbles, moist and compact.	-0.70	2	60		
1.0-		Silty Organics Black silty organics, moist, rootlets throughout.	-1.00	3	375		
_		<i>Silty Sand</i> Light brown becoming yellowish brown silty sand, some gravel, trace clay, scattered cobbles, occasional		4	150		
2 0-		boulder, moist at 2.0 metres.	-2.00	5	75		
-		Sand and Gravel Light brown sand and gravel, some silt, moist to wet,		6	60		
2.0		water seepage at 2.75 metres.	-3.00	7	50		
3.0-		Sand and Silt Red brown sand and silt, some gravel, trace clay, occasional cobbles, stiff and wet.	-3.50	8	50		
4.0-							
E	cavat	ion Contractor: R. Fraser Construction			\		

Excavation Method: Excavator

Dillon Consulting Limited Halifax, Nova Scotia

Client: Imperial Oil Limited

Project: Phase II ESA

Date: July 31, 2003

Location: 64 Mill Lake Rd., Hubbards, NS Supervisor: Todd Baker

Log of Test Pit: TP13
Project No.: 03-2088-0200

	SUBSURFACE PROFILE					SAMPLE		
Depth (m)	Symbol	Description	Elevation	Sample #	Gastech ppm	Comments		
0.0		Ground Surface	0.00					
0.0-		Sand and Gravel Grey brown sand and gravel, compact and damp. Drainage pipe at 0.25 metres, clearstone fill.	-0.35	1	60			
-		<i>Silty Sand and Gravel</i> Orange brown silty sand and gravel, scattered cobbles, occasional boulder.	-1.00	2	80			
1.0-				3	70			
2.0-	Light brown sandy gravel, so	Sandy Gravel Light brown sandy gravel, some silt, scattered cobbles,		4	50			
		occasional boulder, moist to wet at 2.4 metres.	-3.00	5	60			
3.0-		Sand and Silt Red brown sand and silt, some gravel, trace clay, scattered cobbles, wet and stiff.	-3.50	6	75			
4.0-		tion Contractor: R Fraser Construction						
E	xcava	tion Method: Excavator Checked by: G	ТВ					

	3	DILLON	Log Project No.: 03-2088-0200 Project: Phase II ESA	of Te	est P	Pit: TP	14		
	Dillo H	on Consulting Limited Halifax, Nova Scotia	Client: Imperial Oil Limited Date: July 31, 2003			aly 31, 2003			
Location: 64 Mill Lake Ro					s, NS	Superv	isor: Todd Baker		
		SUBSURFAC				SAMPLE			
Depth (m)	Description			Elevation	Sample #	Gastech ppn	Comments		
0.0-		Sand an	Ground Surface	0.00					
		Grey brown sand and grave	I, organics throughout,			/5			
-		Orange brown silty sand and cobble, organics throughout	and Gravel d gravel, occasional , damp and compact.		2	75			
-	<i>Silty Sandy</i> Light brown silty sand, some gravel, trace clay, scattered cobbles and boulders, damp to wet at 2.0 metres.				3	75			
2.0-				-2.00					
		Sand Red brown sandy silt with gr wet and stiff.	y Silt avel, scattered cobbles,	-2.50	4	80			
3.0-									
4.0-									
E	xcava xcava	ntion Contractor: R. Fraser Contractor: R. Fraser Contractor	onstruction Checked by: G	тв	f				

DILLON			Log of Test Pit: TP15 Project No.: 03-2088-0200					
			Project: Phase II ESA					
	Dille	alifax, Nova Scotia	Client: Imperial Oil Limited			Date: July 31, 2003		
			Location: 64 Mill Lake Rd., Hubbards, NS			Supervisor: Todd Baker		
		SUBSURFAC						
Depth (m)	Symbol	Desc	ription	Elevation	Sample #	Gastech ppm	Comments	
0.0-			Ground Surface	0.00				
_		Light brown sand and grave occasional boulder, organic compact.	d Gravel I, scattered cobbles, s throughout, damp and	-0.60	1	70		
1.0					2	60		
-		Silty Grey to light brown silty sar scattered cobbles, moist.	Sand d, some gravel, trace clay,		3	75		
2.0-				-2.00	4	70		
					5	40		
3.0-		Sand Red brown sandy silt with gr occasional boulder, moist to	y <i>Silt</i> avel, scattered cobbles, wet at 3.0 metres.	-3.50	6	60		
4.0-								
<i>Excavation Contractor:</i> R. Fraser Construction <i>Excavation Method:</i> Excavator <i>Checked by:</i> GTB								



Log of Test Pit: TP16

Т

Project No.: 03-2088-0200

Dillon Consulting Limited Halifax, Nova Scotia

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Project: Phase II ESA Client: Imperial Oil Limited

Date: July 31, 2003

Location: 64 Mill Lake Rd., Hubbards, NS Supervisor: Todd Baker

SUBSURFACE PROFILE				SAMPLE		
Depth (m)	Symbol	Description	Elevation	Sample #	Gastech ppm	Comments
0.0-		Ground Surface	0.00			
0.0		<i>Silty Organics</i> Black silty organics, scattered cobbles, soft and moist.	-0.40	1	75	
-		Silty Sand and Gravel Orange brown intermixed with dark brown silty sand and gravel, moist and compact.	-1.00	2	100	
		<i>Silty Sand</i> Orange brown silty sand, some gravel, trace clay, scattered cobbles, occasional boulder, wet and compact.	-2.00	3	125	
2.0-		Silty Sand and Gravel Grey brown silty sand and gravel, scattered cobbles, occasional boulder, wet and compact.	-2.50	4	125	
3.0-		Sandy Silt Red brown sandy silt with gravel, scattered cobbles and boulders, stiff and wet. Water seepage at 2.5 metres.	-3.00	5	125	
4.0-						

Excavation Contractor: R. Fraser Construction

Excavation Method: Excavator



Log of Test Pit: TP17 Project No.: 03-2088-0200

Project: Phase II ESA

Dillon Consulting Limited Halifax, Nova Scotia

Client: Imperial Oil Limited

Location: 64 Mill Lake Rd., Hubbards, NS Supervisor: Todd Baker

Date: August 1, 2003

SUBSURFACE PROFILE				SAMPLE			
Depth (m)	Symbol	Description	Elevation	Sample #	Gastech ppm	Comments	
0.0-		Ground Surface	0.00				
		<i>Silty Sand and Gravel</i> Rootmat, dark brown silty sand and gravel, scattered cobbles and boulders, damp and loose.	-0.80	1	100		
				2	120		
1.0-		Sand and Gravel Orange brown sand and gravel, scattered cobbies and boulders, damp and compact.	-2.00	3	60		
2.0-							
-		Silty Sand and Gravel Light brown silty sand and gravel, scattered cobbles and boulders, moist and compact. Wet at 3.0 metres		4	70		
2.0			-3.00	5	50		
5.0		Sand and Silt	-3.20	6	75		
4.0-		scattered cobbles and boulders, moist and stiff. Refusal at 3.2 metres on boulder.					
_							
Excavation Contractor: R. Fraser Construction							
Excavation Method: Excavator Checked by: GTB							


Log of Test Pit: TP18 Project No.: 03-2088-0200

Project: Phase II ESA

Dillon Consulting Limited Halifax, Nova Scotia

Client: Imperial Oil Limited

Date: August 1, 2003

Location: 64 Mill Lake Rd., Hubbards, NS

Supervisor: Todd Baker

		SUBSURFACE PROFILE		SAMPLE			
Depth (m)	Symbol	Description	Elevation	Sample #	Gastech ppm	Comments	
		Ground Surface	0.00				
0.0-		Sand and Gravel Greyish brown sand and gravel, scattered cobbles, compact and damp.	-0.20 -0.40	1	30		
-		Silty Sand and Gravel Light brown silty sand and gravel, compact and damp. Silty Sand Dark brown silty sand with gravel, organics throughout, damp and stiff.	-1.00	2	100		
-		Silly Cond		3	250		
2.0-		Siny Sand Black silty sand, some gravel, trace clay, roots, tree branches, abundant cobbles and boulders.	-2.75	4	150		
		Sand and Gravel	2.00	5	125		
3.0-		Light brown sand and gravel, some silt, compact and wet at 3.0 metres. Sand and Silt Red brown sand and silt, some gravel, trace clay, scattered cobbles, stiff and wet.	-3.50	6	50		
4.0-							
E	xcav	ation Contractor: R. Fraser Construction					

Excavation Method: Excavator

Checked by: GTB



Log of Test Pit: TP19 Project No.: 03-2088-0200

Project: Phase II ESA

Dillon Consulting Limited Halifax, Nova Scotia

Client: Imperial Oil Limited

Location: 64 Mill Lake Rd., Hubbards, NS Supervisor: Todd Baker

Date: August 1, 2003

	_	SUBSURFACE PROFILE			S	AMPLE
Depth (m)	Symbol	Description	Elevation	Sample #	Gastech ppm	Comments
0.0-		Ground Surface	0.00			
		Sand and Gravel Greyish brown sand and gravel.	-0.20	1	125	
-		Silty Sand and Gravel Red brown silty sand and gravel, moist and compact.	-1.00	2	75	
1.0-		Silty Organics Black silty organics, soft, moist, intermixed with orange brown silty sand and gravel.	-1.50	3	375	
2 0-		<i>Silty Sand</i> Orange brown silty sand, some gravel, trace clay, compact and wet at 2.0 metres.	-2.00	4	150	
		Silty Sand and Gravel Light brown silty sand and gravel, scattered cobbles and boulders, compact and wet.	-2.50	5	100	
3 0-		Sand and Silt Red brown sand and silt, some gravel, trace clay		6	50	
5.0		scattered cobbles and boulders, stiff and wet.	-3.50	7	40	
4.0-						
E	xcava	tion Contractor: R. Fraser Construction		1		

Excavation Method: Excavator

Checked by: GTB



Log of Test Pit: TP20

Project No.: 03-2088-0200

Project: Phase II ESA

Dillon Consulting Limited Halifax, Nova Scotia

Client: Imperial Oil Limited

Location: 64 Mill Lake Rd., Hubbards, NS

Date: August 1, 2003 Supervisor: Todd Baker

SUBSURFACE PROFILE SAMPLE ppm Depth (m) Comments Sample # Elevation Gastech Symbol Description **Ground Surface** 0.00 0.0 Sand and Gravel Red brown sand and gravel, some organics, scattered 1 75 -0.30 cobbles, compact and damp. Silty Sand and Gravel 2 75 Light brown silty sand and gravel, moist and comapct. -0.70 Silty Organics 3 200 Black silty organics, some gravel, soft and moist. -1.00 1.0 👫 4 50 2.0Silty Sand 5 50 Grey brown silty sand, some gravel, trace clay, scattered cobbles and boulders, compact and moist. Wet at 3.0 metres. 3.0 6 50 -3.50 Silty Sand Red brown silty sand with gravel, scattered cobbles, stiff and wet. -4.00 4.0 Excavation Contractor: R. Fraser Construction Excavation Method: Excavator Checked by: GTB

	Log Project				of Monitoring Well: MW1 at No.: 03-2088-0200					
	Dillo	n Consulting Limited	Client:	Imperial	Imperial Oil Limited Date: August 14, 2003					
	Н	alifax, Nova Scotia	Locatio	o <i>n:</i> 64 M	n: 64 Mill Lake Rd., Hubbards, NS Supervisor: Todd Baker					
	SUBSURFACE PROFILE					SAMPLE				
Depth (m)	Symbol	Description		Elevation (m)	Sample #	Method		Comments	Well Completi Details	
0-		Ground	Surface	100.17			-			
		Sand and Gravel Dark brown sand and grave compact and damp.	I,	99.87						
1- - 2- - 3-		<i>Silty Sand and Grav</i> Light brown silty sand and g scattered cobbles, occasion boulder, wet at 2.75 metres	r el jravel, al	97.17			Groundwater El	levation 99.440 m, Aug. 15/03		
4		Sandy Silt Reddish brown sandy silt wi gravel, occasional cobble, s wet.	ith stiff and	95.57						
-										
5							,		. I	
D	rilling	Contractor: Lantech Drilling	Services	Top of Casing Elevation: 100.870 m						
	rill M	ethod: Standard Auger		Stick-up Height: 0.705 m						
Н	ole Si	ize: 100 mm		Check	ed by:	GTB				

	Log			of Monitoring Well: MW2						
		DILLON	Projec	t No.: 03 t: Phase	3-2088	-0200				
		5.A.099034.5.6 09939	Client:	: Imperial Oil Limited Date: August 14, 2003						
	Dillo H	n Consulting Limited Ialifax, Nova Scotia	Locati	on: 64 Mill Lake Rd., Hubbards, NS Supervisor: Todd Baker						
			11 22							
		SUBSURFACE PROF					SAIVI	<u>'LE</u>	Lion	
Ê				u (E	#			nts	mple	
pth (i	mbol	Description		vatio	mple	thod		шше	ails Co	
De	Sy			<u></u>	Sai	₹ S		Ö	Det	
0-		Ground Sand and Gravel	Surface	100.08						
		Dark brown sand and gravel compact and damp.	l, /	99.78						
-	•	\	/							
							Groundwater El	evation 99.270 m, Aug. 15/03		
1–										
		Silty Sand and Grave	e/							
		Light brown slity sand and gi scattered cobbles, occasiona	ravel, al							
2	•	boulder, wet at 2.0 metres.				and respective				
27						A STATE AND A S				
1										
		- 4		97.33						
3-										
,										
_		Sandy Silt	h							
		gravel, occasional cobble, st	iff and							
4-		WGI.								
				95.48						
5-										
Drilling Contractor: Lantech Drilling Services			Services	Top of	Casin	g Elevi	ation: 100,995	m		
Dr	ill Me	thod: Standard Auger		Stick-up Height: 0.92 m						
Но	le Siz	ze: 100 mm		Checked by: GTB						



Dillon Consulting Limited Halifax, Nova Scotia

Log of Monitoring Well: MW3

Project No.: 03-2088-0200

Project: Phase II ESA

Client: Imperial Oil Limited

Date: August 14, 2003

Location: 64 Mill Lake Rd., Hubbards, NS Supervisor: Todd Baker

		SUBSURFACE PROFILE				SAMPLE	~	
Depth (m)	Symbol	Description	Elevation (m)	Sample #	Method	Comments	Well Completion Details	
0-		Ground Surface	99.73					
0 1 2		Sand and Gravel Dark brown sand and gravel, compact and damp. Silty Sand and Gravel Light brown silty sand and gravel, scattered cobbles, occasional boulder, wet at 3.0 metres.	99.43			Groundwater Elevation 98.730 m, Aug. 15/03		
4-		Sandy Silt Reddish brown sandy silt with gravel, occasional cobble, stiff and wet.	95.13					
5-								
Dr. Dr.	illing ill Me	Contractor: Lantech Drilling Services	Top of Stick-u	Casin <u>c</u>	g Eleva	a <i>tion:</i> 100.520 m 9 m		
Ho	le Si	zer 100 mm	Checked by CTP					
				<u>а лу.</u>		·		



Log of Monitoring Well: MW4

Project No.: 03-2088-0200

Project: Phase II ESA

Dillon Consulting Limited Halifax, Nova Scotia

Client: Imperial Oil Limited

Date: August 14, 2003

Location: 64 Mill Lake Rd., Hubbards, NS Supervisor: Todd Baker

		SUBSURFACE PROFILE		SAMPLE			
Depth (m)	Symbol	Description	Elevation (m)	Sample #	Method	Comments	Well Completion Details
0_		Ground Surface	99.47				
0- 1- 2- 3-		Sand and Gravel Dark brown sand and gravel, compact and damp. Silty Sand and Gravel Light brown silty sand and gravel, scattered cobbles, occasional boulder. Sandy Silt Reddish brown sandy silt with gravel, occasional cobble, stiff and wet at 3.0 metres.	99.17			Groundwater Elevation 98.190 m, Aug. 15/03	
4	illing	Contractor: Lantech Drilling Services	94.87 Top of	Casin	g Eleva	ation: 100.120 m	
Dri	ill Me	thod: Standard Auger	Stick-u	p Hei <u>c</u>	ht: 0.6	5 m	
Но	le Siz	ze: 100 mm	Checked by: GTB				



Log of Monitoring Well: MW5

Project No.: 03-2088-0200

Project: Phase II ESA

Dillon Consulting Limited Halifax, Nova Scotia

Client: Imperial Oil Limited

Date: August 14, 2003

Location: 64 Mill Lake Rd., Hubbards, NS Supervisor: Todd Baker

		SUBSURFACE PROFILE				SAMPLE	
Depth (m)	Symbol	Description	Elevation (m)	Sample #	Method	Comments	Well Completio Details
0-		Ground Surface	99.70				
0- - 1- 2- 3-		Sand and Gravel Dark brown sand and gravel, compact and damp. Silty Sand and Gravel Light brown silty sand and gravel, scattered cobbles, occasional boulder. Wet at 3.2 metres.	99.40 96.20			Groundwater Elevation 98.050 m, Aug. 15/03	
4- - 5- -		Sandy Silt Reddish brown sandy silt with gravel, occasional cobble, stiff and wet.	93.60				
Drilling Contractor: Lantech Drilling Services Drill Method: Standard Auger Hole Size: 100 mm			Top of Stick-u Checke	Casin Ip Heig ed by:	g Elev Iht: 0.9 GTB	<i>ration:</i> 100.200 m 500 m	



Log of Monitoring Well: MW6

Project No.: 03-2088-0200

Project: Phase II ESA

Dillon Consulting Limited Halifax, Nova Scotia Client: Imperial Oil Limited

Date: August 14, 2003

Location: 64 Mill Lake Rd., Hubbards, NS

Supervisor: Todd Baker

	SUBSURFACE PROFILE			SAMPLE				
Depth (m)	Symbol	Description	Elevation (m)	Sample #	Method	Comments	Well Completior Details	
0-		Ground Surface	99.84					
- 1- 2-		Sand and Gravel Dark brown sand and gravel, compact and damp. Silty Sand and Gravel Light brown silty sand and gravel, scattered cobbles, occasional boulder. Wet at 2.5 metres.	99.54 97.09			Groundwater Elevation 99.450 m, Aug. 15/03		
4-		Sandy Silt Reddish brown sandy silt with gravel, occasional cobble, stiff and wet.	95.24					
5-								
Drilling Contractor: Lantech Drilling Services Drill Method: Standard Auger			Top of Casing Elevation: 100.650 m Stick-up Height: 0.810 m					
Но	ole Siz	re: 100 mm	Checked by: GTB					

Appendix III Grain Size Analysis



	Iuorganic Paramet		eters	page: 1	
Client :	Dillon Consult: 137 Chain Lake	ing Limit Dr. Suit	ed e 100		COX, BRENT
	Maillax Big 1B.	2			FAX # : 450-2008
	PSC Project Nu	nber : 03	12644H		Printed : 2003/08/17
	Client Project	Number :	03-2088	-0200	Reported : 2003/08/11
					
Matrix	····			Soil	Soil
Philip I	D			03-H047971	03-H047972
Client I	D			TP 15/3 (1	TP 15/3 (1
				.5-2m)	.5-2m) DUP
Date Sam	pled (y/m/d)			03/07/31	03/07/31
Date Shi	pped (y/m/d)			03/08/01	03/08/01
Date Rec	eived (y/m/d)			03/08/01	03/08/01
Analyte		Units	EQL		DUP
< 12 5 m	m	2	0.1	100.	100.
< 9.5 mm		2	0.1	100.	100.
< 4.75 m	m	움	0.1	100.	100.
< PHI ~1	(2 mm)	망	0.1	85.6	85.9
< PHI 0	(1 mm)	8	0.1	75.7	76.0
~				~ ~ ~	
< PHI +1	(1/2 mm)	of of	0.1	65.0	65.1
< PHI +2	(1/4 mm)	융	0.1	63.6	60.7
< PHI +3	(1/8 mm)	29	0.1	56.4	53.5
< PHI +4	(1/16 mm)	oo	0.1	37.9	39.5
< PHI +5	(1/32 mm)	8	0.1	28.2	29.8
< PHI +6	(1/64 mm)	alo	0.1	20.3	21.0
< PHI +7	(1/128 mm)	eko Alo	0.1	11.8	12.0
< PHI +8	(1/256 mm)	8	0.1	9.3	9.4
< PHI +9	(1/512 mm)	29	0.1	6.6	6.5
Gravel		÷	0.1	14.4	14.1
Sand		Ę.	0.1	47.7	46.4
Silt		20	0.1	28.6	30.1
Clay		90	0.1	9.3	9.4
Legend	EQL = E b ND ≈ N ND () = N i	stimated e reliabl ot Detect ot Detect nterferen	Quantita y report ed, inst ed at t ces or s	ation Limit i ed. It is n rument did n the elevated sample pre-di	s the minimum concentration that can ot a regulatory limit. ot detect anything above standard EQL. EQL specified, due to matrix lution.
	- = D	ash is re	ported w	when paramete	r not requested in sample.
Note	: Soil result : Biota resul	s are exp ts are ex	ressed a pressed	ls air dry w on a wet wei	eight basis. ght basis unless otherwise stated.
					page verified

	Inorganic	Parameters	page :	2
PSC Analytical Services 200 Bluewater Road Bedford NS Capada B4B 169	Client :	Dillon Consulting 1 137 Chain Lake Dr.	Limited Suite 100	COX, BRENT
Tel (902) 420-0203 Toll free (800) 565-7227	PSC Pr	NS B3S 1B3 roject Number : 031:	2644H	FAX # : 450-2008 Printed : 2003/08/17
Fax (902) 420-8612	Client Pr	roject Number : 03-:	2088-0200	Reported : 2003/08/11

Certificate of Analysis

Method Summaries:

- Particle Size Distribution of Soils and Sediments: Sieve/Pipette technique. Ref: Methods of Sampling and Analysis of Marine Sediments - Ocean Dumping Report 1

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. The results relate only to the items tested. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Approval of Inorganic Parameters:

Inorganics Manager :

Project Manager :

Jerry Arenovich Suzanne Rogers

v



TP 15/3 (1.5-2m)



PSC ID: 03-H047972



TP 15/3 (1.5-2m) Dup





Inorganic Parameters			page: 1			
Client : Dillon Consulti 137 Chain Lake	lng Limit Dr. Suit	ed e 100		COX, BRENT		
Halifax NS B3S 1B3	1			FAX # : 450-2008		
PSC Project Num	ber : 03	12756H		Printed : 2003/08/20		
Client Project	Number :	03-2088	5-0200	Reported : 2003/08/13		
Matrix			Soil	Soil		
Philip ID			03-H048483	03-H048484		
Client ID			TP 19/7 (3	TP 19/7 (3		
			-3.5m)	-3.5m) DUP		
Date Sampled (y/m/d)			03/08/01	03/08/01		
Date Shipped (y/m/d) Date Received (y/m/d)			03/08/05	03/08/05		
Analyte	Units	EQL	- -	DUP		
< 12 5 mm		0.1	100.	100.		
< 9.5 mm	8	0.1	100.	100.		
< 4.75 mm	8	0.1	100.	100.		
< PHI -1 (2 mm)	20	0.1	86.2	81.8		
< PHI 0 (1 mm)	olo	0.1	75.6	72.4		
	0.		<i>E A D</i>	<pre></pre>		
< PHI +1 (1/2 mm)	б с	0.1	64.3	56 C		
< PHI +2 (1/4 mm)	o Q	0.1	45 7	44.0		
< PHI + 3 (1/36 mm)	9 9	0.1	43.0	39.5		
< PHI +5 (1/32 mm)	90 90	0.1	31.4	28.4		
< PHI +6 (1/64 mm)	5	0.1	23.6	21.8		
< PHI +7 (1/128 mm)	ъ с	0.1	13.5			
< PHI +8 (1/256 mm)	б е.	0.1	LU.2	5.4		
< PHI +9 (1/512 mm) Gravel	o o	0.1	13.8	18.2		
Sand	90 90	0.1	43.1	42.3		
Silt	olo	0.1	32.8	30.3		
Clay	00	0.1	10.2	9.2		
Legend EQL = E b ND = N ND () = N i	stimated e reliab] ot Detect ot Detect nterferen	Quantit y repor ed, ins ed at	ation Limit i ted. It is n trument did n the elevated sample pre-di	s the minimum concentration that can ot a regulatory limit. ot detect anything above standard EQL. EQL specified, due to matrix lution.		
- = D	ash is re	ported	when paramete	r not requested in sample.		
Note : Soil result : Biota resul	s are exp ts are ex	pressed	as air dry w on a wet wei	eight basis. ght basis unless otherwise stated.		
				page verified/		

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	Inorganic Parameters	page: 2	
PSC Analytical Services 200 Bluewater Road Bedford, NS Canada B4B 1G9	Client : Dillon Consulting L 137 Chain Lake Dr. Halifax	imited Suite 100	COX, BRENT
Tel (902) 420-0203	NS B3S 1B3	F.	AX # : 450-2008
Toll free (800) 565-7227 Fax (902) 420-8612	PSC Project Number : 0312 Client Project Number : 03-2	756H P: 088-0200 R	rinted : 2003/08/20 eported : 2003/08/13

Certificate of Analysis

Method Summaries:

- Particle Size Distribution of Soils and Sediments: Sieve/Pipette technique. Ref: Methods of Sampling and Analysis of Marine Sediments - Ocean Dumping Report 1

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. The results relate only to the items tested. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Analyses reviewed by:

Inorganics Manager :

Project Manager :

Jerry Arenovich Suzanne Rogers



<u>TP 19/7 (3-3.5m)</u>



PSC ID: 03-H048484

TP 19/7 (3-3.5m) Dup



Approved

Appendix IV Hydraulic Conductivity Plots



Data Set: L:\PROJECTS\Draft\032088\spread\MW4.aqt Title: Slug Test Date: 09/11/03 Time: 15:17:08

PROJECT INFORMATION

Company: Dillon Consulting Limited Client: Imperial Oil Ltd Project: 03-2088-0200 Location: Hubbards, NS` Test Date: August 15, 2003 Test Well: MW4

AQUIFER DATA

Saturated Thickness: 5. m Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Initial Displacement: 3.23 m Casing Radius: 0.0254 m Wellbore Radius: 0.0254 m Well Skin Radius: 0.0254 m Screen Length: 3. m Total Well Penetration Depth: 3. m Gravel Pack Porosity: 0.3

No. of observations: 24

Observation Data				
Time (min)	Displacement (m)	Time (min)	Displacement (m)	
0.2	3.23	2.28	1.97	
0.42	2.93	27	1.37	
0.55	2.77	2.7	1.32	
0.68	2.62	2.07	1.27	
0.83	2.02	3.4Z	1.22	
0.98	2.77	3.75	1.17	
1 15	2.32	4.08	1.12	
1.10	2.17	4.42	1.07	
1.0	2.02	4.85	1.02	
1.47	1.87	5.42	0.97	
1.65	1.72	6.2	0.02	
1.68	1.62	75	0.92	
2.02	1 47	10	0.87	
	****	10.	0.81	

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	9.714E-07	m/sec
у0	1.873	m

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	
K	2.125E-06	2.023E-07	m/sec
y0	2.969	0.1297	m

Parameter Correlations

	K	y0
K	1.00	0.76
y0	0.76	1.00

Residual Statistics

for weighted residuals

Sum of Squares 1.4 m ²
Variance
Std. Deviation 0.2522 m
Mean 0.03082 m
No. of Residuals 24.
No. of Estimates 2



Aquifer Model: Unconfined

Solution Method: Hvorslev

PROJECT INFORMATION

Company: Dillon Consulting Limited Client: Imperial Oil Ltd Project: 03-2088-0200 Location: Hubbards, NS Test Date: August 15, 2003 Test Well: MW6

AQUIFER DATA

Saturated Thickness: 5. m Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Initial Displacement: 4.69 m Casing Radius: 0.0254 m Wellbore Radius: 0.0254 m Well Skin Radius: 0.0254 m Screen Length: 3. m Total Well Penetration Depth: 3. m Gravel Pack Porosity: 0.3

No. of observations: 35

Observation Data				
<u>Time (min)</u>	Displacement (m)	Time (min)	Displacement (m)	
0.2	4.69	4.22	3.81	
0.42	4.63	4.47	3.76	
0.6	4.59	4.68	3.71	
0.73	4.56	4.95	3.66	
0.95	4.51	5.17	3.61	
1.18	4.46	5.38	3.56	
1.42	4.41	5.62	3.51	
1.65	4.36	5.88	3.46	
1.87	4.31	6.13	3.41	
2.1	4.26	6.33	3.36	
2.33	4.21	6.57	3.31	
2.58	4.16	6.8	3.26	
2.82	4.11	7.03	3.21	
3.03	4.06	7.3	3.16	
3.27	4.01	10.	2.56	
3.52	3.96	15.	1.74	
3.75	3.91	20.	1.21	
4.	3.86			

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	5.713E-07	m/sec
y0	4.968	m

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	
K	5.152E-07	1.128E-08	m/sec
y0	4.844	0.02734	m

Parameter Correlations

	K	y0
K	1.00	0.79
y0	0.79	1.00

Residual Statistics

for weighted residuals

Sum of Squares 0.2	2067 m ²
Variance 0.0	06263 m ²
Std. Deviation 0.0	7914 m
Mean	003014 m
No. of Residuals 35.	
No. of Estimates 2	

Appendix V Headspace Analysis

APPENDIX V VOC HEADSPACE ANALYSIS 64 MILL LAKE ROAD, HUBBARDS, NOVA SCOTIA				
Sample Location	Depth (metres)	PPM	% LEL	
TP 1	0-05	75	Ι ΝΔ	
	0.5 - 1.0	100	NA	
	1.2	150	NA	
	1.5	100	NA	
	2.0	110	NA	
	2.5	200	NA	
	2.6 - 3.9	175	NA	
	4.0	100	NA	
	4.0 - 4.3	100	NA	
TP 2	0 - 0.5	>500	3	
	0.5 - 1.0	375	NA	
	1.0 - 1.5	>500	6	
	1.5 - 2.0	200	NA	
	2.0 - 2.5	75	NA	
	2.5 - 3.5	60	NA	
	3.5 - 4.0	50	NA	
TP 3	0 - 0.5	275	NA	
	0.5 - 1.0	250	NA	
	1.0 - 1.5	175	NA	
	1.5 - 2.0	150	NA	
	2.0 - 2.5	200	NA	
	2.5 - 3.0	150	NA	
	3.0 - 3.75	50	NA	
TP 4	0 - 0.5	100	NA	
	0.5 - 1.0	70	NA	
	1.0 - 1.5	100	NA	
	1.5 - 2.0	400	NA	
	2.0 - 3.0	120	NA	
	3.0 - 3.75	50	NA	
TP 5	0 - 0.5	100	NA	
	0.5 - 1.0	>500	10	
	1.0 - 2.0	250	NA	
	2.0 - 3.0	>500	45	
· · · ·	3.0 - 3.75	40	<u>NA</u>	
TP 6	0-0.5	100	NA	
	0.5 - 1.0	125	NA	
	1.0 - 1.5	120	NA	
	1.5 - 2.0	50	NA	
	2.0 - 2.5	75	NA	
TO *	2.5 - 3.0	50	NA	
IF /	0-0.5	60 77	NA	
		/5	NA	
	1.0 - 2.0	100	NA	

APPENDIX V VOC HEADSPACE ANALYSIS 64 MILL LAKE ROAD, HUBBARDS, NOVA SCOTIA				
Sample Location Depth PPM % LEL				
TDO	(metres)			
160	0-0.5	75	NA	
	0.5 - 1.0	125	NA	
	1.0 - 1.5	225	NA	
	1.5 - 2.0	100	NA	
	2.0 - 2.5	60	NA NA	
	2.75 - 3.0	60	NA	
ТРО	3.0 - 3.75	60	NA	
	0-0.5	>500	7	
		275	NA NA	
	1.0 - 1.0	125	NA	
	1.0 - 2.0	75	NA	
TP 10	2.3=3.0	/5	NA	
	0 = 0.5	100	NA	
	10-15	120	NA	
	15-20	120	NA NA	
	20-25	120	NA	
	25-30	140	NA	
TP 11	0-04	40		
	0.4 - 0.9	>500		
	1.0 - 1.5	>500	3	
	1.5 - 2.0	175		
	2.0 - 2.5	>500		
	2.75 - 3.25	200	100	
TP 12	0 - 0.3	40		
	0.3 - 0.8	60		
	0.8 - 1.0	375		
	1.0 - 1.5	150		
	1.5 - 2.0	75		
	2.0 - 2.5	60		
	2.5 - 3.0	50		
	3.0 - 3.5	50		
TP 13	0 - 0.35	60		
	0.35 - 1.0	80	NA	
	1.0 - 1.5	70	NA	
	1.5 - 2.0	50	NA	
	2.0 - 3.0	60	NA	
	3.0 - 3.5	75	NA	
TP 14	0 - 0.2	75	NA	
	0.2 - 1.0	75		
	1.0 - 2.0	75	NA	
	2.0 - 2.5	80		

	APF		
	04 MILL LARE KOAD,	HUBBARDS, NOVA SCC	AITA
Sample Location	Depth	PPM	<u>% I El</u>
	(metres)	1 1 101	
TP 15	0 - 0.6	70	NA
	0.6 - 1.0	60	NA
	1.0 - 1.5	75	NA
	1.5 - 2.0	70	NA
	2.0 - 2.5	40	NA
	2.5 - 3.5	60	NA
TP 16	0 - 0.4	75	NA
	0.4 - 1.0	100	NA
	1.0 - 2.0	125	NA
	2.0 - 2.5	125	NA
	2.5 - 3.0	125	NA
IP 17	0 - 0.8	100	NA
	0.8 - 1.0	120	NA
	1.0 - 2.0	60	NA
	2.0 - 2.5	70	NA
	2.5 - 3.0	50	NA
	3.0 - 3.2	75	NA
119 18	0 - 0.4	30	NA
	0.4 - 1.0	100	NA
	1.0 - 1.75	250	NA
	1.75 - 2.75	150	NA
	2.75 - 3.0	125	NA
	3.0 - 3.5	50	NA
IP 19	0 - 0.5	125	NA
	0.5 - 1.0	75	NA
	1.0 - 1.5	375	NA
	1.5 - 2.0	150	NA
	2.0 - 2.5	100	NA I
	2.5 - 3.0	50	NA
TD 20	3.0 - 3.5	40	NA
IP 20	0-0.3	75	NA
	0.3 - 0.7	75	NA I
	0.7 - 1.0	200	NA
1	1.0 - 1.5	50	NA
	1.5 - 2.5	50	NA NA
ST BASE	2.0 - 3.5	50	NA
ST S-MALL	3.U 0 1 0	130	NA
ST S-WALL	U - 1.U 10 20	125	NA NA
ST NLWALL	1.0 - 3.0	130 NA	
ST NLWALL	10 20	100	NA NA
ST W-WALL	1.0 - 3.0	125	NA NA
S.T. F-WALL	10-30	125	NA
	<u> </u>	200	NA NA

Appendix VI Atlantic PIRI Ecological Receptors Checklist

1. ECOLOGICAL HABITAT

Are any of the following within 150 metres of the site:

YES/NO

No	Wetland habitats such as marshes, swamps, tidal flats, beaches
No	Aquatic habitats such as rivers, lakes or streams
No	Forested habitats (50 acres or more)
No	Grassland habitats
<u>No</u>	Provincial/National parks or ecological reserve
<u>No</u>	Rare, threatened or endangered species populations
No	Other critical or sensitive habitat for wildlife, migratory species

If the answer is "**NO**" to ALL questions, then no habitat of potential concern is identified. There is no further action required.

If the answer is"YES", then proceed to the next step, Exposure Assessment.

2. EXPOSURE ASSESSMENT

YES/NO

Can dissolved hydrocarbons in groundwater reach any receptor habitat identified above now or in the future?

Can LNAPL (light Non-Aqueous Phase Liquids) reach receptor habitat identified above?

Can hydrocarbons reach receptor habitat identified above via surface runoffs?

If the site soils or surface water are not accessible due to pavement or other barriers, skip the next two questions.

Is there a potential for direct absorption of contaminants through skin?

Is there a potential for oral consumption of contaminated soils, water, plants?

Have hydrocarbons, associated with the site being investigated, been known to be present in any of the soils, sediments, surface water of the receptor habitats identified above at concentrations greater than CCME ecologicallybased guidelines?

If the answer to any questions above is **YES**, then further assessment is required. Additional data should be gathered to enhance the knowledge of the site-specific situation such as: fate and transport of contaminants, description of the receptor of concerns, preliminary toxicity estimates and mitigation options. (Tiered ERA).

Appendix VII Laboratory Certificates



Certificate of Analysis

CLIENT INFORMATION

Attention:	Brent Cox
Client Name:	Dillon Consulting Ltd
Project:	03-2088-0200
Project Desc:	Hubbards, NS

Address: 137 Chain Lake Drive Halifax, NS B3S 1B3 Fax Number: 902-450-2008 Phone Number: 902-450-4000



LABORATORY INFORMATION

Contact:Suzanne RogersProject:0312535HDate Received:03/07/31Date Reported:03/08/07

Sample No.:

03-H047542 - 03-H047573

Methods used by PSC are based upon those found in 'Standard Methods for the Examination of Water and Wastewater', Nineteenth Edition. Other methods are based on the principles of EPA or American Petroleum Institute methodologies. All data is in statistical control unless otherwise flagged. Acceptance criteria for analytical QC has been met unless otherwise flagged.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. Any and all use of these test results shall be limited to the actual cost of the pertinent analysis done. There is no other warranty expressed or implied. Your samples will be retained at PSC for a period of 60 days from receipt of samples as per contract.

Kogus Certified by: S

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ANALYTICAL SERVICES

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IMPERIAL OIL LIMITED / PHILIP ANALYTICAL LABORATORY SERVICES CONTRACT

HALIFAX LABORATORY

DATA QUALITY WAIVER NO:_030054H____

Customer Samples Affected: 03-4047551, 47552, 47568 Tests Effected:	
Tests Effected:	Customer Samples Affected: 03-4047551, 47552, 47568
Date of Deviation:	Tests Effected:
Quality Deviation: <u>03-H047551 - 12PH Summeret 760%</u> <u>O3-H047552 + 03-H047552 - 12PH</u> <u>Duraget > 14090 month</u> Reason for Deviation: <u>Zow Numerit</u> , <u>dur</u> to matur <u>intiajume</u> <u>Sample</u> <u>was uported</u> with Dimilar <u>intiajume</u> <u>Sample</u> <u>was uported</u> with Dimilar <u>intiajume</u> <u>Sample</u> <u>was uported</u> with Dimilar <u>intiajume</u> <u>Date</u> <u>Date</u> <u>Date</u> <u>21/03</u> <u>Data Quality Waiver Reviewed and Accepted by:</u> <u>Signature</u> <u>Brent Cox (Dillon)</u> <u>itle</u> <u>Project manager</u>	Date of Deviation: Que 7/03
Reason for Deviation: Zow Neuropat. due to mature interference. Dample was repeated with Dimilar Line 10. Nich Device atta due to sample. dilution / product interference. Waiver Issued By: Shocen Date: Aug 21/03 Date: Aug 21/03 Date: Aug 21/03 Date: Maiver Reviewed and Accepted by: Signature: Date: August 25, 2003 Name: Breat Cox (Dillon) "itle: Project manager	Quality Deviation: 03-HOY7551 - UPH DULLOPETE 560%
Reason for Deviation: <u>Low Neuropate</u> , <u>due to mater</u> <u>interfreence</u> , <u>Lample</u> was repeated interprinter <u>interfreence</u> , <u>Nick</u> Neuropated <u>interfreence</u> <u>interfreence</u> Waiver Issued By: <u>Koccur</u> Date: <u>August 25, 2003</u> Data Quality Waiver Reviewed and Accepted by: iignature: <u>Brent (ok (Dillon)</u> "itle: <u>Project manager</u>	d de la de
Data Quality Waiver Reviewed and Accepted by: Signature: Date: Date: Date: Date:	Reason for Deviation: <u>Zow Neuropated</u> due to matura <u>interjuence</u> <u>Sample</u> was repeated with Dimilar <u>reputto</u> <u>High</u> <u>Ouropeotes</u> <u>due to Sample</u> <u>dilution</u> / product interference Waiver Issued By: <u>Shogen</u> Date: <u>Aug 21/03</u>
Data Quality Waiver Reviewed and Accepted by: Signature: Date: Date: Date: Date: Date:	
Data Quality Waiver Reviewed and Accepted by: Signature: Date: Date: Date: Date: August 25, 2003 Name: Breat Cox (Dillon) Title: Project manager	
Signature: Date: <u>Avgrs + 25, 2003</u> Name: <u>Brent (ok (Dillon)</u> Title: <u>Project manager</u>	Data Quality Waiver Reviewed and Accepted by:
Name: Brent Cox (Dillon) Title: Project manager	Signature: Date: August 25 2003
Title: <u>Project manager</u>	Name: Breat Cox (Dillon)
	Title: Project manager

200 BLUEWATER ROAD, SLITE TOS, BEDFORD, NOVA SCOTIA, CANADA 848 IGO 1902 420 0203 1902 420 8612 W WW.psephalvicol.com



	Inorgan	nic Par	ameters	acre : ?	ANALYTICA	AL SERVICES
Client : Dillon Consulting Limited 137 Chain Lake Dr. Suite 100 Halifax			II. BRENT			
NS B3S 1B	3			FAX # : 4	50-2008	
PSC Project Nu	PSC Project Number : 0312535H			Irinted : 2	003/08/08	
Client Project	Number :	03-20	88-0200	Reported : 2	003/08/07	
					,, -, -,	
Matrix			Soil	Soil	Soil	Soil
Philip ID			03-H047546	03-H047548	03-H047549	03-H047561
Client ID			TP 2/3 (1-	TT 3/6 (2.	TP 3/6 (2)	TP 11/5 (2
			1.5m)	5 - 3m)	5-3m) DIIP	-25m
Date Sampled (y/m/d)			03/07/12	03/07/28	03/07/28	03/07/28
Date Shipped (y/m/d)			03/07/:1	03/07/31	03/07/31	03/07/20
Date Received (y/m/d)			03/07/~1	03/07/31	03/07/31	03/07/31
						
Analyte	Units	EQL	·		DUP	
HNO3 Peroxide Digestion	1	-	20030801-A	.:0030801-A	20030801-A	20030801-A
Aluminum	mg/kg	10	9500	4300	3700	-
Antimony	mg/kq	2.	nd	nd	nd	-
Antimony Recovery	0)0	-	40.	:0.	40.	-
Arsenic	mg/ka	2.	5.	•	5.	-
Barium	ma/ka		24.	······································		
Beryllium	mar/ka	2.	nd		2.	-
Boron	ma/ka	5	nd	ud	nd	-
Cadmium	ma/ka	0.3	nd	ud	nd	-
Chromium	ma/ka	2	6	i	2	-
				· · · · · · · · · · · · · · · · · · ·	J.	
Cobalt	mg/kg	1.	2.	.L .	1.	-
Copper	mg/kg	2.	6.	5.	4.	-
Iron	mg/kg	50	7100	1600	4000	-
Iron Recovery	e S	-	80.	80.	80.	-
Lead	mg/}cq	0.5	12.	5. L	3.8	3.1
Manganese	ma/ka	2.	150	100	·-···································	
Molybdenum	mar/ka	2	nd	100 12d	or. Dd	
Nickel	mcr/lru	с, С	5	, 201	2	-
Selenium	mg/kg	2.	nd	ud	nd	-
		- · · ·				
Legend EQL = E b	stimated e reliabl	Quanti: V repoi	tation Limit is rted. It is no	s the minimum of a regulator	concentration	that can
ND = N	ot Detect	ed, in:	strument did no	ot detect anot	y iing aborro st-	ndard for
ND () = N	ot Detect	ed at	the elevated H	COL specified	due to materia	uuara EQL.
i.	nterferen	ces or	sample nre-di	ution.	une to matrix	_
- = Di	ash is re	ported	when par.meter	I not requested	d in gamelo	
Note : Soil result:	s are exp	ressed	as air dry we	aight basis	. in sample.	
: Biota resul	ts are ex	pressed	l on a wer weig	nt basis unles	ss otherwise s	stated.
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					page ver	ified
	Inorganic Parameters page :	5				
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PSC Analytical Services	Client : Dillon Consulting Limited	COX, BRENT				
200 Bluewater Road	137 Chain Lake Dr. Suite 100					
Bedford, NS Canada B4B 1G9	Halifax					
Tel (902) 420-0203	NS B3S 1B3	FAX # : 450-2008				
Toll free (800) 565-7227	PSC Project Number : 0312535H	Printed : 2003/08/08				
Fax (902) 420-8612	Client Project Number : 03-1088-0200	Reported : 2003/08/07				

Matrix		Soil	il	Soil	Soil
Philip ID		03-H04 1540	🗧 – H047548	03-H047549	03-H047561
Client ID		TP 2/3 (1-	TP 3/6 (2.	TP 3/6 (2.	TP 11/5 (2
		1.5m)	- 3m)	5-3m) DUP	-2.5m)
Date Sampled (y/m/d)		03/07/28	°3/07/28	03/07/28	03/07/28
Date Shipped (y/m/d)		03/07/~1	03/07/31	03/07/31	03/07/31
Date Received (y/m/d)		03/07/71	03/07/31	03/07/31	03/07/31
Analyte	Units E	OL (Continu	ad from prev	ious page)	

Analyte	Units	ЕQL	(Continued from previous page)						
Silver	mg/kg	0.5	nd	nd	nd	_			
Strontium	ma /ka								
SCLOICELIM	mg / Kg	э.	na	ticl.	nd	-			
Thallium	mg/leq	0.1	0.1	:d	nd	-			
Uranium	mg/kg	0.1	0.8	1.2	0.9	_			
Vanadium	mg/kg	2.	9.	·, .	5.	-			
Zinc	mg/kg	5.	30.	61.	53.	_			

03-H047549 TP 3/6 (2.5-3m) DUP Poor lead RPD result due to sample inhomogeneity.

Legend	EQL = Estimated Quantitation Limit is the minimum concentration that can
	be reliably reported. It is near regulatory limit.
	ND = Not Detected, instrument wid not detect anything above standard EQL
	ND () = Not Detected at the elevated EQL specified, due to matrix
	interferences or sample pre-dilution.
	- = Dash is reported when parameter not requested in sample.
Note	: Soil results are expressed as air dry weight basis.
	: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified ____/

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	Intrgan	ic Para	meters age :	3
PSC Analytical Services 200 Bluewater Road	Client	: Dill 137	on Consulting Limited Chain Lake Dr. Suite 100	COX, BRENT
Bedford, NS Canada B4B 1G9		Hali	fax	
Tel (902) 420-0203		NS	B3S 1B3	FAX # : 450-2008
Toll free (800) 565-7227	PSC	Projec	t Number : 0312535H	Printed : 2003/08/08
⁾ Fax (902) 420-8612	Client	Projec	t Number : 03-2088-0200	Reported : 2003/08/07
§				
Matrix			Soil	
Philip ID			03-H04/562	
Client ID			TP 11/7 (2	
			-2.5m) OUF	
Date Sampled (y/m/d)			03/07/08	
Date Shipped (y/m/d)			03/07/ 1	
Date Received (y/m/d)			03/07/31	
Analyte	Units	EQL	DUP	
HNO3 Peroxide Digestion		_	20030801-A	
Lead	mg/h_{1}	0.5	3.3	

Legend	EQL = Estimated Quantitation Limit i. the minimum concentration that can
	be reliably reported. It is not a regulatory limit.
	ND = Not Detected, instrument did not detect anything above standard EQL.
	ND () = Not Detected at the elevated EQL specified, due to matrix
	interferences or sample pre-dilution.
	- = Dash is reported when parameter not requested in sample.
Note	: Soil results are expressed as air ary weight basis.
	: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified _____

	Inorganic	Parameters	hage :	4	
PSC Analytical Services 200 Bluewater Road Bedford, NS Canada B4B 1G9	Client :	Dillon Con 137 Chain Halifax	sulting Limited Lake Dr. Juite 100	COX, BR	ENT
Tel (902) 420-0203 Toll free (800) 565-7227 Fax (902) 420-8612	PSC Pr Client Pr	NS B3 coject Numb coject Numb	S 153 er – 0312535H er – 03-2988-0200	FAX # Printed Reported	: 450-2008 : 2003/08/08 : 2003/08/07

Certificate of Analysis

Method Summaries:

- Available Trace Metals in soils/sediments: Nitric/Peroxide Digestion. Ref:USEPA Method #30508.

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. The results relate only to the items tested. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Except sample will be discarded upon expiry of hold time.

Approval of Inorganic Parameters: Inorganics Manager : Ferry Arenovich Project Manager : Suzanne Rogers

Page 1 of 0 Project : Philip ID : Client ID :	l 8140621 0312056H		45527-2	13035731 1303 TH03-05 45535	5734 5-2 TH03-08
Sparcode	Parameter	Unit	MDL		
GENERAL INO	RGANICS				
K-AVAV31	Available Potassium	ug/g	2	66	71
NITROGEN					
NHAVSKCL	Available Ammonia(N)	ug/g	0.5	3.5	2.3
NXAVSKCL	Available NO2+NO3(N)	ug/g	2 < 2	< 2	
N2AVSKCL	Available NO2 (N)	ug/g	0.5	0.7 < 0.5	
N3AVCALC	Available NO3 (N)	ug/g	< 2	< 2	
PHOSPHORUS	3				
P4AVBCDI	Available Phosphorus	ug/g	0.5	4.8	4.3
Matrix : Sampled on: Sampled at:			Soil 16:00	Soil 7/28/2003 7/28/ 16:0(2003
Sampled at.					

.

						RM		Sp	iked Bl	ank		Matr	ix Spike			Dupl	icate	
Analyte	Method	Units	EQL	Blank	Value	Target	% Rec.	Value	Target	% Rec.	Original	Spiked	Rec.	% Rec.	Original	Duplicate	Abs. Diff.	% Diff.
Aluminum	ICP-MS	mg/kg	10	nd	4451	6170	72	19673	20000	98	2836	2786	-49	-247	2554	2836	282	10
Antimony	ICP-MS	mg/kg	2	nđ	23	57.2	40	20166	20000	101	0	6	6	29	n	0		55
Arsenic	ICP-MS	mg/kg	2	nd	180	193	93	20194	20000	101	2	21	19	96	2	2	Ö	16
Barium	ICP-MS	mg/kg	5	nd	366	389	94	19769	20000	99	10	31	20	102	ā	10	1	10
Beryllium	ICP-MS	mg/kg	2	nd	67	73.4	92	18922	20000	95	0	19	19	05	Ő			44
Boron	ICP-MS	mg/kg	5	nd	40	49	82	19288	20000	96	n n	19	18	02		0		41
Cadmium	ICP-MS	mg/kg	0.3	nd	68.0	70.5	96	19965	20000	100	ň	20	20	100		0		14
Chromium	ICP-MS	mg/kg	2	nd	75	79	95	20118	20000	101	2	22	20	00	2	2		4
Cobalt	ICP-MS	mg/kg	1	nd	77	76	101	19961	20000	100	1	21	10	07	1	2	0	45
Copper	ICP-MS	mg/kg	2	nđ	114	121	94	19795	20000	99	3	23	20	100	3	2		
Iron	ICP-MS	mg/kg	50	nd	7199	9830	73	21421	20000	107	3505	3223	-282	_1//0	3234	2505	274	
Lead	ICP-MS	mg/kg	0.5	nd	94.5	96.5	98	20005	20000	100	3	23	202	-1403	3204	3303	2/1	°,
Manganese	ICP-MS	mg/kg	2	nd	402	425	95	20384	20000	102	82	94	11	57	72	92	11	
Molybdenum	ICP-MS	mg/kg	2	nd	71	78	91	20656	20000	103	n n	19	10	07	12	02		14
Nickel	ICP-MS	mg/kg	2	nd	81	82	98	20183	20000	101	2	22	20	08				93
Selenium	ICP-MS	mg/kg	2	nđ	111	121	92	18681	20000	93	ō	19	10	04				10
Silver	ICP-MS	mg/kg	0.5	nd	134	127.0	106	5059	5000	101	ñ	5	5	02		0	0	31
Strontium	ICP-MS	mg/kg	5	nd	63	76	84	20513	20000	103	1	20	10	93		0	0	43
Thallium	ICP-MS	mg/kg	0.1	nd	101.4	103.0	98	20234	20000	101	i i	20	20	100		1	0	14
Uranium	ICP-MS	mg/kg	0.1	nd	1.2	na	N/A	19584	20000	08	1	20	20	00		0	0	9
Vanadium	ICP-MS	mg/kg	2	nd	139	147	95	20327	20000	102		20	20	33			0	0
Zinc	ICP-MS	mg/kg	5	nd	247	274	90	18819	20000	94	12	23 30	18	89	4 12	4 12	0	11 3
Uranium Vanadium Zinc	ICP-MS ICP-MS ICP-MS	mg/kg mg/kg mg/kg	0.1 2 5	nd nd nd	1.2 139 247	na 147 274	N/A 95 90	19584 20327 18819	20000 20000 20000	98 102 94	1 4 12	20 23 30	20 19 18	99 96 89	1 4 12	1 4 12	0 0 0	

nd = not detected

N/A = not applicable

na = not available

Values in Bold and Italicized print are not applicable.

Non-Conformance Comments: Low matrix spike recovery for Antimony due to digestion type Control Chart Violations: None

Approved:

ENQC\Data\Imperial\2002.completeo\imperial.0312535H.xis



Ĩ	malytic	al Test 1	Results	page :	1
Client : Dillon Consultir	lg Limit	ed		CCX, BRENT	
Halifay	Juic	e 100			
NG BSC 1B3				177757 <i>1</i> 1 4 r	
PSC Project Numb	$ar \cdot 03$	125354		PAA # 14:	00-2008
Client Project N	Number ·	03-2088	0200	Filling : 20	03/08/08
	and the set of the set	05~2000	- 0200	raporteu : 3t	03/08/07
Matrix			Soil	Soil	Soil
Philip ID			03-H047571	03-H047572	03-H047573
Description					
Client ID			TP 8/4 (1.	TP 8/7 (3-	TP 8/7 (3-
			5-2m)	2.75m)	3.75m) DUP
Date Sampled (y/m/d)			03/07/28	03/07/28	03/07/28
DateShipped (y/m/d)			03/07/31	03/07/31	03/07/31
Date Received (y/m/d)			03/07/31	03/07/31	03/07/31
Analyte	Units	EQL		·	
Total Organic Carbon	g/kg	0.2	2.9	2.3	0.3
Fract. of Organic Carbon	g/g	0.0002	0.0029	0.0003	0.0003
TOC QC Event	-	-	7	20030801-A	20030801-A

Legend	EQL	= Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit.
	ND () = Not Detected, our instruments d d not ditect anything above EQL. Raised EQL listed in Parenthesis.
\$	-	= Dash is reported when parameter not requested in sample.
2	Event	# = PSC Quality Control Reference number for QC samples run with your sample.
	%REC	= Surrogate Recovery Values are results of PSC guality control tests.
Note	:	Soil results are expressed on a dry weight basis.
	:	Food results are expressed on a wet weight basis.
		page verified

DO BUTWATER POAD, SUIT TOS REDEORD, NOVA SCOTIA, CANADA, R4B, TO9, 1902,400,0203, 1907,400,8685, W. WAWGA BUT A

	Analytical Test Results	page :	2
PSC Analytical Services 200 Bluewater Road	Client : Dillon Consulting L 137 Chain Lake Dr.	Jimited Suite 100	COX, BRENT
Bedford, NS Canada B4B 1G9	Halifax		
Tel (902) 420-0203	NS B3S 153		FAX # : 450-2008
Toll free (800) 565-7227 Fax (902) 420-8612	PSC Project Number : 0312 Client Project Number : 03-2	1535H 1082-0200	Printed : 2003/08/08 Reported : 2003/08/07

Certificate of Analysis

Method Summaries:

- Carbon: Leco EC-12 Carbon Determinator. Ref: Leco Instruction Manual Model 752-100, 1977 or Leco CS-400 Carbon/Sulphur Analyser. Ref: Instruction Manual Form No. 200-537, 1994.

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. The results relate only to the items tested. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Approval of Industrial Chemistry Parameters: Industrial Chemistry Manager : Robert K. Boss Project Manager :



Quality Control Summary

-			<u> </u>					Blank	Proc. F	Recov.	Ma	trix Spike	Dupli	cate	SR	М
Ļ	Workstation Description	Batch ID Anal	yte	Analyte Name	Method	EQL	Units	Value	Value	% Rec.	ID	% Rec.	ID	% Diff	Value	% Rec.
	Leco-EC12	20030731-A 340	01	Total Organic Carbon	ombustion-I	0.2	g/kg	< 0.2	NA	NA	NA	NA	03-H045572	0	3.2	97



Quality Control Summary

						Non-conformance Comment
Workstation Description	Batch ID Analyte	Analyte Name	Method	EQL	Units	
Leco-EC12	20030731-A 34001	Total Organic Carbon	ombustion-	0.2	g/kg	



	Organi	page : 1					
Client : Dillon Consultin 137 Chain Lake I Halifax	ng Limito Dr. Suito	ed e 100		COX, BRENT			
NS B3S 1B3 PSC Project Numb Client Project N	per : 03: Number :	12535H 03-2088	-0200	FAX # : 4 Printed : 20 Reported : 20	50-2008 003/08/20 003/08/07		
Matrix Philip ID Client ID Date Sampled (y/m/d) Date Shipped (y/m/d) Date Received (y/m/d)			Soil 03-H047542 TP1/1 (0-0 .5m) 03/07/28 03/07/31 03/07/31	Soil 03-H047543 TP1/3 (1.2 m) 03/07/28 03/07/31 03/07/31	Soil 03-H047544 TP1/9 (4-4 .3m) 03/07/28 03/07/31 03/07/31	Soil 03-H047545 TP 2/1 (0- 0.5m) 03/07/28 03/07/31 03/07/31	
Analyte	Units	EQL					
VPH low Event # TEH Cl1-32 Soil Event # Benzene Toluene Ethylbenzene	mg/kg mg/kg mg/kg	- 0.005 0.025 0.010	HL77 HM17 nd nd nd	HL77 HM17 nd nd nd	HL77 HM17 nd nd nd	HL77 HM17 nd nd nd	
Xylenes C6 - C10 HC {less BTEX} >C10-C21 (Fuel Range) >C21-C32 (Lube Range) Modified TPH - Tier 1	mg/kg mg/kg mg/kg	0.050 2.5 15. 15. 32.	nd nd 36. 52. 88.	nd 5.5 250 170 420	nd nd nd nd nd nd	0.155 25.0 1100 430 1500	
TEH Surrogate (IBB) TEH Surrogate (C32) VPH Surrogate (IBB) Moisture	% Rec. % Rec % Rec. %		97. 102. 107. 10.	97. 89. 110. 16.	98. 101. 88. 14.	93. 90. 103. 13.	

EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit. For soils, zero %moisture is assumed. The moisture corrected EQL = EQL/(1-(%moisture/100))
ND () = Analyte was not detected above the EQL. Raised EQL listed in Parenthesis.
- = Dash is reported when parameter not requested in sample.
Event # = PSC Quality Control Reference number for QC samples run with your sample.
KREC = Surrogate Recovery Values are results of PSC quality control tests.
Note : Soil results are expressed on a dry weight basis.
- Biota results are expressed on a wet weight basis.

page verified

PSC Analytical Services 200 Bluewater Road Bedford, NS Canada B4B 1G9	C_ Janic Parameters page : Client : Dillon Consulting Limited 137 Chain Lake Dr. Suite 100 Halifax	2 COX, BRENT
Tel (902) 420-0203	NS B3S 1B3	FAX # : 450-2008
Toll free (800) 565-7227	PSC Project Number : 0312535H	Printed : 2003/08/20
Fax (902) 420-8612	Client Project Number : 03-2088-0200	Reported : 2003/08/07

 Note: The product resemblance comments are provided for general guidance only and may not be accurate. Resemblances are based on comparison with available reference standards. Due to chromatographic similarity of certain products, the influence of weathering effects and interference of non-petrogenic compounds, it is not always possible to positively identify products.
 Notes: Modified TPH - Tier 1 (C6-C32) does not include BTEX
 03-H047542 TP1/1 (0-0.5m) One product in fuel / lube range.
 03-H047543 TP1/3 (1.2m) Fuel oil fraction.
 03-H047545 TP 2/1 (0-0.5m) Weathered fuel oil fraction.

EQL	=	Estimated Quantitation Limit is the minimum concentration that can be reliably
		reported. It is not a regulatory limit. For soils, zero %moisture is assumed
		The moisture corrected EQL = $EQL/(1-(moisture/100))$
ND ()	=	Analyte was not detected above the EQL. Raised EQL listed in Parenthesia
-	=	Dash is reported when parameter not requested in sample
Event #	=	PSC Quality Control Reference number for OC samples run with your cample
%REC	Ħ	Surrogate Recovery Values are results of PSC quality control tests
Note	:	Soil results are expressed on a dry weight basis.
	:	Biota results are expressed on a wet weight basis.
		page verified

SC Analytical Services 00 Bluewater Road edford, NS Canada B4B 1G9 el (902) 420-0203 oll free (800) 565-7227 ax (902) 420-8612	Client PSC Client	: Dillo 137 C Halif NS Project Project	COX, BRENT FAX # : 45 Printed : 20 Reported : 20	, BRENT : 450-2008 ed : 2003/08/20 ted : 2003/08/07		
Matrix Philip ID Client ID Date Sampled (y/m/d) Date Shipped (y/m/d) Date Received (y/m/d)			Soil 03-H047546 TP 2/3 (1- 1.5m) 03/07/28 03/07/31 03/07/31	Soil 03-H047547 TP 3/1 (0- 0.5m) 03/07/28 03/07/31 03/07/31	Soil 03-H047548 TP 3/6 (2. 5-3m) 03/07/28 03/07/31 03/07/31	Soil 03-H04754 TP 3/6 (2 5-3m) DUP 03/07/28 03/07/31 03/07/31
Analyte	Units	EQL				DUP
VPH low Event # TEH C11-32 Soil Event # Benzene Toluene Ethylbenzene	mg/kg mg/kg mg/kg	- 0.005 0.025 0.010	HL77 HM17 0.008 0.054 2.14	HL77 HM17 nd 0.211 nd	HL77 HM17 nd nd nd	HL77 HM17 nd nd nd
Xylenes C6 - C10 HC {less BTEX} >C10-C21 (Fuel Range) >C21-C32 (Lube Range) Modified TPH - Tier 1	mg/kg mg/kg mg/kg	0.050 2.5 15. 15. 32.	11.0 434. 5000 520 6000	nd nd nd 29. nd	nd nd nd nd nd nd	nd nd nd nd nd
TEH Surrogate (IBB) TEH Surrogate (C32) VPH Surrogate (IBB) PAH in Soil Event # Naphthalene	<pre>% Rec. % Rec % Rec. mg/kg</pre>	- - - 0.05	97. 90. 81. HL80 23.	100. 93. 110. -	98. 100. 105. HL80 nd	98. 99. 108. HL80 nd
2-Methylnaphthalene 1-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene	mg/kg mg/kg mg/kg mg/kg mg/kg	0.05 0.05 0.05 0.05 0.05 0.05	56. 37. nd 3.0 6.7		nd nd nd nd nd nd	nd nd nd nd nd nd
Phenanthrene EQL = Estimated Quantita reported. It is no The moisture corre () = Analyte was not d = Dash is reported w ent # = PSC Quality Contro	mg/kg tion Lim t a regu cted EQI etected hen para 1 Refere	0.05 nit is the latory : = EQL/ above the meter not	13. he minimum con limit. For so: (1-(%moisture, he EQL. Raised ot requested : oer for QC sam	ncentration (ils, zero %mo /100)) d EQL listed in sample. mples run wit	nd that can be re bisture is ass in Parenthesi th your sample	nd liably umed. s.
EC = Surrogate Recovery Note : Soil results are e : Biota results are	Values xpressed expressed	are resul l on a di ed on a y	ults of PSC qu ry weight bas: wet weight bas	uality contro is. sis.	ol tests.	-

	∪rgani	c Parame	ters	page: 4		
PSC Analytical Services	Client	: Dillo	n Consulting	Limited	COX, BRENT	
200 Bluewater Road						
Bedford, NS Canada B4B 1G9		Halif	ax			
Tel (902) 420-0203		NS	B3S 1B3		FAX # : 45	0-2008
Toll free (800) 565-7227	PSC	Project	Number : 033	L2535H	Printed : 20	03/08/20
Fax (902) 420-8612	Client	Project	Number : 03-	-2088-0200	Reported : 20	03/08/07
					-	
Matrix			Soil	Soil	Soil	got 1
Philip ID			03-H047546	03-H047547	03-9047549	02 1047540
Client ID			TP 2/3 (1-	TP 3/1 (0-	עבינידיינט ייי אוב מיד	UD-AU4/349
			1.5m)	0.5m	1F 370 (2. 5-3m)	1P 3/0 (2.)
Date Sampled (v/m/d)			03/07/28	03/07/28	02/07/20	5-3m) DOP
Date Shipped (v/m/d)			03/07/31	03/07/20	03/07/28	03/07/28
Date Received (v/m/d)			03/07/31	03/07/31	03/07/31	03/07/31
				03/07/31		03/07/31
Analyte	Units	EQL	(Contin	ued from prev	vious page)	
Anthracene	mg/kg	0.05	0.61		nd	nd
Fluoranthene	ma/ka	0.05	0.32	_	nd	nd
Pyrene	ma/ka	0.05	0.58	-	nd	nd
Benz[a]anthracene	ma/ka	0 05	0.08	_	nd	110
					nu	na
Chrysene	mg/kg	0.05	0.13	-	nd	nd
Benzo[b]fluoranthene	mg/kg	0.05	0.07	-	nd	nd
Benzo[k]fluoranthene	mg/kg	0.05	0.07	-	nd	nd
Benzo[a]pyrene	mg/kg	0.05	0.08	-	nd	nð
Perylene	mg/kg	0.05	nd	-	nd	nd
Indeno [1, 2, 3-cd] pyrene	ma/ka	0 05	nd			
Dibenz (a, hlanthracene	mg/kg	0.05	nd	-	na	nd
Benzo[ghi]pervlene	mg/kg	0.05	nd	-	nd	nd
D8 Acenanhthylene Surr	Red Red	0.05	104	~	na	nd
Di Anthracene Surr	* Nec.		104.	-	98.	91.
	ъ кес.		88.	-	100.	94.
D10 Pyrene Surr.	% Rec.	-	97.	_	97.	91.
Dl4 p-Terphenyl Surr.	% Rec.	-	97.	-	98.	93.
Moisture	6	-	16.	15.	11.	13.

EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit. For soils, zero %moisture is assumed. The moisture corrected EQL = EQL/(1-(%moisture/100)) ND () = Analyte was not detected above the EQL. Raised EQL listed in Parenthesis. = Dash is reported when parameter not requested in sample. Event # = PSC Quality Control Reference number for QC samples run with your sample. = Surrogate Recovery Values are results of PSC quality control tests. %REC Note : Soil results are expressed on a dry weight basis. : Biota results are expressed on a wet weight basis. page verified

	<pre>、 janic Parameters page :</pre>	5
PSC Analytical Services	Client : Dillon Consulting Limited	COX, BRENT
200 Bluewater Road	137 Chain Lake Dr. Suite 100	
Bedford, NS Canada B4B 1G9	Halifax	
Tel (902) 420-0203	NS B3S 1B3	FAX # : 450-2008
Toll free (800) 565-7227	PSC Project Number : 0312535H	Printed : 2003/08/20
Fax (902) 420-8612	Client Project Number : 03-2088-0200	Reported : 2003/08/07

Note: The product resemblance comments are provided for general guidance only and may not be accurate. Resemblances are based on comparison with available reference standards. Due to chromatographic similarity of certain products, the influence of weathering effects and interference of non-petrogenic compounds, it is not always possible to positively identify products.
Notes: Modified TPH - Tier 1 (C6-C32) does not include BTEX
03-H047546 TP 2/3 (1-1.5m) Weathered fuel oil fraction.
03-H047547 TP 3/1 (0-0.5m) Lube oil range.

}	
EQL = Est	imated Quantitation Limit is the minimum concentration that can be reliably
rep	orted. It is not a regulatory limit. For soils, zero %moisture is assumed.
The	moisture corrected EQL = EQL/(1-(%moisture/100))
ND () = Ana	lyte was not detected above the EQL. Raised EQL listed in Parenthesis.
- = Das	n is reported when parameter not requested in sample.
Svent # = PSC	Quality Control Reference number for QC samples run with your sample.
REC = Sur	rogate Recovery Values are results of PSC quality control tests.
Note : Soi	l results are expressed on a dry weight basis.
: Bio	ta results are expressed on a wet weight basis.
	page verified

	Jani	c Parame	ters	page: 6			
PSC Analytical Services 200 Bluewater Road Bedford, NS Canada B4B 1G9	Client	: Dillo 137 C Halif	n Consulting hain Lake Dr. ax	Limited Suite 100	COX, BRENT		
Tel (902) 420-0203		NS	B3S 1B3		FAX # : 45	0-2008	
Toll free (800) 565-7227	PSC	Project	Number : 031	2535H	Printed : 20	03/08/20	
Fax (902) 420-8612	Client	Project	Number : 03-	2088-0200	Reported : 2003/08/07		
Matrix		,	Soil	Soil	Soil	Soil	
Philip ID			03-H047550	03-H047551	03-H047552	03-0047553	
Client ID			TP 4/1 (0- 0.5m)	TP $5/2$ (0.	TP 5/4 (2-3m)	TP 6/5 (2-2)	
Date Sampled (y/m/d)			03/07/28	03/07/28	03/07/20	4.JM)	
Date Shipped (y/m/d)			03/07/31	03/07/31	03/07/20	03/07/28	
Date Received (y/m/d)			03/07/31	03/07/31	03/07/31	03/07/31	
Analyte	Units	EQL	<u> </u>				
VPH low Event #		_	HL77	HL98	HL98	HI.98	
TEH C11-32 Soil Event #		-	HM17	HM17	HM17	HM17	
Benzene	mg/kg	0.005	nd	nd	nd(0.05)	nd	
Toluene	mg/kg	0.025	nd	nd	nd(0.05)	nd	
Ethylbenzene	mg/kg	0.010	nd	0.211	1.83	nd	
Xylenes	mg/kg	0.050	nd	2.43	15.9	nd	
C6 - C10 HC {less BTEX}		2.5	nd	280.	420,	nd	
>C10-C21 (Fuel Range)	mg/kg	15.	nd	6000	93.	nd	
>C21-C32 (Lube Range)	mg/kg	15.	nd	480	nd	nd	
Modified TPH - Tier 1		32.	nd	6700	510	nd	
TEH Surrogate (IBB)	% Rec.	-	98.	84.	100.	97.	
TEH Surrogate (C32)	% Rec	-	102.	104.	100.	100.	
VPH Surrogate (IBB)	% Rec.	-	104.	40.	230.	106.	
Moisture	30	-	7.	8.	12.	9.	

```
EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably
          reported. It is not a regulatory limit. For soils, zero %moisture is assumed.
          The moisture corrected EQL = EQL/(1-(%moisture/100))
ND ( ) = Analyte was not detected above the EQL. Raised EQL listed in Parenthesis.
        = Dash is reported when parameter not requested in sample.
Event # = PSC Quality Control Reference number for QC samples run with your sample.
%REC
       = Surrogate Recovery Values are results of PSC quality control tests.
  Note : Soil results are expressed on a dry weight basis.
        : Biota results are expressed on a wet weight basis.
                                                           page verified
```

	C_ganic Parameters page : '	7
PSC Analytical Services	Client : Dillon Consulting Limited	COX, BRENT
200 Bluewater Road	137 Chain Lake Dr. Suite 100	-
Bedford, NS Canada B4B 1G9	Halifax	
Tel (902) 420-0203	NS B3S 1B3	FAX # : 450-2008
Toll free (800) 565-7227	PSC Project Number : 0312535H	Printed : 2003/08/20
Fax (902) 420-8612	Client Project Number : 03-2088-0200	Reported : 2003/08/07

Note: The product resemblance comments are provided for general guidance only and may not be accurate. Resemblances are based on comparison with available reference standards. Due to chromatographic similarity of certain products, the influence of weathering effects and interference of non-petrogenic compounds, it is not always possible to positively identify products. Notes: Modified TPH - Tier 1 (C6-C32) does not include BTEX 03-H047551 TP 5/2 (0.5-1m) VPH surrogate not within acceptance limits. Sample was repeated with similar results. 03-H047551 TP 5/2 (0.5-1m) Weathered fuel oil fraction. 03-H047552 TP 5/4 (2-3m) VPH surrogate not within acceptance limits due to sample dilution / product interference. Elevated VPH EQL(s) due to sample dilution. 03-H047552 TP 5/4 (2-3m) Fuel oil fraction.

EQL	=	Estimated Quantitation Limit is the minimum concentration that can be reliably
3		reported. It is not a regulatory limit. For soils, zero %moisture is assumed.
		The moisture corrected EQL = EQL/(1-(%moisture/100))
_D ()	=	Analyte was not detected above the EQL. Raised EQL listed in Parenthesis.
-	=	Dash is reported when parameter not requested in sample.
vent #	=	PSC Quality Control Reference number for QC samples run with your sample.
REC		Surrogate Recovery Values are results of PSC quality control tests.
Note	:	Soil results are expressed on a dry weight basis.
	:	Biota results are expressed on a wet weight basis.
		page verified <u>In</u>

C Analytical Services 0 Bluewater Road 9 Gford, NS Canada B4B 1G9	Client	: Dillo 137 C Halif	n Consulting : hain Lake Dr. ax	COX, BRENT			
al (902) 420-0203 bll free (800) 565-7227 ax (902) 420-8612	PSC Client	NS Project Project	B3S 1B3 Number : 031 Number : 03-	2535H 2088-0200	FAX # : 45 Printed : 20 Reported : 20	0-2008 03/08/20 03/08/07	
Matrix Philip ID Client ID			Soil 03-H047554 TP 7/2 (0. 5-1.0m)	Soil 03-H047555 TP 8/3 (1- 1.5m)	Soil 03-H047556 TP 9/1 (0- 0.5m)	Soil 03-H0475 TP 9/5 (5-3m)	
Date Sampled (y/m/d) Date Shipped (y/m/d) Date Received (y/m/d)			03/07/28 03/07/31 03/07/31	03/07/28 03/07/31 03/07/31	03/07/28 03/07/31 03/07/31	03/07/28 03/07/31 03/07/31	
Analyte	Units	EQL			-		
VPH low Event # TEH C11-32 Soil Event # Benzene Toluene	mg/kg mg/kg	- 0.005 0.025	HL98 HM17 nd nd	HL98 HM17 nd nd nd	HL98 HM17 nd 0.308 0.157	HL98 HM17 nd nd nd	
Ethylbenzene	тд/кд 	0.010			0.10/		
Xylenes C6 - C10 HC {less BTEX} >C10-C21 (Fuel Range) >C21-C32 (Lube Range) Modified TPH - Tier 1	mg/kg mg/kg mg/kg	0.050 2.5 15. 15. 32.	nd nd 200 33. 230	nd nd nd nd nd	7.20 52.3 670 82. 810	nd nd nd nd nd	
TEH Surrogate (IBB) TEH Surrogate (C32) VPH Surrogate (IBB)	¥ Rec. % Rec % Rec. % Rec.		99. 101. 104. 10.	97. 101. 113. 21.	96. 100. 104. 8.	97. 101. 108. 11.	
Note: The product resem and may not be ac reference standar influence of weat is not always pos Notes: Modified TPH - Ti 03-H047554 TP 7/2 (0. 03-H047556 TP 9/1 (0-	blance of curate. ds. Due hering e sible to er 1 (Ce 5-1.0m)V 0.5m) H	comments Resembl to chro effects positi 5-C32) d Neathere Fuel oil	are provided ances are bas matographic s and interfere vely identify oes not inclu d fuel oil fr fraction. he minimum co	for general ed on compar imilarity of nce of non-p products. de BTEX action. ncentration	guidance only ison with avai certain produ etrogenic comp that can be re	lable cts, the ounds, it	
reported. It is no The moisture correct () = Analyte was not of = Dash is reported w rent # = PSC Quality Contro	ot a reguented EQI Netected When para	alatory L = EQL/ above t ameter n ence num	limit. For so (1-(%moisture he EQL. Raise ot requested ber for QC sa	ils, zero %m /100)) d EQL listed in sample. mples run wi	oisture is ass in Parenthesi th your sample	umed. s.	

oll free (800) 565-7227 ax (902) 420-8612	PSC Client	Project Project	: Number : 031 : Number : 03-	Printed : 2003/08/20 Reported : 2003/08/07		
Matrix Philip ID Client ID Date Sampled (y/m/d) Date Shipped (y/m/d) Date Received (y/m/d)			Soil 03-H047558 TP 10/1 (0 -0.5m) 03/07/28 03/07/31 03/07/31	Soil 03-H047559 TP 10/5 (2 -2.5m) 03/07/28 03/07/31 03/07/31	Soil 03-H047560 TP 11/2 (0 .4-0.9m) 03/07/28 03/07/31 03/07/31	Soil 03-H0475 TP 11/5 -2.5m) 03/07/28 03/07/31 03/07/31
Analyte	Units	EQL			·····	
VPH low Event # TEH C11-32 Soil Event # Benzene Toluene Ethylbenzene	mg/kg mg/kg mg/kg	- 0.005 0.025 0.010	HL98 HM17 nd nd nd	HL98 HM17 nd nd nd	HL98 HM17 nd nd nd	HL98 HM17 nd nd 0.383
Xylenes C6 - C10 HC {less BTEX} >C10-C21 (Fuel Range) >C21-C32 (Lube Range) Modified TPH - Tier 1	mg/kg mg/kg mg/kg	0.050 2.5 15. 15. 32.	nd nd 43. 28. 70.	nd nd nd nd nd nd	nd 10.6 420 84. 510	2.44 209. 260 21. 490
TEH Surrogate (IBB) TEH Surrogate (C32) VPH Surrogate (IBB) Moisture	<pre>% Rec. % Rec % Rec. %</pre>	-	96. 99. 103. 6.	98. 101. 106. 10.	95. 93. 107. 19.	95. 100. 100. 9.
EQL = Estimated Quantitat reported. It is not The moisture correct	tion Lim: a regul ted EQL	it is th Latory 1 = EQL/()	e minimum conc imit. For soil 1-(%moisture/1	entration th s, zero %moi .00))	at can be reli sture is assum	ably med.

Note : Soil results are expressed on a dry weight basis.

: Biota results are expressed on a wet weight basis.

page verified

PSC Analytical Services 200 Bluewater Road Bedford, NS Canada B4B 1G9	C_yanic Parameters page : 10 Client : Dillon Consulting Limited 137 Chain Lake Dr. Suite 100 Halifax	COX, BRENT
Tel (902) 420-0203	NS B3S 1B3	FAX # : 450-2008
Toll free (800) 565-7227	PSC Project Number : 0312535H	Printed : 2003/08/20
Fax (902) 420-8612	Client Project Number : 03-2088-0200	Reported : 2003/08/07

Note: The product resemblance comments are provided for general guidance only and may not be accurate. Resemblances are based on comparison with available reference standards. Due to chromatographic similarity of certain products, the influence of weathering effects and interference of non-petrogenic compounds, it is not always possible to positively identify products. Notes: Modified TPH - Tier 1 (C6-C32) does not include BTEX TP 10/1 (0-0.5m) Fuel oil fraction. 03-H047558 03-H047560 TP 11/2 (0.4-0.9mWeathered fuel oil fraction. TP 11/5 (2-2.5m) One product in the gas/fuel oil range. 03-H047561 03-H047561 TP 11/5 (2-2.5m) Weathered fuel oil fraction.

EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit. For soils, zero %moisture is assumed. The moisture corrected EQL = EQL/(1-(%moisture/100)) ND () = Analyte was not detected above the EQL. Raised EQL listed in Parenthesis. = Dash is reported when parameter not requested in sample. Event # = PSC Quality Control Reference number for QC samples run with your sample. = Surrogate Recovery Values are results of PSC quality control tests. %REC Note : Soil results are expressed on a dry weight basis. : Biota results are expressed on a wet weight basis. page verified _____

C Analytical Services 0 Bluewater Road dford, NS Canada B4B 1G9	Client	: Dillc 137 C Halif	n Consulting hain Lake Dr. ax	Limited Suite 100	COX, BRENT	
11 free (800) 565-7227	PSC	Project	Number : 031	2535H	$\begin{array}{ccc} \text{FAA # & : 4:} \\ \text{Printed } & : 20 \end{array}$	0-2008
(902) 420-8612	Client	Project	Number : 03-	2088-0200	Reported : 20	03/08/07
Matrix			Soil	Soil	Soil	Soil
Philip ID			03-H047562	03-H047565	03-H047566	03-H04756
Client ID			TP 11/5 (2	S.T. Base	S.T. S-Wal	S.T. E-Wa
			-2.5m) DUP	(3m)	l (1-3m)	l (1-3m)
Date Sampled (y/m/d)			03/07/28	03/07/28	03/07/28	03/07/28
Date Shipped (y/m/d)			03/07/31	03/07/31	03/07/31	03/07/31
Date Received (y/m/d)			03/07/31	03/07/31	03/07/31	03/07/31
Analyte	Units	EQL	DUP			
VPH low Event #		-	HL98	HL98	HL98	HL98
TEH C11-32 Soil Event #			HM17	HM17	HM17	HM17
Benzene	mg/kg	0.005	nd	nd	nd	nd
Toluene	mg/kg	0.025	nd	nd	nd	nð
Ethylbenzene	mg/kg	0.010	0.302	nd	nd	nd
Xylenes	mg/kg	0.050	2.10	nd	nd	nd
C6 - C10 HC {less BTEX}		2.5	181.	nd	nd	21.2
>C10-C21 (Fuel Range)	mg/kg	15.	250	19.	nd	1100
>C21-C32 (Lube Range)	mg/kg	15.	20.	30.	nd	280
Modified TPH - Tier 1		32.	450	49.	nd	1400
TEH Surrogate (IBB)	% Rec.	-	96.	98.	98.	93.
TEH Surrogate (C32)	% Rec	-	102.	100.	102.	92.
VPH Surrogate (IBB)	% Rec.	-	102.	109.	108.	103.
Moisture	oļo	-	8.	14.	13.	13.
		· · · · ·		_		
EQL = Estimated Quantitat	tion Lim	it is th	le minimum con	centration t	hat can be rel	liably
The moisture correct	ted FOL	- FOL//	lmit. For soi	IS, Zero %mo:	isture is assu	umed.
() = Analyte was not de	stected	above th	e EOL. Raised	EOL listed	in Derenthegic	,
= Dash is reported wh	ien para	meter no	t requested i	n sample.	in farentnesis	s .
	Refere	nce numb	er for OC sam	ples run with	h vour sample.	
ent # = PSC Quality Control			Eo Dom	pete add nie		
ent # = PSC Quality Control C = Surrogate Recovery	Values	are resu	lts of PSC qu	ality control	l tests.	

	Liganic Parameters F	page: 12
PSC Analytical Services	Client : Dillon Consulting I	Limited COX, BRENT
200 Bluewater Road	137 Chain Lake Dr.	Suite 100
Bedford, NS Canada B4B 1G9	Halifax	
Tel (902) 420-0203	NS B3S 1B3	FAX # : 450-2008
Toll free (800) 565-7227	PSC Project Number : 0312	2535H Printed : 2003/08/20
Fax (902) 420-8612	Client Project Number : 03-2	2088-0200 Reported : 2003/08/07

Note: The product resemblance comments are provided for general guidance only and may not be accurate. Resemblances are based on comparison with available reference standards. Due to chromatographic similarity of certain products, the influence of weathering effects and interference of non-petrogenic compounds, it is not always possible to positively identify products.
Notes: Modified TPH - Tier 1 (C6-C32) does not include BTEX
03-H047562 TP 11/5 (2-2.5m) One product in the gas/fuel oil range.
03-H047565 S.T. Base (3m) Fuel / Lube range.
03-H047567 S.T. E-Wall (1-3mOne product in the gasoline/fuel oil range. Weathered fuel oil fraction.

EQL	Π	Estimated Quantitation Limit is the minimum concentration that can be reliably
		reported. It is not a regulatory limit. For soils, zero %moisture is assumed.
		The moisture corrected EQL = EQL/(1-(%moisture/100))
ND ()	=	Analyte was not detected above the EQL. Raised EQL listed in Parenthesis.
-	Ξ	Dash is reported when parameter not requested in sample.
Event #	=	PSC Quality Control Reference number for QC samples run with your sample.
%REC	-	Surrogate Recovery Values are results of PSC quality control tests.
Note	:	Soil results are expressed on a dry weight basis.
	:	Biota results are expressed on a wet weight basis.
		page verified

17 four fa bholladhann o bh		L_ganic	Paramet	ers	page : 13	
PSC 200 Bed	Analytical Services Bluewater Road ford, NS Canada B4B 1G9	Client	: Dillon 137 Ch Halifa	n Consulting Main Lake Dr. Mx	Limited Suite 100	COX, BRENT
Tel Tol Fax	(902) 420-0203 1 free (800) 565-7227 (902) 420-8612	PSC Client	NS Project Project	B3S 1B3 Number : 031 Number : 03-	2535H 2088-0200	FAX # : 450-2008 Printed : 2003/08/20 Reported : 2003/08/07
-JANNAADEEND M Fanam ^{an} .	Matrix Philip ID Client ID			Soil 03-H047568 DUP A	Soil 03-H047569 DUP B	Soil 03-H047570 DUP C
n na manana an	Date Sampled (y/m/d) DateShipped (y/m/d) Date Received (y/m/d)			03/07/28 03/07/31 03/07/31	03/07/28 03/07/31 03/07/31	03/07/28 03/07/31 03/07/31
014 -	Analyte	Units	EQL			
2014 VIVI0000000000000000000000000000000000	VPH low Event # TEH C11-32 Soil Event # Benzene Toluene Ethylbenzene	mg/kg mg/kg mg/kg	- 0.005 0.025 0.010	HL98 HM17 nd(0.05) nd(0.2) 2.47	HL98 HM17 nd(0.05) nd(0.2) 0.181	HL98 HM17 nd nd 0.048
*/************************************	Xylenes C6 - C10 HC {less BTEX} >C10-C21 (Fuel Range) >C21-C32 (Lube Range) Modified TPH - Tier 1	mg/kg mg/kg mg/kg	0.050 2.5 15. 15. 32.	12.9 722. 5700 620 7100	2.13 268. 5700 460 6400	0.346 67.6 200 20. 290
	TEH Surrogate (IBB) TEH Surrogate (C32) VPH Surrogate (IBB) Moisture	<pre>% Rec. % Rec % Rec. %</pre>	- - -	94. 89. 241. 16.	105. 102. 183. 9.	96. 100. 104. 9.
ND - ≷RE	<pre>EQL = Estimated Quantita reported. It is no The moisture corre () = Analyte was not d = Dash is reported w nt # = PSC Quality Contro C = Surrogate Recovery</pre>	tion Lim t a regu cted EQL etected hen para l Refere Values	it is th latory l = EQL/(above th meter no nce numb are resu	e minimum co imit. For so 1-(%moisture e EQL. Raise t requested er for QC sa lts of PSC q	ncentration t ils, zero %mo /100)) d EQL listed in sample. mples run wit uality contro	that can be reliably bisture is assumed. in Parenthesis. th your sample. bl tests.
****	Note : Soil results are e	xpressed	on a dr	y weight bas	is.	,

: Biota results are expressed on a wet weight basis.

page verified <u>___</u>

PSC Analytical Services 200 Bluewater Road	C.ganic Parameters page : 14 Client : Dillon Consulting Limited 137 Chain Lake Dr. Suite 100	COX, BRENT
Bedford, NS Canada B4B 1G9	Halifax	
Tel (902) 420-0203	NS B3S 1B3	FAX # : 450-2008
Toll free (800) 565-7227	PSC Project Number : 0312535H	Printed : 2003/08/20
Fax (902) 420-8612	Client Project Number : 03-2088-0200	Reported : 2003/08/07

Note:	The pro	oduc	t resemblance	comments are provided for general guidance only
	and may	y noi	t be accurate	. Resemblances are based on comparison with available
	referen	nce :	standards. Du	e to chromatographic similarity of certain products, the
	influer	nce d	of weathering	effects and interference of non-petrogenic compounds, it
	is not	alwa	ays possible (to positively identify products.
Notes:	Modifie	ed Tl	PH - Tier 1 (0	C6-C32) does not include BTEX
03-H04	7568	DUP	A	Elevated VPH EQL(s) due to sample dilution.
				VPH surrogate not within acceptance limits due to
				sample dilution / product interference.
03-H04	7568	DUP	А	Weathered fuel oil fraction.
03-H04	7569	DUP	В	Elevated VPH EQL(s) due to sample dilution.
				VPH surrogate not within acceptance limits due to
				sample dilution / product interference.
03-H04	7569	DUP	В	Weathered fuel oil fraction.
03-H04	7570	DUP	С	One product in the gas/fuel oil range.
03-H04	7570	DUP	С	Weathered fuel oil fraction.

EQL	-	Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit. For soils, zero %moisture is assumed. The moisture corrected EQL = $EQL/(1-(%moisture/100))$
ND ()	=	Analyte was not detected above the EQL. Raised EQL listed in Parenthesis.
-	=	Dash is reported when parameter not requested in sample.
Event #	H	PSC Quality Control Reference number for QC samples run with your sample.
%REC	=	Surrogate Recovery Values are results of PSC quality control tests.
Note	:	Soil results are expressed on a dry weight basis.
	:	Biota results are expressed on a wet weight basis.
		page verified

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Certificate of Analysis

Method Summaries :

Polycyclic Aromatic Hydrocarbons - Soil/Sediment: Acetone/Hexane extr'n. HP5890/5971 GC/MS (SIM mode). Ref: EPA 8270A Purgeable Hydrocarbons - Soil: Methanol extr'n. Purge and Trap/GC/MS. Tekmar LSC 2000. Varian 3400/Saturn II GC/MS. Ref: Atlantic PIRI Guidelines for Laboratories, Draft 1.0, 1999. Extractable Hydrocarbons - Soil: Acetone/Hexane extraction. HP5890 GC/FID. Ref: Atlantic PIRI Guidelines for Laboratories, Draft 1.0, 1999. Moisture- based upon: Handbook of Analytical Methods for Environmental Samples Gravimetric Metod Vol 1, page ME4, Ontario Ministry of the Environment, Rexdale Ont.1983. Drying temperature 105+- 5 Degrees C.

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. The results relate only to the items tested. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Analyses reviewed by:

a Organics Manager : James MacDonald Suzanne Rogers Project Manager



Quality Control Summary

Workstation Description	Batch ID	Analyte	Analyte Name					Blank Proc. Recov. Matrix Spike			Spîke	Duplicate		SPM	
				Method	EQL	Units	Value	Value	% Rec		% Rec				M
VPH Iow Event #	HL//	6413	Benzene	PT GCMS	0.005	malka	< 0.005	0.007	400				76 Din	Value	% Rec.
VPH IOW EVENT#	HL77	6413	Benzene	PT GCMS	0.005	malka	< 0.005	0.027	108	03-H047548	108	03-H047548	0		
VPH (0W Event #	HL77	5421	Toluene	PT GCMS	0.025	ma/ka	< 0.005	0.026	104					1	
VPH low Event #	HL77	5421	Toluene	PT GCMS	0.025	ma/ka	< 0.025	0.087	116	03-H047548	103	03-H047548	0	1	
VPH IOW Event #	HL77	5433	Ethylbenzene	PT GCMS	0.020	mg/kg	< 0.025	0.084	112						
VPH low Event #	HL77	5433	Ethylbenzene	PT GCMS	0.01	malka	< 0.01	0.028	112	03-H047548	95	03-H047548	0		
VPH low Event #	HL.77	5441	Xylenes	PT GCMS	0.05	ma/ka		0.027	108					1	
VPH low Event #	HL77	5441	Xylenes	PT GCMS	0.05	mg/kg	< 0.05	0.11	110	03-H047548	101	03-H047548	0		
VPH low Event #	HL77	5449	Total C6-C10 (incl. BTEX	PTGCMS	25	mg/kg	< 0.05	0.11	110						
VPH low Event #	HL77	5449	Total C6-C10 (incl. BTEX	PT GCMS	2.5	mg/kg	\$ 4.5	57	86	03-H047548	85	03-H047548	0	ĺ	
VPH low Event #	HL98	6413	Benzene	PTCCMS	2.5	mg/kg	< 2.5	59	89				·		
VPH low Event #	HL98	6413	Benzene	PTCCMS	0.005	mg/kg	< 0.005	0.024	96	03-H047562	100	03-H047561	0		
VPH low Event #	HL98	5421	Toluene	PTCCMS	0.005	mg/kg	< 0.005	0.026	104				•		
VPH low Event #	HL98	5421	Toluene	PT CCMS	0.025	mg/kg	< 0.025	0.082	109	03-H047562	103	03-H047561	0		
VPH low Event #	HL98	5433	Fthylhenzeno	PTGCMS	0.025	mg/kg	< 0.025	0.082	109				U		
VPH low Event #	HL98	5433	Ethylbenzone	PIGUMS	0.01	mg/kg	< 0.01	0.028	112	03-H047562	89	03-H047561	21		
VPH low Event #	HL98	5441	- Xylence	PIGCMS	0.01	mg/kg	< 0.01	0.027	108	1			£1		
VPH low Event #	HL98	5441	Xylenes	PIGCMS	0.05	mg/kg	< 0.05	0.11	110	03-H047562	97	03-0047561	11		
VPH low Event #	HL98	5449	Total C6-C10 (and DTEV	PIGCMS	0.05	mg/kg	< 0.05	0.11	110		<i></i>	00-11047 001	11		
VPH low Event #	HL98	5449	Total C6-C10 (incl. BTEX	PIGCMS	2.5	mg/kg	< 2.5	53	80	03-H047562	0	03-0047561	12		
TEH C11-32 Soil Event #	HM17	4160		PTGCMS	2.5	mg/kg	< 2.5	55	83		Ŭ	00-11047 001	12		
TEH C11-32 Soil Event #	HM17	4160	TEH (>C10-C32)	GC FID	30	mg/kg	< 30	880	88	03-H047562	85	03-4047561			
PAH in Soil Event #	HL80	7410	Norphthelene	GC FID	30	mg/kg	< 30	880	88	03-H047549	89	03-4047549	0		
PAH in Soil Event #	HL80	7410	Naphinalene	GC/MS	0.05	mg/kg	< 0.05	2.1	84	03-H047548	80	03-4047540	U I		
PAH in Soil Event #	HL80	7425		GC/MS	0.05	mg/kg	< 0.05	2.1	84			05-11047546	v I		
PAH in Soil Event #	HL 80	7425	2 Mothulaeabilitate	GC/MS	0.05	mg/kg	< 0.05	2	80	03-H047548	80	03 1047540			
PAH in Soil Event #	HL 80	7420	2-Methylnaphtnalene	GC/MS	0.05	mg/kg	< 0.05	2	80		<u> </u>	05-11047 546	U I		
PAH in Soil Event #	HL 80	7420		GC/MS	0.05	mg/kg	< 0.05	2.3	92	03-H047548		02 11047540	_	[
PAH in Soil Event #	HL 80	7440	1-ivieuryinaphtnaiene	GC/MS	0.05	mg/kg	< 0.05	2.2	88			03-004/ 348	0	1	
PAH in Soil Event #	HL80	7440	Acenaphthylene	GC/MS	0.05	mg/kg	< 0.05	2.6	104	03-H047548	100	02 110 175 10			1
PAH in Soil Event#	HI 80	7440	Acenaphthylene	GC/MS	0.05	mg/kg	< 0.05	2.6	104	0401040	100	U3-HU4/548	0		
PAH in Soil Event #	HISO	7450	Acenaphthene	GC/MS	0.05	mg/kg	< 0.05	2.6	104	02-4047549	104	00 110 175 10	_		
PAH in Soil Event #		7450	Acenaphthene	GC/MS	0.05	mg/kg	< 0.05	26	104	00-110-47 040	104	J3-HU4/548	0		
PAH in Soil Event #		7460	Fluorene	GC/MS	0.05	mg/kg	< 0.05	2.5	100	03 4047540	00				
PAH in Soil Event #		7460	Fluorene	GC/MS	0.05	mg/kg	< 0.05	24	96	00-11047 040	30	J3-H047548	0		
PAH in Soil Event #		7470	Phenanthrene	GC/MS	0.05	mg/kg	< 0.05	24	96	03.4047540			. [
PAH in Soil Event #		7470	Phenanthrene	GC/MS	0.05	mg/kg	< 0.05	24	96	05-11047540	90 1	J3-H04/548	0		
PAH in Soil Event #		7480	Anthracene	GC/MS	0.05	mg/kg	< 0.05	2.5	100	02 1047540			1		
PAH in Soil Event #		7460	Anthracene	GC/MS	0.05	mg/kg	< 0.05	2.5	100	00-11047 546	96 10	J3-HU4/548	0		
PAH in Soil Event #		7500	Fluoranthene	GC/MS	0.05	ma/ka	< 0.05	21	84	02.4047540					
PAH in Soil Event#	HL80	7500	Fluoranthene	GC/MS	0.05	ma/ka	< 0.05	21	04	03-104/548	84 (3-H047548	0		
PAH in Soil Event #	HL80	7510	Pyrene	GC/MS	0.05	ma/ka	< 0.05	1 00	04	02 110 177 10					
PALLin Soil Event#	HL80	7510	Pyrene	GC/MS	0.05	ma/ka	< 0.05	2.02	00	U3-HU4/548	81 [0)3-H047548	0		
	HL80	7530	Benz[a]anthracene	GC/MS	0.05	ma/ka	< 0.05	2.00	01	00.110.177	l		1		ļ
DAU in Call Durat II	HL80	7530	Benz[a]anthracene	GC/MS	0.05	mo/ko	< 0.05	2.3	92	U3-H047548	92 0	3-H047548	0		
PAR II Soll Event #	HL80	7540	Chrysene	GC/MS	0.05	ma/ka	20.05	2.4	96						
PALLIN CONTRACT	HL80	7540	Chrysene	GC/MS	0.05	ma/ka	<0.00 <0.0e	2.4	96	03-H047548	92 0	3-H047548	0		1
FAR IN SOIL EVent #	HL80	7551	Benzo[b]fluoranthene	GC/MS	0.05	mo/ka	-0.05	2.4	96				1		
			•			- gring [- 0.03	2.4	96	U3-H047548	92 0	3-H047548	0		1

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Workstation Description	Batch ID	Analyte	Analida M				Mon
VPH low Event #			Arlaiyte Name	Method	EQL	Units	Non-conformance Comment
VPH low Event #	HL77	6413	Benzene	PTGCMS	0.005		
VPH low Event #	HL/7	6413	Benzene	PT CCM	0.000	_ mg/кg	
VPH low Event #	HL77	5421	Toluene	PT CCMS		mg/kg	
VPH low Event #	HL77	5421	Toluene	PT CCM	0.025	mg/kg	
VPH low Event #	HL77	5433	Ethylbenzene	PTCCMS	0.025	mg/kg	
VPH low Event #	HL77	5433	Ethylbenzene	PTOCMS	0.01	mg/kg	
VPH low Event #	HL77	5441	Xvienes	PIGUMS	0.01	mg/kg	
VED JOW EVENT#	HL77	5441	Xvienes	PTGCMS	0.05	_ mg/kg	
VPH low Event #	HL77	5449	Total C6-C10 (incl. BTEY	PIGCMS	0.05	mg/kg	
VPH IOW Event #	HL77	5449	Total C6-C10 (incl. BTEX	PIGCMS	2.5	mg/kg	
VPH IOW Event #	HL98	6413	Benzene	PIGCMS	2.5	mg/kg	
VPH low Event #	HL98	6413	Benzono	PIGCMS	0.005	mg/kg	
VPH low Event #	HL98	5421	Tokieno	PTGCMS	0.005	mg/kg	
VPH low Event #	HL98	5421	Tokono	PTGCMS	0.025	mg/kg	
VPH low Event #	HL98	5433	Ethylbopzopo	PIGCMS	0.025	mg/kg	
VPH low Event #	HL98	5433	Ethylboozee	PLECWS	0.01	mg/kg	
VPH low Event #	HL98	5441	Yulopeo	PT GCMS	0.01	mg/kg	
VPH low Event #	HL98	5441	Xylenes Xylenes	PT GCMS	0.05	mg/kg	
VPH low Event #	HL98	5449		PT GCMS	0.05	mg/kg	
VPH low Event #	HL98	5449	Total C6-C10 (incl. BTEX	PT GCMS	2.5	ma/ka	Matrix spike sample connect in the
TEH C11-32 Soil Event #	HM17	4160	TCL (O LO DATEX	PT GCMS	2.5	ma/ka	service sample concentration is >2x spiking level.
TEH C11-32 Soil Event #	HM17	4160	TEH (>C10-C32)	GC FID	30	ma/ka	
PAH in Soil Event #	HI 80	7410	TEH (>C10-C32)	GC FID	30	mo/ko	
PAH in Soil Event #	HIRO	7410	Naphthalene	GC/MS	0.05	ma/ka	
PAH in Soil Event #	HLSO	7410	Naphthalene	GC/MS	0.05	ma/ka	
PAH in Soil Event #	HISO	7420	2-Methylnaphthalene	GC/MS	0.05	ma/ka	
PAH in Soil Event #	HLSO	7420	2-Methylnaphthalene	GC/MS	0.05	mo/ko	
PAH in Soil Event #	HL 80	7420	1-Methylnaphthalene	GC/MS	0.05	ma/ka	
PAH in Soil Event #	HLSO	7420	1-Methylnaphthalene	GC/MS	0.05	mo/ko	
PAH in Soil Event #	H1 80	7440	Acenaphthylene	GC/MS	0.05	ma/ka	
PAH in Soil Event #	HI 80	7440	Acenaphthylene	GC/MS	0.05	ma/ka	
PAH in Soil Event #	HL80	7450	Acenaphthene	GC/MS	0.05	ma/ka	
PAH in Soil Event #	HLRO	7400	Acenaphthene	GC/MS	0.05	ma/ka	
PAH in Soil Event #	HIRO	7400	Fluorene	GC/MS	0.05	mo/ka	
PAH in Soil Event #	HIRO	7400	Fluorene	GC/MS	0.05	ma/ka	
PAH in Soil Event #	HI PO	7470	Phenanthrene	GC/MS	0.05	malka	
PAH in Soil Event #	HIGO	7470	Phenanthrene	GC/MS	0.05	malka	
PAH in Soil Event #		7480	Anthracene	GC/MS	0.05	mg/kg	
PAH in Soil Event #		7480	Anthracene	GC/MS	0.05	mg/kg mg/kg	
PAH in Soil Event #		7500	Fluoranthene	GC/MS	0.05	mg/kg	
PAH in Soil Event #	11.00	7500	Fluoranthene	GC/MS	0.05	mg/kg	
PAH in Soil Event #	HL80	7510	Pyrene	GC/MS	0.05	ng/kg	
PAH in Soil Event #	HL80	7510	Pyrene	GC/MS	0.05	пу/кд	
PAH in Soil Event #	HL80	7530	Benz[a]anthracene	GC/MS	0.05	ng/kg	
PAH in Soil Event #	HL80	7530	Benz[a]anthracene	GC/MS	0.05	ng/kg	
PAH in Soil Event #	HL80	7540	Chrysene	GC/MS	0.05	ng/kg	
PAH in Soil Event #		7540	Chrysene	GC/MS		ng/kg	
and a contraction of	HL80	/551	Benzo[b]fluoranthene	GC/MS		ig/kg	
			- 1		oroa tu	ng/kg	1



PAH in Soil Event # HL80 7551 Benzo[b]fluoranthene GC/MS 0.05 mg/kg < 0.05	Workstation Description	Rotch ID	I American					Blank	Proc F	200011			7			
PAH in Soil Event # HL80 7551 Benzo[b]fluoranthene GC/MS 0.05 mg/kg < 0.05		Baton ID	Analyte	Analyte Name	Method	EQL	Units	Value	Voluo	W Dee	Matrix	Spike	Dupli	cate	SR	M
PAH in Soil Event # HL80 7570 Indeno[1,2,3-cd]pyrene GC/MS 0.05 mg/kg < 0.05 2.3 92 0.1 0.3-H047548 0 PAH in Soil Event # HL80 7570 Indeno[1,2,3-cd]pyrene GC/MS 0.05 mg/kg < 0.05	PAH in Soil Event # PAH in Soil Event #	HL80 HL80 HL80 HL80 HL80 HL80 HL80 HL80	7551 7552 7552 7560 7560 7415 7415	Analyte Name Benzo[b]fluoranthene Benzo[k]fluoranthene Benzo[k]fluoranthene Benzo[a]pyrene Benzo[a]pyrene Perylene Perylene	Method GC/MS GC/MS GC/MS GC/MS GC/MS	EQL 0.05 0.05 0.05 0.05 0.05 0.05	Units mg/kg mg/kg mg/kg mg/kg mg/kg	Value < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05	Value 2.4 2.4 2.3 2.3 2.3 2.4	% Rec. 96 96 92 92 92 96	03-H047548 03-H047548 03-H047548	92 92 92	Dupli ID 03-H047548 03-H047548	cate % Diff 0 0	SR Value	M % Rec.
	PAH in Soil Event # PAH in Soil Event #	HL80 HL80 HL80 HL80 HL80 HL80	7570 7570 7580 7580 7590 7590	Indeno[1,2,3-cd]pyrene Indeno[1,2,3-cd]pyrene Dibenz[a,h]anthracene Dibenz[a,h]anthracene Benzo[ghi]perylene Benzo[ghi]perylene	GC/MS GC/MS GC/MS GC/MS GC/MS GC/MS	0.05 0.05 0.05 0.05 0.05 0.05 0.05	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	< 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05	2.3 2.2 2.1 2.2 2.1 2.3	92 88 84 88 88 84 92	03-H047548 03-H047548 03-H047548	84 84 88	03-H047548 03-H047548 03-H047548	0 0 0		

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ANALYTICAL SERVICES

Analyte Details

page :

1

Client : Dillon Consulting Limited COX, BRENT 137 Chain Lake Dr. Suite 100 Halifax NS B3S 1B3 FAX # : 450-2008 PSC Project Number : 0312535H Printed : 2003/08/19 Client Project Number : 03-2088-0200 Reported : 2003/08/07

<u>Sample ID</u>	<u>Analyte</u>	Date Analysed	<u>Analyst</u>
03-H047542	VPH low	8/ 2/03	April Darrach
03-H047542	TEH C11-32 Soil	8/ 6/03	Heather Eisnor
03-H047542	Moisture	8/ 1/03	Amanda Roberts
03-H047542	VPH Soil Extraction	7/31/03	Amy MacArthur
03-H047542	TEH Soil Extraction	8/ 6/03	Karen Hamill
03-H047543	VPH low	8/ 2/03	April Darrach
03-H047543	TEH C11-32 Soil	8/ 7/03	Heather Eisnor
03-H047543	Moisture	8/ 1/03	Amanda Roberts
03-H047543	VPH Soil Extraction	7/31/03	Amy MacArthur
03-H047543	TEH Soil Extraction	8/ 6/03	Karen Hamill
03-H047544	VPH low	8/ 1/03	April Darrach
03-H047544	TEH C11-32 Soil	8/ 6/03	Heather Eisnor
03-H047544	Moisture	8/ 1/03	Amanda Roberts
03-H047544	VPH Soil Extraction	7/31/03	Amy MacArthur
03-H047544	TEH Soil Extraction	8/ 6/03	Karen Hamill
03-H047545	VPH low	8/ 2/03	April Darrach
03-H047545	TEH C11-32 Soil	8/ 7/03	Heather Eisnor
03-H047545	Moisture	8/ 1/03	Amanda Roberts
03-H047545	VPH Soil Extraction	7/31/03	Amy MacArthur
03-H047545	TEH Soil Extraction	8/ 6/03	Karen Hamill
03-H047546	VPH low	8/ 7/03	April Darrach
03-H047546	TEH C11-32 Soil	8/ 6/03	Heather Eisnor
03-H047546	Antimony Recovery	8/ 1/03	Lynne Kempton
03-H047546	Aluminum	8/ 1/03	Lynne Kempton
03-H047546	Antimony	8/ 1/03	Lynne Kempton
03-H047546	Arsenic	8/ 1/03	Lynne Kempton
03-H047546	Barium	8/ 1/03	Lynne Kempton
03-H047546	Beryllium	8/ 1/03	Lynne Kempton
03-H047546	Boron	8/ 1/03	Lynne Kempton
03-H047546	Cadmium	8/ 1/03	Lynne Kempton
03-H047546	Chromium	8/ 1/03	Lynne Kempton
03-H047546	Cobalt	8/ 1/03	Lynne Kempton
03-H047546	Copper	8/ 1/03	Lynne Kempton
03-H047546	Iron	8/ 1/03	Lynne Kempton

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Analyte Details page : 2

PSC Analytical Services	Client : Dillon Consulting Limited	COX, BRENT
200 Bluewater Road	137 Chain Lake Dr. Suite 100	
Bedford, NS Canada B4B 1G9	Halifax	
Tel (902) 420-0203	NS B3S 1B3	FAX # : 450-2008
Toll free (800) 565-7227	PSC Project Number : 0312535H	Printed : 2003/08/19
Fax (902) 420-8612	Client Project Number : 03-2088-0200	Reported : 2003/08/07

<u>Sample ID</u>	Analyte	Date Analysed	Analyst
03-H047546	Iron Recovery	8/ 1/03	Lynne Kempton
03-H047546	Lead	8/ 1/03	Lynne Kempton
03-H047546	Manganese	8/ 1/03	Lynne Kempton
03-H047546	Molybdenum	8/ 1/03	Lynne Kempton
03-H047546	Nickel	8/ 1/03	Lynne Kempton
03-H047546	Selenium	8/ 1/03	Lynne Kempton
03-H047546	Silver	8/ 1/03	Lynne Kempton
03-H047546	Strontium	8/ 1/03	Lynne Kempton
03-H047546	Thallium	8/ 1/03	Lynne Kempton
03-H047546	Uranium	8/ 1/03	Lynne Kempton
03-H047546	Vanadium	8/ 1/03	Lynne Kempton
03-H04/546	Zinc	8/ 1/03	Lynne Kempton
03-H047546	Moisture	8/ 1/03	Amanda Roberts
03-H047546	Aluminum	8/ 1/03	Jerry Arenovich
03-H047546	Copper	8/ 1/03	Jerry Arenovich
03-H047546	Iron	8/ 1/03	Jerry Arenovich
03-H047546	Lead	8/ 1/03	Jerry Arenovich
03-H047546	Manganese	8/ 1/03	Jerry Arenovich
03-H047546	Zinc	8/ 1/03	Jerry Arenovich
03-H047546	HNO3 Peroxide Digestion	8/ 1/03	Hirovuki Inamura
03-H047546	VPH Soil Extraction	7/31/03	Amy MacArthur
03-H047546	TEH Soil Extraction	8/ 6/03	Karen Hamill
03-H047546	PAH Soil Extraction	7/31/03	Cynthia Coleman
03-H047546	Naphthalene	7/31/03	Cynthia Coleman
03-H047546	Perylene	7/31/03	Cynthia Coleman
03-H047546	1-Methylnaphthalene	7/31/03	Cynthia Coleman
03-H047546	2-Methylnaphthalene	7/31/03	Cynthia Coleman
03-H047546	Acenaphthylene	7/31/03	Cynthia Coleman
03-H047546	Acenaphthene	7/31/03	Cynthia Coleman
03-H047546	Fluorene	7/31/03	Cynthia Coleman
03-H047546	Phenanthrene	7/31/03	Cynthia Coleman
		.,	Cynchia Coreman
03-H047546	Anthracene	7/31/03	Cynthia Coleman
03-H047546	Fluoranthene	7/31/03	Cynthia Coleman
03-H047546	Pyrene	7/31/03	Cynthia Coleman
03-H047546	Benz[a] anthracene	7/31/03	Cynthia Coleman

PSC Analytical Services	Client : Dillon Consulting Limited	COX, BRENT
200 Bluewater Road	137 Chain Lake Dr. Suite 100	
Bedford, NS Canada B4B 1G9	Halifax	
Tel (902) 420-0203	NS B3S 1B3	FAX # : 450-2008
Toll free (800) 565-7227	PSC Project Number : 0312535H	Printed : 2003/08/19
Fax (902) 420-8612	Client Project Number : 03-2088-0200	Reported : 2003/08/07

<u>Sample ID</u>	Analyte	Date Analysed	Analyst
03-H047546	Chrysene	7/31/03	Cynthia Coleman
03-H047546	Benzo [b] fluoranthene	7/31/03	Cynthia Coleman
03-H047546	Benzo [k] fluoranthene	7/31/03	Cynthia Coleman
03-H047546	Benzo[a]pyrene	7/31/03	Cynthia Coleman
03-H047546	Indeno[1,2,3-cd]pyrene	7/31/03	Cynthia Coleman
03-H047546	Dibenz[a,h]anthracene	7/31/03	Cynthia Coleman
03-H047546	Benzo[ghi]perylene	7/31/03	Cynthia Coleman
03-H047546	D8 Acenaphthylene Surr.	7/31/03	Cynthia Coleman
03-H047546	D10 Anthracene Surr.	7/31/03	Cynthia Coleman
03-H047546	D10 Pyrene Surr.	7/31/03	Cynthia Coleman
03-H047546	D14 p-Terphenyl Surr.	7/31/03	Cynthia Coleman
03-H047547	VPH IOW	8/ 1/03	April Darrach
03-H047547	TEH C11-32 Soil	8/ 7/03	Heather Eisnor
03-H047547	Moisture	8/ 1/03	Amanda Roberts
03-H047547	VPH Soil Extraction	7/31/03	Amy MacArthur
03-H047547	TEH Soil Extraction	8/ 6/03	Karen Hamill
03-H047548	VPH low	8/ 1/03	April Darrach
03-H047548	TEH C11-32 Soil	8/ 6/03	Heather Eisnor
03-H047548	Antimony Recovery	8/ 1/03	Lynne Kempton
03-H047548	Aluminum	8/ 1/03	Lynne Kempton
03-H047548	Antimony	8/ 1/03	Lynne Kempton
03-H047548	Arsenic	8/ 1/03	Lynne Kempton
03-H047548	Barium	8/ 1/03	Lynne Kempton
03-H047548	Beryllium	8/ 1/03	Lynne Kempton
03-H047548	Boron	8/ 1/03	Lynne Kempton
03-H047548	Cadmium	8/ 1/03	Lynne Kempton
03-H047548	Chromium	8/ 1/03	Lynne Kempton
03-H047548	Cobalt	8/ 1/03	Lynne Kempton
03-H047548	Copper	8/ 1/03	Lynne Kempton
03-H047548	Iron	8/ 1/03	Lynne Kempton
03-H047548	Iron Recovery	8/ 1/03	Lynne Kempton
03-H047548	Lead	8/ 1/03	Lynne Kempton
03-H047548	Manganese	8/ 1/03	Lynne Kempton
03-H047548	Molybdenum	8/ 1/03	Lynne Kempton
03~H047548	Nickel	8/ 1/03	Lynne Kempton
			- •

	Analyte Details	page :	4
PSC Analytical Services 200 Bluewater Road Bedford, NS Canada B4B 1G9	Client : Dillon Consult 137 Chain Lake Halifax	ing Limited Dr. Suite 100	COX, BRENT
Tel (902) 420-0203 Toll free (800) 565-7227 Fax (902) 420-8612	NS B3S 1B. PSC Project Number : Client Project Number :	3 0312535H 03-2088-0200	FAX # : 450-2008 Printed : 2003/08/19 Reported : 2003/08/07

Sample ID	Analyte	Date Analysed	Analyst
03-H047548	Selenium	8/ 1/03	Lynne Kempton
03-H047548	Silver	8/ 1/03	Lynne Kempton
03-H047548	Strontium	8/ 1/03	Lynne Kempton
03-H047548	Thallium	8/ 1/03	Lynne Kempton
03-H047548	Uranium	8/ 1/03	Lynne Kempton
03-H047548	Vanadium	8/ 1/03	Lynne Kempton
03-H047548	Zinc	8/ 1/03	Lynne Kempton
03-H047548	Moisture	8/ 1/03	Amanda Roberts
03-H047548	Aluminum	8/ 1/03	Jerry Arenowich
03-H047548	Copper	8/ 1/03	Jerry Arenovich
03-H047548	Iron	8/ 1/03	Jorry Arenovich
			Jerry Arenovich
03-H047548	Lead	8/ 1/03	Jerry Arenovich
03-H047548	Manganese	8/ 1/03	Jerry Arenovich
03-H047548	Zinc	8/ 1/03	Jerry Arenovich
03-H047548	HNO3 Peroxide Digestion	8/ 1/03	Hiropolei Teeruus
03-H047548	VPH Soil Extraction	7/31/03	Antoyuki inamura
			Any MacArthur
03-H047548	TEH Soil Extraction	8/ 6/03	Karen Hamill
03-H047548	PAH Soil Extraction	7/31/03	Cypthia Coleman
03-H047548	Naphthalene	7/31/03	Cynthia Coleman
03-H047548	Perylene	7/31/03	Cynthia Coleman
03-H047548	1-Methylnaphthalene	7/31/03	Cynthia Coleman
			Cynenia Coreman
03-H047548	2-Methylnaphthalene	7/31/03	Cvnthia Coleman
03-H047548	Acenaphthylene	7/31/03	Cynthia Coleman
03-H047548	Acenaphthene	7/31/03	Cynthia Coleman
03-H047548	Fluorene	7/31/03	Cynthia Coleman
03-H047548	Phenanthrene	7/31/03	Cynthia Coleman
03-H047548	Anthracene	7/31/03	Cynthia Coleman
03-H047548	Fluoranthene	7/31/03	Cynthia Coleman
03-H047548	Pyrene	7/31/03	Cynthia Coleman
03-H047548	Benz[a]anthracene	7/31/03	Cynthia Coleman
03-H047548	Chrysene	7/31/03	Cvnthia Coleman
03-H047548	Benzo[b]fluoranthene	7/31/03	Cynthia Coleman
03-H047548	Benzo[k]fluoranthene	7/31/03	Cynthia Coleman
03-H047548	Benzo[a]pyrene	7/31/03	Cynthia Coleman
03-H047548	Indeno[1,2,3-cd]pyrene	7/31/03	Cynthia Coleman
			1

PSC Analytical ServicesClient : Dillon Consulting LimitedCOX, BRENT200 Bluewater Road137 Chain Lake Dr. Suite 100100Bedford, NS Canada B4B 1G9HalifaxFAX # : 450-2008Tel (902) 420-0203NSB3S 1B3FAX # : 450-2008Toll free (800) 565-7227PSC Project Number : 0312535HPrinted : 2003/08/19Fax (902) 420-8612Client Project Number : 03-2088-0200Reported : 2003/08/07

Sample ID	Analyte	Date Analysed	Analyst
03-H047548	Dibenz[a,h]anthracene	7/31/03	Cynthia Coleman
			Complete de l
03-H04/548	Benzo (gni) perytene	7/31/03	Cynthia Coleman Gwrthia Galaman
03-H04/548	D8 Adenaphthylene Surr.	7/31/03	Cynthia Coleman
03-H047548	Dio Anthracene Surr.	7/31/03	Cynthia Coleman
03-H047548	Dio Pyrene Surr.	7/31/03	Cynthia Coleman
03-H047548	D14 p-Terphenyl Surr.	7/31/03	Cynthia Coleman
03-H047549	VPH low	8/ 1/03	April Darrach
03-H047549	TEH C11-32 Soil	8/ 6/03	Heather Eisnor
03-H047549	Antimony Recovery	8/ 1/03	Lynne Kempton
03-H047549	Aluminum	8/ 1/03	Lynne Kempton
03-H047549	Antimony	8/ 1/03	Lynne Kempton
03-H047549	Arsenic	8/ 1/03	Lynne Kempton
03-H047549	Barium	8/ 1/03	Lynne Kempton
03-H047549	Beryllium	8/ 1/03	Lynne Kempton
03-H047549	Boron	8/ 1/03	Lynne Kempton
03-H047549	Cadmium	8/ 1/03	Lynne Kempton
03-H047549	Chromium	8/ 1/03	Lynne Kempton
03-H047549	Cobalt	8/ 1/03	Lynne Kempton
03-H047549	Copper	8/ 1/03	Lynne Kempton
03-H047549	Iron	8/ 1/03	Lynne Kempton
03-H047549	Iron Recovery	8/ 1/03	Lynne Kempton
03-H047549	Lead	8/ 1/03	Lynne Kempton
03-H047549	Manganese	8/ 1/03	Lynne Kempton
03-H047549	Molybdenum	8/ 1/03	Lynne Kempton
03-H047549	Nickel	8/ 1/03	Lynne Kempton
03-H047549	Selenium	8/ 1/03	Lynne Kempton
03-H047549	Silver	8/ 1/03	Lynne Kempton
03-0047549	Strontium	8/ 1/03	Lynne Kempton
03-1047549	Thallium	8/ 1/03	Lynne Kempton
03-4047549	Iranium	8/ 1/03	Luppe Kempton
03-1047549	Vanadium	B/ 1/03	Lynne Kempton
05-004/549	vanautum	0/ 1/05	
03-H047549	Zinc	8/ 1/03	Lynne Kempton
03-H047549	Moisture	8/ 1/03	Amanda Roberts
03-H047549	Aluminum	8/ 1/03	Jerry Arenovich
03-H047549	Copper	8/ 1/03	Jerry Arenovich
	-		-

5

	Analyte Details page : 6	
PSC Analytical Services 200 Bluewater Road Bedford, NS Canada B4B 1G9	Client : Dillon Consulting Limited 137 Chain Lake Dr. Suite 100 Halifax	COX, BRENT
Tel (902) 420-0203 Toll free (800) 565-7227 Fax (902) 420-8612	NS B3S 1B3 PSC Project Number : 0312535H Client Project Number : 03-2088-0200	FAX # : 450-2008 Printed : 2003/08/19 Reported : 2003/08/07

<u>Sample ID</u>	Analyte	Date Analysed	
03-H047549	Iron	8/ 1/03	Jerry Arenovich
03-H047549	Lead	8/ 1/03	Jerry Arenovich
03-H047549	Manganese	8/ 1/03	Jerry Arenovich
03-H047549	Zinc	8/ 1/03	Jerry Arenovich
03-H047549	HNO3 Peroxide Digestion	8/ 1/03	Hiroyuki Inamura
03-H047549	VPH Soil Extraction	7/31/03	Amy MacArthur
03-H047549	TEH Soil Extraction	8/ 6/03	Varan Varill
03-H047549	PAH Soil Extraction	7/31/03	Cumthia Calenau
03-H047549	Naphthalene	7/31/03	Cynthia Coleman
03-H047549	Perylene	7/31/03	Cynthia Coleman
03-H047549	1-Methylnaphthalene	7/31/03	Cynthia Coleman
			Cynthia Coleman
03-H047549	2-Methylnaphthalene	7/31/03	Cynthia Coleman
03-H047549	Acenaphthylene	7/31/03	Cvnthia Coleman
03-H047549	Acenaphthene	7/31/03	Cvnthia Coleman
03-H047549	Fluorene	7/31/03	Cynthia Coleman
03-H047549	Phenanthrene	7/31/03	Cvnthia Coleman
03-H047549	Anthracene	7/31/03	Cynthia Coleman
03-H047549	Fluoranthene	7/31/03	Cynthia Coleman
03-H047549	Pyrene	7/31/03	Cynthia Coleman
03-H047549	Benz[a]anthracene	7/31/03	Cynthia Coleman
03-H047549	Chrysene	7/31/03	Cynthia Coleman
03 1047540			
03-1047549	Benzo [b] fluoranthene	7/31/03	Cynthia Coleman
03-11047549	Benzo [k] fluoranthene	7/31/03	Cynthia Coleman
03-0047549	Benzo[a]pyrene	7/31/03	Cynthia Coleman
03-H04/549	Indeno[1,2,3-cd]pyrene	7/31/03	Cynthia Coleman
03-H047549	Dibenz[a,h] anthracene	7/31/03	Cynthia Coleman
03-H047549	Benzo[ghi]perylene	7/31/03	Complete Caliman
03-H047549	D8 Acenaphthylene Surr.	7/31/03	Cynthia Coleman
03-H047549	D10 Anthracene Surr.	7/31/03	Cynthia Coleman
03-H047549	D10 Pyrene Surr.	7/31/03	Cynthia Coleman
03-H047549	D14 p-Terphenyl Surr	7/31/03	Cynthia Coleman
	E Frank Frank		Cynthia Coleman
03-H047550	VPH low	8/ 1/03	April Darrach
03-H047550	TEH C11-32 Soil	8/ 6/03	Heather Figner
03-H047550	Moisture	8/ 1/03	Amanda Boborta
03-H047550	VPH Soil Extraction	7/31/03	Amanua KODETES Amu MagArthur
			Any MACALLINI

PSC Analytical Services Client : Dillon Consulting Limited COX, BRENT 200 Bluewater Road 137 Chain Lake Dr. Suite 100 Bedford, NS Canada B4B 1G9 Halifax Tel (902) 420-0203 NS B3S 1B3 : 450-2008 FAX # Toll free (800) 565-7227 PSC Project Number : 0312535H Printed : 2003/08/19 Fax (902) 420-8612 Client Project Number : 03-2088-0200 Reported : 2003/08/07

Sample ID	Analyte	Date Analysed	Analyst
03-H047550	TEH Soil Extraction	8/ 6/03	Karen Hamill
03-H047551	VPH IOW	8/ 7/03	April Darrach
03-H047551	TEH C11-32 Soil	8/ 6/03	Heather Eisnor
03-H047551	Moisture	8/ 1/03	Amanda Roberts
03-H047551	VPH Soil Extraction	7/31/03	Amy MacArthur
03-H047551	TEH Soil Extraction	8/ 6/03	Karen Hamill
03-H047552	VPH low	8/ 6/03	April Darrach
03-H047552	TEH C11-32 Soil	8/ 6/03	Heather Figner
03-H047552	Moisture	8/ 1/03	Amanda Roberta
) 03-H047552	VPH Soil Extraction	8/ 2/03	Amu MagArthur
03-H047552	TEH Soil Extraction	8/ 6/03	Karon Hamill
03-H047553	VPH low	8/ 2/03	April Darrach
03-H047553	TEH C11-32 Soil	8/ 6/03	Heather Eisnor
03-H047553	Moisture	8/ 1/03	Amanda Roberts
03-H047553	VPH Soil Extraction	8/ 2/03	Amy MacArthur
03-H047553	TEH Soil Extraction	8/ 6/03	Karen Hamill
03-H047554	VPH low	8/ 2/02	
03-H047554	TEH (11-32 Soil	0/ 2/05	April Darrach
03-H047554	Moisture	0/ 0/05	Heather Eisnor
03-H047554	VPH Soil Extraction	0/ 1/03 8/ 2/02	Amanda Roberts
03-H047554	TEH Soil Extraction	0/ 2/03	Amy MacArthur
		8/ 6/03	Karen Hamill
03-H047555	VPH low	8/ 2/03	April Darrach
03-H047555	TEH C11-32 Soil	8/ 6/03	Heather Eisnor
³ 03-H047555	Moisture	8/ 1/03	Amanda Roberts
03-H047555	VPH Soil Extraction	8/ 2/03	Amy MacArthur
03-H047555	TEH Soil Extraction	8/ 6/03	Karen Hamill
03-H047556	VPH low	8/ 6/03	April Dannah
03-H047556	TEH C11-32 Soil	8/ 6/03	April Darrach Hosthow Rissia
03-H047556	Moisture	8/ 1/03	heather Eisnor
03-H047556	VPH Soil Extraction	8/ 2/03	Amanua Koderts
03-H047556	TEH Soil Extraction	8/ 6/03	Amy MacArthur
			Karen Hamili
03-H047557	VPH low	8/ 2/03	April Darrach
03-H047557	TEH C11-32 Soil	8/ 6/03	Heather Eisnor
03-H047557	Moisture	8/ 1/03	Amanda Roberts
03-H047557	VPH Soil Extraction	8/ 2/03	Amy MacArthur
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Analyte Details page : 8

PSC Analytical Services Client : Dillon Consulting Limited COX, BRENT 200 Bluewater Road 137 Chain Lake Dr. Suite 100 Bedford, NS Canada B4B 1G9 Halifax Tel (902) 420-0203 NS B3S 1B3 FAX # : 450-2008 Toll free (800) 565-7227 PSC Project Number : 0312535H Printed : 2003/08/19 Fax (902) 420-8612 Client Project Number : 03-2088-0200 Reported : 2003/08/07

Sample ID	Analyte	Date Analysed	Analyst
03-H047557	TEH Soil Extraction	8/ 6/03	Karen Hamill
03-H047558	VPH 10W	8/ 2/03	April Darrach
03-0047558	Meisture	8/ 6/03	Heather Eisnor
03-H047558	Moisture	8/ 1/03	Amanda Roberts
03-H047558	VPH Soll Extraction	8/ 2/03	Amy MacArthur
03-H047558	TER SOLL Extraction	8/ 6/03	Karen Hamill '
03-H047559	VPH low	8/ 2/03	April Darrach
03-H047559	TEH C11-32 Soil	8/ 6/03	Heather Eisnor
03-H047559	Moisture	8/ 1/03	Amanda Roberts
03-H047559	VPH Soil Extraction	8/ 2/03	Amy MacArthur
03-H047559	TEH Soil Extraction	8/ 6/03	Karen Hamill
03-H047560	VPH low	8/ 7/03	April Darrach
03-H047560	TEH C11-32 Soil	8/ 6/03	Heather Eisnor
03-H047560	Moisture	8/ 1/03	Amanda Roberts
03-H047560	VPH Soil Extraction	8/ 2/03	Amy MacArthur
03-H047560	TEH Soil Extraction	8/ 6/03	Karen Hamill
03-H047561	VPH low	8/ 6/03	April Darrach
03-H047561	TEH C11-32 Soil	8/ 6/03	Heather Figner
03-H047561	Lead	8/ 1/03	Lynne Kempton
03-H047561	Moisture	8/ 1/03	Manda Roberta
03-H047561	Lead	8/ 1/03	Jorry Aronowich
			Jerry Arenovich
03-H047561	HNO3 Peroxide Digestion	8/ 1/03	Hiroyuki Inamura
03-H047561	VPH Soil Extraction	8/ 2/03	Amy MacArthur
03-H047561	TEH Soil Extraction	8/ 6/03	Karen Hamill
03-H047562	VPH low	8/ 6/03	April Darrach
03-H047562	TEH C11-32 Soil	8/ 6/03	Heather Eisnor
03-H047562	Lead	8/ 1/03	Lunne Kompton
03-H047562	Moisture	8/ 1/03	Amanda Poberta
03-H047562	Lead	8/ 1/03	Jerry Arenovich
03-H047562	HNO3 Peroxide Digestion	8/ 1/03	Hiroyaki Thomas
03-H047562	VPH Soil Extraction	8/ 2/03	Amy MagArthur
~~~~~			Amy MacAlthur
03-H047562	TEH Soil Extraction	8/ 6/03	Karen Hamill
03-H047565	VPH low	8/ 2/03	April Darrach
03-H047565	TEH C11-32 Soil	8/ 6/03	Heather Eisnor
03-H047565	Moisture	8/ 1/03	Amanda Roberts

PSC Analytical Services	Client : Dillon Consulting Limited	COX, BRENT
200 Bluewater Road	137 Chain Lake Dr. Suite 100	
Bedford, NS Canada B4B 1G9	Halifax	
Tel (902) 420-0203	NS B3S 1B3	FAX # : 450-2008
Toll free (800) 565-7227	PSC Project Number : 0312535H	Printed : 2003/08/19
Fax (902) 420-8612	Client Project Number : 03-2088-0200	Reported : 2003/08/07

	<u>Sample ID</u>	<u>Analyte</u>	Da	te Analysed	Analyst														
1933AA	03-H047565	VPH Soil Extraction	8/	2/03	Amy MacArthur														
SAMA'N																			
	03-H047565	TEH Soil Extraction	8/	6/03	Karen Hamill														
AMANNA	03-H047566	VPH low	8/	2/03	April Darrach														
	03-H047566	TEH C11-32 Soil	8/	6/03	Heather Eisnor														
	03-H047566	Moisture	8/	1/03	Amanda Roberts														
	03-H047566	VPH Soil Extraction	8/	2/03	Amy MacArthur														
**********																			
-	03-H047566	TEH Soil Extraction	8/	6/03	Karen Hamill														
	03-H047567	VPH low	8/	2/03	April Darrach														
	03-H047567	TEH C11-32 Soil	8/	7/03	Heather Eisnor														
***	03-H047567	Moisture	8/	1/03	Amanda Roberts														
	03-H047567	VPH Soil Extraction	8/	2/03	Amy MacArthur														
~																			
	03-H04/56/	TEH Soll Extraction	8/	6/03	Karen Hamill														
	03-H047568	VPH LOW	8/	6/03	April Darrach														
i	03-H047568	TEH C11-32 Soil	8/	7/03	Heather Eisnor														
ł	03-H047568	Moisture	8/	1/03	Amanda Roberts														
	03-H047568	VPH Soil Extraction	8/	2/03	Amy MacArthur														
~~~	03-H047568	TEH Soil Extraction	 8/	6/03	Karen Hamill														
	03-H047569	VDH low	o/	3/03	Aren Hamili April Downer														
	03-1047569	$\frac{1}{2} = \frac{1}{2} = \frac{1}$	0/	5/03 6/02	April Darlach														
	03 1047569	Mojeture	0/	1/02	Heather Eisnor														
	03-0047569	MOISCUIE MDN deil Technetien	8/	1/03	Amanda Roberts														
A manual and the second	03-H047569	VPH SOIL Extraction	8/	2/03	Amy MacArthur														
	03-H047569	TEH Soil Extraction	8/	6/03	Karen Hamill														
	03-H047570	VPH low	8/	6/03	April Darrach														
	03-H047570	TEH C11-32 Soil	8/	6/03	Heather Eispor														
2	03-H047570	Moisture	8/	1/03	Amanda Roberts														
í	03-H047570	VPH Soil Extraction	8/	2/03	Amy MacArthur														
}	03-H047570	TEH Soil Extraction	8/	6/03	Karen Hamill														
	03-H047571	Total Organic Carbon	8/	1/03	Kevin MacDonald														
	03-H047571	Fract. of Organic Carbon			Calculated														
	03~H047572	Total Organic Carbon	8/	1/03	Kevin MacDonald														
	03-H047572	Fract, of Organic Carbon	•,	-,	Calculated														
1.			· • • • • • •																
	03-H047572	TOC QC	8/	1/03	Bob Boss														
	03-H047573	Total Organic Carbon	8/	1/03	Kevin MacDonald														
	03-H047573	Fract. of Organic Carbon			Calculated														
	03-H047573	TOC QC	8/	1/03	Bob Boss														
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Bedford, Nova Sco	otia B4B 1G9	Contact: B	LENT	Co	<u>></u> X						San	nple	d By	:	Ţ	15	-1-	21	Contact: David O'Carroll
Tel: 902-420-0203 Toll Free: 1-800-56	Fax: 902-420-8612 5-RCAp (7227)	001111011																	
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0-31253614	Client contacted if R	USH Date cannot be	met og	Serve	otal	Tota	De	letal	soil (NN	- e S	() TP				(EP/	EPA	THM	
Thezella	RUSH (Extra Cost) Sp	ecity Date	/Salt	Pre	se:]	ose:	letals	ved	ls - 0	Soil (ТЩ,	table 2)			ļ	nics	iics () sət	
Verified w	Standard 5-7 Busines	s Days 👿	face	a d 8	ood ood	Cho	tal M	ssol	Meta	ls - S	T (B	6-C3	tion			Orga	rgan	ethar	Analysis or Regulatory Packages (specify Guidlines)
(11)	10 Busines	s Days 🚺		Filter	-30 (SM-0	4		able	Meta	MUS	ЗÖ ХС	tiona			Vol.	tile C	lome	Comments/Hazards (ie. High Concentration Expected)
PSC Sample #	Client Sample I.	D No. 8 of B	Type	Field	RCAP	RCAF	Water	Water	Avail	Total	трн	Lov (BTE	Fract	PAH	РСВ	Semi	Volat	Triha	
47542	TP 1/1 (0-0	15m) 1-6	OML								 	V							
<u> </u>	TP1/3 (1.2	.)																	175A2 ET
												1	•						03-H04/54
44	TP1/9 (4-1	4.3.4)														·			
4.5.	TP2/1 (0-0	5m)										V	ļ						- 1047573
46	TP 2/3 (1-1	(5.4)							V		ļ	Ľ		\checkmark					03-110470
47	TP 3/1 (0-	0.5m)		1							<u> </u>	V	1					<u> </u>	
48/49	TP 3/6 (2.5	- 3.w		1		_					<u> </u>	V	-	\checkmark	<u> </u>			<u> </u>	₫
50	TP 4/1 (0-1	0.5_{m}		11								1			ļ				
51	TP 5/2 (0.5	-1m)	V												 				
52	TP 5/4 (2.	3~)	N	1				L			<u> </u>	\checkmark)						
53	TP 6/5 (2.	2.52	V V								<u> </u>	\bigvee	6-1						
Samples Relingui	ished to PSC by:	11Sde	Dat	e. Jj	4 3	i/0	3	Tim ,	^{ie:} 7'	; 3.	4 د	m	San	npiē I	meg		SHCIE		
Samples Receive	p in lab by:	ALINI	Dat	:m/	7	5/1	5.3	Tim	"ey .	2			Ten	прега	ture(s): r	5]	51 21 "
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Z-mail: PASI.H: /	alifax@contactPSC.com		us	7-40	ነለም			(/.<	· · · ·	· 7 -		5						,		. 1	
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Date	Client contacted if RU	ISH Date .c	annot be	met		rved	ם וס מן	tal <u>or</u> D	befault i	als	(HNO3	03/HF/	-C32)	PH MU				A 625, 8	624, 82	s)	
	RUSH (Extra Cost) Spe	Dave 5	`		/Satt/G	k Prese	kequire ise: Tot	ose: To	etals (D	ed Met	ls - Soil	ioil (HN	EX, C6	able) Ti				ics (EP	ss (EPA	WH1) s	
Verified	10 Business	Days]		Surface e/Efflue	litered &	30 Choc	MS Cho	Total M	Dissolv	le Meta	etals - S	IST (BT	Vel (Pot C6- C3	nation			l. Organ	Organie	nethane	Analysis or Regulatory Packages (specify Guidlines)
PSC Sample #	Client Sample I.D)	No. & of Bo	Type ottles	Matrix: Sewag	Field F		RCAp-	Water -	Water -	Availab	Total M	TPH ML	Low Le	Fraction	HHC	CB	Sernivol	/olatile	Tihalon	Comments/Hazards (ie. High Concentration Expected) Site Location & Task number
47554	TP 7/2 (015	-1.0.2)	1-29	570 iq L () iq L	V									1							an para ana ana ana ana ana ana ana ana ana
55	TP 6/3 (1-1.	5n)		 	$ \checkmark$									~							
56	TP 9/1 (0-0.	5n)			\checkmark		_							1							
<u>51</u> E9	TP 9/5 (2,5.	- 3)			\checkmark									1							
59	TP 10/1 (0-0	<u>, 5~</u>)												1			-			75	Per Per 1704
60	TP 11/2 (0.4)	Dal					_							S	·						
61/62	TP 11/5 (2-2,	1.5 m)					_									$\overline{\mathcal{A}}$	-6	3/	-4		ICAD
65	5.T. Buse (3	.~)			Ň											\leq				-	
66	5.7. 5-Wall (1	-3.11)				_	-						-	/	<u> </u>						
67	S.T. E-Wall (1	-3-	V	/	1									7							
Samples Relinqui (Client Signature) Samples Receiver	d in lab by:	Bele)		Date:	ΣŊ	31	10-	3	Time	7	:30	An	1	Sam	ple Ini	legrit	y Def	icien	cy?	Yes (see attached) No, Initial
Somples Received	Samples Received in lab by:					Date: Time:							Temperature(s):								

CAL SERVICES Acwater Road, Suite 105 ord, Nova Scotia B4B 1G9 902-420-0203 Fax: 902-420-8612 oll Free: 1-800-565-RCAp (7227) E-mail: PASI.Halifax@contactPSC.com	Client: Dillon 137 Halife Contact: BRE	Cons-1 Chain L IX NI NT CC	ting L enter On S	<u>H.</u>	Dient P.O. #: Client P.O. #: Client Project #: <u>0'3-2098-020</u> Sampled By: <u>July 24</u> T. G. fur	Invoice to (if other than client): Client: <u>Inperial Oil LHJ.</u> > Contact: <u>Dovid O'Carroll</u>
Page of	Phone: <u>{50 - \ o</u> E-mail:	<u>və</u>	_ Fax: <u>4</u> 77	E-mail Results	ampling Date: <u>July 28/63</u> ampling Time: <u>Pr</u>	Phone: 484-4072 Fax: 484-4004
Client CodePLEASEADVANOW.O.#FOR RUSDateClient contacted if RURUSH (Extra Cost) SpectrumVerified10 BusinessPSC Sample #Client Sample I.DUT568DopA69Dop70Dop71TP 8/4 (1.5-2)	PROVIDE E NOTICES H ORDERS ISH Date cannot be met crify Date Days \square No. & Type of Bottles 1 - 2.50 1 - 60 2 - 60 1 - 2.50	C C C Matrix:Surface/Salt/Ground/Tapwater Sewage/Effluent/Tissue(Sol) Field Filtered & Preserved	RCAp-30 Choose: Total <u>or</u> Diss. Metals RCAp-MS Choose: Total <u>or</u> Diss. Metals	Water - Total Metals (Default Method) Water - Dissolved Metals Available Metals - Soli (HNO3/H2O2) Total Metals - Soli (HNO3/HF/HCIO4)	Contraction Contraction Fractionation Fractionation PAH PAH PCB PCB PCB Semivol. Organics (EPA 625, 8270) Volatile Organics (EPA 625, 8270) Trihalomethanes (THMs)	Aill Lolae Rd, Aubbards, NS Mill Lolae Rd, Aubbards, NS Mysis or Regulatory Packages (specify Guidlines) ments/Hazards (ie. High Concentration Expected) Site Location & Task number
12/7.3 TPE/7 (3-3.7	5-1) 1-2.50					tion of Deganin Carbon ction of Orgunin Carbon
(Client Signature)	1)alez	Date:	31/03	Time: 7 : 3.	Sample Integrity Deficiency? Yes Temperature(s):	(see attached) No, Initial

IOL / PSC CHECKLIST

LIENT CONTACT: Brent (0X CLIENT FAX #: 450-2008 CLIENT PROJECT #: 03-7088-0200 DATE: July 31/03. DATE: July 31/03.

Initial Deficiency Type	
Custody seel on coder is not intervi	Comments
Sample bottlas hate	
a chain of custody accompanying the shipment	
Chain of custody information is incomplete	
Chain of custody is not signed and dated by consultant	
Non-current version of PSC CoC for IOL Sempler	
Bottles listed on CoC, but not included in shipmont	
Bottles in shipment, but not listed on CoC	
Analysis required for each sample is not interest	
clearly specified on the CoC	
Sample bottle labeling issue (-i.e.	
Samples received >5 down (missing or incorrect)	
Samples received in a sampling	
excanded	e
Wrong sample bottle has been used	
Sample was incorrectly preserved or headspace present	
Insufficient number of bottles provided by consultant	
Incorrect or missing task order number provided to BSC	
U Sample shipment has been checked for the	1
Sample Integrity has not been compromised.	nentioned deficiencies.
F-MILLICIM d Wave	M 7582481
Samples received >5 days after sampling Samples received after analytical hold time has been exceeded Wrong sample bottle has been used Sample was incorrectly preserved or headspace present Insufficient number of bottles provided by consultant Incorrect or missing task order number provided to PSC Wissemple shipment has been checked for the above missing task order compromised. r Mayte deficience Wayte	nentioned deficiencies. M 7582481

deficiency is present, please fax a copy of the completed form to the consultant and attached original and st firmation to the Chain of Custody.

please see Suzanne Rogers if further explanation is peaded





LABORATORY INFORMATION

Certificate of Analysis

CLIENT INFORMATION

Attention:	Brent Cox	Contact:	Suzanne Rogers
Client Name:	Dillon Consulting Ltd.	Project:	0312536H
Project:	03-2088-0200	Date Received:	03/07/31
Project Desc:	Hubbards, NS	Date Reported:	03/08/15
Address:	137 Chain Lake Drive Halifax, NS	Sample No.:	03-H047563 - 03-H047564
	B3S 1B3		
Fax Number:	902-450-2008		
Phone Number:	902-450-4000		

Methods used by PSC are based upon those found in 'Standard Methods for the Examination of Water and Wastewater', Nineteenth Edition. Other methods are based on the principles of EPA or American Petroleum Institute methodologies. All data is in statistical control unless otherwise flagged. Acceptance criteria for analytical QC has been met unless otherwise flagged.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. Any and all use of these test results shall be limited to the actual cost of the pertinent analysis done. There is no other warranty expressed or implied. Your samples will be retained at PSC for a period of 60 days from receipt of samples as per contract.

Certified by: Kocus

Page 1



	Organi	c Parame	ters	page: 1							
Client : Dillon Consulti: 137 Chain Lake	ng Limit Dr. Suit	ed e 100		COX, BRENT							
Halifax				TAX # . 450 2009							
NS B3S 1B3	ham . 02	125264		Printed : 2003/08/17							
PSC Project Num	Der : US. Number :	03-2086 T7230H	-0200	Printed : 2003/08/17							
Client Project .	Number :	03-2008	-0200	Reported . 2003/00/13							
Matrix			Soil	Soil							
Philip ID			03-H047563	03-H047564							
Client ID			TP 11/5 (2	TP 11/5 (2							
			-2.5m)	-2.5m) DUP							
Date Sampled (y/m/d)			03/07/28	03/07/28							
Date Shipped (y/m/d)			03/07/31	03/07/31							
Date Received (y/m/d)			03/07/31	03/07/31							
Analyte	Units	EQL		DUP							
TEH Fract. Soil Event #		-	HM60	HM60							
VPH-Fract. Soil Event #		-	HL98	HL98							
>C8-C10 Aromatics (-EX)	mg/kg	0.1	7.1	6.9							
> Cl0-Cl2 (Aromatic)	mg/kg	4.0	20.8	28.2							
> C12-C16 (Aromatic)	mg/kg	15.0	41.9	50.0							
> C16-C21 (Aromatic)	mg/kg	15.0	38.0	40.4							
> C21-C32 (Aromatic)	mg/kg	15.0	nd	nd							
> C6-C8 (Aliphatic)	mg/kg	0.1	43.4	36.0							
> C8-C10 (Aliphatic)	mg/kg	0.4	55.1	54.4							
> Cl0-Cl2 (Aliphatic)	mg/kg	8.0	46.4	42.4							
> C12-C16 (Aliphatic)	mg/kg	15.0	79.3	70.4							
> C16-C21 (Aliphatic)	mg/kg	15.0	47.9	42.4							
> C21-C32 (Aliphatic)	mg/kg	15.0	nđ	nd							
Modified TPH - Tier II	mg/kg	103.	380.	371.							
TEH Surrogate (IBB)	% Rec.	_	95.	93.							
Benzene	mg/kg	0.025	nd	nd							
Toluene	mg/kg	0.025	nd	nd							
Ethylbenzene	mg/kg	0.025	0.357	0.296							
Xylenes	mg/kg	0.050	2.72	2.30							
EQL = Estimated Quantita reported. It is no The moisture corre D () = Analyte was not d	ation Lin ot a regu acted EQI detected	nit is t latory : = EQL/ above t	he minimum co limit. For so (1-(%moisture he EQL. Raise	oncentration that can be reliably bils, zero %moisture is assumed. e/100)) ed EQL listed in Parenthesis.							
= Dash is reported w	when para	ameter no	ot requested	in sample.							
vent # = PSC Quality Contro	ol Refere	ence numb	per for QC sa	mples run with your sample.							
REC = Surrogate Recovery	Values	are resu	ilts of PSC o	uality control tests.							
Note : Soil results are e	expressed	l on a di	ry weight bas	is.							
: Biota results are	expresse	ed on a v	vet weight ba	sis.							
				page verified \mathcal{A}							

PSC Analytical Services		C Farame		vaye : 2	
	Client	: : Dillo	n Consulting I	Limited	COX, BRENT
200 Bluewater Road		137 C	hain Lake Dr.	Suite 100	,
Bedford, NS Canada B4B 1G9		Halif	ax		
Tel (902) 420-0203		NS	B3S 1B3		FAX # : 450-2008
Toll free (800) 565-7227	PSC	Project	Number : 0312	2536H	Printed : 2003/08/17
Fax (902) 420-8612	Client	Project	Number : 03-2	2088-0200	Reported : 2003/08/13
		2			
Matrix			Scil	Soil	
Philip TD			03-4047563	03-4047564	
Client ID			03-H04/505	UJ-AU4/304	
CITENT ID			1P 11/5 (2)	TP II/5 (2)	
			-2.5m)	-2.5m) DUP	
Date Sampled $(\gamma/m/d)$			03/07/28	03/07/28	
Date Snipped (y/m/d)			03/07/31	03/07/31	
Date Received (y/m/d)			03/07/31	03/07/31	
Analyte	Units	EQL	(Continu	ed from prev	vious page)
				·····	······································
TEH Surrogate (C32)	% Rec	-	96.	89.	
TEH Surrogate (C32) VPH Surrogate (IBB)	% Rec 	- 	96. 	89. 102.	
TEH Surrogate (C32) VPH Surrogate (IBB) Moisture Note: The product rese	% Rec * Rec. %	- - - -	96. 100. 9.	89. 102. 8.	
TEH Surrogate (C32) VPH Surrogate (IBB) Moisture Note: The product rese and may not be a reference standa influence of wea is not always po Note: Equivalent carbon being reported.	<pre>% Rec % Rec. % mblance of ccurate. rds. Due thering of ssible to numbers</pre>	comments Resembla to chrom effects a positiv (based	96. 100. 9. are provided inces are base atographic si ind interferen ely identify on n-alkane e	89. 102. 8. for general ed on compari milarity of ice of non-pe products. lution times	guidance only son with available certain products, the strogenic compounds, it
TEH Surrogate (C32) VPH Surrogate (IBB) Moisture Note: The product rese and may not be a reference standa influence of wea is not always po Note: Equivalent carbon being reported. Notes: - Aromatic C6 - C7 respectively	<pre>% Rec % Rec. % mblance of courate. rds. Due thering e ssible to numbers and Arom</pre>	- Resembla to chrom effects a positiv (based natic >C7	96. 100. 9. are provided inces are base atographic si ind interferen rely identify on n-alkane e - C8 are com	89. 102. 8. for general d on compari- milarity of ice of non-pe- products. lution times posed of ben	guidance only son with available certain products, the etrogenic compounds, it) are zene and toluene
TEH Surrogate (C32) VPH Surrogate (IBB) Moisture Note: The product rese and may not be a reference standa influence of wea is not always por Note: Equivalent carbon being reported. Notes: - Aromatic C6 - C7 respectively. - Aromatic >C8 - C7	<pre>% Rec % Rec. % mblance of ccurate. rds. Due thering e ssible to numbers and Aron 10 does r</pre>	comments Resembla to chrom effects a positiv (based matic >C7	96. 100. 9. are provided inces are base atographic si nd interferen rely identify on n-alkane e - C8 are com de ethylbenze	89. 102. 8. for general d on compari- milarity of ce of non-pe- products. lution times posed of ben	guidance only son with available certain products, the trogenic compounds, it) are zene and toluene
TEH Surrogate (C32) VPH Surrogate (IBB) Moisture Note: The product rese and may not be a reference standa influence of wea is not always por Note: Equivalent carbon being reported. Notes: - Aromatic C6 - C7 respectively. - Aromatic >C8 - C2 - Modified TPH - T	<pre>% Rec % Rec. % mblance of ccurate. rds. Due thering & ssible to numbers and Arom 10 does n ier 2 - s</pre>	- comments Resembla to chrom effects a positiv (based natic >C7 not inclu	96. 100. 9. are provided inces are base batographic si and interferen rely identify on n-alkane e - C8 are com de ethylbenze 1 aliphatic d	89. 102. 8. for general d on compari- milarity of ice of non-pe- products. lution times posed of ben ne or xylene	guidance only son with available certain products, the etrogenic compounds, it) are zene and toluene
TEH Surrogate (C32) VPH Surrogate (IBB) Moisture Note: The product rese and may not be a reference standar influence of wea is not always por Note: Equivalent carbon being reported. Notes: - Aromatic C6 - C7 respectively. - Aromatic >C8 - C2 - Modified TPH - T2 (does not inlude	<pre>% Rec % Rec. % Rec. % mblance of ccurate. rds. Due thering e ssible to numbers and Arom 10 does n ier 2 = s BTEY)</pre>	- comments Resembla to chrom effects a positiv (based natic >C7 not inclu sum of al	96. 100. 9. are provided are provided ances are base batographic si and interferen rely identify on n-alkane e - C8 are com de ethylbenze 1 aliphatic +	89. 102. 8. for general d on compari milarity of ce of non-pe products. lution times posed of ben ne or xylene aromatic ra	guidance only son with available certain products, the etrogenic compounds, it ;) are uzene and toluene ss. nges
TEH Surrogate (C32) VPH Surrogate (IBB) Moisture Note: The product rese and may not be a reference standar influence of wea is not always por Note: Equivalent carbon being reported. Notes: - Aromatic C6 - C7 respectively. - Aromatic >C8 - C2 - Modified TPH - T2 (does not inlude 03-H047563 TP 11/5 (2)	<pre>% Rec % Rec. % mblance of ccurate. rds. Due thering e ssible to numbers and Arom 10 does n ier 2 = s BTEX) 2-2 5m) %</pre>	- comments Resembla to chrom effects a positiv (based natic >C7 not inclu sum of al	96. 100. 9. are provided Inces are base batographic si ind interferen rely identify on n-alkane e - C8 are com de ethylbenze 1 aliphatic +	89. 102. 8. for general d on compari milarity of cce of non-pe products. lution times posed of ben ne or xylene aromatic ra	guidance only son with available certain products, the strogenic compounds, it) are zene and toluene s. nges
TEH Surrogate (C32) VPH Surrogate (IBB) Moisture Note: The product rese and may not be a reference standar influence of wea is not always por Note: Equivalent carbon being reported. Notes: - Aromatic C6 - C7 respectively. - Aromatic >C8 - C2 - Modified TPH - T2 (does not inlude 03-H047563 TP 11/5 (2)	<pre>% Rec % Rec. % Rec. % mblance of ccurate. rds. Due thering e ssible to numbers and Arom 10 does n ier 2 = s BTEX) 2-2.5m) W 2-2.5m) W</pre>	- comments Resembla to chrom effects a positiv (based natic >C7 not inclu sum of al	96. 100. 9. are provided inces are base batographic si and interferen rely identify on n-alkane e - C8 are com de ethylbenze 1 aliphatic + fuel oil fra-	89. 102. 8. for general d on compari- milarity of ice of non-pe- products. lution times posed of ben ne or xylene aromatic ra ction.	guidance only son with available certain products, the etrogenic compounds, it) are zene and toluene s. nges
TEH Surrogate (C32) VPH Surrogate (IBB) Moisture Note: The product reser and may not be a reference standar influence of wea is not always por Note: Equivalent carbon being reported. Notes: - Aromatic C6 - C7 respectively. - Aromatic >C8 - C2 - Modified TPH - T2 (does not inlude 03-H047563 TP 11/5 (2 03-H047564 TP 11/5 (2)	<pre>% Rec % Rec. % Rec. % mblance of courate. rds. Due thering e ssible to numbers and Arom 10 does n ier 2 = s BTEX) 2-2.5m) W 2-2.5m) C 2-2.5m) C</pre>	- comments Resembla to chrom effects a positiv (based natic >C7 not inclu sum of al Weathered One produ	96. 100. 9. are provided inces are base batographic si ind interferent rely identify on n-alkane e - C8 are com de ethylbenze 1 aliphatic + fuel oil fra- ct in the gas	89. 102. 8. for general d on compari- milarity of ice of non-pe- products. lution times posed of ben ne or xylene aromatic ra ction. /fuel oil ra	guidance only son with available certain products, the etrogenic compounds, it) are zene and toluene s. nges
TEH Surrogate (C32) VPH Surrogate (IBB) Moisture Note: The product rese and may not be a reference standar influence of wea is not always por Note: Equivalent carbon being reported. Notes: - Aromatic C6 - C7 respectively. - Aromatic >C8 - C2 - Modified TPH - T2 (does not inlude 03-H047563 TP 11/5 (2 03-H047564 TP 11/5 (2 03-H	<pre>% Rec % Rec. % Rec. % mblance of courate. rds. Due thering e ssible to numbers and Arom 10 does n ier 2 = s BTEX) 2-2.5m) W 2-2.5m) W 2-2.5m) W</pre>	- comments Resembla to chrom effects a positiv (based matic >C7 not inclu sum of al Weathered Due produ	96. 100. 9. are provided inces are base atographic si ind interferen rely identify on n-alkane e - C8 are com de ethylbenze 1 aliphatic + fuel oil fra- fuel oil fra- fuel oil fra-	89. 102. 8. for general ed on compari- milarity of ice of non-pe- products. lution times posed of ben ne or xylene aromatic ra ction. /fuel oil ra ction.	guidance only son with available certain products, the etrogenic compounds, it) are zene and toluene s. nges nge.

EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit. For soils, zero %moisture is assumed. The moisture corrected EQL = EQL/(1-(%moisture/100))

```
ND ( ) = Analyte was not detected above the EQL. Raised EQL listed in Parenthesis.
- = Dash is reported when parameter not requested in sample.
```

Event # = PSC Quality Control Reference number for QC samples run with your sample.

%REC = Surrogate Recovery Values are results of PSC quality control tests.

Note : Soil results are expressed on a dry weight basis. : Biota results are expressed on a wet weight basis.

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page verified \mathcal{N}
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	Organic Parameters pag	je: 3
PSC Analytical Services 200 Bluewater Road Bedford, NS Canada B4B 1G9	Client : Dillon Consulting Lin 137 Chain Lake Dr. Su Halifax	nited COX, BRENT Nite 100
Tel (902) 420-0203 Toll free (800) 565-7227 Fax (902) 420-8612	NS B3S 1B3 PSC Project Number : 031253 Client Project Number : 03-208	FAX # : 450-2008 6H Printed : 2003/08/17 88-0200 Reported : 2003/08/13

Certificate of Analysis

Method Summaries :

- Volatile Petroleum Hydrocarbon Fractionation soil: Methanol extr'n. Purge and Trap-Tekmar LSC2000. Varian 3400/Saturn II GC/MS. Ref: Atlantic PIRI Guidelines for Laboratories, Draft 1.0, 1999.
 Moisture- based upon: Handbook of Analytical Methods for Environmental Samples Gravimetric Metod Vol 1, page ME4, Ontario Ministry of the Environment, Rexdale Ont.1983. Drying temperature 105+- 5 Degrees C.
- Total Extractable Petroleum Hydrocarbons Fractionation Soil: Acetone/Hexane extr'n. Silica gel column separation. HP5890 cap. col. GC-FID. Ref: Atlantic PIRI Guidelines for Laboratories, Draft 1.0, 1999.

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. The results relate only to the items tested. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Approval of Organic Parameters:

James MacDonald Organics Manager : Project Manager : Suzanne-Rogers



Workstation Description	Batch ID	Analyte	Apolido Niomo	L. Marthand			Blank	Proc. Recov.		Matrix	Spike	Duplic	ate	SRM		
		/ vial / to	Analyte Name	Method	EQL	Units	Value	Value	% Rec.	ID	% Rec.	D	% Diff	Value	% Rec.	
VPH-Fract. Soil Event #	HL98	5411	Benzene	PT GCMS	0.025	ma/ka	< 0.025	0.026	104			02 110 47500	~			
VPH-Fract. Soil Event#	HL98	5411	Benzene	PT GCMS	0.025	ma/ka	< 0.025	0.024	06			U3-HU4/563	0			
VPH-Fract. Soil Event#	HL98	5421	Toluene	PT GCMS	0.025	ma/ka	< 0.025	0.024	100			02 110 17 000				
VPH-Fract Soil Event #	HL98	5421	Toluene	PT GCMS	0.025	ma/ka	< 0.025	0.082	109			03-104/503	U			
VPH-Fract. Soil Event #	HL98	5431	Ethylbenzene	PT GCMS	0.025	mg/kg	< 0.025	0.027	108			02 1047562	10			
VPH-Fract. Soil Event #	HL98	5431	Ethylbenzene	PT GCMS	0.025	ma/ka	< 0.025	0.028	112			03-1047 303	10			
VPH-Fract. Soil Event #	HL98	5441	Xylenes	PT GCMS	0.05	ma/ka	< 0.05	0.11	110			02 11047502				
VPH-Fract. Soil Event #	HL98	5441	Xylenes	PT GCMS	0.05	ma/ka	< 0.05	0.11	110			03-0047503	14			
VPH-Fract. Soil Event #	HL98	5459	Total C6-C10 (incl. BTEX	PT GCMS	0.725	ma/ka	< 2.5	55	83			02 110 175 00				
VPH-Fract. Soil Event #	HL98	5459	Total C6-C10 (incl. BTEX	PT GCMS	0.725	ma/ka	< 2.5	53	80			U3-HU47503	8			
TEH-Fract. Soil Event #	HM60	6640	>C10-C12 Aromatic	GC FID	4	ma/ka	< 4	~	00							
TEH-Fract. Soil Event #	HM60	6650	>C12-C16 Aromatic	GC FID	15	ma/ka	<15	ы Б	107				i			
TEH-Fract. Soil Event #	HM60	6660	>C16-C21 Aromatic	GC FID	15	mo/ko	<15	ġ	102							
TEH-Fract. Soil Event #	HM60	6670	>C21-C32 Aromatic	GC FID	15	mo/ko	<15	臣	100				1			
TEH-Fract. Soil Event #	HM60	6710	>C10-C12 Aliphatic	GC FID	8	ma/ka	<8	u o	100							
TEH-Fract. Soil Event #	HM60	6627	>C12-C16 Aliphatic	GC FID	15	ma/ka	<15	Tat	121							
TEH-Fract. Soil Event #	HM60	6615	>C16-C21 Aliphatic	GC FID	15	ma/ka	<15	ğ	117							
TEH-Fract. Soil Event #	HM60	6625	>C21-C32 Aliphatic	GC FID	15	mo/ko	<15	s	11/				1			
TEH-Fract. Soil Event #	HM60	4164	>C10-C32 Total	GC FID	100	ma/ka	<100	966	07							
TEH-Fract. Soil Event #	HM60	4164	>C10-C32 Total	GC FID	100	ma/ka	<100	1001	100	02 1047662		00 110 17500				
	-	•						1001	1 100 1	03-1104/503	04	[U3-HU4/563]	1			

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ANALYTICAL SERVICES

Analyte Details page :

1

Client : Dillon Consulting Limited	COX, BREN	т
137 Chain Lake Dr. Suite 100		
Halifax		
NS B3S 1B3	FAX #	: 450-2008
PSC Project Number : 0312536H	Printed	: 2003/08/17
Client Project Number : 03-2088-0200	Reported	: 2003/08/13

Sample ID	Analyte	Date Analysed	Analyst
03-H047563	TEH Fract. Soil	8/12/03	Marsha Skinner
03-H047563	VPH-Fract. Soil	8/ 2/03	Amy MacArthur
03-H047563	Moisture	8/ 1/03	Amanda Roberts
03-H047563	TEHS - F Extraction	8/11/03	Marsha Skinner
03-H047563	VPH Fraction Extraction	8/13/03	Amy MacArthur
03-H047564 03-H047564 03-H047564 03-H047564 03-H047564 03-H047564	TEH Fract. Soil VPH-Fract. Soil Moisture TEHS - F Extraction VPH Fraction Extraction	8/12/03 8/ 2/03 8/ 1/03 8/11/03 8/13/03	Marsha Skinner Amy MacArthur Amanda Roberts Marsha Skinner Amy MacArthur

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	in the second second																						Invoice	to (if ot	her than (ciient): /	
	and the second sec		Dilla	Co	İs	L.		ltə	1			F	PSC	Quo	ote #	: .				_	Client:	_ <u></u>	per, .	20	140	·	•
		Client: _	137	Chai	<u> </u>	had	<u>'</u>	0		e			Clier	nt P.	O. #:							<u></u> ,			<u></u>		-
TTICAL SERVI	ICES	-	Hal	<u> </u>	<u> </u>	N N	ĪS					4	Clie	nt Pr	rojec	:t #:/	<u>03-</u>	<u>ZC8</u>	5-0	02	$\ddot{v}\ddot{v}$			· 1		<u>.</u> 11	-
0 Bluewater Roa dford, Nova Sco	id, Suite 105 otia B4B 1G9		BAC	ENT	(0x							Sam	pleo	d By:	:		<u>P</u>	zat	<u>67</u>	Contac	t: <u>/4~</u>	. <u>JA</u>	, u <u>(</u>	Cavr	<u>ی ()</u>	-
: 902-420-0203	Fax: 902-420-8612 5-RCAp (7227)	Contact:																								•	
nail: PASI.Halif	ax@contactPSC.com		1	: 1			,	1	.	.	~ 0					• • •	+.	<u>{</u>	291	103	Phone	4 84	-403	E Fax:	434-	4004	
		Phone:	4.50-	-400	2	F	ax:	630	<u>с</u> Е	-mail	<u>שש</u> ות ו		San	iplir	ng Da	ate:	<u></u>	<u>'</u>] 4,~	<u> </u>		Thomas	·					
ge 12 of	2	E-mail:	<u></u>					u	R	lesuli	ts L		San	piir	ng It	me.					_ 1 1			#	11040	282	2_
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lieur code	ADVAN	CE NOTIC	E E	a te			s. Met	ss. Me	lethod		H202	1CI04		зт				8270)	(260)		69 Mi	17		-9 m	/		
v.o.#	FOR RUS	SH ORDE	RS				or Dis	а ы	ault N	ŝ	1EONH	3/HF/	C32)	SUM H				A 625,	624, 8	s)							
	Client contacted if R	USH Date ca	annot be m	net g	ssue	ired	Total	. Total	s (Def	Metal	Soil (I	ONH)	50	le) TP				s (EP,	(EPA	(THM							
Jate	RUSH (Extra Cost) S		, 		ent/Ti ent/Ti	Requ) oose:	loose	Metal	olved	etals -	- Soll	втех	Potab C32)				rganic	ganics	hanes		ar Bogi	latory P:	ackages (specify Gu	uidlines	,
Verified	Standard 5-7 Busines	s Days	<u>1</u> 7		Surtao e/Efflu iltered	tration	30 CH	MS CI	- Total	- Diss	ble M	Metals	AUST	evel (onatio			vol. O	ile Or	lomet	Commen	s/Hazar	ds (ie. Hi	gh Conce & Task n	entration E	xpecter) (t
	Client Sample	.D	No.& T	Type ties	ield F	ab Fil	RCAp-	RCAp-	Water	Water	Availa	Total	TPH	Low L	Fract	PAH	РСВ	Semi	Volat	Triha						<u></u>	
PSC Sample #			1-25	242	<u>~</u>	┤┛			-					1	^												
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57	TP9/5 (2	5-3.4)						+	┼──	+			┼╴			\uparrow		1				pe	/ / C	()in			
<u> </u>	TP 10/1 (0	-0.5m)						<u> </u>		-		.	+		r	+	+	I Ĉ	1	d C				ر ۲ تسله:			
59	TP 10/5-(2	2,5m)) 					+	1			+					十	<u> </u> [
60	TP 11/2 (0.	4-0,9m)							+						Art	77	251	F	╢	TIFA	+D					
61162	TP 11/5 (2	-2,5A)		ļ	V				+			╋			<u>\</u>	╀	+		-								
65	S.T. Bose (3.2)									_				4			╋						- <u>.</u>	<u></u>		
66	S.T. S-Wall	2(1-3.4))		4		_	-							4					+		<u></u>					
67	S.T. E-Wall	2 (1-3.~	1 1							_	ime'			L	s		e Inte	grity i	Defic	iency	/? Yes (see attac	hed)	No, Initia	I		
Samples Reline	quished to PSC by: 72	dol Be	les _		Date:	Juh	<u>3</u>	1	03		ane:	7;	32:	m	- - - - -		ratur	e(s):									
Samples Rece	ived in lab by:				Da	نه	•			L	1e:			<u></u>	L										S_R_HXM	 F03_Jan 13	7, 2003



Certificate of Analysis

RECEIVED AUG 2 5 2003

CLIENT INFORMATION

Attention:Brent CoxClient Name:Dillon Consulting Ltd.Project:03-2088-0200Project Desc:Hubbards, NS

Address: 137 Chain Lake Drive Halifax, NS B3S 1B3 Fax Number: 902-450-2008 Phone Number: 902-450-4000

LABORATORY INFORMATION

Contact:	Suzanne Rogers
Project:	0312644H
Date Received:	03/08/01
Date Reported:	03/08/11

Sample No.:

*

03-H047961 - 03-H047970

Methods used by PSC are based upon those found in 'Standard Methods for the Examination of Water and Wastewater', Nineteenth Edition. Other methods are based on the principles of EPA or American Petroleum Institute methodologies. All data is in statistical control unless otherwise flagged. Acceptance criteria for analytical QC has been met unless otherwise flagged.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. Any and all use of these test results shall be limited to the actual cost of the pertinent analysis done. There is no other warranty expressed or implied. Your samples will be retained at PSC for a period of 60 days from receipt of samples as per contract.

Certified by: Kee.co

Page 1



g Limito r. Suito er : 03: mber : Units	ed = 100 12644H 03-2088	-0200 Soil 03-H047961 TP 12/2 (0 .3-0.8m) 03/07/31 03/07/31	COX, BRENT FAX # : 4! Printed : 20 Reported : 20 Soil 03-H047962 TP 12/6 (2 -2.5m)	50-2008 003/08/17 003/08/11 Soil 03-H047963 TP 13/5 (2	Soil 03-H047964
er : 03 mber : Units	12644H 03-2088	-0200 Soil 03-H047961 TP 12/2 (0 .3-0.8m) 03/07/31 03/02/01	FAX # : 4! Printed : 20 Reported : 20 Soil 03-H047962 TP 12/6 (2 -2.5m)	50-2008 003/08/17 003/08/11 Soil 03-H047963 TP 13/5 (2	Soil 03-H047964
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Units		TP 12/2 (0 .3-0.8m) 03/07/31	TP 12/6 (2 -2.5m)	TP 13/5 (2	יי כ/ גו מיח
Units		.3-0.8m) 03/07/31	-2.5m)	2 1	ן כוצב בב
Units		03/07/31	a a 1 1 -	-3m)	-2m)
Units		02/09/01	03/07/31	03/07/31	03/07/31
Units		03/08/01	03/08/01	03/08/01	03/08/01
Units		03/08/01	03/08/01	03/08/01	03/08/01
	EQL				
	-	HM19	HM19	HM19	HM19
	-	HM18	HM18	HM18	HM18
mg/kg	0.005	nd	nd	nd	nd
mg/kg	0.025	nd	nd	nd	nð
mg/kg	0.010	nd	nd	nd	nd
mg/kg	0.050	nd	nd	nd	nd
	2.5	nd	nd	nd	nd
mg/kg	15.	nd	nd	nd	nd
mg/kg	15.	17.	nd	nd	nd
	32.	nd	nd	nd	nd
% Rec.	-	93.	94.	93.	94.
∦ Rec	-	93.	94.	93.	91,
% Rec.	-	105.	110.	106.	113.
210	-	7.	13.	10.	9.
lance c	omments	are provided	for general g	uidance only	
irate. 3	Resembla	nces are base	ed on comparise	on with avail	able
s. Due	to chrom	natographic si	imilarity of co	ertain produc	ts, the
ering e	ffects a	nd interferer	nce of non-pet:	rogenic compo	unds, it
ible to	positiv	ely identify	products.		
c 1 (C6	-C32) do	es not includ	le BTEX		
3-0.8mL1	ube oil	range.			
lon Lim	it is th	e minimum cor	centration that	at can be rel:	iably
a regui	latory 1	imit. For soi	ls, zero %mois	sture is assu	med.
eated .	= EQL/(I- (% moiscure/	LUU))		
n narer	neter no	t remested 4	n samela	1 Parenthesis	•
Referen	neter numb	er for OC com	un sampre.		
Talues a	are resu	lts of PSC on	pies fun with	your sample.	
ressed	on a dr	v weight basi	s. control	.C313.	
pressed	lonaw	et weight bas	is.		
	••		nade verif	ied A	
	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg kg kg kec. k Rec. k Rec.	<pre></pre>	 HM19 HM18 mg/kg 0.005 nd mg/kg 0.025 nd mg/kg 0.010 nd mg/kg 0.050 nd 2.5 nd mg/kg 15. nd mg/kg 15. 17. 32. nd k Rec 93. k Rec 93. k Rec 93. k Rec 105. - 7. tance comments are provided trate. Resemblances are bases to chromatographic sizering effects and interferent tible to positively identify 1 (C6-C32) does not inclued to chromatographic sizering effects and interferent tible to positively identify 1 (C6-C32) does not inclued to a regulatory limit. For soid ted EQL = EQL/(1-(%moisture/ tected above the EQL. Raised en parameter not requested in Reference number for QC same talues are results of PSC que to a wet weight baside termsed on a dry weight baside	 HM19 HM19 HM18 HM18 mg/kg 0.005 nd nd ng/kg 0.025 nd nd ng/kg 0.010 nd nd ng/kg 0.050 nd nd ng/kg 0.050 nd nd ng/kg 15. nd nd ng/kg 15. nd nd ng/kg 15. 17. nd 32. nd nd 8 Rec 93. 94. 8 Rec 93. 94. 8 Rec 105. 110. - 7. 13. 1ance comments are provided for general grate. Resemblances are based on comparises. Due to chromatographic similarity of constraints of the state of t	 HM19 HM19 HM19 HM19 HM18 HM18 HM18 HM18 mg/kg 0.005 nd nd nd nd mg/kg 0.025 nd nd nd nd mg/kg 0.010 nd nd nd nd mg/kg 0.050 nd nd nd nd mg/kg 15. nd nd nd mg/kg 15. nd nd nd mg/kg 15. 17. nd nd md nd <

	Organi	c Parame	ters	page: 2		
SC Analytical Services 00 Bluewater Road edford, NS Canada B4B 1G9 el (902) 420-0203	Client	: Dillo 137 C Halif NS	n Consulting hain Lake Dr. ax B3S 1B3	Limited Suite 100	COX, BRENT FAX # : 45	0-2008
oll free (800) 565-7227	PSC	Project	Number : 031	2644H	Printed : 20	03/08/17
ax (902) 420-8612	Client	Project	Number : 03-	2088-0200	Reported : 20	03/08/11
Matrix			Soil	Soil	Soil	Soil
Philip ID Client ID			03-H047965 TP 15/1 (0	03-H047966 TP 15/1 (0	03-H047967 TP 15/6 (2	03-H04796 TP 16/2
			-0.6m)	-0.6m) DUP	.5-3.5m)	.4-1.0m)
Date Sampled (y/m/d)			03/07/31	03/07/31	03/07/31	03/07/31
Date Shipped (y/m/d) Date Received (y/m/d)			03/08/01	03/08/01 03/08/01	03/08/01	03/08/01
Analyte	Units	EQL	<u></u>	DUP		
VPH low Event #			НМ19	HM19	HM19	HM19
TEH C11-32 Soil Event #		-	HM18	HM18	HM18	HM18
Benzene	mg/kg	0.005	nd	nd	nd	nd
Toluene	mg/kg	0.025	nd	nd	nd	nd
Ethylbenzene	mg/kg	0.010	nd	nd 	nd 	nd
Xylenes	mg/kg	0.050	nd	nd	nd	nd
C6 - C10 HC {less BTEX}	4-	2.5	nd	nd	nd	nd
>C10-C21 (Fuel Range)	mg/kg	15.	nd	nd	nd	nd
>C21-C32 (Lube Range)	mg/kg	15.	nd d	nd	nd	46.
Modified TPH - Tier I		32.	na 	na 	na 	46.
TEH Surrogate (IBB)	% Rec.	-	94.	92.	92.	95.
TEH Surrogate (C32)	% Rec	-	93.	91.	91.	100.
VPH Surrogate (IBB)	% Rec.	-	114.	114.	108.	127.
PAH in Soil Event #	<i>/</i> •	-	HM03	HM03	-	нмоз
Naphthalene	mg/kg	0.05	nd	nd 	-	nd
2-Methylnaphthalene	mg/kg	0.05	nd	nd	-	nđ
1-Methylnaphthalene	mg/kg	0.05	nd	nd	-	nd
Acenaphthylene	mg/kg	0.05	nd	nd	_	nd
Acenaphthene	mg/kg	0.05	nd	nd	-	nd
Fluorene	mg/kg	0.05	na 	na	-	na
Phenanthrene	mg/kg	0.05	nd	nd	-	nd
EQL = Estimated Quantita reported. It is no The moisture corre () = Analyte was not d = Dash is reported w rent # = PSC Quality Contro	tion Lin t a regu cted EQI etected hen para 1 Refere	alt is the latory of a = EQL/ above the meter no ence number	he minimum cor limit. For soi (1–(%moisture/ he EQL. Raised ot requested i ber for OC sam	icentration t ils, zero %mc /100)) d EQL listed in sample. mples run wit	that can be rel disture is assu in Parenthesis th your sample.	iably med.
EC = Surrogate Recovery Note : Soil results are e	Values xpressed	are rest l on a di	ults of PSC qu ry weight basi	ality controls.	l tests.	
: Biota results are	expresse	ed on a v	wet weight bas	sis. pade ver	ified <i>X</i>	
				Fage tor		

PSC Analytical Services 200 Bluewater Road Bedford, NS Canada B4B 1G9	Organic Parameters page : 3 Client : Dillon Consulting Limited COX, BRENT 137 Chain Lake Dr. Suite 100 Halifax							
Tel (902) 420-0203 Toll free (800) 565-7227 Fax (902) 420-8612	PSC Client	NS Project Project	B3S 1B3 Number : 031 Number : 03-	FAX # : 450-2008 Printed : 2003/08/17 Reported : 2003/08/11				
Matrix			Soil	Soil	Soil	Soil		
Philip ID Client ID			03-H047965 TP 15/1 (0	03-H047966 TP 15/1 (0	03-H047967 TP 15/6 (2	03-H047968 TP 16/2 (0		
Date Sampled (y/m/d) Date Shipped (y/m/d) Date Received (y/m/d)			-0.8m) 03/07/31 03/08/01 03/08/01	-0.6m) DDP 03/07/31 03/08/01 03/08/01	.5-3.5m) 03/07/31 03/08/01 03/08/01	.4-1.0m) 03/07/31 03/08/01 03/08/01		
Analyte	Units	EQL	(Continu	led from prev	vious page)	, , , , , , , , , , , , , , , , , , ,		
Anthracene	mg/kg	0.05	nd	nd		nd		
Fluoranthene	mg/kg	0.05	nd	nd	→	nd		
Pyrene	mg/kg	0.05	nd	nd	-	nd		
Benz [a] anthracene	mg/kg	0.05	nd	nd	-	nd		
Chrysene	mg/kg	0.05	nd	nd	_	nd		
Benzo[b]fluoranthene	mg/kg	0.05	nd	nd	-	nd		
Benzo[k]fluoranthene	mg/kg	0.05	nd	nd	-	nd		
Benzo[a]pyrene	mg/kg	0.05	nd	nd	_	nd		
Perylene	mg/kg	0.05	nd	nd	-	nd		
Indeno[1,2,3-cd]pyrene	mg/kg	0.05	nd	nd	-	nd		
Dibenz[a,h]anthracene	mg/kg	0.05	nd	nd	-	nd		
Benzo[ghi]perylene	mg/kg	0.05	nd	nd	-	nd		
D8 Acenaphthylene Surr.	ቼ Rec.		94.	96.	-	93.		
D10 Anthracene Surr.	% Rec.	_	99.	101.	-	98.		
D10 Pyrene Surr.	% Rec.	-	99.	101.		99.		
D14 p-Terphenyl Surr.	∛ Rec.	-	99.	101.	_	101.		
Moisture	00	-	6.	7.	10.	30.		

EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit. For soils, zero %moisture is assumed. The moisture corrected EQL = EQL/(1-(%moisture/100))

ND () = Analyte was not detected above the EQL. Raised EQL listed in Parenthesis.
- = Dash is reported when parameter not requested in sample.

Event # = PSC Quality Control Reference number for QC samples run with your sample.

%REC = Surrogate Recovery Values are results of PSC quality control tests.

Note : Soil results are expressed on a dry weight basis.

: Biota results are expressed on a wet weight basis.

page verified 🔜

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Note: The product resemblance comments are provided for general guidance only and may not be accurate. Resemblances are based on comparison with available reference standards. Due to chromatographic similarity of certain products, the influence of weathering effects and interference of non-petrogenic compounds, it is not always possible to positively identify products.
Notes: Modified TPH - Tier 1 (C6-C32) does not include BTEX 03-H047968 TP 16/2 (0.4-1.0mLube oil range.

<i>8</i>		
EQL	=	Estimated Quantitation Limit is the minimum concentration that can be reliably
		reported. It is not a regulatory limit. For soils, zero %moisture is assumed.
		The moisture corrected FOT FOT /(1 (2moisture (200))
		The moiscure corrected Eq. = Eq. $(1 - (3moisture/100))$
ND ()	=	Analyte was not detected above the EQL. Raised EQL listed in Parenthesis.
Ţ		Dash is reported when parameter not requested in sample.
<pre>Svent #</pre>	Π	PSC Quality Control Reference number for QC samples run with your sample.
*REC	=	Surrogate Recovery Values are results of PSC quality control tests.
Note	:	Soil results are expressed on a dry weight basis.
* Year and	:	Biota results are expressed on a wet weight basis.
		page verified "

	L_gani	c Parame	eters	page: 5	
PSC Analytical Services 200 Bluewater Road Bedford, NS Canada B4B 1G9 Tel (902) 420-0203 Toll free (800) 565-7227 Fax (902) 420-8612	Client PSC Client	: Dillo 137 C Halif NS Project Project	on Consulting Chain Lake Dr. Cax B3S 1B3 Number : 031 Number : 03-	Limited Suite 100 2644H 2088-0200	COX, BRENT FAX # : 450-2008 Printed : 2003/08/17 Reported : 2003/08/11
Matrix Philip ID Client ID Date Sampled (y/m/d) Date Shipped (y/m/d) Date Received (y/m/d)			Soil 03-H047969 TP 16/4 (2 -2.5m) 03/07/31 03/08/01 03/08/01	Soil 03-H047970 Dup D 03/07/31 03/08/01 03/08/01	
Analyte	Units	EQL			
VPH low Event # TEH C11-32 Soil Event # Benzene Toluene Ethylbenzene	mg/kg mg/kg mg/kg	- 0.005 0.025 0.010	HM19 HM18 nd nd nd	HM19 HM18 nd nd nd	
Xylenes C6 - C10 HC {less BTEX} >C10-C21 (Fuel Range) >C21-C32 (Lube Range) Modified TPH - Tier 1	mg/kg mg/kg mg/kg	0.050 2.5 15. 15. 32.	nd nd nd nd nd	nd nd nd nd nd nd	
TEH Surrogate (IBB) TEH Surrogate (C32) VPH Surrogate (IBB) Moisture	% Rec. % Rec % Rec % Rec.	-	96. 96. 107. 11.	94. 93. 108. 10.	
Note: The product resem and may not be acc reference standard influence of weat is not always pose Notes: Modified TPH - Tie	blance c curate. ds. Due nering e sible to er 1 (C6	omments Resembla to chrom ffects a positiv -C32) do	are provided inces are base atographic si and interferen rely identify es not includ	for general d on compari milarity of ce of non-pe products. e BTEX	guidance only son with available certain products, the trogenic compounds, it
<pre>EQL = Estimated Quantitat reported. It is not The moisture correct ND () = Analyte was not de - = Dash is reported wh Event # = PSC Quality Control %REC = Surrogate Recovery Note : Soil results are ex : Biota results are ex</pre>	tion Lim a regu ted EQL tected a nen para Referes Values a pressed expressed	it is th latory 1 = EQL/(above th meter no nce numb are resu on a dr d on a w	e minimum con- imit. For soi 1-(%moisture/) e EQL. Raised t requested in er for QC samy lts of PSC qua y weight basis et weight basis	centration t ls, zero %mo 100)) EQL listed n sample. oles run wit ality contro s.	hat can be reliably isture is assumed. in Parenthesis. h your sample. l tests.
				page ver:	ified 1

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PSC Analytical Services Client : Dillon Consulting Limited COX, BRENT 200 Bluewater Road 137 Chain Lake Dr. Suite 100 Bedford, NS Canada B4B 1G9 Halifax Tel (902) 420-0203 NSB3S 1B3 FAX # : 450-2008 Toll free (800) 565-7227 PSC Project Number : 0312644H Printed : 2003/08/17 Fax (902) 420-8612 Client Project Number : 03-2088-0200 Reported : 2003/08/11

Certificate of Analysis

Method Summaries :

- Polycyclic Aromatic Hydrocarbons Soil/Sediment: Acetone/Hexane extr'n. HP5890/5971 GC/MS (SIM mode). Ref: EPA 8270A
- Purgeable Hydrocarbons Soil: Methanol extr'n. Purge and Trap/GC/MS. Tekmar LSC 2000. Varian 3400/Saturn II GC/MS. Ref: Atlantic PIRI Guidelines for Laboratories, Draft 1.0, 1999.
- Extractable Hydrocarbons Soil: Acetone/Hexane extraction. HP5890 GC/FID.
- Ref: Atlantic PIRI Guidelines for Laboratories, Draft 1.0, 1999.
- Moisture- based upon: Handbook of Analytical Methods for Environmental Samples Gravimetric Metod Vol 1, page ME4, Ontario Ministry of the Environment, Rexdale Ont.1983. Drying temperature 105+- 5 Degrees C.

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. The results relate only to the items tested. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Approval of Organic Parameters:

Organics	Manager	:	Connie Somson
			James MacDonald
Project	Manager	:	Jugan Rogers
			Suzanne Rogers

SERVICES Quality Control Summary

Workstation Description	Batch I		1		_		Blank								
VPH low Examine		- 7 012190	Analyte Name	Metho	d EC	L Unit	s Value		. Recov	. Matr	x Spike	Dup	licate	Ter	3.bz
VPH low Event #	HM19	6413	Benzene	PTCC	10 0.0		Value	s value	∋_%F	lec. ID	% Red	c. ID	% Diff	- SR	LOC D
VPH low Event #	HM19	6413	Benzene	PTCC		05 mg/k	g < 0.00	5 0.028	3 11	2 03-H04796	5 105			Vaiue	% Rec.
VPH low Event #	HM19	5421	Toluene	PTCC		05 mg/k	g < 0.00	5 0.023	9	2	125	U3-H047965	5 0	1	
VPH low Event #	HM19	5421	Toluene	PIGCA	15 0.02	25 mg/k	g < 0.02	5 0.086	11	- 5 03-H04706	5 400		ļ		
VPH low Event #	HM19	5433	Ethylbenzene	PTCO	1S 0.02	25 mg/k	9 < 0.029	5 0.078	10	4	128	03-H047965	0	ł	
VPH low Event #	HM19	5433	Ethylbenzene	FIGUN	15 0.0	1 mg/k	9 < 0.01	0.025	10	0 03.004706				1	1
VPH low Event #	HM19	5441	Xvienes	DTOCK	IS 0.0	1 mg/kg	9 < 0.01	0.022	85	1	811	03-H047965	0	1	
	HM19	5441	Xvienes	PIGCN	IS 0.0	5 mg/kg	3 < 0.05	0.1	10			1	í	1	
VPH low Event #	HM19	5449	Total C6-C10 (incl. PTEX	PIGCM	IS 0.0	5 mg/kg	< 0.05	0.09		03-004796	p 125	03-H047965	0	1	
TELLOID DO D T	HM19	5449	Total C6-C10 (incl. BTEX	PIGCM	S 2.5	mg/kg	< 2.5	58	00	00.00.000				1	
TEH C11-32 Soil Event #	HM18	4160	TEH (SC10 COD)	PT GCM	S 2.5	mg/ko	<25	46	200	U3-H04796	98	03-H047965	0	1	
TEH C11-32 Soil Event #	HM18	4160	TEH (>C10-C32)	GC FID	30	mg/kg	< 30	010	1 10		1		-		
PAH in Soil Event #	HM03	7410	Neebit-1	GC FID	30	ma/ka	< 30	810	91			03-H047965	n		
PAH in Soil Event #	HM03	7410	Naphinalene	GC/MS	0.05	ma/ka	< 0.05	930	93				0	1 /	
PAH in Soil Event #	НМОЗ	7425	Naphinalene	GC/MS	0.05	mo/ko	< 0.00		80	03-H047965	80	03-H047965	0		
PAH in Soil Event #	HM03	7425	2-Methylnaphthalene	GC/MS	0.05	mo/ka	< 0.05	2.1	84	1			Ų		i 1
PAH in Soil Event #	HM03	7420	∠-Methylnaphthalene	GC/MS	0.05	ma/ka	< 0.05	2	80	03-H047965	80	03-H047965	0		
PAH in Soil Event #	HM03	7420	1-Methylnaphthalene	GC/MS	0.05	ma/ka	< 0.05	2	80				v	í !	1
PAH in Soil Event #	HM03	7420	1-Methyinaphthalene	GC/MS	0.05	maile	< 0.05	2.2	88	03-H047965	88	03-H047965	~	1	
PAH in Soil Event #	HM03	7440	Acenaphthylene	GC/MS	0.05	mg/kg	< 0.05	2.2	88	1		00-1047 905	0		
PAH in Soil Event #	LIM03	7440	Acenaphthylene	GC/MS	0.05	nig/kg	< 0.05	2.5	100	03-H047965	100	03-0047066	_		
PAH in Soil Event #	HMUS	7450	Acenaphthene	GC/MS	0.05	nig/kg	< 0.05	2.6	104			03-1047905	U	1 1	[
PAH in Soil Event #	HM03	7450	Acenaphthene	GC/MS	0.05	mg/kg	< 0.05	2.5	100	03-H047965	100	02 110 17000		.	[
PAH in Soil Event #	FIMU3	7460	Fluorene	GC/MS	0.05	mg/kg	< 0.05	2.6	104		100	03-1104/965	0		1
PAH in Soil Event #	FIM03	7460	Fluorene	GCMS	0.05	mg/kg	< 0.05	2.3	92	03-H047965	06	02.110.170.0-1	- 1		ĺ
PAH in Soil Event #	HM03	7470	Phenanthrene	GC/MS	0.05	mg/kg	< 0.05	2.4	96		90	U3-H047965	0		
PAH in Soil Event #	HM03	7470	Phenanthrene	GC/MS	0.05	mg/kg	< 0.05	2.4	96	03-0047066	00				1
PAH in Soil Event #	HM03	7480	Anthracene	GC/MS	0.05	mg/kg	< 0.05	2.4	96	00-110-41 903	92	03-H047965	0		1
PAH in Soir Event #	HM03	7480	Anthracene	GC/MS	0.05	mg/kg	< 0.05	2.4	96	03-4047065			1		j j
	HM03	7500	Fluoranthene	GC/MS	0.05	mg/kg	< 0.05	2.5	100	00-11047905	96	03-H047965	0		ļ
PAU in Soil Event #	HM03	7500	Eluoranthene	GC/MS	0.05	mg/kg	< 0.05	2.1	84	02 110 17000			1		
PAH in Soil Event#	HM03	7510	Pyrene	GC/MS	0.05	mg/kg	< 0.05	2	80	03-1047965	80	03-H047965	0		
PAH in Soil Event #	HM03	7510	Pyrene	GC/MS	0.05	mg/kg	< 0.05	1.96	79	0211047005		1	1		
PArt in Soit Event #	HM03	7530	Benzialanthrases	GC/MS	0.05	mg/kg	< 0.05	1.93	70	U3-H04/965	77	03-H047965	0		
PAH in Soil Event #	HM03	7530	Benzlejenthasse	GC/MS	0.05	mg/kg	< 0.05	21	54	00.00		l í			
PAH in Soil Event #	HM03	7540	Champers	GC/MS	0.05	mg/ka	< 0.05	22	04	U3-H047965	84	03-H047965	0		j
PAH in Soil Event #	HM03	7540	Christene	GC/MS	0.05	mg/kg	< 0.05	25	00				·		1
PAH in Soil Event #	HM03	7551	Beozoble	GC/MS	0.05	ma/ka	< 0.05	2.0	100	03-H047965	96	03-H047965	0		1
PAH in Soil Event #	HM03	7551	Benzolbiture	GC/MS	0.05	ma/ka	< 0.05	2.0	100				Ŭ		
PAH in Soil Event #	HM03	7552	Benzelug	GC/MS	0.05	ma/ka	< 0.05	2.0	92	03-H047965	92	03-H047965		1	
PAH in Soil Event #	HM03	7552	Benzolkjiluoranthene	GC/MS	0.05	mo/ko	-0.05	2.3	92		i		° I	.	
PAH in Soil Event #	HM03	7560	Benzo[k]fluoranthene	GC/MS	0.05	ma/ka	< 0.05	2.3	92	03-H047965	92	03-H047965			
PAH in Soil Event #	HM03	7560	Benzo(a)pyrene	GC/MS	0.05	molko	0.05	2.3	92			0011047303			1
PAH in Soil Event #	HM03	7560	Benzo[a]pyrene	GC/MS	0.05	mg/kg	< 0.05	2.1	84	03-H047965	80	03-4047065			1
PAH in Soil Event #	HM02	7415	Perylene	GC/MS	0.05	nig/Kg	< 0.05	2.1	84			00-11047903	0		1
PAH in Soil Event #	- MNO3	7415	Perylene	GC/MS	0.05	mg/Kg	< 0.05	2.3	92	03-H047965	92	02 4047000			1
PAH in Soil Event #		/570	Indeno[1,2,3-cd]pyrene	GC/MS	0.05	mg/kg	< 0.05	2.3	92		32	03-1104/965	0		l
PAH in Soil Event #		/570	Indeno[1,2,3-cd]pyrene	GC/MS	0.05	mg/kg	< 0.05	2	80	03-H047965	72	02 110 1700-			
	пмоз [7580 j	Dibenz[a,h]an(hracene	GC/Me	0.05	mg/kg	< 0.05	1.9	76		·4	us-HU47965	0		1
				00/W0 [0.05	mg/kg 📔	< 0.05	2.1	84	3-H047965	76	20.000	1		Í
								•		1000	70 JU	JS-HU47965	0		1

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Quality Control Summary

ſ	Workstation Description	Batch ID	Analyta	Appleto Marra				Blank	Proc. R	ecov.	Matrix	Spike	Dupli	cate	SRI	M
ł		BOILD	(Allenyte	Analyte Name	Method	EQL	Units	Value	Value	% Rec.	<u> </u>	% Rec.	ID	% Diff	Value	% Rec.
	PAH in Soil Event # PAH in Soil Event # PAH in Soil Event #	HM03 HM03 HM03	7580 7590 7590	Dibenz[a,h]anthracene Benzo[ghi]perylene Benzo[ghi]perylene	GC/MS GC/MS GC/MS	0.05 0.05 0.05	mg/kg mg/kg mg/kg	< 0.05 < 0.05 < 0.05	2.1 2 1.8	84 80 72	03-H047965	76	0 3- H047965	o		



		Iuorgan	ic Param	neters	page : 1
Client : Di 13 He	llon Consulti 7 Chain Lake 1 lifey	ng Limit Dr. Suit	ed e 100		COX, BRENT
NS	BIS 1B3				FAX # • 450-2008
PS	C Project Num	ber : 03	12644H		Printed : 2003/08/17
Cl	ient Project	Number:	03-2088	8-0200	Reported : 2003/08/11
	2				•
Matrix				Soil	Soil
Philip ID				03-H047971	03-H047972
Client ID				TP 15/3 (1	TP 15/3 (1
				.5-2m)	.5-2m) DUP
Date Sample	ed (y/m/d)			03/07/31	03/07/31
Date Shippe	ed (y/m/d)			03/08/01	03/08/01
Date Receiv	ved (y/m/d)	<u> </u>	······	03/08/01	03/08/01
Analyte		Units	EQL		DUP
< 12.5 mm		90	0.1	100.	100.
< 9.5 mm		90	0.1	100.	100.
< 4.75 mm		ajo	0.1	100.	100.
< PHI -1 ((2 mm)	2	0.1	85.6	85.9
< PHI 0 ((1 mm)	%	0.1	75.7	76.0
< PHI +1 ((1/2 mm)	e o	0.1	65.0	65.1
< PHI +2 (1/4 mm)	0	0.1	63.6	60.7
< PHI +3 (1/8 mm)	99	0.1	56.4	53.5
< PHI +4 (1/16 mm)	aja	0.1	37.9	39.5
< PHI +5 (1/32 mm)	8	0.1	28.2	29.8
< PHI +6 (1/64 mm)	0	0.1	20.3	21.0
< PHI +7 (1/128 mm)	a10	5.1	11.8	12.0
< PHI +8 (1/256 mm)	oto	0.1	9.3	9.4
< PHI +9 (1/512 mm)	00	1.0	6.6	6.5
Gravel		: <u>'</u> ;	0.1	14.4	14.1
Sand		۱.	0.1	47.7	46.4
Silt		olo	0.1	28.6	30.1
Clay		010	0.1	9.3	9.4
-					
Legend	EQL = Es	timated	Quantita	ation Limit i	s the minimum concentration that can
	be	rel.abl	y report	ed. It is not	ot a regulatory limit.
	ND = No	t Detect	ed, inst	rument did no	ot detect anything above standard EQL.
	ND() = NO	t Detect	ed at t	he elevated i	EQL specified, due to matrix
	in	certeran	ces or s	ample pre-di	lution.
Nata	- = Da;	sn is ie	ported w	nen paramete:	r not requested in sample.
NOLG :	Bioto results	are exp	ressed a	is air dry w	eight basis.
i	BIOTA result:	s are ex	pressed	on a wet weig	ght basis unless otherwise stated.

page verified _/

	Inorganic H	Parameters	page : 2	2
PSC Analytical Services 200 Bluewater Road Bedford, NS Canada B4B 1G9	Client : I J F	Dillon Consulting 1 137 Chain Lake Dr. Halifax	Limited Suite 100	COX, BRENT
Tel (902) 420-0203 Toll free (800) 565-7227 Fax (902) 420-8612	N PSC Pro Client Pro	NS B3S 1B3 oject Number : 0312 oject Number : 03-2	2644H 2088-0200	FAX # : 450-2008 Printed : 2003/08/17 Reported : 2003/08/11

Certificate of Analysis

Method Summaries:

Particle Size Distribution of Soils and Sediments: Sieve/Pipette technique. Ref: Methods of Sampling and Analysis of Marine Sediments - Ocean Dumping Report 1

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. The results relate only to the items tested. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Approval of Inorganic Parameters:

Inorganics Manager : Jerry Arenovich Project Manager : Suzanne Rogers

Approved

//



<u>TP 15/3 (1.5-2m)</u>



PSC ID: 03-H047972



TP 15/3 (1.5-2m) Dup





Analyte Details

page: 1

Client : Dillon Consulting Limited COX, BRENT 137 Chain Lake Dr. Suite 100 Halifax NS B3S 1B3 FAX # : 450-2008 PSC Project Number : 0312644H Printed : 2003/08/17 Client Project Number : 03-2088-0200 Reported : 2003/08/11

<u>Sample ID</u>	<u>Analyte</u>	Date Analysed	<u>Analyst</u>
03-H047961	VPH low	8/ 8/03	Philippe Deveau
03-H047961	TEH C11-32 Soil	8/ 8/03	Connie Samson
03-H047961	Moisture	8/ 1/03	Amanda Roberts
03-H047961	VPH Soil Extraction	8/ 7/03	Amy MacArthur
03-H047961	TEH Soil Extraction	8/ 6/03	Allan Abbott
03-H047962	VPH low	8/ 8/03	Philippe Deveau
03-H047962	TEH C11-32 Soil	8/ 8/03	Connie Samson
03-H047962	Moisture	8/ 1/03	Amanda Roberts
03-H047962	VPH Soil Extraction	8/ 7/03	Amy MacArthur
03-H047962	TEH Soil Extraction	8/ 6/03	Allan Abbott
03-H047963	VPH low	8/ 8/03	Philippe Deveau
03-H047963	TEH C11-32 Soil	8/ 8/03	Connie Samson
03-H047963	Moisture	8/ 1/03	Amanda Roberts
03-H047963	VPH Soil Extraction	8/ 7/03	Amy MacArthur
03-H047963	TEH Soil Extraction	8/ 6/03	Allan Abbott
03-H047964	VPH low	8/ 8/03	Philippe Deveau
03-H047964	TEH C11-32 Soil	8/ 8/03	Connie Samson
03-H047964	Moisture	8/ 1/03	Amanda Roberts
03-H047964	VPH Soil Extraction	8/ 7/03	Amy MacArthur
03-H047964	TEH Soil Extraction	8/ 6/03	Allan Abbott
03-H047965	VPH low	8/ 8/03	Philippe Deveau
03-H047965	TEH C11-32 Soil	8/ 8/03	Connie Samson
03-H047965	Moisture	8/ 1/03	Amanda Roberts
03-H047965	VPH Soil Extraction	8/ 7/03	Amy MacArthur
03-H047965	TEH Soil Extraction	8/ 6/03	Allan Abbott
03-H047965	PAH Soil Extraction	8/ 5/03	Cynthia Coleman
03-H047965	Naphthalene	8/ 6/03	Cynthia Coleman
03-H047965	Perylene	8/ 6/03	Cynthia Coleman
03-H047965	1-Methylnaphthalene	8/ 6/03	Cynthia Coleman
03-H047965	2-Methylnaphthalene	8/ 6/03	Cynthia Coleman
03-H047965	Acenaphthylene	8/ 6/03	Cynthia Coleman
03-H047965	Acenaphthene	8/ 6/03	Cynthia Coleman
03-H047965	Fluorene	8/ 6/03	Cynthia Coleman
03-H047965	Phenanthrene	8/ 6/03	Cynthia Coleman

page: 2

PSC Analytical Services 200 Bluewater Road Bedford, NS Canada B4B 1G9	Client : Dillon Consulting Limited 137 Chain Lake Dr. Suite 100 Halifax	COX, BRENT
Tel (902) 420-0203 Toll free (800) 565-7227 Fax (902) 420-8612	NS B3S 1B3 PSC Project Number : 0312644H Client Project Number : 03-2088-0200	FAX # : 450-2008 Printed : 2003/08/17 Reported : 2003/08/11
Sample ID Analyte	Date Analysed	Analyst

03-H047965	Anthracene	8/6	5/03	Cyn	thia Coleman
03-H047965	Fluoranthene	8/6	5/03	Cyn	thia Coleman
03-H047965	Pyrene	8/6	5/03	Cyn	thia Coleman
03-H047965	Benz [a] anthracene	8/6	5/03	Cyn	thia Coleman
03-H047965	Chrysene	8/6	5/03	Cyn	thia Coleman
03-H047965	Benzo[b]fluoranthene	8/6	5/03	Cyn	thia Coleman
03-H047965	Benzo[k]fluoranthene	8/6	5/03	Cyn	thia Coleman
03-H047965	Benzo[a]pyrene	8/6	5/03	Cyn	thia Coleman
03-H047965	Indeno[1,2,3-cd]pyrene	8/6	5/03	Cyn	thia Coleman
03-H047965	Dibenz[a,h]anthracene	8/6	5/03	Cyn	thia Coleman
03-H047965	Benzo[ghi]perylene	8/6	5/03	Cyn	thia Coleman
03-H047965	D8 Acenaphthylene Surr.	8/6	5/03	Cyn	thia Coleman
03-H047965	D10 Anthracene Surr.	8/6	5/03	Cyn	thia Coleman
03-H047965	D10 Pyrene Surr.	8/6	5/03	Cyn	thia Coleman
03-H047965	D14 p-Terphenyl Surr.	8/6	5/03	Cyn	thia Coleman
03-H047966	VPH low	8/8	3/03	Phi	lippe Deveau
03-H047966	TEH C11-32 Soil	8/8	/03	Con	nie Samson
03-H047966	Moisture	8/ 1	/03	Ama	nda Roberts
03-H047966	VPH Soil Extraction	8/7	/03	Amy	MacArthur
03-H047966	TEH Soil Extraction	8/6	/03	All	an Abbott
03-H047966	PAH Soil Extraction	8/5	/03	Cyn	thia Coleman
03-H047966	Naphthalene	8/6	/03	Cyn	thia Coleman
03-H047966	Perylene	8/6	/03	Cynt	thia Coleman
03-H047966	1-Methylnaphthalene	8/6	/03	Cyni	thia Coleman
03-H047966	2-Methylnaphthalene	8/6	/03	Cyn	thia Coleman
03-H047966	Acenaphthylene	8/6	/03	Cyni	thia Coleman
03-H047966	Acenaphthene	8/6	/03	Cynt	thia Coleman
03-H047966	Fluorene	8/6	/03	Cynt	thia Coleman
03-H047966	Phenanthrene	8/6	/03	Cynt	thia Coleman
'03-H047966	Anthracene	8/6	/03	Cynt	thia Coleman
03-H047966	Fluoranthene	8/6	/03	Cynt	thia Coleman
03-H047966	Pyrene	8/ 6	/03	Cynt	chia Coleman
03-H047966	Benz[a]anthracene	8/6	/03	Cynt	chia Coleman
03-H047966	Chrysene	8/6	/03	Cynt	chia Coleman
03-H047966	Benzo[b]fluoranthene	8/6	/03	Cynt	chia Coleman

PSC Analytical Services Client : Dillon Consulting Limited COX, BRENT 200 Bluewater Road 137 Chain Lake Dr. Suite 100 Bedford, NS Canada B4B 1G9 Halifax Tel (902) 420-0203 NS B3S 1B3 FAX # : 450-2008 Toll free (800) 565-7227 PSC Project Number : 0312644H Printed : 2003/08/17 Fax (902) 420-8612 Client Project Number : 03-2088-0200 Reported : 2003/08/11

page: 3

Analyte Details

<u>Sample ID</u>	Analyte	Date Analysed	Analyst
03-H047966	Benzo[k]fluoranthene	8/ 6/03	Cynthia Coleman
03-H047966	Benzo[a]pyrene	8/ 6/03	Cynthia Coleman
03-H047966	Indeno[1,2,3-cd]pyrene	8/ 6/03	Cynthia Coleman
03-H047966	Dibenz[a,h]anthracene	8/ 6/03	Cynthia Coleman
03-H047966	Benzo[ghi]perylene	8/ 6/03	Cynthia Coleman
03-H047966	D8 Acenaphthylene Surr.	8/ 6/03	Cynthia Coleman
03-H047966	D10 Anthracene Surr.	8/ 6/03	Cynthia Coleman
03-H047966	D10 Pyrene Surr.	8/ 6/03	Cynthia Coleman
03-H047966	D14 p-Terphenyl Surr.	8/ 6/03	Cynthia Coleman
03-H047967	VPH low	8/ 8/03	Philippe Deveau
03-H047967	TEH C11-32 Soil	8/ 8/03	Connie Samson
03-H047967	Moisture	8/ 1/03	Amanda Roberts
03-H047967	VPH Soil Extraction	8/ 7/03	Amy MacArthur
03-H047967	TEH Soil Extraction	8/ 6/03	Allan Abbott
03-H047968	VPH low	8/ 8/03	Philippe Deveau
03-H047968	TEH C11-32 Soil	8/ 8/03	Connie Samson
03-H047968	Moisture	8/ 1/03	Amanda Roberts
03-H047968	VPH Soil Extraction	8/ 7/03	Amy MacArthur
03-H047968	TEH Soil Extraction	8/ 6/03	Allan Abbott
03-H047968	PAH Soil Extraction	8/ 5/03	Cynthia Coleman
03-H047968	Naphthalene	8/ 6/03	Cynthia Coleman
03-H047968	Perylene	8/ 6/03	Cynthia Coleman
03-H047968	1-Methylnaphthalene	8/ 6/03	Cynthia Coleman
03-H047968	2-Methylnaphthalene	8/ 6/03	Cynthia Coleman
03-H047968	Acenaphthylene	8/ 6/03	Cynthia Coleman
03-H047968	Acenaphthene	8/ 6/03	Cynthia Coleman
03-H047968	Fluorene	8/ 6/03	Cynthia Coleman
03-H047968	Phenanthrene	8/ 6/03	Cynthia Coleman
03-H047968	Anthracene	8/ 6/03	Cynthia Coleman
03-H047968	Fluoranthene	8/ 6/03	Cynthia Coleman
03-H047968	Pyrene	8/ 6/03	Cynthia Coleman
03-H047968	Benz[a] anthracene	8/ 6/03	Cynthia Coleman
03-H047968	Chrysene	8/ 6/03	Cynthia Coleman
03-H047968	Benzo[b]fluoranthene	8/ 6/03	Cynthia Coleman
03-H047968	Benzo[k]fluoranthene	8/ 6/03	Cynthia Coleman

PSC Analytical Services	Client : Dillon Consulting Limited	COX, BRENT
200 Bluewater Road	137 Chain Lake Dr. Suite 100	
Bedford, NS Canada B4B 1G9	Halifax	
Tel (902) 420-0203	NS B3S 1B3	FAX # : 450-2008
Toll free (800) 565-7227	PSC Project Number : 0312644H	Printed : 2003/08/17
Fax (902) 420-8612	Client Project Number : 03-2088-0200	Reported : 2003/08/11

Sample ID	Analyte	Date Analysed	Analyst
03-H047968	Benzo[a]pyrene	8/ 6/03	Cynthia Coleman
03-H047968	Indeno[1,2,3-cd]pyrene	8/ 6/03	Cynthia Coleman
03-H047968	Dibenz[a,h]anthracene	8/ 6/03	Cynthia Coleman
°03-H047968	Benzo[ghi]perylene	8/ 6/03	Cynthia Coleman
03-H047968	D8 Acenaphthylene Surr.	8/ 6/03	Cynthia Coleman
03-H047968	D10 Anthracene Surr.	8/ 6/03	Cynthia Coleman
03-H047968	D10 Pyrene Surr.	8/ 6/03	Cynthia Coleman
03-H047968	D14 p-Terphenyl Surr.	8/ 6/03	Cynthia Coleman
03-H047969	VPH low	8/ 8/03	Philippe Deveau
03-H047969	TEH C11-32 Soil	8/ 8/03	Connie Samson
03-H047969	Moisture	8/ 1/03	Amanda Roberts
03-H047969	VPH Soil Extraction	8/ 7/03	Amy MacArthur
03-H047969	TEH Soil Extraction	8/ 6/03	Allan Abbott
03-н047970	VPH low	8/ 8/03	Philippe Deveau
03-Н047970	TEH Cl1-32 Soil	8/ 8/03	Connie Samson
03-H047970	Moisture	8/ 1/03	Amanda Roberts
03-H047970	VPH Soil Extraction	8/ 7/03	Amy MacArthur
03-H047970	TEH Soil Extraction	8/ 6/03	Allan Abbott



Phone: 450 - 4200 Fax: 450 - 4202 Sampling Date: July 31/03 Phone: 464 - 403 ² Fax: 464 - 403 ² rage	Client: ANALYTICAL SERVICES 200 Bluewater Road, Suite 105 Bedford, Nova Scotia B4B 1G9 Tel: 902-420-0203 Fax: 902-420-8612 Toll Free: 1-800-565-RCAp (7227) E-mail: PASI.Halifax@contactPSC.com	Dillon (137 Chai Halifax BRENT	<u>Consulting</u> <u>Lalu</u> , NS Cox	Ltd. Drive	PSC Quote #: Client P.O. #: Client Project #: <u>03-2053</u> Sampled By: <u>T. A.J.</u>	Client: Inperial 0:1 Ltd -0200 er Contact: David O'Carroll
Int Code PLEASE PROVIDE 03 ADVANCE NOTICE PO3 FOR RUSH ORDERS 03 FOR RUSH ORDERS 04 FOR RUSH ORDERS 05 Standard S-7 Business Days For Rush or Standard S-7 Business Days <td>Page of E-mail:</td> <td>450-4000</td> <td> Fax:</td> <td>ムデン - 200 名 E-mail Results []</td> <td>Sampling Date: <u>5:431/</u> Sampling Time: <u>AM</u></td> <td><u>03</u> Phone: <u>464-403</u>² Fax: <u>464-4004</u></td>	Page of E-mail:	450-4000	Fax:	ムデン - 200 名 E-mail Results []	Sampling Date: <u>5:431/</u> Sampling Time: <u>AM</u>	<u>03</u> Phone: <u>464-403</u> ² Fax: <u>464-4004</u>
Samples Received in late the state of the st	ent Code 63 W.O.# 03/216444 Date 03/216444 Date Date 10 Verified 10	E IS nnot be met No. & Type of Bottles 1 - 2 50 - 1 1 - 6 c - 1 V V Bqq Date: 7 Deferil	K. O Field Filtered & Preserved RCAP-30 Choose: Total or Diss. Metals	Vater - Total Metals (Default Method) Water - Total Metals (Default Method) Water - Dissolved Metals Available Metals - Soil (HNO3/H2O2)	TPH MUST (BTEX, C6- C32) TPH MUST (BTEX, C6- C32) Fractionation PAH PAH PCB Semivol. Organics (EPA 624, 8260)	Philip Task Order # 11040282 64 mill Lake Rel, Hobbards, NS Analysis or Regulatory Packages (specify Guidlines) Comments/Hazar e. High Concentration Expected) 'on & Task number 103-H041961-7 03-H041972-7 03-H041972-7 03-H041972-7 03-H041972-7 03-H041972-7 03-H041972-7 03-H041972-7

Invoice to (if other than client): ÷.

101 (Doo	
CLIENT CONTACT: Brent(ox	HECKLIST
CLIENT PROJECT =: 03-2088-0200	CLIENT FAX #: 450-2008

CLIENT FAX #: 450-2008 DATE: Aug 1/03

Initial	
Deficiency Type	
Custody seal on cooler is not intact	
and a credites in cooler is >10°C	
ISample bottles broken in transit	
No chain of custody account	
Chain at	ment
Chain of custody information is incomplete	
Chain of custody is not signed as the	
Non-current und signed and dated by	consultant
I ten-centent Version of PSC CoC for IOL same	
Bottles listed on CoC, but not include	ules
Bottles in ship and in ship	Dment
realized in shipment, but not listed on CoC	
Analysis required for each sample is not in	
clearly specified as it.	1 or
2	
Sample bottle labeling issue (missing or in	
Samples received >5 down f	ect)
Samuel States after sampling	
Samples received after analytical hold time b	
exceeded	s been
Wrong and the	
thong sample bottle has been used	
Sample was incorrectly preserved and	
Insufficient number	e present
Incorrect or missing task order number -	
Sample shines in the shines of	to PSC
Sample Intraction	

the above mentioned deficiencies. ty has not been compromised.

Irler

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AWaybill #: N/A. ficiency is present, please fax a copy of the completed form to the consultant and attached original and suffirmation to the Chain of Custody.



RECEIVED AUG 2 5 201

Certificate of Analysis

CLIENT INFORMATION

Attention:Brent CoxClient Name:Dillon Consulting Ltd.Project:03-2088-0200Project Desc:Consulting Ltd.

Address: 137 Chain Lake Drive Halifax, NS B3S 1B3 Fax Number: 902-450-2008 Phone Number: 902-450-4000

LABORATORY INFORMATION

Contact:Suzanne RogersProject:0312784HDate Received:03/08/05Date Reported:03/08/19

Sample No.:

03-H048555

Methods used by PSC are based upon those found in 'Standard Methods for the Examination of Water and Wastewater', Nineteenth Edition. Other methods are based on the principles of EPA or American Petroleum Institute methodologies. All data is in statistical control unless otherwise flagged. Acceptance criteria for analytical QC has been met unless otherwise flagged.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. Any and all use of these test results shall be limited to the actual cost of the pertinent analysis done. There is no other warranty expressed or implied. Your samples will be retained at PSC for a period of 60 days from receipt of samples as per contract.

Certified by: <u>Koce</u>

Page 1



		Organi	c Parame	ters	page : 1	
	Client : Dillon Consultin 137 Chain Lake M Halifax	ng Limit Dr. Suit	ed e 100		COX, BRENT	
	NS B3S 1B3				FAX # : 450-2008	
	PSC Project Numl	oer : 03	12784H		Printed : 2003/08/17	
	Client Project 1	Number :	03-2088	-0200	Reported : 2003/08/15	
	Matrix			Soil		
	Philip ID			03-H048555		
	Client ID			TP 2/3 (1-		
				1.5m)		
	Date Sampled (y/m/d)					
	Date Shipped (y/m/d) Date Received (y/m/d)			03/08/05		
	Analyte	Units	EQL			-
	TEH Fract. Soil Event #			HM76		_
	VPH-Fract. Soil Event #		-	HL77		
	>C8-C10 Aromatics (-EX)	mg/kg	0.1	41.4		
	> Cl0-Cl2 (Aromatic)	mg/kg	4.0	569.		
	> Cl2-Cl6 (Aromatic)	mg/kg	15.0	1400		
	> C16-C21 (Aromatic)	mg/kg	15.0	1120		
	> C21-C32 (Aromatic)	mg/kg	15.0	224.		
	> C6-C8 (Aliphatic)	mg/kg	0.1	10.6		
	> C8-Cl0 (Aliphatic)	mg/kg	0.4	330.		
	> Cl0-Cl2 (Aliphatic)	mg/kg	8.0	480.		
	> C12-C16 (Aliphatic)	mg/kg	15.0	649.		-
	> C16-C21 (Aliphatic)	mg/kg	15.0	654.		
	> C21-C32 (Aliphatic)	mg/kg	15.0	226.		
	Modified TPH - Tier II	mg/kg	103.	5710		
	TEH Surrogate (IBB)	% Rec.	-	98.		
	Benzene	mg/kg	0.025	nd		
	Toluene	mg/kg	0.025	0.055		
	Ethylbenzene	mg/kg	0.025	2.14		
	Xylenes	mg/kg	0.050	11.0		
	EQL = Estimated Quantita reported. It is no The moisture corre	tion Lim t a regu cted EQI	hit is th latory] = EQL/(ne minimum co limit. For so (1-(%moisture)	oncentration that can be reliably oils, zero %moisture is assumed. e/100))	
ND.	() = Analyte was not d	etected	above th	ne EQL. Raise	ed EQL listed in Parenthesis.	
-	= Dash is reported w	hen para	meter no	ot requested	in sample.	
Iver	nt # = PSC Quality Contro	1 Refere	ence numb	er for QC sa	amples run with your sample.	
KRE(= Surrogate Recovery	values	are resu	LITS OI PSC q	quality control tests.	
r	NOUE : SOLI RESULTS ARE E	xpressed	ion a dr	y weight bas	i18.	
	: bloca results are	expresse	u on a N	ver weight pa	nage verified <i>l</i>	
					page verilied	

Matrix Philip ID Client ID Date Sampled (y/m/d) Date Shipped (y/m/d) Date Received (y/m/d) Analyte TEH Surrogate (C32) % Rec VPH Surrogate (IBB) % Rec Moisture % Note: The product resemblance and may not be accurate reference standards. Due influence of weathering is not always possible t Note: Equivalent carbon numbers being reported. Notes: - Aromatic C6 - C7 and Arco respectively. - Aromatic >C8 - C10 does - Modified TPH - Tier 2 = (does not inlude BTEX) 03-H048555 TP 2/3 (1-1.5m)	EQL - comments Resemblue to chron effects to positive to based	Soil 03-H048555 TP 2/3 (1- 1.5m) 03/08/05 (Continued from 94. 81. 16. s are provided for gene ances are based on cor matographic similarity and interference of no vely identify products on n-alkane elution t	<pre>previous page) eral guidance only mparison with available y of certain products, the on-petrogenic compounds, it s. times) are</pre>
Matrix Philip ID Client ID Date Sampled (y/m/d) Date Received (y/m/d) Date Received (y/m/d) Analyte TEH Surrogate (C32) % Rec VPH Surrogate (IBB) % Rec Moisture % Note: The product resemblance and may not be accurate reference standards. Due influence of weathering is not always possible t Note: Equivalent carbon numbers being reported. Notes: - Aromatic C6 - C7 and Arcorespectively. - Aromatic >C8 - C10 does - Modified TPH - Tier 2 = (does not inlude BTEX) 03-H048555 TP 2/3 (1-1.5m)	EQL - comments Resemble to chron effects to positive to based	Soil 03-H048555 TP 2/3 (1- 1.5m) 03/08/05 (Continued from 94. 81. 16. s are provided for gene ances are based on con matographic similarity and interference of no vely identify products on n-alkane elution t	<pre>previous page) eral guidance only mparison with available y of certain products, the on-petrogenic compounds, it s. times) are</pre>
Date Sampled (y/m/d) Date Shipped (y/m/d) Date Received (y/m/d) Analyte Units TEH Surrogate (C32) % Rec VPH Surrogate (IBB) % Rec Moisture % Note: The product resemblance and may not be accurate reference standards. Due influence of weathering is not always possible t Note: Equivalent carbon numbers being reported. Notes: - Aromatic C6 - C7 and Arc respectively. - Aromatic >C8 - C10 does - Modified TPH - Tier 2 = (does not inlude BTEX) 03-H048555 TP 2/3 (1-1.5m)	EQL - comments Resemble to chron effects o positiva (based	03/08/05 (Continued from 94. 81. 16. are provided for gene ances are based on cor matographic similarity and interference of no vely identify products on n-alkane elution t	previous page) eral guidance only mparison with available y of certain products, the on-petrogenic compounds, it s. times) are
AnalyteUnitsTEH Surrogate (C32)% RecVPH Surrogate (IBB)% RecMoisture%Note: The product resemblance and may not be accurate reference standards. Due influence of weathering is not always possible tNote: Equivalent carbon numbers being reported.Notes: - Aromatic C6 - C7 and Arc respectively Aromatic >C8 - C10 does (does not inlude BTEX)03-H048555TP 2/3 (1-1.5m)	EQL - comments Resemble to chron effects to positions (based	(Continued from 94. 81. 16. are provided for gene ances are based on cor matographic similarity and interference of no vely identify products on n-alkane elution t	<pre>previous page) eral guidance only mparison with available y of certain products, the on-petrogenic compounds, it s. times) are</pre>
<pre>TEH Surrogate (C32) % Rec VPH Surrogate (IBB) % Rec Moisture % Note: The product resemblance and may not be accurate reference standards. Due influence of weathering is not always possible t Note: Equivalent carbon numbers being reported. Notes: - Aromatic C6 - C7 and Arc respectively. - Aromatic >C8 - C10 does - Modified TPH - Tier 2 = (does not inlude BTEX) 03-H048555 TP 2/3 (1-1.5m)</pre>	comments Resemble to chron effects o positions (based	94. 81. 16. are provided for gene ances are based on cor matographic similarity and interference of no vely identify products on n-alkane elution t	eral guidance only mparison with available y of certain products, the on-petrogenic compounds, it s. cimes) are
<pre>VPH Surrogate (IBB) % Rec Moisture % Note: The product resemblance and may not be accurate reference standards. Due influence of weathering is not always possible t Note: Equivalent carbon numbers being reported. Notes: - Aromatic C6 - C7 and Arc respectively. - Aromatic >C8 - C10 does - Modified TPH - Tier 2 = (does not inlude BTEX) 03-H048555 TP 2/3 (1-1.5m)</pre>	comments Resemble to chron effects to positions (based	81. 16. are provided for gene ances are based on com matographic similarity and interference of no vely identify products on n-alkane elution t	eral guidance only mparison with available y of certain products, the on-petrogenic compounds, it s. cimes) are
<pre>Note: The product resemblance and may not be accurate reference standards. Due influence of weathering is not always possible t Note: Equivalent carbon numbers being reported. Notes: - Aromatic C6 - C7 and Arc respectively. - Aromatic >C8 - C10 does - Modified TPH - Tier 2 = (does not inlude BTEX) 03-H048555 TP 2/3 (1-1.5m)</pre>	comments Resemble to chron effects a to position (based	are provided for gene ances are based on com matographic similarity and interference of no vely identify products on n-alkane elution t	eral guidance only mparison with available y of certain products, the on-petrogenic compounds, it s. cimes) are
	matic >C' not inclu sum of al Weathered	7 - C8 are composed of ude ethylbenzene or xy ll aliphatic + aromati d fuel oil fraction.	t benzene and toluene vlenes. to ranges
EQL = Estimated Quantitation Li reported. It is not a reg The moisture corrected EQ ND () = Analyte was not detected - = Dash is reported when par	mit is th ulatory l L = EQL/(above th ameter no	he minimum concentrati limit. For soils, zero (1-(%moisture/100)) he EQL. Raised EQL lis ot requested in sample	on that can be reliably %moisture is assumed. ted in Parenthesis.
Event # = PSC Quality Control Refer %REC = Surrogate Recovery Values Note : Soil results are expresse : Biota results are express	ence numb	per for QC samples run alts of PSC quality co y weight basis.	with your sample. ntrol tests.

page : 3 Organic Parameters COX, BRENT Client : Dillon Consulting Limited PSC Analytical Services 137 Chain Lake Dr. Suite 100 200 Bluewater Road Bedford, NS Canada B4B 1G9 Halifax B3S 1B3 FAX # : 450-2008 NS Tel (902) 420-0203 Printed : 2003/08/17 PSC Project Number : 0312784H Toll free (800) 565-7227 Client Project Number : 03-2088-0200 Reported : 2003/08/15 Fax (902) 420-8612

Certificate of Analysis

Method Summaries :

- Volatile Petroleum Hydrocarbon Fractionation soil: Methanol extr'n.
 Purge and Trap-Tekmar LSC2000. Varian 3400/Saturn II GC/MS. Ref:
 Atlantic PIRI Guidelines for Laboratories, Draft 1.0, 1999.
 Moisture- based upon: Handbook of Analytical Methods for Environmental
- Samples Gravimetric Metod Vol 1, page ME4, Ontario Ministry of the
- Environment, Rexdale Ont.1983. Drying temperature 105+- 5 Degrees C.
- Total Extractable Petroleum Hydrocarbons Fractionation Soil: Acetone/Hexane extr'n. Silica gel column separation. HP5890 cap. col. GC-FID. Ref: Atlantic PIRI Guidelines for Laboratories, Draft 1.0, 1999.

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. The results relate only to the items tested. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Approval of Organic Parameters:

(mile Jamon Organics Manager : James MacDonald Project Manager : Suzanne_Rogers



Quality Control Summary

						Blank	Proc. Recov.		Matrix Spike		Duplicate		SRM		
Workstation Description	Batch ID	Analyte	Analyte Name	Method	EQL	Units	Value	Value	% Rec.	ID	% Rec.	ID	% Diff	Value	% Rec.
VPH-Fract. Soil Event#	HL77	5411	Benzene	PT GCMS	0.025	mg/kg	< 0.025	0.026	108						
VPH-Fract. Soil Event #	HL77	5411	Benzene	PT GCMS	0.025	mg/kg	< 0.025	0.027	104						
VPH-Fract. Soil Event #	HL77	5421	Toluene	PT GCMS	0.025	mg/kg	< 0.025	0.084	112						
VPH-Fract. Soil Event #	HL77	5421	Toluene	PT GCMS	0.025	mg/kg	< 0.025	0.087	116						
VPH-Fract. Soil Event #	HL77	5431	Ethylbenzene	PT GCMS	0.025	mg/kg	< 0.025	0.027	108						
VPH-Fract. Soil Event #	HL77	5431	Ethylbenzene	PT GCMS	0.025	mg/kg	< 0.025	0.028	112						
VPH-Fract. Soil Event #	HL77	5441	Xylenes	PT GCMS	0.05	mg/kg	< 0.05	0.11	110						
VPH-Fract. Soil Event #	HL77	5441	Xylenes	PT GCMS	0.05	mg/kg	< 0.05	0.11	110						
VPH-Fract. Soil Event #	HL77	5459	Total C6-C10 (incl. BTEX	PT GCMS	0.725	mg/kg	< 2.5	59	89						
VPH-Fract. Soil Event #	HL77	5459	Total C6-C10 (incl. BTEX	PT GCMS	0.725	mg/kg	< 2.5	57	86						
TEH-Fract. Soil Event #	HM76	6640	>C10-C12 Aromatic	GC FID	4	mg/kg	< 4	5	87						
TEH-Fract. Soil Event #	HM76	6650	>C12-C16 Aromatic	GC FID	15	mg/kg	<15	ten	94						
TEH-Fract. Soil Event #	HM76	6660	>C16-C21 Aromatic	GC FID	15	mg/kg	<15	ffic	96						
TEH-Fract. Soil Event #	HM76	6670	>C21-C32 Aromatic	GC FID	15	mg/kg	<15	щ	95						
TEH-Fract. Soil Event #	HM76	6710	>C10-C12 Aliphatic	GC FID	8	mg/kg	<8	tlor	116						
TEH-Fract. Soil Event #	HM76	6627	>C12-C16 Aliphatic	GC FID	15	mg/kg	<15	ara	114						
TEH-Fract. Soil Event #	HM76	6615	>C16-C21 Aliphatic	GC FID	15	mg/kg	<15	de	113						
TEH-Fract. Soil Event #	HM76	6625	>C21-C32 Aliphatic	GC FID	15	mg/kg	<15	õ	111			:			
TEH-Fract. Soil Event #	HM76	4164	>C10-C32 Total	GC FID	100	mg/kg	<100	944	94						
TEH-Fract. Soil Event #	HM76	4164	>C10-C32 Total	GC FID	100	mg/kg	<100								

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Analyte Detailspage : 1Client : Dillon Consulting Limited
137 Chain Lake Dr. Suite 100
HalifaxCOX, BRENTNSB3S 1B3
PSC Project Number : 0312784H
Client Project Number : 03-2088-0200FAX # : 450-2008
Printed : 2003/08/15

Sample ID	Analyte	Date Analysed	Analyst		
03-H048555	TEH Fract. Soil	8/13/03	Marsha Skinner		
03-H048555	VPH-Fract. Soil	8/ 7/03	Amy MacArthur		
03-H048555	Moisture	8/ 1/03	Amanda Roberts		
³ 03-H048555	TEHS - F Extraction	8/12/03	Marsha Skinner		
03-H048555	VPH Fraction Extraction	8/14/03	Amy MacArthur		
200 Bluewater Road, Suite 105 Bedford, Nova Scotia B4B 1G9 Tel: 902-420-0203 Fax: 902-420-8612 Toll Free: 1-800-565-RCAp (7227) E-mail: PASI.Halifax@contactPSC.com	Client: <u>73</u> Address: Contact: <u>Brent</u>	Post Code	PS Cli ⊉ Cli Sa	SC Quote #: ient P.O. #: <u>//C 40282.</u> ient Project #: <u>03 - 2085 - い</u> んの mpled By:	Invoice to (if other than client): Client: <u>TOL</u> Contact: <u>Dovid G'Carce</u>]
--	--	---	--	---	--
Page of	Phone: E-mail:	Fax:	Sar E-mail Results	mpling Date: mpling Time:	Phone: Fax:
ient Code 63 W.O.# 0312184H Date Aug5103 Verifie PSC Sample # 485355 TP 2/3 (1 - /. Samples Relinguished to PSC by: PSC by: Client Contacted if RU RUSH (Extra Cost) Spe Standard 5-7 Business 10 Business Client Sample 1.D Client Sample 1.D Cli	PROVIDE E NOTICE H ORDERS	attivi:Surface/Salr Salrface/S	Mater - Turdi metals, Uzerauti, metilogi Water - Dissolved Metals Available Metals - Soil (HNO3/H2O2) Total Metals - Soil (HNO3/HF/HCIO4) TPH MUST (BTEX, C6- C32)	Low Level (Potable) TPH MUST (BTEX, CG-C32) PAH PAH PAH PAH PAH Path Path	nalysis or Regulatory Packages (specify Guidlines) mments/Hazards (ie. High Concentration Expected) Site Location & Task number mose of rad. Site Location & Task number mose of rad.
Samples Received in lab by:	Mr. M.	Data:	 	Tempi (s): 7. /	(es (see attached) [] No, Initial



RECEIVED AUG 2 5 2008

Certificate of Analysis

CLIENT INFORMATION

Attention:	Brent Cox
Client Name:	Dillon Consulting Ltd.
Project:	03-2088-0200
Project Desc:	
Address:	137 Chain Lake Drive
	Halifax, NS
	B3S 1B3
Fax Number:	902-450-2008
Phone Number:	902-450-4000

LABORATORY INFORMATION

Contact:	Suzanne Rogers
Project:	0312755H
Date Received:	03/08/05
Date Reported:	03/08/12

Sample No.:

03-H048474 - 03-H048487

Methods used by PSC are based upon those found in 'Standard Methods for the Examination of Water and Wastewater', Nineteenth Edition. Other methods are based on the principles of EPA or American Petroleum Institute methodologies. All data is in statistical control unless otherwise flagged. Acceptance criteria for analytical QC has been met unless otherwise flagged.

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Certified by: Kore

Page 1

R	
ANALYTICAL	SERVICES

A	nalytical Test	Results	page :	INALYTICAL SERVICES
Client : Dillon Consultin 137 Chain Lake D Halifax	g Limited r. Suite 100		COX, BRENT	
NS B3S 1B3 PSC Project Numb Client Project N	er : 0312755H umber : 03-2088	-0200	FAX # : 45 Printed : 20 Reported : 20	50-2008 003/08/14 003/08/12
Matrix Philip ID Description		Soil 03-H048482	Soil 03-H048486	Soil 03-H048487
Client ID Date Sampled (y/m/d) DateShipped (y/m/d)		TP 20/6 (2 .5-3.5m) 03/08/01	TP 20/4 (1 -1.5m) 03/08/01	TP 20/4 (1 -1.5m) DUP 03/08/01
Date Received (y/m/d)		03/08/05	03/08/05	03/08/05
Analyte	Units EQL	·····	. <u></u>	
Total Organic Carbon Fract. of Organic Carbon TOC QC Event	g/kg 0.2 g/g 0.0002 -	nd nd 20030806-A	1.1 0.0011	1.1 0.0011 20030806-A

Legend	EQL	= Estimated Quantitation Limit is the minimum concentration that can be
		reliably reported. It is not a regulatory limit
	ND () = Not Detected, our instruments did not detect anything shows not not
		EQL listed in Parenthesis.
	-	= Dash is reported when parameter not requested in semi-
	Event	# = PSC Quality Control Reference number for og
	%REC	= Surrogate Recovery Values are regults of Dag
Note	:	Soil results are expressed on a dry weight h
		Ford a service and compressed on a dry weight basis.
	:	Food results are expressed on a wet weight basis.

page verified $\mathcal{P}(\mathcal{W})>$

	Analytical Test Results	page :	2
PSC Analytical Services 200 Bluewater Road Bedford, NS Canada B4B 169	Client : Dillon Consulting 137 Chain Lake Dr. Halifar	Limited Suite 100	COX, BRENT
Tel (902) 420-0203 Toll free (800) 565-7227 Fax (902) 420-8612	NS B3S 1B3 PSC Project Number : 031 Client Project Number : 03-	2755H 2088-0200	FAX # : 450-2008 Printed : 2003/08/14 Reported : 2003/08/12

Certificate of Analysis

Method Summaries:

- Carbon: Leco EC-12 Carbon Determinator. Ref: Leco Instruction Manual Model 752-100, 1977 or Leco CS-400 Carbon/Sulphur Analyser. Ref: Instruction Manual Form No. 200-537, 1994.

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Approval of Industrial Chemistry Parameters: Industrial Chemistry Manager : Robert K. Boss Project Manager : Suzanne Rogers



Quality Control Summary

Workstation Description	Rotob ID	Analida	A				Blank	Proc. R	ecov.	Matrix	Spike	Duplic	ate	SR	M
Workstation Description	Datch ID	Analyte	Analyte Name	Method	EQL	Units	Value	Value	% Rec.	0	% Rec.	ID	% Diff	Value	% Rec.
Leco-EC12	20030806-A	34001	Total Organic Carbon	ombustion-	0.2	g/kg	< 0.2	NA	NA	NA	NA	03-H048486	0	3.2	94



Quality Control Summary

-								Non-conformance Comment
I	Workstation Description	Batch ID	Analyte	Analyte Name	Method	EQL	Units	
	Leco-EC12	20030806-A	34001	Total Organic Carbon	ombustion-l	0.2	g/kg	



	Organi	c Parame	eters	page: 1			
Client : Dillon Consulti 137 Chain Lake	ng Limit Dr. Suit	COX, BRENT					
Halifax MG DOG 1D2				13 N Y H . A	E0 0000		
NS BJS IBJ BSC Broject Num	her • 03	107554		Printed . 2	50-2008 003/08/17		
Client Project	Number (03-2088	-0200	Perorted : 2	003/08/17		
	Muniper .	05 2000	0200	Keported . 2	005700712		
Matrix			Soil	Soil	Soil	Scil	
Philip ID			03-H048474	03-H048475	03-H048476	03-H048477	
Client ID			TP 17/2 (0	TP 17/6 (3	TP 18/2 (0	TP 18/5 (2	
			.8-1.0m)	-3.2m)	.4-1.0m)	.75-3m)	
Date Sampled (y/m/d) Date Shipped (y/m/d)			03/08/01	03/08/01	03/08/01	03/08/01	
Date Received (y/m/d)			03/08/05	03/08/05	03/08/05	03/08/05	
Analyte	Units	EQL					
VPH low Event #		-	HM20	HM20	HM20	HP (20	
TEH C11-32 Soil Event #		-	HM4 7	HM47	HM47	HI 47	
Benzene	mg/kg	0.005	nd	nd	nd	nć	
Toluene	mg/kg	0.025	nd	nd	nd	nc	
Ethylbenzene	mg/kg	0.010	nd 	nd	nd	nd'	
Xylenes	mg/kg	0.050	nd	nd	nd	nć	
C6 - C10 HC {less BTEX}		2.5	nd	nd	nd	nc	
>Cl0-C21 (Fuel Range)	mg/kg	15.	nd	nd	nd	nà	
>C2I-C32 (Lube Range)	mg/kg	15.	na	nd	18.	rd	
MODIFIED IPH - Tier I		32.			na 	19/1 	
TEH Surrogate (IBB)	% Rec.	-	96,	96.	98.	98.	
TEH Surrogate (C32)	% Rec	-	97.	100.	105.	102	
VPH Surrogate (IBB)	% Rec.	-	103.	108.	102.	109.	
Moisture	elo	-	13.	9.	9.	10.	
Note: The product resen	mblance c	comments	are provided	l for general g	juidance only		
and may not be ac	curate.	Resembla	ances are bas	ed on comparis	son with avail	lable	
reference standar	ds. Due	to chro	natographic s	imilarity of c	certain produc	ts, the	
influence of weat	hering e	effects a	and interfere	ence of non-pet	rogenic compo	ounds, it	
is not always pos	ssible to	positi	vely identify	products.			
Notes: Modified TPH - Ti	ler 1 (C6	i-C32) de	oes not inclu	ide BTEX			
03-H048476 TP 18/2 (0).4-1.0mL	Mbe oi!	range.				
EQL = Estimated Quantita	tion Lin		le minimum co	ncentration th	at can be rel	Liably	
reported. It is no	ot a regu	Hatory .	LAMIC. For so	118, zero %moi	sture is assu	med.	
The moisture corre	screa EQL	ı≡ £QL/	((%moisture	(LUU)) A DOX l'atal '			
AD() = Analyte was not c	letected	above ti	ne EQL. Raise	a EQL listed 1	n Parenthesis	3.	
Event # - PSC Quality Control	l Pafara	nnecer numi	or for OC ca	un sampie. Molec run with			
*REC = Surrogate Recovery	v Values	are resi	ilts of PSC a	mality control	tosta	1	
Note : Soil results are e	xpressed	lon a di	ry weight has	is.			
: Biota results are	expresse	d on a v	wet weight ba	sis.			
			<u> </u>	page veri	fied M		
		······································				······································	

Organic Parameters page : 2 PSC Analytical Services Client : Dillon Consulting Limited COX, BRENT 200 Bluewater Road 137 Chain Lake Dr. Suite 100 Bedford, NS Canada B4B 1G9 Halifax Tel (902) 420-0203 NS B3S 1B3 FAX # : 450-2008 Toll free (800) 565-7227 PSC Project Number : 0312755H Printed : 2003/08/17 Fax (902) 420-8612 Client Project Number : 03-2088-0200 Reported : 2003/08/12 Matrix Soil Soil Soil Soil Philip ID 03-H048478 03-H048479 03-H048480 03-H048481 Client ID TP 19/1 (0 TP 19/5 (2 TP 19/5 (2 TP 20/2 (0 -0.5m) -2.5m) -2.5m) DUP .3 - 0.7mDate Sampled (y/m/d)03/08/01 03/08/01 03/08/01 03/08/01 Date Shipped (y/m/d) Date Received (y/m/d) 03/08/05 03/08/05 03/08/05 03/08/05 Analyte Units EQL DUP VPH low Event # HM20 HM20 HM20 HM20 TEH C11-32 Soil Event # HM47 HM47 HM47 HM47 Benzene mg/kg 0.005 nd nd nd nd Toluene mg/kg 0.025 nd nd nd nđ Ethylbenzene mg/kg 0.010 nd nd nd nd _____ Xylenes mg/kg 0.050 nd nd nd nd C6 - C10 HC {less BTEX} 2.5 nd nd nd nd >C10-C21 (Fuel Range) mg/kg 15. nd nd nd $\mathbf{n}\mathbf{d}$ >C21-C32 (Lube Range) mq/kq 15. nď nd nd nď Modified TPH - Tier 1 32. nd nd nd nd _ _ _ _ _ _ _ - - - -- -- - - -----TEH Surrogate (IBB) % Rec. _ 101. 102. 103. 99. TEH Surrogate (C32) % Rec -105. 100. 102. 103. VPH Surrogate (IBB) % Rec. ---108. 109. 110. 1(6. Moisture 욹 9. 11. 12. 7. Note: The product resemblance comments are provided for general guidance only and may not be accurate. Resemblances are based on comparison with available reference standards. Due to chromatographic similarity of certain products, the influence of weathering effects and interference of non-petrogenic compounds, it is not always possible to positively identify products. Notes: Modified TPH - Tier 1 (C6-C32) does not include BTEX EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit. For soils, zero %moisture is assumed. The moisture corrected EQL = EQL/(1-(%moisture/100)) ND () = Analyte was not detected above the EQL. Raised EQL listed in Parenthesis. = Dash is reported when parameter not requested in sample. vent # = PSC Quality Control Reference number for QC samples run with your sample. %REC = Surrogate Recovery Values are results of PSC quality control tests. Note : Soil results are expressed on a dry weight basis. : Biota results are expressed on a wet weight basis. page verified μ

	0.yani	c Parame	ters	page: 3	1	
PSC Analytical Services 200 Bluewater Road Bedford, NS Canada B4B 1G9 Tel (902) 420-0203	Client	: Dillo 137 C Halif	n Consulting hain Lake Dr. ax	Limited Suite 100	COX, BRE	NT
Toll free (800) 565-7227	ספרי	Project	DJS IBJ Number : 021	075 FTT	FAX # :	450-2008
Fax (902) 420-8612	Client	Project	Number : 031	2/55H	Printed :	2003/08/17
	0.20110	1203000	Manuser . 05-	2088-0200	Reportea :	2003/08/12
Matrix			Soil	Soil		
Philip ID			03-H048482	03-H048485		
Client ID			TP 20/6 (2	Dup E		
Date Sampled (y/m/d) Date Shipped (y/m/d)			03/08/01	03/08/01		
Date Received (y/m/d)			03/08/05	03/08/05		
Analyte	Units	EQL		······································		
VPH low Event #		-	HM20	HM20		
TEH C11-32 Soil Event #		-	HM4 7	HM47		
Benzene	mg/kg	0.005	nd	nd		
Toluene	mg/kg	0.025	nd	nd		
stnyibenzene	mg/kg	0.010	nd	nd		
Xylenes	mg/kg	0.050	nd	nd		
C6 - C10 HC {less BTEX}		2.5	nd	nd		
>Cl0-C21 (Fuel Range)	mg/kg	15.	nd	nd		
>C2I-C32 (Lube Range)	mg/kg	15.	nd	nd		
Modified IPA - Her I		32.	na 	nd		
TEH Surrogate (IBB)	% Rec.	-	98.	97.		
TEH Surrogate (C32)	% Rec	-	102.	100.		
VPH Surrogate (IBB)	% Rec.	-	109.	107.		
Moisture	∛ ⊾⊐	-	11.	14.		
and may not be acc	curate	omments Resembla	are provided	for general	guidance on	ly
reference standard	ds. Due	to chrom	atographic si	u on comparı milarity of	son with av	allable dugta the
influence of weat	hering e	ffects a	nd interferen	ce of non-ne	trogenic co	mounds it
is not always pos	sible to	positiv	ely identify	products.	erogenic co	mpounds, it
Notes: Modified TPH - Tie	er 1 (C6	-C32) do	es not includ	e BTEX		
EOL = Estimated Quantitat	tion Lim	it ie th	e minimum con	contration t	h	
reported. It is not	t a requi	latorv l	imit. For soi	ls. zero %mo	nat can be isture is a	rellably
The moisture correc	ted EQL	= EQL/()	1-(%moisture/	100))	LDCUIC IS A	ssumeu.
ND () = Analyte was not de	etected a	above th	e EQL. Raised	EQL listed	in Parenthe.	sis.
- = Dash is reported wh	nen para	meter no	t requested in	n sample.		
Event # = PSC Quality Control	Referen	nce numb	er for QC sam	ples run wit	h your samp	le.
SKEC = Surrogate Recovery	Values a	are resul	lts of PSC qua	ality contro	l tests.	
Note : Solt results are example and the second seco	cpressed	on a dry	y weight basis	s.		
. Diola lesuits are e	.vbresse	u on a we	et weight bas:	1S.	1 E L . A	
				page ver	iried μ	

	Organic Parameters	page: 4
PSC Analytical Services 200 Bluewater Road Bedford, NS Canada B4B 1G9	Client : Dillon Consulting 137 Chain Lake Dr. Halifar	Limited COX, BRENT Suite 100
Tel (902) 420-0203 Toll free (800) 565-7227 Fax (902) 420-8612	NS B3S 1B3 PSC Project Number : 031 Client Project Number : 03-	FAX # : 450-2008 2755H Printed : 2003/08/17 2088-0200 Reported : 2003/08/12

Certificate of Analysis

Method Summaries :

Purgeable Hydrocarbons - Soil: Methanol extr'n. Purge and Trap/GC/MS. Tekmar LSC 2000. Varian 3400/Saturn II GC/MS. Ref: Atlantic PIRI Guidelines for Laboratories, Draft 1.0, 1999. Extractable Hydrocarbons - Soil: Acetone/Hexane extraction. HP5890 GC/FID. Ref: Atlantic PIRI Guidelines for Laboratories, Draft 1.0, 1999. Moisture- based upon: Handbook of Analytical Methods for Environmental Samples Gravimetric Metod Vol 1, page ME4, Ontario Ministry of the Environment, Rexdale Ont.1983. Drying temperature 105+- 5 Degrees C.

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. The results relate only to the items tested. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Approval of Organic Parameters:

Organics	Manager	:	Connie Jamson
Project	Manager	:	James MacDonald June Rogers



Quality Control Summary

							Blank	Proc. R	ecov.	Matrix	Spike	Duplic	ate	SR	м
workstation Description	Batch ID	Analyte	Analyte Name	Method	EQL	Units	Value	Value	% Rec.	ID	% Rec.	ID	% Diff	Value	% Rec.
VPH low Event #	HM20	6413	Benzene	PT GCMS	0.005	mg/kg	< 0.005	0.023	92	03-H048480	117	03-H048479	0		
VPH low Event #	HM20	6413	Benzene	PT GCMS	0.005	mg/kg	< 0.005	0.022	88	Ì			-		
VPH low Event #	HM20	5421	Toluene	PT GCMS	0.025	mg/kg	< 0.025	0.071	95	03-H048480	118	03-H048479	0		
VPH low Event #	HM20	5421	Toluene	PT GCMS	0.025	mg/kg	< 0.025	0.072	96				-		
VPH low Event #	HM20	5433	Ethylbenzene	PT GCMS	0.01	mg/kg	< 0.01	0.02	80	03-H048480	101	03-H048479	n		
VPH low Event #	HM20	5433	Ethylbenzene	PT GCMS	0.01	mg/kg	< 0.01	0.021	84				ĩ		
VPH low Event #	HM20	5441	Xylenes	PT GCMS	0.05	ma/ka	< 0.05	0.09	90	03-H048480	112	03-0048479	0		
VPH low Event #	HM20	5441	Xylenes	PT GCMS	0.05	ma/ka	< 0.05	0.09	90						
VPH low Event #	HM20	5449	Total C6-C10 (incl. BTEX	PT GCMS	2.5	ma/ka	< 2.5	63	95	03-H048480	. 94	03-0048479	0		
VPH low Event #	HM20	5449	Total C6-C10 (incl. BTEX	PT GCMS	2.5	ma/ka	< 2.5	66	100		0.		0		
TEH C11-32 Soil Event #	HM47	4160	TEH (>C10-C32)	GC FID	30	ma/ka	< 30	890	89	03-H048479	100	03-0048479	0		
TEH C11-32 Soil Event #	HM47	4160	TEH (>C10-C32)	GC FID	30	mg/kg	< 30	950	95		.50		v		



Analyte Details

page: 1

Client :	Dillon Consulting Limited 137 Chain Lake Dr. Suite 100 Halifax	COX, BRENI	r L
	NS B3S 1B3	FAX #	: 450-2008
	PSC Project Number : 0312755H	Printed	: 2003/08/17
	Client Project Number : 03-2088-0200	Reported	: 2003/08/12

Sample ID	Analyte	Date Analysed	Analyst
03-H048474	VPH low	8/12/03	Philippe Deveau
03-H048474	TEH C11-32 Soil	8/ 9/03	Marsha Skinner
)3-H048474	Moisture	8/ 5/03	Amanda Roberts
D3-H048474	VPH Soil Extraction	8/ 8/03	April Darrach
03-H048474	TEH Soil Extraction	8/ 8/03	Karen Hamill
)3-H048475	VPH low		······
03-H048475	TEH C11-32 Soil	8/ 9/03	April Darrach
03-H048475	Moisture	Q/ E/02	Marsha Skinner
3-H048475	VPH Soil Extraction	8/ 8/03	Amanda Roberts
03-H048475	TEH Soil Extraction	8/ 8/03	April Darrach Karen Hamill
13-H048476	VPH LOW	8/12/03	Philippe Deveau
13-H048476	TEH CII-32 SOII	8/ 9/03	Marsha Skinner
03-H048476	Molsture	8/ 5/03	Amanda Roberts
3-H048476	VPH Soil Extraction	8/ 8/03	April Darrach
3-H048476	TEH Soll Extraction	8/ 8/03	Karen Hamill
03-H048477	VPH low	8/10/03	April Darrach
3-H048477	TEH C11-32 Soil	8/ 9/03	Marsha Skinner
J3-H048477	Moisture	8/ 5/03	Amanda Roberts
03-H048477	VPH Soil Extraction	8/ 8/03	April Darrach
3-H048477	TEH Soil Extraction	8/ 8/03	Karen Hamill
03-H048478	VPH low	8/10/03	April Darrach
^3-H048478	TEH C11-32 Soil	8/ 9/03	Marsha Skinner
3-H048478	Moisture	8/ 5/03	Amanda Roberts
∪ ¹ 3-H048478	VPH Soil Extraction	8/ 8/03	April Darrach
03-H048478	TEH Soil Extraction	8/ 8/03	Karen Hamill
3-H048479	VPH low	8/10/03	Anril Darrach
03-H048479	TEH C11-32 Soil	8/ 9/03	Marsha Skinner
β-H048479	Moisture	8/ 5/03	Amanda Roberts
3-H048479	VPH Soil Extraction	8/ 8/03	April Darrack
0 ['] 3-H048479	TEH Soil Extraction	8/ 8/03	Karen Hamill
3-H048480	VPH low	8/10/03	April Derrach
J-H048480	TEH C11-32 Soil	8/ 9/03	Margha Skinnor
03-H048480	Moisture	8/ 5/03	Amanda Dohasta
3-H048480	VPH Soil Extraction	8/ 8/03	Amanua RODEIUS
		0, 0,00	April Darrach

	Analyte Details	page: 2		
PSC Analytical Services 200 Bluewater Road Bedford, NS Canada B4B 1G9	Client : Dillon Consult 137 Chain Lake Halifax	ing Limited Dr. Suite 100	COX, BR	ENT
Tel (902) 420-0203 Toll free (800) 565-7227 Fax (902) 420-8612	NS B3S 1B PSC Project Number : Client Project Number :	3 0312755H 03-2088-0200	FAX # Printed Reported	: 450-2008 : 2003/08/17 : 2003/08/12

<u>Sample ID</u>	<u>Analyte</u>	Date Analysed	<u>Analyst</u>
03-H048480	TEH Soil Extraction	8/ 8/03	Karen Hamill
03-H048481	VPH low	8/10/03	April Darrach
03-H048481	TEH C11-32 Soil	8/ 9/03	Marsha Skinner
03-H048481	Moisture	8/ 5/03	Amanda Roberts
03-H048481	VPH Soil Extraction	8/ 8/03	April Darrach
03-H048481	TEH Soil Extraction	8/ 8/03	Karen Hamill
03-H048482	VPH low	8/11/03	April Darrach
03-H048482	TEH C11-32 Soil	8/ 9/03	Marsha Skinner
03-H048482	Moisture	8/ 5/03	Amanda Roberts
03-H048482	VPH Soil Extraction	8/ 8/03	April Darrach
03-H048482	TEH Soil Extraction	8/ 8/03	Karen Hamill
03-H048482 03-H048482 03-H048482 03-H048485 03-H048485	Total Organic Carbon Fract. of Organic Carbon TOC QC VPH low TEH C11-32 Soil	8/ 6/03 8/ 6/03 8/11/03 8/ 9/03	Colleen Crewe Calculated Colleen Crewe April Darrach Marsha Skinner
03-H048485 03-H048485 03-H048485 03-H048486 03-H048486	Moisture VPH Soil Extraction TEH Soil Extraction Total Organic Carbon Fract. of Organic Carbon	8/ 5/03 8/ 8/03 8/ 8/03 8/ 6/03	Amanda Roberts April Darrach Karen Hamill Colleen Crewe Calculated
03-H048487 03-H048487 03-H048487	Total Organic Carbon Fract. of Organic Carbon TOC QC	8/ 7/03 8/ 7/03	Colleen Crewe Calculated Colleen Crewe

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Samples Received in lab by:

																						Invoice to (if other than client):
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ANALYTICAL SEF	WICES		12		<u>_h</u>	<u>ai</u>	• •	<u>[</u>] ح	1ce		121	52	r	Clie	ent F	P.O. 7	¥:					
200 Bluewater R	oad, Suite 105		17-	J. ty	<u>×</u>		N	2					-	Clie	ent F	Proje	ect #	: <u>03</u>	<u>·· 2</u> 2	<u>80</u>	<u>·· C</u>	200
Tel: 902-420-020	3 Fax: 902-420-8612	Contac	et: <u> </u>	REN	7		<u>(</u>	<u>0 x</u>	<u> </u>				-	Sar	nple	d By	y:	\underline{T}	14	>ak	<u> </u>	Contact: David O'Carroll
Toll Free: 1-800- E-mail: PASLHa	565-RCAp (7227) lifax@contactPSC.com															1						
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1	9,	Phone	: 4)	0 7	001	2		Fax:	Ð	<u>0 </u>	200 E-mai	<u>, </u>	-	Sar	nplii	ng D	ate:	141	<u>,d</u>	1	<u>v </u>	Phone: $\frac{107-7052}{707}$ Fax: $\frac{787-7007}{707}$
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C't Code		PROVI	חב				<u> </u>	<u>~</u>	als					,	r							Philip Task Order #11040282
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13127564	Client contacted if RL	JSH Date o	annot b	e met	onber	Zed V	-	al <u>or</u>	tal <u>or</u>	efau	als	ŇH)	03/H	- C32	PHM				A 62	v 624,	(s)	the ahead as por
Date	RUSH (Extra Cost) Spe	ecify Date	°		alt/G	rese	quire	: Tot	e: To	als (D	d Met	- Soil	II (HN	x, c6	ole) T				s (EP	(EP∕	(THN	Brud Cur (m).
4005709	Standard 5-7 Business	Days 🚺	7		ace/S	d & F	on Re	10056	hoos	l Met	solver	etals	- Soi	(вте)	Potal C32)	Ę			ganic	anics	anes	
N	10 Business	Days			:Surf: JefEff	iltere	Itratic	30 CI	MS C	- Tota	- Dist	ble M	Aetals	UST	evel (onatio			ol. Or	e Org	meth	Analysis or Regulatory Packages (specify Guidlines) Comments/Hazards (ie. High Concentration Expected)
PSC Sample #	Client Sample I.D	D C	No. of E	& Type lottles	Matrix Sewag	Field F	Lab Fi	RCAp-	RCAp-	Water	Water	Availa	Total N	трн м	Low L	Fractic	PAH	РСВ	Semiv	Volatil	Trihalo	Site Location & Task number
48474	TP 17/2 (04	3-1.0-	1+2-5	2 C	1										1							Grun Size 10 day (M)
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82.	TP 20/6 (2.5	3.5.4)	,	/	\checkmark										/							Fraction of Daganic Carbon /
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Samples Relingu (Client Signature	vished to PSC by: Luft	Bila	1		Date	: 	15	TI	10-2	,	Time	" 10	53	່ວ		San	iple Ir	ntegr	ty De	ficier	ncy?	Yes (see attached) No, Initial
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15.1°C C 11 7/000 103 1 1- 300

15.42

14.7 6

Adva Mova	Road, Suite 105 Scotia B4B 1G9 203 Fax: 902-420-8612 0-565-RCAp (7227) Halifax@contactPSC.com	Client: $D l_{on}$ 137 H_{ALII} Contact: BRE	EAX Chu FAX	<u>11.</u> 2. L	s S	L ta Di			PS Clie Clie Sar	C Que ent P.e ent Pr npled	ote # O. #: ojec By:	: t #:⊈ 		-	<u>'e</u> ,	Invoice to (if other than client): — Client: <u>Imper. 1</u> 0.1 Ltd. — — — — Contact: <u>David</u> O'Caros II
Page Z of	2	Phone: <u>450</u> - E-mail:	4000	I	Fax: <u>4</u>	52-1 E	2 20 f mail esults [<u>8</u>	San San	npling Ipling	Dat Tim	e: _/	1 Ar	<u> </u>	/v [.]	> Phone: <u>484-4032</u> Fax: <u>484-4004</u>
Verified PSC Sample #	PLEASE ADVANC FOR RUSH Client contacted if RUSH RUSH (Extra Cost) Spec Standard 5-7 Business I 10 Business I Client Sample I.D	PROVIDE E NOTICE I ORDERS SH Date cannot be met cify Date Days No. & Type of Bottles A) 1 - 2 SD	Matrix:Surface/Salt/Ground/Tapwater Sewage/Effluen/Tissu Field Filtered & Pressond	Lab Filtration Required	RCAP-30 Choose: Total or Diss. Metals RCAP-MS Choose: Total or Diss. Metals	Water - Total Metals (Default Method) Water - Disconton Mater	Available Metals - Soil (HNO3/H2O2)	Totał Metals - Soil (HNO3/HF/HCIO4)	TPH MUST (BTEX, C6- C32) LOW Aver (Bostshis) Truit 1115-	(BTEX, C6-C32) PTI MUSI Fractionation	РАН	PCB	Semivol. Organics (EPA 625, 8270)	Volatile Organics (EPA 624, 8260)	Trihalomethanes (THMs)	Philip Task Order & 11040282 64 Mill Lala Rd., Hibbards NS Analysis or Regulatory Packages (specify Guidlines) Comments/Hazards (ie. High Concentration Expected) Site Location & Task number Fraction of Organic Carhon
								•								
amples Relinquis Disat Signature) amples Received	in lab by:	Balan Rug IIN	Date:	, 5/	63	Time	/0::	30		Samp	le inte	egrity	Defici	елсу	?[Yes (see attached) No, Initial

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101/Doc				
JENT CONTACT: BOOT CONTACT:	HECKI	-IST		
CLIENT PROJECT #: DZ:DDX# 000	CUENT FAS	(≠: 4Cn-)/		ų.
	CATE:	f. CLD	<u>NR</u>	V
Initial Deficiency Type				
Custody seal on coder is not intect		<u> </u>		
D Temperature of bottles in cooler is 2 1020		Com	ments	
Sample bottles broken in transit	14.7%	15.47	10.110	
No chain of custody accompanying the ship-		· · · · · · · · · · · · · · · · · · ·	()/(:
Chain of custody information is incomplete				
Chain of custody is not signed and dated by com				
Non-current version of PSC CoC for IOL samples				
Bottles listed on CcC, but not included in shipment				
Sottles in shipment, but not listed on CoC				
Analysis required for each sample is not listed or				
- Iclearly specified on the CoC				
Sample bottle labeling issue (missing or incorrect)				
Samples received >5 days after sampling				
Samples received after analytical hold time has been				
- exceeded				
Sample word in the second seco				
Insufficient and				
ncorrect or mission but in a				
Sample shipments				
Sample Integrity has not been compromi	ioned doficio		·	
r:drapped aff by (owner	Longe Concle	ncles.		
f lency is present, please fax a copy of the s	:N/A.			
i mauon to the Chain of Custody.	to the consu	ltant and attac	ihad original	
			- Sugma and	
Hease see Suzanne Regers if further explanation is presented				
en to boot to the transmission of the transmis			G_S_1000_F5 February 2003	



RECEIVED AUG 2 5 2003

Certificate of Analysis

CLIENT INFORMATION

Attention:Brent CoxClient Name:Dillon Consulting Ltd.Project:03-2088-0200Project Desc:137 Chain Lake Drive

Halifax, NS B3S 1B3 Fax Number: 902-450-2008 Phone Number: 902-450-4000

LABORATORY INFORMATION

Contact:Suzanne RogersProject:0312756HDate Received:03/08/05Date Reported:03/08/13

Sample No.:

03-H048483 - 03-H048484

Methods used by PSC are based upon those found in 'Standard Methods for the Examination of Water and Wastewater', Nineteenth Edition. Other methods are based on the principles of EPA or American Petroleum Institute methodologies. All data is in statistical control unless otherwise flagged. Acceptance criteria for analytical QC has been met unless otherwise flagged.

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Certified by:

Page 1



	Inorgan	ic Param	eters	ANALYTICAL SERVICES
Client : Dillon Consult: 137 Chain Lake Halifax	ing Limit Dr. Suit	ed e 100		COX, BRENT
NS B3S 1B3	3	10050		FAX # : 450-2008
Client Project Nur	nber : 03. Number :	12756H 03-2088	-0200	Printed : 2003/08/20 Reported : 2003/08/13
Matrix			Soil	Soi 3
Philip ID			03-H048483	03-H048484
Client ID			TP 19/7 (3	TP 19/7 (3
			-3.5m)	-3.5m) DUP
Date Sampled (y/m/d)			03/08/01	03/08/01
Date Shipped (y/m/d)				
			03/08/05	03/08/05
Analyte	Units	EQL		DUP
< 12.5 mm	ola	0.1	100.	100.
< 9.5 mm	8	0.1	100.	100.
< 4.75 mm	oto	0.1	100.	100.
< PHI -1 (2 mm)	ola	0.1	86.2	81.8
< PHI 0 (1 mm)	9	0.1	75.6	72.4
< PHI +1 (1/2 mm)		0.1	64.3	62 2
< PHI +2 (1/4 mm)	망	0.1	63.6	56.2
< PHI +3 (1/8 mm)	alo	0.1	45.7	44.0
< PHI +4 (1/16 mm)	20	0.1	43.0	39.5
< PHI +5 (1/32 mm)	olo	0.1	31.4	28.4
< PHI +6 (1/64 mm)		0.1	23.6	21.8
< PHI +7 (1/128 mm)	용	0.1	13.5	11.4
< PHI +8 (1/256 mm)	용	0.1	10.2	9.2
< PHI +9 (1/512 mm)	00	0.1	6.4	5.6
Gravel	00	0.1	13.8	18.2
Sand		0.1	43.1	42 3
Silt	20	0.1	32.8	30.3
Clay	8	0.1	10.2	9.2
	a b i m n b n d	0		
	stimated o rolishl	Quantita V report	ed It is a	s the minimum concentration that can
ND = NC	ot Detect	ed. inst	rument did n	ot detect anything above standard BOI
ND () = Nc	ot Detect	ed at t	he elevated	EQL specified, due to matrix
L.	nterferen	ces or s	ample pre-di	lution.
- = Da	ash is re	ported w	hen paramete	r not requested in sample.
Note : Soil result:	s are exp	ressed a	s air dry w	eight basis.
: Biota result	ts are ex	pressed	on a wet wei	ght basis unless otherwise stated.
				page verified

 $^{|}$ 200 BLJEWATER ROAD, SLITE (05, EECFCRD, NOVA SCOTIA, CANADA, B4B (1G9, 1902, 411, 0203, F902, 420, 8612, with white both to the

.

Inorganic Parameters page : 2 PSC Analytical Services Client : Dillon Consulting Limited COX, BRENT 200 Bluewater Road 137 Chain Lake Dr. Suite 100 Bedford, NS Canada B4B 1G9 Halifax Tel (902) 420-0203 NS B3S 1B3 FAX # : 450-2008 Toll free (800) 565-7227 PSC Project Number : 0312756H Printed : 2003/08/20 Fax (902) 420-8612 Client Project Number : 03-2088-0200 Reported : 2003/08/13

Certificate of Analysis

Method Summaries:

Particle Size Distribution of Soils and Sediments: Sieve/Pipette technique.
 Ref: Methods of Sampling and Analysis of Marine Sediments - Ocean Dumping
 Report 1

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Analyses reviewed by: Inorganics Manager : Jerry Arenovich Project Manager : Suzanne Rogers

PSC ID: 03-H048483



TP 19/7 (3-3.5m)



Approved

PSC ID: 03-H048484



TP 19/7 (3-3.5m) Dup



ANALYTICAL SERVICES

Analyte Details

page :

1

Client : Dillon Consulting Limited COX, BRENT 137 Chain Lake Dr. Suite 100 Halifax NS B3S 1B3 FAX # : 450-2008 PSC Project Number : 0312756H Printed : 2003/08/20 Client Project Number : 03-2088-0200 Reported : 2003/08/13

Sample ID	<u>Analyte</u>	Date Analysed	Analyst
03-H048483	< 12.5 mm	8/11/03	Sarah Barkhouse
03-H048483	< 9.5 mm	8/11/03	Sarah Barkhouse
03-H048483	< 4.75 mm	8/11/03	Sarah Barkhouse
03-H048483	< PHI -1 (2 mm)	8/11/03	Sarah Barkhouse
03-H048483	< PHI 0 (1 mm)	8/11/03	Sarah Barkhouse
03-H048483	< PHI +1 (1/2 mm)	8/11/03	Sarah Barkhouse
03-H048483	< PHI +2 (1/4 mm)	8/11/03	Sarah Barkhouse
03-H048483	< PHI +3 (1/8 mm)	8/11/03	Sarah Barkhouse
03-H048483	< PHI +4 (1/16 mm)	8/11/03	Sarah Barkhouse
03-H048483	< PHI +5 (1/32 mm)	8/11/03	Sarah Barkhouse
03-H048483	< PHI +6 (1/64 mm)	8/11/03	Sarah Barkhouse
03-H048483	< PHI +7 (1/128 mm)	8/11/03	Sarah Barkhouse
03-H048483	< PHI +8 (1/256 mm)	8/11/03	Sarah Barkhouse
03-H048483	< PHI +9 (1/512 mm)	8/11/03	Sarah Barkhouse
03-H048483	Gravel	8/11/03	Sarah Barkhouse
03-H048483	Sand	8/11/03	Sarah Barkhouse
03-H048483	Silt	8/11/03	Sarah Barkhouse
03-H048483	Clay	8/11/03	Sarah Barkhouse
03-H048483	Particle Size Analysis	5	Calculated
03-H048484	< 12.5 mm	8/11/03	Sarah Barkhouse
03-H048484	< 9.5 mm	8/11/03	Sarah Barkhouse
03-H048484	< 4.75 mm	8/11/03	Sarah Barkhouse
03-H048484	< PHI -1 (2 mm)	8/11/03	Sarah Barkhouse
03-H048484	< PHI 0 (1 mm)	8/11/03	Sarah Barkhouse
03-H048484	< PHI +1 (1/2 mm)	8/11/03	Sarah Barkhouse
03-H048484	< PHI +2 (1/4 mm)	8/11/03	Sarah Barkhouse
03-H048484	< PHI +3 (1/8 mm)	8/11/03	Sarah Barkhouse
03-H048484	< PHI +4 (1/16 mm)	8/11/03	Sarah Barkhouse
03-H048484	< PHI +5 (1/32 mm)	8/11/03	Sarah Barkhouse
03-H048484	< PHI ÷6 (1/64 mm)	8/11/03	Sarah Barkhouse
03-H048484	< PHI +7 (1/128 mm)	8/11/03	Sarah Barkhouse
03-H048484	< PHI +8 (1/256 mm)	8/11/03	Sarah Barkhouse
03-H048484	< PHI +9 (1/512 mm)	8/11/03	Sarah Barkhouse
03-H048484	Gravel	8/11/03	Sarah Barkhouse

200 BLUEWATER ROAD, SUITE LID BEDFURU INOVA SCOTIAL CANADA, B45 1GP († 902,429,0203, F.902,420,8612, W. WAW estand in spill

	Analyte Details page :	2
PSC Analytical Services 200 Bluewater Road Bedford, NS Canada B4B 1G9	Client : Dillon Consulting Limited 137 Chain Lake Dr. Suite Halifax	1 COX, BRENT 100
Tel (902) 420-0203 Toll free (800) 565-7227 Fax (902) 420-8612	NS B3S 1B3 PSC Project Number : 0312756H Client Project Number : 03-2088-02	FAX # : 450-2008 Printed : 2003/08/20 200 Reported : 2003/08/13

Sample ID	<u>Analyte</u>	Date Analysed	<u>Analyst</u>
03-H048484	Sand	8/11/03	Sarah Barkhouse
03-H048484 03-H048484 03-H048484	Silt Clay Particle Size Analysis	8/11/03 8/11/03	Sarah Barkhouse Sarah Barkhouse Calculated

-

ANALYTICAL SERVICES 200 Bluewater Road, Suite 105 Bedford, Nova Scotia B4B 1G9 Tel: 902-420-0203 Fax: 902-420-8612 Toll Free: 1-800-565-RCAp (7227) E-mail: PASI.Halifax@contactPSC.com	Hon Consulting Ltd. 7 Chain Lola Daire, lityx NS RENT COX	Invoice to (if other than client): PSC Quote #: Client: <u>Experial 0:1 LH.</u> Client Project #:03-2088-0200 Sampled By: <u>DBaker</u> Contact: <u>David O'Carrol</u>
Page 1 of 2 Phone: 450 E-mail:	<u>- 4000</u> Fax: <u>450 - 2008</u> E-mail Results	Sampling Date: <u>AUG 1/03</u> Phone: <u>484-4032</u> Fax: <u>484-4004</u> Sampling Time: <u>AM</u>
Int CodePLEASE PROVIDE (3) ADVANCE NOTICEW.0.#FOR RUSH ORDERS 0.3127561 FOR RUSH ORDERS 23127561 Client contacted if RUSH Date cannot be rDateRUSH (Extra Cost) Specify Date $4.035/03$ Standard 5-7 Business DaysVerified10 Business DaysPSC Sample #Client Sample 1.D 454714 TP $17/2$ $(0.9-1.0.5)$ 15 TP $17/2$ $(2.95-3)$ 77 $76/5$ 77 $76/5$	الج تر هي الج تر هي الج الج ترفي الج المتانة: Surface/Salt/GroupdTapwater Sewage/Effluent/Tissue(Goil الج الحال Field Filtered & Preserved الحال Field Filtered & Preserved Itali Filtered RCAp-30 Choose: Total of Diss. Metals Nater - Total Metals Water - Total Metals Vater - Dissolved Metals Vater - Dissolved Metals Available Metals - Soil (HNO3/HF/HCIO4)	Image: Provide the i
78 TP 19/1 (0-0.5.m) 19/80 TP 19/5 (2-2.5.m)		1 03-H048474
81 TP 20/2 (0.3 0.7m) 82 TP 20/6 (2.5.3.5m)		03-H048488
93/84 TP 19/7 (3-3,5.) 1-250		Fraction of Organic Carbon
SS DUP. E Samples Relinquished to PSC by: 2010 Biles (Client Signature) Cost Biles Samples Received in lab by:	Date: Da	Sample Integrity Deficiency? Yes (see attached) No, Initial



LABORATORY INFORMATION



Certificate of Analysis

CLIENT INFORMATION

Attention: Client Name: Project:	Brent Cox Dillon Consulting Ltd. 03-2088-0200	Contact: Project: Date Received:	Suzanne Rogers 0312785H 03/08/05
Project Desc:	64 Mill Lake Rd., Hubbards. NS	Date Reported:	03/08/11
Address:	137 Chain Lake Drive Halifax, NS B3S 1B3	Sample No.:	03-H048556
Fax Number:	902-450-2008		
Phone Number:	902-450-4000		

Methods used by PSC are based upon those found in 'Standard Methods for the Examination of Water and Wastewater', Nineteenth Edition. Other methods are based on the principles of EPA or American Petroleum Institute methodologies. All data is in statistical control unless otherwise flagged. Acceptance criteria for analytical QC has been met unless otherwise flagged.

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Certified by

Page 1



	Inorgan:	ic Param	eters	page :		1
Client : Dillon Consultin 137 Chain Lake I Halifax	ng Limite Dr. Suite	ed ≥ 100		CCX, BREN	11	
NS B3S 1B3				FAX #	:	450-2008
PSC Project Numb	per : 033		linted	:	2003/08/08	
Client Project N	Number :	03-2088	-0200	Reported	:	2003/08/08
Matrix			Soil			
Philip ID			03-H048556			
Client ID			TP 5/4 (2-			
			3m)			
Date Sampled (y/m/d)						
Date Shipped (y/m/d)						
Date Received (y/m/d)			03/08/05	_		
Analyte	Units	EQL				
HNO3 Peroxide Digestion		-	20030806-A			
Lead	mg kg	0.5	3.7			

Legend	EQL = Estimated Quantitation Limit is the minimum concentration that can
	be reliably reported. It is not a regulatory limit.
	ND = Not Detected, instrument did not detect anything above standard EQL.
	ND () = Not Detected at the elevated EQL specified, due to matrix
	interferences or sample pre-dilution.
	 - = Dash is reported when parameter not requested in sample.
Note	: Soil results are expressed as air dry weight basis.
	: Biota results are expressed on a wet weight basis unless otherwise stated.

page verified 📝

00 BLUEWATER ROAD, SUITE 105, BEDFLIRE INOVAISCOTIA, CANADA, B48, 199, 1902, 420, 0203, F902, 420, 8612, W. WWW.estand. (121, 11)

	Inorganic	Parameters	page :	2
PSC Analytical Services 200 Bluewater Road Bedford, NS Canada B4B 1G9	Client :	Dillon Consulting 137 Chain Lake Dr. Halifax	Limited Suite 100	COX, BRENT
Tel (902) 420-0203 Toll free (800) 565-7227 Fax (902) 420-8612	PSC Pr Client Pr	NS B3S 1B3 roject Number : 031 coject Number : 03-	2785H 2088-0200	FAX # : 450-2008 Printed : 2003/08/08 Reported : 2003/08/08

Certificate of Analysis

Method Summaries:

- Available Trace Metals in soils/sediments: Nitric/Peroxide Digestion. Ref:USEPA Method #3050B.

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Approval of Inorganic Parameters: Inorganics Manager : Jerry Arenovich Project Manager : Suzanne Røgers

QC data for Imperial Oil Ltd Project #0312785H Representative data for sample 03-H048556

						RM		Sp	iked Bl	ank		Matri	ix Spike		Duplicate				
Analyte	Method	Units	EQL	Blank	Value	Target	% Rec.	Value	Target	% Rec.	Original	Spiked	Rec.	% Rec.	Original	Duplicate	Abs. Diff.	% Diff.	
Lead	ICP-MS	mg/kg	0.5	nd	97.4	96.5	101	20271	20000	101	4	24	20	100	4	4	0	2	

nd = not detected

N/A = not applicable na = not available Values in *Bold and Italicized* print are not applicable. Non-Conformance Comments: None Control Chart Violations: None

Approved:



Analyte	Details	page :	1	AIXALL

Client : Dillon Consulting Limited COX, BRENT 137 Chain Lake Dr. Suite 100 Halifax NS B3S 1B3 FAX # : 450-2008 PSC Project Number : 0312785H Printed : 2003/08/11 Client Project Number : 03-2088-0200 Reported : 2003/08/08

a 1			
Sample ID	Analyte	Date Analysed	
03-H048556	Lead	8/ 7/03	Analyst
03-H048556	Lead	8/ 7/03	Lynne Kempton
03-H048556	HNO3 Dorovido Directi	8/ //03	Jerry Arenovich
00 11010000	mos Peroxide Digestion	8/ 6/03	Hiroyuki Inamura

200 Bluewater Road, Suite 105	Client:	55; <u></u>		,								P	SC (Quot	e #:		101	10	2.67	_ Client:		invo TOL	pice to	(if other t	han clie	:nt):
Bedford, Nova Scotia B4B 1G9 Tel: 902-420-0203 Fax: 902-420-8612 Toll Free: 1-800-565-RCAp (7227) E-mail: PASI.Halifax@contactPSC.com	Contac	t: Bient	(י גטי			Po Co	stal de _				CI Sa	ient ımp	Proj Ied E	; #: ject 3y:	ת ם:# 	3 -	-20	<u>28</u>	– <u>-</u> ಡಬ – Contac		<u>~~ cl</u>	0, (.Gnroll		
Page of	Phone: E-mail:		·····			Fax			E-ma Resu	ail líts [Sa Sa	mpl mpl	ling ling ⁻	Date Time	e:				_ Phone:			F	ax:		
nt Code <u>63</u> W.O.# <u>03127851</u> Date AUG 5/0 Veriked PSC Sample # <u>485556</u> <u>7P S/41 (2-3m</u>) <u>AUG 5/2</u> <u>10 Business</u> <u>148556</u> <u>7P S/41 (2-3m</u>)	PROVID E NOTIC H ORDE SH Date ca cify Date Days Days Days Days	IE RS Innot be met No. & Type of Bottles	Matrix:Surface/Salt/Ground/Rapwater Sewage/Effluen//Tissue/Soil	Field Filtered & Preserved	Lab Filtration Required	RCAp-30 Choose: Total or Diss. Metals	RCAp-MS Choose: Total or Diss. Metals	Water - Total Metals (Default Method)	Water - Dissolved Metals	Available Metals - Soil (HNO3/H2O2)	Total Metals - Soil (HNO3/HF/HCiO4)	TPH MUST (BTEX, C6- C32)	C Low Level (Potable) TPH MUST (BTEX, C6, C32)	Fractionation	Ран	PCB	Semivol. Organics (EPA 625, 8270)	Volatile Organics (EPA 624, 8260)	Trihalomethanes (THMs)	Analysis or Comments/ Leccl	r Regul Hazard Site L	latory F Is (ie. H ocatior	'ackage igh Con ι & Task	s (specify centration number	Guidlines I Expecte	s) (d)
								{	35 	T	- 												· · · · · · · · · · · · · · · · · · ·			
																								7- e (11 -	<u>.</u>	
Samples Relinquished to PSC by: (Client Signature) Samples Received in lab by:	- fh	An	Date: Date:	I				T T	lme:					Sam; Temp	ole In erati	tegrit Jre(s)	y Def	icien	cy? [Yes (see all	tached)	Market No.	$\overline{\gamma}$, Initial .	Ð		



Certificate of Analysis

CLIENT INFORMATION

Q.					
1	RECEIVED	SEP	Î	0	2003

LABORATORY INFORMATION

Attention:	Brent Cox	Contact:	Suzanne Rogers
Client Name:	Dillon Consulting Ltd.	Project:	0313534H
Project:	03-2088-0200	Date Received:	03/08/15
Project Desc:	Hubbards, NS	Date Reported:	03/08/29
Address: Fax Number: Phone Number:	137 Chain Lake Drive Halifax, NS B3S 1B3 902-450-2008 902-450-4000	Sample No.:	03-H051608 - 03-H051609

Methods used by PSC are based upon those found in 'Standard Methods for the Examination of Water and Wastewater', Nineteenth Edition. Other methods are based on the principles of EPA or American Petroleum Institute methodologies. All data is in statistical control unless otherwise flagged. Acceptance criteria for analytical QC has been met unless otherwise flagged.

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Certified by: Krzus



						ANALYTICAL SERVICES					
		Organi	page: 1								
C	lient : Dillon Consulti 137 Chain Lake Halifax	.ng Limit Dr. Suit		COX, BRENT							
	NS B3S 1B3 PSC Project Num Client Project	ber : 03 Number :	FAX # : 450-2008 Printed : 2003/08/26 Reported : 2003/08/25								
	Matrix Philip ID Client ID			Water 03-H051608 MW6	Water 03-H051609 MW6 DUP						
	Date Sampled (y/m/d) Date Shipped (y/m/d)			03/08/15	03/08/15						
	Date Received (y/m/d)			03/08/15	03/08/15						
;	Analyte	Units	EQL		DUP						
,	TEH Fract. Water Event#			HN59	HN59						
]	Benzene	mg/L	0.001	nd	nd						
	Toluene	mg/L	0.001	nd	nd						
ן ז	Ethyibenzene	mg/L	0.001	nd	nd						
		mg/L	0.002	0.006	0.006						
;	>C8-C10 Aromatics(-EX)	mg/L	0.01	0.12	0.11						
2	> Cl0-Cl2 W Aromatic	mg/L	0.01	1.05	1.16						
تر •	> C12-C16 W Aromatic	mg/L mg/I	0.05	3.44	4.10						
-	> C21-C32 W Aromatic	шg/Б mg/L	0.05	1.90	2.34						
		ш <u>д</u> /ш			0.59						
>	> C6-C8 W Aliphatic	mg/L	0.01	0.02	0.02						
>	> C8-Cl0 W Aliphatic	mg/L	0.01	0.06	0.04						
>	> C10-C12 W Aliphatic	mg/L	0.01	1.72	1.87						
>	> C12-C16 W Aliphatic	mg/L	0.05	4.92	5.51						
<	> CIG-C2I W Aliphatic	mg/L	0.05	2.01	2.20						
>	C21-C32 W Aliphatic	mg/L	0.10	0.39	0.46						
М	Nodified TPH Tier II	mg/L	0.45	16.1	18.4						
	PH Surrogate	% Rec.	-	105.	96.						
V		0. m									

PSC Analytical Services 200 Bluewater Road Bedford, NS Canada B4B 1G9 Tel (902) 420-0203 Toll free (800) 565-7227 Fax (902) 420-8612	C_yanic Parame Client : Dillo 137 C Halif NS PSC Project Client Project	COX, BRENT FAX # : 450-2008 Printed : 2003/08/26 Reported : 2003/08/25							
Matrix		Water	Water						
Philip ID Client ID		03-H051608 MW6	03-H051609 MW6 DUP						
Date Sampled (y/m/d) Date Shipped (y/m/d)		03/08/15	03/08/15						
Date Received (y/m/d)		03/08/15	03/08/15						
Analyte	Units EQL	(Continu	ied from pre-	vious page)					
VPH Fract. Water Event#	_	HN41	HN41						
 VPH Fract. Water Event# - HN41 HN41 TEH Surrogate (C32) % Rec - 49. 49. Note: The product resemblance comments are provided for general guidance only and may not be accurate. Resemblances are based on comparison with available reference standards. Due to chromatographic similarity of certain products, the influence of weathering effects and interference of non-petrogenic compounds, it is not always possible to positively identify products. Note: Equivalent carbon numbers (based on n-alkane elution times) are being reported. Notes: - Aromatic C6 - C7 and Aromatic >C7 - C8 are composed of benzene and toluene respectively. Aromatic >C8 - C10 does not include ethylbenzene or xylenes. Modified TPH - Tier 2 = sum of all aliphatic + aromatic ranges (does not inlude BTEX) 03-H051608 MW6 Weathered fuel oil fraction. TEH sample contained sediment. 03-H051609 MW6 DUP Weathered fuel oil fraction. TEH sample contained sediment. 									

EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit. For soils, zero %moisture is assumed. The moisture corrected EQL = EQL/(1-(%moisture/100))

ND () = Analyte was not detected above the EQL. Raised EQL listed in Parenthesis. - = Dash is reported when parameter not requested in sample. Event # = PSC Quality Control Reference number for QC samples run with your sample. %REC = Surrogate Recovery Values are results of PSC quality control tests.

Note : Soil results are expressed on a dry weight basis.

: Biota results are expressed on a wet weight basis.

page verified $\,\mathcal{H}\,$

	Organic Parameters	page :	3		
PSC Analytical Services 200 Bluewater Road	Client : Dillon Consulting 137 Chain Lake Dr.	COX, BRENT			
Bedford, NS Canada B4B 1G9	Halifax				
Tel (902) 420-0203	NS B3S 1B3		FAX # : 450-2008		
Toll free (800) 565-7227	PSC Project Number : 031	L3534H	Printed : 2003/08/26		
Fax (902) 420-8612	Client Project Number : 03-	2088-0200	Reported : 2003/08/25		

Certificate of Analysis

Method Summaries :

-Extractable Petroleum Hydrocarbon Fraction - water: Hexane extr'n. Silica gel column separation. HP5890 cap. col. GC-FID. Ref: Atlantic PIRI Guidelines for Laboratories, Draft 1.0, 1999.

-Volatile Pertoleum Hydrocarbon Fractionation - water: Purge and Trap-Tekmar LSC2000. Autosampler. Varian 3400/Saturn II GC/MS. Ref: Atlantic PIRI Guidelines for Laboratories, Draft 1.0, 1999.

PSC Analytical Services (200 Bluewater Road Bedford, NS Canada B4B 1G9	Client : Dillon Consulting 137 Chain Lake Dr. Halifax	Limited COX, BRENT Suite 100
Tel (902) 420-0203 Toll free (800) 565-7227 Fax (902) 420-8612 0	NS B3S 1B3 PSC Project Number : 031 Client Project Number : 03-	FAX # : 450-2008 3534H Printed : 2003/08/26 2088-0200 Reported : 2003/08/25

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm) 1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. The results relate only to the items tested. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Analyses reviewed by:

Suzanne Rogers



Quality Control Summary

Workstation Description	Batch ID	Analyte	Applyto Nome	L M. H. I			Blank	< Proc. Recov.		c. Recov. Matrix Spike		Duplicate		SRM	
		7 dialiyic	Analyte Name	Method	EQL	Units	Value	Value	% Rec.	ID	% Rec		0/ 0/17	JA	
VPH Fract. Water Event#	HN41	6005	Benzene	PTGCMS	0.001						/01166.		% Uiff	Value	% Rec.
VPH Fract. Water Event# VPH Fract. Water Event#	HN41	6005	Benzene	PT GCMS	0.001	mg/L	< 0.001	0.02	100			03-H051608	0		
VPH Fract, Water Event#	HN41 HN41	6025 6025	Toluene	PT GCMS	0.001	mg/L	< 0.001	0.021	90						
VPH Fract. Water Event#	HN41	6035	Fibulbonano	PT GCMS	0.001	mg/L	< 0.001	0.019	95			03-H051608	0		
VPH Fract. Water Event#	HN41	6035	Ethylbenzene	PT GCMS	0.001	mg/L	< 0.001	0.017	85			03-H051608	0		
VPH Fract. Water Event#	HN41	6045	Xylenes	PT GCMS	0.001	mg/L mg/l	< 0.001	0.019	95				Ň		
VPH Fract. Water Event#	HN41	6045	Xylenes	PT GCMS	0.002	mg/L	< 0.002	0.052	87			03-H051608	15		
VPH Fract. Water Event#	HN41	5059	Total C6-C10 (incl. BTEX	PT GCMS	0.035	mg/L	< 0.01	0.45	92			02 11054000			
TEH-Fract. Water Event #	HN59	6979	>C10-C12 Aromatic	PTGCMS	0.035	mg/L	< 0.01	0.44	90			03-1001608	13		
TEH-Fract. Water Event #	HN59	6981	>C12-C16 Aromatic	GCFID	0.01	mg/L	< 0.01	ç	109						
TEH-Fract. Water Event #	HN59	6983	>C16-C21 Aromatic	GC FID	0.05	mg/L mg/l	<0.05	cier	119				1		
TEH-Fract. Water Event #	HN59 HN59	6985 6991	>C21-C32 Aromatic	GC FID	0.10	mg/L	<0.1	Effi	114	ļ					
TEH-Fract. Water Event #	HN59	6993	>C10-C12 Aliphatic >C12-C16 Aliphatic	GC FID	0.01	mg/L	<0.01	tion	117			1			
TEH-Fract. Water Event #	HN59	6995	>C16-C21 Aliphatic	GCFID	0.05	mg/L	<0.05	ara	111						
TEH-Fract. Water Event #	HN59	6997	>C21-C32 Aliphatic	GC FID	0.10	mg/L mg/l	<0.05	gep	115	1			1		
TEH-Fract. Water Event #	HN59 HN59	4154	>C10-C32 Total	GC FID	0.40	mg/L	<0.4	1.78	89						
	1	7104	-C10-C32 Total	GC FID	0.40	mg/L	<0.4	1.73	87			03-0051608	14		
Analyte Details

page :

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ANALYTICAL SERVICES

Client : Dillon Consulting Limited COX, BRENT 137 Chain Lake Dr. Suite 100 Halifax NS B3S 1B3 FAX # : 450-2008 PSC Project Number : 0313534H Printed : 2003/08/26 Client Project Number : 03-2088-0200 Reported : 2003/08/25

Sample TD	3 1 + -		
Dampie ID	Analyte	Date Analysed	Analyst
03-H051608	Benzene	8/20/03	April Darrach
03-H051608	Toluene	8/20/03	April Darrach
03-H051608	Ethylbenzene	8/20/03	April Darrach
03-H051608	Xylenes	8/20/03	April Darrach
03-H051608	VPH Surrogate	8/20/03	April Darrach
			April Darrach
03-H051608	TEHW - F Extraction	8/20/03	Marsha Skippor
03-H051608	> C10-C12 W Aromatic	8/22/03	Margha Chinas
03-H051608	> C12-C16 W Aromatic	8/22/03	Marsha Skinner
03-H051608	> C16-C21 W Aromatic	8/22/03	Marsha Skinner
03-H051608	> C21-C32 W Aromatic	8/22/03	Marsha Skinner
			Marsha Skinner
03-H051608	> C6-C8 W Aliphatic	8/20/03	April Derrach
03-H051608	> C8-C10 W Aliphatic	8/20/03	April Darrach
03-H051608	> Cl0-Cl2 W Aliphatic	8/22/03	Mamaha Ol'
03-H051608	> C12-C16 W Aliphatic	8/22/03	Marsha Skinner
03-H051608	> C16-C21 W Aliphatic	8/22/03	Marsha Skinner
			Marsha Skinner
03-H051608	> C21-C32 W Aliphatic	8/22/03	Marcha Chinana
03-H051609	Benzene	8/21/03	April Dannel
03-H051609	Toluene	8/21/03	April Darrach
03-H051609	Ethylbenzene	8/21/03	April Darrach
03-H051609	Xylenes	8/21/02	April Darrach
		0/21/03	April Darrach
03-H051609	VPH Surrogate	8/21/03	April Down-1
03-H051609	TEHW - F Extraction	8/20/03	April Dallach
03-H051609	> C10-C12 W Aromatic	8/22/03	Marsha Skinner
03-H051609	> C12-C16 W Aromatic	8/22/03	Marsna Skinner
03-H051609	> C16-C21 W Aromatic	8/22/03	Marsha Skinner
	·	0/22/03	Marsha Skinner
03-H051609	> C21-C32 W Aromatic	8/22/03	Marcha Older
03-H051609	> C6-C8 W Aliphatic	8/21/03	Marsha Skinner
03-H051609	> C8-C10 W Aliphatic	8/21/03	April Darrach
03-H051609	> Cl0-Cl2 W Aliphatic	8/22/02	April Darrach
03-H051609	> C12-C16 W Aliphatia	0/22/03	Marsha Skinner
	cro n Aribuacio	8/22/03	Marsha Skinner
03-H051609	> C16-C21 W Aliphatic	8/22/03	
03-H051609	> C21-C32 W Aliphatic	8/22/03	Marsha Skinner
	<u> </u>	0/22/00	Marsha Skinner



ANALYTICAL

Page 2

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	Client: <u>Dillm</u> (37	<u>Cons</u> Chuic	Hing	L	td.		PSC	C Quote #	:		Invoice to (if other than client):
200 Bluewater Road, Suite 105 Bedford, Nova Scotia B4B 1G9 Tel: 902-420-0203 Fax: 902-420-8612 Toll Free: 1-800-565-RCAp (7227) E-mail: PASI.Halifax@contactPSC.com	Hal. f. Contact: BRENT	ar - (N5 (24				Clie Clie San	nt P.O. #: nt Projec ıpled By:	t#: <u>03-7</u> Г.Д	Ust-0 wer	200 Contact: David O'Carroll
Page 2 of 2	Phone: <u>-(50 - 4</u> E-mail:	tovo	Fa	1×: {SD	- <u>202</u> E-ma Resu		Sam Sam	pling Dat	te: <u>Avz</u> 1e: <u>[['J</u>	15/0) An	2 Phone: <u>484 4032</u> Fax: <u>484 - 4004</u>
Clir + Code PLEASE ADVANO W.O.# FOR RUS Client contacted if RU RUSH (Extra Cost) Sectors	PROVIDE E NOTICE H ORDERS	fround/tapwater HelSoff erved	ed tat or Diss Metale	otal or Diss. Metals	Jefault Method) lais	l (HNO3/H2O2) 03/HF/HCIO4)	-C32)		A 625, 8270)	624, 8260) s)	Philip Task Order # 11040282
Verified Verified Standard 5-7 Business 10 Business PSC Sample # Client Sample I.D	Days No. & Type	atrix:Surface/Sat ewage/Effluent/Tis eld Filtered & Pres	b Filtration Require	Ap-MS Choose: To	iter - Total Metals (I iter - Dissolved Me	ailable Metals - Soi al Metals - Soil (HN	H MUST (BTEX, C6	EX, C6-C32) ctionation	s ivol. Organics (EP	ttile Organics (EPA alomethanes (THM:	Analysis or Regulatory Packages (specify Guidlines) Comments/Hazards (ie. High Concentration Expected)
UST MTRE	2-1000	∑on iii ∫	RC La		M N	Av	E 61		PCE	Triha	Site Location & Task number
98 09/08 DUP. F	2-250 3-40						/				tor all Singles in Seperate certificate Abase.
Samples Relinquished to PSC by: 1 1		Date:									
Samples Received in tab by: M. M.	Nan'	Date: 1	0/6	3	Time:	1:00	PM	Sample Ir Temperat	ntegrity Defi ure(s):	ciency?	Yes (see attached) No, Initial

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RECEIVED AUG 2 8 2003

Certificate of Analysis

CLIENT INFORMATION

LABORATORY INFORMATION

Attention: Client Name: Project: Project Desc:	Brent Cox Dillon Consulting Ltd. 03-2088-0200 Hubbards, NS	Contact: Project: Date Received: Date Reported:	Suzanne Rogers 0313532H 03/08/15 03/08/22
Address:	137 Chain Lake Drive Halifax, NS B3S 1B3	Sample No.:	03-H051592 - 03-H051598
Fax Number:	902-450-2008		
Phone Number:	902-450-4000		

Methods used by PSC are based upon those found in 'Standard Methods for the Examination of Water and Wastewater', Nineteenth Edition. Other methods are based on the principles of EPA or American Petroleum Institute methodologies. All data is in statistical control unless otherwise flagged. Acceptance criteria for analytical QC has been met unless otherwise flagged.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. Any and all use of these test results shall be limited to the actual cost of the pertinent analysis done. There is no other warranty expressed or implied. Your samples will be retained at PSC for a period of 60 days from receipt of samples as per contract.

Certified by

Page 1



03/08/15

Organic Pa	page: 1						
Client : Dillon Consulting Limited 137 Chain Lake Dr. Suite 10 Halifax	00	COX, BRENT					
NS B3S 1B3		FAX # : 4!	50-2008				
PSC Project Number : 031353	2H	Printed : 20	03/08/21				
Client Project Number : 03-	2088-0200	Reported : 20	003/08/21				
Matrix	Water	Water	Water	Water			
Philip ID	03-H051592	03-H051593	03-H051594	03-H051595			
Client ID	MW1	MW2	MW3	MW4			
Date Sampled (y/m/d) Date Shipped (y/m/d)	03/08/15	03/08/15	03/08/15	03/08/15			

Date Received (y/m/d)

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2.
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03/08/15

03/08/15

03/08/15

EQL	=	Estimated Quantitation Limit is the minimum concentration that can be reliably
		reported. It is not a regulatory limit. For soils, zero %moisture is assumed.
		The moisture corrected EQL = EQL/(1-(%moisture/100))
ND ()	-	Analyte was not detected above the EQL. Raised EQL listed in Parenthesis.
-	=	Dash is reported when parameter not requested in sample.
Event #	=	PSC Quality Control Reference number for QC samples run with your sample.
%REC	E	Surrogate Recovery Values are results of PSC quality control tests.
Note	:	Soil results are expressed on a dry weight basis.
	:	Biota results are expressed on a wet weight basis.

page verified _____

PSC Analytical Services 200 Bluewater Road Bedford, NS Canada B4B 1G9	Client : Dillon Consulting Limited 137 Chain Lake Dr. Suite 100 Halifax	2 COX, BRENT
Tel (902) 420-0203	NS B3S 1B3	FAX # : 450-2008
Toll free (800) 565-7227	PSC Project Number : 0313532H	Printed : 2003/08/21
Fax (902) 420-8612	Client Project Number : 03-2088-0200	Reported : 2003/08/21

Note: The product resemblance comments are provided for general guidance only and may not be accurate. Resemblances are based on comparison with available reference standards. Due to chromatographic similarity of certain products, the influence of weathering effects and interference of non-petrogenic compounds, it is not always possible to positively identify products. Notes: Modified TPH - Tier 1 (C6-C32) does not include BTEX 03-H051592 MW1 TEH sample contained sediment. 03-H051593 MW2 TEH sample contained sediment. 03-H051594 MW3 TEH sample contained sediment. Fuel oil range. 03-H051595 MW4 TEH sample contained sediment.

	гõг	=	Estimated Quantitation Limit is the minimum concentration that can be reliably
			reported. It is not a regulatory limit. For soils zero "moisture is and in
			The moleture is assumed.
			ine moisture corrected EQL = EQL/(1-(%moisture/100))
ND ()	=	Analyte was not detected above the EQL. Raised EQL listed in Parenthesis.
-		=	Dash is reported when parameter not requested in sample.
Event	E #	=	PSC Quality Control Reference number for QC samples run with your sample
%REC		=	Surrogate Recovery Values are results of Dod
			and the second provides are results of PSC quality control tests.
NC	ote	:	Soil results are expressed on a dry weight basis.
		:	Biota results are expressed on a wet weight basis.

page verified \mathcal{I}

	O _{rd} anic Parameters	page :	3	
PSC Analytical Services 200 Bluewater Road Bedford, NS Canada B4B 1G9	Client : Dillon Consulting 137 Chain Lake Dr. Halifax	COX, BRENT		
Tel (902) 420-0203 Toll free (800) 565-7227 Fax (902) 420-8612	NS B3S 1B3 PSC Project Number : 031 Client Project Number : 03-	.3532H 2088-0200	FAX # : 450-2008 Printed : 2003/08/21 Reported : 2003/08/21	

Matrix Philip ID Client ID			Water 03-H051596 MW5	Water 03-H051597 MW5 DUP	Water 03-H051598 DUP F
Date Sampled (y/m/d) DateShipped (y/m/d)			03/08/15	03/08/15	03/08/15
Date Received (y/m/d)			03/08/15	03/08/15	03/08/15
Analyte	Units	EQL		DUP	
TEH C11-32 Water Event #	ŧ	_	HN22	HN22	HN22

TEH CII-32 Wa VPH Water Eve Benzene Toluene Ethylbenzene	ter Event # nt #	mg/L mg/L mg/L	- 0.001 0.001 0.001	HN22 HN41 nd nd 0.005	HN22 HN41 nd nd 0.005	HN22 HN41 nd nd nd	
Xylenes C6 - C10 HC { >C10-C21 (Fue >C21-C32 (Lube Modified TPH	less BTEX} l Range) e Range) - Tier 1	mg/L mg/L mg/L mg/L mg/L	0.002 0.01 0.05 0.1 0.2	0.008 0.07 0.22 nd 0.3	0.008 0.07 0.22 nd 0.3	nd nd nd nd nd nd	
VPH Surrogate TEH Surrogate TEH Surrogate	(IBB) (IBB) (C32)	% Rec. % Rec. % Rec	-	108. 94. 93.	95. 93. 75.	106. 94. 82.	

Note: The product resemblance comments are provided for general guidance only and may not be accurate. Resemblances are based on comparison with available reference standards. Due to chromatographic similarity of certain products, the influence of weathering effects and interference of non-petrogenic compounds, it is not always possible to positively identify products.

Notes:	Modifie	d TP	н -	Tier	1	(C6-C32) da	bes	not	include	BTE
03-H05	51596	MW5				Fuel	oil	rar	nae.		U 11.
0 0 1100									. <u> </u>		

02-0021231	MW5 DOP	Fuel oil range.
03-H051598	DUP F	TEH sample contained sediment

EQL = Estimated Quantitation Limit is the minimum concentration that can be reliably reported. It is not a regulatory limit. For soils, zero %moisture is assumed. The moisture corrected EQL = EQL/(1-(%moisture/100))

```
ND ( ) = Analyte was not detected above the EQL. Raised EQL listed in Parenthesis.
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- = Dash is reported when parameter not requested in sample.

Event # = PSC Quality Control Reference number for QC samples run with your sample. %REC = Surrogate Recovery Values are recults of DCG mucht

%REC = Surrogate Recovery Values are results of PSC quality control tests.

Note : Soil results are expressed on a dry weight basis.

: Biota results are expressed on a wet weight basis.

page verified _____

	Organic Parameters page	: 4
PSC Analytical Services 200 Bluewater Road Bedford, NS Canada B4B 1G9	Client : Dillon Consulting Limit 137 Chain Lake Dr. Suit Halifax	ed COX, BRENT e 100
Tel (902) 420-0203 Toll free (800) 565-7227 Fax (902) 420-8612	NS B3S 1B3 PSC Project Number : 0313532H Client Project Number : 03-2088-	FAX # : 450-2008 Printed : 2003/08/21 0200 Reported : 2003/08/21

Certificate of Analysis

Method Summaries :

- Extractable Hydrocarbons Water: Hexane extraction. HP5890 GC/FID. Ref: Atlantic PIRI Guidelines for Laboratories, Draft 1.0, 1999.
- Volatile Petroleum Hydrocarbons Water: Tekmar LSC2000. Autosampler. Varian 3400/Saturn II or HP6890 GC/MS. Ref: Atlantic PIRI Guidelines for Laboratories, Draft 1.0, 1999.

	Organic Parameters	page :	5	
PSC Analytical Services 200 Bluewater Road	Client : Dillon Consulting 137 Chain Lake Dr.	Limited Suite 100	COX, BR	ENT
Bedford, NS Canada B4B 1G9	Halifax			
Tel (902) 420-0203	NS B3S 1B3		FAX #	: 450-2008
Toll free (800) 565-7227	PSC Project Number : 031	L3532H	Printed	: 2003/08/21
Fax (902) 420-8612	Client Project Number : 03-	2088-0200	Reported	: 2003/08/21

Conversions: 1 mg/L = 1000 ug/L = 1 part per million (ppm) 1 ug/L = 0.001 mg/L = 1 part per billion (ppb)

All work recorded herein has been done in accordance with normal professional standards using accepted testing technologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. The results relate only to the items tested. Liability for any and all use of these test results shall be limited to the actual cost of the pertinent analysis performed. There is no other warranty expressed or implied. Excess sample will be discarded upon expiry of hold time.

Analyses reviewed by:

Connie Junil Alman Jun James MacDonald Organics Manager : Project Manager : Suzanne)Rogers



Workstation Description	Batch ID	Analida	Applida Norra				Blank	Proc. R	ecov.	Matrix S	Spike	Duplid	cate	SR	M
Provide a contraction of the second s	Daton ID	Analyte	Analyte Name	Method	EQL	Units	Value	Value	% Rec.	ID	% Rec.	ID	% Diff	Value	% Rec
TEH C11-32 Water Event #	HN22	4150	TPH Extract.(>C10-C32)	GC FID	0.2	ma/l	< 0.2	81	101	02 1051509	60	02.11054500		, dide	/01.000.
TEH C11-32 Water Event #	HN22	4150	TPH Extract.(>C10-C32)	GC FID	0.2	ma/L	<02	84	105	03-1031396	00	U3-HU51596	0		
VPH Water Event #	HN41	5010	Benzene	PT GCMS	0.001	mg/L	< 0.001	0.02	100	03-0051598	120	03 1051500			
VPH Water Event #	HN41	5010	Benzene	PT GCMS	0.001	mg/L	< 0.001	0.021	105	0011001000	120	03-1031390	U		
VPH water Event #	HN41	5020	Toluene	PT GCMS	0.001	ma/L	< 0.001	0.018	an	03-4051508	102	02 10051500	~		
VPH Water Event #	HN41	5020	Toluene	PT GCMS	0.001	ma/L	< 0.001	0.019	95	0011001300	102	03-1031390	U		
VPH Water Event #	HN41	5030	Ethylbenzene	PT GCMS	0.001	ma/L	< 0.001	0.017	85	03-0051508	100	02 105 1500			
VPH Water Event #	HN41	5030	Ethylbenzene	PT GCMS	0.001	mg/L	< 0.001	0.019	95	00-11001000	100	03-0031390	U		
VPH Water Event #	HN41	5040	Xylenes	PT GCMS	0.002	mg/L	< 0.002	0.052	87	03-H051598	101	03-0051596	5		
VFH Water Event #	HN41	5040	Xylenes	PT GCMS	0.002	mg/L	< 0.002	0.056	93			0011001000	J		
VPH Water Event #	HN41	5050	C6-C10 (Gas Range)	PT GCMS	0.01	mg/L	< 0.01	0.45	92	03-0051598	٩A		10		
VPM water Event #	HN41	5050	C6-C10 (Gas Range)	PT GCMS	0.01	mg/L	< 0.01	0.44	90		04	00-1031090	12		
												• 1		1	1

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ANALYTICAL SERVICES

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Analyte Details page: 1

Client :	Dillon Consulting Limited 137 Chain Lake Dr. Suite 100 Halifar	COX, BREN	г	
	NS B3S 1B3	FAX #	•	450-2008
	PSC Project Number : 0313532H	Printed	:	2003/08/21
	Client Project Number : 03-2088-0200	Reported	:	2003/08/21

Sample ID	Analyte	Date Analysed	Analyst
03-H051592	TEH C11-32 Water	8/20/03	Marsha Skinner
03-H051592	VPH Water	8/20/03	April Darrach
03-H051592	TEH Water Extraction	8/18/03	Allan Abbott
03-H051593	TEH C11-32 Water	8/20/03	Marsha Skinner
03-H051593	VPH Water	8/20/03	April Darrach
03-H051593	TEH Water Extraction	8/18/03	Allan Abbott
03-H051594	TEH Cll-32 Water	8/20/03	Marsha Skinner
03-H051594	VPH Water	8/20/03	April Darrach
03-H051594	TEH Water Extraction	8/18/03	Allan Abbott
03-H051595	TEH C11-32 Water	8/20/03	Marsha Skinner
03-H051595	VPH Water	8/20/03	April Darrach
03-H051595	TEH Water Extraction	8/18/03	Allan Abbott
03-H051596	TEH Cll-32 Water	8/20/03	Marsha Skinner
03-H051596	VPH Water	8/20/03	April Darrach
03-H051596	TEH Water Extraction	8/18/03	Allan Abbott
03-H051597	TEH Cl1-32 Water	8/20/03	Marsha Skinner
03-H051597	VPH Water	8/20/03	April Darrach
03-H051597	TEH Water Extraction	8/18/03	Allan Abbott
03-H051598	TEH C11-32 Water	8/20/03	Marsha Skinner
03-H051598	VPH Water	8/20/03	April Darrach
03-H051598	TEH Water Extraction	8/18/03	Allan Abbott

DD BLLEWATER ROAD, SUITE 103, BEDRURU, NOVA SODTIA, CANADA, B48, 1G9, † 902,420,0203, F.902,420,8612, W. Awwellond 105, 21



ANALYTICAL SERVICES

Page ____ of ____

it Code

200 Bluewater Road, Suite 105 Bedford, Nova Scotia B4B 1G9 Tel: 902-420-0203 Fax: 902-420-8612 Toll Free: 1-800-565-RCAp (7227) E-mail: PASI.Halifax@contactPSC.com

E-mail:

Inco Him LH. D:1 Ltd Client: \hat{D} Fuperin PSC Quote #: Client: Chain Drive du Client P.O. #: N۶ Client Project #:03-2088 -0200 чX Contact: BRENT Contact: David COX T.B.Jur O'Carroll Sampled By: Fax: 450 - 2008 Sampling Date: <u>Aug 15/03</u> Phone: <u>484-4032</u> Fax: <u>484-4004</u> Phone: 450 - 4000

E-mail Results

Sampling Time: 11:00 AM

164 Mill Late Red Hills to als

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ļ	Sample	s Receive	ed in lab by: M.M.(,	N <u>an'</u>	Date	»: 	/	-		1	Tim	e:				Temp	perati	ure(s)	:		8	.4°C 9.8°C 7.7°C

5 R 1000 no. au 17, 2005

Invoice to (if other than client):

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Å	ANALYTICAL SERVICES 200 Bluewater Road, Suite 105 Bedford, Nova Scotia B4B 1G9 Tel: 902-420-0203 Fax: 902-420-8612 Toll Free: 1-800-565-RCAp (7227) E-mail: PASI.Halifax@contactPSC.com	Client: <u>Dillon</u> <u>137</u> Halifz Contact: <u>BRENT</u>	Cous Izain V	141. 	15 4	<u>L1</u> 2 ((d. Oriv	e	·····	PS Clie Clie Sar	C Qı ent F ent F nple	iote #: :O. #: [:] roject d By:	 - - :#:0: I	 5-21 - Ве	hr-(Invoice to (if other than clier — Client: Inperial Orl Ltd. <u>)200</u> — Contact: David OCarroll
	Page 2 of 2	Phone: <u>-(50</u> E-mail:	010	,,	Fax:	(50	- <u>])</u> E-m Res	ail ults [San San	nplir nplir	ig Dat ig Tim	e: <u>A</u> e: _{	いう [:40	15/0 Am	23 Phone: <u>484 4032</u> Fax: <u>484 -400</u>
	Client Code PLEASE ADVANC W.O.# FOR RUSE Date Client contacted if RU RUSH (Extra Cost) Spec	PROVIDE E NOTICE H ORDERS SH Date cannot be met cify Date	(Ground) apwater issue/Soll served	uired	Total <u>or</u> Diss. Metals	: Total or Diss. Metals	s (Derault Method) Metals	Soil (HNO3/H2O2)	HNO3/HF/HCIO4)	C6- C32)) TPH MUST			EPA 625, 8270)	PA 624, 8260)	Philip Task Order # 1104028
- FR	Verified Verified Standard 5-7 Business 10 Business PSC Sample # Client Sample I.D	Days No. & Type of Bottles	Matrix:Surface/Sa Sewage/Effluen/T Field Fitered & Pr	Lab Filtration Requ	RCAp-30 Choose:	RCAp-MS Choose:	Water - Dissolved P	Available Metals - S	Total Metals - Soil (TPH MUST (BTEX,	Low Level (Potable (BTEX, C6- C32)	Fractionation	PCB	Semivol. Organics (Volatile Organics (E	Analysis or Regulatory Packages (specify Guidlines) Comments/Hazards (ie. High Concentration Expected Site Location & Task number
510 N 14	UST MTEC. 98 09/55 DUP. F	2-1000														Report MTBE andys.s for all surgers on seperate certificate abase.
		>-40								√						
	Samples Relinquished to PSC by: 7, . 4/	RI	Date: /				Time									
	Samples Received in lab by: M. M.	Nan	Date:		163		Time	<u>[</u> ;	00 1	M	Т	mperat	ure(s)	y Den(hency	r res (see attached) No, Initial

IOL / PSC CHECKLIST

ILIENT CONTINCT. ON I	IL OKLISI	
Breat Cax		
CLIENT PROJECT #: 03-2088-0300	DATE: Au	450-2008
		(5) (5)
Deficiency Type		
Custody seel on cooler is not intact		Comments
Temperature of bottes in cooler is bitche		
Sample bottles broken in transit		
No chain of custody accompanying the state		
Chain of custody information is incoment		
Chain of custody is not signed and details		
Non-current version of PSC CoC for to:	1	
Bottles listed on CoC, but not in the		
Sottles in shipment		
Analysis and the state of the s	-	
closed or		
clearly specified on the CoC		
Sample bottle labeling issue (missing or incorrect)		
Samples received >5 days after sampling		
Samples received after analytical hold time back		
exceeded		
Wrong sample bottle has been used		
Sample was incorrectly preserved or band	·	
Insufficient number of bottles provided by		
Incorrect or missing task order number of the		
()Sample shipment has been at		
Sample Integrity has not been compre-	entioned deficiencies.	

Proppil off by sampler.

------ Waybill #:_____ ficiency is present, please fax a copy of the completed form to the consultant and attached original and mirmation to the Chain of Custody.



April 21, 2005

IMPERIAL OIL LIMITED 585 Pleasant Street P. O. Box 1001 Dartmouth, Nova Scotia B2Y 3Z7

ATTENTION: Mr. David O'Carroll, P.Eng. Associate, Site Remediation Specialist

April 2005 Groundwater Sample Results - MTBE Former Imperial Oil Limited Bulk Plant 64 Mill Lake Road, Hubbards, Nova Scotia

During the April 6th, 2005 monitoring visit to the above captioned site, groundwater samples were collected from the six (6) on site monitoring wells (MW-1 through MW-6). All six groundwater samples were submitted to Maxxam Analytics Inc. in Halifax, Nova Scotia for MTBE analysis. For QA/QC purposes, one (1) field duplicate (Dup A) was collected from MW-6, as well as, one (1) field blank and one (1) trip blank and analyzed for MTBE. In addition, two lab duplicates (MW-6 dup and field blank dup) were also analyzed for MTBE. MTBE results, in comparison with BTEX and Modified TPH results, are presented in Table 1. A copy of the April 2005 laboratory certificate of analysis is attached for reference. All eleven (11) samples analysed indicated no detectable MTBE concentrations.

Please contact the undersigned with any questions or comments you may have.

Yours truly,

DILLON CONSULTING LIMITED

Brent Cox, B.Sc., P.Geo. Project Manager

BJC:jep Attachments Our File: 03-2088-0300

L:\PROJECTS\FINAL\032088\text\O'Carroll 11 Letter.doc

137 Chain Lake Drive Suite 100 Halifax Nova Scotia Canada B3S 1B3 Telephone (902) 450-4000 Fax (902) 450-2008

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			Т	ABLE 1			
		GRO	UNDWATER H	YDROCARBON	RESULTS		
		64 MILI	L LAKE ROAD,	HUBBARDS, N	OVA SCOTIA		
Sample	Sample		BTEX Conce	entration (ppm)		Modified	
Location	Date	Benzene	Toluene	E. Benzene	Xylenes	TPH (ppm)	MTBE
MW-1	Aug 15/03	ND	ND	ND	ND	ND	ND
	Apr 19/04	NÐ	ND	ND	ND	ND	NÐ
	Oct 28/04	ND	NÐ	ND	ND	ND	ND
	Apr. 6/05	ND	ND	ND	ND	ND	ND
MW-2	Aug 15/03	ND	ND	ND	NÐ	ND	ND
	Apr 19/04	ND	ND	ND	ND	ND	ND
	Oct 28/04	ND	ND	ND	ND	ND	ND
Dup A (F/D)	Oct 28/04	ND	NÐ	ND	ND	ND	ND
1012	Apr. 6/05	ND ND	ND	ND ND	ND	ND	ND
WIW-3	Aug 15/03			ND	ND	NÐ	ND
	Apr 19/04			ND	ND	NÐ	ND
	Apr 6/05	ND		ND	ND	ND	ND
MWLAR	Aug 15/03	ND		ND		ND	
$\operatorname{Dun} \mathbf{E} (\mathbf{E} / \mathbf{D}) / \mathbf{D}$	Aug 15/03			ND		ND	ND
Dup ((1/D) @	Aug 15/03	ND	ND	ND	ND	ND	ND
	Opt 28/04	ND	ND	ND	ND	ND	ND
	Apr 6/05	ND				ND	ND
MW-5	Aug 15/03	ND	ND	0.005	0.008	0.2**	ND
Lab Dun	Aug 15/02	ND	ND	0.003	0.008	0,3**	ND
	Aug 15/05		שא	0.005	0.008	0.3**	ND
	Apr 19/04	ND	ND	ND	ND	ND	ND
	Oct 28/04	ND	UN ND	ND	ND	ND	0.001
	Apr. 6/05	ND	ND	ND	ND	ND	ND
MW-0	Aug 15/05	ND	ND	ND	0.006	16.1**	ND
	Aug 15/03	ND	ND	ND	0.006	18.4**	ND
	Apr 19/04	ND	ND	ND	NÐ	13**	ND
	Apr 19/04	ND	ND	ND	ND	14**	ND
	Oct 28/04	ND	ND	ND	ND	12**	ND
Lab Dup	Oct 28/04	ND	ND	ND	ND	13**	ND
	Apr. 6/05	ND	ND	ND	ND	13**	ND
Dup A	Apr. 6/05	ND	ND	ND	ND	12**	ND
Lao Dup	Apr. 6/05	ND	ND	ND	ND	14**	ND
ricid Blank	Apr. 6/05	ND	ND	ND	NÐ	ND	ND
Lao Dup	Apr. 6/05	-	•	-	-	-	ND
Atlantic PIRI Tier	Apr. 6/05	ND	ND	ND	ND	ND	UN
	TRDSLS (2005)						
						19*	
Commercial,		0.005	0.024	0.0024	0.3	15**	-
Potable, Coarse-gr	ained					20***	
						4,4*	
Residential		0.005	0.024	0,0024	0.3	3.2**	-
Potable, Coarse-gr	amed					7.8***	
Site Specific Tier I	II Guidelines (upd	ated Nov. 2004)					
Vacant Lot, Fenced	d,	0.005	0.024	0.0024	0.3	2.3	-
Off-site, Residenti:	al, Potable						
Estimated Quantita	ation Limit	0.001	0.001	0.001	0.002	0.2	0.001
G - Resembles Gas	soline	ND - Not detected					
F - Resembles Fuel	l Oil	F/D - Field duplicate					
L - Resembles Lub	e Oil						
B - Compared to R	esidential Criteria	(based on adjacent la	nd use)				
Bold	- Exceeds Atlantic	PIRI Tier I Guideline	s (commercial, potabl	le, coarse grained}			
1	• Exceeds Atlantic	PIRI Tier I Guideline	s (residential notable	coares urained)			
	Presed at	BINI THE ROOT	- Concontial, polable	, course grameu)	• •		
	- Exceeds Atlantic	FIRI TIET II SSTLS (V	acant lot, fenced, off-	site, residential, potab	le)		
Note: For the purp	ose of comparison	to applicable guidelin	e criteria, the Modifi	ed TPH hydrocarbon r	ange assumed to be m	iost	
specific to each sai	apte result was ba	sed on laboratory rese	motance data and Atl	antic PIKI Reference I	Documentation (April	1999).	

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Driven by Service and Science

Dillon Consulting Ltd. 137 Chain Lake Dr., Suite 100 Halifax, NS CANADA B3S 1B3

Attention: Brent Cox

Report Date: 2005/04/13

Task Order#: 11047030 Site#: QO2846 Site Location: HUBBARDS, NS IOLProject #: 03-2088-0300 Contact Name: David O'Carroll Your C.O.C. #: 305977

ANALYTICAL REPORT

MAXXAM JOB #: A525898 Received: 2005/04/06, 13:53

Sample Matrix: Water # Samples Received: 9

MAXXAM ANALYTICS INC.

SUZANNE ROGERS Manager, Client Services

SRG/srg encl.

Total cover pages: 1

Bedford: 200 Bluewater Road Bedford NS B4B 1G9 Telephone(902)420-0203 FAX(902)420-8612

This document is in electronic format, hard copy is available on request.



Dillon Consulting Ltd. Task Order#: 11047030 Site#: QO2846 Site Location: HUBBARDS, NS IOLProject #: 03-2088-0300 Contact Name: David O'Carroll

ATLANTIC MTBE IN WATER (WATER)

Maxxam ID		F43958	F43959	F43960	F43961	F43962		
Sampling Date		2005/04/06	2005/04/06	2005/04/06	2005/04/06	2005/04/06		1
	Units	MW 1	MW 2	MW 3	MW 4	MW 5	DL	QC Batch
				· · · · · · · · · · · · · · · · · · ·		······································		
Methyl t-butyl ether (MTBE)	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	713209
Surrogate Recovery (%)			· · · · · · · · · · · · · · · · · · ·					
Isobutylbenzene - Volatile	%	116	121	114	118	115		713209

QC Batch = Quality Control Batch Please check for attached comments

/06 2005/04/06 D TRIP BLANK DL QC Batch K 0.001 0.001 713200
TRIP BLANK DL QC Batch
1 <0.001 0.001 713200
1 50.001 0.001 713209
119 713209
119

Maxam

Dillon Consulting Ltd. Task Order#: 11047030 Site#: QO2846 Site Location: HUBBARDS, NS IOLProject #: 03-2088-0300 Contact Name: David O'Carroll

Test Summary

ľv :	laxxam ID Sample ID	F43958 MW 1		Collected Shipped	2005/04/06	
Tei	mperature	o		Received	2005/04/06	
Test Description	· •	Instrumentation	Batch	Prepared	Analyzed	Analyst
VPH in Water (PIRI)		PTGC/MS	713209	2005/04/12	2005/04/12	MSK
M	laxxam ID Sample ID	F43959 MW 2		Collected	2005/04/06	
Ter	Matrix mperature	Water		Received	2005/04/06	
Test Description	· · <u>-</u>	Instrumentation	Batch	Prepared	Analyzed	Analyst
VPH IN Water (PIRI)		PTGC/MS	713209	2005/04/12	2005/04/12	MSK
M	laxxam ID Sample ID	F43960		Collected	2005/04/06	
Ter	Matrix nperature	Water		Received	2005/04/06	
Test Description VPH in Water (PIRI)		Instrumentation PTGC/MS	Batch 713209	Prepared 2005/04/12	Analyzed	Analyst MSK
·				2000/01112	2000/04/12	Mor
M	laxxam ID Sample ID	F43961 MW 4		Collected Shipped	2005/04/06	
Ter	Matrix nperature	Water ⁰		Received	2005/04/06	
Test Description		Instrumentation	Batch	Prepared	Analyzed	Analyst
		F160/M6	713209	2005/04/12	2005/04/12	MSK
M	laxxam ID Sample ID	F43962 MW 5		Collected	2005/04/06	
Ten	Matrix	Water		Received	2005/04/06	
Test Description	nporature	Instrumentation	Batch	Propared	Applused	A so a la cará
VPH in Water (PIRI)	······	PTGC/MS	713209	2005/04/12	2005/04/12	MSK
M	axxam ID	F43963		Collected	2005/04/06	
S	Sample ID Matrix	MW 6 Water		Shipped Received	2005/04/06	
Ten	nperature	0				
Test Description VPH in Water (PIRI)		Instrumentation PTGC/MS	Batch 713209	Prepared 2005/04/12	Analyzed 2005/04/12	Analyst MSK
M. S	axxam ID Sample ID	F43963 Dup MW 6		Collected Shipped	2005/04/06	
Ten	Matrix nperature	water •		Received	2005/04/06	
Test Description		Instrumentation	Batch	Prepared	Analyzed	Analyst

Maxam

Dillon Consulting Ltd. Task Order#: 11047030 Site#: QO2846 Site Location: HUBBARDS, NS IOLProject #: 03-2088-0300 Contact Name: David O'Carroll

Test Summary

VPH in Water (PIRI)	PTGC/MS	713209	2005/04/12	2005/04/12	MSK
Maxxam ID	F43964		Collected	2005/04/06	
Sample ID	DUPA		Shipped		
Matrix	Water		Received	2005/04/06	
Temperature	0				
Test Description	Instrumentation	Batch	Prepared	Analyzed	Analyst
VPH in Water (PIRI)	PTGC/MS	713209	2005/04/12	2005/04/12	<u>MSK</u>
Moyyam ID	E42085		Collected	2005/04/08	
Sample ID	FIGUD BLANK		Shipped	2.000/04/00	
Matrix	Water		Received	2005/04/06	
Temperature	0		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	2000/01/00	
· · · · · ·					
Test Description	Instrumentation	Batch	Prepared	Analyzed	Analyst
VPH in Water (PIRI)	PTGC/MS	713209	2005/04/12	2005/04/12	MSK
Maxxam ID	F43966		Collected	2005/04/06	
Sample ID	TRIP BLANK		Shipped		
Matrix	Water		Received	2005/04/06	
Temperature	0				
Test Description	Instrumentation	Batch	Prepared	Analyzed	Analyst
VPH in Water (PIRI)	PTGC/MS	713209	2005/04/12	2005/04/12	MSK

Maxam

Dillon Consulting Ltd. Task Order#: 11047030 Site#: QO2846 Site Location: HUBBARDS, NS IOLProject #: 03-2088-0300 Contact Name: David O'Carroll

Laboratory Analysis Code Volatile Hydrocarbons / PPHPIRI-W

Results relate only to the items tested.



Dillon Consulting Ltd. Task Order#: 11047030 Site#: QO2846 Site Location: HUBBARDS, NS IOLProject #: 03-2088-0300 Contact Name: David O'Carroll

Quality Assurance Report Maxxam Job Number: DA525898

QA/QC			Date				
Batch			Analyzed				
Num Init	QC Type	Parameter	yyyy/mm/dd	Value	Recovery	Units	QC Limits
713209 MSK	MATRIX SPIKE	Isobutylbenzene - Volatile	2005/04/12		111	%	70 - 130
		Methyl t-butyl ether (MTBE)	2005/04/12		104	%	70 - 130
	Spiked Blank	Isobutylbenzene - Volatile	2005/04/12		120	%	70 - 130
		Methyl t-butyl ether (MTBE)	2005/04/12		113	%	70 - 130
	Method Blank	Isobutylbenzene - Volatile	2005/04/12		120	%	70 - 130
		Methyl t-butyl ether (MTBE)	2005/04/12	<0.001		mg/L	
	RPD	Methyl t-butyl ether (MTBE)	2005/04/12	NC		%	40
NC = Non-calc RPD = Relative SPIKE = Fortifi	ulable Percent Difference						

Bedford: 200 Bluewater Road Bedford NS B4B 1G9 Telephone(902)420-0203 FAX(902)420-8612

Page 6 of 6



November 2006 Monitoring Results Former Imperial Oil Limited Bulk Plant 64 Mill Lake Road, Hubbards, Nova Scotia

Introduction

On November 30, 2006, Dillon Consulting Limited (Dillon) conducted a monitoring event at the former Imperial Oil Limited Bulk Plant property located at 64 Mill Lake Road in Hubbards, Nova Scotia. This work was carried out as part of ongoing monitoring being undertaken at this site.

Background

The subject site was a former Imperial Oil Limited Bulk Plant facility, which was decommissioned in July 2003. The site is located in a residential/commercial area with properties serviced by individual potable water supply wells. An environmental site assessment (ESA) was undertaken by Dillon in association with decommissioning activities. Results indicated petroleum hydrocarbon impacts to soil and groundwater, which exceed Atlantic PIRI Tier I Look Up Table criteria (Dillon's Report "Final Report on Phase II Environmental Site Assessment, 64 Mill Lake Road, Hubbards, Nova Scotia", dated November 2003). Subsequently, in November 2003, Dillon generated Tier II Site Specific Target Levels (SSTLs) utilizing the Atlantic RBCA version 1 software (Dillon's "Tier II Criteria & Impacted Soil Volume Estimates - Final Report Former Imperial Oil Bulk Plant, 64 Mill Lake Road, Hubbards, N.S." dated November 20, 2003). In November 2004, Dillon updated the Tier II SSTLs using the Atlantic RBCA Tool Kit (version 2.1) (Dillon's "Updated Tier II Criteria and Impacted Soil Volume Estimates -Draft Report, Former Imperial Oil Bulk Plant - 64 Mill Lake Road, Hubbards, N.S." dated November 8, 2004). A monitoring program has been developed for the site to assess changing groundwater quality over time.

"THIS REPORT CONTAINS PROVISIONS LIMITING LIABILITY, THE SCOPE OF THE REPORT AND THIRD PARTY RELIANCE"

These documents and the information contained therein are confidential, property of Imperial Oil and any disclosure of same is governed by the provision of each of the applicable provincial and territorial freedom of information legislation, the Privacy Act (Canada) 1980-81-83, c.111, Sch.II[°]1, and the Access to Information Act (Canada) 1980-81-82-83, c.111, Sch.II[°]1, as such legislation may be amended or replaced from time to time.



137 Chain Lake Drive Suite 100 Halifax Nova Scotia Canada B3S 1B3 Telephone (902) 450-4000 Fax (902) 450-2008

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Page 2 IMPERIAL OIL LIMITED December 21, 2006

November 2006 Monitoring Results

On November 30, 2006, groundwater samples were collected from the six on site monitoring wells (MW-1 through MW-6). For QA/QC purposes, one field duplicate (Dup A) was collected from monitoring well MW-5. In addition, a field blank and a trip blank were utilized.

In total, nine groundwater samples were submitted to Maxxam Analytics Inc. in Bedford, Nova Scotia for benzene, toluene, ethyl benzene, xylene (BTEX) and modified total petroleum hydrocarbon (TPH) analysis. Two laboratory duplicates (MW 1 Lab-Dup and MW2 Lab-Dup) were also analyzed for petroleum hydrocarbons. November 2006 groundwater analytical results, in comparison to Atlantic PIRI Tier I Risk-Based Screening Levels (RBSLs) and Tier II Site Specific Target Levels (SSTLs), are illustrated within **Figure 1**. Cumulative groundwater analytical results are presented in **Table 1**. November 2006 laboratory certificates of analysis are attached for reference.

Of the six groundwater sampling locations analysed as part of the November 2006 monitoring event, five indicated no detectable BTEX or Modified TPH concentration (MW-1, MW-2, MW-3, MW-4 and MW-5). The field duplicate sample collected from MW-5 (Dup A) also indicated no detectable BTEX or Modified TPH concentrations. The groundwater sample collected from MW-6 indicated no parameters exceeding applicable Atlantic PIRI Tier I RBSLs for a commercial site with a potable water supply and coarse-grained soil conditions. However, this sample location did exhibit a modified TPH concentration in exceedance of Tier II SSTLs for a vacant fenced lot, protective of an offsite, residential, potable land use scenario. It should be noted that the sample from monitoring well MW-4, which is located near the property boundary between MW-6 and the neighbouring residence, exhibited no detectable petroleum hydrocarbon concentrations.

Groundwater levels were measured during the November 2006 monitoring event with elevation data presented in **Table 2**. The most recent data indicates groundwater flow direction to be to the northeast. **Figure 1** presents the hydraulic head data.

Page 3 IMPERIAL OIL LIMITED December 21, 2006

Conclusions

Results collected from the November 2006 monitoring event indicated no detectable BTEX or Modified TPH concentration in five of six monitor well locations sampled. Monitoring well MW-6, while exhibiting no detectable BTEX concentrations, did exhibit 2 Modified TPH concentration of 13 mg/L. This value is below the applicable Tier I criteria of 15 mg/L, however, in excess of Tier II SSTLs protective of an offsite residential, potable land use scenario guideline of 2.3 mg/L. It is noted that the sample from monitoring well MW-4, which is located near the property boundary between MW6 and the neighbouring residence, exhibited no detectable petroleum hydrocarbon concentrations.

Statement of Limitations

This report has been prepared and the work referred to in this report has been undertaken by Dillon Consulting Limited for Imperial Oil Limited. It is intended for the sole and exclusive use of Imperial Oil Limited, its affiliated companies and partners and their respective insurers, agents, employees and advisors (collectively, "Imperial Oil"). Any use, reliance on or decision made by any person other than Imperial Oil based on this report is the sole responsibility of such other person. Imperial Oil and Dillon Consulting Limited make no representation or warranty to any other person with regard to this report and the work referred to in this report and they accept no duty of care to any other person or any liability or responsibility whatsoever for any losses, expenses, damages, fines, penalties or other harm that may be suffered or incurred by any other person as a result of the use of, reliance on, any decision made or any action taken based on this report or the work referred to in this report.

The investigation undertaken by Dillon Consulting Limited with respect to this report and any conclusions or recommendations made in this report reflect Dillon Consulting Limited's judgement based on the site conditions observed at the time of the site inspection on the date(s) set out in this report. This report has been prepared for specific application to this site and it is based, in part, upon visual observation of the site, subsurface investigation at discrete locations and depths, and specific analysis of specific chemical parameters and materials during a specific time interval, all as described in this report. Unless otherwise stated, the findings cannot be extended to previous or future site conditions, portions of the site which were unavailable for direct investigation, subsurface locations which were not investigated directly, or chemical parameters, materials or analysis which were not addressed. Substances other than those addressed by the investigation described in this report Page 4 IMPERIAL OIL LIMITED December 21, 2006

may exist within the site, substances addressed by the investigation may exist in areas of the site not investigated and concentrations of substances addressed which are different that those reported may exist in areas other that the locations from which samples were taken.

If site conditions or applicable standards change or if any additional information becomes available at a future date, modifications to the findings, conclusions and recommendations in this report may be necessary.

Other than by Imperial Oil, copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted without the express written permission of Dillon Consulting Limited. Nothing in this report is intended to constitute or provide a legal opinion.

Closing

We trust this correspondence is sufficient for your reference at this time. However, if you have any questions or comments, please do not hesitate to contact the undersigned at your convenience.

Yours truly,

DILLON CONSULTING LIMITED

Jula

Brent Cox, B.Sc., P.Geo. Project Manager

GTB:jep Attachments Our File: 03-2008-0300



.dwg `12/21 08:21:57 G:\CAD\032088\DECE

WOODE	ED S	
NOV TPH B T E X	MW3 /. 30/06 ND ND ND ND ND ND ND	
(W3 09) MW5		
NOV. 30/06 NOV. TPH ND TPH B ND B T ND T E ND E X ND X	30/06 ND ND ND ND ND ND ND ND ND	
TP17		
APPR	OXIMATE SCALE: 1:400	
GROUNDWATER ANALYTICAL D HYDRAULIC HEAD DATA	PROJECT No. 03-2088	
MER BULK PLANT E ROAD, HUBBARDS, N.S.	FIGURE No. 1	

TABLE 1 GROUNDWATER HYDROCARBON RESULTS 64 MILL LAKE ROAD, HUBBARDS, NOVA SCOTIA

<u> </u>										
Sample	Sample		BTEX Concer	utration (ppm)			Petroleum	Hydrocarbons (p	(ma	
Location	Date	Benzene	Toluene	E. Benzene	Xylenes	C6 - C10	C10-C21	C21 - C32	Total	
MWI	Aug 15/03	ND	ND	ND	ND	ND	ND	ND	ND	<u> </u>
	Apr 19/04	ND	ND	ND	ND	ND	0.06	ND	ND	F
	Oct 28/04	ND	ND	ND	ND	ND	ND	ND	ND	-
1	Apr. 6/05	ND	ND	ND	ND	ND	ND	ND	ND	-
	Oct. 13/05	ND	ND	ND	ND	ND	ND	ND	ND	-
	Nov. 30/06	ND	ND	ND	ND	ND	ND	ND	ND	-
	Nov. 30/06	ND	ND	ND	ND	ND	-	~		
MW2	Aug 15/03	ND	ND	ND	ND	ND	ND	ND	ND	
	Apr 19/04	ND	ND	ND	ND	ND	ND	ND	ND	-
	Oct 28/04	ND	ND	ND	ND	ND	ND	ND	ND	-
Dup A (F/D)	Apr 6/05	ND	ND	ND	ND	ND	ND	ND	ND	-
	Apr. 0/05		ND	ND	ND	ND	ND	ND	ND	-
	Nev 30/06	ND	ND	ND	ND	ND	ND	ND	ND	-
Lah Dun	Nov 30/05	ND	UN	ŊD	ND	NÐ	ND	ND	ND	-
MW3	Aug 15/03	ND	NID	-	-		ND	ND	-	-
	Apr 19/04	ND	ND	ND	ND	ND	0.05	ND	ND	F
	Oct 28/04	ND		ND	ND	ND	ND	ND	ND	-
	Apr. 6/05	ND	ND	ND	ND	ND	ND	ND	ND	-
	Oct. 13/05	ND	ND	ND	ND	ND	ND	ND	ND	-
	Nov. 30/06	ND	ND	ND	ND	ND	ND	ND	ND	-
MW4 ®	Aug 15/03	ND	ND	ND	ND	ND	ND	ND	ND	
Dup F (F/D)	Aug 15/03	ND	ND	ND	ND	ND	ND	ND	ND	-
	Apr 19/04	ND	ND	ND	ND	ND	ND	ND	NU	-
	Oct 28/04	ND	ND	ND	ND	ND	ND	ND	ND	•
	Apr. 6/05	ND	ND	ND	ND	ND	ND	ND	ND	•
	Oct, 13/05	ND	ND	ND	ND	ND	ND	ND	ND	
	Nov. 30/06	ND	ND	ND	ND	ND	ND	ND	ND	-
MW5	Aug 15/03	ND	ND	0.005	0.008	0.07	0.22	ND	03**	F
Lab Dup	Aug 15/03	ND	ND	0.005	0.008	0.07	0.22	ND	0.5	r
	Apr 19/04	ND	ND	ND	ND	ND	0.22		0.3**	r
	Oct 28/04	ND	ND	ND	ND	ND	0.06		ND	F
	Apr. 6/05	ND	ND	ND	ND	ND	0.05	ND	ND	F
	Oct. 13/05	ND	ND	ND	ND	ND	ND	ND	ND	r
	Nov. 30/06	ND	ND	ND	ND	ND	ND	ND	ND	-
Dup A (F/D)	Nov 30/06	ND	ND	ND	ND	ND	ND	ND	ND	-
Atlantic PIRI Tier	I RBSLs (2003)									
				T	T		Gasoline	<u> </u>	10*	
Commercial,		0.005	0.024	0.0024	0.3		Fuel Oil		15**	
otable, Coarse G	ained						#6 Oil	ŀ	20***	
							Gasoline		4 4*	
Residential		0.005	0.024	0.0024	0.3		Fuel Oil		3.2**	
otable, Coarse Gr	ained						#6 Oil		7.8***	
ite Specific Tier I	I Guidelines (upd	ated Nov. 2004)								
annt tot T	. 1		T	T	Т					
acant Lot, Fence	L. D. 4-1-1-1	0.005	0.024	0.0024	0.3				2.3	
ntimated Quantita	tion Limit									
D. Not detroted	tion Linit	0.001	0.001	0,001	0.002	0.01	0.05	0.1	0.2	
/D - Field duplice	•									
Resembles Gas	oline									ĺ
- Resembles Fuel	Oil									1
- Resembles Lube	Oil									
- Compared to R	sidential Criteria	(based on adjacent	land use)							
old -	Exceeds Atlantic	PIRI Tier I Guidelin	nes (commercial, p	ootable, coarse-gra	uined)					
-	Exceeds Atlantic I	PIRI Tier I Guidelin	nes (residentia) no	table, coarse arei	ned)					
	Exceeds Atlantic	DIRETion II COTT	(unnet 1-t for							1
ate: For the aver-	e of openedice	incluic in 351LS	(vacant iot, ience)	L OIT-SILE, resident	nai, potable)					
ecific to each ear	ole result was been	ed on jaboratory	une criteria, the M	togethed TPH hydr	ocarbon range	assumed to be mo	st			
	iosan was Uds	ce on laboratory re	semerance data ar	A ADAMIC FIKI K	elerence Docu	mentation (Octobe	n 2003).			

.

TABLE 1 (cont'd) GROUNDWATER HYDROCARBON RESULTS 64 MILL LAKE ROAD, HUBBARDS, NOVA SCOTIA

Sample	Sample		BTEX Concen	tration (ppm)			Petroleum	Hydrocarbons (pr		
Location	Date	Benzene	Toluene	E. Benzene	Xylenes	C6 - C10	C10 - C21	C21 - C32	Total	
MW6	Aug 15/03	ND	ND	ND	0.006	0.2	15.04	0,85	16.1**	F
Lab Dup	Aug 15/03	ND	ND	ND	0.006	0.17	17.18	1.05	18.4**	F
	Apr 19/04	ND	ND	NÐ	ND	010	12	0.6		r r
Dup A	Apr 19/04	ND	ND	ND	ND	0.09	12	0,0		r
	Oct 28/04	ND	ND	ND	ND	0.11	15	0.0		7
Lab Dup	Oct 28/04	ND	ND	ND	ND	0.14	17	0.5		r F
	Apr. 6/05	ND	ND	ND	ND	0.06	13	0.5		r E
Dup A	Apr. 6/05	ND	ND	ND	ND	0.06	12	0.0		r
Lab Dup	Apr. 6/05	ND	ND	ND	ND	0.06	13	0.4		г Б
	Oct. 13/05	ND	ND	ND	ND	0.04	58	0.4		r F
Dup A	Oct. 13/05	ND	ND	ND	ND	0.02	6.8	0.5		r F
	Nov, 30/06	ND	ND	ND	ND	0.03	13	0,5		F
Field Blank	Apr. 6/05	ND	ND	ND	ND	ND	ND	0.0	ND	- F
Lab Dup	Apr, 6/05	-			_	-	ND	ND		
	Oct. 13/05	ND	ND	ND	ND	ND	ND	ND	ND	-
Lab Dup	Oct. 13/05	ND	ND	ND	ND	ND	-			
	Nov, 30/06	ND	ND	ND	ND	ND	ND	ND	ND	
Trip Blank	Apr. 6/05	ND	ND	ND	ND	ND	ND	ND	ND	
	Oct. 13/05	ND	ND	ND	ND	ND	ND	ND	ND	.
Lab Dup	Oct. 13/05	-	-	-	-		ND	ND	-	
	Nov. 30/06	ND	ND	ND	ND	ND	ND	ND	ND	_
Atlantic PIRI Tier	l RBSLs (2003)									
							Gasoline	1	10+	
Commercial,		0.005	0.024	0.0024	0.3		Fuel Oil		15**	
Potable, Coarse G	rained						#6 Oil		20***	
					The second se		Gasoline		4 4*	
Residential		0.005	0.024	0.0024	0.3		Fuel Oil		3.2**	H
Potable, Coarse G	rained						#6 Oil		7.8***	
Site Specific Tier	II Guidelines (upc	lated Nov. 2004)						A		
		1						T		
Vacant Lot, Fence	d,	0.005	0.024	0.0024	0.3				23	
Off-site, Residenti	al, Potable								4.5	
Estimated Quantit	ation Limit	0.001	0.001	0.001	0.002	0.01	0.05	01	0.2	
ND - Not detected										
F/D - Field duplics	ite									
G - Resembles Gas	soline									
F - Resembles Fue	l Oil									
Resembles Lub	e Oil									
B - Compared to R	esidential Criteria	ı (based on adjaceı	ut land use)							
Bold -	Exceeds Atlantic	PIRI Tier I Guidel	ines (commercial,	potable, coarse-g	rained)					
	Exceeds Atlantic	PIRI Tier I Guidel	ines (residential, p	otable, coarse gra	ined)					
	Exceeds Atlantic	PIRI Tier II SSTL	s (vacant lot fence	d off-site resider	ntial notable)					
Jote: For the mum	the of comparison	to applicable and	alina oritoria sh-1	Modified TDU L	inan, potatoic)	a a mana a f to 1	4			
pecific to each sar	nple result was ba	sed on laboratory	resemblance data a	and Atlantic PIRI	Reference Doct	mentation (Octob	usi er 2003)			

				GH 64 MILL	TABLE 2 ROUNDWATER ELEVA LAKE ROAD, HUBBAF	TION DATA DS, NOVA SCOTIA				
Monitoring Well	Ground Surface	Top of PVC Casing	Date Witches							
Designation	Elevation*	Elevation*	Depurito Water (mbgs)	Groundwater El.*	Depth to Water (mbgs)	Groundwater El.*	Depth to Water (mbgs)	Groundwater El +	Denth to Water (mkm)	
				28-Uct-194	6-Apr-05	6-Apr-05	13-Oct-05	13-Oct-05	30-Novi-06	Oroundwater El.*
MW1	100.165	100.870	1 513	00 253						90-ADVI-UC
				70.02	1.(30	99.740	0.585	99.580	1 403	
MW2	100.075	100.995	1.669	98 406						710'04
				DOL:07	(442)	99.550	0.600	99.475	1 704	00 771
MW3	99.730	100.520	1 870	07 020						116.06
				21,400	8CE.1	99.162	0.640	060 66	1 2 7 1	
MW4	99.470	100.120	1.910	07 560					176.1	606.76
				001.11	1,453	98,667	0.868	98.602	1 892	07 570
MWS	99.700	100.200	2.012	97 688	0.21					01012
					600.1	98.561	1.225	98.475	1.925	27 775
MW6	99.840	100.650	1.269	QB 671						C11.12
* Elevations referenced	from a temporary bench	unark with an accumed e	lamation of 100 000	1/000	0.880	99, 770	0.120	99.720	1 293	00 641
mbgs - metres below gru	ound surface		TEVERUN OF LUO.OUGH.					1		140.05

L:/PROJECTS/Final/032088/spread/Hubbards Analytical Tables April 2005(GW Elev.); xls

DATA OVALITY REVIEW CHECKLIST - IMPERIAL OIL PROJECTS

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Consultant: Dillon Consulting Location: 64 Mill Lake Ed. Hubbards, NS	Sampling Date: <u>NOV 30, 06</u> Laboratory : <u>MONXam Abalyfics</u>
Consultant Project Number: 03-2082-0300	Sample Submission Number: AbD0220
Are All Laboratory QC Samples Within Acceptance Criteria (Yes	, No, Not Applicable)?
Yes No NA Instrument Surrogate Recovery // // Extraction Surrogate Recovery // // Method Blank Concentration // // Matrix Duplicate RPD // // Matrix Spike Recovery // // Lab Control Sample Recovery // //	Comments
Are All Field QC Samples Within Alert Limits (Yes, No, Not App	licable)?
Field Blank Concentration Trip Blank Concentration Field Duplicate RPD	Comments
Has CoA been signed off (Yes/No)?: Has lab warranted all tests were in statistical control in CoA (Yes/ Has lab warranted all tests were analyzed following SOP's in CoA Were all samples analyzed within hold times (Yes/No)?: All volatiles samples methanol extracted (If required) within 48 ho is Chain of Custody completed and signed (Yes/No)?: Were sample temperatures acceptable when they reached lab (Yes/	No)?: Yes (Yes/No)?: Yes urs (Yes/No)?: Yes No)?: Yes No)?: Yes
Was a Data Quality Waiver (DQW) issued (Yes/No)?: Date issued: D	NO
Is data considered to be reliable (Yes/No)?:	<u> </u>
	î 44 j
Data Reviewed by (Print): Janony D. Veters Date: Dec 21, 06	ata Reviewed by (Signature): Janony Valana

For Use on Imperial Oil Projects Only



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Task Order#: 11055148 Site#: QO2846 Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 03-2088-0300 Your C.O.C. #: B12388

Attention: Brent Cox

Dillon Consulting Ltd. 137 Chain Lake Dr., Suite 100 Halifax, NS CANADA B3S 1B3

Report Date: 2006/12/07

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A6D0220 Received: 2006/11/30, 10:54

Sample Matrix: Water # Samples Received: 9

		Date	Date	Method
Analyses	Quantity	Extracted	Analyzed Laboratory Method	Primary reference
TEH in Water (PIRI) ()	9	2006/12/04	2006/12/06 ATL SOP 00113	Based on Atl. PIRI
VPH in Water (PIRI) ()	9	2006/12/03	2006/12/05 ATL SOP 00118	Based on Atl. PIRI
ModTPH (T1) Calc. for Water (12)	9	N/A	2006/11/30	Based on Atl. PIRI

Remarks:

Methods used by Maxxam are based upon those found in 'Standard Methods for the Examination of Water and Wastewater,' Nineteenth Edition. Other methods are based on the principles of EPA or American Petroleum Institute methodologies. All data is in statistical control, unless otherwise flagged. Acceptance criteria for analytical QC has been met unless otherwise flagged.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. Any and all use of these test results shall be limited to the actual cost of the pertinent analysis done. There is no other warranty expressed or implied. Your samples will be retained at Maxxam for a period of 60 days from receipt of samples as per contract.

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

(1) This test was performed by Bedford (2) SCC/CAEAL

Maxam

Driven by service and Science www.maxxamanalytics.com

Task Order#: 11055148 Site#: QO2846 Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 03-2088-0300 Your C.O.C. #: B12388

Attention: Brent Cox

Dillon Consulting Ltd. 137 Chain Lake Dr., Suite 100 Halifax, NS CANADA B3S 1B3

Report Date: 2006/12/07

CERTIFICATE OF ANALYSIS

-2-

MAXXAM JOB #: A6D0220 Received: 2006/11/30, 10:54

Encryption Key Rogers North Population Suzanne Rogers 07 Dec 2006 14:29:28 -04:00

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

SUZANNE ROGERS, Manager, Client Services Email: suzanne.rogers.reports@maxxamanalytics.com Phone# (902) 420-0203 Ext:232

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CAEAL have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 2

Page 2 of 10



Maxxam Job #: A6D0220 Report Date: 2006/12/07

Driven by service and Science www.maxxamanalytics.com

Dillon Consulting Ltd. Task Order#: 11055148 Site#: QO2846 Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 03-2088-0300

ATLANTIC MUST IN WATER - PIRI TIER I (WATER)

Maxxam ID		P83328	P83328	P83329	P83329		1
Sampling Date		2006/11/30	2006/11/30	2006/11/30	2006/11/30		1
COC Number		B12388	B12388	B12388	B12388		
	Units	MW1	MW1	MW2	MW2	RDL	QC Batch
			Lab-Dup		Lab-Dup		1
	-						
Benzene	mg/L	<0.001	<0.001	<0.001		0.001	1117664
Toluene	mg/L	<0.001	<0.001	<0.001		0.001	1117664
Ethylbenzene	mg/L	<0.001	<0.001	<0,001		0.001	1117664
Xylene (Total)	mg/L	<0.002	<0.002	<0.002		0.002	1117664
C6 - C10 (less BTEX)	mg/L	<0.01	<0.01	<0.01		0.01	1117664
>C10-C21 Hydrocarbons	mg/L	<0.05		<0.05	<0.05	0.05	1117842
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.1</td><td></td><td><0.1</td><td><0.1</td><td>0.1</td><td>1117842</td></c32>	mg/L	<0.1		<0.1	<0.1	0.1	1117842
Modified TPH (Tier1)	mg/L	<0.1		<0.1		0.1	1115832
Surrogate Recovery (%)							
sobutylbenzene - Extractable	%	98		102	102		1117842
sobutylbenzene - Volatile	%	78 (1)	98	87 (1)			1117664
n-Dotriacontane - Extractable	%	95 (2)		96 (2)	97 (2)	1	1117842

RDL = Reportable Detection Limit QC Batch = Quality Control Batch

(1) VPH sample contained headspace. VPH analysis performed on previously opened vial.

(2) TEH sample contained sediment.



Maxxam Job #: A6D0220 Report Date: 2006/12/07 Driven by service and Science www.maxxamanalytics.com

Dillon Consulting Ltd. Task Order#: 11055148 Site#: QO2846 Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 03-2088-0300

ATLANTIC MUST IN WATER - PIRI TIER I (WATER)

Maxxam ID		P83330	P83331	P83332	P83333	1	1
Sampling Date		2006/11/30	2006/11/30	2006/11/30	2006/11/30		-
COC Number		B12388	B12388	B12388	B12388		1
	Units	MW3	MW4	MW5	MW6	RDL	QC Batch
F			1		1		· .
Benzene	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	1117664
Toluene	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	1117664
Ethylbenzene	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	1117664
Xylene (Total)	mg/L	<0.002	<0.002	<0.002	<0.002	0.002	1117664
C6 - C10 (less BTEX)	mg/L	<0.01	<0.01	<0.01	0.03	0.01	1117664
>C10-C21 Hydrocarbons	mg/L	<0.05	<0.05	<0.05	13	0.05	1117842
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.1</td><td><0.1</td><td><0.1</td><td>0.6</td><td>0.1</td><td>1117842</td></c32>	mg/L	<0.1	<0.1	<0.1	0.6	0.1	1117842
Modified TPH (Tier1)	mg/L	<0.1	<0.1	<0.1	13	0.1	1115832
Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	103	97	108	72		1117842
Isobutylbenzene - Volatile	%	93	99	96	75	1	1117664
n-Dotriacontane - Extractable	%	100 (1)	91 (1)	78 (1)	55 (2)		1117842

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

(1) TEH sample contained sediment.

(2) Weathered fuel oil fraction. TEH sample contained sediment.



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Maxxam Job #: A6D0220 Report Date: 2006/12/07 Driven by service and Science www.maxxamanalytics.com

Dillon Consulting Ltd. Task Order#: 11055148 Site#: QO2846 Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 03-2088-0300

ATLANTIC MUST IN WATER - PIRI TIER I (WATER)

Maxxam ID		P83334	P83335	P83336	T	1
Sampling Date		2006/11/30	2006/11/30	2006/11/30	1	1
COC Number		B12388	B12388	B12388		
	Units	DUP A	FIELD	TRIP BLANK	RDL	QC Batch
			BLANK			
· · · · · · · · · · · · · · · · · · ·	1		í			-
Benzene	mg/L	<0.001	<0.001	<0.001	0.001	1117664
Toluene	mg/L	<0.001	<0.001	<0.001	0.001	1117664
Ethylbenzene	mg/L	<0.001	<0.001	<0.001	0.001	1117664
Xylene (Total)	mg/L	<0.002	<0.002	<0.002	0.002	1117664
C6 - C10 (less BTEX)	mg/L	<0.01	<0.01	<0.01	0.01	1117664
>C10-C21 Hydrocarbons	mg/L	<0.05	<0.05	<0.05	0.05	1117842
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.1</td><td><0.1</td><td><0.1</td><td>0.1</td><td>1117842</td></c32>	mg/L	<0.1	<0.1	<0.1	0.1	1117842
Modified TPH (Tier1)	mg/L	<0.1	<0.1	<0.1	0.1	1115832
Surrogate Recovery (%)						
Isobutylbenzene - Extractable	%	101	105	102		1117842
Isobutylbenzene - Volatile	%	98	98	101		1117664
n-Dotriacontane - Extractable	%	90 (1)	97	105		1117842
RDL = Reportable Detection Lin	nit					
QC Batch = Quality Control Bat	cn dim a st					
() IEm sample contained si	eaiment	-				
RDL = Reportable Detection Lir QC Batch = Quality Control Bat (1) TEH sample contained s	nit ch ediment	-				

7



Maxxam Job #: A6D0220 Report Date: 2006/12/07 Driven by service and Science www.maxxamanalytics.com

Dillon Consulting Ltd. Task Order#: 11055148 Site#: QO2846 Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 03-2088-0300

Test Summary

	Maxxam ID Sample ID	P83328 MW1		Collected	2006/11/30	
	Matrix	Water		Received	2006/11/30	
Test Description		Instrumentation	Batch	Prepared	Analyzed	Analyst
TEH in Water (PIRI)		GC/FID	1117842	2006/12/04	2006/12/06	AON
VPH in Water (PIRI)		PTGC/MS	1117664	2006/12/05	2006/12/05	LMU
ModTPH (T1) Calc. for Water		CALC	1115832	2006/11/30	2006/11/30	GGI
	Maxxam ID Sample ID Matrix	P83328 Dup MW1 Water		Collected Shipped Received	2006/11/30 2006/11/30	
Test Description		Instrumentation	Batch	Prepared	Analyzed	Analyst
VPH in Water (PIRI)		PTGC/MS	1117664	2006/12/05	2006/12/05	LMU
	Maxxam ID Sample ID Matrix	P83329 MW2 Water		Collected Shipped Received	2006/11/30 2006/11/30	
Test Description		Instrumentation	Batch	Prepared	Analyzed	Analyst
TEH in Water (PIRI)		GC/FID	1117842	2006/12/04	2006/12/06	AON
VPH in Water (PIRI)		PTGC/MS	1117664	2006/12/05	2006/12/05	LMU
ModTPH (T1) Calc. for Water	·	CALC	1115832	2006/11/30	2006/11/30	GGI
	Maxxam ID Sample ID Matrix	P83329 Dup MW2 Water		Collected Shipped Received	2006/11/30 2006/11/30	
Test Description		Instrumentation	Batch	Prepared	Analyzed	Analyst
IEH IN Water (PIRI)		GC/FID	1117842	2006/12/04	2006/12/06	AON
	Maxxam ID Sample ID Matrix	P83330 MW3 Water		Collected Shipped Received	2006/11/30 2006/11/30	
Test Description		Instrumentation	Batch	Prepared	Analyzed	Analyst
VOLLE WAter (PIRI)		GC/FID	1117842	2006/12/04	2006/12/06	AON
VPH In Water (PIRI)		PIGC/MS	111/664	2006/12/05	2006/12/05	LMU
Mod IPH (11) Calc. for Water		CALC	1115832	2006/11/30	2006/11/30	GGI
	Maxxam ID Sample ID Matrix	P83331 MW4 Water		Collected Shipped Received	2006/11/30 2006/11/30	
Test Description		Instrumentation	Batch	Prepared	Analyzed	Analvet
TEH in Water (PIRI)		GC/FID	1117842	2006/12/04	2006/12/06	AON
VPH in Water (PIRI)		PTGC/MS	1117664	2006/12/05	2006/12/05	I MU
ModTPH (T1) Calc. for Water		CALC	1115832	2006/11/30	2006/11/30	GGI
			····			


Maxxam Job #: A6D0220 Report Date: 2006/12/07 Driven by service and Science www.maxxamanalytics.com

Dillon Consulting Ltd. Task Order#: 11055148 Site#: QO2846 Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 03-2088-0300

Test Summary

	Maxxam ID	P83332		Collected	2006/11/30	
	Sample ID	MW5		Shipped		
	Matrix	Water		Received	2006/11/30	
Test Description		Instrumentation	Batch	Prepared	Analyzed	Analyst
TEH in Water (PIRI)		GC/FID	1117842	2006/12/04	2006/12/06	AON
VPH in Water (PIRI)		PTGC/MS	1117664	2006/12/05	2006/12/05	LMU
ModTPH (T1) Calc. for Water		CALC	1115832	2006/11/30	2006/11/30	GGI
	Maxvam ID	D83333		Collected	2006/11/20	
	Sampla ID	F 03333		Collected	2000/11/30	
	Sample (D	Wiveton		Shipped	2006/44/20	
	Matrix	vvaler		Received	2006/11/30	
Test Description		Instrumentation	Batch	Prepared	Analyzed	Analyst
TEH in Water (PIRI)		GC/FID	1117842	2006/12/04	2006/12/06	AON
VPH in Water (PIRI)		PTGC/MS	1117664	2006/12/05	2006/12/05	LMU
ModTPH (T1) Calc. for Water		CALC	1115832	2006/11/30	2006/11/30	GGI
	Maxxam ID	P83334		Collected	2006/11/30	
	Sample ID	DUP A		Shipped		
	Matrix	Water		Received	2006/11/30	
Test Description		Instrumentation	Batch	Prepared	Analyzed	Analyst
TEH in Water (PIRI)		GC/FID	1117842	2006/12/04	2006/12/06	AON
VPH in Water (PIRI)		PTGC/MS	1117664	2006/12/05	2006/12/05	LMU
ModTPH (T1) Calc. for Water	· · · ·	CALC	1115832	2006/11/30	2006/11/30	GGI
	Maxxam ID	P83335		Collected	2006/11/30	
	Sample ID	FIELD BLANK		Shipped		
	Matrix	Water		Received	2006/11/30	
Test Description	· ····	Instrumentation	Batch	Prepared	Analyzed	Analyst
TEH in Water (PIRI)		GC/FID	1117842	2006/12/04	2006/12/06	AON
VPH in Water (PIRI)		PTGC/MS	1117664	2006/12/05	2006/12/05	LMU
ModTPH (T1) Calc. for Water		CALC	1115832	2006/11/30	2006/11/30	GGI
	Maxxam ID	P83336		Collected	2006/11/30	
	Sample ID	TRIP BLANK		Shipped		
	Matrix	Water		Received	2006/11/30	

Test Description	Instrumentation	Batch	Prepared	Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	1117842	2006/12/04	2006/12/06	AON
VPH in Water (PIRI)	PTGC/MS	1117664	2006/12/05	2006/12/05	LMU
ModTPH (T1) Calc. for Water	CALC	1115832	2006/11/30	2006/11/30	GGI



Maxxam Job #: A6D0220 Report Date: 2006/12/07 Driven by service and Science www.maxxamanalytics.com

Dillon Consulting Ltd. Task Order#: 11055148 Site#: QO2846 Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 03-2088-0300

GENERAL COMMENTS

Results relate only to the items tested.

Page 8 of 10



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www.maxxamanalytics.com Dillon Consulting Ltd. Task Order#: 11055148 Site#: QQ2846

Site#: QO2846 Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 03-2088-0300

Quality Assurance Report Maxxam Job Number: A6D0220

			Date				
Batch			Analyzed				
Num Init	QC Type	Parameter	yyyy/mm/dd	Value	Recoverv	Units	OC Limits
1117664 LMU	Method Blank	Isobutylbenzene - Volatile	2006/12/05		102	%	70 - 130
		Benzene	2006/12/05	< 0.001		ma/L	
		Toluene	2006/12/05	< 0.001		ma/L	
		Ethylbenzene	2006/12/05	<0.001		ma/L	
1		Xylene (Total)	2006/12/05	<0.002		ma/L	
		C6 - C10 (less BTEX)	2006/12/05	<0.01		ma/L	
1117842 AON	Method Blank	Isobutylbenzene - Extractable	2006/12/06		102	%	30 - 130
		n-Dotriacontane - Extractable	2006/12/06		117	%	30 - 130
		>C10-C21 Hydrocarbons	2006/12/06	<0.05		ma/L	
		>C21- <c32 hydrocarbons<="" p=""></c32>	2006/12/06	<0.1		ma/L	
1117664 LMU	RPD [P83328-01]	Benzene	2006/12/05	NC		%	40
		Toluene	2006/12/05	NC		%	40
		Ethylbenzene	2006/12/05	NC		%	40
		Xylene (Total)	2006/12/05	NC		%	40
		C6 - C10 (less BTEX)	2006/12/05	NC		%	40
1117842 AON	RPD [P83329-01]	>C10-C21 Hydrocarbons	2006/12/06	NC		%	40
		>C21- <c32 hydrocarbons<="" p=""></c32>	2006/12/06	NC		%	40
1117664 LMU	MATRIX SPIKE						
	[P83330-01]	Isobutylbenzene - Volatile	2006/12/05		97	%	70 - 130
		Benzene	2006/12/05		113	%	70 - 130
		Toluene	2006/12/05		113	%	70 - 130
		Ethylbenzene	2006/12/05		113	%	70 - 130
		Xylene (Total)	2006/12/05		113	%	70 - 130
1117842 AON	MATRIX SPIKE						
	[P83330-01]	Isobutylbenzene - Extractable	2006/12/06		103	%	30 - 130
		n-Dotriacontane - Extractable	2006/12/06		113 (1)	%	30 - 130
		>C10-C21 Hydrocarbons	2006/12/06		76	%	30 - 130
		>C21- <c32 hydrocarbons<="" p=""></c32>	2006/12/06		74	%	30 - 130
1117664 LMU	LCS	Isobutylbenzene - Volatile	2006/12/05		99	%	70 - 130
		Benzene	2006/12/05		114	%	70 - 130
		Toluene	2006/12/05		111	%	70 - 130
		Ethylbenzene	2006/12/05		110	%	70 - 130
		Xylene (Total)	2006/12/05		113	%	70 - 130
1117842 AON	LCS	isobutylbenzene - Extractable	2006/12/06		100	%	30 - 130
		n-Dotriacontane - Extractable	2006/12/06		112	%	30 - 130
		>C10-C21 Hydrocarbons	2006/12/06		94	%	30 - 130
		>C21- <c32 hydrocarbons<="" td=""><td>2006/12/06</td><td></td><td>92</td><td>%</td><td>30 - 130</td></c32>	2006/12/06		92	%	30 - 130

LCS = Laboratory Control Sample

1) TEH sample contained sediment.

() I chi sample contained sediment



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Validation Signature Page

Maxxam Job #: A6D0220

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

GREG GILBERT, Scientific Specialist

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CAEAL have approved this reporting process and electronic report format.

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	and the second	

IOL / Maxxam CHECKLIST

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CLIENT CONTACT: North O'Came of C

CLIENT FAX #: 428-6955

CLIENT PROJECT #: Cose a loss - 0300

DATE: Nov 30104

Initial	Deficiency Type	Comments
	Custody seal on cooler is not intact	
	Temperature of bolities in cooler is >10°C	
	Sample bottles brosen in transit	
	No chain of custody accompanying the shipment	
	Chain of custody information is incomplete	
	Chain of custody is not signed and dated by consultant	
	Non-current version of Maxxam CoC for IOL samples	
	Bottles listed on CoC, but not included in shipment	
	Bottles in shipment, but not listed on CoC	
	Analysis required for each sample is not listed or	
	clearly specified on the CoC	
	Sample bottle tabeing issue (missing or incorrect)	
	Samples received >5 days after sampling	
	Samples received after analytical hold time has been	
	exceeded	
	Wrong sample bottle has been used	
	Sample was incorrectly preserved or headspace present	
NUD .	insufficient number of bottles provided by consultant	2840m for sample MWZ - une dependen
	Incorrect or missing task order number provided to Maxxam	wino to

Sample shipment has been checked for the above mentioned deficiencies. Sample integrity has not been compromised.

____Maxxam sample login process has been initiated.

*If a deficiency is present, please fax a copy of the completed form to the consultant and attached original and fax confirmation to the Chain of Custody.

Please see Suzanne Rogers if further explanation is needed.

ATL WI00019 ATL FCD 00113 Revision 1 Page 1 of 1

DILLON CONSULTING

137

March 30, 2007

IMPERIAL OIL LIMITED 585 Pleasant Street P. O. Box 1001 Dartmouth, Nova Scotia B2Y 3Z7

ATTENTION: David O'Carroll, P.Eng. Associate Site Remediation Specialist

Updated Tier II Criteria & Impacted Soil Volume Estimates - Final Report Former Imperial Oil Bulk Plant - 64 Mill Lake Road, Hubbards, N.S. (Site #Q02846)

Introduction

Dillon Consulting Limited (Dillon) previously completed an Environmental Site Assessment and an Atlantic RBCA Tier II screening (RBCA version 1.1) at the former Imperial Oil Bulk Plant located at 64 Mill Lake Road in Hubbards, N.S. The work was carried out in association with site dismantling activities. The petroleum infrastructure and building had been removed and the site is currently vacant and fenced.

Numerous soil and groundwater samples were collected for laboratory analysis during assessment activities (Dillon, November 2003). Soil sample locations are presented on Figure 1 (attached). Initially, analytical results were compared with Atlantic PIRI Tier I Look Up Table criteria (1999) for a commercial site with potable groundwater and sandy soils. Tier II site specific target levels (SSTL's) were developed for two different land use scenarios, the current vacant lot scenario and commercial slab on grade intended for development purposes, both with a residential potable offsite receptor (Dillon's "Tier II Criteria & Impacted Soil Volume Estimates - Final Report Former Imperial Oil Bulk Plant, 64 Mill Lake Road, Hubbards, N.S.", dated November 20, 2003).

In October 2003, Atlantic RBCA process and software was updated with version 2.1, including replacement of Atlantic PIRI Tier I Look Up Table criteria (1999) with Atlantic PIRI Tier I Risk Based Screening Level (RBSL) criteria (2003). Given the regulatory change, this correspondence is intended to present previous soil and groundwater assessment data, in comparison to current Atlantic PIRI RBSL's, as well as update the Tier II Screening utilizing RBCA version 2.1 software.

"THIS REPORT CONTAINS PROVISIONS LIMITING LIABILITY, THE SCOPE OF THE REPORT AND THIRD PARTY RELIANCE"

These documents and the information contained therein are confidential, property of Imperial Oil and any disclosure of same is governed by the provision of each of the applicable provincial and territorial freedom of information legislation, the Privacy Act (Canada) 1980-81-83, c.111, Sch.II"1, and the Access to Information Act (Canada) 1980-81-82-83, c.111, Sch.II"1", as such legislation may be amended or replaced from time to time.

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4

Page 2 IMPERIAL OIL LIMITED March 30, 2007

Comparison of Results with Current Tier I Criteria

Existing analytical results were compared with Atlantic PIRI Tier I RBSL's for a commercial site with potable groundwater and coarse grained soils. Petroleum hydrocarbon impacts, in excess of Atlantic PIRI RBSL's, were identified to exist in soil on the subject site (Table 1 and Figure 1, attached).

Petroleum hydrocarbon impacts, in excess of Atlantic PIRI Tier I RBSL's, were identified to exist in groundwater on the subject site (Table 2 and Figure 2, attached).

Update of Tier II Site Specific Target Levels

Updated Tier II criteria were derived with the RBCA (Risk-Based Corrective Action) Tool Kit for Atlantic Canada using procedures described in the Atlantic Reference Documentation for Petroleum Impacted Sites (Atlantic PIRI Committee, October 2003). Details of the Tier II evaluation methodology and assumptions can be provided upon request.

Table 3 presents the Tier I RBSL's for a commercial potable property and Tier II SSTL's for two land use scenarios: 1) long-term management of the site (i.e.; vacant, fenced lot), and 2) commercial (i.e., construction of slab-on-grade building for commercial use). Both scenarios include consideration of the offsite residential potable receptor.

Figure No. 1 presents analytical results of soil sampling in comparison to Tier I RBSL's and Tier II SSTLs for commercial development. Figure No. 2 presents the analytical results of groundwater sampling in comparison to the Tier I RBSL's and Tier II SSTL's for commercial development.

Table 4 presents the estimated volumes of on-site petroleum-impacted soil and groundwater for the two potential land use scenarios, based on Tier I and Tier II criteria.

Based on the results of the Tier II criteria derived with the Atlantic RBCA Tool Kit for Atlantic Canada, a potential unacceptable risk was identified for the site based on off-site migration of impacted groundwater. It is noted that groundwater analytical results collected to date exhibit no exceedances of Tier I RBSLs or Tier II SSTLs at those locations closest to the property boundary. As such, assuming current site conditions and land use remain unchanged (i.e., vacant, fenced lot), potential unacceptable risk would be managed through continued groundwater monitoring to confirm acceptable petroleum hydrocarbon concentrations at the property boundaries. Page 3 IMPERIAL OIL LIMITED March 30, 2007

Statement of Limitations

This report has been prepared and the work referred to in this report has been undertaken by Dillon Consulting Limited for Imperial Oil Limited. It is intended for the sole and exclusive use of Imperial Oil Limited, its affiliated companies and partners and their respective insurers, agents, employees and advisors (collectively, "Imperial Oil"). Any use, reliance on or decision made by any person other than Imperial Oil based on this report is the sole responsibility of such other person. Imperial Oil and Dillon Consulting Limited make no representation or warranty to any other person with regard to this report and the work referred to in this report and they accept no duty of care to any other person or any liability or responsibility whatsoever for any losses, expenses, damages, fines, penalties or other harm that may be suffered or incurred by any other person as a result of the use of, reliance on, any decision made or any action taken based on this report or the work referred to in this report.

The investigation undertaken by Dillon Consulting Limited with respect to this report and any conclusions or recommendations made in this report reflect Dillon Consulting Limited's judgement based on the site conditions observed at the time of the site inspection on the date(s) set out in this report. This report has been prepared for specific application to this site and it is based, in part, upon visual observation of the site, subsurface investigation at discrete locations and depths, and specific analysis of specific chemical parameters and materials during a specific time interval, all as described in this report. Unless otherwise stated, the findings cannot be extended to previous or future site conditions, portions of the site which were unavailable for direct investigation, subsurface locations which were not investigated directly, or chemical parameters, materials or analysis which were not addressed. Substances other than those addressed by the investigation may exist in areas of the site not investigated and concentrations of substances addressed which are different that those reported may exist in areas other that the locations from which samples were taken.

If site conditions or applicable standards change or if any additional information becomes available at a future date, modifications to the findings, conclusions and recommendations in this report may be necessary.

Other than by Imperial Oil, copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted without the express written permission of Dillon Consulting Limited. Nothing in this report is intended to constitute or provide a legal opinion. Page 4 IMPERIAL OIL LIMITED March 30, 2007

Closing

We trust this information satisfies your current requirements. If you require any clarification, please contact the undersigned.

Yours truly,

DILLON CONSULTING LIMITED

Brent Cox, B.Sc., P.Geo. Project Manager

BJC:jep Attachments Our File: 03-2088-0400

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		TPH	ND	
		В	ND	
		Т	ND	
		Ē	ND	
		X	ND	
			TP18	
		12	75-30	m
	and the second se	Три		
			ND	
S	T S-WALL		ND	
(1.0-3.0m)			-
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QU2046			4	



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TABLE 1 SOIL HYDROCARBON RESULTS											
			64 MI	LL LAKE RO	DROCARBON DAD, HUBBAI	RDS, NOVA	SCOTIA				
			1	DITING					,		
Sample Location	Sample Date	Depth (m)	Benzene	Toluene	E. Benzene	Xvlenes	C6 - C10	Petroleum H C10 - C21	C21 - C32	pm) Tota	l
• TP I/I	July 28/03	0-0.5	ND	ND	ND	ND	ND	36	52	88**	F,L
TP 1/3	July 28/03	1.2	ND	ND	ND	ND	5.5	250	170	420**	F
TP 1/9	July 28/03	4.0-4.3	ND ND	ND	ND	ND	ND 25.0	ND 1100	ND 420	ND	-
TP 2/3	July 28/03	10-15	0.008	0.054	2.14	110	434	5000	520	6000**	г F
Dup A (F/D)	July 28/03	1.0-1.5	ND (0.05)	ND (0.2)	2.47	12.9	722	5700	620	7100**	F
TPH Frac	July 28/03	1.0-1.5	ND	0.055	2.14	11.0	382	4872	450	5710**	F
TP 3/1	July 28/03	0-0.5	ND	0.211	ND	ND	ND	ND	29	ND	L
TP 3/6	July 28/03	2,5-3,0	NÐ	ND	ND	ND	ND	ND	ND	ND	-
Lab Dup	July 28/03	2,5-3,0	ND	ND	ND	ND ND	ND	ND	ND	ND	-
TP5/2	July 28/03	0-0.5	ND ND		ND 0211	2.43	NU 280	<u>ND</u>	ND 480	ND 6700**	-
Dan B (E/D)	July 28/03	0.5-1.0	ND (0.05)	ND (0.2)	0.181	2.45	268	5700	460	6400**	F
TP 5/4	hily 28/03	2.0-3.0	ND (0.05)	ND (0.05)	1.83	15.9	420	0700	400 ND	510**	F
TP 6/5 ®	July 28/03	2.0-2.5	ND	ND	ND	ND	ND	ND	ND	ND	
TP7/2	July 28/03	0.5-1.0	ND	ND	ND	ND	ND	200	33	230**	F
TP 8/3	July 28/03	1.0-1.5	ND	ND	ND	ND	ND	ND	ND	ND	-
TP 9/1	July 28/03	0-0.5	ND	0.308	0.157	7.20	52,3	670	82	810**	F
TP 9/5	July 28/03	2,5-3,0	ND ND	ND	ND	ND	ND ND	ND 42	ND 28	ND	-
TP 10/5	July 28/03	20-25	ND ND	ND	ND	ND		43 ND	28 ND	ND	r
TP 11/2	July 28/03	0.4-0.9	ND	ND	ND	ND	10,6	420	84	510**	F
TP t1/5	July 28/03	2.0-2.5	ND	ND	0.383	2.44	209	260	21	490*	G,F
Lab Dup	July 28/03	2,0-2,5	ND	ND	0.302	2.10	181	250	20	450*	G,F
Dup C (F/D)	July 28/03	2.0-2.5	ND	ND	0.048	0,346	67.6	200	20	290*	G,F
TPH Frac	July 28/03	2.0-2.5	ND	ND	0.357	2.72	105,6	274,3	ND	380*	G,F
TPH Frac (L/D)	July 28/03	2.0-2.5	ND	ND	0.296	2.30	97.3	273,8	ND	371*	G,F
TP 12/2	July 31/03	0.3-0.8	ND ND	ND ND	ND ND	ND	ND	ND	17 ND	ND	L
TP13/5 @	July 31/03	2.0-2.0	ND	ND	ND	ND	ND	ND	ND	ND	<u> </u>
TP 14/3 ®	July 31/03	1.0-2.0	ND	ND	ND	ND	ND	ND	ND	ND	-
TP15/1 ®	July 31/03	0.0-0.6	ND	ND	ND	ND	ND	ND	ND	ND	
Lab Dup &	July 31/03	0,0-0,6	ND ND	ND ND	ND	ND	ND	ND	ND	ND	-
Dup D (F/D) @	July 31/03	2.5-3.5	ND	ND	ND	ND	ND	ND	ND	ND	-
TP16/2 ®	July 31/03	0.4-1.0	ND	ND	ND	ND	ND	ND	46	46***	L
TP 16/4 ®	July 31/03	2.0-2,5	NÐ	ND	ND	ND	ND	ND	ND	ND	-
TP17/2	Aug 1/03	0.8-1.0	ND	ND	ND	ND	ND	ND	ND	ND	-
TP17/6 TP18/2	Aug 1/03	0.4-1.0	ND		ND 1	ND ND		ND	ND 18	ND	-
TP18/5	Aug 1/03	2,75-3,0	ND	ND	ND	ND	ND	ND	ND	ND	- 1
TP19/1	Aug 1/03	0,0-0,5	ND	ND	ND	ND	ND	ND	ND	ND	-
TP19/5	Aug 1/03	2.0-2.5	ND	ND	ND	ND	ND	ND	ND	ND	- 1
TP20/2	Aug 1/03	2.0-2.5	ND		ND ND						
TP20/6	Aug 1/03	2.5-3,5	ND	ND	ND	ND	ND	ND	ND	ND	-
Dup E (F/D)	Aug 1/03	2.5-3.5	ND	ND	ND	ND	ND	ND	ND	ND	-
ST Base	July 28/03	3.0	ND	ND	ND	ND	ND	19	30	49**	F,L
ST 5-Wall ST F-Wall	Jury 28/03 July 28/02	1.0-3.0	ND ND	ND	ND		ND 21.2	ND 1100	280	ND 1400*	<u></u>
Atlantic PIRI Tier I	RBSL	1.0-0.0		110	111/		<u>ک, د ک</u>	Gagolina	002	1400	<u> </u>
Commercial, Potab	le		0.03	0,38	0.08	11		Fuel Oil		7,400	**
Coarse grained								#6 Oil		10,000*	***
Atlantic PIRI Tier I	RBSL							Gasoline		39*	
Residential, Potable	•		0.03	0.38	0,08	11		Fuel Oil		140*	*
Coarse grained	ion Limit		0.025	0.025	0.025	0.050	25	#0 UII	15	**090 20	·T
ND - Not detected	aon Liniil		ND (0.05) - Analy	te was not detector	d shoved the EOT	o,ooo	in norenthesis	1.3	13	34	
G - Resembles Gasoline			TP - Test Pit	e nea not dotecto	a agorea die EQE()		in parentitesis.				
F - Resembles Fuel Oil			F/D - Field Duplic	ate							
L - Resembles Lube Oil											
8) 8 - 1 - 1	- Compared to Res	idential Criteria (l	based on adjacent la	nd use)							1
5010 Lag	- Exceeds Atlantic	PIRI HER I RESL	s connercial, Pota	ioie, Coarse grains	ea.						
Nata Basile *	- Exceeds Atlantic	irana incrindist. Baabla as 24-25	s residential, Potal	ne, coarse grainei (mpu ! !	u (pasco on adjacen	a aano use).	· ·	de come la come de la come			
ste: For the purpose of comparison to applicable guideline criteria, the Modified TPH hydrocarbon range assumed to be most specific to each sample result was based on laboratory semblance data and Atlantic PIRI Reference Documentation (October, 2003).											

Note: For the purpose of comparison to applicable guideline criteria, the Modified TPH hydrocarbon range assumed to be most specific to each sample result was based on laboratory resemblance data and Atlantic PIRI Reference Documentation (October, 2003).

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	TABLE 2									
	GROUNDWATER HYDROCARBON RESULTS 64 MILL LAKE ROAD, HUBBARDS, NOVA SCOTIA									
			64 MILL I	LAKE ROAD,	, HUBBARDS	5, NOVA SCO	TIA			
Sample	Sample	<u> </u>	BTEX Conce	ntration (ppm)		I	Petroleum 1	Hydrocarbons (pp	m)	
Location	Date	Benzene	Toluene	E. Benzene	Xylenes	C6 - C10	C10 - C21	C21 - C32	Total	
					[l		Í — — — — — — — — — — — — — — — — — — —	T	
MW1®	Aug 15/03	ND	ND	ND	ND	ND	ND	ND	ND	-
	Apr 19/04	ND	ND	ND	ND	ND	0.06	ND	ND	F
		1								
MW2	Aug 15/03	ND	ND	ND	ND	ND	ND	ND	ND	-
	Apr 19/04	ND	ND	ND	ND	ND	ND	ND	ND	
MW3	Aug 15/03	ND ND	ND	ND	ND	ND	0.05	ND	ND	F
J'	Apr 19/04		ND	ND	ND	ND	ND	ND	ND	-
M3374 @	Aug 15/02	NUD		NID	NID			ND		
	Aug 15/03			ND		ND		ND	ND	-
Dupr(rib)	Aug 15/05							ND		-
	Api 15/04							ND	ND	
MW5	Aug 15/03	ND	ND	0.005	0.008	0.07	0.22	ND	0.3**	F
Lab Dup	Aug 15/03	ND		0.005	0.008	0.07	0.22	ND	0.3**	F
	Apr 19/04			ND	NTA	0.07 ND	0.22			r
<u> </u>	Api 19/04			ND	IND		0,00	ND	ND	r
MW6	Aug 15/03	ND	ND	ND	0.006	0.2	15.04	0.85	16.1**	F
Lab Dup	Aug 15/03	ND	ND	ND	0.006	0,17	17.18	1.05	18.4**	F
	Apr 19/04	ND	ND	ND	ND	0.1	12	0.6	13**	F
Dup A (F/D)	Apr 19/04	ND	ND	ND	ND	0.09	13	0.6	14**	F
Atlantic PIRI Tier	t I RBSLs	1	1	1			Gasoline		19*	
Commercial, Pote	ıble	0,005	0.024	0,0024	0.30		Fuel Oit		15**	I
Coarse grained		I]					#6 Oil		20***	
Atlantic PIRI Tier	I RBSLs		,				Gasoline		4.4*	<u>.</u>
Residential, Potab	le	0,005	0.024	0.0024	0.30		Fuel Oil		3.2**	
Coarse grained			i!				#6 Oil		7.8***	
Estimated Quantif	tation Limit	0.001	0.001	0.001	0.002	0.01	0.05	0.1	0.2	
ND Not detector										<u> </u>

F/D - Field duplicate

Ĩ

G - Resembles Gasoline

F - Resembles Fuel Oil

L - Resembles Lube Oil

Bold

R - Compared to Residential Criteria (based on adjacent land use)

- Exceeds Atlantic PIRI Tier I RBSLs (Commercial, Potable, Coarse grained)

Bold - Exceeds Atlantic PIRI Tier I RBSLs Residential, Potable, Coarse grained (based on adjacent land use).

Note: For the purpose of comparison to applicable guideline criteria, the Modified TPH hydrocarbon range assumed to be most

specific to each sample result was based on laboratory resemblance data and Atlantic PIRI Reference Documentation (October, 2003).

Tier II Site-Specific Target Levels (SSTLs) Former Imperial Oil Bułk Plant, 64 Mill Lake Road, Hubbards, N.S. Table 3

-	Maximum	Tier I	RSLs	Tier II SS	TLS
Parameter	On-Site Concentration	Commercial Potable	Residential Potable	Vacant Lot, Fenced,	Commercial Potable, Slab
		Coarse grained	Coarse grained	Off-site Residential Potable	On-grade
Soil (ppm)					
mod TPH	1400*	450	39	>Res	2100
Benzene	0.008	0.03	0.03	390	4.4
Toluene	0.308	0.38	0.38	>Res	9.66
Ethyl Benzene	2.47	0.08	0.08	>Res	10000
Xylenes	15.9	11	F	>Res	120
Groundwater (ppm)					
mod TPH	18.4	15	3.2	2.3	2.8
Benzene	nd	0.005	0.005	0.005	0.0019
Toluene	nd	0.024	0.024	0.024	0.021
Ethyl Benzene	0.005	0.0024	0.0024	0.0024	0.0045
Xylenes	0.008	0.3	0.3	0.3	0.58
* - Hinhest Tier I RBSI exce	edance (das resemblai	nce)			

- Fuguest then in Nove excending two recentions.
> Res = Target risk level is not exceeded for chemical present at any concentration.

> Sol = Target risk level is not exceeded for all possible dissolved concentrations below which free product is predicted to occur.

ND = Not Detected

Note: The soil leaching to groundwater pathway was turned off based on measured groundwater concentrations.

L:\PROJECTS\Final\032088\spread\[Hubbards Analytical Tables updated.xls]Table4

Table 4 Petroleum - Impacted Material Volume Estimates Former Imperial Oil Limited Bulk Plant 64 Mill Lake Road, Hubbards, N.S.

	On-site Volumes (In-situ m ³)							
Impacted Media	Tier RBSLs Commercial	Tier II Vacant	SSTLs Commercial					
	Non-Potable Coarse grained	Lot Fenced	Slab on Grade					
Soil	1220	0	0					
Groundwater	150*	0	150*					

UN = Unknown

Vacant, fenced, unused lot (intended for property ownership by Imperial Oil)

Commercial = assumes construction of stab-on-grade type building (intended for property transfer scenario) Volume estimates include consideration of aesthetic criteria (eg. stained surface soil, mobile product, etc.)

* - Based on anticipated groundwater volume requiring removal during remedial excavation.

L:\PROJECTS\Final\032088\spread\[Hubbards Analytical Tables updated.xls]Table4



May 28, 2007

IMPERIAL OIL LIMITED 585 Pleasant Street P. O. Box 1001 Dartmouth, Nova Scotia B2Y 3Z7

ATTENTION: David O'Carroll, P.Eng. Associate Site Remediation Specialist

Risk Management Plan, Former Imperial Oil Bulk Plant, 64 Mill LakeRoad, Hubbards, N.S. (Site #Q02846)

Dillon Consulting Limited (Dillon) is pleased to submit the following Risk Management Plan for the former Imperial Oil Bulk Plant located at 64 Mill LakeRoad, Hubbards, Nova Scotia.

Introduction

Dillon Consulting Limited (Dillon) previously completed an Environmental Site Assessment and an Atlantic RBCA Tier II screening (RBCA version 1.1) at the former Imperial Oil Bulk Plant located at 64 Mill Lake Road in Hubbards, N.S. The work was carried out in association with site dismantling activities. The petroleum infrastructure and building have been removed and the site is currently a vacant fenced lot.

Numerous soil and groundwater samples were collected for laboratory analysis during assessment activities (Dillon, November 2003). Soil sample locations are presented on Figure 1 (attached). Initially, analytical results were compared with Atlantic PIRI Tier I Look Up Table criteria (1999) for a commercial site with potable groundwater and sandy soils. Tier II site specific target levels (SSTL's) were developed for two different land use scenarios, the current vacant lot scenario and commercial slab on grade intended for development purposes, both with a residential potable offsite receptor (Dillon's "Tier II Criteria & Impacted Soil Volume Estimates - Final Report Former Imperial Oil Bulk Plant, 64 Mill Lake Road, Hubbards, N.S.", dated November 20, 2003).

"THIS REPORT CONTAINS PROVISIONS LIMITING LIABILITY, THE SCOPE OF THE REPORT AND THIRD PARTY RELIANCE"

These documents and the information contained therein are confidential, property of Imperial Oil and any disclosure of same is governed by the provision of each of the applicable provincial and territorial freedom of information legislation, the Privacy Act (Canada) 1980-81-83, c.111, Sch.II^{'1}, and the Access to Information Act (Canada) 1980-81-82-83, c.111, Sch.II^{'1}, as such legislation may be amended or replaced from time to time.

137 Chain Lake Drive Suite 100 Halifax Nova Scotia Canada B3S 1B3 Telephone (902) 450-4000 Fax (902) 450-2008

ISO 9001 Registered

Page 2 IMPERIAL OIL LIMITED May 28, 2007

In October 2003, Atlantic RBCA process and software was updated with version 2.1, including replacement of Atlantic PIRI Tier I Look Up Table criteria (1999) with Atlantic PIRI Tier I Risk Based Screening Level (RBSL) criteria (2003). Given the regulatory change, this correspondence is intended to present previous soil and groundwater assessment data, in comparison to current Atlantic PIRI RBSL's, as well as update the Tier II Screening utilizing RBCA version 2.1 software.

Comparison of Results with Current Tier I Criteria

Existing analytical results were compared with Atlantic PIRI Tier I RBSL's for a commercial site with potable groundwater and coarse grained soils. Petroleum hydrocarbon impacts, in excess of Atlantic PIRI RBSL's, were identified to exist in soil on the subject site (Table A-1, Attachment A).

Petroleum hydrocarbon impacts, in excess of Atlantic PIRI Tier I RBSL's, were identified to exist in groundwater on the subject site (Table A-2, Attachment A).

DEVELOPMENT OF TIER II SITE SPECIFIC TARGET LEVELS

Calculated Tier II criteria (SSTLs) were derived with the RBCA (Risk-Based Corrective Action) Tool Kit for Atlantic Canada using procedures described in the Atlantic Reference Documentation for Petroleum Impacted Sites (Atlantic PIRI Committee, October 2003). In developing Tier II SSTL's, changes to default values were undertaken based on site specific data collected during decommissioning and assessment activities. Parameters for which changes to default values were undertaken included: TPH fractionation, hydraulic conductivity, hydraulic gradient, groundwater elevation data and extent of impact. These changes to default values are summarized in Table 1. No other changes were made to default values. Model input/output tables are provided as Attachment B for reference.

	Table 1 Changes to Default Atlantic RBCA V	/alues
Parameter	Site Specific	c Value
	Groundwater (mg/L)	Soil (mg/kg)
Aliph >C06-C08	2.0E-2	1.3E+2
Aliph >C08-C10	4.0E-2	2.0E+2
Aliph >C10-C12	1.9E+0	1.5E+2
Aliph >C12-C16	5.5E+0	2.6E+2
Aliph >C16-C21	2.2E+0	1.5E+2
Aliph >C21-C34	4.6E-1	2.7E+1

"Automotion

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Page 3 IMPERIAL OIL LIMITED May 28, 2007

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	Table 1 Changes to Default Atlantic RBCA	Values		
Parameter	Site Speci	fic Value		
an An an an An 2019 an Anna an	Groundwater (mg/L)	Soil (mg/kg)		
Arom >C07-C08	5.0E-4	3.1E-1		
Arom >C08-C10	1.2E-1	4.3E+1		
Arom >C10-C12	1.2E+0	1.0E+2		
Arom >C12-C16	4.1E+0	1.8E+2		
Arom >C16-C21	2.3E+0 1.5E+2			
Arom >C21-C35	5.9E-1 2.7E+1			
Benzene	5.0E-4	2.5E-2		
Toluene	5.0E-4	3 1E-1		
Ethylbenzene	5.0E-3	2 5E+0		
Xylenes	8.0E-3	1.6E+1		
hydraulic conductivity	1.0E-4	cm/s		
hydraulic gradient	0.0	2		
depth to groundwater	0.39	9 m		
area of impacted soil	890	m ²		
depth of impacted soil	0 n	n		
area of impacted groundwater	1480	m ²		
depth of impacted groundwater	2.0	m		

Tier II SSTLs established for the site versus maximum onsite concentrations from decommissioning and assessment activities are presented as follows:

Tier II SS7 Forme	Table 2 [L's versus Maximum Onsite C er Imperial Oil Bulk Plant, Milf	oncentrations ord, N.S.
Parameter	Maximum Onsite Concentration	Onsite SSTL's Vacant Lot (Fenced)
Soil (mg/kg)		
TPH	1400	48
Benzene	0.025	0.0019
Toluene	0,308	0.021
Ethyl Benzene	241	0.0045
Xylenes	1555	0.58

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Page 5 IMPERIAL OIL LIMITED May 28, 2007

Statement of Limitations

This report has been prepared and the work referred to in this report has been undertaken by Dillon Consulting Limited for Imperial Oil Limited. It is intended for the sole and exclusive use of Imperial Oil Limited, its affiliated companies and partners and their respective insurers, agents, employees and advisors (collectively, "Imperial Oil"). Any use, reliance on or decision made by any person other than Imperial Oil based on this report is the sole responsibility of such other person. Imperial Oil and Dillon Consulting Limited make no representation or warranty to any other person with regard to this report and the work referred to in this report and they accept no duty of care to any other person or any liability or responsibility whatsoever for any losses, expenses, damages, fines, penalties or other harm that may be suffered or incurred by any other person as a result of the use of, reliance on, any decision made or any action taken based on this report or the work referred to in this report.

The investigation undertaken by Dillon Consulting Limited with respect to this report and any conclusions or recommendations made in this report reflect Dillon Consulting Limited's judgement based on the site conditions observed at the time of the site inspection on the date(s) set out in this report. This report has been prepared for specific application to this site and it is based, in part, upon visual observation of the site, subsurface investigation at discrete locations and depths, and specific analysis of specific chemical parameters and materials during a specific time interval, all as described in this report. Unless otherwise stated, the findings cannot be extended to previous or future site conditions, portions of the site which were unavailable for direct investigation, subsurface locations which were not investigated directly, or chemical parameters, materials or analysis which were not addressed. Substances other than those addressed by the investigation may exist in areas of the site not investigated and concentrations of substances addressed which are different that those reported may exist in areas other that the locations from which samples were taken.

If site conditions or applicable standards change or if any additional information becomes available at a future date, modifications to the findings, conclusions and recommendations in this report may be necessary.

Other than by Imperial Oil, copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted without the express written permission of Dillon Consulting Limited. Nothing in this report is intended to constitute or provide a legal opinion. Page 6 IMPERIAL OIL LIMITED May 28, 2007

Closing

We trust this information satisfies your current requirements. If you require any clarification, please contact the undersigned.

Yours truly,

DILLON CONSULTING LIMITED

Brent J. Cox, B.Sc., P.Geo. Senior Project Manager

BJC:tcl Attachments Our File: 02-0805-0200

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				SOIL H	TABLE A-1 YDROCARBON	RESULTS	F1 4				
			· · · · · ·	DEPENDENT	RUAD, HUBBAR						
Sample Location	Sample Date	Sample Depth (m)	Benzene	BTEX Conce Toluene	E. Benzene	Xvlencs	C6 - C10	Petroleum C10 - C21	Hydrocarbons (pp C21 - C32	n) Tota	 al
TP 1/1	July 28/03	0-0.5	ND	ND	ND	ND	ND	36	52	88**	F,L
TP 1/3	July 28/03	1.2	ND	ND	ND	ND	5,5	250	170	420**	F
TP 1/9	July 28/03	4.0-4.3	ND	ND	ND	ND	ND	ND	ND	ND	-
TP 2/1	July 28/03	0-0.5	ND	ND	ND	0,155	25,0	1100	430	1500**	F
TP 2/3	July 28/03	1.0-1.5	0.008	0.054	2.14	11.0	434	5000	520	6000**	F
Dup A (F/D)	July 28/03	1.0-1.5	ND (0.05)	ND (0.2)	2.47	12.9	722	5700	620	7100**	F
TPH Frac	July 28/03	1.0-1.5	ND	0.055	2.14	11,0	382	4872	450	5710**	F
TP 3/1	July 28/03	0-0.5	ND	0.211	ND	ND	ND	ND	29	ND	L
TP 3/6	July 28/03	2,5-3.0	ND .	ND	ND	ND	ND	ND	ND	ND	-
Lab Dup	July 28/03	2.5-3.0	ND	ND	ND	ND	ND	ND	ND ND	ND	
TP 4/1 TP5/2	July 28/03	0-0.5	ND		0.211	2.43	280	5000	480	5700**	- F
Dun B (F/D)	July 28/03	0,5-1,0	ND (0.05)	ND (0.2)	0.481	2.40	268	5700	460	6400**	r F
TP 5/4	July 28/03	20-30	ND (0.05)	ND (0.05)	1.83	15.9	420	93	ND	510**	F
TP 6/5 (8)	July 28/03	2.0-2.5	ND	ND	ND	ND	ND	ND	ND	ND	
TP7/2	July 28/03	0.5-1.0	ND	ND	ND	ND	ND	200	33	230**	F
TP 8/3	July 28/03	1.0-1.5	ND	ND	ND	ND	ND	ND	ND	ND	-
TP 9/1	July 28/03	0-0,5	ND	0.308	0.157	7,20	52,3	670	82	810**	F
TP 9/5	July 28/03	2.5-3.0	ND	ND	ND	ND	ND	ND	ND	ND	
TP 10/1	July 28/03	0-0.5	ND	ND	ND	ND	ND	43	28	70**	F
TP 10/5	July 28/03	2.0-2.5	ND	ND	ND	סא	ND	ND	ND	ND	-
TP 11/2	July 28/03	0.4-0.9	ND	ND	ND	ND	10.6	420	84	510**	F
TP 11/5	July 28/03	2.0-2.5	ND	ND	0.383	2.44	209	260	21	490*	G,F
Lab Dup	July 28/03	2.0-2.5	ND	ND	0.302	2.10	181	250	20	450*	G,F
Dup C (F/D)	July 28/03	2.0-2,5	ND	ND	0.048	0.346	67,6	200	20	290*	U,F
TDU Free (1 /D)	July 28/03	2.0-2.5		ND	0.357	2.72	103.6	274.5	ND	380*	G,F
TR 12/2	July 28/03	03.08	ND		ND	2.50 ND		ND	17	ND	
TP 12/6	hily 31/03	2.0-2.5	ND	ND	ND	ND	ND	ND	ND	ND	
TP13/5 🕸	July 31/03	2,0-3,0	ND	ND	ND	ND	ND	ND	ND	ND	
TP 14/3 🔞	July 31/03	1.0-2.0	ND	ND	ND	ND	ND	ND	ND	ND	-
TP15/1 :®	July 31/03	0.0-0.6	ND	ND	ND	ND	ND	ND	ND	ND	-
Lab Dup 🕅	July 31/03	0.0-0,6	סא	ND	ND	ND	ND	ND	ND	ND	-
TP15/6 🕸	July 31/03	2.5-3.5	ND	ND	ND	ND	ND	ND	ND	ND	-
Dup D (F/D) @	July 31/03	2.5-3.5	ND	ND	ND	ND	ND	ND	ND	ND	<u> </u>
TP16/2 00	July 31/03	0.4-1.0	ND	ND	ND	ND	ND	ND	46	46***	L
TP17/2	Aug 1/03	0.8-1.0	ND	D	ND	ND	ND		ND		
TP17/6	Aug 1/03	3.0-3.2	ND	ND	ND	ND	ND	ND	ND	ND	-
TP18/2	Aug 1/03	0,4-1,0	NÐ	ND	ND	ND	ND	ND	18	ND	L
TP18/5	Aug 1/03	2.75-3.0	ND	ND	ND	ND	ND	ND	ND	ND	
TP19/1	Aug 1/03	0.0-0.5	ND	ND	ND	ND	ND	ND	ND	ND	-
TP19/5	Aug 1/03	2.0-2.5	ND	ND	ND	ND	ND	ND	ND	ND	-
Lab Dup	Aug 1/03	2.0-2.5	ND	ND	ND	ND	ND	ND	ND	ND	
TP20/2	Aug 1/03	0.3-0.7	ND	ND	ND	ND	ND	ND	ND	ND	-
1r20/6	Aug 1/03	2.3-3.5	ND ND	UN CIN	ND	ND ND			ND	ND	-
ST Base	July 28/03	3.0		ND		ND		10	30	49**	
ST S-Wall	July 28/03	1.0-3.0	ND	ND	ND	ND	ND	ND	ND	ND	
ST E-Wali	July 28/03	1.0-3.0	ND	ND	ND	ND	21.2	1100	280	1400*	G,F
Atlantic PIRI Tier I RB	SL				i	Ī		Gasoline		450*	
Commercial, Potable			0.03	0.38	0.08	11		Fuel Oil		7,400	••
Coarse grained								#6 Oil		10,000	•+*
Atlantic PIRI Tier I RBS	SL.							Gasoline		39*	
Residential, Potable			0.03	0.38	0.08	11		Fuel Oil		140**	•
Coarse grained								#6 Oil	····	690**	<u>*</u>
Estimated Quantitation	Limit		0.025	0,025	0.025	0.050	2.5	15	15	32]
ND - Not detected			ND (0.05) - Analy	c was not detected	aboved the EQL;	aised EQL listed	n parenthesis.				
3 - Resembles Gasoline			TP - Test Pit								5
- Kesembles Fuel Oil			F/D - Field Duplica	ate							
- resenutes rube Off	Commercial P	Idential Column 11	and on adjacent f	(and here)							
Boid	 Compared to Kes Exceede Atlantic 	PIRI Tier I R B S I	ascu on aujacent la s Commercial Pote	na uso) ble. Coarce oraine	d						
	warmes munitify	THE THE THE PARTY AND A THE PA	a commencial, r'Old	one, course gradie	···						1

- Exceeds Atlantic PIRI Tier I RBSLs Residential, Potable, Coarse grained (based on adjacent land use). Bold

Note: For the purpose of comparison to applicable guideline criteria, the Modified TPH hydrocarbon range assumed to be most specific to each sample result was based on laboratory resemblance data and Atlantic PIRI Reference Decumentation (October, 2003).

TABLE A-2 GROUNDWATER HYDROCARBON RESULTS 64 MILL LAKE ROAD, HUBBARDS, NOVA SCOTIA

Sample	Samala		PTEV Concern	testion (nam)		T	Datus laura	0.1		
Location	Date	Benzene	Toluene	E. Benzene	Xylenes	C6 - C10	C10 - C21	C21 - C32	Total	· · ·
MW1	Aug 15/03	ND	ND	ND	ND	ND		ND		<u> </u>
	Apr 19/04	ND	ND	ND	ND	ND	0.06		ND	-
	Oct 28/04	ND	ND	ND	ND	ND	ND	ND	ND	1
	Apr. 6/05	ND	ND	ND	ND	ND	ND	ND	ND	
	Oct. 13/05	ND	ND	ND	ND	ND	ND	ND	ND	_
	Nov, 30/06	ND	ND	ND	ND	ND	ND	ND	ND	
Lab Dup	Nov. 30/06	ND	ND	ND	ND	ND	-			
MW2	Aug 15/03	ND	ND	ND	ND	ND	ND	ND	ND	
	Apr 19/04	ND	ND	ND	ND	ND	ND	ND	ND	-
	Oct 28/04	ND	ND	ND	ND	NÐ	ND	ND	ND	-
	Oct 28/04	ND	ND	ND	ND	ND	ND	ND	NÐ	-
Dup A (F/D)	Apr. 6/05	ND	ND	ND	ND	ND	ND	ND	ND	-
	Oct. 13/05	ND	ND	ND	ND	ND	ND	ND	ND	-
	Nov. 30/06	ND	ND	ND	ND	ND	ND	ND	ND	-
Lab Dup	Nov. 30/06		-	-	-	<u>-</u>	ND	ND	-	-
MW3	Aug 15/03	ND	ND	ND	ND	ND	0.05	ND	ND	F
	Apr 19/04	ND	ND	ND	ND	ND	ND	ND	ND	-
	Oct 28/04	ND	ND	ND	ND	ND	ND	ND	ND	-
	Apr. 6/05	ND	ND	ND	ND	NÐ	NÐ	ND	ND	-
	Oct. 13/05	ND	NÐ	ND	ND	ND	ND	ND	ND	-
	Nov, 30/06	ND	ND	ND	ND	ND	ND	ND	ND	-
MW4 ®	Aug 15/03	ND	ND	ND	ND	ND	ND	ND	ND	-
Dup F (F/D)	Aug 15/03	ND	ND	ND	ND	NÐ	ND	ND	ND	-
	Apr 19/04	ND	ND	ND	ND	ND	ND	ND	ND	-
	Oct 28/04	ND	ND	ND	ND	ND	ND	ND	ND	-
	Apr. 6/05	ND	ND	ND	ND	ND	ND	ND	ND	-
	Oct. 13/05	ND	ND	ND	ND	ND	NÐ	ND	ND	-
	Nov. 30/06	ND	ND	ND	ND	ND	ND	ND	ND	-
MW5	Aug 15/03	ND	ND	0.005	0,008	0.07	0.22	ND	0.3**	F
Łab Dup	Aug 15/03	ND	ND	0.005	0,008	0.07	0.22	ND	0.3**	F
	Apr 19/04	ND	ND	ND	ND	ND	0.06	ND	ND	F
	Oct 28/04	ND	ND	ND	ND	ND	0.06	ND	ND	F
	Apr. 6/05	ND	ND	ND	ND	ND	0.05	ND	ND	F
	Oct. 13/05	ND	ND	ND	ND	ND	ND	ND	ND	- 1
	Nov, 30/06	ND	ND	ND	ND	ND	ND	ND	ND	-
Dup A (F/D)	Nov. 30/06	ND	ND	ND	ND	ND	ND	ND	ND	-
Atlantic PIRI Tier	I RBSLs (2003)									
							Gasoline		19*	
Commercial,		0,005	0.024	0,0024	0.3		Fuel Oil		15**	1
otable, Coarse G	rained						#6 Oil		20***	
							Gasoline		4,4*	
Residential		0.005	0.024	0.0024	0.3		Fuel Oil		3.2**	
otable, Coarse G	rained						#6 Oil		7.8***	
ite Specific Tier	II Guidelines (upc	lated Nov. 2004)								
acant Lot, Fence	d,	0.005	0.024	0,0024	0.3				2.3	
on-site, Residenti	al, Potable									
stimated Quantita	tion Limit	0.001	0,001	0.001	0.002	0.01	0.05	1.0	0.2	
D - Not detected										
D - Field duplice	ite									
Personales Gas										
- Reembles fue	- Oil									
- Resembles Luc	e on esidential Ceitaria	(haved on adia	nt land use)							
sold -	Exceeds Atlantic	PIRI Tier I Guide	lines (commercial	potable, coarse-o	rained)					
	Exceeds Atlantic	PIRI Tior I Guida	lines (residential	notable coarse -	(hand)					
-	Discours Alignine	THE TOTAL	ines (residential,	potable, coarse gr	anicu)					
-	Exceeds Atlantic	PIRI Tier II SSTL	s (vacant lot, fenc	ed, off-site, reside	ntial, potable)					
ote: For the purp	ose of comparison	to applicable guid	deline criteria, the	Modified TPH hy	drocarbon rang	e assumed to be n	nost			
pecific to each sai	npie result was ba	ised on laboratory	resemblance data	and Atlantic PIRI	Reference Doc	umentation (Octo	ber 2003).			

TABLE A-2 (cont'd) GROUNDWATER HYDROCARBON RESULTS 64 MILL LAKE ROAD, HUBBARDS, NOVA SCOTIA

Sample	Sample		BTEX Concent	ration (pom)			Petroleum I	Ivdrocarbons (pp	m)			
Location	Date	Benzene	Toluene	E. Benzene	Xylenes	C6 - C10	C10 - C21	C21 - C32	Total			
MW6	Aug 15/03	ND	ND	ND	0.006	0.2	15.04	0.85	16.1**	F		
Lab Dup	Aug 15/03	ND	ND	ND	0,006	0.17	17.18	1.05	18.4**	F		
	Apr 19/04	ND	ND	ND	ND	0.10	12	0,6	13.4	F		
Dup A	Apr 19/04	ND	NÐ	ND	ND	0.09	13	0,6	14**	F		
-	Oct 28/04	ND	ND	ND	ND	0.11	11	0.5	1244	F		
Lab Dup	Oct 28/04	ND	ND	ND	ND	0.14	12	0.5	. 13**	F		
	Арг. 6/05	ND	ND	ND	ND	0.06	13	0.6		F		
Dup A	Apr. 6/05	ND	ND	ND	ND	0,06	12	0,4	-12**	F		
Lab Dup	Apr. 6/05	ND	ND	ND	NÐ	0.06	13	0.6	14**	F		
	Oct, 13/05	ND	ND	ND	ND	0.04	5.8	0.4	6.2**	F		
Dup A	Oct, 13/05	ND	ND	ND	ND	0,02	6.8	0.5	2 3** X	F		
	Nov 30/06	ND	ND	ND	ND	0,03	13	0,6	13**02	F		
Field Blank	Apr. 6/05	ND	ND	ND	ND	ND	ND	ND	ND	-		
Lab Dup	Apr. 6/05	-	-	-	-	-	ND	ND	-	-		
T-L D	Oct. 13/05	ND	ND	ND	ND	ND	Dи	ND	ND	-		
Lao Dup	Nev 20/06	ND	ND	ND	ND		- ND	- NID		-		
Trin Blank	Apr 6/05		ND	ND	ND	ND		ND	ND	-		
ттр ышқ	Oct 13/05	ND	ND	ND	ND	ND	ND	ND		_		
Lab Dun	Oct 13/05		-	-			ND	ND		2		
Date Dap	Nov, 30/06	ND	ND	ND	ND	NÐ	ND	ND	ND	-		
Atlantic PIRI Tier	I RBSLs (2003)					- /: <u></u>			· ···			
Gasoline 19*												
Commercial,		0.005	0.024	0,0024	0,3		Fuel Oil		15**			
Potable, Coarse G	rained						#6 Oil		20***			
							Gasoline		4.4*			
Residential		0.005	0.024	0.0024	0.3		Fuel Oil		3.2**			
Potable, Coarse G	rained						#6 Oil		7.8***			
Site Specific Tier	II Guidelines (upo	lated Nov. 2004)										
Vacant Lot, Fence	ed,	0.005	0.024	0.0024	0.3				2.3			
Off-site, Resident	iał, Potable											
Estimated Quantit	ation Limit	0.001	0.001	0.001	0.002	0.01	0.05	0.1	0.2			
ND - Not detected	l											
F/D - Field duplic	ate											
G - Resembles Ga	soline											
F - Resembles Fue	el Oil											
L - Resembles Lui												
Compared to a Bold	Exponde Atlantic	a (based on adjace	in and use)	notable acorea	wainad)							
			ennes (continerciai	, potable, coarse-g	stanicu)							
	- Exceeds Atlantic	PIRI Tier I Guide	ennes (residential,	potable, coarse gr	ained)							
	- Exceeds Atlantic	PIRI Tier II SSTI	.s (vacant lot, fend	ed, off-site, reside	ential, potable)							
Note: For the purp	ose of comparison	n to applicable gui	deline criteria, the	Modified TPH hy	drocarbon rang	e assumed to be n	nost					
specific to each sa	mple result was b	ased on laboratory	resemblance data	and Atlantic PIRI	Reference Doc	umentation (Octo	ber 2003).					

RBCA Tool Kit for Atlantic Canada, Version 2.1

		RBCA S	ITE ASS	ESSMEN	T				Input Pa	Irameter Sum	mary
Site Name: Imperial Oii Hubbards Site Location: 64 Mili Lake Road, Hubbards, NS				Com	pleted By BJM Completed: 28-	Ct-04		Job ID: 03-2	098-0		
Exposure Parameters		Residential		Commarcial/Indi		Surface	Jaramatane				
	Adult	Age 1-4 vrs.	Age 5-11 vrs.	Adult Co	istruc.	A	Soil source your great	CALIAL OF	CONSTRUCTION		(Units)
AT _e Averaging time for carcinogens (yr)	78					: >	-ength of source-zone area parallel to wind	3.75+1	3.7641		(11"2) (11"
AT _n Averaging time for non-carcinogens (yr)	25	4	7	25	-	Waw	-ength of source-zone area parallel to GW flow	3.76+1			ĒĒ
BW Body weight (kg)	70.7	16.5	33	70.7		, L	Ambient air vetocity in mixing zone	5.0E+0			(m/s)
EU Exposure duration (yr)	59	4	7	25	-	δ _{etr} ,	Air mixing zone height	2.0E+0			Ê
7 Averaging time tor vapour flux (yr) EF Evolution fractionary (Amorbia)	Ş 3			25	-	۔ مُ	Areal particulate emission rate	6.9E-14			(g/cm^2/s)
EFn Exposure frequency (usys) i)	202			100		ľ	Thickness of affected surface soils	٩N			(m)
IR Indestion rate of water // /dav/	2 u	aç	6	107							
IR. Indestion rate of soil (mol/day)	<u>,</u> 5	0.0	n (0, L		Surface	Soli Column Parameters	Value			(Units)
SA Skin surfare area (derma) (cmA2)		0006	07	07	001	, - -	Capillary zone thickness	5.0E-2			(w)
M Soil to skin artherence factor	2000	0000	nnne	3400	0.044	e"	vadose zone thickness	3.4E-1			E)
FT Swimming experies time /hs/averth	5 *					å.	Soil bulk density	1.7E+0			(g/cm^3)
EV Summing sylostic function (interest)	- (ę	ļ			_= _=	-raction organic carbon	2.9E-3			0
Revenue of the submitted of the submitted of the second se	222	7 7	ž č			ь. Б.:	Soil total porosity	4.0E-1			Ð
SA Skip surface and for suitmind (LIII)	cn:n	6'D	0.0			*	Vertical hydraulic conductivity	1.0E-4			(cm/s)
Porsein John suudee alea lui swimining (cmr.z) IR	23000	4400	8100			ý.	Vapour permeability	1.0E-12			(m^2)
Flash Contaminated fish fraction (unitiess)						2	Jepth to groundwater Parth to for of affacted solic	3.96-1			Ê.
						r _	Jenth to have of affected soils	0.0E+0			Ê
Complete Exposure Pathways and Receptors	On-site	Off-site 1	Off-site 2				cupus to base of affected build Thinkness of offected coils	0.001			Ê
Groundwater			-			5		0+30%			Ê
Groundwater Incestion	Commernia	Decidential	hono			Ld.	soli/groundwater pH	5.5E+0			÷
Solf Leaching to Groundwater Ingestion	Commercial	Residential	None			-	foly introducts a constant	<u>capillary</u>	vadose	foundation	:
			21041				volumento water content Administrationalismentent	95.0	0.119	0,119	•
Applicable Surface Mater Evenence Douter:					ن ـ		volumetric air content	0.04	0.281	0.281	()
Cumming					Ľ						
			AA.			Building	Parameters	Residential	Commercial		(Units)
			AA			۔ د	Building volume/area ratio	AN	3.00E+0		(m)
Aquatic Life Protection			٩N			- ⊀	Foundation area	٩N	3.00€+2		(m^2)
						× **	⁻ oundation perimeter	AN	7.00E+1		Ê
						ER	Building air exchange rate	٩N	2.80E-4		(1/s)
Lifect ingestion and Dermai Contact	Com/Canstr.					۔ ڈ	Foundation thickness	٩N	1.13E-1		Ê
						Z _{erk} I	Depth to bottom of foundation slab	¥	1.13E-1		Ê
Outdoor Air:						L L	Coundation crack fraction	AN	6 20E-4		
Particulates from Surface Soils	Com./Constr.	None	None			. ф	ndoon/outdoor differential pressure	ž	2.00F+1		(c) (clem/ch2)
	Com./Constr.	None	None			ð	Convective air flow through slab	¥	1.09E-5		(m^3/s)
Volantization from Groundwater	Commercial	None	None		: 1						
]	Proundw	ator Parameters	Value			(Units)
Volatiiration from Subsurface Colle						Ser.	Groundwater mixing zone depth	2.0E+0			(EL)
Volatilization from Groundwater	Commercial						Vet groundwater infiltration rate	2.8E+1			(cm/yr)
							sroundwater Larcy velocity	2.0E-6			(cm/s)
Receptor Distance from Source Media	Onelte	Officitio 1	C e ite a				oroundwater seepage velocity	5.05-6			(cm/s)
Groundwater recentor: Distance downgradient						ž.	saturated hydrautic conductivity	1.0E-4			(cm/s)
Lateral distance off centreline	ΨN	9 c		Ē (Sroundwater gradient	2.06-2			Θ
Vertical distance below too of water bearing unit	VIV	• •	Źź	(II)		ñ	Width of groundwater source zone	2.0E+1			Ē
Soil leaching to groundwater receptor: Dist. downgradie	o to	5		Ē		ກິເ	Jepth of groundwater source zone	2.0E+0			(E)
Lateral distance off centreline	AN IN	} a	A N	1		100 4	erredrive porosity in water-beaning unit	4.0E-1			÷
Vertical distance below top of water-bearing unit	AN N	٥	AN	Ē		- Participation	stoundwater pH	207 1412 14			I :
Outdoor air inhalation receptor: downwind distance	0	M	٨A	(E)			siodegradation considered?	Q			5
Tarred Haatth Dieb Vahaa	-										
TRAST Target Risk (class A&B carciponeos)	Individual	Cumulative									
TR. Target Risk (class C carcinogens)	105-5	2027				ranspor	r Parameters	Off-site 1	Off-site 2	Off-site 1 Off-site	e 2 (Units)
THQ Target Hazard Quotient (non-carcinogenic risk,	() 1.0E+0	1.0040				Lateral G ut	roundwater Transport onofinitional dismansivity	Groundwat	er Ingestion MA	Soil Leaching to GV	Ā
						5	ransverse dispersivity	2.5E-1	47	2.557U NA	Ē
Modelling Options						مع مع	fertical dispersivity	2.5E-2	42	2.5E-2 NA	
RBCA tier	Tier 2 or 3					Lateral O	utdoor Air Transport	Soll to Outd	oor Air Inhal	GW to Outfloor Air Int	(III)
Calculation option	Individual & CI	umulative Rísks				יין שלי	ransverse dispersion coefficient	AN	NA NA	NA NA NA	
Outdoor air votatilization model	User Input Val	les				ۍ. ۲	Vertical dispersion coefficient	٩Z	AN	NA NA	
Incoor air volatilization mode	Johnson & Etti	nger model				ADF /	Nir dispersion factor	٩Z	٩Z	AN NA	ুত
	ASTM leaching	g mode!			1						
Use soil attenuation model (SAM) for leachate?	02 :					Surface V	Vater Parameters		Off-site 2		(Units)
Chinakator Antria attaction forth	AA A						burface water flowrate		AN		(m ^A 3/s)
		lel				N ⁿ	Width of GW plume at SW discharge		٨A		(E)
NO IE: NA = Not applicable; Bold itatic font indicates v.	value differs from ther 1	Actal III Scaling				Š _{pi} J	hickness of GW plume at SW discharge		٩N		, ii
A ANTINATINE AND A DEPARTMENT OF A DEPARTMENTA DEPARTMENT OF A DEPARTMENTA DEPART		gelault value.				DF	Sroundwater-to-surface water dilution factor		AN)))

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Site Name. In	riperial VII Audoards		Completed By: B,	M			Job (Ü: 03	3-2088-0							
Site Location:	: 64 Mill Lake Road, Hubbards, NS		Date Completed:	28-Oct-04											1051
			Target Ri	isk (Class A & B):	1.0E-5						Source	Depletion Option: 1	No.		
SOIL (0 - 3 m) SSTL VALUES		Targ	et Risk (Class C):	1.0E-5						Time to	Future Exposure: (0 vears		
			Target	Hazard Quotient:	1.0E+0					Gro	undwater Dilution-Al	ttenuation Factor: 1	Domenico - No E	Jecav	
						SSTL Results F	or Complete Expo	isure Pathways ("X	" if Complete)						
			X Soil	Leaching to Grou	undwater	X Soil Vol. to Indece Air	×	Soil Volatiliz	ation and Surface		X Surface S	oil Inhalation,			Required CRF
CONSTITUEN	VTS OF CONCERN	Representative Concentration	On-site (0 m)	Off-site 1 (38 m)	Off-site 2 (0 m)	On-site (0 m)	On-sit	te (0 m)	Off-site 1 (0 m)	Off-site 2 (0 m)	On-site	(0 m)	Applicable SSTL	Exceeded ?	Only if "une"
CAS No.	Name	(mg/kg)	Commercial	Residential	None	Commercial	Commercial	Canstruction	None	None	Commercial	Construction Worker	(By/Gw)	°∎° if yes	left
71-43-2	Benzene	2.5E-2	1.9E-3	2.3E-3	AN	4.4E+0	>6.1E+2	>6.1E+2	AA	AN	5.0E+2	3,0E+3	1.9E-3		1.3E+1
108-88-3	Toluene	3.1E-1	2.1E-2	2.6E-2	NA	1.0E+2	>4.1E+2	>4.1E+2	AN	¥	1.6E+4	6.6E+3	2.1E-2		146+1
100-41-4	Ethylbenzene	2.5E+0	4.5E-3	5.4E-3	AN	>2.6E+2	>2.6E+2	>2.6E+2	AN	AN	1.0E+4	1.26+4	4.5E-3	-	5 4F+2
1330-20-7	Xylene (mixed isomers)	1.6E+1	5.8E-1	7.0E-1	AN	1.2E+2	>3.8E+2	>3.8E+2	AA	AN	5.6E+4	3.3E+3	5.8E-1		2.7E+1
106-08-0	TPH - Aliph >C06-C08	2.6E+0	>1.1E+2	>1.1E+2	AN	>1.1E+2	>1.1E+2	>1.1E+2	AN	AN	4,9E+5	2.8E+5	2.8E+5		
108-10-0	TPH - Aliph >C08-C10	8.1E+1	>4.5E+1	>4.5E+1	AA	>4.5E+1	>4.5E+1	>4.5E+1	AA	¥	9.2E+3	1.2E+4	9.2E+3		Ī
110-12-0	TPH - Aliph >C10-C12	1.2E+2	>2.5E+1	>2.5E+1	¥	>2.5E+1	>2.5E+1	>2.5E+1	NA	A	1.0E+4	1.2E+4	1.0E+4		- V
112-16-0	TPH - Alph >C12-C16	1.6E+2	>1.1E+1	>1.1E+1	AN	×1.1E+1	>1.1E+1	>1.1E+1	NA	AN	1.0E+4	1.7E+4	1.0E+4		v
116-21-0	TPH - Aliph >C16-C21	1.6E+2	>4.6E+0	>4.6E+0	AA	Ŋ	Ŷ	Ŷ	AN	NA	Ŋ	NC	>4.6E+0		AA
121-34-0	TPH - Aliph >C21-C34	1+14.6	>7.3E+4	>7.3E+4	AA	NC	Ŋ	Ŋ	AN	AN	NC	N N	>7.3E+4		NA
0-20-/02	IPH - Arom >C07-C08		1.9E+1	6.1E+0	AN	1.0E+2	>4.4E+2	>4.4E+2	NA	AN	1.8E+4	6.4E+3	6.1E+0		£
208-10-0	TPH - Arom >C08-C10	2.9E+1	1.6E+1	5.4E+0	AN	1.4E+2	>3.1E+2	>3.1E+2	AA	NA	3.1E+3	2.4E+3	5.4E+0	1	5.3E+0
210-12-0	IPH - Arom >C10-C12	1.4E+2	3.3E+1	1.1E+1	Ą	>1.8E+2	>1.8E+2	>1.8E+2	AN	AN	4.0E+3	5.3E+3	1.1E+1		1.3E+1
212-16-0	TPH - Arom >C12-C16	3.4E+2	6.6E+1	2.26+1	AN	>8.5E+1	>8.5E+1	>8.5E+1	NA	AN	4.0E+3	8.4E+3	2.2E+1		1.6E+1
216-21-0	17PH - Arom >C16-C21	2./E+2	>3.0E+1	>3.0E+1	AN	Ŋ	Ŷ	NC	AN	AN	Ŷ	ÿ	>3.0E+1		AN
221-35-0	TPH - Arom >C21-C35	5.5E+1	>2.4E+0	>2.4E+0	AN	Ŋ	Ŷ	ğ	NA	NA	S	р У	>2.4E+0		AN

^{nor} indicates risk-based target concentration greater than constituent residual saturation value. NA = Not applicable. NC = Not calculated

RBCA Tool Kit for Atlantic Canada, Version 2.1

RBCA Too! Kit for Atlantic Canada, Version 2.1

Site Name: Imp	perial Oil Hubbards		Completed By: E	MLE			Job ID: 03-2	2088-0				
Site Location: 6	64 Mill Lake Road, Hubbards, NS		Date Completed	: 28-Oct-04								1 OF 1
		_	Target Ris	k (Class A & B):	1.0E-5				Source [Depletion Option:	No	
GROUN	DWATER SSTL VALUES		Targer	t Risk (Class C):	1.0E-5				Time to F	Future Exposure:	0 vears	
			Target F	fazard Quotient:	1.0E+0			Groun	dwater Dilution-Att	tenuation Factor.	Domenico - No I	Jecar
		•		SST	L Results For Com	iplete Exposure Pati	thways ("X" If Com	plete)				Ĩ
			ڻ ×	iroundwater Inge	stion	X GW Vol. to	en A	oundwater Volatili.	zation			Part ired Opt
		Representative	On-site	Off-site 1	Off-site 2	On-sita	On eite	to Outdoor Air	046 240 0	Applicable	SSTL	
CONSTITUEN	ITS OF CONCERN	Concentration	(m o)	(38 m)	- (m o)	(H 0)	(0 m)	(0 m)	(0 m)	2011	/. Debeeck	Only if "ves"
CAS No.	Name	(mg/L)	Commercial	Residential	None	Commercial	Commercial	None	None	(mg/L)	"∎" if ves	left
71-43-2	Benzene	5.0E-4	5.0E-3	6.0E-3	AN	5.9E+0	>1.8E+3	AN	AN	5 0F-3	È	Ź
108-88-3	Toluene	5.0E-4	2.4E-2	2.9E-2	AN	2.2E+2	>5.2E+2	AN	NA	2.4E-2		1
100-41-4	Ethylbenzene	5.0E-3	2.4E-3	2.9E-3	AN	>1.5E+2	>1.5E+2	NA	AN	2.45-3]	2 1E+0
1330-20-7	Xylene (mixed isomers)	8.0E-3	3.0E-1	3.6E-1	AN	1.2E+2	>2.2E+2	MA	AN	3.0E-1		ç i
106-08-0	TPH - Aliph >C06-C08	2.0E-2	>5.4E+0	>5.4E+0	NA	>5.4E+0	>5.4E+0	AN	AN	>5.4F+0		AN
108-10-0	TPH - Aliph >C08-C10	4.0E-2	>4.3E-1	>4.3E-1	AN	>4.3E-1	>4.3E-1	AN	A	>4.3E-1		NA
110-12-0	TPH - Aliph >C10-C12	1.9E+0	>3.4E-2	>3.4E-2	M	>3.4E-2	>3.4E-2	NA	NA	>3.4E-2		AN
112-16-0	TPH - Aliph >C12-C16	5.5E+0	>7.6E-4	>7.6E-4	AN	>7.6E-4	>7.6E-4	AN	AN	>7.6E-4		NA
116-21-0	TPH - Aliph >C16-C21	2.2E+0	>2.5E-6	>2.5E-6	AN	S	NC	AN	AN	>2.5E-6		AN
121-34-0	TPH - Aliph >C21-C34	4.6E-1	>2.5E-6	>2.5E-6	AN	S	о И	AN	٩N	>2.5E-6		AN
207-08-0	TPH - Arom >C07-C08	5.0E-4	2.0E+1	6.4E+0	ΥN	2.4E+2	>5.2E+2	AA	AN	6.4E+0		5
208-10-0	IPH - Arom >C08-C10	1.2E-1	3.1E+0	1.0E+0	AN	6.5E+1	>6.5E+1	AN	AN	1.0E+0		4
210-12-0	IPH - Arom >C10-C12	1.2E+0	4.0E+0	1.3E+0	AN	>2.5E+1	>2.5E+1	AN	AN	1.3E+0		4
212-16-0	TPH - Arom >C12-C16	4.1E+0	4.0E+0	1.3E+0	AN	>5.8E+0	>5.8E+0	NA	AN	1.3E+0	•	3.1E+0
216-21-0	TPH - Arom >C16-C21	2.3E+0	>6.5E-1	>6.5E-1	NA	SC	NC	AN	NA	>6.5E-1		AN
0-62-177	11PH - Arom >C21-C35	5.9E-1	>6.6E-3	>6.6E-3	AN	NC	NC	NA	NA	>6.6E-3		AN
		No. 11 (11-14) - 40 - 10 - 10										

">" indicates risk-based target concentration greater than constituent solubility value. NA = Not applicable. NC = Not calculated.

RBCA Tool Kit for Atlantic Canada, Version 2.1

SSTL. Worksheet						STL Values	Groundwater		(mg/L)	>5.4E+0	>4.3E-1	>3 4E-2	57 RE 4		27.3E-0	>2.5E-6	6.4E+0	1.0E+0	1 3F+0	1 3F+0	26.5E-1		>6.6E-3	2 85+0
IPH Criteria			5) years	Jomenico - No Decay	Appilcable 5	Soils	(0-3 m)	(mg/kg)	2.8E+5	9.2E+3	1.0E+4	1 0E+4	24 66 40	10.10	>/.3E+4	6.1E+0	5.4E+0	1.15+1	2.0E+1	>3.0F41		~2.4E+U	3.6E+1
	Job ID: 03-2088-0		rce Depletion Option: N	e to Future Exposure: 0	on-Attenuation Factor: [entration Limits	Solubility		(mg/L)	5.4E+0	4.3E-1	3.4E-2	7.6E-4	2 4E. 6	2 2 2 2	0-10.7	5.2E+2	6.5E+1	2.5E+1	5.8E+0	6.5E-1		0.00-30	Cotal TPH SSTL
			SOL	Tim	Groundwater Dilutic	Calculated Conce	Residual Soil	Concentration	(mg/kg)	1.1E+2	4.5E+1	2.5E+1	1.1E+1	4 6F+0	7 36 44	1.0574	4.4E+2	3.1E+2	1.8E+2	8.5E+1	3.0E+1	2 4E40	2.1	F
	lct-04					Concentrations	Groundwater	7X	(mg/L)	2.UE-2	4.0E-2	1.9E+0	5.5E+0	2.2E+0	4 6E.1		5.0E-4	1.2E-1	1.2E+0	4.1E+0	2.3E+0	5 95-1		1.8E+1
	Completed By: BJM Date Completed: 28-C					Representative (Soil	(meller)	(Ry/RH)	2.0E+U	8.1E+1	1.2E+2	1.6E+2	1.6E+2	5.5E+1	- LT C	3.1E-1	2.9E+1	1.4E+2	3.4E+2	2.7E+2	5.5E+1		1.4E+3
		ndey: 1 0E+0				ractions	Groundwater			1.14-3	2.2E-3	1.0E-1	3.0E-1	1.2E-1	2 5E-2		2.7E-5	6.7E-3	6.3E-2	2.2E-1	1.3E-1	3.252		1.0E+0
		Tarnet Hazard i				Mass Fi	Sail	1	1 0 1 0	1,0673	5.7E-2	8.3E-2	1.1E-1	1.1E-1	3.9E-2		Z.ZE-4	2.0E-2	9.8E-2	2.4E-1	1.9E-1	3.9E-2		1.0E+0
serial Oil Hubbordo	serter Oir Frauderus 34 Mill Lake Road, Hubbards, NS					L	TS OF CONCERN	Name	TPH - Alinh >C08-C08			TPH - Aliph >C10-C12	TPH - Aliph >C12-C16	TPH - Aliph >C16-C21	TPH - Aliph >C21-C34	TDH - Arom SCOT COS		IPH - Arom >C08-C10	11PH - Arom >C10-C12	TPH - Arom >C12-C16	TPH - Arom >C16-C21	TPH - Arom >C21-C35		Total
Site Name: Imp	Site Location: 6		SSTI VAL				CONSTITUEN	CAS No.	106-08-0	108 10 0	0-01-001	110-12-0	112-16-0	116-21-0	121-34-0	207-08-0	0.00-102	n-ni-anz.	210-12-0	212-16-0	216-21-0	221-35-0		

">" indicates risk-based target concentration greater than constituent residual saturation value. NC \approx Not calculated.



45 Akerley Blvd. Dartmouth, Nova Scotia, Canada B3B 1J7 Telephone: 902.468.1248 Facsimile: 902.468.2207 www.CRAworld.com

May 4, 2010

Reference No. 059548

Ms. Sura Ali, ing. Project Manager Remediation and Reclamation Services Imperial Oil Limited 7100 Rue Jean Talon Est Anjou, Quebec H1M 3R8

Dear Ms. Ali:

Re: Groundwater Monitoring - March 2010 Former Imperial Oil Bulk Plant 64 Mill Lake Road, Hubbards, Nova Scotia (Site #Q02846)

Conestoga-Rovers & Associates (CRA) is pleased to provide you with a report detailing our groundwater monitoring activities at the former Imperial Oil Limited bulk plant located at 64 Mill Lake Road in Hubbards, Nova Scotia. CRA personnel conducted a site visit on March 31, 2010 that included the collection of groundwater samples from six (6) on-site monitor wells. Monitoring activities also involved the collection of groundwater elevational data and headspace vapor readings.

The following sections of this document detail the results of the groundwater monitoring event undertaken on March 31, 2010. Sampling locations and analytical results can be seen on Figure 1, attached.

GROUNDWATER CONTAMINANT LEVELS

A groundwater monitoring event was conducted on March 31, 2010. During field activities, groundwater samples were collected from all onsite monitoring wells including MW1, MW2, MW3, MW4, MW5, and MW6. A duplicate sample labelled MWA was collected from MW6; MWB was submitted as a field blank and MWC was submitted as a trip blank. See Figure 1 for monitoring well locations.

Total petroleum hydrocarbon concentrations in groundwater samples collected during the March 2010 monitoring event ranged from non-detect in MW1, MW2, MW3, MW4 and MW5 to 37 mg/L in MW6. Analytical results indicate that all TPH concentrations are below Atlantic

THIS REPORT CONTAINS PROVISIONS LIMITING LIABILITY, THE SCOPE OF THE REPORT AND THIRD PARTY RELIANCE

<u>NOTICE</u> ACCESS TO INFORMATION ACT

These documents and the information contained in them are the property of Imperial Oil and any disclosure of same is governed by the provision of each of the applicable provincial or territorial Freedom of Information legislation, the Privacy Act (Canada) 1980-81-82-83, c.111 Sch. II "1", and the Access to Information Act (Canada) 1980-81-82-83, c.111, Sch I "1", as such legislation may be amended or replaced from time to time.



May 4, 2010

Reference No. 059548

PIRI Tier I guidelines for both a commercial, potable site with coarse-grained soil, as well as a residential, potable site with coarse-grained soil, with the exception of MW6 (37 mg/L). BTEX concentrations for all monitoring wells sampled are below applicable Atlantic PIRI Tier I guidelines.

2

Complete results of the chemical analyses, along with historical data, are presented in Table 1. Laboratory certificates of analysis are attached to the report.

GROUNDWATER ELEVATIONAL DATA

During the monitoring event, depth to groundwater and thickness of any phase-separated product was determined for all monitoring well at the site. This activity was completed with a Solinst electronic interface probe. Free product was not identified in any of the wells accessed during the site visit. Groundwater elevation data is presented in Table 2.

MONITOR WELL VAPOUR READINGS

Vapour concentration readings were recorded during the March 2010 monitoring event using a Gastech Gastector Model 1238. Monitor well vapour readings are presented in Table 2.

MANN-KENDALL ANALYSIS

Mann-Kendall analysis was utilized to characterize the groundwater plume using results of BTEX analysis data from MW5 and MW6. Stability evaluation results continue to indicate no trend in MW5 and MW6.

LIMITATION OF LIABILITY, SCOPE OF REPORT AND THIRD PARTY RELIANCE

This report has been prepared and the work referred to in this report has been undertaken by Conestoga-Rovers & Associates Limited for Imperial Oil Limited. It is intended for the sole and exclusive use of Imperial Oil Limited, its affiliated companies and partners and their respective insurers, agents, employees and advisors (collectively, "Imperial Oil"). Any use, reliance on or decision made by any person other than Imperial Oil based on this report is the sole responsibility of such other person. Imperial Oil and Conestoga-Rovers & Associates Limited make no representation or warranty to any other person with regard to this report and the work referred to in this report and they accept no duty of care to any other person or any liability or responsibility whatsoever for any losses, expenses, damages, fines, penalties or other harm that may be suffered or incurred by any other person as a result of the use of, reliance on, any decision made or any action taken based on this report or the work referred to in this report.



May 4, 2010

Reference No. 059548

The investigation undertaken by Conestoga-Rovers & Associates Limited with respect to this report and any conclusions or recommendations made in this report reflect Conestoga-Rovers & Associates Limited judgment based on the site conditions observed at the time of the site inspection on the date(s) set out in this report and on information available at the time of preparation of this report. This report has been prepared for specific application to this site and it is based, in part, upon visual observation of the site, subsurface investigation at discrete locations and depths, and specific analysis of specific chemical parameters and materials during a specific time interval, all as described in this report. Unless otherwise stated, the findings cannot be extended to previous or future site conditions, portions of the site which were unavailable for direct investigation, subsurface locations which were not investigated directly, or chemical parameters, materials or analysis which were not addressed. Substances other than those addressed by the investigation may exist in areas of the site not investigated and concentrations of substances addressed which are different than those reported may exist in areas other than the locations from which samples were taken.

3

If site conditions or applicable standards change or if any additional information becomes available at a future date, modifications to the findings, conclusions and recommendations in this report may be necessary.

Other than by Imperial Oil, copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted without the express written permission of Conestoga-Rovers & Associates Limited. Nothing in this report is intended to constitute or provide a legal opinion.

We trust this submission meets with your requirements, however if you have any questions please contact the undersigned at your convenience.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

Cott Clevellyn

Scott Llewellyn, B.Sc., P.Geo.

MF/si/1 Encl.



059548 GN-DA001 MAY 07/2010

	Atlantic PIRI — TIER I Risk Commercial Potable Coarse	Base Gra	ed Scr ined S	eening Levels for oil	-
	Benzene (B)		(0.005mg/L	
	Toluene (T)		(D.024mg/L	
	Ethyl Benzene (E)		0	.0024mg/L	
	Xylenes (X)			0.3mg/L	
	TPH (Gasoline (G))			19mg/L	
	TPH (Diesel/#2 Oil (F))			15mg/L	
	TPH (#6 Oil (L))			20mg/L	
	Within Atlantic P	'IRI 1	ier I	RBSLs	۲
	Exceeds Atlantic I	PIRI	Tier I	RBSLs	
			MW3	(31-MAR-	10)
		1	В	<0.001	۲
			Т	<0.001	۲
\mathcal{N}			E	<0.001	۲
21	WOODED		Х	<0.002	۲
			TPH	<0.1	۲
		_			
TIC SY	'STEM		MW5	(31-MAR-	10)

MW5	(31-MAR-	10)
В	<0.001	۲
Т	<0.001	۲
E	<0.001	۲
X	<0.002	۲
TPH	<0.1	۲

- SEPTIC SYSTEM DISPOSAL FIELD

MWB	(FIELD BLANK)	
В	<0.001	۲
Т	<0.001	۲
E	<0.001	۲
Х	<0.002	۲
TPH	<0.1	۲

MWC	(TRIP BLANK)	
В	<0.001	۲
Т	<0.001	۲
E	<0.001	۲
Х	<0.002	۲
TPH	<0.1	۲

figure 1

SITE PLAN GROUNDWATER ANALYTICAL RESULTS (mg/L) GROUNDWATER MONITORING - MARCH 2010 FORMER IMPERIAL OIL LIMITED BULK PLANT 64 Mill Lake Road, Hubbards, Nova Scotia

TABLE 1 GROUNDWATER HYDROCARBON RESULTS 64 MILL LAKE ROAD, HUBBARDS, NS

Sample	Sample	BTEX Concentration (ppm)				Petroleum Hydrocarbons (ppm)				
Location	Date	Benzene	Toluene	E. Benzene	Xylenes	C6 - C10	C10 - C21	C21 - C32	Т	otal
	15-Aug-03	ND	ND	ND	ND	ND	ND	ND	ND	-
MW/1	19-Apr-04	ND	ND	ND	ND	ND	0.06	ND	ND	F
	28-Oct-04	ND	ND	ND	ND	ND	ND	ND	ND	-
	6-Apr-05	ND	ND	ND	ND	ND	ND	ND	ND	-
IV1 VV 1	13-Oct-05	ND	ND	ND	ND	ND	ND	ND	ND	-
	30-Nov-06	ND	ND	ND	ND	ND	ND	ND	ND	-
	30-Nov-06 Lab Dup	ND	ND	ND	ND	ND	-	-	-	-
	31-Mar-10	< 0.001	< 0.001	< 0.001	< 0.002	< 0.01	< 0.05	< 0.1	< 0.1	-
	15-Aug-03	ND	ND	ND	ND	ND	ND	ND	ND	-
	19-Apr-04	ND	ND	ND	ND	ND	ND	ND	ND	-
	28-Oct-04	ND	ND	ND	ND	ND	ND	ND	ND	-
	28-Oct-04								- 12	
	Field Dup A	ND	ND	ND	ND	ND	ND	ND	ND	-
MW2	6-Apr-05	ND	ND	ND	ND	ND	ND	ND	ND	-
	13-Oct-05	ND	ND	ND	ND	ND	ND	ND	ND	-
	30-Nov-06	ND	ND	ND	ND	ND	ND	ND	ND	-
	30- Nov-06 Lab Dup	-	-	-	-	-	ND	ND	-	-
	31-Mar-10	<0.001	<0.001	<0.001	<0.002	<0.01	<0.05	<0.1	<01	-
	15_A110_02	ND	ND	ND	ND	ND	0.05	ND	ND	F
	10 Arra 04	ND	ND	ND	ND	ND	0.00	ND	ND	Г
	28 Oct 04	ND	ND	ND	ND	ND	ND	ND	ND	-
M14/2	20-UCI-U4		ND	ND	ND	ND	ND	ND	ND	-
101005	6-Apr-05	ND	ND	ND	ND	ND	ND	ND	ND	-
	13-Oct-05	ND	ND	ND	ND	ND	ND	ND	ND	-
	30-INOV-06	ND	ND	ND	ND <0.002	ND	ND <0.05	ND	ND	-
	31-Mar-10	<0.001	<0.001	<0.001	<0.002	<0.01	<0.05	<0.1	<0.1	-
	15-Aug-03	ND	ND	ND	ND	ND	ND	ND	ND	-
	15-Aug-03	ND	ND	ND	ND	ND	ND	ND	ND	-
	Field Dup F									
	19-Apr-04	ND	ND	ND	ND	ND	ND	ND	ND	-
MW4	28-Oct-04	ND	ND	ND	ND	ND	ND	ND	ND	-
	6-Apr-05	ND	ND	ND	ND	ND	ND	ND	ND	-
	13-Oct-05	ND	ND	ND	ND	ND	ND	ND	ND	-
	30-Nov-06	ND	ND	ND	ND	ND	ND	ND	ND	-
	31-Mar-10	< 0.001	< 0.001	< 0.001	< 0.002	< 0.01	< 0.05	< 0.1	< 0.1	-
	15-Aug-03	ND	ND	0.005	0.01	0.1	0.22	ND	0.3**	F
	15-Aug-03 Lab Dup	ND	ND	0.005	0.01	0.1	0.22	ND	0.3**	F
	19-Apr-04	ND	ND	ND	ND	ND	0.06	ND	ND	F
	28-Oct-04	ND	ND	ND	ND	ND	0.06	ND	ND	F
MM	6-Apr-05	ND	ND	ND	ND	ND	0.05	ND	ND	F
101005	13-Oct-05	ND	ND	ND	ND	ND	ND	ND	ND	-
	30-Nov-06	ND	ND	ND	ND	ND	ND	ND	ND	-
	30-Nov-06	NTD	NTD	NTD	ND	NT	NTD	NTD	NTD	
	Field Dup A	ND	ND	ND	ND	IND	ND	ND	ND	-
	31-Mar-10	< 0.001	< 0.001	< 0.001	< 0.002	< 0.01	< 0.05	< 0.1	< 0.1	-
	15-Aug-03	ND	ND	ND	0.006	0.2	15.04	0.85	16.1**	F
MW6	15-Aug-03 Lab Dup	ND	ND	ND	0.006	0.17	17.18	1.05	18.4**	F
	19-Apr-04	ND	ND	ND	ND	0.1	12	0.6	13**	F
	19-Apr-04									_
	Field Dup A	ND	ND	ND	ND	0.09	13	0.6	14**	F
	28-Oct-04	ND	ND	ND	ND	0.11	11	0.5	12**	F
	28-Oct-04 Lab Dup	ND	ND	ND	ND	0.14	12	0.5	13**	F
	6-Apr-05	ND	ND	ND	ND	0.06	13	0.6	13**	F
	6-Apr-05									
	Field Dup A	ND	ND	ND	ND	0.06	12	0.4	12**	F
	6-Apr-05 Lab Dup	ND	ND	ND	ND	0.06	13	0.6	14**	F
	13-Oct-05	ND	ND	ND	ND	0.00	5.8	0.0	6.2**	F
	12 0-1 05	IND	IND.	IND	IND	0.04	5.0	0.4	0.4	1.
	13-Oct-05 Field Dun A	ND	ND	ND	ND	0.02	6.8	0.5	7.3**	F
	20 Nov 06	NID	ND	ND	ND	0.02	10	0.6	12**	Е
	21 Mar 10	IND <0.001	IND <0.001	IND <0.001	IND <0.002	0.03	13	0.0	27**	r r
	SI-iviar-10	<0.001	<0.001	<0.001	<0.002	0.02	36	1.6	3/**	F
	31-Mar-10	< 0.001	< 0.001	< 0.001	< 0.002	0.01	31	1.4	33**	F
	Field Dup MWA									

TABLE 1 GROUNDWATER HYDROCARBON RESULTS 64 MILL LAKE ROAD, HUBBARDS, NS

Sample	BTEX Concentration (ppm)				Petroleum Hydrocarbons (ppm)					
Location	Date	Benzene	Toluene	E. Benzene	Xylenes	C6 - C10	C10 - C21	C21 - C32 Total		otal
Atlantic PIRI Tier I RBSL Criteria (2007) - Residential, Potable, Coarse-grained		0.005	0.024	0.0024	0.3		Gasoline Fuel Oil #6 Oil		4.4* 3.2** 7.8***	
Atlantic PIRI Tier I RBSL Criteria (2007) - Commercial, Potable, Coarse-grained		0.005	0.024	0.0024	0.3		Gasoline Fuel Oil #6 Oil		19* 15** 20***	
Reportable Detection Limit (RDL)		0.001	0.001	0.001	0.002	0.01	0.05	0.1	0.1	
	6-Apr-05	ND	ND	ND	ND	ND	ND	ND	ND	-
	6-Apr-05 Lab Dup	-	-	-	-	-	ND	ND	-	-
FIELD BLANK	13-Oct-05	ND	ND	ND	ND	ND	ND	ND	ND	-
	13-Oct-05 Lab Dup	ND	ND	ND	ND	ND	-	-	-	-
	30-Nov-06	ND	ND	ND	ND	ND	ND	ND	ND	-
	31-Mar-10	< 0.001	< 0.001	< 0.001	< 0.002	< 0.01	< 0.05	< 0.1	< 0.1	-
TRIP BLANK	6-Apr-05	ND	ND	ND	ND	ND	ND	ND	ND	
	13-Oct-05	ND	ND	ND	ND	ND	ND	ND	ND	-
	13-Oct-05 Lab Dup	-	-	-	-	-	ND	ND	-	-
	30-Nov-06	ND	ND	ND	ND	ND	ND	ND	ND	-
	31-Mar-10	< 0.001	< 0.001	< 0.001	< 0.002	< 0.01	< 0.05	< 0.1	< 0.1	-
Atlantic PIRI Tier I RBSL Criteria (2007) - Residential, Potable, Coarse-grained		0.005	0.024	0.0024	0.3		Gasoline Fuel Oil #6 Oil		4.4* 3.2** 7.8***	
Atlantic PIRI Tier I RBSL Criteria (2007) - Commercial, Potable, Coarse-grained		0.005	0.024	0.0024	0.3		Gasoline Fuel Oil #6 Oil		19* 15** 20***	
Reportable Detection Limit (RDL)		0.001	0.001	0.001	0.002	0.01	0.05	0.1	0.1	

NOTES:

ND Not detected - Not analyzed Bold Exceeds Atlan

Shading

Exceeds Atlantic PIRI Tier I RBSL Guidelines (Commercial, Potable, Coarse-grained)

Exceeds Atlantic PIRI Tier I RBSL Guidelines (Residential, Potable, Coarse-grained)

TABLE 2 GROUNDWATER ELEVATIONS 64 MILL LAKE ROAD, HUBBARDS, NS

Monitoring Well Designation	Ground Surface Elevation*	Top of PVC Casing Elevation*	PVC Riser Height (m)	Date	Depth to Water (mbgs)	Groundwater Elevation*	VOC Reading
	100.165	100.870	0.705	28-Oct-04	1.513	98.652	-
				6-Apr-05	1.130	99.550	-
MW1				13-Oct-05	0.585	99.580	-
				30-Nov-06	1.493	98.672	-
				31-Mar-10	1.302	98.863	0 ppm
	100.075	100.995	0.920	28-Oct-04	1.669	98.406	-
				6-Apr-05	1.445	99.550	-
MW2				13-Oct-05	0.600	99.475	-
				30-Nov-06	1.704	98.371	-
				31-Mar-10	1.506	98.569	0 ppm
	99.730	100.520	0.790	28-Oct-04	1.870	97.860	-
				6-Apr-05	1.358	99.162	-
MW3				13-Oct-05	0.640	99.090	-
				30-Nov-06	1.821	97.909	-
				31-Mar-10	1.510	98.220	0 ppm
	99.470	100.120	0.650	28-Oct-04	1.910	97.560	-
MW4				6-Apr-05	1.453	98.667	-
				13-Oct-05	0.868	98.602	-
				30-Nov-06	1.892	97.578	-
				31-Mar-10	1.672	97.798	0 ppm
MW5	99.700	100.200	0.500	28-Oct-04	2.012	97.688	-
				6-Apr-05	1.639	98.561	-
				13-Oct-05	1.225	98.475	-
				30-Nov-06	1.925	97.775	-
				31-Mar-10	1.811	97.889	0 ppm
MW6	99.840	100.650	0.810	28-Oct-04	1.269	98.571	-
				6-Apr-05	0.880	99.770	-
				13-Oct-05	0.120	99.720	-
				30-Nov-06	1.293	98.547	-
				31-Mar-10	1.171	98.669	25 ppm

* Elevations referenced from a temporary benchmark with an assumed elevation of 100.000m.

mbgs - metres below ground surface.
MANN-KENDALL ANALYSIS

64 Mill	Lake	Road.	Hubbards.	NS
v + mm	Lano	, couu,	naosai ao,	

MANN-KENDALL	ANALYSIS OI	F PLUME				MONIT		NO: MW5			
	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Sum Rows
BTEX	0.014	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025				
	Aug 03	Apr 04	Oct 04	Apr 05	Oct 05	Nov-06	Mar-10				
Row 1: Compare to Event 1:		-1	-1	-1	-1	-1	-1	0	0	0	-6
Row 2: Compare to Event 2:			0	0	0	0	0	0	0	0	0
Row 3: Compare to Event 3:				0	0	0	0	0	0	0	0
Row 4: Compare to Event 4:					0	0	0	0	0	0	0
Row 5: Compare to Event 5:						0	0	0	0	0	0
Row 6: Compare to Event 6:							0	0	0	0	0
Row 7: Compare to Event 7:								0	0	0	0
Row 8: Compare to Event 8:								-	0	0	0
Row 9: Compare to Event 9:										0	0

1/2 detection limit used for nd. Historical data assumed EQL of 0.001 for benzene, toulene and ethylbenzene, and 0.002 for xylenes.

Mann-Kendall Statistic(s) = Total



Confidence Level Chart										
S			Total I	No. of Sampli	ng Events					
Value	4	5	6	7	8	9	10			
0										
± 1				No Trend						
± 2				Indicated						
± 3										
± 4										
± 5										
± 6			X							
± 7										
±8										
± 9										
±10										
±11										
±12										
±13										
±14										
±15		Trenc	l Probably P	resent						
±16		(> 9	90% Confide	ence)						
±17										
±18										
±19										
± 20										
± 21										
± 22										
± 23										
± 24										
± 25										

No Trend and CV<=1							
indicates stable plume							
s.d.	mean	CV					
0.00	0.0041	1.05					

Stability Evaulation Results									
-	No Trend Indicated	Plume Not Dimishing or Expanding (Plume is Stable)							
	Trend Is Present (≥90% Confidenc □ S < 0 □ S > 0	e) Diminishing Plume Expanding Plume							

MANN-KENDALL ANALYSIS

64 Mill Lake Road, H	ubbards, NS
----------------------	-------------

MANN-KENDALL	ALL ANALYSIS OF PLUME MONITORING WELL NO: MW6										
	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Sum Rows
BTEX	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025				
	Aug 03	Apr 04	Oct 04	Apr 05	Oct 05	Nov-06	Mar-10				
Row 1: Compare to Event 1:		0	0	0	0	0	0	0	0	0	0
Row 2: Compare to Event 2:			0	0	0	0	0	0	0	0	0
Row 3: Compare to Event 3:				0	0	0	0	0	0	0	0
Row 4: Compare to Event 4:					0	0	0	0	0	0	0
Row 5: Compare to Event 5:						0	0	0	0	0	0
Row 6: Compare to Event 6:							0	0	0	0	0
Row 7: Compare to Event 7:	vent 7:						0	0	0	0	
Row 8: Compare to Event 8:	0					0	0	0			
Row 9: Compare to Event 9:										0	0

1/2 detection limit used for nd. Historical data assumed EQL of 0.001 for benzene, toulene and ethylbenzene, and 0.002 for xylenes.

Mann-Kendall Statistic(s) = Total

0

		Cor	nfidence Lev	el Chart					
S		Total No. of Sampling Events							
Value	4	5	6	7	8	9	10		
0				X					
± 1				No Trend					
± 2				Indicated					
± 3									
± 4									
± 5									
± 6									
± 7									
±8									
± 9									
± 10									
± 11									
± 12									
± 13									
± 14									
± 15		Trend	d Probably Pr	esent					
± 16		(>	90% Confide	nce)					
± 17									
± 18									
± 19									
± 20									
± 21									
± 22									
± 23									
± 24									
± 25									

Stability Evaulation Results									
-	No Trend Indicated	Plume Not Dimishing or Expanding (Plume is Stable)							
	Trend Is Present (<u>></u> 90% Confider □ S < 0 □ S > 0	nce) Diminishing Plume Expanding Plume							

No Trend and CV<=1							
in	indicates stable plume						
s.d.	CV						
0.00	0.0025	0.00					



Task Order#: 11064645 Site#: Q02846 Site Location: 64 Mill Lake Road, Hubbards, NS Project #: 059548 Your C.O.C. #: B 113194

Attention:

S Llewellyn/M Fitzgerald

Conestoga-Rovers & Associates Limited 45 Akerley Blvd Dartmouth, NS B3B 1J7

Report Date: 2010/04/08

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B038415 Received: 2010/03/31, 14:27

Sample Matrix: Water # Samples Received: 15

			Method
Analyses	Quantity	Laboratory Method	Primary reference
Sample Disposal Charge	15		
TEH in Water (PIRI)	15	ATL SOP 00113 R3	Based on Atl. PIRI
VPH in Water (PIRI)	15	ATL SOP 00118 R4	Based on Atl. PIRI
ModTPH (T1) Calc. for Water	15		Based on Atl. PIRI

Remarks:

All work recorded herein has been performed in accordance to the ISO 17025 standard. Methods used by Maxxam Analytics are based upon accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing.

Maxxam Analytics is accredited by Standards Council of Canada (SCC). Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract.

All data is in statistical control and has met all QC and method performance criteria unless otherwise flagged. All samples were analysed within hold time unless otherwise flagged. All BTEX samples were methanol extracted within 24 hours unless otherwise flagged.

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

Maxxam Analytics International Corporation o/a Maxxam Analytics 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.maxxamanalytics.com



Task Order#: 11064645 Site#: Q02846 Site Location: 64 Mill Lake Road, Hubbards, NS Project #: 059548 Your C.O.C. #: B 113194

Attention:

S Llewellyn/M Fitzgerald

Conestoga-Rovers & Associates Limited 45 Akerley Blvd Dartmouth, NS B3B 1J7

Report Date: 2010/04/08

CERTIFICATE OF ANALYSIS

-2-

MAXXAM JOB #: B038415 Received: 2010/03/31, 14:27

Encryption Key

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

SUZANNE ROGERS, Manager, Client Services Email: suzanne.rogers@maxxamanalytics.com Phone# (902) 420-0203 Ext:232

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

Total cover pages: 2

Page 2 of 17

This document is in electronic format, hard copy is available on request.

Maxxam Analytics International Corporation o/a Maxxam Analytics 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.maxxamanalytics.com



Conestoga-Rovers & Associates Limited Task Order#: 11064645 Site#: Q02846 Site Location: 64 Mill Lake Road, Hubbards, NS Project #: 059548

ATLANTIC MUST IN WATER - PIRI TIER I (WATER)

Maxxam ID		FL8759	FL8759	FL8777	FL8778		
Sampling Date		2010/03/31	2010/03/31	2010/03/31	2010/03/31		
		11:46	11:46	11:54	11:00		
COC Number		B 113194	B 113194	B 113194	B 113194		
	Units	MW1 (B)	MW1	MW1	MW2 (B)	RDL	QC Batch
			(B) Lab-Dup				
Benzene	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	2115774
Toluene	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	2115774
Ethylbenzene	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	2115774
Xylene (Total)	mg/L	<0.002	<0.002	<0.002	<0.002	0.002	2115774
C6 - C10 (less BTEX)	mg/L	<0.01	<0.01	<0.01	<0.01	0.01	2115774
>C10-C21 Hydrocarbons	mg/L	<0.05		<0.05	<0.05	0.05	2115637
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.1</td><td></td><td><0.1</td><td><0.1</td><td>0.1</td><td>2115637</td></c32>	mg/L	<0.1		<0.1	<0.1	0.1	2115637
Modified TPH (Tier1)	mg/L	<0.1		<0.1	<0.1	0.1	2113361
Extraction Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	94		95	88		2115637
n-Dotriacontane - Extractable	%	106 (1)		109 (1)	99 (1)		2115637
Isobutylbenzene - Volatile	%	89	91	92	95		2115774
Instrument Surrogate Recovery (%)							
1,4-Difluorobenzene	%	98	98	100	100		2115774
4-Bromofluorobenzene	%	96	97	98	97		2115774
D4-1,2-Dichloroethane	%	97	98	99	99		2115774

RDL = Reportable Detection Limit QC Batch = Quality Control Batch

(1) TEH sample contained sediment.



Conestoga-Rovers & Associates Limited Task Order#: 11064645 Site#: Q02846 Site Location: 64 Mill Lake Road, Hubbards, NS Project #: 059548

ATLANTIC MUST IN WATER - PIRI TIER I (WATER)

Maxxam ID		FL8778		FL8779		FL8780		
Sampling Date		2010/03/31		2010/03/31		2010/03/31		
		11:00		11:07		10:44	_	
COC Number		B 113194		B 113194		B 113194		
	Units	(B) Lab-Dup	QC Batch	MW2	QC Batch	MW3 (B)	RDL	QC Batch
Benzene	mg/L		2115774	<0.001	2115774	<0.001	0.001	2115774
Toluene	mg/L		2115774	<0.001	2115774	<0.001	0.001	2115774
Ethylbenzene	mg/L		2115774	<0.001	2115774	<0.001	0.001	2115774
Xylene (Total)	mg/L		2115774	<0.002	2115774	<0.002	0.002	2115774
C6 - C10 (less BTEX)	mg/L		2115774	<0.01	2115774	<0.01	0.01	2115774
>C10-C21 Hydrocarbons	mg/L	<0.05	2115637	<0.05	2115637	<0.05	0.05	2114285
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.1</td><td>2115637</td><td><0.1</td><td>2115637</td><td><0.1</td><td>0.1</td><td>2114285</td></c32>	mg/L	<0.1	2115637	<0.1	2115637	<0.1	0.1	2114285
Modified TPH (Tier1)	mg/L		2113361	<0.1	2113790	<0.1	0.1	2113790
Extraction Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	94	2115637	87	2115637	99		2114285
n-Dotriacontane - Extractable	%	107 (1)	2115637	102 (1)	2115637	97		2114285
Isobutylbenzene - Volatile	%		2115774	94	2115774	85		2115774
Instrument Surrogate Recovery (%)								
1,4-Difluorobenzene	%		2115774	101	2115774	95		2115774
4-Bromofluorobenzene	%		2115774	97	2115774	92		2115774
D4-1,2-Dichloroethane	%		2115774	99	2115774	97		2115774

RDL = Reportable Detection Limit QC Batch = Quality Control Batch

(1) TEH sample contained sediment.



Conestoga-Rovers & Associates Limited Task Order#: 11064645 Site#: Q02846 Site Location: 64 Mill Lake Road, Hubbards, NS Project #: 059548

ATLANTIC MUST IN WATER - PIRI TIER I (WATER)

Maxxam ID		FL8780		FL8781	FL8782	FL8783		
Sampling Date		2010/03/31		2010/03/31	2010/03/31	2010/03/31		
		10:44		10:52	11:32	11:30		
COC Number		B 113194		B 113194	B 113194	B 113194		
	Units	MW3	QC Batch	MW3	MW4 (B)	MW4	RDL	QC Batch
		(B) Lab-Dup						
_			1					
Benzene	mg/L		2115774	<0.001	<0.001	<0.001	0.001	2115774
Toluene	mg/L		2115774	<0.001	<0.001	<0.001	0.001	2115774
Ethylbenzene	mg/L		2115774	<0.001	<0.001	<0.001	0.001	2115774
Xylene (Total)	mg/L		2115774	<0.002	<0.002	<0.002	0.002	2115774
C6 - C10 (less BTEX)	mg/L		2115774	<0.01	<0.01	<0.01	0.01	2115774
>C10-C21 Hydrocarbons	mg/L	<0.05	2114285	<0.05	<0.05	<0.05	0.05	2115637
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.1</td><td>2114285</td><td><0.1</td><td><0.1</td><td><0.1</td><td>0.1</td><td>2115637</td></c32>	mg/L	<0.1	2114285	<0.1	<0.1	<0.1	0.1	2115637
Modified TPH (Tier1)	mg/L		2113790	<0.1	<0.1	<0.1	0.1	2113790
Extraction Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	100	2114285	90	98	80		2115637
n-Dotriacontane - Extractable	%	99	2114285	110 (1)	116 (1)	89 (1)		2115637
Isobutylbenzene - Volatile	%		2115774	94	89	85		2115774
Instrument Surrogate Recovery (%)								
1,4-Difluorobenzene	%		2115774	99	101	98		2115774
4-Bromofluorobenzene	%		2115774	95	96	91		2115774
D4-1,2-Dichloroethane	%		2115774	99	100	98		2115774

RDL = Reportable Detection Limit QC Batch = Quality Control Batch

(1) TEH sample contained sediment.



Conestoga-Rovers & Associates Limited Task Order#: 11064645 Site#: Q02846 Site Location: 64 Mill Lake Road, Hubbards, NS Project #: 059548

ATLANTIC MUST IN WATER - PIRI TIER I (WATER)

Maxxam ID		FL8784		FL8785	FL8786	FL8787		
Sampling Date		2010/03/31		2010/03/31	2010/03/31	2010/03/31		
		11:19		11:26	12:02	12:09		
COC Number		B 113194		B 113194	B 113194	B 113194		
	Units	MW5 (B)	QC Batch	MW5	MW6 (B)	MW6	RDL	QC Batch
[1				1			1
Benzene	mg/L	<0.001	2115774	<0.001	<0.001	<0.001	0.001	2115774
Toluene	mg/L	<0.001	2115774	<0.001	<0.001	<0.001	0.001	2115774
Ethylbenzene	mg/L	<0.001	2115774	<0.001	<0.001	<0.001	0.001	2115774
Xylene (Total)	mg/L	<0.002	2115774	<0.002	<0.002	<0.002	0.002	2115774
C6 - C10 (less BTEX)	mg/L	<0.01	2115774	<0.01	<0.01	0.02	0.01	2115774
>C10-C21 Hydrocarbons	mg/L	<0.05	2114285	<0.05	3.3	36	0.05	2115637
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.1</td><td>2114285</td><td><0.1</td><td>0.2</td><td>1.6</td><td>0.1</td><td>2115637</td></c32>	mg/L	<0.1	2114285	<0.1	0.2	1.6	0.1	2115637
Modified TPH (Tier1)	mg/L	<0.1	2113790	<0.1	3.5	37	0.1	2113790
Extraction Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	96	2114285	91	95	75		2115637
n-Dotriacontane - Extractable	%	99	2114285	111 (1)	100 (2)	111 (3)		2115637
Isobutylbenzene - Volatile	%	92	2115774	91	80	59 (4)		2115774
Instrument Surrogate Recovery (%)								
1,4-Difluorobenzene	%	93	2115774	96	99	98		2115774
4-Bromofluorobenzene	%	91	2115774	93	98	90		2115774
D4-1,2-Dichloroethane	%	92	2115774	97	96	98		2115774

RDL = Reportable Detection Limit QC Batch = Quality Control Batch

(1) TEH sample contained sediment.

(2) Fuel oil fraction.

(3) Fuel oil fraction. TEH sample contained sediment.

(4) 1 out of 4 VPH instrument surrogates not within acceptance limits. No action required.



Conestoga-Rovers & Associates Limited Task Order#: 11064645 Site#: Q02846 Site Location: 64 Mill Lake Road, Hubbards, NS Project #: 059548

ATLANTIC MUST IN WATER - PIRI TIER I (WATER)

Maxxam ID		FL8788	FL8789	FL8790		
Sampling Date		2010/03/31	2010/03/31	2010/03/31		
		12:12	10:32	10:27		
COC Number		B 113194	B 113194	B 113194		
	Units	MWA	MWB	MWC	RDL	QC Batch
Benzene	mg/L	<0.001	<0.001	<0.001	0.001	2115774
Toluene	mg/L	<0.001	<0.001	<0.001	0.001	2115774
Ethylbenzene	mg/L	<0.001	<0.001	<0.001	0.001	2115774
Xylene (Total)	mg/L	<0.002	<0.002	<0.002	0.002	2115774
C6 - C10 (less BTEX)	mg/L	0.01	<0.01	<0.01	0.01	2115774
>C10-C21 Hydrocarbons	mg/L	31	<0.05	<0.05	0.05	2115637
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td>1.4</td><td><0.1</td><td><0.1</td><td>0.1</td><td>2115637</td></c32>	mg/L	1.4	<0.1	<0.1	0.1	2115637
Modified TPH (Tier1)	mg/L	33	<0.1	<0.1	0.1	2113790
Extraction						
Surrogate Recovery (%)						
Isobutylbenzene - Extractable	%	76	98	102		2115637
n-Dotriacontane - Extractable	%	111 (1)	111	117		2115637
Isobutylbenzene - Volatile	%	58 (2)	93	92		2115774
Instrument Surrogate Recovery (%)						
1,4-Difluorobenzene	%	95	96	95		2115774
4-Bromofluorobenzene	%	87	96	93		2115774
D4-1,2-Dichloroethane	%	97	97	96		2115774

RDL = Reportable Detection Limit QC Batch = Quality Control Batch

(1) Fuel oil fraction. TEH sample contained sediment.

(2) 1 out of 4 VPH instrument surrogates not within acceptance limits. No action required.



Conestoga-Rovers & Associates Limited Task Order#: 11064645 Site#: Q02846 Site Location: 64 Mill Lake Road, Hubbards, NS Project #: 059548

Test Summary

	Maxxam ID Sample ID	FL8759 MW1 (B)		Collected Shipped	2010/03/31 2010/03/31	
	Matrix	Water		Received	2010/03/31	
Test Description		Instrumentation	Potob	Extracted	Applyzod	Analyst
TEH in Water (PIPI)		GC/FID	2115637	2010/04/05	2010/04/05	
VPH in Water (PIRI)		PTGC/MS	2115037	2010/04/05	2010/04/05	SHI
ModTPH (T1) Calc. for Water			2113361	N/A	2010/04/00	
		CALC	2113301		2010/04/07	700
	Maxxam ID	FL8759 Dup		Collected	2010/03/31	
	Sample ID	MW1 (B)		Shipped	2010/03/31	
	Matrix	Water		Received	2010/03/31	
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst
VPH in Water (PIRI)		PTGC/MS	2115774	2010/04/05	2010/04/06	SHI
		1100/110	2110771	2010/01/00	2010/01/00	0112
	Maxxam ID	FL8777		Collected	2010/03/31	
	Sample ID	MW1		Shipped	2010/03/31	
	Matrix	Water		Received	2010/03/31	
Test Description		Instrumontation	Batch	Extracted	Analyzod	Analyst
TEH in Water (PIRI)			2115637	2010/04/05	2010/04/05	
VPH in Water (PIRI)		PTGC/MS	2115057	2010/04/05	2010/04/05	SHI
ModTPH (T1) Calc. for Water			2113361	N/A	2010/04/07	ASC
		0,120	2110001		2010/01/01	100
	Maxxam ID	FL8778		Collected	2010/03/31	
	Sample ID	MW2 (B)		Shipped	2010/03/31	
	Matrix	Water		Received	2010/03/31	
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Water (PIRI)		GC/FID	2115637	2010/04/05	2010/04/05	I HU
VPH in Water (PIRI)		PTGC/MS	2115774	2010/04/05	2010/04/06	SHL
ModTPH (T1) Calc. for Water		CALC	2113361	N/A	2010/04/07	ASC
	Maxxam ID	FL8778 Dup		Collected	2010/03/31	
	Sample ID	MW2 (B)		Shipped	2010/03/31	
	Matrix	Water		Received	2010/03/31	
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Water (PIRI)		GC/FID	2115637	2010/04/05	2010/04/05	LHU
	Maxxam ID	FL8779		Collected	2010/03/31	
	Sample ID	MW2		Shipped	2010/03/31	
	Matrix	Water		Received	2010/03/31	
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst
TFH in Water (PIRI)		GC/FID	2115637	2010/04/05	2010/04/05	I HU
VPH in Water (PIRI)		PTGC/MS	2115774	2010/04/05	2010/04/07	SHL
ModTPH (T1) Calc. for Water		CALC	2113790	N/A	2010/04/07	ASC
, ,						



Conestoga-Rovers & Associates Limited Task Order#: 11064645 Site#: Q02846 Site Location: 64 Mill Lake Road, Hubbards, NS Project #: 059548

Test Summary

	Maxxam ID	FL8780		Collected	2010/03/31	
	Sample ID	MW3 (B)		Shipped	2010/03/31	
	Matrix	Water		Received	2010/03/31	
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Water (PIRI)		GC/FID	2114285	2010/04/01	2010/04/06	LHU
VPH in Water (PIRI)		PTGC/MS	2115774	2010/04/05	2010/04/07	SHL
ModTPH (T1) Calc. for Water		CALC	2113790	N/A	2010/04/07	ASC
	Maxxam ID	FL8780 Dup		Collected	2010/03/31	
	Sample ID	MW3 (B)		Shipped	2010/03/31	
	Matrix	Water		Received	2010/03/31	
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Water (PIRI)		GC/FID	2114285	2010/04/01	2010/04/06	LHU
	Maxxam ID	FL8781		Collected	2010/03/31	
	Sample ID	MW3		Shipped	2010/03/31	
	Matrix	Water		Received	2010/03/31	
		Truct -				
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Water (PIRI)		GC/FID	2115637	2010/04/05	2010/04/05	LHU
VPH in Water (PIRI)		PTGC/MS	2115774	2010/04/05	2010/04/07	SHL
ModTPH (T1) Calc. for Water		CALC	2113790	N/A	2010/04/07	ASC
· · · ·						
	Maxxam ID	FI_8782		Collected	2010/03/31	
	Sample ID	MW4 (B)		Shipped	2010/03/31	
	Matrix	Water		Received	2010/03/31	
	With IA	Water	_		2010/00/01	
Test Description	-	Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Water (PIRI)		GC/FID	2115637	2010/04/05	2010/04/05	LHU
VPH in Water (PIRI)		PTGC/MS	2115774	2010/04/05	2010/04/06	SHL
ModTPH (T1) Calc. for Water		CALC	2113790	N/A	2010/04/07	ASC
	Maxxam ID	FI 8783		Collected	2010/03/31	
	Sample ID			Shinned	2010/03/31	
	Sample ib Matriv	Mator		Bacaived	2010/03/31	
	Iviau in	Water		NECEIVEU	2010/03/31	
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Water (PIRI)		GC/FID	2115637	2010/04/05	2010/04/05	LHU
VPH in Water (PIRI)		PTGC/MS	2115774	2010/04/05	2010/04/06	SHL
ModTPH (T1) Calc. for Water		CALC	2113790	N/A	2010/04/07	ASC



Conestoga-Rovers & Associates Limited Task Order#: 11064645 Site#: Q02846 Site Location: 64 Mill Lake Road, Hubbards, NS Project #: 059548

Test Summary

	Maxxam ID	FL8784		Collected	2010/03/31	
	Sample ID	MW5 (B)		Shipped	2010/03/31	
	Matrix	Water		Received	2010/03/31	
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Water (PIRI)		GC/FID	2114285	2010/04/01	2010/04/06	LHU
VPH in Water (PIRI)		PTGC/MS	2115774	2010/04/05	2010/04/06	SHL
ModTPH (T1) Calc. for Water		CALC	2113790	N/A	2010/04/07	ASC
	Maxxam ID	FL8785		Collected	2010/03/31	
	Sample ID	MW5		Shipped	2010/03/31	
	Matrix	Water		Received	2010/03/31	
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Water (PIRI)		GC/FID	2115637	2010/04/05	2010/04/05	LHU
VPH in Water (PIRI)		PTGC/MS	2115774	2010/04/05	2010/04/06	SHL
ModTPH (T1) Calc. for Water		CALC	2113790	N/A	2010/04/07	ASC
	Maxyam ID			Collected	2010/02/21	
				Collected	2010/03/31	
	Sample ID			Snipped	2010/03/31	
	Watrix	water		Received	2010/03/31	
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Water (PIRI)		GC/FID	2115637	2010/04/05	2010/04/05	LHU
VPH in Water (PIRI)		PTGC/MS	2115774	2010/04/05	2010/04/07	SHL
ModTPH (T1) Calc. for Water		CALC	2113790	N/A	2010/04/07	ASC
	Maxxam ID	FI 8787		Collected	2010/03/31	
				Obligation	2010/00/01	
	Sample ID	MM//6		Shipped	2010/03/31	
	Sample ID Matrix	MW6 Water		Received	2010/03/31 2010/03/31	
Test Description	Sample ID Matrix	MW6 Water Instrumentation	Batch	Shipped Received Extracted	2010/03/31 2010/03/31 Analyzed	Analyst
Test Description TEH in Water (PIRI)	Sample ID Matrix	MW6 Water Instrumentation GC/FID	Batch 2115637	Extracted 2010/04/05	2010/03/31 2010/03/31 Analyzed 2010/04/05	Analyst LHU
Test Description TEH in Water (PIRI) VPH in Water (PIRI)	Sample ID Matrix	MW6 Water Instrumentation GC/FID PTGC/MS	Batch 2115637 2115774	Extracted 2010/04/05 2010/04/05	2010/03/31 2010/03/31 Analyzed 2010/04/05 2010/04/07	Analyst LHU SHL

Maxxam ID	FL8788
Sample ID	MWA
Matrix	Water

Collected 2010/03/31 Shipped 2010/03/31 Received 2010/03/31

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	2115637	2010/04/05	2010/04/06	LHU
VPH in Water (PIRI)	PTGC/MS	2115774	2010/04/05	2010/04/07	SHL
ModTPH (T1) Calc. for Water	CALC	2113790	N/A	2010/04/07	ASC



ModTPH (T1) Calc. for Water

ASC

2010/04/07

Conestoga-Rovers & Associates Limited Task Order#: 11064645 Site#: Q02846 Site Location: 64 Mill Lake Road, Hubbards, NS Project #: 059548

Test Summary

Maxxam ID Sample ID Matrix	FL8789 MWB Water		Collected Shipped Received	2010/03/31 2010/03/31 2010/03/31	
Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	2115637	2010/04/05	2010/04/06	LHU
VPH in Water (PIRI)	PTGC/MS	2115774	2010/04/05	2010/04/07	SHL
ModTPH (T1) Calc. for Water	CALC	2113790	N/A	2010/04/07	ASC
Maxxam ID Sample ID Matrix	FL8790 MWC Water		Collected Shipped Received	2010/03/31 2010/03/31 2010/03/31	
Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	2115637	2010/04/05	2010/04/06	LHU
VPH in Water (PIRI)	PTGC/MS	2115774	2010/04/05	2010/04/07	SHL

2113790

N/A

CALC



Conestoga-Rovers & Associates Limited Task Order#: 11064645 Site#: Q02846 Site Location: 64 Mill Lake Road, Hubbards, NS Project #: 059548

 Package 1
 2.0°C

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

GENERAL COMMENTS

Results relate only to the items tested.



Conestoga-Rovers & Associates Limited Task Order#: 11064645 Site#: Q02846 Site Location: 64 Mill Lake Road, Hubbards, NS Project #: 059548

Quality Assurance Report

Maxxam Job Number: B038415

QA/QC			Date				
Batch			Analyzed				
Num Init	QC Type	Parameter	yyyy/mm/dd	Value	Recovery	Units	QC Limits
2114285 LHU	Method Blank	Isobutylbenzene - Extractable	2010/04/06		101	%	30 - 130
		n-Dotriacontane - Extractable	2010/04/06		101	%	30 - 130
		>C10-C21 Hydrocarbons	2010/04/06	<0.05		mg/L	
		>C21- <c32 hydrocarbons<="" td=""><td>2010/04/06</td><td><0.1</td><td></td><td>mg/L</td><td></td></c32>	2010/04/06	<0.1		mg/L	
2115637 LHU	Method Blank	Isobutylbenzene - Extractable	2010/04/05		89	%	30 - 130
		n-Dotriacontane - Extractable	2010/04/05		103	%	30 - 130
		>C10-C21 Hydrocarbons	2010/04/05	<0.05		mg/L	
		>C21- <c32 hydrocarbons<="" td=""><td>2010/04/05</td><td><0.1</td><td></td><td>mg/L</td><td></td></c32>	2010/04/05	<0.1		mg/L	
2115774 SHL	Method Blank	1,4-Difluorobenzene	2010/04/06		93	%	70 - 130
		4-Bromofluorobenzene	2010/04/06		93	%	70 - 130
		D4-1,2-Dichloroethane	2010/04/06		93	%	70 - 130
		Isobutylbenzene - Volatile	2010/04/06		93	%	70 - 130
		Benzene	2010/04/06	<0.001		mg/L	
		Toluene	2010/04/06	<0.001		mg/L	
		Ethylbenzene	2010/04/06	<0.001		mg/L	
		Xylene (Total)	2010/04/06	<0.002		mg/L	
		C6 - C10 (less BTEX)	2010/04/06	<0.01		mg/L	
	RPD [FL8759-01]	Benzene	2010/04/06	NC		%	40
		Toluene	2010/04/06	NC		%	40
		Ethylbenzene	2010/04/06	NC		%	40
		Xylene (Total)	2010/04/06	NC		%	40
		C6 - C10 (less BTEX)	2010/04/06	NC		%	40
2115637 LHU	RPD [FL8778-01]	>C10-C21 Hydrocarbons	2010/04/05	NC		%	40
		>C21- <c32 hydrocarbons<="" td=""><td>2010/04/05</td><td>NC</td><td></td><td>%</td><td>40</td></c32>	2010/04/05	NC		%	40
2114285 LHU	RPD [FL8780-01]	>C10-C21 Hydrocarbons	2010/04/06	NC		%	40
		>C21- <c32 hydrocarbons<="" td=""><td>2010/04/06</td><td>NC</td><td></td><td>%</td><td>40</td></c32>	2010/04/06	NC		%	40
	Matrix Spike						
	[FL8784-01]	Isobutylbenzene - Extractable	2010/04/06		96	%	30 - 130
		n-Dotriacontane - Extractable	2010/04/06		101	%	30 - 130
		>C10-C21 Hydrocarbons	2010/04/06		107	%	30 - 130
		>C21- <c32 hydrocarbons<="" td=""><td>2010/04/06</td><td></td><td>105</td><td>%</td><td>30 - 130</td></c32>	2010/04/06		105	%	30 - 130
2115637 LHU	Matrix Spike						
	[FL8786-01]	Isobutylbenzene - Extractable	2010/04/05		124	%	30 - 130
		n-Dotriacontane - Extractable	2010/04/05		109	%	30 - 130
		>C10-C21 Hydrocarbons	2010/04/05		NC	%	30 - 130
		>C21- <c32 hydrocarbons<="" td=""><td>2010/04/05</td><td></td><td>115</td><td>%</td><td>30 - 130</td></c32>	2010/04/05		115	%	30 - 130
2115774 SHL	Matrix Spike						
	[FL8777-01]	1,4-Difluorobenzene	2010/04/07		102	%	70 - 130
		4-Bromofluorobenzene	2010/04/07		105	%	70 - 130
		D4-1,2-Dichloroethane	2010/04/07		101	%	70 - 130
		Isobutylbenzene - Volatile	2010/04/07		101	%	70 - 130
		Benzene	2010/04/07		109	%	70 - 130
		loluene	2010/04/07		113	%	70 - 130
			2010/04/07		109	%	70 - 130
0444005 1111	1.00	Xylene (Total)	2010/04/07		113	%	70 - 130
2114285 LHU	LUS	Isobutyibenzene - Extractable	2010/04/06		101	%	30 - 130
		n-Dotriacontane - Extractable	2010/04/06		102	%	30 - 130
			2010/04/06		114	% 0/	30 - 130
0445607		>U21- <u32 hydrocarbons<="" td=""><td>2010/04/06</td><td></td><td>108</td><td>% 0/</td><td>30 - 130</td></u32>	2010/04/06		108	% 0/	30 - 130
2115637 LHU	L03	n Detriegentene - Extractable	2010/04/05		93	% 0/	30 - 130
			2010/04/05		110	70 0/	30 - 130
			2010/04/05		90	70 0/	30 - 130
2115774 011	100		2010/04/05		91	70 0/	30 - 130
2115//4 SHL	103		2010/04/07		90	70 0/	70 - 130
		4-DI 01110110010Del12elle	2010/04/07		90	70	70 - 130

Page 13 of 17 This document is in electronic format, hard copy is available on request.

Maxxam Analytics International Corporation o/a Maxxam Analytics 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.maxxamanalytics.com



Conestoga-Rovers & Associates Limited Task Order#: 11064645 Site#: Q02846 Site Location: 64 Mill Lake Road, Hubbards, NS Project #: 059548

Quality Assurance Report (Continued)

Maxxam Job Number: B038415

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2115774 SHL	LCS	D4-1,2-Dichloroethane	2010/04/07		95	%	70 - 130
		Isobutylbenzene - Volatile	2010/04/07		92	%	70 - 130
		Benzene	2010/04/07		105	%	70 - 130
		Toluene	2010/04/07		103	%	70 - 130
		Ethylbenzene	2010/04/07		100	%	70 - 130
		Xylene (Total)	2010/04/07		104	%	70 - 130

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.

LCS: A blank matrix sample to which a known amount of the analyte has been added. Used to evaluate analyte recovery.

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

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency. NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the

spiked amount was not sufficiently significant to permit a reliable recovery calculation.

NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.



Validation Signature Page

Maxxam Job #: B038415

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

Maelmald _____

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

ils column for lab use only	INVOICE INFORMATION:	-	REPORT I	FORM	ATION	(if differ	rs from	invoice):	PO#					TURNARC	
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Mate Maxam Velow: Mal Pric Client ATL FCD 00149 / Beelsion 10 Maxxam Analytics International Corporation o/a Maxxam Analytics 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel:902-420-0203 Toll-free:800-565-7227 Fax:902-420-8612 www.maxamanalytics.com

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ATL FCD 00149 / Revision 10 Maxxam Analytics International Corporation o/a Maxxam Analytics 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel:902-420-0203 Toll-free:800-565-7227 Fax:902-420-8612 www.maxamanalytics.com

DATA QUALITY REVIEW CHECKLIST – IMPERIAL OIL PROJECTS

Consultant: Location: Consultant Project Number: Are All Laboratory QC Sample Instrument Surrogate Recovery Extraction Surrogate Recovery Method Blank Concentration Matrix Duplicate RPE Matrix Spike Recovery	CRA 64 Mill Lake Rd., Hubbards Nova Scotia 059548 s Within Acceptance Criteria (Yes No I Yes No I Yes No I Yes No I	Yes, No ✓	Sampling Date: Laboratory: Sample Submission Number: o, Not Applicable)? <u>Comr</u>	31-Mar-10 Maxxam-Bedford, NS B038415 nents
Lab Control Sample Recovery	,			
Are All Field QC Samples With Field Blank Concentration Trip Blank Concentration Field Duplicate RPD	nin Alert Limits (Yes, No, Not)	Applica M	able)? Comme W-A is a dup of MW-6	ents
Has CoA been signed off (Yes/ Has lab warranted all tests were Has lab warranted all tests were Were all samples analyzed with All volatiles samples methanol Is Chain of Custody completed Were sample temperatures acce	No)?: in statistical control in CoA (Y analyzed following SOPs in C in hold items (Yes/No)?: extracted (if required) within 4 and signed (Yes/No)?: ptable when they reached lab (Yes/No) CoA (Ye 8 hours Yes/No)?: es/No)? 6 (Yes/No)?:))?:	YES YES YES N/A YES YES
Was a Data Qua Date Issued	lity Waiver (DQW) issued (Yes	s/No)?:	NO Date of Response:	_
Is data considered to be reliable If answer is "No", provide ratio	a (Yes/No)?: mal:		YES	
Data Reviewed by (Print): Date:	Melissa Fitzgerald 4-May-10		Data Reviewed by (Signature):	Scott Clewellen

For Use on Imperial Oil Projects Only



45 Akerley Blvd. Dartmouth, Nova Scotia, Canada B3B 1J7 Telephone: 902.468.1248 Facsimile: 902.468.2207 www.CRAworld.com

February 1, 2013

Reference No.: 059548-02

Sura Ali, Project Manager Remediation and Reclamation Services Imperial Oil Limited 7100 Rue Jean-Talon Est Montréal, Québec H1M 3R8

Dear Ms. Ali:

Re: 2012 Groundwater Monitoring and Sampling Report 64 Mill Lake Road No. 2, Hubbards, Nova Scotia, Location No. 88000331

INTRODUCTION

Conestoga-Rovers & Associates (CRA) was retained by Imperial Oil Limited to complete groundwater monitoring and sampling activities at the former Imperial Oil bulk plant property located at 64 Mill Lake Road No. 2 in Hubbards, Nova Scotia (Site). Associated field work was completed on November 22, 2012.

A Site Location Map is presented as Figure 1. A Site Plan showing all monitor well locations is presented as Figure 2.

SCOPE OF WORK

The scope of work was to perform the following activities.

- Monitor all accessible monitor wells for subsurface vapour concentrations, water levels and the presence or absence of light non-aqueous phase liquids (free product).
- Collect groundwater samples from all accessible monitor wells and submit to Maxxam Analytics Incorporated laboratory (Maxxam), for modified total petroleum hydrocarbon (TPH) analysis utilizing the Atlantic PIRI protocol, including a benzene, toluene, ethylbenzene and xylenes (BTEX) breakdown.

THIS REPORT CONTAINS PROVISIONS LIMITING LIABILITY, THE SCOPE OF THE REPORT AND THIRD PARTY RELIANCE

NOTICE ACCESS TO INFORMATION ACT

These documents and the information contained in them are confidential - property of Imperial Oil and any disclosure of same is governed by the provision of each of the applicable provincial or territorial <u>Freedom of Information</u> legislation, the <u>Privacy Act</u> (Canada) 1980-81-82-83, c.111,Sch.II "1", and the <u>Access to Information Act</u> (Canada) 1980-81-82-83, c.111, Sch I "1", as such legislation may be amended or replaced from time to time.



Reference No.: 059548-02

• Compare groundwater analytical results to the applicable Atlantic Risk-Based Corrective Action (RBCA) Version 3.0 for Petroleum Hydrocarbon Impacted Sites in Atlantic Canada (August 2012); specifically, the Risk-Based Screening Level (RBSL) Table values for a commercial site with potable groundwater usage and coarse-grained soil. Compare groundwater analytical results to the applicable Atlantic Risk-Based Corrective Action (RBCA) Tier I Ecological Screening Levels for Plant and Invertebrate Direct Contact with Shallow Groundwater (applicable only if groundwater levels are within 3 meters of ground surface).

2

• Prepare a report that describes field activities and monitoring results.

FIELD ACTIVITIES

Groundwater Monitoring

On November 22, 2012, all accessible monitor wells were monitored for subsurface vapour concentrations, water levels and the presence or absence of free product. Generally, the monitor wells were monitored in order of least impacted to most impacted (based on historical groundwater data).

Immediately after removing the well cap (J-plug), the maximum subsurface vapour concentration in each monitor well was measured using a portable multi-gas detector (RKI Eagle Series), operating in methane elimination mode. Measurements were obtained by inserting the collection tube of the RKI Eagle into the riser pipe and recording the peak instrument reading. The RKI Eagle was laboratory calibrated prior to use in the field.

Depth to the water table and presence or absence of free product in each monitor well was determined using a Solinst electronic interface probe that was cleaned using a non-toxic, biodegradable cleaner/degreaser (Simple Green) and rinsed with distilled water between monitor wells.

Groundwater Sampling and Analyses

If measurable free product is observed in any monitor well, CRA protocol is not to collect a groundwater sample from that monitor well; however, groundwater samples are collected from all other monitor wells, even if petroleum hydrocarbon sheen is observed.

On November 22, 2012, groundwater samples were collected from all accessible monitor wells. Three well volumes of water were removed, using dedicated polyethylene tubing fitted with a foot valve, from each monitor well prior to sampling. In an attempt to reduce the amount of suspended sediment in each groundwater sample, each monitor well was allowed to sit for approximately 2 hours and was then sampled using a disposable polyethylene bailer.



Reference No.: 059548-02

Samples submitted for BTEX and TPH (fraction C_6-C_{10}) analyses were collected in 40-ml clear glass vials (with zero headspace), pre-charged with sodium bisulfate (NaHSO₄) preservative. Samples submitted for TPH analysis (fractions $>C_{10}-C_{16}, >C_{16}-C_{21}, >C_{21}-C_{32}$) were collected in 250-ml clear glass bottles, pre-charged with sodium bisulfate (NaHSO₄) preservative. All sample bottles were supplied by Maxxam. All groundwater samples were placed in coolers and cooled with ice, immediately after collection.

3

Groundwater samples were submitted to Maxxam in Bedford, Nova Scotia. Maxxam is accredited by the Standards Council of Canada (SCC). Analytical methods used by the laboratory are referenced in the Certificates of Analysis presented in Appendix A.

QUALITY ASSURANCE AND QUALITY CONTROL SAMPLING

A quality assurance and quality control (QA/QC) program was implemented to reduce and quantify potential issues introduced during sample collection, handling, shipping and analysis. The program included, but was not limited to, using dedicated sampling equipment, using sample specific identification and labelling procedures, and using chain of custody records. Field QA/QC samples consisted of one trip blank, one field blank and one field duplicate analyzed for BTEX and TPH.

RESULTS

On November 22, 2012, the depth to groundwater ranged from 1.401 metres below top of casing (mbtoc) in MW6 to 1.925 mbtoc in MW5. Based on this information, relative groundwater elevations were calculated and a groundwater potentiometric surface elevations diagram was generated (Figure 3). As indicated on Figure 3, the inferred principal direction of groundwater flow was to the east.

Groundwater depths, calculated potentiometric elevations, measured product thicknesses and subsurface vapour concentrations are presented in Table 1. Measurable free product was not detected in any of the monitor wells. The subsurface vapour concentrations measured in all accessible monitor wells were non-detectable.

Groundwater analytical results for BTEX and TPH are presented and compared to applicable criteria in Table 2 and on Figure 4. All groundwater analytical results were below the applicable criteria for petroleum hydrocarbon parameters.

QUALITY ASSURANCE AND QUALITY CONTROL RESULTS

The results of the laboratory QA/QC analyses are presented in the Certificates of Analysis located in Appendix A. The analyses included method blanks, matrix duplicates, matrix spikes



Reference No.: 059548-02

and laboratory control samples. Laboratory QA/QC issues that call into question the reliability of the lab data were not reported.

4

The results of the field QA/QC sample analysis are presented in Appendix B. The samples included one trip blank, one field blank and one field duplicate. Field QA/QC issues that call into question the reliability of the lab data reported were not reported.

The laboratory and field QA/QC discussions are presented in Appendix B. In summary, no QA/QC issues were identified that would affect the overall conclusions of the groundwater monitoring and sampling event presented in this report.

LIMITATION OF LIABILITY, SCOPE OF REPORT AND THIRD PARTY RELIANCE

This report has been prepared and the work referred to in this report has been undertaken by Conestoga-Rovers & Associates Limited for Imperial Oil Limited. It is intended for the sole and exclusive use of Imperial Oil Limited, its affiliated companies and partners and their respective insurers, agents, employees and advisors (collectively, "Imperial Oil"). Any use, reliance on or decision made by any person other than Imperial Oil based on this report is the sole responsibility of such other person. Imperial Oil and Conestoga-Rovers & Associates Limited make no representation or warranty to any other person with regard to this report and the work referred to in this report and they accept no duty of care to any other person or any liability or responsibility whatsoever for any losses, expenses, damages, fines, penalties or other harm that may be suffered or incurred by any other person as a result of the use of, reliance on, any decision made or any action taken based on this report or the work referred to in this report.

The investigation undertaken by Conestoga-Rovers & Associates Limited with respect to this report and any conclusions or recommendations made in this report reflect Conestoga-Rovers & Associates Limited judgment based on the site conditions observed at the time of the site inspection on the date(s) set out in this report and on information examined at the time of preparation of this report. This report has been prepared for specific application to this site and it is based, in part, upon visual observation of the site, subsurface investigation at discrete locations and depths, and specific analysis of specific chemical parameters and materials during a specific time interval, all as described in this report. Unless otherwise stated, the findings cannot be extended to previous or future site conditions, portions of the site which were unavailable for direct investigation, subsurface locations which were not investigated directly, or chemical parameters, materials or analysis which were not addressed. Substances other than those addressed by the investigation may exist in areas of the site not investigated and concentrations of substances addressed which are different than those reported may exist in areas other than the locations from which samples were taken.



Reference No.: 059548-02

If site conditions or applicable standards change or if any additional information becomes available at a future date, modifications to the findings, conclusions and recommendations in this report may be necessary.

5

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CLOSURE

We trust the foregoing information is satisfactory for your requirements. If you have any questions or concerns, please do not hesitate to contact the undersigned.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

Clevellyn

Scott Llewellyn, P.Geo. Reviewer

MF/mb/2 Encl.

Melissa Fítzgerald, B.Sc., CET Author



⁰⁵⁹⁴⁵⁸⁻⁰² GIS-DA001 JANUARY 10/2013



059548-02 GA-DA002 JANUARY 10/2013



059548-02 GA-DA003 JANUARY 10/2013



	E	х	C6 - C10 (LESS BTEX)	>C10 - C16	>C16 - C21	>C21- <c32< td=""><td>MTPH</td><td></td></c32<>	MTPH	
01	<0.001	<0.002	<0.01	<0	.05	<0.1	<0.1	
01	<0.001	<0.002	<0.01	<0	.05	<0.1	<0.1	Ī
01	<0.001	<0.002	<0.01	<0	.05	<0.1	<0.1	Ī
01	<0.001	<0.002	<0.01	<0.05	<0.05	<0.1	<0.1	

	Е	х	C6 - C10 (LESS BTEX)	>C10 - C16	>C16 - C21	>C21- <c32< td=""><td>MTPH</td><td></td></c32<>	MTPH	
01	<0.001	< 0.002	<0.01	<0	.05	<0.1	<0.1	
01	<0.001	<0.002	<0.01	<0	.05	<0.1	<0.1	
01	<0.001	<0.002	<0.01	<0	.05	<0.1	<0.1	
01	<0.001	<0.002	<0.01	<0.05	<0.05	<0.1	<0.1	
								č

	Е	х	C6 - C10 (LESS BTEX)	>C10 - C16	>C16 - C21	>C21- <c32< td=""><td>MTPH</td><td></td></c32<>	MTPH	
01	<0.001	<0.002	<0.01	<0	.05	<0.1	<0.1	
01	<0.001	<0.002	<0.01	<0	.05	<0.1	<0.1	
01	<0.001	<0.002	<0.01	<0	.05	<0.1	<0.1	
01	<0.001	<0.002	<0.01	<0.05	<0.05	<0.1	<0.1	

	Е	х	C6 - C10 (LESS BTEX)	>C10 - C16	>C16 - C21	>C21- <c32< td=""><td>MTPH</td><td></td></c32<>	MTPH	
01	<0.001	<0.002	<0.01	<0	.05	<0.1	<0.1	
01	<0.001	<0.002	<0.01	<0	.05	<0.1	<0.1	
01	<0.001	<0.002	<0.01	<0	.05	<0.1	<0.1	
01	<0.001	< 0.002	<0.01	<0.05	<0.05	<0.1	<0.1	

	Е	х	C6 - C10 (LESS BTEX)	>C10 - C16	>C16 - C21	>C21- <c32< td=""><td>MTPH</td></c32<>	MTPH
01	<0.001	<0.002	0.04	5	.8	0.4	6.2(2)
01	<0.001	<0.002	0.03	1	3	0.6	13(2)
01	<0.001	<0.002	0.02	3	6	1.6	37(2)
01	<0.001	<0.002	<0.01	0.43	0.27	0.11	0.81(2)
01	< 0.001	< 0.002	< 0.01	0.43	0.22	0.14	0.78(2)

ECOLOGICAL CRITERIA (b)	RDL
350	0.001
200	0.001
110	0.001
120	0.002
11	0.01
3.1	0.05
NG	0.05
NG	0.1

Figure 4

GROUNDWATER ANALYTICAL RESULTS FORMER IMPERIAL OIL BULK PLANT **IMPERIAL OIL** 64 Mill Lake Road No.2, Hubbards, Nova Scotia

TABLE 1GROUNDWATER MONITORING RESULTS64 Mill Lake Road No. 2, Hubbards, Nova Scotia

MONITOR WELL ID	TOP OF CASING ELEVATION ¹ (m)	GROUND SURFACE ELEVATION (m)	SCREEN INTERVAL (mbgs)	DATE (yyyy/mm/dd)	SUBSURFACE VAPOUR CONCENTRATIONS ²	FREE PRODUCT THICKNESSES (mm)	POTENTIO- METRIC DEPTH (mbtoc)	POTENTIO- METRIC DEPTH (mbgs)	POTENTIO-METRIC ELEVATION (m)
MW1	100.870	100.165	unknown	2012/11/22	0	nd	1.799	1.094	99.071
MW2	100.995	100.075	unknown	2012/11/22	0	nd	1.734	0.814	99.261
MW3	100.520	99.730	unknown	2012/11/22	0	nd	1.835	1.045	98.685
MW4	100.120	99.470	unknown	2012/11/22	0	nd	1.884	1.234	98.236
MW5	100.200	99.700	unknown	2012/11/22	0	nd	1.925	1.425	98.275
MW6	100.650	99.840	unknown	2012/11/22	0	nd	1.401	0.591	99.249

1 - Relative elevations determined using a temporary benchmark with an assumed elevation of 100.000 meters above sea level (masl).

2 - ppmv if not indicated; % LEL if indicated

m - metres

mm - millimetres

mbtoc - metres below top of casing

mbgs - metres below ground surface

nd - not detected

TABLE 2 GROUNDWATER ANALYTICAL RESULTS 64 Mill Lake Road No. 2, Hubbards, Nova Scotia

SAMPLE LOCATIONS		MW1	MW1	MW2	MW3	MW4	MW5		
			Lab Duplicate					Human Haalth	Faclorical
								Criteria (a)	Criteria (b)
Maxxam ID		PS0987	PS0987	PS0988	PS0989	PS0990	PS0991	Cinterna (u)	cinteria (b)
Date Sampled (yyyy/mm/dd)		2012/11/22	2012/11/22	2012/11/22	2012/11/22	2012/11/22	2012/11/22		
PARAMETERS	RDL								
Benzene	0.0010	< 0.0010	<0.0010	< 0.0010	<0.0010	< 0.0010	< 0.0010	0.005	350
Toluene	0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.024	200
Ethylbenzene	0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0024	110
Total Xylenes	0.0020	<0.0020	<0.0020	< 0.0020	<0.0020	<0.0020	<0.0020	0.3	120
Petroleum Hydrocarbons (C6 - C10)	0.010	< 0.010	<0.010	< 0.010	<0.010	<0.010	<0.010	NA	11
Petroleum Hydrocarbons (>C10 - C16)	0.050	< 0.050		< 0.050	< 0.050	< 0.050	< 0.050	NA	3.1
Petroleum Hydrocarbons (>C16 - C21)	0.050	< 0.050		< 0.050	< 0.050	<0.050	< 0.050	NA	NA
Petroleum Hydrocarbons (>C21 - C32)	0.10	< 0.10		<0.10	<0.10	<0.10	<0.10	NA	NA
Petroleum Hydrocarbons (Modified TPH)	0.10	<0.10		<0.10	<0.10	<0.10	<0.10	4.4/3.2/7.8	NA

(a) Atlantic Risk-Based Corrective Action (RBCA) Tier I Risk Based Screening Levels (RBSLs) for a commercial property with potable groundwater usage and coarse-grained soil

(b) Atlantic Risk-Based Corrective Action (RBCA) Tier I Ecological Screening Levels for Plant and Invertebrate Direct Contact with Shallow Groundwater; criteria is applicable only if groundwater levels are within 3 metres of ground surface

RDL - Reportable Detection Limit

NA - Not Applicable

"---" - Not Analyzed

Analytical results for all parameters are reported in milligrams per litre (mg/L)

<u>BOLD</u> - exceeds applicable guidelines (a)

ITALIC - exceeds applicable guidelines (b)

mTPH - Modified Total Petroleum Hydrocarbons

"(1)" - mTPH result is compared to gasoline fraction criteria of 4.4 mg/L

"(2)" - mTPH result is compared to diesel fraction criteria of 3.2 mg/L

"(3)" - mTPH result is compared to lube oil fraction criteria of 7.8 mg/L

TABLE 2 GROUNDWATER ANALYTICAL RESULTS 64 Mill Lake Road No. 2, Hubbards, Nova Scotia

SAMPLE LOCATIONS		MW6	MWA				
			Field Duplicate			Uuman Uaalth	Ecological
			MW6			Critoria (a)	Criteria (b)
Maxxam ID		PS0992	PS1034			Cincila (a)	Cincila (b)
Date Sampled (yyyy/mm/dd)		2012/11/22	2012/11/22				
PARAMETERS	RDL						
Benzene	0.0010	< 0.0010	< 0.0010			0.005	350
Toluene	0.0010	< 0.0010	< 0.0010			0.024	200
Ethylbenzene	0.0010	< 0.0010	< 0.0010			0.0024	110
Total Xylenes	0.0020	< 0.0020	< 0.0020			0.3	120
Petroleum Hydrocarbons (C6 - C10)	0.010	<0.010	< 0.010			NA	11
Petroleum Hydrocarbons (>C10 - C16)	0.050	0.43	0.43			NA	3.1
Petroleum Hydrocarbons (>C16 - C21)	0.050	0.27	0.22			NA	NA
Petroleum Hydrocarbons (>C21 - C32)	0.10	0.11	0.14			NA	NA
Petroleum Hydrocarbons (Modified TPH)	0.10	0.81 (2)	0.78 ⁽²⁾			4.4/3.2/7.8	NA

(a) Atlantic Risk-Based Corrective Action (RBCA) Tier I Risk Based Screening Levels (RBSLs) for a commercial property with potable groundwater usage and coarse-grained soil

(b) Atlantic Risk-Based Corrective Action (RBCA) Tier I Ecological Screening Levels for Plant and Invertebrate Direct Contact with Shallow Groundwater; criteria is applicable only if groundwater levels are within 3 metres of ground surface

mTPH - Modified Total Petroleum Hydrocarbons

"(1)" - mTPH result is compared to gasoline fraction criteria of 4.4 mg/L

"(2)" - mTPH result is compared to diesel fraction criteria of 3.2 mg/L

RDL - Reportable Detection Limit

NA - Not Applicable

"---" - Not Analyzed

Analytical results for all parameters are reported in milligrams per litre (mg/L)

litre (mg/L) "(3)" - mTPH result is compared to lube oil fraction criteria of 7.8 mg/L

<u>BOLD</u> - exceeds applicable guidelines (a)

ITALIC - exceeds applicable guidelines (b)

APPENDIX A

LABORATORY CERTIFICATES



Task Order#: 4410047514 Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02 Your C.O.C. #: BE 03669

Attention: Scott LLewellyn

Conestoga-Rovers & Associates Limited 45 Akerley Blvd Dartmouth, NS B3B 1J7

Report Date: 2012/11/30

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2I4092 Received: 2012/11/22, 15:04

Sample Matrix: Water # Samples Received: 6

			Method
Analyses	Quantity	Laboratory Method	Primary reference
TEH in Water (PIRI)	6	ATL SOP 00113	Based on Atl. PIRI
VPH in Water (PIRI)	6	ATL SOP 00118	Based on Atl. PIRI
ModTPH (T1) Calc. for Water	6		Based on Atl. PIRI

Remarks:

All work recorded herein has been performed in accordance to the ISO 17025 standard. Methods used by Maxxam Analytics are based upon accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing.

Maxxam Analytics is accredited by Standards Council of Canada (SCC). Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract. Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

All data is in statistical control and has met all QC and method performance criteria unless otherwise flagged. All samples were analysed within hold time unless otherwise flagged. All soil samples for BTEX analysis were methanol extracted within 24 hours unless otherwise flagged.

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

Encryption Key

Suzanne Rogers 30 Nov 2012 13:40:21 -04:00

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

Suzanne Rogers, Manager, Client Services Email: SRogers@maxxam.ca Phone# (902) 420-0203 Ext:232

Page 1 of 10



Task Order#: 4410047514 Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02 Your C.O.C. #: BE 03669

Attention: Scott LLewellyn

Conestoga-Rovers & Associates Limited 45 Akerley Blvd Dartmouth, NS B3B 1J7

Report Date: 2012/11/30

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2I4092 Received: 2012/11/22, 15:04

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



Maxxam Job #: B2I4092 Report Date: 2012/11/30

Conestoga-Rovers & Associates Limited Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

ATLANTIC MUST IN WATER - PIRI TIER I (WATER)

Maxxam ID		PS0987	PS0987	PS0988	PS0989		
Sampling Date		2012/11/22	2012/11/22	2012/11/22	2012/11/22		
		11:49	11:49	11:40	11:34		
COC Number		BE 03669	BE 03669	BE 03669	BE 03669		
	Units	MW1	MW1 Lab-Dup	MW2	MW3	RDI	OC Batch
	Tornes						go Baton
Benzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	3049712
Toluene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	3049712
Ethylbenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	3049712
Xylene (Total)	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	3049712
C6 - C10 (less BTEX)	mg/L	<0.010	<0.010	<0.010	<0.010	0.010	3049712
>C10-C16 Hydrocarbons	mg/L	<0.050		<0.050	<0.050	0.050	3046446
>C16-C21 Hydrocarbons	mg/L	<0.050		<0.050	<0.050	0.050	3046446
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.10</td><td></td><td><0.10</td><td><0.10</td><td>0.10</td><td>3046446</td></c32>	mg/L	<0.10		<0.10	<0.10	0.10	3046446
Modified TPH (Tier1)	mg/L	<0.10		<0.10	<0.10	0.10	3045078
Reached Baseline at C32	mg/L	NA		NA	NA	N/A	3046446
Hydrocarbon Resemblance	mg/L	NA		NA	NA	N/A	3046446
Extraction Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	105		109	106		3046446
n-Dotriacontane - Extractable	%	114 (1)		113	113 (1)		3046446
Isobutylbenzene - Volatile	%	98	99	98	98		3049712
Instrument Surrogate Recovery (%)							
1,4-Difluorobenzene	%	100	102	100	101		3049712
4-Bromofluorobenzene	%	100	101	100	100		3049712
D4-1,2-Dichloroethane	%	100	102	99	100		3049712

RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate QC Batch = Quality Control Batch (1) TEH sample contained sediment.


Conestoga-Rovers & Associates Limited Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

ATLANTIC MUST IN WATER - PIRI TIER I (WATER)

Maxxam ID		PS0990		PS0991	PS0992		
Sampling Date		2012/11/22		2012/11/22	2012/11/22		
		11:25		11:15	11:08		
COC Number		BE 03669		BE 03669	BE 03669		
	Units	MW4	OC Batch	MW5	MW6	RDI	QC Batch
	- on to		Ro Buton				Le Datein
Benzene	mg/L	<0.0010	3049712	<0.0010	<0.0010	0.0010	3049712
Toluene	mg/L	<0.0010	3049712	<0.0010	<0.0010	0.0010	3049712
Ethylbenzene	mg/L	<0.0010	3049712	<0.0010	<0.0010	0.0010	3049712
Xylene (Total)	mg/L	<0.0020	3049712	<0.0020	<0.0020	0.0020	3049712
C6 - C10 (less BTEX)	mg/L	<0.010	3049712	<0.010	<0.010	0.010	3049712
>C10-C16 Hydrocarbons	mg/L	<0.050	3051073	<0.050	0.43	0.050	3046446
>C16-C21 Hydrocarbons	mg/L	<0.050	3051073	<0.050	0.27	0.050	3046446
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.10</td><td>3051073</td><td><0.10</td><td>0.11</td><td>0.10</td><td>3046446</td></c32>	mg/L	<0.10	3051073	<0.10	0.11	0.10	3046446
Modified TPH (Tier1)	mg/L	<0.10	3045078	<0.10	0.81	0.10	3045078
Reached Baseline at C32	mg/L	NA	3051073	NA	Yes	N/A	3046446
Hydrocarbon Resemblance	mg/L	NA	3051073	NA	COMMENT (1)	N/A	3046446
Extraction Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	109	3051073	104	114		3046446
n-Dotriacontane - Extractable	%	105	3051073	110 (2)	118		3046446
Isobutylbenzene - Volatile	%	98	3049712	98	98		3049712
Instrument Surrogate Recovery (%)							
1,4-Difluorobenzene	%	100	3049712	100	100		3049712
4-Bromofluorobenzene	%	100	3049712	99	101		3049712
D4-1,2-Dichloroethane	%	100	3049712	99	100		3049712

RDL = Reportable Detection Limit QC Batch = Quality Control Batch (1) Weathered fuel oil fraction. (2) TEH sample contained sediment.



VPH in Water (PIRI)

ModTPH (T1) Calc. for Water

Conestoga-Rovers & Associates Limited Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

Test Summary

Maxxam ID Sample ID Matrix	PS0987 MW1 Water				Re	Collected linquished Received	2012/11/22 2012/11/22 2012/11/22
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst	
TEH in Water (PI	RI)	GC/FID	3046446	2012/11/23	2012/11/24	Susan Ha	ardy
VPH in Water (PII	RI)	PTGC/MS	3049712	2012/11/27	2012/11/28	Tony We	ingartshofer
ModTPH (T1) Cal	c. for Water	CALC	3045078	N/A	2012/11/29	Automate	d Statchk
Maxxam ID Sample ID Matrix	PS0987 Dup MW1 Water				Re	Collected linquished Received	2012/11/22 2012/11/22 2012/11/22
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst	
VPH in Water (PI	RI)	PTGC/MS	3049712	2012/11/27	2012/11/28	Tony We	ngartshofer
Maxxam ID Sample ID Matrix	PS0988 MW2 Water				Re	Collected linquished Received	2012/11/22 2012/11/22 2012/11/22
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst	
TEH in Water (PI	<u>२।)</u>	GC/FID	3046446	2012/11/23	2012/11/24	Susan Ha	ardy
VPH in Water (PII	RI)	PTGC/MS	3049712	2012/11/27	2012/11/28	Tony We	ngartshofer
ModTPH (T1) Cal	c. for Water	CALC	3045078	N/A	2012/11/29	Automate	d Statchk
Maxxam ID Sample ID Matrix	PS0989 MW3 Water				Re	Collected linquished Received	2012/11/22 2012/11/22 2012/11/22
Test Description		Instrumentation	Batch	Extracted	Analvzed	Analvst	
TEH in Water (PI	२ ।)	GC/FID	3046446	2012/11/23	2012/11/24	Susan Ha	ardy
VPH in Water (PII	RI)	PTGC/MS	3049712	2012/11/27	2012/11/28	Tony We	ingartshofer
ModTPH (T1) Cal	c. for Water	CALC	3045078	N/A	2012/11/29	Automate	d Statchk
Maxxam ID Sample ID Matrix	PS0990 MW4 Water				Re	Collected linquished Received	2012/11/22 2012/11/22 2012/11/22
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst	
TEH in Water (PI	<u>21)</u>	GC/FID	3051073	2012/11/28	2012/11/20	Susan Ha	ardy

3049712

3045078

PTGC/MS

CALC

2012/11/27

N/A

2012/11/28

2012/11/30

Tony Weingartshofer

Automated Statchk



Conestoga-Rovers & Associates Limited Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

2012/11/29

Test Summary

Maxxam ID Sample ID Matrix	PS0991 MW5 Water				Re	Collected 20 elinquished 20 Received 20)12/11/22)12/11/22)12/11/22
Test Description		Instrumentatio	n Batch	Extracted	Analyzed	Analyst	
TEH in Water (PIF	RI)	GC/FID	3046446	2012/11/23	2012/11/24	Susan Hardy	1
VPH in Water (PIF	RI)	PTGC/MS	3049712	2012/11/27	2012/11/28	Tony Weinga	artshofer

3045078

N/A

CALC

Maxxam ID	PS0992
Sample ID	MW6
Matrix	Water

ModTPH (T1) Calc. for Water

Collected	2012/11/22
Relinquished	2012/11/22
Received	2012/11/22

Automated Statchk

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	3046446	2012/11/23	2012/11/24	Susan Hardy
VPH in Water (PIRI)	PTGC/MS	3049712	2012/11/27	2012/11/28	Tony Weingartshofer
ModTPH (T1) Calc. for Water	CALC	3045078	N/A	2012/11/29	Automated Statchk



Conestoga-Rovers & Associates Limited Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

Package 1 2.3°C

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

GENERAL COMMENTS

Incorrect IOL project number listed on COC. We will proceed using JW.00096 as per Scott Llewellyn. 11/26/12 MMC

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics 200 Bluewater Rd, Suite 105, Bedford, Nova Sootia Canada B4B 109 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-6612 www.maxxamanalytics.com



Conestoga-Rovers & Associates Limited Task Order#: 4410047514 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

Quality Assurance Report

Maxxam Job Number: B2I4092

QA/QC			Date				
Batch			Analyzed				
Num Init	QC Type	Parameter	yyyy/mm/dd	Value	Recovery	Units	QC Limits
3046446 SHR	Method Blank	Isobutylbenzene - Extractable	2012/11/24		107	%	30 - 130
		n-Dotriacontane - Extractable	2012/11/24		109	%	30 - 130
		>C10-C16 Hydrocarbons	2012/11/24	< 0.050		ma/L	
		>C16-C21 Hydrocarbons	2012/11/24	< 0.050		ma/l	
		$\sim C^{21} - C^{22}$ Hydrocarbons	2012/11/24	<0.10		mg/L	
3049712 TWE	Method Blank	1 4-Difluorobenzene	2012/11/24	\$0.10	100	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	70 - 130
5045712 TWL	Method Diank	4-Bromofluorobenzene	2012/11/28		90	%	70 - 130
		DI-1 2-Dichloroethane	2012/11/28		100	70 9/	70 - 130
			2012/11/20		100	70 9/	70 - 130
		Bonzono	2012/11/20	-0.0010	30	70 ma/l	70 - 150
		Teluene	2012/11/20	<0.0010		mg/L	
			2012/11/28	<0.0010		mg/L	
			2012/11/28	<0.0010		mg/L	
			2012/11/28	<0.0020		mg/L	
		C6 - C10 (less BTEX)	2012/11/28	<0.010	10.1	mg/L	00 100
3051073 SHR	Method Blank	Isobutylbenzene - Extractable	2012/11/29		104	%	30 - 130
		n-Dotriacontane - Extractable	2012/11/29		104	%	30 - 130
		>C10-C16 Hydrocarbons	2012/11/29	<0.050		mg/L	
		>C16-C21 Hydrocarbons	2012/11/29	<0.050		mg/L	
		>C21- <c32 hydrocarbons<="" td=""><td>2012/11/29</td><td><0.10</td><td></td><td>mg/L</td><td></td></c32>	2012/11/29	<0.10		mg/L	
3049712 TWE	RPD [PS0987-02]	Benzene	2012/11/28	NC		%	40
		Toluene	2012/11/28	NC		%	40
		Ethylbenzene	2012/11/28	NC		%	40
		Xylene (Total)	2012/11/28	NC		%	40
		C6 - C10 (less BTEX)	2012/11/28	NC		%	40
3051073 SHR	Matrix Spike						
	[PS0990-01]	Isobutylbenzene - Extractable	2012/11/29		107	%	30 - 130
		n-Dotriacontane - Extractable	2012/11/29		106	%	30 - 130
		>C10-C16 Hvdrocarbons	2012/11/29		84	%	30 - 130
		>C16-C21 Hydrocarbons	2012/11/29		100	%	30 - 130
		>C21- <c32 hydrocarbons<="" td=""><td>2012/11/29</td><td></td><td>106</td><td>%</td><td>30 - 130</td></c32>	2012/11/29		106	%	30 - 130
3046446 SHR	LCS	Isobutylbenzene - Extractable	2012/11/24		103	%	30 - 130
	200	n-Dotriacontane - Extractable	2012/11/24		109	%	30 - 130
		>C10-C16 Hydrocarbons	2012/11/24		87	%	30 - 130
		>C16-C21 Hydrocarbons	2012/11/24		101	%	30 - 130
		>C21-2C32 Hydrocarbons	2012/11/24		113	%	30 - 130
3049712 TWE	105	1 4-Difluorobenzene	2012/11/24		90	%	70 - 130
5049712 TWL	200	1,4-Dilidolobelizerie	2012/11/20		100	70 9/	70 - 130
		4-Droniondorobenzene	2012/11/20		100	/0	70 - 130
			2012/11/28		100	% 0/	70 - 130
		Isobutyibenzene - volatile	2012/11/28		97	%	70 - 130
		Benzene	2012/11/28		98	%	70 - 130
		loluene	2012/11/28		101	%	70 - 130
		Ethylbenzene	2012/11/28		98	%	70 - 130
		Xylene (Total)	2012/11/28		99	%	70 - 130
3051073 SHR	LCS	Isobutylbenzene - Extractable	2012/11/29		105	%	30 - 130
		n-Dotriacontane - Extractable	2012/11/29		108	%	30 - 130
		>C10-C16 Hydrocarbons	2012/11/29		82	%	30 - 130
		>C16-C21 Hydrocarbons	2012/11/29		97	%	30 - 130
		>C21- <c32 hydrocarbons<="" td=""><td>2012/11/29</td><td></td><td>108</td><td>%</td><td>30 - 130</td></c32>	2012/11/29		108	%	30 - 130

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. LCS: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy. Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination. Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency. NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.



Validation Signature Page

Maxxam Job #: B2I4092

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

Maelonalo

Rose Macdonald, Scientific Specialist (Organics)

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

Maxiam Bec	Bluewat Iford, NS w.maxxa	er Roa B4B ⁻ manaly	d, Suite 1G9 tics.co	∍105 Pł m Toll	none: (90 Fax: (90 Free: 1-6)2) 420-)2) 420- 800-565	0203 8612 5-722	3 2 27		E	ΕΧλ	(ON MC CHAI)BIL/ N-Oł	/IMP F-Cu A	ERI IST(AL I DDY YSIS	DIL RE S RE	- <i>M.</i> COR	4XX/ D Ste	a <i>in</i> D	С	of C	# E	Page 3E	03	of 66	9	3
INVOICE INFORMATION			REF	ORT INFORM	ATION		1.00									-								-				
Company Name: 🗹 Imperial Oil 🗌 Ex	xonMobil	Compar	y Name:	URA	L																							
Contact Name: SURA ALI		Contact	Name:	SCOTT LU	EWELL	1N_											Contraction of the local distribution of the											
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FIELD SAMPLE ID	ROUND	VIRFACE ATER OIL		DATE DATE SAMPI	JING	PRESERVED PRESERVED AB FILTRATION	CAp-30 Choose	CAp-MS Choose	Total Digest (Dissolved	leroury	Default Avails Default Avails Metals Total I For Ocean Se	Selenium (low	Hot Water So (Required for	TPH MUST (E	Soil (Potable) Policy Low Lo	BTEX, VPH, L	TPH Fraction	PCBs	VOCS EPA 62								
1 MI434	<u>ع</u> و لا	ss s		12/11/27	11:44	교생그여	: <u>œ</u>	Я	vvate		≥		1	T İ	V	1	1	Ť	T	1			<u>.</u>			-	H	
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IOL SITE LOCATION				REGUL	ATORY (RITERIA	A/DE	TEC	TION	LIMI	TS	SPECIA	L INS	TRUC	TION	IS	ee l			-t	# JAR	S USED	Т	URNA	ROUN	ND TIN	NE	
IOL SITE # (if applicable)	1BBAK	(25)	NIS	A	TIAN	TT()	PRI	Δ													SUBM	ITTED	Dias		15 -1		1	l .
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COOLER ID CUSTO	DY SEAL	YES	NO C	OOLER ID		CU	STOD	Y SE	AL	YES	N		er Id			a	C	CUSTO	DOY SE	EAL	YES	NÓ	(100)	Dat	e Requ	uired		
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COC - 1009 (01/10) IOL - NS		ابع حيد				White: Max	xam			Yei	llow:	Client		1200	_	200					0	12.1		<u></u>	<u></u>		- 2-	1

COC - 1009 (01/10) IOL - NS

DATA QUALITY REVIEW CHECKLIST - IMPERIAL OIL PROJECTS

Consultant:	CRA	-	Sampling Date:	2012/11/22
Location: 64 Mill	Lake Rd No. 2, Hubb	ards, NS	Laboratory :	Maxxam - Bedford, NS
Consultant Project Number:	059548-02		Sample Submissio	on Number: <u>B2I4092</u>
Are All Laboratory QC Samples	Within Acceptance C	Criteria (Ye	s, No, Not Applicable	e)?
	Yes No	NA		Comments
Instrument Surrogate Recovery	N.	X	All lab QC have me	t acceptance criteria
Extraction Surrogate Recovery Method Blank Concentration	X			
Matrix Duplicate RPD	Λ	x	5 of 5 parameters no	ot calculated
Matrix Spike Recovery	Х		I I I I I I I I I I I I I I I I I I I	
Lab Control Sample Recovery	Х			
Are All Field QC Samples Within	n Alert Limits (Yes, I	No, Not Ap	pplicable)?	
	Yes No	NA	-	Comments
Field Blank Concentration		X		
Field Duplicate RPD		X X		
Tield Duplicate RID		Λ		
Has CoA been signed off (Yes/N	o)?:			Yes
Has lab warranted all tests were i	n statistical control in	n CoA (Yes	s/No)?:	Yes
Has lab warranted all tests were a Were all samples analyzed within	hold times (Yes/No	0P's in Co.)9.	A (Yes/No)?:	Yes
All volatiles samples methanol ex	tracted (if required)	within 48 h	nours (Yes/No)?:	N/A
Is Chain of Custody completed as	nd signed (Yes/No)?:	:		Yes
Were sample temperatures accep	able when they reach	hed lab (Ye	es/No)?:	No
Was a Data Quality Waiver (DQ)	W) issued (Yes/No)?	:	_	No
Date Issued:	N/A		Date of Response:	N/A
Is data considered to be reliable (If answer is "No", describe and p	Yes/No)?: rovide rationale:		Yes	
Data Reviewed by (Print):	Melissa Fitzgera	ıld	Data Reviewed by (Signature): WHzgerald
Data	2013/01/07			
Date:	2015/01/07			

For Use on Imperial Oil Projects Only



Task Order#: 4410047514 Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02 Your C.O.C. #: BE 03670

Attention: Scott LLewellyn

Conestoga-Rovers & Associates Limited 45 Akerley Blvd Dartmouth, NS B3B 1J7

Report Date: 2012/11/30

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2I4098 Received: 2012/11/22, 15:05

Sample Matrix: Water # Samples Received: 3

			Method
Analyses	Quantity	Laboratory Method	Primary reference
TEH in Water (PIRI)	3	ATL SOP 00113	Based on Atl. PIRI
VPH in Water (PIRI)	3	ATL SOP 00118	Based on Atl. PIRI
ModTPH (T1) Calc. for Water	3		Based on Atl. PIRI

Remarks:

All work recorded herein has been performed in accordance to the ISO 17025 standard. Methods used by Maxxam Analytics are based upon accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing.

Maxxam Analytics is accredited by Standards Council of Canada (SCC). Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract. Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

All data is in statistical control and has met all QC and method performance criteria unless otherwise flagged. All samples were analysed within hold time unless otherwise flagged. All soil samples for BTEX analysis were methanol extracted within 24 hours unless otherwise flagged.

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

Encryption Key

Mari Kerny Mari Kenny 30 Nov 2012 14:06:35 -04:00

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

Suzanne Rogers, Manager, Client Services Email: SRogers@maxxam.ca Phone# (902) 420-0203 Ext:232

Page 1 of 8



Task Order#: 4410047514 Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02 Your C.O.C. #: BE 03670

Attention: Scott LLewellyn

Conestoga-Rovers & Associates Limited 45 Akerley Blvd Dartmouth, NS B3B 1J7

Report Date: 2012/11/30

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2I4098 Received: 2012/11/22, 15:05

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



Conestoga-Rovers & Associates Limited Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

ATLANTIC MUST IN WATER - PIRI TIER I (WATER)

Maxxam ID		PS1034	PS1035	PS1035	PS1036		
Sampling Date		2012/11/22	2012/11/22	2012/11/22	2012/11/22		
		11:09	12:00	12:00	12:00		
COC Number		BE 03670	BE 03670	BE 03670	BE 03670		
	Units	MWA	MWB	MWB Lab-Dup	MWC	RDL	QC Batch
	1			1			
Benzene	mg/L	<0.0010	<0.0010		<0.0010	0.0010	3049712
Toluene	mg/L	<0.0010	<0.0010		<0.0010	0.0010	3049712
Ethylbenzene	mg/L	<0.0010	<0.0010		<0.0010	0.0010	3049712
Xylene (Total)	mg/L	<0.0020	<0.0020		<0.0020	0.0020	3049712
C6 - C10 (less BTEX)	mg/L	<0.010	<0.010		<0.010	0.010	3049712
>C10-C16 Hydrocarbons	mg/L	0.43	<0.050	<0.050	<0.050	0.050	3051073
>C16-C21 Hydrocarbons	mg/L	0.22	<0.050	<0.050	<0.050	0.050	3051073
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td>0.14</td><td><0.10</td><td><0.10</td><td><0.10</td><td>0.10</td><td>3051073</td></c32>	mg/L	0.14	<0.10	<0.10	<0.10	0.10	3051073
Modified TPH (Tier1)	mg/L	0.78	<0.10		<0.10	0.10	3045078
Reached Baseline at C32	mg/L	Yes	NA		NA	N/A	3051073
Hydrocarbon Resemblance	mg/L	COMMENT (1)	NA		NA	N/A	3051073
Extraction Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	110	107	104	104		3051073
n-Dotriacontane - Extractable	%	108	109	102	106		3051073
Isobutylbenzene - Volatile	%	99	98		99		3049712
Instrument Surrogate Recovery (%)							
1,4-Difluorobenzene	%	100	100		99		3049712
4-Bromofluorobenzene	%	101	100		101		3049712
D4-1,2-Dichloroethane	%	100	98		100		3049712

RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate QC Batch = Quality Control Batch (1) Weathered fuel oil fraction.



Conestoga-Rovers & Associates Limited Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

Test Summary

Maxxam ID	PS1034					Collected 2012/11/22
Sample ID	MWA				Re	linquished 2012/11/22
Matrix	Water					Received 2012/11/22
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Water (PIR	RI)	GC/FID	3051073	2012/11/28	2012/11/29	Susan Hardy
VPH in Water (PIF	RI)	PTGC/MS	3049712	2012/11/27	2012/11/28	Tony Weingartshofer
ModTPH (T1) Calo	c. for Water	CALC	3045078	N/A	2012/11/30	Automated Statchk

Maxxam ID PS1035 Sample ID MWB Matrix Water

VPH in Water (PIRI)

ModTPH (T1) Calc. for Water

Collected 2012/11/22 Relinquished 2012/11/22 Received 2012/11/22

Tony Weingartshofer

Automated Statchk

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	3051073	2012/11/28	2012/11/29	Susan Hardy
VPH in Water (PIRI)	PTGC/MS	3049712	2012/11/27	2012/11/28	Tony Weingartshofer
ModTPH (T1) Calc. for Water	CALC	3045078	N/A	2012/11/30	Automated Statchk

Maxxam ID	PS1035 Dup				(Collected	2012/11/22
Sample ID	MWB				Reli	nquished	2012/11/22
Matrix	Water				I	Received	2012/11/22
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst	
TEH in Water (PIF	RI)	GC/FID	3051073	2012/11/28	2012/11/29	Susan Ha	ırdy

Maxxam ID Sample ID Matrix	PS1036 MWC Water				Re	Collected linquished Received	2012/11/22 2012/11/22 2012/11/22
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst	
TEH in Water (PIF	RI)	GC/FID	3051073	2012/11/28	2012/11/29	Susan Ha	ardv

3049712

3045078

2012/11/27

N/A

2012/11/28

2012/11/30

PTGC/MS

CALC



Conestoga-Rovers & Associates Limited Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

Package 1 2.0°C

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

GENERAL COMMENTS

Incorrect IOL project number listed on COC. We will proceed using JW.00096 as per Scott Llewellyn. 11/26/12 MMC

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 109 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.maxxamanalytics.com



Conestoga-Rovers & Associates Limited Task Order#: 4410047514 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

Quality Assurance Report

Maxxam Job Number: B2I4098

QA/QC			Date				
Batch			Analyzed				
Num Init	QC Type	Parameter	yyyy/mm/dd	Value	Recovery	Units	QC Limits
3049712 TWE	Method Blank	1,4-Difluorobenzene	2012/11/28		100	%	70 - 130
		4-Bromofluorobenzene	2012/11/28		99	%	70 - 130
		D4-1,2-Dichloroethane	2012/11/28		100	%	70 - 130
		Isobutylbenzene - Volatile	2012/11/28		98	%	70 - 130
		Benzene	2012/11/28	<0.0010		mg/L	
		Toluene	2012/11/28	<0.0010		mg/L	
		Ethylbenzene	2012/11/28	<0.0010		mg/L	
		Xylene (Total)	2012/11/28	<0.0020		mg/L	
		C6 - C10 (less BTEX)	2012/11/28	<0.010		mg/L	
3051073 SHR	Method Blank	Isobutylbenzene - Extractable	2012/11/29		104	%	30 - 130
		n-Dotriacontane - Extractable	2012/11/29		104	%	30 - 130
		>C10-C16 Hydrocarbons	2012/11/29	< 0.050		mg/L	
		>C16-C21 Hydrocarbons	2012/11/29	< 0.050		mg/L	
		>C21- <c32 hydrocarbons<="" td=""><td>2012/11/29</td><td><0.10</td><td></td><td>mg/L</td><td></td></c32>	2012/11/29	<0.10		mg/L	
	RPD [PS1035-01]	>C10-C16 Hydrocarbons	2012/11/29	NC		%	40
		>C16-C21 Hydrocarbons	2012/11/29	NC		%	40
		>C21- <c32 hydrocarbons<="" td=""><td>2012/11/29</td><td>NC</td><td></td><td>%</td><td>40</td></c32>	2012/11/29	NC		%	40
3049712 TWE	Matrix Spike	·					
	[PS1034-02]	1,4-Difluorobenzene	2012/11/28		100	%	70 - 130
		4-Bromofluorobenzene	2012/11/28		100	%	70 - 130
		D4-1,2-Dichloroethane	2012/11/28		99	%	70 - 130
		Isobutylbenzene - Volatile	2012/11/28		98	%	70 - 130
		Benzene	2012/11/28		96	%	70 - 130
		Toluene	2012/11/28		100	%	70 - 130
		Ethylbenzene	2012/11/28		100	%	70 - 130
		Xylene (Total)	2012/11/28		97	%	70 - 130
	LCS	1,4-Difluorobenzene	2012/11/28		99	%	70 - 130
		4-Bromofluorobenzene	2012/11/28		100	%	70 - 130
		D4-1,2-Dichloroethane	2012/11/28		100	%	70 - 130
		Isobutylbenzene - Volatile	2012/11/28		97	%	70 - 130
		Benzene	2012/11/28		98	%	70 - 130
		Toluene	2012/11/28		101	%	70 - 130
		Ethylbenzene	2012/11/28		98	%	70 - 130
		Xylene (Total)	2012/11/28		99	%	70 - 130
3051073 SHR	LCS	Isobutylbenzene - Extractable	2012/11/29		105	%	30 - 130
		n-Dotriacontane - Extractable	2012/11/29		108	%	30 - 130
		>C10-C16 Hydrocarbons	2012/11/29		82	%	30 - 130
		>C16-C21 Hydrocarbons	2012/11/29		97	%	30 - 130
		>C21- <c32 hydrocarbons<="" td=""><td>2012/11/29</td><td></td><td>108</td><td>%</td><td>30 - 130</td></c32>	2012/11/29		108	%	30 - 130

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.

LCS: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy. Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

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

NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.



Validation Signature Page

Maxxam Job #: B2I4098

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

Maelonalo

Rose Macdonald, Scientific Specialist (Organics)

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

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Page 8 of 8

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DATA QUALITY REVIEW CHECKLIST - IMPERIAL OIL PROJECTS

Committeet	CD A		Courseline Dotor	2012/11/22
			Samping Date:	2012/11/22
Location: 64 Mill L	ake Rd No. 2, Hubb	ards, NS	Laboratory :	Maxxam - Bedford, NS
Consultant Project Number:	059548-02		Sample Submissi	on Number: B2I4098
Are All Laboratory QC Samples V	Vithin Acceptance C	Criteria (Yes	s, No, Not Applicabl	e)?
	Yes No	NA		Comments
Instrument Surrogate Recovery Extraction Surrogate Recovery Method Blank Concentration	X X	Х	All lab QC have me	et acceptance criteria
Matrix Duplicate RPD Matrix Spike Recovery Lab Control Sample Recovery	X X	Х	3 of 3 parameters n	ot calculated
Are All Field QC Samples Within	Alert Limits (Yes, I	No, Not Ap	plicable)?	
Field Blank Concentration	Yes No	NA	T	Comments
Trip Blank Concentration Field Duplicate RPD	X X X			
Has CoA been signed off (Yes/No Has lab warranted all tests were ir Has lab warranted all tests were an Were all samples analyzed within All volatiles samples methanol ex Is Chain of Custody completed an Were sample temperatures accept	o)?: a statistical control in nalyzed following S0 hold times (Yes/No) tracted (if required) d signed (Yes/No)?: able when they reacl	n CoA (Yes OP's in CoA)?: within 48 h ned lab (Ye	/No)?: A (Yes/No)?: ours (Yes/No)?: s/No)?:	Yes Yes Yes Yes N/A Yes No
Was a Data Quality Waiver (DQV	V) issued (Yes/No)?	:	_	No
Date Issued:	N/A		Date of Response:	N/A
Is data considered to be reliable (` If answer is "No", describe and pr	Yes/No)?: ovide rationale:		Yes	
Data Reviewed by (Print):	Melissa Fitzgera	lld	Data Reviewed by	(Signature): MHzgerald.
Date:	2013/01/07			

APPENDIX B

LABORATORY AND FIELD QA/QC

QUALITY ASSURANCE AND QUALITY CONTROL DISCUSSION

There were no laboratory or field QA/QC issues identified in this report that require discussion.

The groundwater field QA/QC program consisted of one (1) field duplicate sample, one (1) field blank sample and one (1) trip blank sample that were submitted for laboratory analysis of BTEX and modified TPH.

For the field duplicate samples, evaluations of the QA/QC results were determined by calculating the relative percent difference (RPD) between the field duplicate and original sample results, and comparison of the RPD to designated alert limits.

RPD =
$$\left| \left(\frac{\frac{(X_1 - X_2)}{(X_1 + X_2)}}{2} \right) \right| X 100$$

Consistent with laboratory practices and to permit reliable calculations, an RPD is only calculated when the original and duplicate sample concentrations are at least 5 times the reportable detection limit (RDL).

The designated RPD alert limits for the groundwater samples are presented in Table B-1. The RPDs were either within the alert limits for all of the parameters that were analyzed or not calculable.

The groundwater field blank and trip blank data were compared to the alert limits and are presented in Table B-2. As indicated, all of the RPDs were within the alert limits.

The laboratory QA/QC program consisted of one or more of the following analysis (a) instrument and extraction surrogate recoveries for groundwater samples that were analyzed, and (b) the analysis of method blank, laboratory duplicate, matrix spike and/or laboratory control samples for the sample analytical batches that were analyzed. The laboratory QA/QC results are presented in the Certificates of Analysis (Appendix A). As indicated, no laboratory QA/QC issues were identified.

No field or laboratory QA/QC issues were identified that would affect the overall conclusions presented in this report. The results reported are considered to be reliable.

TABLE B-1 RELATIVE PERCENT DIFFERENCE CALCULATIONS - GROUNDWATER FIELD DUPLICATE SAMPLES 64 Mill Lake Road No. 2, Hubbards, Nova Scotia

SAMPLE LOCATIONS	MW6	MWA FIELD DUPLICATE MW6	RDL	RPD	RPD ALERT LIMITS (%) ^a
Maxxam Sample ID	PS0992	PS1034			
Date Sampled (yyyy/mm/dd)	2012/11/22	2012/11/22			
PARAMETERS					
Benzene	<0.0010	<0.0010	0.0010	NC	80
Toluene	<0.0010	<0.0010	0.0010	NC	80
Ethylbenzene	<0.0010	<0.0010	0.0010	NC	80
Total Xylenes	<0.0020	<0.0020	0.0020	NC	80
Petroleum Hydrocarbons (C6 - C10)	< 0.010	<0.010	0.010	NC	80
Petroleum Hydrocarbons (>C10 - C16)	0.43	0.43	0.050	NC	80
Petroleum Hydrocarbons (>C16 - C21)	0.27	0.22	0.050	NC	80
Petroleum Hydrocarbons (>C21 - C32)	0.11	0.14	0.10	NC	80
Petroleum Hydrocarbons (Modified TPH)	0.81	0.78	0.10	4%	80

a - Alert limits used for field duplicate samples

NA - Not Applicable

NC - Not Calculated

RDL - Reportable Detection Limit

RPD - Relative Percent Difference (not calculated when one or both results are less than 5X RDL)

"---" - Not Analyzed

Analytical results for all parameters are reported in milligrams per litre (mg/L)

BOLD - Exceeds RPD alert limit

TABLE B-2 GROUNDWATER FIELD BLANK AND TRIP BLANK DATA 64 Mill Lake Road No. 2, Hubbards, Nova Scotia

SAMPLE LOCATIONS Maxxam Sample ID Date Sampled (yyyy/mm/dd)	RDL	MWB FIELD BLANK PS1035 2012/11/22	MWB Lab Duplicate PS1035 2012/11/22	EXCEEDS ALERT LIMIT	MWC TRIP BLANK P51036 2012/11/22	EXCEEDS ALERT LIMIT
PARAMETERS						
Benzene	0.0010	< 0.0010		No	< 0.0010	No
Toluene	0.0010	<0.0010		No	< 0.0010	No
Ethylbenzene	0.0010	<0.0010		No	< 0.0010	No
Total Xylenes	0.0020	<0.0020		No	< 0.0020	No
Petroleum Hydrocarbons (C6 - C10)	0.010	<0.010		No	< 0.010	No
Petroleum Hydrocarbons (>C10 - C16)	0.050	< 0.050	< 0.050	No	< 0.050	No
Petroleum Hydrocarbons (>C16 - C21)	0.050	< 0.050	< 0.050	No	< 0.050	No
Petroleum Hydrocarbons (>C21 - C32)	0.10	<0.10	<0.10	No	<0.10	No
Petroleum Hydrocarbons (Modified TPH)	0.10	<0.10		No	<0.10	No

RDL - Reportable Detection Limit

"---" - Not Analyzed

Analytical results for all parameters are reported in milligrams per litre (mg/L)

BOLD - Exceeds alert limit (Note: alert limits for field blanks and trip blanks are 5x RDL for BTEX and TPH fractions)





NSE File #:

Notification of Free Product or Contamination

For all sites with either contamination, or free product in soil or groundwater requiring written notification

Instructions for completing this form

- ALL relevant Sections of this Notification of Free Product or Contamination form are to be completed in entirety
- No changes to this Notification of Free Product or Contamination form are allowed
- Signatures on this form are required from ALL of the following: the Site Owner or their Approved Agent; the managing Site Professional and the Person Providing the Notice (if different than the preceding).
- All regulatory protocols must be followed and all forms/checklists must be completed separately for each property. This means that a source property and an impacted third party property must have all documents filed separately. Once the source property or impacted third party property is identified by the check box below, all subsequent reference on this form/checklist are to that site owner.
- · Forms/checklists must be complete prior to filing with the Minister

1 - Site Location and Contact Information

Site owner and details provided on this form are applicable to 🗹 Source Property **OR** 🔾 Impacted Third Party Property

Current Site Owner		
Contact Information	Name Sura Ali	Phone (514) 493-7053
	Email <u>sura.ali@esso.ca</u>	Fax
Site Location	Site Address 64 Mill Lake Road	City Hubbards
	Parcel Identification Number (PID): <u>60082138</u>	Postal Code BOJ 1TO
Mailing Address	Company Name Imperial Oil	City Anjou
	Address 7100 Jean Talon Est, Anjou, QC	Postal Code H1M 3R8

Approved Agent (if ad	cting on behalf of the owner)	
Contact Information	Name	Phone
	Email	Fax
Mailing Address	Company Name	City
	Address	Postal Code

Site Professional		
Contact Information	Name Scott Llewellyn	Phone (902) 468-1248
	Email sllewellyn@craworld.com	Fax (902) 468-2207
Mailing Address	Company Name <u>Conestoga-Rovers and Associates Limited</u>	City Dartmouth
	Address 45 Akerley Blvd., Dartmouth, NS	Postal Code B3B 1J7

Impacted Third-Party Property Owner(s)

Contact Information	Name	Phone
	Email	Fax
Property Location	Property Address	City
	Parcel Identification Number (PID):	Postal Code
Mailing Address	Company Name	City
	Address	Postal Code



2 - Notification of Free Product in Soil or Groundwater

Section 2 must be omitted if no Free Product has been identified as defined in PRO-100, *Notification of Contamination Protocol.*

The Site Professional must ensure that all work has been completed in accordance withObservedMeasurePR0-100, Notification of Contamination Protocol.in SoilGroundweight				
Type of free product.	Gasoline			
Check all applicable.	Fuel Oil (No. 2)			
	Lube Oil			
	Hydrocarbon mixture			
	Mineral oil			
	Glycols			
	DNAPL and Chlorinated Solvent			
	Other (describe)			
Presence of free product in soil or gro	oundwater was determined during, or following these activities. <i>Ch</i>	eck all applicable	9.	
Routine Monitoring	Other accidental release			
Underground tank removal	Construction/excavation activities			
Emergency response actions	Other (describe)			
Domestic oil spill				
Confirmation that verbal notifications <i>Check all applicable.</i>	have been made in accordance with Section 8 (1) of the Contamination	ated Sites Regul	ations.	
Site Owner listed above (if person	reporting is not the owner) \Box All known Impacted Third-Party	Property Owner	rs listed above	
Date of verbal notification	; and Date of verbal notification;			

3 - Notification of Contamination in Soil, Sediment, Surface Water or Groundwater

			Affected Media			
The Site Professional must ensure that all work has been completed in accordance with PRO-100, <i>Notification of Contamination Protocol</i> .		Soil	Sediment	Surface Water	Groundwater	
Type of Contamination	Inorganic Parameters (metals)					
Check all applicable.	Petroleum Hydrocarbon Parameters	Z				
	Polycyclic Aromatic Hydrocarbon (PAH) Parameters					
	Volatile Organic Compound (VOC) Parameters					
	Pesticides					
	PCBs					
	Dioxins and Furans					
	Pentachlorophenol					
	Organotins					
	Glycols					
	Phenol					



4 - Supporting Information

Current land use/zoning	of site			
Agricultural	Commercial	Other municipal zoning (list)		
Residential	Industrial			
Groundwater potability o	of site (potable or non-po	otable according to Appendix 1, Figure 3 of Notification Protocol)		
🗹 Potable 🛛 No	on-potable			
Confirmation of Written If impacted third party is	Notice Made to Impacte selected in Section 1, th	ted Third-Party Property Owner(s). the remainder of Section 4 must not be completed.		
Are there any impacted, If yes, confirm written no	or potentially impacted, t otice has been provided (, third party properties? 🗳 Yes 🗹 No (below).		
Confirmation that this Notification of Free Product or Contamination form is being provided to Impacted Third-Party Property Owners, where migration of contaminants has occurred or is likely to occur in accordance with Section 8 (1) of the <i>Contaminated Sites Regulations</i> .				
Yes, this Notification	of Free Product or Conta	tamination form is being provided to all known Impacted Third-Party Property Owners		

5 - Declarations

listed in Section 1.

Site Professional Declaration

I acknowledge it is an offence under Section 158 of the Environment Act to provide false or misleading information, and confirm to the best of my knowledge and belief the information provided in this form and supporting documentation is true and accurate and complies with the relevant provisions of the Environment Act and Contaminated Sites Regulations.

Scott

Name (Print) Scott Llewellyn

Signature	Llewellyn, Scott Digitally signed by Llewellyn, Scott DN: dc=int, dc=cra, ou=CRALtd, ou=HAL, ou=Users, cn=Llewellyn, s Site Professional

Professional Registration Number/Stamp 019/APGNS

Date 09/18/2013

Date <u>08/23/2013</u> MM/DD/YYYY

Declaration of Responsible Party, Site Owner or Approved Agent

I acknowledge that the above Site Professional has been engaged and acts on my behalf [or, on behalf of Imperial Oil _____ (insert name of site owner)] in preparing the Notification of Free Product or Contamination form.

All impacted, or potentially impacted, third-party property owners have been formally notified according to the Contaminated Sites *Regulations* of any contaminants migrating, or likely to migrate to their property from this site. Signature_Sura Ali

Name (Print, indicate if Approved Agent)	Sura Ali, ing.	

Address	7100	Jean	Talon	Est,	Anjou,	QC	H1M 3R8
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Return completed form and associated documents to Regional Office.

To find your Regional Office go online at http://www.gov.ns.ca/nse/dept/division.emc.asp#central or call 1-877-936-8476

9.18 11:00:50

MM/DD/YYYY



PHASE II ENVIRONMENTAL SITE ASSESSMENT

FORMER IMPERIAL OIL BULK PLANT (SAP Location No. 88000331) 64 MILL LAKE ROAD, HUBBARDS, NOVA SCOTIA PID #60082138

Prepared For: Imperial Oil

Prepared by: Conestoga-Rovers & Associates

45 Akerley Blvd. Dartmouth, Nova Scotia Canada B3B 1J7

Office: (902) 468-1248 Fax: (902) 468-2207

web: http://www.CRAworld.com

APRIL 2013 REF. NO. 059548 (4) This report is printed on recycled paper.

THIS REPORT CONTAINS PROVISIONS LIMITING LIABILITY, THE SCOPE OF THE REPORT AND THIRD PARTY RELIANCE

NOTICE ACCESS TO INFORMATION ACT

These documents and the information contained in them are confidential - property of Imperial Oil and any disclosure of same is governed by the provision of each of the applicable provincial or territorial <u>Freedom of Information</u> legislation, the <u>Privacy Act</u> (Canada) 1980-81-82-83, c.111, Sch.II "1", and the <u>Access to Information Act</u> (Canada) 1980-81-82-83, c.111, Sch I "1", as such legislation may be amended or replaced from time to time.

SUMMARY

SITE	64 Mill Lake Road, Hubbards, NS
Type of Facility	Former Imperial Bulk Plant, currently vacant lot
Municipal Zoning	General Commercial
Adjacent Land Use	Residential and Undeveloped Resource
Aquifer Usage in 100 m radius	Yes
Reference Standards	Atlantic PIRI Tier I RBSLs (Version 3) for a commercial receptor with potable water use and coarse textured soil for petroleum hydrocarbons. 2012 Atlantic RBCA Ecological Screening Levels for the Protection of Plants and Soil Invertebrates.
Used	KKI Eagle
Date(s) of Soil Sampling	November 2012
Date(s) of Groundwater Sampling	November 2012
Number of Test Pits Advanced	4
Number of Boreholes Drilled	0
Number of Wells Installed in	0
Boreholes	

Summary of Test Pits Excavated:

	TP21	TP22	TP23	TP24
Well Installed	No	No	No	No
Test Pit Depth (mbgs)	4.1	4.0	4.1	4.0
Dominant Soil Type	Sand	Sand	Sand	Sand
Depth to Groundwater (mbgs)	NA	NA	NA	NA
Screened Interval (mbgs)	NA	NA	NA	NA
Free Product Thickness (mm)	nd	nd	nd	nd
Exceeded Soil Standards	No	No	No	Yes
Exceeded Groundwater Standards	NA	NA	NA	NA
Vertical Soil Impact Delineation Achieved	Yes	Yes	Yes	No

Notes:

mbgs – metres below ground surface mm – millimetres NA – Not Applicable or Not Available nd – Not detected

TABLE OF CONTENTS

1.0	1.0 INTRODUCTION				
	1.1	BACKGROUND	1		
	1.2	SCOPE OF WORK	1		
2.0	FIELD .	ACTIVITIES	3		
	2.1	DAY-LIGHTING AND TEST PITTING	3		
	2.2	SOIL SAMPLING	3		
	2.3	GROUNDWATER SAMPLING	4		
	2.4	LABORATORY ANALYSES	5		
	2.5	QUALITY ASSURANCE AND QUALITY CONTROL SAMPLING	5		
3.0	FINDIN	IGS	7		
	3.1	FIELD OBSERVATIONS	7		
	3.1.1	STRATIGRAPHY	7		
	3.1.2	VAPOUR CONCENTRATIONS	7		
	3.1.3	GROUNDWATER	7		
	3.2	SELECTED SITE CONDITION STANDARDS	8		
	3.2.1	PETROLEUM HYDROCARBONS	8		
	3.3	SOIL ANALYTICAL RESULTS	8		
	3.4	GROUNDWATER ANALYTICAL RESULTS	9		
	3.5	QUALITY ASSURANCE AND QUALITY CONTROL RESULTS	9		
4.0	SUMM	ARY AND CONCLUSIONS	10		
5.0	LIMITA	ATION OF LIABILITY, SCOPE OF REPORT AND			
	THIRD	PARTY RELIANCE	11		
6.0	CLOSU	IRE	13		

LIST OF FIGURES (Following Text)

- FIGURE 1 SITE LOCATION
- FIGURE 2 SITE PLAN
- FIGURE 3 GROUNDWATER POTENTIOMETRIC SURFACE ELEVATIONS DIAGRAM
- FIGURE 4 SOIL ANALYTICAL RESULTS PETROLEUM HYDROCARBONS
- FIGURE 5 GROUNDWATER ANALYTICAL RESULTS PETROLEUM HYDROCARBONS

LIST OF TABLES (Following Text)

- TABLE 1GROUNDWATER MONITORING RESULTS
- TABLE 2SOIL ANALYTICAL RESULTS PETROLEUM HYDROCARBON
PARAMETERS
- TABLE 3GROUNDWATER ANALYTICAL RESULTS PETROLEUM HYDROCARBON
PARAMETERS

LIST OF APPENDICES

APPENDIX A TEST PIT LOGS
APPENDIX B LABORATORY CERTIFICATES OF ANALYSIS - SOIL AND GROUNDWATER
APPENDIX C QUALITY ASSURANCE AND QUALITY CONTROL

1.0 INTRODUCTION

Conestoga-Rovers & Associates (CRA) was retained by Imperial Oil to conduct a Phase II Environmental Site Assessment (ESA) at a former Imperial Oil bulk plant located at 64 Mill Lake Road, in Hubbards, Nova Scotia (the Site).

The objective of the Phase II ESA is to characterize the soil and groundwater conditions with respect to potential contaminants of concern (PCOCs) associated with areas of potential environmental concern (APECs) from the current and historical activities of the Site and adjacent properties, as detailed in the Phase I and II ESAs completed for the Site by Dillon Consulting Limited (reports dated November 2003). The additional Phase II work was completed between November 14 and 22, 2012.

1.1 <u>BACKGROUND</u>

The Site location is shown on Figure 1 and a Site plan showing the monitoring well and test pit locations is presented on Figure 2.

The Site is located at 64 Mill Lake Road in a mixed residential, commercial and resource area of Hubbards, Nova Scotia. According to the Service Nova Scotia and Municipal Relations website, the Site is zoned as Commercial.

The Site was acquired from Margaret M.L. McLean by Imperial Oil in 1971. A bulk plant operated on the subject Site from 1971 to 2002. The office/warehouse, aboveground storage tanks (ASTs) and underground storage tanks (USTs) were removed between 1986 and 2002. The Site infrastructure included a office/warehouse, loading rack, pumps, eight USTs ($1 \times 2,270 \text{ L}, 1 \times 15,600 \text{ L}, 1 \times 15,900 \text{ L}, 2 \times 22,300 \text{ L}, 2 \times 22,700 \text{ L}, and 1 \times 59,000 \text{ L}$), eleven ASTs ($4 \times 908 \text{ L}, 2 \times 1,135 \text{ L}, 1 \times 90,900 \text{ L}$, and $4 \times 59,000 \text{ L}$), and associated piping were removed between 1986 and 2002. The Site is currently vacant.

1.2 <u>SCOPE OF WORK</u>

The scope of work was to perform the following activities:

- Excavate 4 test pits (TP21 to TP24) in the vicinity of the former Site infrastructure
- Analyze soil samples from select test locations for BTEX and modified TPH analysis utilizing the Atlantic PIRI protocol

- Monitor all existing monitoring wells for subsurface vapour concentrations, water levels and the presence or absence of free product
- Collect groundwater samples from the existing monitoring wells for BTEX and modified TPH analyses utilizing Atlantic PIRI protocol
- Prepare a report that describes the field activities and the results of the Phase II ESA

2.0 FIELD ACTIVITIES

All field procedures were conducted in accordance with the Atlantic RBCA (Risk-Based Corrective Action) Version 3.0 User Guidance for Petroleum Impacted Sites in Atlantic Canada (updated July 2012) and generally accepted industry practices.

2.1 DAY-LIGHTING AND TEST PITTING

Prior to proceeding with the subsurface investigation, various utility representatives were contacted to identify underground utility locations.

Industrial Hydrovac Services was retained by CRA to day-light pre-selected test pit locations. The day-lighting activities were completed on November 14, 2012. Each test pit was day-lighted to a depth of 2.4 m below ground surface (mbgs) or until refusal, using a truck mounted hydro-vacuum. The holes were backfilled generally within 0.3 m of surface using clean gravel fill material to keep the holes from sloughing.

Maritime Remediation Inc. further advanced the day-lighted test pits using a Hitachi EX-120 excavator. The test pit program was conducted on November 19, 2012. The test pits were excavated to depths ranging from 4.0 to 4.1 mbgs. The test pit locations are shown on Figure 2.

2.2 <u>SOIL SAMPLING</u>

Soil samples were collected at 0.5 metre intervals at each test pit location. The samples were collected using a clean trowel and nitrile gloves. The sampling devices were washed with phosphate-free soap and tap water, then rinsed with tap water, prior to collection of each soil sample. Each soil sample was immediately split and placed in containers supplied by the laboratory and stored in coolers with ice for possible analysis. The remainder of the sample was placed in a sealed clean plastic bag for field screening, which included determining textural description, physical evidence of impact (e.g., staining, free product, odour), and measurement of the sample combustible headspace vapour concentration (soil vapour concentration).

The soil samples submitted for BTEX and TPH fraction (C_6 - C_{10}) analyses were collected with zero headspace in 60 ml glass jars with Teflon lined lids. All sample containers were supplied by the laboratory.

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The soil vapour concentrations were measured using a portable multi-gas detector (RKI Eagle Series) having a detection limit of <5 parts per million by volume (ppmv). The gas detector was operated in the methane elimination mode.

The daily calibration procedure for the RKI Eagle involves checking the instrument response against an approximately 40% lower explosive limit (% LEL) concentration standard of n-hexane, delivered at the operational flow rate of the instrument. If the instrument readings are within $\pm 10\%$ of the gas standard concentration, then the instrument is deemed to be calibrated. However, if the reading is greater than $\pm 10\%$ of the gas standard concentration, then the instrument calibration is adjusted until the standard gives a reading within 10% of the gas standard concentration.

In general, one worst case soil sample, based on field screening results, and the first sample from above and below the apparent impacted zone, was submitted for laboratory analysis. The soil sampling locations are presented on the test pit logs (Appendix A).

2.3 <u>GROUNDWATER SAMPLING</u>

The six existing monitoring wells were sampled on November 22, 2012, following the test pit program. The monitoring included measurements of subsurface vapour concentrations, water levels, and the presence or absence of free product.

Immediately after removing the well cap, the maximum subsurface vapour concentrations in the wells were measured using the combustible gas detector that was operated in the methane elimination mode, and calibrated as discussed in Section 2.2. This was done by inserting the collection tube of the instrument into the riser pipe and recording the peak instrument reading.

The depth to the water table and presence or absence of free product in the wells were determined with a Solinst electronic interface probe that was cleaned with a non-toxic, biodegradable cleaner/degreaser, then rinsed with clean tap water, between monitoring wells.

If measurable free product is observed in any well, CRA protocol is not to collect a groundwater sample from that well. However, groundwater samples are collected from wells if a hydrocarbon sheen is observed.

Prior to collecting the groundwater samples, the wells were purged until a minimum of three standing well water volumes were removed. The water level in the monitoring well was allowed to recover to 90% of its static level prior to collecting the groundwater sample. All groundwater samples were collected using foot values and polyethylene tubing. The sampling equipment was individually dedicated to each monitoring well.

Samples for BTEX and TPH fraction C_6 - C_{10} analyses were collected in 40 ml clear glass vials (with zero headspace), pre-charged with sodium bisulfate preservative. Samples for TPH fractions > C_{10} - C_{16} , > C_{16} - C_{21} , > C_{21} - C_{32} and modified TPH analyses were collected in 250 ml clear glass bottles pre-charged with sodium bisulfate preservative. All sample bottles were supplied by the laboratory. The groundwater samples were placed in coolers with ice immediately after they were collected.

2.4 <u>LABORATORY ANALYSES</u>

The soil and groundwater samples collected from the test pits and/or monitoring wells were submitted for laboratory BTEX and TPH analyses. A total of 11 soil samples and 6 groundwater samples, excluding quality assurance and quality control (QA/QC) samples, were submitted for analysis.

All samples were submitted to the laboratory in custody sealed coolers filled with ice to keep samples at <10°C. Standard chain of custody forms accompanied these samples to the laboratory.

The samples were submitted to the Maxxam Analytics Inc. laboratory in Bedford, Nova Scotia. Maxxam is accredited by the Standards Council of Canada. Analytical methods used by the laboratory are referenced in the certificates of analysis presented in Appendix B.

2.5 QUALITY ASSURANCE AND QUALITY CONTROL SAMPLING

A QA/QC program was implemented to reduce and quantify potential issues introduced during sample collection, handling, shipping and analysis. The program included, but was not limited to, using dedicated sampling equipment, using sample specific identification and labelling procedures, and using chain of custody records.

The soil QA/QC samples submitted to the laboratory included one field duplicate soil sample for BTEX and TPH analyses.

The groundwater field QA/QC samples consisted of one trip blank, one field blank and one field duplicate analyzed for BTEX and TPH.

3.0 <u>FINDINGS</u>

3.1 FIELD OBSERVATIONS

3.1.1 <u>STRATIGRAPHY</u>

The stratigraphic profile encountered in the test pits generally consisted of sand with trace silt and some cobbles and boulders throughout to depths ranging from 4.0 to 4.1 mbgs. Bedrock was not intersected during the Phase II ESA work completed in November 2012. Detailed stratigraphic descriptions for each test location are presented on the test pit logs in Appendix A.

Based on field observations, the soil can be classified as coarse-grained relative to the Guidelines for the Management of Contaminated Site.

3.1.2 VAPOUR CONCENTRATIONS

Soil vapour concentrations measured in the samples recovered from the test pits are presented on the test pit logs (Appendix A). The soil vapour concentrations ranged from not detected to 190 ppm.

Subsurface vapour concentrations measured in the monitoring wells on November 22, 2012 are presented in Table 1. The subsurface vapour concentrations were not detected.

3.1.3 <u>GROUNDWATER</u>

On November 22, 2012, the depth to groundwater ranged from 0.591 metres below ground surface (mbgs) to 1.425 mbgs. The groundwater elevations are shown on Table 1 and the groundwater potentiometric surface elevations are presented on Figure 3. The inferred principal direction of groundwater flow was to the east.

The groundwater depths, calculated potentiometric elevations are presented in Table 1. No product was identified in any of the monitor wells.
3.2 <u>SELECTED SITE CONDITION STANDARDS</u>

3.2.1 <u>PETROLEUM HYDROCARBONS</u>

The Site is zoned as general commercial and is currently vacant. The Site is therefore classified as commercial for evaluation purposes.

There are currently no potable water wells on the Site. Surrounding properties are serviced by private water and sewer. The Site is therefore considered potable for evaluation purposes.

Based on the above information and on the soil stratigraphy intersected during the Site assessment, the hydrocarbon levels at the subject Site are compared to the Atlantic RBCA 2012 Tier I risk-based screening levels (RBSLs) for a commercial property with potable water and coarse-grained soil. Hydrocarbon levels were also compared to the Atlantic RBCA Ecological Screening Levels (ESLs) for the protection of plants and soil invertebrates.

3.3 <u>SOIL ANALYTICAL RESULTS</u>

The soil analytical results for BTEX, TPH fractions (C6-C10, >C10-C16, >C16-C21 and >C21-C32) and modified TPH are presented and compared to the applicable 2012 Tier I RBSLs and ESLs in Table 2 and on Figure 4. The soil hydrocarbon results were within the applicable guidelines with the exception of samples collected from TP24 (former product dispenser/pump location). BTEX levels were within the Tier I guidelines with the exception of ethylbenzene concentrations in TP24. Ethylbenzene concentrations ranged from <0.025 mg/kg to 0.57 mg/kg. Modified TPH levels ranging from <15 mg/kg to 2,600 mg/kg were reported for the soil samples analyzed. The modified TPH results were compared to the guidelines for gasoline, fuel oil or lube oil fractions. TPH fractions C6-C10 and >C10-C16 concentrations exceeded the Ecological Screening levels in TP24.

The laboratory certificates of analysis for the soil samples are presented in Appendix B.

3.4 <u>GROUNDWATER ANALYTICAL RESULTS</u>

The groundwater analytical results for BTEX, TPH fractions (C_6-C_{10} , $>C_{10}-C_{16}$, $>C_{16}-C_{21}$ and $>C_{21}-<C_{32}$) and modified TPH are presented and compared to the applicable 2012 Tier I RBSLS and ESLs in Table 3 and on Figure 5. All groundwater analytical results were below the applicable criteria for petroleum hydrocarbon parameters.

3.5 QUALITY ASSURANCE AND QUALITY CONTROL RESULTS

A QA/QC program was implemented to reduce and quantify potential issues introduced during sample collection, handling, shipping and analysis. The program included, but was not limited to using dedicated sampling equipment, using sample specific identification and labeling procedures, and using chain of custody records.

The results of the laboratory QA/QC analyses are presented in the laboratory certificates of analysis in Appendix B. The analyses included instrument and extraction surrogate recovery, method blanks, matrix duplicates, matrix spikes and laboratory quality control samples. No laboratory QA/QC issues were identified that call into question the reliability of the laboratory data reported.

The results of the field QA/QC sample analysis are discussed and presented in Appendix C. The samples included trip blanks, field blanks and field duplicates. No field QA/QC issues were identified that call into question the reliability of the laboratory data reported.

The laboratory and field QA/QC discussions are presented in Appendix C. In summary, no QA/QC issues were identified that would affect the overall results of the assessment findings.

4.0 <u>SUMMARY AND CONCLUSIONS</u>

During this assessment, four test pits were excavated. Soil and groundwater samples were submitted for BTEX and TPH analyses.

The results of the supplementary assessment are summarized as follows:

- 1. The stratigraphic profile encountered in the test pits generally consisted of sand with trace silt and some cobbles and boulders.
- 2. The depth to groundwater ranged from 0.591 mbgs to 1.425 mbgs. The inferred principal direction of groundwater flow was to the east.
- 3. Free phase product was not detected during the sampling and monitoring of the wells.
- 4. The hydrocarbon levels on the subject Site are compared to the Atlantic RBCA 2012 Tier I risk-based screening levels (RBSLs) for a commercial property with potable water and coarse-grained soil. Hydrocarbon levels were also compared to the Atlantic RBCA Ecological Screening levels (ESLs) for the protection of plants and soil invertebrates.
- 5. Modified TPH concentrations above the applicable 2012 Tier I RBSLs and ESLs were identified in soil samples from TP24. BTEX exceedances were not observed, with the exception of ethylbenzene concentrations above the Tier I RBSLs in soil samples analyzed from TP24. Generally, exceedances of the 2012 Tier I RBSLs and ESLs were observed in the area of the former product dispenser/pump slab which was removed in 2002.
- 6. BTEX and modified TPH concentrations were within the applicable 2012 Tier I RBSLs and ESLs in all groundwater samples analyzed.

5.0 LIMITATION OF LIABILITY, SCOPE OF REPORT AND THIRD PARTY RELIANCE

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The investigation undertaken by Conestoga-Rovers & Associates Limited with respect to this report and any conclusions or recommendations made in this report reflect Conestoga-Rovers & Associates Limited judgment based on the site conditions observed at the time of the site inspection on the date(s) set out in this report and on information examined at the time of preparation of this report. This report has been prepared for specific application to this site and it is based, in part, upon visual observation of the site, subsurface investigation at discrete locations and depths, and specific analysis of specific chemical parameters and materials during a specific time interval, all as described in this report. Unless otherwise stated, the findings cannot be extended to previous or future site conditions, portions of the site which were unavailable for direct investigation, subsurface locations which were not investigated directly, or chemical parameters, materials or analysis which were not addressed. Substances other than those addressed by the investigation described in this report may exist within the site, substances addressed by the investigation may exist in areas of the site not investigated and concentrations of substances addressed which are different than those reported may exist in areas other than the locations from which samples were taken.

If site conditions or applicable standards change or if any additional information becomes available at a future date, modifications to the findings, conclusions and recommendations in this report may be necessary.

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6.0 <u>CLOSURE</u>

All of Which is Respectfully Submitted,

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059548-04 GA-DA002 FEBRUARY 15/2013



059548-04 GA-DA003 FEBRUARY 15/2013



059548-04 GA-DA004 FEBRUARY 15/2013

	Date Sampled: 2012/11/19										
E	х	C6 - C10 (LESS BTEX)	>C10 - C16	>C16 - C21	>C21- <c32< td=""><td>МТРН</td></c32<>	МТРН					
0.025	<0.050	<2.5	<10	<10	<15	<15					
0.025	<0.050	<2.5	<10	<10	<15	<15					
0.025	<0.050	<2.5	<10	<10	<15	<15					

	Date Sampled: 2012/11/19										
E	х	C6 - C10 (LESS BTEX)	>C10 - C16	>C16 - C21	>C21- <c32< td=""><td>МТРН</td></c32<>	МТРН					
0.025	<0.050	<2.5	<10	<10	23	23 (3)					
0.025	<0.050	<2.5	<10	<10	<15	<15					

	Date Sampled: 2012/11/19										
E	х	C6 - C10 (LESS BTEX)	>C10 - C16	>C16 - C21	>C21- <c32< td=""><td>MTPH</td><td></td></c32<>	MTPH					
.025	<0.050	<2.5	<10	<10	<15	<15					
.025	<0.050	<2.5	31	61	33	130 (2)					
0.025	<0.050	<2.5	<10	<10	<15	<15					

				Da	ate Sampled: 2	012/11/19
E	х	C6 - C10 (LESS BTEX)	>C10 - C16	>C16 - C21	>C21- <c32< td=""><td>МТРН</td></c32<>	МТРН
.54	2.2	230	<u>1,100</u>	310	63	<u>1,700 (1)</u>
.57	4.8	<u>520</u>	<u>400</u>	110	29	<u>1,100 (1)</u>
.025	0.072	28	110	55	30	230 (1)
.025	<0.050	3.0	2,600	730	150	<u>3,500 (2)</u>

Figure 4

SOIL ANALYTICAL RESULTS PHASE II ENVIRONMENTAL SITE ASSESSMENT FORMER IMPERIAL OIL BULK PLANT 64 Mill Lake Road No.2, Hubbards, Nova Scotia



059548-04 GA-DA005 FEBRUARY 15/2013

	Screen Interval: unknown											
т	Е	х	C6 - C10 (LESS BTEX)	>C10 - C16	>C16 - C21	>C21- <c32< td=""><td>MTPH</td></c32<>	MTPH					
<0.001	<0.001	<0.002	<0.01	<0	.05	<0.1	<0.1					
<0.001	<0.001	<0.002	<0.01	<0	.05	<0.1	<0.1					
<0.001	<0.001	<0.002	<0.01	<0.05		<0.1	<0.1					
< 0.001	< 0.001	< 0.002	<0.01	< 0.05	< 0.05	<0.1	<0.1					

<0.0

<0.0

<0.0

Screen Interval: unknown									
т	Е	х	C6 - C10 (LESS BTEX)	>C10 - C16	>C16 - C21	>C21- <c32< td=""><td>MTPH</td></c32<>	MTPH		
<0.001	<0.001	< 0.002	<0.01	<0.05		<0.1	<0.1		
<0.001	<0.001	<0.002	<0.01	<0	.05	<0.1	<0.1		
<0.001	<0.001	<0.002	<0.01	<0.05		<0.1	<0.1		
<0.001	<0.001	<0.002	<0.01	<0.05	<0.05	<0.1	<0.1		

	Screen Interval: unknown										
т	Е	х	C6 - C10 (LESS BTEX)	>C10 - C16 >C16 - C21		>C21- <c32< td=""><td>MTPH</td></c32<>	MTPH				
<0.001	<0.001	<0.002	<0.01	<0.05		<0.1	<0.1				
<0.001	<0.001	<0.002	<0.01	<0	.05	<0.1	<0.1				
<0.001	<0.001	<0.002	<0.01	<0.05		<0.1	<0.1				
<0.001	<0.001	<0.002	<0.01	<0.05 <0.05		<0.1	<0.1				
				-							

Screen Interval: unknown										
т	Е	х	C6 - C10 (LESS BTEX)	>C10 - C16 >C16 - C21		>C21- <c32< td=""><td>MTPH</td></c32<>	MTPH			
<0.001	<0.001	<0.002	<0.01	<0.05		<0.1	<0.1			
<0.001	<0.001	<0.002	<0.01	<0	.05	<0.1	<0.1			
<0.001	<0.001	<0.002	<0.01	<0.05		<0.1	<0.1			
<0.001	<0.001	< 0.002	<0.01	<0.05	<0.05	<0.1	<0.1			

	Screen Interval: unknown												
т	Е	х	C6 - C10 (LESS BTEX)	>C10 - C16	>C16 - C21	>C21- <c32< td=""><td>МТРН</td></c32<>	МТРН						
<0.001	<0.001	<0.002	0.04	5	.8	0.4	6.2(2)						
<0.001	<0.001	<0.002	0.03	1	3	0.6	13(2)						
<0.001	<0.001	<0.002	0.02	36		1.6	37(2)						
<0.001	<0.001	<0.002	<0.01	0.43	0.27	0.11	0.81(2)						
<0.001	<0.001	< 0.002	<0.01	0.43	0.22	0.14	0.78(2)						

ECOLOGICAL CRITERIA (b)	RDL
350	0.001
200	0.001
110	0.001
120	0.002
11	0.01
3.1	0.05
NG	0.05
NG	0.1

Figure 5

GROUNDWATER ANALYTICAL RESULTS PHASE II ENVIRONMENTAL SITE ASSESSMENT FORMER IMPERIAL OIL BULK PLANT 64 Mill Lake Road No.2, Hubbards, Nova Scotia

TABLE 1GROUNDWATER MONITORING RESULTS64 Mill Lake Road No. 2, Hubbards, Nova Scotia

MONITOR WELL ID	TOP OF CASING ELEVATION ¹ (m)	GROUND SURFACE ELEVATION (m)	SCREEN INTERVAL (mbgs)	DATE (yyyy/mm/dd)	SUBSURFACE VAPOUR CONCENTRATIONS ²	FREE PRODUCT THICKNESSES (mm)	POTENTIO- METRIC DEPTH (mbtoc)	POTENTIO- METRIC DEPTH (mbgs)	POTENTIO- METRIC ELEVATION (m)
MW1	100.870	100.165	1.6-4.6	2012/11/22	0	nd	1.799	1.094	99.071
MW2	100.995	100.075	1.6-4.6	2012/11/22	0	nd	1.734	0.814	99.261
MW3	100.520	99.730	1.6-4.6	2012/11/22	0	nd	1.835	1.045	98.685
MW4	100.120	99.470	1.6-4.6	2012/11/22	0	nd	1.884	1.234	98.236
MW5	100.200	99.700	1.6-6.1	2012/11/22	0	nd	1.925	1.425	98.275
MW6	100.650	99.840	1.6-4.6	2012/11/22	0	nd	1.401	0.591	99.249

1 - Relative elevations determined using a temporary benchmark with an assumed elevation of 100.000 meters above sea level (masl).

2 - ppmv if not indicated; % LEL if indicated

m - metres

mm - millimetres

mbtoc - metres below top of casing

mbgs - metres below ground surface

nd - not detected

TABLE 2 SOIL ANALYTICAL RESULTS PETROLEUM HYDROCARBON PARAMETERS Former Imperial Oil Bulk Plant, 64 Mill Lake Road, Hubbards, Nova Scotia

SAMPLE LOCATIONS		TP21	TP21	TP21	TP22	TP22	TP23	TP23	Criteria ^a	Criteria ^b
Maxxam ID		PR1712	PR1713	PR1714	PR1715	PR1716	PR1717	PR1718		
Sample Depth (mbgs)		0-0.5	1.0-1.5	2.5-3.0	0.5-1.0	1.5-2.0	0-0.5	1.0-1.5		
Date Sampled (yyyy/mm/dd)		2012/11/19	2012/11/19	2012/11/19	2012/11/19	2012/11/19	2012/11/19	2012/11/19		
Field Vapour Reading (ppmv or %LEL)		0	0	0	0	0	15	130		
PARAMETERS	RDL									
Benzene	0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	0.042	180
Toluene	0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	0.35	250
Ethylbenzene	0.025	< 0.025	<0.025	< 0.025	< 0.025	<0.025	< 0.025	< 0.025	0.065	300
Total Xylenes	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	11	350
Petroleum Hydrocarbons (C6 - C10)	2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	NG	320
Petroleum Hydrocarbons (>C10 - C16)	10	<10	<10	<10	<10	<10	<10	31	NG	260
Petroleum Hydrocarbons (>C16 - C21)	10	<10	<10	<10	<10	<10	<10	61	NG	1700
Petroleum Hydrocarbons (>C21 - C32)	15	<15	<15	<15	23	<15	<15	33	NG	1700
Petroleum Hydrocarbons (Modified TPH)	15	<15	<15	<15	23 ⁽³⁾	<15	<15	130 (2)	870/1800/10,000	NG/NG/NG

"a" - Analyses are compared to the 2012 Atlantic Risk-Based Corrective Action (RBCA) Tier I Risk-Based Screening Levels (RBSLs) for a commercial property with coarse textured soil and potable groundwater

"b" - Analyses are compared to the 2012 Atlantic Risk-Based Corrective Action (RBCA) Ecological Screening Levels for the protection of plants and soil invertebrates; Direct Soil Contact (Table 1a, Appendix 2) - only applicable for sample depths 0-1.5 metres

RDL - Reporting Detection Limit

nd - Not Detectable

NG - No Guideline

"-" - Not Analyzed

mbgs - metres below ground surface

ppmv - Parts per million by volume

LEL - Lower Explosive Limit

Results for all parameters are reported in milligrams per kilogram (mg/kg) on a dry weight basis

MTPH - Modified Total Petroleum Hydrocarbons

"(1)" - MTPH result is compared to gasoline fraction criteria of $870~{\rm mg/kg}$

"(2)" - MTPH result is compared to diesel fraction criteria of 1,800 mg/kg

"(3)" - MTPH result is compared to lube oil fraction criteria of 10,000 mg/kg

BOLD - Exceeds applicable standard

TABLE 2 SOIL ANALYTICAL RESULTS PETROLEUM HYDROCARBON PARAMETERS Former Imperial Oil Bulk Plant, 64 Mill Lake Road, Hubbards, Nova Scotia

SAMPLE LOCATIONS		TP23	TP24	TP24	TP24	TP24	TPA	Criteria ^a	Criteria ^b
							Field Dup		
						Lab Dup	(TP24)		
Maxxam ID		PR1719	PR1720	PR1721	PR1722	PR1722	PR1756		
Sample Depth (mbgs)		2.5-3.0	0.5-1.0	1.0-1.5	3.0-3.5	3.0-3.5	3.0-3.5		
Date Sampled (yyyy/mm/dd)		2012/11/19	2012/11/19	2012/11/19	2012/11/19	2012/11/19	2012/11/19		
Field Vapour Reading (ppmv or %LEL)		0	70	190	5		5		
PARAMETERS	RDL								
Benzene	0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	0.042	180
Toluene	0.025	< 0.025	<0.025	< 0.025	< 0.025	< 0.025	< 0.025	0.35	250
Ethylbenzene	0.025	< 0.025	0.54	0.57	< 0.025	<0.025	< 0.025	0.065	300
Total Xylenes	0.050	< 0.050	2.2	4.8	0.072	< 0.050	< 0.050	11	350
Petroleum Hydrocarbons (C6 - C10)	2.5	<2.5	230	520	28	15	3.0	NG	320
Petroleum Hydrocarbons (>C10 - C16)	10	<10	1100	400	110		2600	NG	260
Petroleum Hydrocarbons (>C16 - C21)	10	<10	310	110	55		730	NG	1700
Petroleum Hydrocarbons (>C21 - C32)	15	<15	63	29	30		150	NG	1700
Petroleum Hydrocarbons (Modified TPH)	15	<15	1700 ⁽¹⁾	1100 ⁽¹⁾	230 (1)		3500 ⁽²⁾	870/1800/10,000	NG/NG/NG

"a" - Analyses are compared to the 2012 Atlantic Risk-Based Corrective Action (RBCA) Tier I Risk-Based Screening Levels (RBSLs) for a commercial property with coarse textured soil and potable groundwater

"b" - Analyses are compared to the 2012 Atlantic Risk-Based Corrective Action (RBCA) Ecological Screening Levels for the protection of plants and soil invertebrates; Direct Soil Contact (Table 1a, Appendix 2) - only applicable for sample depths 0-1.5 metres

RDL - Reporting Detection Limit

nd - Not Detectable

NG - No Guideline

"-" - Not Analyzed

mbgs - metres below ground surface

ppmv - Parts per million by volume

LEL - Lower Explosive Limit

Results for all parameters are reported in milligrams per kilogram (mg/kg) on a dry weight basis

MTPH - Modified Total Petroleum Hydrocarbons

"(1)" - MTPH result is compared to gasoline fraction criteria of $870~{\rm mg/kg}$

"(2)" - MTPH result is compared to diesel fraction criteria of 1,800 mg/kg

"(3)" - MTPH result is compared to lube oil fraction criteria of 10,000 mg/kg

BOLD - Exceeds applicable standard

TABLE 3 GROUNDWATER ANALYTICAL RESULTS 64 Mill Lake Road No. 2, Hubbards, Nova Scotia

SAMPLE LOCATIONS		MW1	MW1	MW2	MW3	MW4	MW5		
Maxxam ID Date Sampled (yyyy/mm/dd)		P50987	Lab Duplicate <i>P50987</i> 2012/11/22	P50988	P50989	P50990	P50991	Human Health Criteria (a)	Ecological Criteria (b)
PARAMETERS	PDI	2012/11/22	2012/11/22	2012/11/22	2012/11/22	2012/11/22	2012/11/22		
I ARAIVIL I LRO	KDL								
Benzene	0.0010	<0.0010	<0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	0.005	350
Toluene	0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.024	200
Ethylbenzene	0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0024	110
Total Xylenes	0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.3	120
Petroleum Hydrocarbons (C6 - C10)	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	NG	11
Petroleum Hydrocarbons (>C10 - C16)	0.050	< 0.050		< 0.050	< 0.050	< 0.050	< 0.050	NG	3.1
Petroleum Hydrocarbons (>C16 - C21)	0.050	< 0.050		< 0.050	< 0.050	< 0.050	< 0.050	NG	NG
Petroleum Hydrocarbons (>C21 - C32)	0.10	<0.10		<0.10	<0.10	<0.10	<0.10	NG	NG
Petroleum Hydrocarbons (Modified TPH)	0.10	<0.10		<0.10	<0.10	<0.10	<0.10	4.4/3.2/7.8	NG

(a) Atlantic Risk-Based Corrective Action (RBCA) Tier I Risk Based Screening Levels (RBSLs) for a commercial property with potable groundwater usage and coarse-grained soil
 (b) Atlantic Risk-Based Corrective Action (RBCA) Tier I Ecological Screening Levels for Plant and Invertebrate Direct Contact with Shallow Groundwater; criteria is applicable only if groundwater levels are within 3 metres of ground surface

RDL - Reportable Detection Limit

NG - No Guideline

"---" - Not Analyzed

Analytical results for all parameters are reported in milligrams per litre (mg/L) <u>BOLD</u> - exceeds applicable guidelines mTPH - Modified Total Petroleum Hydrocarbons

"(1)" - mTPH result is compared to gasoline fraction criteria of 4.4 mg/L

"(2)" - mTPH result is compared to diesel fraction criteria of 3.2 mg/L

"(3)" - mTPH result is compared to lube oil fraction criteria of 7.8 mg/L

TABLE 3 GROUNDWATER ANALYTICAL RESULTS 64 Mill Lake Road No. 2, Hubbards, Nova Scotia

SAMPLE LOCATIONS		MW6	MWA				
			Field Duplicate			Human	Ecological
			MW6			Health Criteria (a)	Criteria (b)
Maxxam ID		PS0992	PS1034				
Date Sampled (yyyy/mm/dd)		2012/11/22	2012/11/22				
PARAMETERS	RDL						
Benzene	0.0010	< 0.0010	< 0.0010			0.005	350
Toluene	0.0010	< 0.0010	< 0.0010			0.024	200
Ethylbenzene	0.0010	< 0.0010	< 0.0010			0.0024	110
Total Xylenes	0.0020	< 0.0020	< 0.0020			0.3	120
Petroleum Hydrocarbons (C6 - C10)	0.010	< 0.010	< 0.010			NG	11
Petroleum Hydrocarbons (>C10 - C16)	0.050	0.43	0.43			NG	3.1
Petroleum Hydrocarbons (>C16 - C21)	0.050	0.27	0.22			NG	NG
Petroleum Hydrocarbons (>C21 - C32)	0.10	0.11	0.14			NG	NG
Petroleum Hydrocarbons (Modified TPH)	0.10	0.81 ⁽²⁾	0.78 ⁽²⁾			4.4/3.2/7.8	NG

(a) Atlantic Risk-Based Corrective Action (RBCA) Tier I Risk Based Screening Levels (RBSLs) for a commercial property with potable groundwater usage and coarse-grained soil
 (b) Atlantic Risk-Based Corrective Action (RBCA) Tier I Ecological Screening Levels for Plant and Invertebrate Direct Contact with Shallow Groundwater; criteria is applicable only if groundwater levels are within 3 metres of ground surface

RDL - Reportable Detection Limit

NG - No Guideline

"---" - Not Analyzed

Analytical results for all parameters are reported in milligrams per litre (mg/L) **BOLD** - exceeds applicable guidelines mTPH - Modified Total Petroleum Hydrocarbons

"(1)" - mTPH result is compared to gasoline fraction criteria of 4.4 mg/L

"(2)" - mTPH result is compared to diesel fraction criteria of 3.2 mg/L

"(3)" - mTPH result is compared to lube oil fraction criteria of 7.8 mg/L

APPENDIX A

TEST PIT LOGS



PRO	PROJECT: Former Imperial Oil Bulk Plant					REF. NO	REF. NO: 059548-02			TEST PIT NO: TP21	
LOC	ATION: 64 Mill Lake Road, Hubbards,	Nova So	cotia			SAMPL	E TYPE G - Grab				
CLIE	NT: Imperial Oil Limited		1			COMPL	ETION DATE: 19/1	1/12	PAGE 1 of	1	
Depth (m)	STRATIGRAPHY DESCRIPTION	MATERIAL TYPE	NUMBER	SAMPLE TYPE	SAMPLE LAB ANA	NAME/ LYSIS	SOIL VAPOUR CONCENTRATION (ppm) 100 300 500 700 900	SOIL CONCE	VAPOUR ENTRATION %LEL) 50 70 90	COMMENTS	Depth (ft)
	Ground Surface ROOT MAT: organic root mat SILTY SAND: brown silty sand, trace to numerous cobbles and boulders, wet at 1.57m		SS-1	G	TP21(0.0-0.5 BTEX/TPH	m)					0
- - - -			SS-2	G	TP21(0.5-1.0	m)	▲				2 2 3
- - -			SS-3	G	TP21(1.0-1.5 BTEX/TPH	m)	A				
- - - 2	SAND: brown, medium grained sand, trace silt, some cobbles and boulders, wet		SS-4	G	TP21(1.5-2.0	m)	•				6
-	CAND, liste and house and list		SS-5	G	TP21(2.0-2.5	m)	•				
- - -	grained sand, trace silt, some cobbles and boulders, wet		SS-6	G	TP21(2.5-3.0 BTEX/TPH	m)	A				9
-			SS-7	G	TP21(3.0-3.5	m)	4				10 11
- - - - -			SS-8	G	TP21(3.5-4.0	m)	•				12
	End of Test Pit 4.1m										14
	1	LOGGED BY: R.Hollett					DAYLIGHTING TO: 1.2m GAS METER TYPE: RKI Eagle				
	45 Akerley Blvd	REVIEWED BY: R.Hollett		ett EQUIPMENT: Hitachi EX-120							
	Dartmouth, NS B3B 1J7	DRAFTED BY: M.Kustudic			1: M.Kustudic	мет	HOD: Hydro-Excava	ate/Exca	avate		

PRO	PROJECT: Former Imperial Oil Bulk Plant					REF. NO: 059548-02			TEST PIT	NO: TP22	
LOC	ATION: 64 Mill Lake Road, Hubbards,	Nova S	cotia			SAMPL	E TYPE G - Grab				
CLIE	NT: Imperial Oil Limited					COMPL	ETION DATE: 19/1	1/12	PAGE 1 of	1	
Depth (m)	STRATIGRAPHY DESCRIPTION	MATERIAL TYPE	NUMBER	SAMPLE TYPE	SAMPLE I LAB ANA	NAME/ Lysis	SOIL VAPOUR CONCENTRATION (ppm) 100 300 500 700 900	SOIL CONCE	VAPOUR ENTRATION %LEL) 50 70 90	COMMENTS	Depth (ft)
-0	Ground Surface	******									_ 0
-	SILTY SAND: brown silty sand, trace to some sand (medium grained), some cobbles and boulders, wet at 0.50m		SS-1	G	TP22(0.0-0.5r BTEX/TPH	n)	4				1
- - - -			SS-2	G	TP22(0.5-1.0r	n)	•				3
- - -			SS-3	G	TP22(1.0-1.5r BTEX/TPH	n)	A				4 4 5
- - - -	SAND: brown to light grey brown,		SS-4	G	TP22(1.5-2.0r	n)	•				6
-	silt, some cobbles and boulders, wet		SS-5	G	TP22(2.0-2.5	n)	A				8
- - - - 3			SS-6	G	TP22(2.5-3.0r	n)	A				9
-	SILT: light grey silt, trace sand, trace		SS-7	G	TP22(3.0-3.5r	n)	A				11
-	cobbles and boulders, wet		SS-8	G	TP22(3.5-4.0r	n)	•				12
- 4 	End of Test Pit 4.0m										15
LOGGED BY: R.Hollett					DAYLIGHTING TO: 2.4m GAS METER TYPE: RKI Eagle						
	45 Akerley Blvd Dartmouth, NS		BY: R.Hollett	equipment: Hitachi EX-120							
	Dartmouth, NS B3B 1J7 DRAFTED BY: M.Ku			: M.Kustudic	MET	HOD: Hydro-Excava	ate/Exca	avate			

PRO	PROJECT: Former Imperial Oil Bulk Plant					REF. NO): 059548-02		TEST PIT NO: TP23		
LOC	ATION: 64 Mill Lake Road, Hubbards,	Nova S	cotia			SAMPLI	E TYPE G - Grab				
CLIE	NT: Imperial Oil Limited					COMPL	ETION DATE: 19/1	1/12	PAGE 1 of	1	
Depth (m)	STRATIGRAPHY DESCRIPTION	MATERIAL TYPE	NUMBER	SAMPLE TYPE	SAMPLE LAB ANA	NAME/ LYSIS	SOIL VAPOUR CONCENTRATION (ppm) 100 300 500 700 900	SOIL CONCE	VAPOUR ENTRATION %LEL) 50 70 90	COMMENTS	Depth (ff)
-0	Ground Surface	***									-0
	ROOT MAT: organic root mat SILTY SAND: brown silty sand, trace silt, trace to some cobbles and boulders, moist to wet at 1.27m		SS-1	G	TP23(0.0-0.5) BTEX/TPH	m)	k				
- - - -			SS-2	G	TP23(0.5-1.0	m)	A				2 3
- - -			SS-3	G	TP23(1.0-1.5) BTEX/TPH	m)					4
- - - - 2	SAND: light brown grey medium grained sand, some silt, some cobbles and boulders, wet		SS-4	G	TP23(1.5-2.0)	m)					6
- - -			SS-5	G	TP23(2.0-2.5)	m)	*				8
- - - - 3			SS-6	G	TP23(2.5-3.0) BTEX/TPH	m)					9
- - -			SS-7	G	TP23(3.0-3.5	m)	▲				11
- - - - 4			SS-8	G	TP23(3.5-4.0)	m)	4				12
- - - - - - - - - - - - - -	End of Test Pit 4.1m										14
LOGGED BY: R.Hollett					DAYLIGHTING TO: 2.4m GAS METER TYPE: RKI Eagle						
	45 Akerley Blvd	REVIEWED BY: R.Hollett		equipment: Hitachi EX-120							
	B3B 1J7	DRAFTED BY: M.Kustudic			: M.Kustudic	METI	METHOD: Hydro-Excavate/Excavate				

PRO	PROJECT: Former Imperial Oil Bulk Plant					REF. N	REF. NO: 059548-02 TEST PIT NO: TP24			NO: TP24	
LOC	ATION: 64 Mill Lake Road, Hubbards,	Nova S	icotia			SAMPL	E TYPE G - Grab	OS - 0	Other Samp	le	
CLIE	NT: Imperial Oil Limited					COMPL	.ETION DATE: 19/1	1/12	PAGE 1 of	1	
Depth (m)	STRATIGRAPHY DESCRIPTION	MATERIAL TYPE	NUMBER	SAMPLE TYPE	SAMPLE LAB ANA	NAME/ LYSIS	SOIL VAPOUR CONCENTRATION (ppm) 100 300 500 700 900	SOIL CONCE	VAPOUR ENTRATION	COMMENTS	Depth (ft)
	Ground Surface										
	ROOT MAT: organic root mat SAND: brown silty sand, trace to some cobbles and boulders		SS-1	G	TP24(0.0-0.5	m)					
- - - -	SAND: light grey brown, medium grained sand, trace to some silt, numerous cobbles and boulders, wet at 1.13m		SS-2	G	TP24(0.5-1.0 BTEX/TPH	m)					2
-			SS-3	G	TP24(1.0-1.5 BTEX/TPH	m)					4
- - - -2			SS-4	G	TP24(1.5-2.0	m)					6
- - -			SS-5	G	TP24(2.0-2.5	m)					8
- - - - 3			SS-6	G	TP24(2.5-3.0	m)					9
- - -			SS-7	G	TP24(3.0-3.5 BTEX/TPH	m)					11
- - -			SS-8	G	TP24(3.5-4.0	m)	•				12 12 13
-	End of Test Pit 4.0m										
											14 15 16
5	<u> </u>	LOC	GEE) BY	: R.Hollett	DAY	LIGHTING TO: 2.4n	n G	AS METER	TYPE: RKI Eagle	<u> </u>
	45 Akerley Blvd	REVIEWED BY: R.Hollett			BY: R.Hollett	t EQUIPMENT: Hitachi EX-120					
	Dartmouth, NS B3B 1J7	DRAFTED BY: M.Kustudic			1: M.Kustudio	MET	HOD: Hydro-Excava	ate/Exca	avate		

APPENDIX B

LABORATORY CERTIFICATES OF ANALYSIS – SOIL AND GROUNDWATER



Task Order#: 4410047514 Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02 Your C.O.C. #: BE 04008, BE 04009

Attention: Scott LLewellyn

Conestoga-Rovers & Associates Limited 45 Akerley Blvd Dartmouth, NS B3B 1J7

Report Date: 2012/11/27

This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2I2112 Received: 2012/11/20, 11:53

Sample Matrix: Soil # Samples Received: 11

			Method
Analyses	Quantity	Laboratory Method	Primary reference
TEH in Soil (PIRI) (1)	11	ATL SOP 00111	Based on Atl. PIRI
Moisture	11	ATL SOP 00001	MOE Handbook 1983
VPH in Soil (PIRI)	11	ATL SOP 00119	Based on Atl. PIRI
ModTPH (T1) Calc. for Soil	11		Based on Atl. PIRI

Remarks:

All work recorded herein has been performed in accordance to the ISO 17025 standard. Methods used by Maxxam Analytics are based upon accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing.

Maxxam Analytics is accredited by Standards Council of Canada (SCC). Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract. Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

All data is in statistical control and has met all QC and method performance criteria unless otherwise flagged. All samples were analysed within hold time unless otherwise flagged. All soil samples for BTEX analysis were methanol extracted within 24 hours unless otherwise flagged.

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

(1) Soils are reported on a dry weight basis unless otherwise specified.



Task Order#: 4410047514 Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02 Your C.O.C. #: BE 04008, BE 04009

Attention: Scott LLewellyn

Conestoga-Rovers & Associates Limited 45 Akerley Blvd Dartmouth, NS B3B 1J7

Report Date: 2012/11/27

This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

-2-

MAXXAM JOB #: B2I2112 Received: 2012/11/20, 11:53

Encryption Key

Suzanne Rogers 27 Nov 2012 16:26:09 -04:00

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

Suzanne Rogers, Manager, Client Services Email: SRogers@maxxam.ca Phone# (902) 420-0203 Ext:232

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



Conestoga-Rovers & Associates Limited Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

ATLANTIC MUST IN SOIL (SOIL)

Maxxam ID		PR1712	PR1713	PR1714	PR1715		
Sampling Date		2012/11/19	2012/11/19	2012/11/19	2012/11/19		
		11:17	11:25	11:39	12:13		
		BE 04008	BE 04008	BE 04008	BE 04008		
	Units	TP21 (0.0-0.5M)	TP21 (1.0-1.5M)	TP21 (2.5-3.0M)	TP22 (0.5-1.0M)	RDL	QC Batch
		1	1	1	1	1	
Moisture	%	15	20	11	6	1	3042047
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	3043340
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	3043340
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	3043340
Xylene (Total)	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	3043340
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	<2.5	<2.5	2.5	3043340
>C10-C16 Hydrocarbons	mg/kg	<10	<10	<10	<10	10	3045034
>C16-C21 Hydrocarbons	mg/kg	<10	<10	<10	<10	10	3045034
>C21- <c32 hydrocarbons<="" td=""><td>mg/kg</td><td><15</td><td><15</td><td><15</td><td>23</td><td>15</td><td>3045034</td></c32>	mg/kg	<15	<15	<15	23	15	3045034
Modified TPH (Tier1)	mg/kg	<15	<15	<15	23	15	3041809
Reached Baseline at C32	mg/kg	NA	NA	NA	Yes	N/A	3045034
Hydrocarbon Resemblance	mg/kg	NA	NA	NA	COMMENT (1)	N/A	3045034
Extraction							
	%	68	64	62	65		3045034
n-Dotriacontane - Extractable	%	99	97	93	90		3045034
Isobutylbenzene - Volatile	%	107	103	102	95		3043340
Instrument	70	107	100	102			00-00-0
Surrogate Recovery (%)							
1,4-Difluorobenzene	%	110	106	108	94		3043340
4-Bromofluorobenzene	%	113	112	111	94		3043340
D4-1,2-Dichloroethane	%	110	110	108	96		3043340

RDL = Reportable Detection Limit QC Batch = Quality Control Batch

(1) Lube oil fraction.



Conestoga-Rovers & Associates Limited Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

ATLANTIC MUST IN SOIL (SOIL)

Maxxam ID		PR1716	PR1717	PR1718	PR1719		
Sampling Date		2012/11/19	2012/11/19	2012/11/19	2012/11/19		
		12:23	10:32	10:40	10:52		
COC Number		BE 04008	BE 04008	BE 04008	BE 04008		
	Unite	TP22 (1 5-2 0M)	TP23 (0.0-0.5M)	TP23 (1 0-1 5M)	TP23 (2 5-3 0M)	PDI	OC Batch
	Units	11 22 (1.3-2.014)	11 23 (0.0-0.310)	11 23 (1.0-1.3W)	11 23 (2.3-3.0M)	INDE	
Moisture	%	11	21	15	9	1	3042047
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	3043340
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	3043340
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	3043340
Xylene (Total)	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	3043340
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	<2.5	<2.5	2.5	3043340
>C10-C16 Hydrocarbons	mg/kg	<10	<10	31	<10	10	3045034
>C16-C21 Hydrocarbons	mg/kg	<10	<10	61	<10	10	3045034
>C21- <c32 hydrocarbons<="" td=""><td>mg/kg</td><td><15</td><td><15</td><td>33</td><td><15</td><td>15</td><td>3045034</td></c32>	mg/kg	<15	<15	33	<15	15	3045034
Modified TPH (Tier1)	mg/kg	<15	<15	130	<15	15	3041809
Reached Baseline at C32	mg/kg	NA	NA	Yes	NA	N/A	3045034
Hydrocarbon Resemblance	mg/kg	NA	NA	COMMENT (1)	NA	N/A	3045034
Extraction Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	62	58	69	63		3045034
n-Dotriacontane - Extractable	%	89	96	105	98		3045034
Isobutylbenzene - Volatile	%	103	106	103	100		3043340
Instrument Surrogate Recovery (%)							
1,4-Difluorobenzene	%	101	104	93	98		3043340
4-Bromofluorobenzene	%	104	107	98	102		3043340
D4-1,2-Dichloroethane	%	103	106	103	102		3043340

RDL = Reportable Detection Limit QC Batch = Quality Control Batch

(1) One product in fuel / lube range.



Conestoga-Rovers & Associates Limited Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

ATLANTIC MUST IN SOIL (SOIL)

Maxxam ID		PR1720		PR1721		PR1722		
Sampling Date		2012/11/19		2012/11/19		2012/11/19		
		09:47		09:51		10:08		
COC Number		BE 04008		BE 04009		BE 04009		
	Units	TP24 (0.5-1.0M)	RDL	TP24 (1.0-1.5M)	RDL	TP24 (3.0-3.5M)	RDL	QC Batch
	101110							<u> </u>
Moisture	%	8	1	16	1	11	1	3042047
Benzene	mg/kg	<0.025	0.025	<0.025	0.025	<0.025	0.025	3043340
Toluene	mg/kg	<0.025	0.025	<0.025	0.025	<0.025	0.025	3043340
Ethylbenzene	mg/kg	0.54	0.025	0.57	0.025	<0.025	0.025	3043340
Xylene (Total)	mg/kg	2.2	0.050	4.8	0.050	0.072	0.050	3043340
C6 - C10 (less BTEX)	mg/kg	230	2.5	520	25	28	2.5	3043340
>C10-C16 Hydrocarbons	mg/kg	1100	10	400	10	110	10	3045034
>C16-C21 Hydrocarbons	mg/kg	310	10	110	10	55	10	3045034
>C21- <c32 hydrocarbons<="" td=""><td>mg/kg</td><td>63</td><td>15</td><td>29</td><td>15</td><td>30</td><td>15</td><td>3045034</td></c32>	mg/kg	63	15	29	15	30	15	3045034
Modified TPH (Tier1)	mg/kg	1700	15	1100	25	230	15	3041809
Reached Baseline at C32	mg/kg	Yes	N/A	Yes	N/A	Yes	N/A	3045034
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	N/A	COMMENT (1)	N/A	COMMENT (2)	N/A	3045034
Extraction Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	61		66		63		3045034
n-Dotriacontane - Extractable	%	86 (3)		90		98		3045034
Isobutylbenzene - Volatile	%	97		92		106		3043340
Instrument Surrogate Recovery (%)								
1,4-Difluorobenzene	%	103		108		104		3043340
4-Bromofluorobenzene	%	105		106		111		3043340
D4-1,2-Dichloroethane	%	105		110		106		3043340

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

(1) Weathered fuel oil fraction.

(2) Weathered fuel oil fraction. Unidentified compound(s) in lube oil range.

(3) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.



Conestoga-Rovers & Associates Limited Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

ATLANTIC MUST IN SOIL (SOIL)

Maxxam ID		PR1722		
Sampling Date		2012/11/19		
		10:08		
COC Number		BE 04009		
	Units	TP24 (3.0-3.5M)	RDL	QC Batch
		Lab-Dup		
		-		-
Benzene	mg/kg	<0.025	0.025	3043340
Toluene	mg/kg	<0.025	0.025	3043340
Ethylbenzene	mg/kg	<0.025	0.025	3043340
Xylene (Total)	mg/kg	<0.050	0.050	3043340
C6 - C10 (less BTEX)	mg/kg	15 (1)	2.5	3043340
Extraction				
Surrogate Recovery (%)				
Isobutylbenzene - Volatile	%	109		3043340
Instrument Surrogate Recovery (%)				
1,4-Difluorobenzene	%	109		3043340
4-Bromofluorobenzene	%	111		3043340
D4-1,2-Dichloroethane	%	112		3043340

RDL = Reportable Detection Limit QC Batch = Quality Control Batch

(1) Duplicate: results are outside acceptance limit. Analysis was repeated with similar results.



Conestoga-Rovers & Associates Limited Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

Test Summary

Maxxam ID	PR1712
Sample ID	TP21 (0.0-0.5M)
Matrix	Soil

 Collected
 2012/11/19

 Relinquished
 2012/11/20

 Received
 2012/11/20

Collected 2012/11/19

Received 2012/11/20

Relinquished 2012/11/20

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	3045034	2012/11/22	2012/11/22	Jillian Ruhl
Moisture	BAL	3042047	N/A	2012/11/20	Kelsey MacGillivray
VPH in Soil (PIRI)	PTGC/MS	3043340	2012/11/20	2012/11/21	Thea Holland
ModTPH (T1) Calc. for Soil	CALC	3041809	2012/11/23	2012/11/23	Automated Statchk

Maxxam ID PR1713 Sample ID TP21 (1.0-1.5M) Matrix Soil

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	3045034	2012/11/22	2012/11/22	Jillian Ruhl
Moisture	BAL	3042047	N/A	2012/11/20	Kelsey MacGillivray
VPH in Soil (PIRI)	PTGC/MS	3043340	2012/11/20	2012/11/21	Thea Holland
ModTPH (T1) Calc. for Soil	CALC	3041809	2012/11/23	2012/11/23	Automated Statchk

Maxxam ID	PR1714	Collected	2012/11/19
Sample ID	TP21 (2.5-3.0M)	Relinquished	2012/11/20
Matrix	Soil	Received	2012/11/20

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	3045034	2012/11/22	2012/11/22	Jillian Ruhl
Moisture	BAL	3042047	N/A	2012/11/20	Kelsey MacGillivray
VPH in Soil (PIRI)	PTGC/MS	3043340	2012/11/20	2012/11/21	Thea Holland
ModTPH (T1) Calc. for Soil	CALC	3041809	2012/11/23	2012/11/23	Automated Statchk

Maxxam ID	PR1715	Collected	2012/11/19
Sample ID	TP22 (0.5-1.0M)	Relinguished	2012/11/20
Matrix	Soil	Received	2012/11/20

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	3045034	2012/11/22	2012/11/22	Jillian Ruhl
Moisture	BAL	3042047	N/A	2012/11/20	Kelsey MacGillivray
VPH in Soil (PIRI)	PTGC/MS	3043340	2012/11/20	2012/11/21	Thea Holland
ModTPH (T1) Calc. for Soil	CALC	3041809	2012/11/23	2012/11/23	Automated Statchk

Maxxam ID PR1716 Sample ID TP22 (1.5-2.0M) Matrix Soil
 Collected
 2012/11/19

 Relinquished
 2012/11/20

 Received
 2012/11/20

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	3045034	2012/11/22	2012/11/22	Jillian Ruhl
Moisture	BAL	3042047	N/A	2012/11/20	Kelsey MacGillivray
VPH in Soil (PIRI)	PTGC/MS	3043340	2012/11/20	2012/11/21	Thea Holland
ModTPH (T1) Calc. for Soil	CALC	3041809	2012/11/23	2012/11/23	Automated Statchk



Conestoga-Rovers & Associates Limited Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

Test Summary

Maxxam ID	PR1717
Sample ID	TP23 (0.0-0.5M)
Matrix	Soil

Collected	2012/11/19
Relinquished	2012/11/20
Received	2012/11/20

Collected 2012/11/19

Received 2012/11/20

Relinquished 2012/11/20

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	3045034	2012/11/22	2012/11/22	Jillian Ruhl
Moisture	BAL	3042047	N/A	2012/11/20	Kelsey MacGillivray
VPH in Soil (PIRI)	PTGC/MS	3043340	2012/11/20	2012/11/21	Thea Holland
ModTPH (T1) Calc. for Soil	CALC	3041809	2012/11/23	2012/11/23	Automated Statchk

Maxxam ID PR1718 Sample ID TP23 (1.0-1.5M) Matrix Soil

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	3045034	2012/11/22	2012/11/23	Jillian Ruhl
Moisture	BAL	3042047	N/A	2012/11/20	Kelsey MacGillivray
VPH in Soil (PIRI)	PTGC/MS	3043340	2012/11/20	2012/11/21	Thea Holland
ModTPH (T1) Calc. for Soil	CALC	3041809	2012/11/23	2012/11/23	Automated Statchk

Maxxam ID	PR1719	Collected	2012/11/19
Sample ID	TP23 (2.5-3.0M)	Relinquished	2012/11/20
Matrix	Soil	Received	2012/11/20

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	3045034	2012/11/22	2012/11/23	Jillian Ruhl
Moisture	BAL	3042047	N/A	2012/11/20	Kelsey MacGillivray
VPH in Soil (PIRI)	PTGC/MS	3043340	2012/11/20	2012/11/21	Thea Holland
ModTPH (T1) Calc. for Soil	CALC	3041809	2012/11/23	2012/11/23	Automated Statchk

Maxxam ID	PR1720	Collected	2012/11/19
Sample ID	TP24 (0.5-1.0M)	Relinquished	2012/11/20
Matrix	Soil	Received	2012/11/20

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	3045034	2012/11/22	2012/11/23	Jillian Ruhl
Moisture	BAL	3042047	N/A	2012/11/20	Kelsey MacGillivray
VPH in Soil (PIRI)	PTGC/MS	3043340	2012/11/20	2012/11/21	Thea Holland
ModTPH (T1) Calc. for Soil	CALC	3041809	2012/11/23	2012/11/23	Automated Statchk

Maxxam ID PR1721 Sample ID TP24 (1.0-1.5M) Matrix Soil
 Collected
 2012/11/19

 Relinquished
 2012/11/20

 Received
 2012/11/20

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	3045034	2012/11/22	2012/11/23	Jillian Ruhl
Moisture	BAL	3042047	N/A	2012/11/20	Kelsey MacGillivray
VPH in Soil (PIRI)	PTGC/MS	3043340	2012/11/20	2012/11/22	Thea Holland
ModTPH (T1) Calc. for Soil	CALC	3041809	2012/11/23	2012/11/23	Automated Statchk



Conestoga-Rovers & Associates Limited Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

Test Summary

Maxxam ID PR1722 Sample ID TP24 (3.0-3.5M) Matrix Soil				Re	Collected 2012/11/19 linquished 2012/11/20 Received 2012/11/20	
Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst	
TEH in Soil (PIRI)	GC/FID	3045034	2012/11/22	2012/11/23	Jillian Ruhl	
Moisture	BAL	3042047	N/A	2012/11/20	Kelsey MacGillivray	
VPH in Soil (PIRI)	PTGC/MS	3043340	2012/11/20	2012/11/21	Thea Holland	
ModTPH (T1) Calc. for Soil	CALC	3041809	2012/11/23	2012/11/23	Automated Statchk	
Maxxam ID PR1722 Dup					Collected 2012/11/19	

Sample ID	TP24 (3.0-3.5M)				Re	linquished	2012/11/20
Matrix	Soil					Received	2012/11/20
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst	
VPH in Soil (PIRI)		PTGC/MS	3043340	2012/11/20	2012/11/21	Thea Hol	and



Conestoga-Rovers & Associates Limited Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

 Package 1
 6.7°C

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

GENERAL COMMENTS

Incorrect IOL project number listed on COC. We will proceed using JW.00096 as per Scott Llewellyn.

11/21/12 MMC

SQC trend rule failure for TEH in Soil, Batch 3045034. 4 of 5 consecutive points greater than 1SD above the mean.

Report re-issued to include signed data quality waiver. Nov 27/12 SR

Results relate only to the items tested.



Conestoga-Rovers & Associates Limited Task Order#: 4410047514 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

Quality Assurance Report

Maxxam Job Number: B2I2112

QA/QC			Date				
Batch			Analyzed				
Num Init	QC Type	Parameter	yyyy/mm/dd	Value	Recovery	Units	QC Limits
3043340 THL	Method Blank	1,4-Difluorobenzene	2012/11/21		87	%	60 - 140
		4-Bromofluorobenzene	2012/11/21		85	%	60 - 140
		D4-1,2-Dichloroethane	2012/11/21		89	%	60 - 140
		Isobutylbenzene - Volatile	2012/11/21		89	%	60 - 140
		Benzene	2012/11/21	<0.025		mg/kg	
		Toluene	2012/11/21	<0.025		mg/kg	
		Ethylbenzene	2012/11/21	<0.025		mg/kg	
		Xylene (Total)	2012/11/21	<0.050		mg/kg	
		C6 - C10 (less BTEX)	2012/11/21	<2.5		mg/kg	
3045034 JRU	Method Blank	Isobutylbenzene - Extractable	2012/11/22		75	%	30 - 130
		n-Dotriacontane - Extractable	2012/11/22		113	%	30 - 130
		>C10-C16 Hydrocarbons	2012/11/22	<10		mg/kg	
		>C16-C21 Hydrocarbons	2012/11/22	<10		mg/kg	
		>C21- <c32 hydrocarbons<="" td=""><td>2012/11/22</td><td><15</td><td></td><td>mg/kg</td><td></td></c32>	2012/11/22	<15		mg/kg	
3043340 THL	RPD [PR1722-02]	Benzene	2012/11/21	NC		%	50
		Toluene	2012/11/21	NC		%	50
		Ethylbenzene	2012/11/21	NC		%	50
		Xylene (Total)	2012/11/21	NC		%	50
		C6 - C10 (less BTEX)	2012/11/21	63.2 (1)		%	50
	Matrix Spike						
	[PR1722-02]	1,4-Difluorobenzene	2012/11/22		109	%	60 - 140
		4-Bromofluorobenzene	2012/11/22		111	%	60 - 140
		D4-1,2-Dichloroethane	2012/11/22		107	%	60 - 140
		Isobutylbenzene - Volatile	2012/11/22		95	%	60 - 140
		Benzene	2012/11/22		92	%	60 - 140
		Toluene	2012/11/22		124	%	60 - 140
		Ethylbenzene	2012/11/22		112	%	60 - 140
		Xylene (Total)	2012/11/22		125	%	60 - 140
	LCS	1,4-Difluorobenzene	2012/11/21		92	%	60 - 140
		4-Bromofluorobenzene	2012/11/21		90	%	60 - 140
		D4-1,2-Dichloroethane	2012/11/21		91	%	60 - 140
		Isobutylbenzene - Volatile	2012/11/21		89	%	60 - 140
		Benzene	2012/11/21		75	%	60 - 140
		Toluene	2012/11/21		82	%	60 - 140
		Ethylbenzene	2012/11/21		83	%	60 - 140
		Xylene (Total)	2012/11/21		83	%	60 - 140
3045034 JRU	LCS	Isobutylbenzene - Extractable	2012/11/22		77	%	30 - 130
		n-Dotriacontane - Extractable	2012/11/22		115	%	30 - 130
		>C10-C16 Hydrocarbons	2012/11/22		87	%	30 - 130
		>C16-C21 Hydrocarbons	2012/11/22		97	%	30 - 130
		>C21- <c32 hydrocarbons<="" td=""><td>2012/11/22</td><td></td><td>100</td><td>%</td><td>30 - 130</td></c32>	2012/11/22		100	%	30 - 130

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.

LCS: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy. Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

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

NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

(1) Duplicate: results are outside acceptance limit. Analysis was repeated with similar results.

					DATA QUALITY	WAIVER		2012/11/26 4-47 P
Invoice C Invoice C Invoice P	Client Name: Imperia Client ID #: 12970 Project Manager: Sur	l Oil, a pari a Ali	tnership of Imp	erial Oil Limited Site Lo Client Task #:	and McColl Frontenac ocation: 88000331;64 Mi Project #: 059548-02 4410047514	Petrole ill Lake Road, Hubbards, NS	Maxxam Jo	b #: B2(2112
Report To Report To Maxxam	o Client Name: Cond o Client ID #: 4753 o Project Manager: Su Project Manager: Su	estoga-Rov Scott LLew zanne Rog	vers & Associat vellyn vers	es Limit@uote: COC/Su TAT: 7 I Rush: N	B25330 Ibmission #: BE 04008 Days		Received : DQW #: DQW Created By: 5	2012/11/20 11:53 1602 Suzanne Rogers
Lab ID	Client Sample ID	Matrix	Test Code	Analysis Type	Dommatow		DQW Created: 2	2012/11/26 16:39
PR1722	TP24 (3.0-3.5M)	Soil	PPHPIRI-S	TPHC	C6 - C10 (less BTEX)	#6 Duplicate RPD Above Control Limit	#6 Non-Homogeneous	Potential Impact This may increase the uncertainty
ignature: ata Quali ignature:	ty Waiver Reviewed	and Acce	epted By:	Date: 2	012/11/26 16:40	þ	Name Title Name Title	: <u>Suzanne Rogers</u> : <u>Manager, Client Services</u> : <u>Scott Llewelly</u> : <u>PM-CRA</u>
gnature:	y Waiver Reviewed a	nd Decline	d By:	Date:			Name Títle	·
omments .	/ Requested Actions:	-						
				_				

If this waiver is not returned within 7 calendar days of issuance, the associated data will be deemed acceptable as reported by the issuing laboratory. Closure of the Data Quality Waiver Request requires written acceptance, or declining with comments. Failure to return a signed waiver within 7 calendar days will be reported to Imperial Oil as a failure to close the Data Quality Waiver Request by the recipient of the data.

Maxiam



Validation Signature Page

Maxxam Job #: B2I2112

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

Maelonald

Rose Macdonald, Scientific Specialist (Organics)

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.
	ter Road, Su B4B 1G9 amanalytics.c	uite 105 com	Phone: (9) Fax: (9) Toll Free: 1-	02) 420- 02) 420- 800-565	0203 8612 5-7227	6		E)	(XON N CH	10BIL AIN-C	L/IMP DF-CL	PERI JSTC ANAL	AL OI DDY R Ysis F	L - M ECOI REQU	AXXA RD ESTED	М	c	of C i	Pa # BE	_{ge_\} E_O	of_ 40(<u>2</u>)8
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Page 14 of 15

INVOICE INFORMATION	xamanalytics.com To REPORT INFO	bll Free: 1-800-568	5-7227	7		633	ANA	LYSIS F	REQUE	STED	Co	fC#	BFr	1401	19
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Email: Sura, alieesso, ca	Email: 51 lewelly ac	naworld.com	Meta	Met	র্নি		etho O3/F Iturs 32)	SN' T							
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1 TP24 (1.0-1.5m)	2 12/11/	19 09:51													
2 TP24 (3,0-3,5m)	2 2 2/11/	9 10:08													
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IOL SITE LOCATION	I I I REC	ULATORY CRITERI	A/DEI	TECT	TON LI	MITS	SPECIAL INSTRUCTION	NS		ن النه تا	# JARS U	ISED	TURNAR	OUND T	IME
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88000 33	<u> </u>	(5							SOBWITT	Sta	andard	(5 days)	
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MAXXAM TASK ORDER # OR SER VICE ORDER	# + LINE ITEM	Po	raw	1-							-12			(1 day)	
4410047514							ICE YES						(sa	ime day)	
COOLER ID CUSTODY SEAR	YES NO COOLER ID	cu	STODY	SEA	LYE	S	NO COOLER ID		CUSTO	DY SEAL	YES	NO -	Date	Required	
TEMP 677 PRESENT	ТЕМР	PR	ESENT				TEMP		PRESE	NT -		8	LABU	ISE ONL	Y
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COC - 1009 (01/10) IOL - NS		Whiter Mes	vam			Yellow	- Client			it					

Page 15 of 15

DATA QUALITY REVIEW CHECKLIST - IMPERIAL OIL PROJECTS

Consultant:	CRA			Sampling Date:	2012/11/19							
Location: 64 Mill I	.ake Rd No.	2, Hubb	ards, NS	Laboratory :	Maxxam - Bedford, NS							
Consultant Project Number:	059:	548-02		Sample Submissio	on Number: <u>B2I2112</u>							
Ara All Laboratory OC Samplas Y	Within Accou	ntanca C	ritoria (Voc	No. Not Applicable)	59							
Are An Laboratory QC Samples V	viunn Accej		1110114 (105	, No, Not Applicable)	1							
Instrument Sumo acta Decoueru	Yes	No	NA	$\mathbf{D}\mathbf{D}\mathbf{D}\mathbf{f}_{out}\mathbf{T}\mathbf{D}24$	Comments							
Extraction Surrogate Recovery	X			exceed the RPD acc	entance criteria for C6-C10 (less							
Method Blank Concentration	X			BTEX). DOW indic	ates sample was non- homogeneous.							
Matrix Duplicate RPD X All other lab QC have met acceptance criteria.												
Matrix Spike Recovery X												
Lab Control Sample Recovery X												
Are All Field OC Samples Within	Alert I imit	s (Ves N	Jo. Not An	nlicable)?								
The full field QC bamples within		5 (105, 1	(0, 1(0) Apj									
	Yes	No	NA		Comments							
Field Blank Concentration			Х	Field duplicate subn	nitted under Maxxam job B212118							
Trip Blank Concentration			Х	RPD for TP24 (3.0-3	3.5M) and its field duplicate exceed							
				the RPD acceptance	criteria for >C10-C16, >C16-C21,							
				>C21-C32and modi	fied TPH. The matrix duplicate for							
				this batch also show	s variability in the results reported							
				is most likely due to	sample inhomogeneity							
Field Duplicate RPD		x		is most likely due to	sample milomogeneity.							
Tield Duplicate RTD		21										
Has CoA been signed off (Yes/No)?:				Yes							
Has lab warranted all tests were in	statistical c	ontrol in	CoA (Yes	/No)?:	No							
Has lab warranted all tests were an	nalyzed follo	owing SC	OP's in CoA	(Yes/No)?:	Yes							
Were all samples analyzed within	hold times (Yes/No)	?:		Yes							
All volatiles samples methanol ex	tracted (11 re	quirea) v	within 48 h	ours (Yes/No)?:	Yes Vas							
Were sample temperatures accenta	able when th	ev reach	ed lab (Yes		Yes							
were sample temperatures accept		iej reach										
Was a Data Quality Waiver (DQW	V) issued (Y	es/No)?:			Yes #1602							
Date Issued:	201	2/07/26		Date of Response:	2012/07/26							
Date issued.	201	2/07/20		Date of Response.	2012/07/20							
Is data considered to be reliable (Yes/No)?:			Yes								
If answer is "No", describe and pr	ovide ration	ale:										
Data Daviawad by (Dring).	Iovoo M	lac Dono	ld	Data Raviawad her (Signature): In manhould							
Data Reviewed by (PIIII):	Joyce M	iac Dolla	uu	Data Reviewed by (Signature) /////////							
Date:	2013	3/02/22			~							



Task Order#: 4410047514 Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02 Your C.O.C. #: BE 04010

Attention: Scott LLewellyn

Conestoga-Rovers & Associates Limited 45 Akerley Blvd Dartmouth, NS B3B 1J7

Report Date: 2012/11/26

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2l2118 Received: 2012/11/20, 11:53

Sample Matrix: Soil # Samples Received: 1

			Method
Analyses	Quantity	Laboratory Method	Primary reference
TEH in Soil (PIRI) (1)	1	ATL SOP 00111	Based on Atl. PIRI
Moisture	1	ATL SOP 00001	MOE Handbook 1983
VPH in Soil (PIRI)	1	ATL SOP 00119	Based on Atl. PIRI
ModTPH (T1) Calc. for Soil	1		Based on Atl. PIRI

Remarks:

All work recorded herein has been performed in accordance to the ISO 17025 standard. Methods used by Maxxam Analytics are based upon accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing.

Maxxam Analytics is accredited by Standards Council of Canada (SCC). Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract. Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

All data is in statistical control and has met all QC and method performance criteria unless otherwise flagged. All samples were analysed within hold time unless otherwise flagged. All soil samples for BTEX analysis were methanol extracted within 24 hours unless otherwise flagged.

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

(1) Soils are reported on a dry weight basis unless otherwise specified.



Task Order#: 4410047514 Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02 Your C.O.C. #: BE 04010

Attention: Scott LLewellyn

Conestoga-Rovers & Associates Limited 45 Akerley Blvd Dartmouth, NS B3B 1J7

Report Date: 2012/11/26

CERTIFICATE OF ANALYSIS -2-

MAXXAM JOB #: B2l2118 Received: 2012/11/20, 11:53

Encryption Key

Suzanne Rogers 26 Nov 2012 16:36:28 -04:00

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

Suzanne Rogers, Manager, Client Services Email: SRogers@maxxam.ca Phone# (902) 420-0203 Ext:232

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



Conestoga-Rovers & Associates Limited Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

ATLANTIC MUST IN SOIL (SOIL)

Maxxam ID		PR1756		
Sampling Date		2012/11/19		
COC Number		10:10 BE 04010		
	Units	TPA (3.0-3.5M)	RDL	QC Batch
		_	1.	
Moisture	%	9	1	3042047
Benzene	mg/kg	<0.025	0.025	3043340
Toluene	mg/kg	<0.025	0.025	3043340
Ethylbenzene	mg/kg	<0.025	0.025	3043340
Xylene (Total)	mg/kg	<0.050	0.050	3043340
C6 - C10 (less BTEX)	mg/kg	3.0	2.5	3043340
>C10-C16 Hydrocarbons	mg/kg	2600	10	3045034
>C16-C21 Hydrocarbons	mg/kg	730	10	3045034
>C21- <c32 hydrocarbons<="" td=""><td>mg/kg</td><td>150</td><td>15</td><td>3045034</td></c32>	mg/kg	150	15	3045034
Modified TPH (Tier1)	mg/kg	3500	15	3041809
Reached Baseline at C32	mg/kg	Yes	N/A	3045034
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	N/A	3045034
Extraction Surrogate Recovery (%)				
Isobutylbenzene - Extractable	%	77		3045034
n-Dotriacontane - Extractable	%	86		3045034
Isobutylbenzene - Volatile	%	105		3043340
Instrument Surrogate Recovery (%)				
1,4-Difluorobenzene	%	112		3043340
4-Bromofluorobenzene	%	112		3043340
D4-1,2-Dichloroethane	%	112		3043340
	•			

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

(1) Weathered fuel oil fraction.



Conestoga-Rovers & Associates Limited Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

Test Summary

Maxxam ID	PR1756					Collected	2012/11/19
Sample ID	TPA (3.0-3.5M)				Re	linquished	2012/11/20
Matrix	Soil					Received	2012/11/20
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst	
			2045024	2012/11/22	2012/11/22	lillion Dul	

Matrix Soil					Received 2012/11/20
Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	3045034	2012/11/22	2012/11/23	Jillian Ruhl
Moisture	BAL	3042047	N/A	2012/11/20	Kelsey MacGillivray
VPH in Soil (PIRI)	PTGC/MS	3043340	2012/11/20	2012/11/22	Thea Holland
ModTPH (T1) Calc. for Soil	CALC	3041809	2012/11/23	2012/11/23	Automated Statchk



Conestoga-Rovers & Associates Limited Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

Package 1 3.7°C

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

GENERAL COMMENTS

Incorrect IOL project number listed on COC. We will proceed using JW.00096 as per Scott Llewellyn.

Cooler received with custody seal on hinged side. Proceed with submission as per Scott Llewellyn.

11/21/12 MMC

SQC trend rule failure for TEH in Soil, Batch 3045034. 4 of 5 consecutive points greater than 1SD above the mean.

Results relate only to the items tested.



Conestoga-Rovers & Associates Limited Task Order#: 4410047514 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

Quality Assurance Report

Maxxam Job Number: B2I2118

QA/QC			Date				
Batch			Analyzed				
Num Init	QC Type	Parameter	yyyy/mm/dd	Value	Recovery	Units	QC Limits
3043340 THL	Method Blank	1,4-Difluorobenzene	2012/11/21		87	%	60 - 140
		4-Bromofluorobenzene	2012/11/21		85	%	60 - 140
		D4-1,2-Dichloroethane	2012/11/21		89	%	60 - 140
		Isobutylbenzene - Volatile	2012/11/21		89	%	60 - 140
		Benzene	2012/11/21	<0.025		mg/kg	
		Toluene	2012/11/21	<0.025		mg/kg	
		Ethylbenzene	2012/11/21	<0.025		mg/kg	
		Xylene (Total)	2012/11/21	<0.050		mg/kg	
		C6 - C10 (less BTEX)	2012/11/21	<2.5		mg/kg	
3045034 JRU	Method Blank	Isobutylbenzene - Extractable	2012/11/22		75	%	30 - 130
		n-Dotriacontane - Extractable	2012/11/22		113	%	30 - 130
		>C10-C16 Hydrocarbons	2012/11/22	<10		mg/kg	
		>C16-C21 Hydrocarbons	2012/11/22	<10		mg/kg	
		>C21- <c32 hydrocarbons<="" td=""><td>2012/11/22</td><td><15</td><td></td><td>mg/kg</td><td></td></c32>	2012/11/22	<15		mg/kg	
3043340 THL	LCS	1,4-Difluorobenzene	2012/11/21		92	%	60 - 140
		4-Bromofluorobenzene	2012/11/21		90	%	60 - 140
		D4-1,2-Dichloroethane	2012/11/21		91	%	60 - 140
		Isobutylbenzene - Volatile	2012/11/21		89	%	60 - 140
		Benzene	2012/11/21		75	%	60 - 140
		Toluene	2012/11/21		82	%	60 - 140
		Ethylbenzene	2012/11/21		83	%	60 - 140
		Xylene (Total)	2012/11/21		83	%	60 - 140
3045034 JRU	LCS	Isobutylbenzene - Extractable	2012/11/22		77	%	30 - 130
		n-Dotriacontane - Extractable	2012/11/22		115	%	30 - 130
		>C10-C16 Hydrocarbons	2012/11/22		87	%	30 - 130
		>C16-C21 Hydrocarbons	2012/11/22		97	%	30 - 130
		>C21- <c32 hydrocarbons<="" td=""><td>2012/11/22</td><td></td><td>100</td><td>%</td><td>30 - 130</td></c32>	2012/11/22		100	%	30 - 130

LCS: 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.

Maxxam Analytics International Corporation o/a Maxxam Analytics 200 Blueweler Rd, Suita 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free 800-565-7227 Fax: 902-420-8612 www.maxxamanalytics.com



Validation Signature Page

Maxxam Job #: B2I2118

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

Maelonald

Rose Macdonald, Scientific Specialist (Organics)

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

Maxiam 200 Bluewat Bedford, NS www.maxxa	ter Road, Suite 105 Pho B4B 1G9 F manalytics.com Toll F	one: (902) 420-0 Fax: (902) 420-8 Free: 1-800-565-	0203 8612 -722	7		ΕΧλ	(ON I CH	NOBII AIN-C	L/IMF DF-CL	PERIAL ISTOL	L OIL DY RI SIS R	- MA	AXX/ 2D Estei	AM D	C	of C	^{Ра} # ВІ	^{3ge_1} E ()	of 40	<u> </u>
INVOICE INFORMATION	REPORT INFORM	ATION							1								-		<u></u>	
Company Name: 🏼 İmperial Olt 🔲 ExxonMobil	Company Name: CRA		A																	
Contact Name: Surce AV.	Contact Name: Scott Lles	wellyn					1								3		é.			
Address: 7100 Rue Jean Talon Est Anjou PQ, HIM 3R8	Address: 45 Akenley Blud Dortmouth. NS. (336 137	sis	als			d HF/HCIO4)	for CCME	tural al)	Fuel Oil Spill	8									
Email: Sura, alie esso. ca	Email: 5 Newelly we crau	varld.com	Meta	Met	Ī		letho O3/I	-paul	ultur	NS NS	с L I									
Ph: 514-493-7053	Ph: 902-468-124	8	Diss	Diss			St N (HN	EQUI-	ron Ag	UST O	び E									
Sampler Name (Print):	Consultant Project #:		5				of the state	N N N	A Points	NI NI	SIL			60				1		
Rich Hollett	059548-	02	otal	Total			diges	ALevel	oble Solution	回官	ater ow L	ttion		4, 82					5	
FIELD SAMPLE ID	SURFACE SURFACE SULL SOIL OTHER OTHER DATE (TY/MIM/DD)	TIME B ELD FILTERED A PRESERVED LAB FILTRATION REQUIRED	RCAp-30 Choose T	RCAp-MS Choose	Perversion Netals Vater	Mercury	Default Availa Metals Total C	Mercury - Lov Selenium (row	Escidential, P Hot Water So (Required for	TPH MUST (B Soil (Potable),	NB Potable W NB Potable W Q BTEX, VPH, L	TPH Fractions	PCBs	VOCS EPA 62				l		
1 TPA (30-35m)	2 12/11/19	10:10							T	. 1		1		1		\square				1
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OL SITE # (if applicable) 88 000 331	241	lantic 12	150	-14											SUBMIT	TED	Standa	ard	(5 days)	i
OL PROJECT # (if applicable)		comme	rcie	a١													Rush		(3 days)	5
JW.000	l\$	0.	1	510											O	\$	W. Arres	1	(2 days))
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4410047519							1	CE	46	S								(sa)	ne dayj	
COOLER ID CUSTODY SEAL	YES NO COOLER ID	Cus	STOD	Y SEAL	YES	3 N	0 00	OLER ID)			CUSTO	DDY SE	EAL	YES	NO		Date f	Required	d
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1 2 3 INTACT	V 1 2	3 INTA	ACT					1	2	3		INTAC	r	-		-	MAXX	(AM J	OB #	24
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Page 8 of 8

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DATA QUALITY REVIEW CHECKLIST - IMPERIAL OIL PROJECTS

Consultant	CRA		Sampling Date:	2012/*	11/19
Location: 64 Mill I	ake Rd No 2 Hubb	- ards NS	Laboratory :	Maxvam - R	edford NS
Construct Design Number	050548.02	Jarus, 195	_ Laboratory	Naxani - D	
Consultant Project Number:	059548-02		Sample Submissio	n Number:	B212118
Are All Laboratory QC Samples V	Within Acceptance C	riteria (Yes	s, No, Not Applicable)	?	
	Yes No	NA		Comments	
Instrument Surrogate Recovery Extraction Surrogate Recovery	X X				
Method Blank Concentration	X				
Matrix Duplicate RPD	X				
Matrix Spike Recovery	X X				
Lab control bample Recovery	Δ				
Are All Field QC Samples Within	Alert Limits (Yes, N	No, Not Ap	plicable)?		
	Yes No	NA	•	Comments	
Field Blank Concentration		X	Field duplicate subm	itted for Maxxam 3 5M) and its field	i job B212112 I duplicate, exceed
The blank concentration		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	the RPD acceptance	criteria for >C10-	C16, >C16-C21,
Field Duplicate RPD	Х		>C21-C32and modif	fied TPH.	
Has CoA been signed off (Yes/No Has lab warranted all tests were in Has lab warranted all tests were as Were all samples analyzed within All volatiles samples methanol ex Is Chain of Custody completed an Were sample temperatures accepta	o)?: a statistical control in halyzed following SC hold times (Yes/No) tracted (if required) d signed (Yes/No)?: able when they reach	/No)?: A (Yes/No)?: ours (Yes/No)?:	Yes No Yes Yes Yes Yes Yes		
Was a Data Quality Waiver (DQV	V) issued (Yes/No)?:			No	
Date Issued:	2012/07/26	_	Date of Response:	2012/	07/26
Is data considered to be reliable (` If answer is "No", describe and pr	Yes/No)?: ovide rationale:		Yes		
Data Reviewed by (Print): Date:	Joyce Mac Dona 2013/02/22	ald	Data Reviewed by (Signature):	ayee Muchanula



Task Order#: 4410047514 Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02 Your C.O.C. #: BE 03669

Attention: Scott LLewellyn

Conestoga-Rovers & Associates Limited 45 Akerley Blvd Dartmouth, NS B3B 1J7

Report Date: 2012/11/30

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2I4092 Received: 2012/11/22, 15:04

Sample Matrix: Water # Samples Received: 6

			Method
Analyses	Quantity	Laboratory Method	Primary reference
TEH in Water (PIRI)	6	ATL SOP 00113	Based on Atl. PIRI
VPH in Water (PIRI)	6	ATL SOP 00118	Based on Atl. PIRI
ModTPH (T1) Calc. for Water	6		Based on Atl. PIRI

Remarks:

All work recorded herein has been performed in accordance to the ISO 17025 standard. Methods used by Maxxam Analytics are based upon accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing.

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All data is in statistical control and has met all QC and method performance criteria unless otherwise flagged. All samples were analysed within hold time unless otherwise flagged. All soil samples for BTEX analysis were methanol extracted within 24 hours unless otherwise flagged.

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

Encryption Key

Suzanne Rogers 30 Nov 2012 13:40:21 -04:00

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

Suzanne Rogers, Manager, Client Services Email: SRogers@maxxam.ca Phone# (902) 420-0203 Ext:232

Page 1 of 10



Task Order#: 4410047514 Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02 Your C.O.C. #: BE 03669

Attention: Scott LLewellyn

Conestoga-Rovers & Associates Limited 45 Akerley Blvd Dartmouth, NS B3B 1J7

Report Date: 2012/11/30

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2I4092 Received: 2012/11/22, 15:04

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



Conestoga-Rovers & Associates Limited Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

ATLANTIC MUST IN WATER - PIRI TIER I (WATER)

Maxxam ID		PS0987	PS0987	PS0988	PS0989		
Sampling Date		2012/11/22	2012/11/22	2012/11/22	2012/11/22		
		11:49	11:49	11:40	11:34		
COC Number		BE 03669	BE 03669	BE 03669	BE 03669		
	Units	MW1	MW1 Lab-Dup	MW2	MW3	RDI	OC Batch
	Tornto						RO Baton
Benzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	3049712
Toluene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	3049712
Ethylbenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	3049712
Xylene (Total)	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	3049712
C6 - C10 (less BTEX)	mg/L	<0.010	<0.010	<0.010	<0.010	0.010	3049712
>C10-C16 Hydrocarbons	mg/L	<0.050		<0.050	<0.050	0.050	3046446
>C16-C21 Hydrocarbons	mg/L	<0.050		<0.050	<0.050	0.050	3046446
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.10</td><td></td><td><0.10</td><td><0.10</td><td>0.10</td><td>3046446</td></c32>	mg/L	<0.10		<0.10	<0.10	0.10	3046446
Modified TPH (Tier1)	mg/L	<0.10		<0.10	<0.10	0.10	3045078
Reached Baseline at C32	mg/L	NA		NA	NA	N/A	3046446
Hydrocarbon Resemblance	mg/L	NA		NA	NA	N/A	3046446
Extraction Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	105		109	106		3046446
n-Dotriacontane - Extractable	%	114 (1)		113	113 (1)		3046446
Isobutylbenzene - Volatile	%	98	99	98	98		3049712
Instrument Surrogate Recovery (%)							
1,4-Difluorobenzene	%	100	102	100	101		3049712
4-Bromofluorobenzene	%	100	101	100	100		3049712
D4-1,2-Dichloroethane	%	100	102	99	100		3049712

RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate QC Batch = Quality Control Batch (1) TEH sample contained sediment.



Conestoga-Rovers & Associates Limited Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

ATLANTIC MUST IN WATER - PIRI TIER I (WATER)

Maxxam ID		PS0990		PS0991	PS0992		
Sampling Date		2012/11/22		2012/11/22	2012/11/22		
		11:25		11:15	11:08		
COC Number		BE 03669	_	BE 03669	BE 03669		
	Units	MW4	QC Batch	MW5	MW6	RDL	QC Batch
Benzene	mg/L	<0.0010	3049712	<0.0010	<0.0010	0.0010	3049712
Toluene	mg/L	<0.0010	3049712	<0.0010	<0.0010	0.0010	3049712
Ethylbenzene	mg/L	<0.0010	3049712	<0.0010	<0.0010	0.0010	3049712
Xylene (Total)	mg/L	<0.0020	3049712	<0.0020	<0.0020	0.0020	3049712
C6 - C10 (less BTEX)	mg/L	<0.010	3049712	<0.010	<0.010	0.010	3049712
>C10-C16 Hydrocarbons	mg/L	<0.050	3051073	<0.050	0.43	0.050	3046446
>C16-C21 Hydrocarbons	mg/L	<0.050	3051073	<0.050	0.27	0.050	3046446
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.10</td><td>3051073</td><td><0.10</td><td>0.11</td><td>0.10</td><td>3046446</td></c32>	mg/L	<0.10	3051073	<0.10	0.11	0.10	3046446
Modified TPH (Tier1)	mg/L	<0.10	3045078	<0.10	0.81	0.10	3045078
Reached Baseline at C32	mg/L	NA	3051073	NA	Yes	N/A	3046446
Hydrocarbon Resemblance	mg/L	NA	3051073	NA	COMMENT (1)	N/A	3046446
Extraction Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	109	3051073	104	114		3046446
n-Dotriacontane - Extractable	%	105	3051073	110 (2)	118		3046446
Isobutylbenzene - Volatile	%	98	3049712	98	98		3049712
Instrument Surrogate Recovery (%)							
1,4-Difluorobenzene	%	100	3049712	100	100		3049712
4-Bromofluorobenzene	%	100	3049712	99	101		3049712
D4-1,2-Dichloroethane	%	100	3049712	99	100		3049712

RDL = Reportable Detection Limit QC Batch = Quality Control Batch (1) Weathered fuel oil fraction. (2) TEH sample contained sediment.



ModTPH (T1) Calc. for Water

Automated Statchk

Conestoga-Rovers & Associates Limited Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

Test Summary

Maxxam ID Sample ID Matrix	PS0987 MW1 Water				Re	Collected 2012/11/22 linquished 2012/11/22 Received 2012/11/22	
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst	
TEH in Water (PIF	रl)	GC/FID	3046446	2012/11/23	2012/11/24	Susan Hardy	
VPH in Water (PI	RI)	PTGC/MS	3049712	2012/11/27	2012/11/28	Tony Weingartshofer	
ModTPH (T1) Cal	c. for Water	CALC	3045078	N/A	2012/11/29	Automated Statchk	
Maxxam ID Sample ID Matrix	PS0987 Dup MW1 Water				Re	Collected 2012/11/22 linquished 2012/11/22 Received 2012/11/22	
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst	
Maxxam ID Sample ID Matrix	PS0988 MW2 Water				Re	Collected 2012/11/22 linquished 2012/11/22 Received 2012/11/22	
Test Description	> N		Batch	Extracted	Analyzea	Analyst	
VPH in Water (PI	או <u>ן</u> ווכ		3046446	2012/11/23	2012/11/24	Susan Hardy	
	(1) a for Water		3049712	ZUIZ/11/Z/ N/A	2012/11/20		
Maxxam ID Sample ID Matrix	PS0989 MW3 Water			- N/A	Re	Collected 2012/11/22 linquished 2012/11/22 Received 2012/11/22	1
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst	
TEH in Water (PIF	RI)	GC/FID	3046446	2012/11/23	2012/11/24	Susan Hardy	
VPH in Water (PI	RI)	PTGC/MS	3049712	2012/11/27	2012/11/28	Tony Weingartshofer	
ModTPH (T1) Cal	c. for Water	CALC	3045078	N/A	2012/11/29	Automated Statchk	
Maxxam ID Sample ID Matrix	PS0990 MW4 Water				Re	Collected 2012/11/22 linquished 2012/11/22 Received 2012/11/22	
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst	
TEH in Water (PIF	<u>२।)</u>	GC/FID	3051073	2012/11/28	2012/11/29	Susan Hardy	
VPH in Water (PII	RÍ)	PTGC/MS	3049712	2012/11/27	2012/11/28	Tony Weingartshofer	

3045078

N/A

2012/11/30

CALC



Conestoga-Rovers & Associates Limited Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

Test Summary

Maxxam ID Sample ID Matrix	PS0991 MW5 Water				Rel	Collected inquished Received	2012/11/22 2012/11/22 2012/11/22
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst	
TEH in Water (PIR	RI)	GC/FID	3046446	2012/11/23	2012/11/24	Susan Ha	irdy

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	3046446	2012/11/23	2012/11/24	Susan Hardy
VPH in Water (PIRI)	PTGC/MS	3049712	2012/11/27	2012/11/28	Tony Weingartshofer
ModTPH (T1) Calc. for Water	CALC	3045078	N/A	2012/11/29	Automated Statchk

Maxxam ID PS0992 Sample ID MW6 Matrix Water

Collected	2012/11/22
Relinquished	2012/11/22
Received	2012/11/22

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	3046446	2012/11/23	2012/11/24	Susan Hardy
VPH in Water (PIRI)	PTGC/MS	3049712	2012/11/27	2012/11/28	Tony Weingartshofer
ModTPH (T1) Calc. for Water	CALC	3045078	N/A	2012/11/29	Automated Statchk



Conestoga-Rovers & Associates Limited Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

Package 1 2.3°C

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

GENERAL COMMENTS

Incorrect IOL project number listed on COC. We will proceed using JW.00096 as per Scott Llewellyn. 11/26/12 MMC

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics 200 Blueweler Rd, Suita 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free 800-565-7227 Fax 902-420-8612 www.maxxamanalytics.com



Conestoga-Rovers & Associates Limited Task Order#: 4410047514 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

Quality Assurance Report

Maxxam Job Number: B2I4092

QA/QC			Date				
Batch			Analyzed				
Num Init	QC Type	Parameter	yyyy/mm/dd	Value	Recovery	Units	QC Limits
3046446 SHR	Method Blank	Isobutylbenzene - Extractable	2012/11/24		107	%	30 - 130
		n-Dotriacontane - Extractable	2012/11/24		109	%	30 - 130
		>C10-C16 Hydrocarbons	2012/11/24	< 0.050		mg/L	
		>C16-C21 Hydrocarbons	2012/11/24	<0.050		mg/L	
		>C21- <c32 hvdrocarbons<="" td=""><td>2012/11/24</td><td><0.10</td><td></td><td>ma/L</td><td></td></c32>	2012/11/24	<0.10		ma/L	
3049712 TWE	Method Blank	1.4-Difluorobenzene	2012/11/28		100	%	70 - 130
		4-Bromofluorobenzene	2012/11/28		99	%	70 - 130
		D4-1.2-Dichloroethane	2012/11/28		100	%	70 - 130
		Isobutylbenzene - Volatile	2012/11/28		98	%	70 - 130
		Benzene	2012/11/28	<0.0010		ma/l	
		Toluene	2012/11/28	<0.0010		mg/L	
		Ethylbenzene	2012/11/28	<0.0010		mg/L	
		Xylene (Total)	2012/11/28			mg/L	
		C6 - C10 (less BTEX)	2012/11/28	<0.0020		mg/L	
3051073 SHR	Method Blank	Isobutylbenzene - Extractable	2012/11/20	\$0.010	104	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	30 - 130
5051075 Onix	Method Blank	n-Dotriacontane - Extractable	2012/11/20		104	%	30 - 130
		>C10-C16 Hydrocarbons	2012/11/29	~0.050	104	ma/l	50 - 150
		>C16-C21 Hydrocarbons	2012/11/29	<0.050		mg/L	
		>C21 <c22 hydrocarbons<="" td=""><td>2012/11/29</td><td><0.000</td><td></td><td>mg/L</td><td></td></c22>	2012/11/29	<0.000		mg/L	
2040712 TWE		Bonzono	2012/11/29	<0.10 NC		0/.	40
3049712 TVL	KFD [F30907-02]	Toluono	2012/11/20	NC		/0 0/	40
		Ethylbonzono	2012/11/20	NC		70 0/	40
			2012/11/20	NC		70 0/	40
			2012/11/20	NC		/0 0/	40
2051072 840	Motrix Spiko	CO-CTO (IESS BTEX)	2012/11/28	NC		70	40
3031073 SHK		lachutulhanzana Extractabla	2012/11/20		107	0/	20 120
	[F30990-01]	n Detriceentone Extractable	2012/11/29		107	70 0/	30 - 130
		II-DOIIIdCOIIIdHe - EXildCidDie	2012/11/29		100	70	30 - 130
		>C16 C21 Hydrogarbons	2012/11/29		04 100	% 0/	30 - 130
		>CTO-C2T Hydrogenhone	2012/11/29		100	70	30 - 130
2046446 6110	100	>C21- <c32 hydrocarbons<="" td=""><td>2012/11/29</td><td></td><td>100</td><td>% 0/</td><td>30 - 130</td></c32>	2012/11/29		100	% 0/	30 - 130
3046446 SHR	LUS	Isobutyibenzene - Extractable	2012/11/24		103	%	30 - 130
		n-Dotriacontane - Extractable	2012/11/24		109	%	30 - 130
		>C10-C16 Hydrocarbons	2012/11/24		87	%	30 - 130
		>C16-C21 Hydrocarbons	2012/11/24		101	%	30 - 130
		>C21- <c32 hydrocarbons<="" td=""><td>2012/11/24</td><td></td><td>113</td><td>%</td><td>30 - 130</td></c32>	2012/11/24		113	%	30 - 130
3049712 TWE	LUS	1,4-Difluorobenzene	2012/11/28		99	%	70 - 130
		4-Bromotiuorobenzene	2012/11/28		100	%	70 - 130
		D4-1,2-Dichloroethane	2012/11/28		100	%	70 - 130
		Isobutylbenzene - Volatile	2012/11/28		97	%	70 - 130
		Benzene	2012/11/28		98	%	70 - 130
		loluene	2012/11/28		101	%	70 - 130
		Ethylbenzene	2012/11/28		98	%	70 - 130
		Xylene (Total)	2012/11/28		99	%	70 - 130
3051073 SHR	LCS	Isobutylbenzene - Extractable	2012/11/29		105	%	30 - 130
		n-Dotriacontane - Extractable	2012/11/29		108	%	30 - 130
		>C10-C16 Hydrocarbons	2012/11/29		82	%	30 - 130
		>C16-C21 Hydrocarbons	2012/11/29		97	%	30 - 130
		>C21- <c32 hydrocarbons<="" td=""><td>2012/11/29</td><td></td><td>108</td><td>%</td><td>30 - 130</td></c32>	2012/11/29		108	%	30 - 130

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. LCS: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy. Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination. Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency. NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.



Validation Signature Page

Maxxam Job #: B2I4092

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

Maelonald

Rose Macdonald, Scientific Specialist (Organics)

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

Maxiam Bec	Bluewat Iford, NS w.maxxa	er Roa B4B ⁻ manaly	d, Suite 1G9 tics.co	∍105 Pł m Toll	none: (90 Fax: (90 Free: 1-6)2) 420-)2) 420- 800-565	0203 8612 5-722	3 2 27		E	ΕΧλ	(ON MC CHAI)BIL/ N-Oł	/IMP F-Cu A	ERI IST(AL I DDY YSIS	DIL RE S RE	- M. COR	4XX/ D Ste	a <i>in</i> D	С	of C	# E	Page 3E	03	of 66	9	3
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FIELD SAMPLE ID	ROUND	VIRFACE ATER OIL		DATE DATE SAMPI	JING	PRESERVED PRESERVED AB FILTRATION	CAp-30 Choose	CAp-MS Choose	Total Digest (Dissolved	leroury	Default Avails Default Avails Metals Total I For Ocean Se	Selenium (low	Hot Water So (Required for	TPH MUST (E	Soil (Potable) Policy Low Lo	BTEX, VPH, L	TPH Fraction	PCBs	VOCS EPA 62								
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IOL SITE # (if applicable)	1BBAK	(25)	Nis	A	TIAN	TT()	DRI	Δ													SUBM	ITTED	Dias		15 -1		1	l .
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COC - 1009 (01/10) IOL - NS

DATA QUALITY REVIEW CHECKLIST - IMPERIAL OIL PROJECTS

Consultant:	CRA	-	Sampling Date:	2012/11/22				
Location: 64 Mill La	ke Rd No. 2, Hubb	oards, NS	Laboratory :	Maxxam - Bedfore	d, NS			
Consultant Project Number:	059548-02		Sample Submission Number: B2I4092					
Are All Laboratory QC Samples W	ithin Acceptance C	Criteria (Yes	, No, Not Applicable)	?				
	Yes No	NA		Comments				
Instrument Surrogate Recovery Extraction Surrogate Recovery Method Blank Concentration Matrix Duplicate RPD Matrix Spike Recovery	X X X	X X	All lab QC have met 5 of 5 parameters not	acceptance criteria				
Lab Control Sample Recovery	X							
Are All Field QC Samples Within A	Alert Limits (Yes, M	No, Not Ap	plicable)?	Comments				
Field Blank Concentration Trip Blank Concentration Field Duplicate RPD		X X X						
Has CoA been signed off (Yes/No) Has lab warranted all tests were in s Has lab warranted all tests were and Were all samples analyzed within h All volatiles samples methanol extr Is Chain of Custody completed and Were sample temperatures acceptab	?: statistical control in lyzed following SC old times (Yes/No) acted (if required) signed (Yes/No)?: ole when they reach	n CoA (Yes DP's in CoA)?: within 48 h ned lab (Yes	/No)?: (Yes/No)?: ours (Yes/No)?: s/No)?:	Yes Yes Yes N/A Yes No	-			
Was a Data Quality Waiver (DQW)	issued (Yes/No)?:			No	-			
Date Issued:	N/A	-	Date of Response:	N/A	-			
Is data considered to be reliable (Yo If answer is "No", describe and pro	es/No)?: vide rationale:		Yes					
Data Reviewed by (Print): Date:	Melissa Fitzgera 2013/01/07	ald	Data Reviewed by (S	Signature): MH	zgenald			



Task Order#: 4410047514 Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02 Your C.O.C. #: BE 03670

Attention: Scott LLewellyn

Conestoga-Rovers & Associates Limited 45 Akerley Blvd Dartmouth, NS B3B 1J7

Report Date: 2012/11/30

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2I4098 Received: 2012/11/22, 15:05

Sample Matrix: Water # Samples Received: 3

			Method
Analyses	Quantity	Laboratory Method	Primary reference
TEH in Water (PIRI)	3	ATL SOP 00113	Based on Atl. PIRI
VPH in Water (PIRI)	3	ATL SOP 00118	Based on Atl. PIRI
ModTPH (T1) Calc. for Water	3		Based on Atl. PIRI

Remarks:

All work recorded herein has been performed in accordance to the ISO 17025 standard. Methods used by Maxxam Analytics are based upon accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing.

Maxxam Analytics is accredited by Standards Council of Canada (SCC). Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract. Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

All data is in statistical control and has met all QC and method performance criteria unless otherwise flagged. All samples were analysed within hold time unless otherwise flagged. All soil samples for BTEX analysis were methanol extracted within 24 hours unless otherwise flagged.

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

Encryption Key

Mari Kerny Mari Kenny 30 Nov 2012 14:06:35 -04:00

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

Suzanne Rogers, Manager, Client Services Email: SRogers@maxxam.ca Phone# (902) 420-0203 Ext:232

Page 1 of 8



Task Order#: 4410047514 Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02 Your C.O.C. #: BE 03670

Attention: Scott LLewellyn

Conestoga-Rovers & Associates Limited 45 Akerley Blvd Dartmouth, NS B3B 1J7

Report Date: 2012/11/30

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2I4098 Received: 2012/11/22, 15:05

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



Conestoga-Rovers & Associates Limited Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

ATLANTIC MUST IN WATER - PIRI TIER I (WATER)

Maxxam ID		PS1034	PS1035	PS1035	PS1036		
Sampling Date		2012/11/22	2012/11/22	2012/11/22	2012/11/22		
		11:09	12:00	12:00	12:00	_	
COC Number		BE 03670	BE 03670	BE 03670	BE 03670		
	Units	MWA	MWB	MWB Lab-Dup	MWC	RDL	QC Batch
-				I	1		
Benzene	mg/L	<0.0010	<0.0010		<0.0010	0.0010	3049712
Toluene	mg/L	<0.0010	<0.0010		<0.0010	0.0010	3049712
Ethylbenzene	mg/L	<0.0010	<0.0010		<0.0010	0.0010	3049712
Xylene (Total)	mg/L	<0.0020	<0.0020		<0.0020	0.0020	3049712
C6 - C10 (less BTEX)	mg/L	<0.010	<0.010		<0.010	0.010	3049712
>C10-C16 Hydrocarbons	mg/L	0.43	<0.050	<0.050	<0.050	0.050	3051073
>C16-C21 Hydrocarbons	mg/L	0.22	<0.050	<0.050	<0.050	0.050	3051073
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td>0.14</td><td><0.10</td><td><0.10</td><td><0.10</td><td>0.10</td><td>3051073</td></c32>	mg/L	0.14	<0.10	<0.10	<0.10	0.10	3051073
Modified TPH (Tier1)	mg/L	0.78	<0.10		<0.10	0.10	3045078
Reached Baseline at C32	mg/L	Yes	NA		NA	N/A	3051073
Hydrocarbon Resemblance	mg/L	COMMENT (1)	NA		NA	N/A	3051073
Extraction Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	110	107	104	104		3051073
n-Dotriacontane - Extractable	%	108	109	102	106		3051073
Isobutylbenzene - Volatile	%	99	98		99		3049712
Instrument Surrogate Recovery (%)							
1,4-Difluorobenzene	%	100	100		99		3049712
4-Bromofluorobenzene	%	101	100		101		3049712
D4-1,2-Dichloroethane	%	100	98		100		3049712

RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate QC Batch = Quality Control Batch (1) Weathered fuel oil fraction.



Conestoga-Rovers & Associates Limited Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

Test Summary

Maxxam ID PS1034					Collected 2012/11/22	
Sample ID MWA				Re	linquished 2012/11/22	
Matrix Water					Received 2012/11/22	
Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst	
TEH in Water (PIRI)	GC/FID	3051073	2012/11/28	2012/11/29	Susan Hardy	
VPH in Water (PIRI)	PTGC/MS	3049712	2012/11/27	2012/11/28	Tony Weingartshofer	
ModTPH (T1) Calc. for Water	CALC	3045078	N/A	2012/11/30	Automated Statchk	

Maxxam ID PS1035 Sample ID MWB Matrix Water

ModTPH (T1) Calc. for Water

Collected 2012/11/22 Relinquished 2012/11/22 Received 2012/11/22

Automated Statchk

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	3051073	2012/11/28	2012/11/29	Susan Hardy
VPH in Water (PIRI)	PTGC/MS	3049712	2012/11/27	2012/11/28	Tony Weingartshofer
ModTPH (T1) Calc. for Water	CALC	3045078	N/A	2012/11/30	Automated Statchk

PS1035 Dup				(Collected	2012/11/22
MWB				Reli	nquished	2012/11/22
Water				I	Received	2012/11/22
	Instrumentation	Batch	Extracted	Analyzed	Analyst	
RI)	GC/FID	3051073	2012/11/28	2012/11/29	Susan Ha	ırdy
	PS1035 Dup MWB Water	PS1035 Dup MWB Water RI) GC/FID	PS1035 Dup MWB Water RI) GC/FID 3051073	PS1035 Dup MWB Water RI) GC/FID 3051073 2012/11/28	PS1035 Dup Relia MWB Relia Water Instrumentation Batch Extracted Analyzed RI) GC/FID 3051073 2012/11/28 2012/11/29	PS1035 Dup MWB Water Collected Relinquished Received Instrumentation Batch Extracted Analyzed Analyst RI) GC/FID 3051073 2012/11/28 2012/11/29 Susan Ha

Maxxam ID Sample ID Matrix	PS1036 MWC Water				Re	Collected 2012/11/22 linquished 2012/11/22 Received 2012/11/22
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Water (PIF	RI)	GC/FID	3051073	2012/11/28	2012/11/29	Susan Hardy
VPH in Water (PIF	RI)	PTGC/MS	3049712	2012/11/27	2012/11/28	Tony Weingartshofer

3045078

N/A

2012/11/30

CALC



Conestoga-Rovers & Associates Limited Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

Package 1 2.0°C

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

GENERAL COMMENTS

Incorrect IOL project number listed on COC. We will proceed using JW.00096 as per Scott Llewellyn. 11/26/12 MMC

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics 200 Blueweler Rd, Suita 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free 800-565-7227 Fax: 902-420-8612 www.maxxamanalytics.com



Conestoga-Rovers & Associates Limited Task Order#: 4410047514 Site#: JW.00096 Site Location: 88000331;64 Mill Lake Road, Hubbards, NS Project #: 059548-02

Quality Assurance Report

Maxxam Job Number: B2I4098

QA/QC			Date				
Batch			Analyzed				
Num Init	QC Type	Parameter	yyyy/mm/dd	Value	Recovery	Units	QC Limits
3049712 TWE	Method Blank	1,4-Difluorobenzene	2012/11/28		100	%	70 - 130
		4-Bromofluorobenzene	2012/11/28		99	%	70 - 130
		D4-1,2-Dichloroethane	2012/11/28		100	%	70 - 130
		Isobutylbenzene - Volatile	2012/11/28		98	%	70 - 130
		Benzene	2012/11/28	<0.0010		mg/L	
		Toluene	2012/11/28	<0.0010		mg/L	
		Ethylbenzene	2012/11/28	<0.0010		mg/L	
		Xylene (Total)	2012/11/28	<0.0020		mg/L	
		C6 - C10 (less BTEX)	2012/11/28	<0.010		mg/L	
3051073 SHR	Method Blank	Isobutylbenzene - Extractable	2012/11/29		104	%	30 - 130
		n-Dotriacontane - Extractable	2012/11/29		104	%	30 - 130
		>C10-C16 Hydrocarbons	2012/11/29	< 0.050		mg/L	
		>C16-C21 Hydrocarbons	2012/11/29	< 0.050		mg/L	
		>C21- <c32 hydrocarbons<="" td=""><td>2012/11/29</td><td><0.10</td><td></td><td>mg/L</td><td></td></c32>	2012/11/29	<0.10		mg/L	
	RPD [PS1035-01]	>C10-C16 Hydrocarbons	2012/11/29	NC		%	40
		>C16-C21 Hydrocarbons	2012/11/29	NC		%	40
		>C21- <c32 hydrocarbons<="" td=""><td>2012/11/29</td><td>NC</td><td></td><td>%</td><td>40</td></c32>	2012/11/29	NC		%	40
3049712 TWE	Matrix Spike	,					
	[PS1034-02]	1,4-Difluorobenzene	2012/11/28		100	%	70 - 130
		4-Bromofluorobenzene	2012/11/28		100	%	70 - 130
		D4-1,2-Dichloroethane	2012/11/28		99	%	70 - 130
		Isobutylbenzene - Volatile	2012/11/28		98	%	70 - 130
		Benzene	2012/11/28		96	%	70 - 130
		Toluene	2012/11/28		100	%	70 - 130
		Ethylbenzene	2012/11/28		100	%	70 - 130
		Xylene (Total)	2012/11/28		97	%	70 - 130
	LCS	1,4-Difluorobenzene	2012/11/28		99	%	70 - 130
		4-Bromofluorobenzene	2012/11/28		100	%	70 - 130
		D4-1,2-Dichloroethane	2012/11/28		100	%	70 - 130
		Isobutylbenzene - Volatile	2012/11/28		97	%	70 - 130
		Benzene	2012/11/28		98	%	70 - 130
		Toluene	2012/11/28		101	%	70 - 130
		Ethylbenzene	2012/11/28		98	%	70 - 130
		Xylene (Total)	2012/11/28		99	%	70 - 130
3051073 SHR	LCS	Isobutylbenzene - Extractable	2012/11/29		105	%	30 - 130
		n-Dotriacontane - Extractable	2012/11/29		108	%	30 - 130
		>C10-C16 Hydrocarbons	2012/11/29		82	%	30 - 130
		>C16-C21 Hydrocarbons	2012/11/29		97	%	30 - 130
		>C21- <c32 hydrocarbons<="" td=""><td>2012/11/29</td><td></td><td>108</td><td>%</td><td>30 - 130</td></c32>	2012/11/29		108	%	30 - 130

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.

LCS: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy. Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

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

NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.



Validation Signature Page

Maxxam Job #: B2I4098

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

Maelonald

Rose Macdonald, Scientific Specialist (Organics)

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Maxlam	200 Bluewa Bedford, NS www.maxxa	ter Roa S B4B amanal	ad, Su 1G9 ytics.o	lite 1 com	105 F To	Phone: (902) Fax: (902) Il Free: 1-80) 420-0) 420-8)0-565-	203 612 7227	7			EX.	XOI C	V MU Chai)B N-(./IM)F-C	IPEI US AN	RIA TOI	L OI DY R SIS I	L - J ECI	MA))RD		M		Cot	fCi	ہ # E	Page BE	<u> </u>	 36`	1 70
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² MWB	X			5	12/11/2	2 12:00		0	10.40								X														
3 MWC	X			5	12/11/2	2 12:00				Ś				1		T	X	<													
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Page 8 of 8

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DATA QUALITY REVIEW CHECKLIST - IMPERIAL OIL PROJECTS

Consultant:	CRA		Sampling Date:	2012/11/22							
Location: 64 Mill La	ike Rd No. 2, Hub	bards, NS	Laboratory :	Maxxam - Bedford, NS							
Consultant Project Number:	059548-02	Sample Submission Number: B2I4098									
Are All Laboratory QC Samples Within Acceptance Criteria (Yes, No, Not Applicable)?											
	Yes No	NA		Comments							
Instrument Surrogate Recovery X X All lab QC have met acceptance criteria Extraction Surrogate Recovery X X All lab QC have met acceptance criteria Method Blank Concentration X X 3 of 3 parameters not calculated Matrix Duplicate RPD X X 3 of 3 parameters not calculated Matrix Spike Recovery X X X Lab Control Sample Recovery X X X											
Are All Field QC Samples Within A	Alert Limits (Yes,	No, Not Ap	plicable)?								
Field Blank Concentration Trip Blank Concentration Field Duplicate RPD	YesNoNACommentsField Blank ConcentrationXImage: Concentration of the second s										
Has CoA been signed off (Yes/No) Has lab warranted all tests were in Has lab warranted all tests were and Were all samples analyzed within h All volatiles samples methanol extr Is Chain of Custody completed and Were sample temperatures acceptal	?: statistical control i alyzed following S old times (Yes/No acted (if required) signed (Yes/No)? ole when they reac	in CoA (Yes SOP's in CoA o)?: o within 48 h ?: shed lab (Yes	/No)?: (Yes/No)?: ours (Yes/No)?:	Yes Yes Yes Yes N/A Yes No							
Was a Data Quality Waiver (DQW Date Issued:) issued (Yes/No)? N/A	2:	Date of Response:	No N/A							
Is data considered to be reliable (Y If answer is "No", describe and pro	es/No)?: vide rationale:		Yes								
Data Reviewed by (Print): Date:	Melissa Fitzger 2013/01/07	rald	Data Reviewed by (S	ignature): MHBgerald							

APPENDIX C

QUALITY ASSURANCE AND QUALITY CONTROL

QUALITY ASSURANCE AND QUALITY CONTROL DISCUSSION

A summary of the laboratory and field QA/QC issues for the soil in this report are summarized in Table C-1. There were no laboratory or field QA/QC issues identified for groundwater samples.

The groundwater field QA/QC program consisted of one (1) field duplicate sample, one (1) field blank sample and one (1) trip blank sample that were submitted for laboratory analysis of BTEX and modified TPH. The soil field QA/QC program consisted of one (1) field duplicate sample that was submitted for laboratory analysis of BTEX and modified TPH

For the field duplicate samples, evaluations of the QA/QC results were determined by calculating the relative percent difference (RPD) between the field duplicate and original sample results, and comparison of the RPD to designated alert limits.

$$\operatorname{RPD} = \left| \left(\frac{(X_1 - X_2)}{(X_1 + X_2)} \right) \right| X \ 100$$

Consistent with laboratory practices and to permit reliable calculations, an RPD is only calculated when the original and duplicate sample concentrations are at least 5 times the reportable detection limit (RDL).

The designated RPD alert limits for the soil samples are presented in Table C-2. The RPDs for BTEX and C6-C10 were non calculable, but the RPD for petroleum hydrocarbon ranges >C10 - C16, >C16-C21, >C21-C32 and modified TPH all exceeded the alert limits.

The designated RPD alert limits for the groundwater samples are presented in Table C-3. The RPDs were either within the alert limits for all of the parameters that were analyzed or not calculable. The groundwater field blank and trip blank data were compared to the alert limits and are presented in Table C-4. As indicated, all of the RPDs were within the alert limits.

The laboratory QA/QC program consisted of one or more of the following analysis (a) instrument and extraction surrogate recoveries for groundwater samples that were analyzed, and (b) the analysis of method blank, laboratory duplicate, matrix spike and/or laboratory control samples for the sample analytical batches that were analyzed. The laboratory QA/QC results are presented in the Certificates of Analysis (Appendix A). As indicated, no laboratory QA/QC issues were identified for groundwater samples that were submitted, but the laboratory duplicate for the soil sample TP24 (3.0-3.5M) did not meet the laboratory

acceptance criteria of 50% for the hydrocarbon range C6-C10. A data quality waver (#1602) was issued indicating that the sample was non homogeneous. As referenced above the field duplicate also exceeded the alert limits for the extractable hydrocarbon ranges. Based on both the field and laboratory exceedance of the alert limits, the sample would be considered in homogeneous. All QA/QC criteria were met, therefore the analytical data for the remaining soil samples in the batch would be considered reliable.

No other field or laboratory QA/QC issues were identified that would affect the overall conclusions presented in this report. The results reported for both the groundwater and soil samples are considered to be reliable.

TABLE C-1 FIELD AND LABORATORY QUALITY ASSURANCE AND QUALITY CONTROL ISSUES PETROLEUM HYDROCARBON PARAMETERS 64 Mill Lake Road No. 2, Hubbards, Nova Scotia

MAXXAM JOB #	LAB SAMPLE ID	DQW NUMBER	SAMPLE NAME	MATRIX	TEST AFFECTED	DEVIATION	INTERPRETATION
B2I2112	PR1712 PR1713 PR1714 PR1715 PR1716 PR1717 PR1718 PR1719 PR1722	1602	TP21(0.0-0.5m) TP21(1.0-1.5M) TP21(2.5-3.0M) TP22(0.5-1.0M) TP22(1.5-1.0M) TP23(0.0-0.5M) TP23(1.0-1.5M) TP23(2.5-3.0M) TP24(3.0-3.5M) Lab-Dup	Soil	TEH in Soil	SQC trend rule failure for THE in soil, Batch 3045034. 4 of 5 consecutive points greater than 1SD below the mean.	All lab QC for these analyses were within acceptance criteria. The test method being out of statistical control should have no material effect on the interpretation of the TEH results for the samples contained in this batch.
	PR1722	1602	TP24(3.0-3.5M) and the Lab-Dup	Soil	VPH in Soil	RPD for TP24 (3.0-3.5M) and its matrix duplicate exceed the RPD acceptance criteria for C6- C10 (less BTEX).	DQW indicates sample was non- homogeneous. All other lab QC have met acceptance criteria. The exceedanc of the alert limits is most likely the result of sample inhomogeniety. Data will be accepted as is.
R212118	PR1756		TPA(3.0-3.5M)	Soil	TEH in Soil	SQC trend rule failure for THE in soil, Batch 3045034. 4 of 5 consecutive points greater than 1SD below the mean.	All lab QC for these analyses were within acceptance criteria. The test method being out of statistical control should have no material effect on the interpretation of the TEH results for the samples contained in this batch.
0212110	PR1756		TPA(3.0-3.5M) and the field duplicate TP24(3.0-3.5M) from Maxam job B2I2112	Soil	TEH in Soil	RPD for TP24 (3.0-3.5M) and its field duplicate exceed the RPD acceptance criteria for >C10-C16, >C16-C21, >C21- C32and modified TPH	The matrix duplicate for this batch also shows variability in the results reported as referened above. The exceedance of the alert limits is most likley due to sample inhomgeniety.
TABLE C-2 RELATIVE PERCENT DIFFERENCE CALCULATIONS - SOIL FIELD DUPLICATE SAMPLES PETROLEUM HYDROCARBON PARAMETERS 64 Mill Lake Road No. 2, Hubbards, Nova Scotia

SAMPLE LOCATIONS Maxxam Sample ID Depth (mbgs) Date Sampled (yyyy/mm/dd)	TP-24 PR1722 3.0-3.5M 2012/11/19	RDL	QA/QC-1 FIELD DUPLICATE TP-24 PR1756 3.0-3.5M 2012/11/19	RDL	RPD	RPD ALERT LIMITS (%) ^a
PARAMETER						
Benzene Toluene Ethylbenzene Total Xylenes Petroleum Hydrocarbons (C6 - C10) Petroleum Hydrocarbons (>C10 - C16) Petroleum Hydrocarbons (>C16 - C21) Petroleum Hydrocarbons (>C21 - C32) Petroleum Hydrocarbons (Modified TPH)	<0.025 <0.025 <0.025 0.072 28 110 55 30 230	0.025 0.025 0.025 3 10 10 15 15	<0.025 <0.025 <0.025 0.05 3 2600 730 150 3500	0.025 0.025 0.05 3 10 10 15 15	NC NC NC NC 184 172 133 175	100 100 100 100 100 100 100 100 100

a - Alert limits used for field duplicate samples

NA - Not Applicable

NC - Not Calculated

RDL - Reportable Detection Limit

RPD - Relative Percent Difference (not calculated when one or both results are less than 5X RDL)

"-" - Not analyzed

mbgs - metres below ground surface

Results for all parameters are reported in milligrams per kilogram (mg/kg) on a dry weight basis

BOLD - Exceeds RPD alert limit

TABLE C-3 RELATIVE PERCENT DIFFERENCE CALCULATIONS - GROUNDWATER FIELD DUPLICATE SAMPLES 64 Mill Lake Road No. 2, Hubbards, Nova Scotia

SAMPLE LOCATIONS	MW6	MWA FIELD DUPLICATE MW6	IWA DUPLICATE RDL IW6		RPD ALERT LIMITS (%) ^a
Maxxam Sample ID	PS0992	PS1034			
Date Sampled (yyyy/mm/dd)	2012/11/22	2012/11/22			
PARAMETERS					
Benzene	<0.0010	<0.0010	0.0010	NC	80
Toluene	< 0.0010	< 0.0010	0.0010	NC	80
Ethylbenzene	< 0.0010	< 0.0010	0.0010	NC	80
Total Xylenes	< 0.0020	< 0.0020	0.0020	NC	80
Petroleum Hydrocarbons (C6 - C10)	< 0.010	<0.010	0.010	NC	80
Petroleum Hydrocarbons (>C10 - C16)	0.43	0.43	0.050	NC	80
Petroleum Hydrocarbons (>C16 - C21)	0.27	0.22	0.050	NC	80
Petroleum Hydrocarbons (>C21 - C32)	0.11	0.14	0.10	NC	80
Petroleum Hydrocarbons (Modified TPH)	0.81	0.78	0.10	4%	80

a - Alert limits used for field duplicate samples

NA - Not Applicable

NC - Not Calculated

RDL - Reportable Detection Limit

RPD - Relative Percent Difference (not calculated when one or both results are less than 5X RDL)

"---" - Not Analyzed

Analytical results for all parameters are reported in milligrams per litre (mg/L)

BOLD - Exceeds RPD alert limit

TABLE C-4 GROUNDWATER FIELD BLANK AND TRIP BLANK DATA 64 Mill Lake Road No. 2, Hubbards, Nova Scotia

SAMPLE LOCATIONS Maxxam Sample ID Date Sampled (yyyy/mm/dd)	RDL	MWB FIELD BLANK PS1035 2012/11/22	MWB Lab Duplicate PS1035 2012/11/22	EXCEEDS ALERT LIMIT	MWC TRIP BLANK PS1036 2012/11/22	EXCEEDS ALERT LIMIT
PARAMETERS						
Benzene	0.0010	<0.0010		No	<0.0010	No
Toluene	0.0010	<0.0010		No	< 0.0010	No
Ethylbenzene	0.0010	<0.0010		No	< 0.0010	No
Total Xylenes	0.0020	<0.0020		No	<0.0020	No
Petroleum Hydrocarbons (C6 - C10)	0.010	< 0.010		No	<0.010	No
Petroleum Hydrocarbons (>C10 - C16)	0.050	< 0.050	< 0.050	No	< 0.050	No
Petroleum Hydrocarbons (>C16 - C21)	0.050	< 0.050	< 0.050	No	< 0.050	No
Petroleum Hydrocarbons (>C21 - C32)	0.10	<0.10	<0.10	No	<0.10	No
Petroleum Hydrocarbons (Modified TPH)	0.10	<0.10		No	<0.10	No

RDL - Reportable Detection Limit

"---" - Not Analyzed

Analytical results for all parameters are reported in milligrams per litre (mg/L)

BOLD - Exceeds alert limit (Note: alert limits for field blanks and trip blanks are 5x RDL for BTEX and TPH fractions)



45 Akerley Blvd. Dartmouth, Nova Scotia, Canada B3B 1J7 Telephone: 902.468.1248 Facsimile: 902.468.2207 www.CRAworld.com

January 31, 2014

Reference No.: 059548-02

Imperial Oil Environmental Services 1 Duncan Mill Road North York, Ontario M3B 1Z2

Dear Ms. Hazell:

Re: 2013 Groundwater Monitoring and Sampling Report 64 Mill Lake Road No. 2, Hubbards, Nova Scotia, SAP Location No. 88000331

INTRODUCTION

Conestoga-Rovers & Associates (CRA) was retained by Imperial Oil to complete groundwater monitoring and sampling activities at the former Imperial Oil bulk plant located at 64 Mill Lake Road No.2, Hubbards, Nova Scotia (the Site). The field work was completed on November 20, 2013.

The Site location map is presented as Figure 1 and a Site plan showing the monitoring well locations is presented as Figure 2.

CRA Limitations of Liability, Scope of Report and Third Party Reliance are documented at the end of this report.

SCOPE OF WORK

The scope of work was to perform the following activities:

- Monitor all accessible monitoring wells for subsurface vapour concentrations, water levels and the presence or absence of light non-aqueous phase liquids (free product).
- Collect groundwater samples from all accessible monitoring wells and submit to the laboratory for modified total petroleum hydrocarbons (TPH) analyses utilizing the Atlantic PIRI protocol breakdown, as well as benzene, toluene, ethylbenzene and xylenes (BTEX).
- Compare the groundwater analytical results to the Nova-Scotia Environment (NSE) 2013 Tier I Environmental Quality Standards (EQSs) for a commercial property with potable groundwater use and coarse-grained soil. The groundwater results were not compared to the NSE 2013 Tier II

NOTICE: ACCESS TO INFORMATION ACT

These documents and the information contained in them are the property of Imperial Oil and any disclosure of same is governed by the provision of each of the applicable provincial or territorial Freedom of Information legislation, the Privacy Act (Canada) 1980-81-82-83, c.111 Sch. II "1", and the Access to Information Act (Canada) 1980-81-82-83, c.111, Sch I "1", as such legislation may be amended or replaced from time to time.

THIS REPORT CONTAINS PROVISIONS LIMITING LIABILITY, THE SCOPE OF THE REPORT AND THIRD PARTY RELIANCE



Reference No. 059548-02

Pathway Specific Standards (PSSs) for groundwater discharge to a surface water body as the closest ecological receptor (Maple Lake) is greater than 200 metres west of the Site.

- 2 -

• Prepare a report that describes the field activities and the monitoring results.

FIELD ACTIVITIES

Groundwater Monitoring

On November 20, 2013, all accessible monitoring wells were monitored for subsurface vapour concentrations, water levels, and the presence or absence of free product. The wells were generally monitored in order of least impacted to most impacted (based on historical groundwater data).

Immediately after removing the well cap, the maximum subsurface vapour concentrations in the wells were measured using a portable multi-gas detector (RKI Eagle Series) that was operated in methane elimination mode. This was done by inserting the collection tube of the RKI Eagle into the riser pipe and recording the peak instrument reading.

The calibration procedure for the RKI Eagle involves checking the instrument response against an approximately 40% lower explosive limit (%LEL) concentration standard of n-hexane, delivered at the operational flow rate of the instrument. If the instrument readings are within $\pm 10\%$ of the gas standard concentration, then the instrument is deemed to be calibrated. However, if the reading is greater than $\pm 10\%$ of the gas standard concentration, then the instrument calibration is adjusted until the standard gives a reading within 10% of the gas standard concentration.

The depth to the water table and presence or absence of free product in the wells was determined with the Solinst electronic interface probe (Model 122) that was cleaned with a non-toxic, biodegradable cleaner/degreaser, then rinsed with clean tap water between monitoring wells.

Groundwater Sampling and Analyses

If measurable free-product is observed in any monitoring well, a groundwater sample is not collected from that well. Groundwater samples are collected from all other monitoring wells, even if petroleum hydrocarbon sheen is observed.

Groundwater samples were collected from all accessible monitoring wells on November 20, 2013. The monitoring wells were generally sampled in order of least impacted to most impacted (based on historical groundwater data) using a no-purge groundwater sampling method.

All groundwater samples were collected using polyethylene bailers, individually dedicated to each well, which were slowly lowered into the groundwater and then slowly retracted with the groundwater sample.



Reference No. 059548-02

- 3 -

Samples for analysis for BTEX and TPH fraction C_6-C_{10} were collected in 40 ml clear glass vials (with zero headspace), pre-charged with sodium bisulfate preservative. Samples for TPH analysis (fractions $>C_{10}-C_{16}, >C_{16}-C_{21}, >C_{21}-C_{32}$) were collected in 250 ml clear glass bottles pre-charged with sodium bisulfate preservative. All sample bottles were supplied by the laboratory. The groundwater samples were placed in coolers with ice immediately after they were collected.

The samples were submitted to the Maxxam Analytics Inc. laboratory in Bedford, Nova Scotia. Maxxam is accredited by the Standards Council of Canada (SCC). Analytical methods used by the laboratory are referenced in the Certificates of Analysis presented in Appendix A.

QUALITY ASSURANCE AND QUALITY CONTROL SAMPLING

A quality assurance and quality control (QA/QC) program was implemented to reduce and quantify potential issues introduced during sample collection, handling, shipping and analysis. The program included, but was not limited to, using dedicated sampling equipment, using sample specific identification and labeling procedures, and using chain of custody records. Field QA/QC samples consisted of one trip blank, one field blank, and one field duplicate sample analyzed for BTEX and TPH.

RESULTS

On November 20, 2013, the depth to groundwater ranged from 1.11 metres below top of casing (mbtc) to 1.68 mbtc. Based on this information, relative groundwater elevations were calculated and a groundwater potentiometric surface elevations diagram was generated (Figure 3). As indicated on Figure 3, the inferred principal direction of groundwater flow was to the east.

The groundwater depths, calculated potentiometric elevations, measured product thicknesses and subsurface vapour concentrations are presented in Table 1. Measurable free product was not detected in any of the monitoring wells. The subsurface vapour concentrations measured in the monitoring wells were all <5 parts per million by volume (ppmv).

The groundwater analytical results for BTEX and TPH are presented and compared to the applicable criteria in Table 2 and on Figure 4. The groundwater analytical results were below the applicable criteria for petroleum hydrocarbon parameters.

QUALITY ASSURANCE AND QUALITY CONTROL RESULTS

The results of the laboratory QA/QC analyses are presented in the laboratory Certificates of Analysis in Appendix A. The analyses included method blanks, matrix duplicates, matrix spikes, and laboratory control samples. Laboratory QA/QC issues that call into question the reliability of the lab data reported were not reported.



Reference No. 059548-02

The results of the field QA/QC sample analysis are presented in the tables in Appendix B. The samples included a trip blank, field blank and field duplicate. Field QA/QC issues that call into question the reliability of the lab data reported were not reported.

- 4 -

The laboratory and field QA/QC discussions are presented in Appendix B. In summary, no QA/QC issues were identified that would affect the overall conclusions for the groundwater monitoring and sampling event presented in this report.

LIMITATION OF LIABILITY, SCOPE OF REPORT AND THIRD PARTY RELIANCE

This report has been prepared and the work referred to in this report has been undertaken by Conestoga-Rovers & Associates Limited for Imperial Oil Limited. It is intended for the sole and exclusive use of Imperial Oil Limited, its affiliated companies and partners and their respective insurers, agents, employees and advisors (collectively, "Imperial Oil"). Any use, reliance on or decision made by any person other than Imperial Oil based on this report is the sole responsibility of such other person. Imperial Oil and Conestoga-Rovers & Associates Limited make no representation or warranty to any other person with regard to this report and the work referred to in this report and they accept no duty of care to any other person or any liability or responsibility whatsoever for any losses, expenses, damages, fines, penalties or other harm that may be suffered or incurred by any other person as a result of the use of, reliance on, any decision made or any action taken based on this report or the work referred to in this report.

The investigation undertaken by Conestoga-Rovers & Associates Limited with respect to this report and any conclusions or recommendations made in this report reflect Conestoga-Rovers & Associates Limited judgment based on the site conditions observed at the time of the site inspection on the date(s) set out in this report and on information examined at the time of preparation of this report. This report has been prepared for specific application to this site and it is based, in part, upon visual observation of the site, subsurface investigation at discrete locations and depths, and specific analysis of specific chemical parameters and materials during a specific time interval, all as described in this report. Unless otherwise stated, the findings cannot be extended to previous or future site conditions, portions of the site which were unavailable for direct investigation, subsurface locations which were not investigated directly, or chemical parameters, materials or analysis which were not addressed. Substances other than those addressed by the investigation described in this report may exist within the site, substances addressed by the investigation may exist in areas of the site not investigated and concentrations of substances addressed which are different than those reported may exist in areas other than the locations from which samples were taken.

If site conditions or applicable standards change or if any additional information becomes available at a future date, modifications to the findings, conclusions and recommendations in this report may be necessary.



Reference No. 059548-02

- 5 -

Other than by Imperial Oil, copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted without the express written permission of Conestoga-Rovers & Associates Limited. Nothing in this report is intended to constitute or provide a legal opinion.

CLOSURE

We trust the foregoing information is satisfactory for your requirements. If you have any questions or concerns, please do not hesitate to contact the undersigned.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

Roger Poirier, P.Eng. Reviewer

JO/tc/1

James O'Neill Author



⁰⁵⁹⁴⁵⁸⁻⁰² GIS-DA001 JANUARY 10/2013



059548-02 GA-NL002



059548-02 GA-NL003



059548-02 GA-NL004

TABLE 1

GROUNDWATER MONITORING RESULTS

64 Mill Lake Road No. 2, Hubbards, Nova Scotia

MONITOR WELL ID	TOP OF RISER ELEVATION ¹ (masl)	GROUND SURFACE ELEVATION ¹ (masl)	SCREEN INTERVAL (mbgs)	DATE (yyyy/mm/dd)	SUBSURFACE VAPOUR CONCENTRATIONS ²	FREE PRODUCT THICKNESSES (mm)	POTENTIO-METRIC DEPTH ³ (mbtr)	POTENTIO-METRIC ELEVATION ^{1, 3} (masl)
MW1	100.87	100.17	Unknown	2013/11/20	<5	nd	1.54	99.33
MW2	101.00	100.08	Unknown	2013/11/20	<5	nd	1.52	99.48
MW3	100.52	99.73	Unknown	2013/11/20	<5	nd	1.58	98.94
MW4	100.12	99.47	Unknown	2013/11/20	<5	nd	1.59	98.53
MW5	100.20	99.70	Unknown	2013/11/20	<5	nd	1.68	98.52
MW6	100.65	99.84	Unknown	2013/11/20	<5	nd	1.11	99.54

"1" - Relative elevations determined using a temporary benchmark with an assumed elevation of 100.00 meters above sea level (masl).

"2" - ppmv if not indicated, or %LEL if indicated

"3" - Calculated using product thicknesses corrected by a specific gravity of 0.75 g/cm 3

m - metres

mm - millimetres

mbgs - metres below ground surface

masl - metres above sea level

mbtr - metres below top of riser

nd - Not Detected

* - Water level above top of screen

TABLE 2

GROUNDWATER ANALYTICAL RESULTS

PETROLEUM HYDROCARBON PARAMETERS

64 Mill Lake Road No. 2, Hubbards, Nova Scotia

SAMPLE LOCATIONS		MW1	MW1	MW2	MW3	MW4	MW5	MW6	Criteria ^a
			Lab Duplicate						
Maxxam ID		TZ6649	TZ6649	TZ6650	TZ6651	TZ6652	TZ6653	TZ6654	
Date Sampled (yyyy/mm/dd)		2013/11/20	2013/11/20	2013/11/20	2013/11/20	2013/11/20	2013/11/20	2013/11/20	
PARAMETERS	RDL								
Benzene	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.005
Toluene	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.024
Ethylbenzene	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0024
Total Xylenes	0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.3
Petroleum Hydrocarbons (C6 - C10)	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	NA
Petroleum Hydrocarbons (>C10 - C16)	0.050	<0.050	-	<0.050	<0.050	<0.050	<0.050	0.18	NA
Petroleum Hydrocarbons (>C16 - C21)	0.050	<0.050	-	<0.050	<0.050	<0.050	<0.050	0.090	NA
Petroleum Hydrocarbons (>C21 - C32)	0.10	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10	NA
Petroleum Hydrocarbons (Modified TPH)	0.10	<0.10 (2)	-	<0.10 (2)	<0.10 (2)	<0.10 (2)	<0.10 (2)	0.27 (2)	4.4/3.2/7.8

"a" - Analyses are compared to the Nova Scotia Environment (NSE) 2013 Tier I Environmental Quality Standards (EQSs) for a commercial property with coarse textured soil and potable groundwater use

RDL - Reporting Detection Limit

NA - Not Applicable

"-" - Not Analyzed

Results for all parameters are reported in milligrams per litres (mg/L)

MTPH - Modified Total Petroleum Hydrocarbons

"(1)" - MTPH result is compared to gasoline fraction criteria of 4.4 mg/L

"(2)" - MTPH result is compared to diesel fraction criteria of 3.2 mg/L

"(3)" - MTPH result is compared to lube oil fraction criteria of 7.8 mg/L

BOLD - Exceeds applicable standard

TABLE 2

GROUNDWATER ANALYTICAL RESULTS

PETROLEUM HYDROCARBON PARAMETERS

64 Mill Lake Road No. 2, Hubbards, Nova Scotia

SAMPLE LOCATIONS		MWA	MWA	Criteria ^a
		Field Duplicate	Lab Duplicate	
		MW6		
Maxxam ID		TZ6746	TZ6746	
Date Sampled (yyyy/mm/dd)		2013/11/20	2013/11/20	
PARAMETERS	RDL			
Benzene	0.0010	<0.0010	<0.0010	0.005
Toluene	0.0010	<0.0010	<0.0010	0.024
Ethylbenzene	0.0010	<0.0010	<0.0010	0.0024
Total Xylenes	0.0020	<0.0020	<0.0020	0.3
Petroleum Hydrocarbons (C6 - C10)	0.010	<0.010	<0.010	NA
Petroleum Hydrocarbons (>C10 - C16)	0.050	0.19	0.18	NA
Petroleum Hydrocarbons (>C16 - C21)	0.050	0.10	0.094	NA
Petroleum Hydrocarbons (>C21 - C32)	0.10	0.11	<0.10	NA
Petroleum Hydrocarbons (Modified TPH)	0.10	0.40 (2)	-	4.4/3.2/7.8

"a" - Analyses are compared to the Nova Scotia Environment (NSE) 2013 Tier I Environmental Quality Standards (EQSs) for a commercial property with coarse textured soil and potable groundwater use

RDL - Reporting Detection Limit

NA - Not Applicable

"-" - Not Analyzed

Results for all parameters are reported in milligrams per litres (mg/L)

MTPH - Modified Total Petroleum Hydrocarbons

"(1)" - MTPH result is compared to gasoline fraction criteria of 4.4 mg/L

"(2)" - MTPH result is compared to diesel fraction criteria of 3.2 mg/L

"(3)" - MTPH result is compared to lube oil fraction criteria of 7.8 mg/L

BOLD - Exceeds applicable standard

APPENDIX A

LABORATORY CERTIFICATES OF ANALYSIS



Task Order#: 4410047514 Line Item: 10 Site#: JW.00096 Site Location: 64 MILL LAKE ROAD, HUBBARDS, NS Project #: 059548-02 Your C.O.C. #: BE 06143

Attention: Scott Llewellyn

Conestoga-Rovers and Associates Ltd Dartmouth 31 Gloster Crt Dartmouth , NS B3B 1X9

Report Date: 2013/11/27

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B3K1622 Received: 2013/11/21, 16:01

Sample Matrix: Water # Samples Received: 6

			Method
Analyses	Quantity	Laboratory Method	Primary Reference
TEH in Water (PIRI)	6	ATL SOP 00113	Based on Atl. PIRI
VPH in Water (PIRI)	6	ATL SOP 00118	Based on Atl. PIRI
ModTPH (T1) Calc. for Water	6	N/A	Based on Atl. PIRI

Remarks:

All work recorded herein has been performed in accordance to the ISO 17025 standard. Methods used by Maxxam Analytics are based upon accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing.

Maxxam Analytics is accredited by Standards Council of Canada (SCC). Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract. Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

All data is in statistical control and has met all QC and method performance criteria unless otherwise flagged. All samples were analysed within hold time unless otherwise flagged. All soil samples for BTEX analysis were methanol extracted within 24 hours unless otherwise flagged.

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

Encryption Key

Marie Muise Marie Muise 28 Nov 2013 12:28:39 -04:00

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

Marie Muise, Project Manager Email: MMuise@maxxam.ca Phone# (902) 420-0203 Ext:253

Page 1 of 10



Task Order#: 4410047514 Line Item: 10 Site#: JW.00096 Site Location: 64 MILL LAKE ROAD, HUBBARDS, NS Project #: 059548-02 Your C.O.C. #: BE 06143

Attention: Scott Llewellyn

Conestoga-Rovers and Associates Ltd Dartmouth 31 Gloster Crt Dartmouth , NS B3B 1X9

Report Date: 2013/11/27

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B3K1622 Received: 2013/11/21, 16:01

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



Conestoga-Rovers and Associates Ltd Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 64 MILL LAKE ROAD, HUBBARDS, NS Site Location: Project #: 059548-02

ATLANTIC MUST IN WATER - PIRI TIER I (WATER)

Maxxam ID		TZ6649	TZ6649	TZ6650	TZ6651		
Sampling Date		2013/11/20	2013/11/20	2013/11/20	2013/11/20		
		10:27	10:27	10:09	10:04	_	
COC Number		BE 06143	BE 06143	BE 06143	BE 06143	-	
	Units	MW1	MW1 Lab-Dup	MW2	MW3	RDL	QC Batch
						_	
Benzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	3434242
Toluene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	3434242
Ethylbenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	3434242
Xylene (Total)	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	3434242
C6 - C10 (less BTEX)	mg/L	<0.010	<0.010	<0.010	<0.010	0.010	3434242
>C10-C16 Hydrocarbons	mg/L	<0.050		<0.050	<0.050	0.050	3432116
>C16-C21 Hydrocarbons	mg/L	<0.050		<0.050	<0.050	0.050	3432116
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.10</td><td></td><td><0.10</td><td><0.10</td><td>0.10</td><td>3432116</td></c32>	mg/L	<0.10		<0.10	<0.10	0.10	3432116
Modified TPH (Tier1)	mg/L	<0.10		<0.10	<0.10	0.10	3430519
Reached Baseline at C32	mg/L	NA		NA	NA	N/A	3432116
Hydrocarbon Resemblance	mg/L	NA		NA	NA	N/A	3432116
Extraction Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	99		110	104		3432116
n-Dotriacontane - Extractable	%	114		119	120		3432116
Instrument Surrogate Recovery (%)							
1,4-Difluorobenzene	%	95	93	94	95		3434242
4-Bromofluorobenzene	%	100	101	101	100		3434242
D4-1,2-Dichloroethane	%	90	91	90	89		3434242
Isobutylbenzene - Volatile	%	98	98	99	100		3434242

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate QC Batch = Quality Control Batch



Conestoga-Rovers and Associates Ltd Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 64 MILL LAKE ROAD, HUBBARDS, NS Project #: 059548-02

ATLANTIC MUST IN WATER - PIRI TIER I (WATER)

-			1 120004	1	
	2013/11/20	2013/11/20	2013/11/20		
	09:53	09:58	10:21		
	BE 06143	BE 06143	BE 06143		
Units	IVIVV4	IVIV5	I MW6		QC Batch
mg/L	<0.0010	<0.0010	<0.0010	0.0010	3434242
mg/L	<0.0010	<0.0010	<0.0010	0.0010	3434242
mg/L	<0.0010	<0.0010	<0.0010	0.0010	3434242
mg/L	<0.0020	<0.0020	<0.0020	0.0020	3434242
mg/L	<0.010	<0.010	<0.010	0.010	3434242
mg/L	<0.050	<0.050	0.18	0.050	3432116
mg/L	<0.050	<0.050	0.090	0.050	3432116
mg/L	<0.10	<0.10	<0.10	0.10	3432116
mg/L	<0.10	<0.10	0.27	0.10	3430519
mg/L	NA	NA	Yes	N/A	3432116
mg/L	NA	NA	COMMENT (1)	N/A	3432116
%	104	106	106		3432116
%	123	120	112		3432116
%	94	94	95		3434242
%	101	101	103		3434242
%	89	90	91		3434242
%	99	98	101		3434242
	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	Image: Description of the second se	Image: Construction of the construle of the construction of the construction of the	Long 1120 Long 1120 <thlong 1120<="" th=""> Long 1120 <thlong 1120<="" th=""> Long 1120 <thlong 1120<="" th=""> <thlong 1120<="" th=""> <thlon< td=""><td>Longitude Longitude <thlongitude< th=""> Longitude <thlongitude< th=""> Longitude <thlongitude< th=""> <thlongitude< th=""> <thlon< td=""></thlon<></thlongitude<></thlongitude<></thlongitude<></thlongitude<></td></thlon<></thlong></thlong></thlong></thlong>	Longitude Longitude <thlongitude< th=""> Longitude <thlongitude< th=""> Longitude <thlongitude< th=""> <thlongitude< th=""> <thlon< td=""></thlon<></thlongitude<></thlongitude<></thlongitude<></thlongitude<>

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

(1) Weathered fuel oil fraction.



ModTPH (T1) Calc. for Water

Conestoga-Rovers and Associates Ltd Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 64 MILL LAKE ROAD, HUBBARDS, NS Project #: 059548-02

Test Summary

Maxxam ID Sample ID	TZ6649 MW1				Re	Collected 2013/11/20 Alinquished 2013/11/21	
Matrix	Water					Received 2013/11/21	
Test Description		Instrumentation	Batch	Extracted	Analvzed	Analvst	
TEH in Water (PI	RI)	GC/FID	3432116	2013/11/22	2013/11/23	Ashley Matheson	
VPH in Water (PII	RI)	PTGC/MS	3434242	2013/11/25	2013/11/25	Amanda Swales	,
ModTPH (T1) Cal	c. for Water	CALC	3430519	N/A	2013/11/26	Automated Statchk	
Maxxam ID	TZ6649 Dup					Collected 2013/11/20	
Sample ID	MW1				Re	linguished 2013/11/21	
Matrix	Water					Received 2013/11/21	
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst	
VPH in Water (PII	RI)	PTGC/MS	3434242	2013/11/25	2013/11/25	Amanda Swales	
Maxxam ID Sample ID Matrix	TZ6650 MW2 Water				Re	Collected 2013/11/20 linquished 2013/11/21 Received 2013/11/21	
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst	
TEH in Water (PI	रl)	GC/FID	3432116	2013/11/22	2013/11/23	Ashley Matheson	
VPH in Water (PII	RI)	PTGC/MS	3434242	2013/11/25	2013/11/25	Amanda Swales	
ModTPH (T1) Cal	c. for Water	CALC	3430519	N/A	2013/11/26	Automated Statchk	
Maxxam ID Sample ID Matrix	TZ6651 MW3 Water				Re	Collected2013/11/20slinquished2013/11/21Received2013/11/21	
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst	
TEH in Water (PI	રા)	GC/FID	3432116	2013/11/22	2013/11/23	Ashley Matheson	
VPH in Water (PII	RI)	PTGC/MS	3434242	2013/11/25	2013/11/25	Amanda Swales	
ModTPH (T1) Cal	c. for Water	CALC	3430519	N/A	2013/11/26	Automated Statchk	
Maxxam ID Sample ID Matrix	TZ6652 MW4 Water				Re	Collected2013/11/20elinquished2013/11/21Received2013/11/21	
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst	
TEH in Water (PI	२ ।)	GC/FID	3432116	2013/11/22	2013/11/23	Ashley Matheson	
VPH in Water (PII	RI)	PTGC/MS	3434242	2013/11/25	2013/11/25	Amanda Swales	

3430519

N/A

2013/11/26

Automated Statchk

CALC



Conestoga-Rovers and Associates Ltd Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 64 MILL LAKE ROAD, HUBBARDS, NS Project #: 059548-02

2013/11/26

Test Summary

Maxxam ID Sample ID Matrix	TZ6653 MW5 Water				Reli	Collected 2013 inquished 2013 Received 2013	3/11/20 3/11/21 3/11/21
Test Description		Instrumentation	Batch	Extracted	Analyzed	Analyst	
TEH in Water (PIF	RI)	GC/FID	3432116	2013/11/22	2013/11/23	Ashley Mathes	on
VPH in Water (PIF	RI)	PTGC/MS	3434242	2013/11/25	2013/11/25	Amanda Swale	s

3430519

N/A

CALC

Maxxam ID TZ6654 Sample ID MW6 Matrix Water

ModTPH (T1) Calc. for Water

Collected 2013/11/20 Relinquished 2013/11/21 Received 2013/11/21

Automated Statchk

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	3432116	2013/11/22	2013/11/23	Ashley Matheson
VPH in Water (PIRI)	PTGC/MS	3434242	2013/11/25	2013/11/25	Amanda Swales
ModTPH (T1) Calc. for Water	CALC	3430519	N/A	2013/11/26	Automated Statchk



Conestoga-Rovers and Associates Ltd Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 64 MILL LAKE ROAD, HUBBARDS, NS Project #: 059548-02

Package 1 -0.7°C Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Results relate only to the items tested.



Conestoga-Rovers and Associates Ltd Task Order#: 4410047514 Site#: JW.00096 Site Location: 64 MILL LAKE ROAD, HUBBARDS, NS Project #: 059548-02

Quality Assurance Report

Maxxam Job Number: B3K1622

QA/QC			Date				
Batch			Analyzed				
Num Init	QC Type	Parameter	yyyy/mm/dd	Value	Recovery	Units	QC Limits
3432116 AJS	Method Blank	Isobutylbenzene - Extractable	2013/11/23		111	%	30 - 130
		n-Dotriacontane - Extractable	2013/11/23		124	%	30 - 130
		>C10-C16 Hydrocarbons	2013/11/23	<0.050		mg/L	
		>C16-C21 Hydrocarbons	2013/11/23	<0.050		mg/L	
		>C21- <c32 hydrocarbons<="" td=""><td>2013/11/23</td><td><0.10</td><td></td><td>mg/L</td><td></td></c32>	2013/11/23	<0.10		mg/L	
3434242 ASL	Method Blank	1,4-Difluorobenzene	2013/11/25		96	%	70 - 130
		4-Bromofluorobenzene	2013/11/25		100	%	70 - 130
		D4-1,2-Dichloroethane	2013/11/25		90	%	70 - 130
		Isobutylbenzene - Volatile	2013/11/25		99	%	70 - 130
		Benzene	2013/11/25	<0.0010		mg/L	
		Toluene	2013/11/25	<0.0010		mg/L	
		Ethylbenzene	2013/11/25	<0.0010		mg/L	
		Xylene (Total)	2013/11/25	<0.0020		mg/L	
		C6 - C10 (less BTEX)	2013/11/25	<0.010		mg/L	
	RPD [TZ6649-02]	Benzene	2013/11/25	NC		%	40
		Toluene	2013/11/25	NC		%	40
		Ethylbenzene	2013/11/25	NC		%	40
		Xylene (Total)	2013/11/25	NC		%	40
		C6 - C10 (less BTEX)	2013/11/25	NC		%	40
	Matrix Spike						
	[TZ6650-02]	1,4-Difluorobenzene	2013/11/25		94	%	70 - 130
		4-Bromofluorobenzene	2013/11/25		100	%	70 - 130
		D4-1,2-Dichloroethane	2013/11/25		89	%	70 - 130
		Isobutylbenzene - Volatile	2013/11/25		99	%	70 - 130
		Benzene	2013/11/25		110	%	70 - 130
		Toluene	2013/11/25		107	%	70 - 130
		Ethylbenzene	2013/11/25		105	%	70 - 130
		Xylene (Total)	2013/11/25		106	%	70 - 130
3432116 AJS	LCS	Isobutylbenzene - Extractable	2013/11/23		112	%	30 - 130
		n-Dotriacontane - Extractable	2013/11/23		128	%	30 - 130
		>C10-C16 Hydrocarbons	2013/11/23		91	%	30 - 130
		>C16-C21 Hydrocarbons	2013/11/23		106	%	30 - 130
		>C21- <c32 hydrocarbons<="" td=""><td>2013/11/23</td><td></td><td>118</td><td>%</td><td>30 - 130</td></c32>	2013/11/23		118	%	30 - 130
3434242 ASL	LCS	1,4-Difluorobenzene	2013/11/25		95	%	70 - 130
		4-Bromofluorobenzene	2013/11/25		100	%	70 - 130
		D4-1,2-Dichloroethane	2013/11/25		89	%	70 - 130
		Isobutylbenzene - Volatile	2013/11/25		99	%	70 - 130
		Benzene	2013/11/25		113	%	70 - 130
		Toluene	2013/11/25		112	%	70 - 130
		Ethylbenzene	2013/11/25		109	%	70 - 130
		Xylene (Total)	2013/11/25		108	%	70 - 130

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. LCS: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy. Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination. Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency. NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a

NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.



Validation Signature Page

Maxxam Job #: B3K1622

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

Maelonalo

pecialist (Organics)

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

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White: Maxxam

DATA QUALITY REVIEW CHECKLIST - IMPERIAL OIL PROJECTS

Consultant: Conestoga- Rovers & Associates	Sampling Date: 2013/11/20
Location: 64 Mill Lake Road, Hubbards, N	S Laboratory : <u>Maxxam - Bedford, NS</u>
Consultant Project Number: 059548-02	Sample Submission Number: <u>B3K1622</u>
Are All Laboratory QC Samples Within Acceptance C	riteria (Yes, No, Not Applicable)?
Yes No	NA Comments All laboratory OC samples within acceptance criteria
Extraction Surrogate Recovery X Method Blank Concentration X Matrix Duplicate RPD X Matrix Spike Recovery X Lab Control Sample Recovery X	
Are All Field QC Samples Within Alert Limits (Yes, N	lo, Not Applicable)?
YesNoField Blank ConcentrationXTrip Blank ConcentrationXField Duplicate RPDX	NA Comments All field QC have met alert limits and are reported in COA # B3K1644.
Has CoA been signed off (Yes/No)?: Has lab warranted all tests were in statistical control in Has lab warranted all tests were analyzed following SC Were all samples analyzed within hold times (Yes/No) All volatiles samples methanol extracted (if required) v Is Chain of Custody completed and signed (Yes/No)?: Were sample temperatures acceptable when they reach	YesCoA (Yes/No)?:YesOP's in CoA (Yes/No)?:Yes?:Yeswithin 48 hours (Yes/No)?:Not RequiredYesYesed lab (Yes/No)?:Yes
Was a Data Quality Waiver (DQW) issued (Yes/No)?:	No
Date Issued: N/A	Date of Response: N/A
Is data considered to be reliable (Yes/No)?: If answer is "No", describe and provide rationale:	Yes
Data Reviewed by (Print): <u>Shane Jackson</u> Date: <u>2014/01/14</u>	Data Reviewed by (Signature):



Task Order#: 4410047514 Line Item: 10 Site#: JW.00096 Site Location: 64 MILL LAKE ROAD, HUBBARDS, NS Project #: 059548-02 Your C.O.C. #: BE 06144

Attention: Scott Llewellyn

Conestoga-Rovers and Associates Ltd Dartmouth 31 Gloster Crt Dartmouth , NS B3B 1X9

Report Date: 2013/11/27

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B3K1644 Received: 2013/11/21, 16:01

Sample Matrix: Water # Samples Received: 3

			Method
Analyses	Quantity	Laboratory Method	Primary Reference
TEH in Water (PIRI)	3	ATL SOP 00113	Based on Atl. PIRI
VPH in Water (PIRI)	3	ATL SOP 00118	Based on Atl. PIRI
ModTPH (T1) Calc. for Water	3	N/A	Based on Atl. PIRI

Remarks:

All work recorded herein has been performed in accordance to the ISO 17025 standard. Methods used by Maxxam Analytics are based upon accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing.

Maxxam Analytics is accredited by Standards Council of Canada (SCC). Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract. Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

All data is in statistical control and has met all QC and method performance criteria unless otherwise flagged. All samples were analysed within hold time unless otherwise flagged. All soil samples for BTEX analysis were methanol extracted within 24 hours unless otherwise flagged.

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

Encryption Key

Marie Muise Marie Muise 28 Nov 2013 12:32:59 -04:00

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

Marie Muise, Project Manager Email: MMuise@maxxam.ca Phone# (902) 420-0203 Ext:253

Page 1 of 9



Task Order#: 4410047514 Line Item: 10 Site#: JW.00096 Site Location: 64 MILL LAKE ROAD, HUBBARDS, NS Project #: 059548-02 Your C.O.C. #: BE 06144

Attention: Scott Llewellyn

Conestoga-Rovers and Associates Ltd Dartmouth 31 Gloster Crt Dartmouth , NS B3B 1X9

Report Date: 2013/11/27

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B3K1644 Received: 2013/11/21, 16:01

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



Conestoga-Rovers and Associates Ltd Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 64 MILL LAKE ROAD, HUBBARDS, NS Site Location: Project #: 059548-02

ATLANTIC MUST IN WATER - PIRI TIER I (WATER)

Maxxam ID		TZ6746	TZ6746	TZ6747	TZ6748		
Sampling Date		2013/11/20	2013/11/20	2013/11/20	2013/11/20		
		10:22	10:22	12:00	12:00		
COC Number		BE 06144	BE 06144	BE 06144	BE 06144	_	
	Unite	MWA	MWA Lab-Dup	MWB	MWC	PDI	OC Batch
	Tomis	IIIIA			I INVO		
Benzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	3434243
Toluene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	3434243
Ethylbenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	3434243
Xylene (Total)	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	3434243
C6 - C10 (less BTEX)	mg/L	<0.010	<0.010	<0.010	<0.010	0.010	3434243
>C10-C16 Hydrocarbons	mg/L	0.19	0.18	<0.050	<0.050	0.050	3432116
>C16-C21 Hydrocarbons	mg/L	0.10	0.094	<0.050	<0.050	0.050	3432116
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td>0.11</td><td><0.10</td><td><0.10</td><td><0.10</td><td>0.10</td><td>3432116</td></c32>	mg/L	0.11	<0.10	<0.10	<0.10	0.10	3432116
Modified TPH (Tier1)	mg/L	0.40		<0.10	<0.10	0.10	3430519
Reached Baseline at C32	mg/L	Yes		NA	NA	N/A	3432116
Hydrocarbon Resemblance	mg/L	COMMENT (1)		NA	NA	N/A	3432116
Extraction Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	114	113	115	88		3432116
n-Dotriacontane - Extractable	%	125	121	126	118		3432116
Instrument Surrogate Recovery (%)							
1,4-Difluorobenzene	%	95	92	95	93		3434243
4-Bromofluorobenzene	%	102	101	101	100		3434243
D4-1,2-Dichloroethane	%	91	89	91	90		3434243
Isobutylbenzene - Volatile	%	100	99	100	97		3434243

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

(1) Weathered fuel oil fraction.



Conestoga-Rovers and Associates Ltd Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 64 MILL LAKE ROAD, HUBBARDS, NS Site Location: Project #: 059548-02

Test Summary

Maxxam ID TZ6746					Collected 2013/11/20	
Sample ID MWA				Re	elinquished 2013/11/21	
Matrix Water					Received 2013/11/21	
Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst	
TEH in Water (PIRI)	GC/FID	3432116	2013/11/22	2013/11/23	Ashley Matheson	
VPH in Water (PIRI)	PTGC/MS	3434243	2013/11/25	2013/11/26	Amanda Swales	
ModTPH (T1) Calc. for Water	CALC	3430519	N/A	2013/11/26	Automated Statchk	
Maxxam ID TZ6746 Dup					Collected 2013/11/20	
Sample ID MWA				Re	elinquished 2013/11/21	
Matrix Water					Received 2013/11/21	
Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst	
TEH in Water (PIRI)	GC/FID	3432116	2013/11/22	2013/11/23	Ashley Matheson	
VPH in Water (PIRI)	PTGC/MS	3434243	2013/11/25	2013/11/26	Amanda Swales	
Maxxam ID TZ6747					Collected 2013/11/20	
Sample ID MWB				Re	elinguished 2013/11/21	
Matrix Water					Received 2013/11/21	
Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst	
TEH in Water (PIRI)	GC/FID	3432116	2013/11/22	2013/11/23	Ashley Matheson	
VPH in Water (PIRI)	PTGC/MS	3434243	2013/11/25	2013/11/26	Amanda Swales	
ModTPH (T1) Calc. for Water	CALC	3430519	N/A	2013/11/26	Automated Statchk	
Maxxam ID TZ6748					Collected 2013/11/20	
Sample ID MWC				Re	linguished 2013/11/21	

Matrix Water

Relinquished 2013/11/21 Received 2013/11/21

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	3432116	2013/11/22	2013/11/23	Ashley Matheson
VPH in Water (PIRI)	PTGC/MS	3434243	2013/11/25	2013/11/26	Amanda Swales
ModTPH (T1) Calc. for Water	CALC	3430519	N/A	2013/11/26	Automated Statchk



Conestoga-Rovers and Associates Ltd Task Order#: 4410047514, Line Item: 10 Site#: JW.00096 Site Location: 64 MILL LAKE ROAD, HUBBARDS, NS Project #: 059548-02

Package 1 -0.7°C Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Results relate only to the items tested.



Conestoga-Rovers and Associates Ltd Task Order#: 4410047514 Site#: JW.00096 Site Location: 64 MILL LAKE ROAD, HUBBARDS, NS Project #: 059548-02

Quality Assurance Report

Maxxam Job Number: B3K1644

QA/QC			Date				
Batch			Analyzed				
Num Init	QC Type	Parameter	yyyy/mm/dd	Value	Recovery	Units	QC Limits
3432116 AJS	Method Blank	Isobutylbenzene - Extractable	2013/11/23		111	%	30 - 130
		n-Dotriacontane - Extractable	2013/11/23		124	%	30 - 130
		>C10-C16 Hydrocarbons	2013/11/23	< 0.050		mg/L	
		>C16-C21 Hydrocarbons	2013/11/23	< 0.050		mg/L	
		>C21- <c32 hvdrocarbons<="" td=""><td>2013/11/23</td><td><0.10</td><td></td><td>ma/L</td><td></td></c32>	2013/11/23	<0.10		ma/L	
3434243 ASL	Method Blank	1.4-Difluorobenzene	2013/11/25		93	%	70 - 130
		4-Bromofluorobenzene	2013/11/25		102	%	70 - 130
		D4-1.2-Dichloroethane	2013/11/25		91	%	70 - 130
		Isobutylbenzene - Volatile	2013/11/25		99	%	70 - 130
		Benzene	2013/11/25	<0.0010		ma/l	
		Toluene	2013/11/25	< 0.0010		ma/l	
		Ethylbenzene	2013/11/25	<0.0010		ma/l	
		Xylene (Total)	2013/11/25	<0.0010		mg/L	
		C6 - C10 (less BTEX)	2013/11/25	<0.0020		mg/L	
3432116 A.IS	RPD [T76746-01]	>C10-C16 Hydrocarbons	2013/11/23	NC		%	40
04021107.00		>C16-C21 Hydrocarbons	2013/11/23	NC		%	40
		>C21-C32 Hydrocarbons	2013/11/23	NC		%	40
3434243 ASI	RPD [T76746-02]	Benzene	2013/11/26	NC		%	40
0404240 / 102		Toluene	2013/11/26	NC		%	40
		Ethylbenzene	2013/11/26	NC		%	40
		Xylene (Total)	2013/11/26	NC		%	40
		C6 - C10 (less BTEX)	2013/11/26	NC		%	40
3432116 AJS	Matrix Snike		2010/11/20	NO		70	40
0.02.107.00	ITZ6747-011	Isobutylbenzene - Extractable	2013/11/23		112	%	30 - 130
	[.=0]	n-Dotriacontane - Extractable	2013/11/23		122	%	30 - 130
		>C10-C16 Hvdrocarbons	2013/11/23		82	%	30 - 130
		>C16-C21 Hydrocarbons	2013/11/23		94	%	30 - 130
		>C21- <c32 hydrocarbons<="" td=""><td>2013/11/23</td><td></td><td>103</td><td>%</td><td>30 - 130</td></c32>	2013/11/23		103	%	30 - 130
3434243 ASL	Matrix Spike						
	[TZ6747-02]	1.4-Difluorobenzene	2013/11/26		95	%	70 - 130
		4-Bromofluorobenzene	2013/11/26		102	%	70 - 130
		D4-1.2-Dichloroethane	2013/11/26		91	%	70 - 130
		Isobutvlbenzene - Volatile	2013/11/26		99	%	70 - 130
		Benzene	2013/11/26		112	%	70 - 130
		Toluene	2013/11/26		111	%	70 - 130
		Fthylbenzene	2013/11/26		106	%	70 - 130
		Xvlene (Total)	2013/11/26		106	%	70 - 130
3432116 AJS	LCS	Isobutylbenzene - Extractable	2013/11/23		112	%	30 - 130
01021107800	200	n-Dotriacontane - Extractable	2013/11/23		128	%	30 - 130
		>C10-C16 Hydrocarbons	2013/11/23		91	%	30 - 130
		>C16-C21 Hydrocarbons	2013/11/23		106	%	30 - 130
		>C21- <c32< math=""> Hydrocarbons</c32<>	2013/11/23		118	%	30 - 130
3434243 ASI	105	1 4-Difluorobenzene	2013/11/26		95	%	70 - 130
01012107102	200	4-Bromofluorobenzene	2013/11/26		102	%	70 - 130
		D4-1.2-Dichloroethane	2013/11/26			%	70 - 130
		Isobutylbenzene - Volatile	2013/11/26		98	%	70 - 130
		Benzene	2013/11/26		111	%	70 - 130
		Toluene	2013/11/26		111	%	70 - 130
		Ethylbenzene	2013/11/26		109	%	70 - 130
		Xylene (Total)	2013/11/26		109	%	70 - 130

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.

LCS: 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.



Conestoga-Rovers and Associates Ltd Task Order#: 4410047514 Site#: JW.00096 Site Location: 64 MILL LAKE ROAD, HUBBARDS, NS Project #: 059548-02

Quality Assurance Report (Continued) Maxxam Job Number: B3K1644

NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.



Validation Signature Page

Maxxam Job #: B3K1644

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

Maelonalo

pecialist (Organics)

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

Maxiam ²⁰⁰ Bluewat Bedford, NS www.maxxa	ter Road, Suite 105 B4B 1G9 manalytics.com	Phone: (902) 420-0203 EXXON MOB Fax: (902) 420-8612 CHAIN - Toll Free: 1-800-565-7227						L/IMPE DF-CUS AN/	OBIL/IMPERIAL OIL - MAXXAM IN-OF-CUSTODY RECORD ANALYSIS REQUESTED C of C						[⊭] 44
INVOICE INFORMATION	REPORT INF	ORMATION													
Company Name: 🗹 Imperial Oil 🔲 ExxonMobil	Company Name:	LRA													
Contact Name: NANCY HAZELL	Contact Name: SCOTT	LLEWELLYN	_				×	5							
Address: 90 WYNFORD DR	Address: 45 AKER	LEY BLVD					(†	S IS							
TORONTO, ON	DARTMO	NTH, NS			r 5		9	C32)							
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Email: nancy. hazelleesso. ca	Email: SILEWEILYNG	eraworld.co	m ş	s Me	(pot			Sultu	5 			x (
Ph: (416) 441-1862	Ph: (902)468	-1248	Diss	Dise	Meth		s (HI	(BTI (BTI	ン に で い						
Sampler Name (Print):	Consultant Project #:	- 02	al or	alor	ault	2	evel evel	oons oons oons			8260	61			4
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GRA		S DIE (S		RC/	Water	Mer	Metals Soil		0	ganics					
1 MWA X	6 13/11	/20 10:22						X							
² MWB X	6 3/11	120 12:00						X							
3 MWC X	6 13/14	1/20 12:00						X				6			
4	YY/M	WIDD HH:MM													
5	YYIM	WIDD HIMM							\square		\mathbb{N}				1
6	YYIMA	MIDD HH:MM													
7	YYZM	иор нн:мм													
8	KIMA	M/DD HH:MM										X		X	
9 /	YY/MI	M/DD HHEMM													
IOL SITE LOCATION	R	EGULATORY CRITER	ria / Di	ETEC	TION LIM	ITS	SPECIAL IN	STRUCTIC	ONS			# JARS USED &	TURNA	ROUND	TIME
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COC - 1009 (2013) IOL - NS

White: Maxxam

Yellow: Client
DATA QUALITY REVIEW CHECKLIST - IMPERIAL OIL PROJECTS

Consultant: Conestoga- Rovers & Associates	Sampling Date: 2013/11/20
Location: <u>64 Mill Lake Road, Hubbards, NS</u> Laboratory : <u>Maxxam - Bedford, NS</u>	
Consultant Project Number: 059548-02	Sample Submission Number: <u>B3K1644</u>
Are All Laboratory QC Samples Within Acceptance Crite	eria (Yes, No, Not Applicable)?
YesNoInstrument Surrogate RecoveryXExtraction Surrogate RecoveryXMethod Blank ConcentrationXMatrix Duplicate RPDXMatrix Spike RecoveryXLab Control Sample RecoveryX	NA Comments All laboratory QC samples within acceptance criteria.
Are All Field QC Samples Within Alert Limits (Yes, No,	Not Applicable)?
YesNoField Blank ConcentrationXTrip Blank ConcentrationXField Duplicate RPDX	NA Comments All field QC have met alert limits.
Has CoA been signed off (Yes/No)?: Has lab warranted all tests were in statistical control in Co Has lab warranted all tests were analyzed following SOP's Were all samples analyzed within hold times (Yes/No)?: All volatiles samples methanol extracted (if required) with Is Chain of Custody completed and signed (Yes/No)?: Were sample temperatures acceptable when they reached	YesoA (Yes/No)?:Yess in CoA (Yes/No)?:YesYesYeshin 48 hours (Yes/No)?:Not RequiredYesYeslab (Yes/No)?:Yes
Was a Data Quality Waiver (DQW) issued (Yes/No)?:	No
Date Issued: N/A	Date of Response: N/A
Is data considered to be reliable (Yes/No)?: If answer is "No", describe and provide rationale:	Yes
Data Reviewed by (Print): <u>Shane Jackson</u> Date: <u>2014/01/14</u>	Data Reviewed by (Signature):

APPENDIX B

LABORATORY AND FIELD QA/QC

QUALITY ASSURANCE AND QUALITY CONTROL DISCUSSION

There were no laboratory or field QA/QC issues identified in this report that require discussion.

The groundwater field QA/QC program consisted of one (1) field duplicate sample, one (1) field blank sample, and one (1) trip blank sample that were submitted for laboratory analysis of BTEX and modified TPH.

For the field duplicate samples, evaluations of the QA/QC results were determined by calculating the relative percent difference (RPD) between the field duplicate and original sample results, and comparison of the RPD to designated alert limits.

RPD = $\begin{pmatrix} (X_1 - X_2) \\ (X_1 + X_2) \\ 2 \end{pmatrix}$ X 100

Consistent with laboratory practices and to permit reliable calculations, an RPD is only calculated when the original and duplicate sample concentrations are at least 5 times the reportable detection limit (RDL).

The designated RPD alert limits for the groundwater samples are presented in Tables B-1. The RPDs were either within the alert limits for all of the parameters that were analyzed or not calculable.

The water field blank and trip blank data were compared to the alert limits and are presented in Table B-2. As indicated, all of the RPDs were within the alert limits.

The laboratory QA/QC program consisted of one or more of the following analysis (a) instrument and extraction surrogate recoveries for groundwater samples that were analyzed, and (b) the analysis of method blank, laboratory duplicate, matrix spike and/or laboratory control samples for the sample analytical batches that were analyzed. The laboratory QA/QC results are presented in the certificates of analysis (Appendix A). As indicated, no laboratory QA/QC issues were identified.

No field or laboratory QA/QC issues were identified that would affect the overall conclusions presented in this report. The results reported are considered to be reliable.

TABLE B-1

RELATIVE PERCENT DIFFERENCE CALCULATIONS - GROUNDWATER FIELD DUPLICATE SAMPLES

PETROLEUM HYDROCARBON PARAMETERS

64 Mill Lake Road No. 2, Hubbards, Nova Scotia

SAMPLE LOCATIONS	MW6	RDL	MWA FIELD DUPLICATE	RDL	RPD	RPD ALERT
			(MW6)			LINITS (70)
Maxxam Sample ID	TZ6654		TZ6746			
Date Sampled (yyyy/mm/dd)	2013/11/20		2013/11/20			
PARAMETER						
Benzene	<0.0010	0.0010	<0.0010	0.0010	NC	80
Toluene	<0.0010	0.0010	<0.0010	0.0010	NC	80
Ethylbenzene	<0.0010	0.0010	<0.0010	0.0010	NC	80
Total Xylenes	<0.0020	0.0020	<0.0020	0.0020	NC	80
Petroleum Hydrocarbons (C6 - C10)	<0.010	0.010	<0.010	0.010	NC	80
Petroleum Hydrocarbons (>C10 - C16)	0.18	0.050	0.19	0.050	NC	80
Petroleum Hydrocarbons (>C16 - C21)	0.090	0.050	0.10	0.050	NC	80
Petroleum Hydrocarbons (>C21 - C32)	<0.10	0.10	0.11	0.10	NC	80
Petroleum Hydrocarbons (Modified TPH)	0.27	0.10	0.40	0.10	NC	80

a - Alert limits used for field duplicate samples

NA - Not Applicable

NC - Not Calculated

RDL - Reportable Detection Limit

RPD - Relative Percent Difference (not calculated when one or both results are less than 5X RDL)

"-" - Not analyzed

mbgs - metres below ground surface

Results for all parameters are reported in milligrams per litres (mg/L)

BOLD - Exceeds RPD alert limit

TABLE B-2

GROUNDWATER FIELD BLANK AND TRIP BLANK DATA

PETROLEUM HYDROCARBON PARAMETERS

64 Mill Lake Road No. 2, Hubbards, Nova Scotia

SAMPLE LOCATIONS		MWB (FIELD	EXCEEDS	MWC (TRIP	EXCEEDS
		BLANK)	ALERT LIMIT	BLANK)	ALERT LIMIT
Maxxam Sample ID		TZ6747		TZ6748	
Date Sampled (yyyy/mm/dd)		2013/11/20		2013/11/20	
PARAMETERS	RDL				
Benzene	0.0010	<0.0010	No	<0.0010	No
Toluene	0.0010	<0.0010	No	<0.0010	No
Ethylbenzene	0.0010	<0.0010	No	<0.0010	No
Total Xylenes	0.0020	<0.0020	No	<0.002	No
Petroleum Hydrocarbons (C6 - C10)	0.010	<0.010	No	<0.010	No
Petroleum Hydrocarbons (>C10 - C16)	0.050	<0.050	No	<0.050	No
Petroleum Hydrocarbons (>C16 - C21)	0.050	<0.05	No	<0.05	No
Petroleum Hydrocarbons (>C21 - C32)	0.10	<0.10	No	<0.10	No
Petroleum Hydrocarbons (Modified TPH)	0.10	<0.10	No	<0.10	No

RDL - Reportable detection limit

"-" - Not Analyzed

Results for all parameters are reported in milligrams per litre (mg/L)

BOLD - Exceeds alert limit

Note - Alert limits for field blanks and trip blanks are 5x RDL for BTEX and TPH fractions

Recy le 6 mars 2014



60 Logan Road Bridgewater, N.S. B4V 3J8

Phone: (902) 543-4685 Fax: (902) 527-5480

Process RSN Number: 7845934

INSPECTION REPORT

ISSUED TO:	Sura Ali
INSPECTION DATE:	February 07, 2014
MAILING ADDRESS:	7100 Jean Talon Est Anjou, Quebec H1M3R8
SITE NAME:	Limited -Single Property Affected
SITE ADDRESS:	MILL LAKE RD. HUBBARDS, NS

OVERVIEW OF INSPECTION

Based on receipt of FRM-100, Notification of Free Product or Contamination received for the above noted address, contamination has been identified. Pursuant to Section 71 of the Environment Act, any person responsible for the release of substance shall, at that person's own cost, and as soon as that person knows or ought to have known of the release of the substance into the environment that has caused, is causing or may cause an adverse effect, shall rehabilitate the environment to a standard prescribed or adopted by the Department. As a property owner, you are ultimately responsible to ensure that the contamination is properly addressed. You are therefore required to obtain the services of an environmental Site Professional to ensure contamination at the above noted address is addressed in accordance with the Contaminated Sites Regulations. Your timely contact with an environmental Site Professional may be key to reducing the overall time and cost of remediation; and may result in the avoidance of unnecessary work.

COMPLIANCE ITEMS

The following item(s) were determined to be contrary to the <u>Environment Act</u> or <u>Regulations:</u>

Item # 1421210492-001 Environment Act 67(2)

No person shall release or permit the release into the environment of a substance in an amount, concentration or level or at a rate of release that causes or may cause an adverse effect, unless authorized by an approval or the regulations.

In order to comply with this section you must:

Comply with time requirements specified in the attached Directive

Item # 1421210492-001 must be compiled with by October 4, 2015

Please be advised that there may be other deficiencies other than those noted.

The inspection report has been received by:

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Signature:

Print Name of Person Signing:

Date:

Signature of Inspector:

february 25/2014

Date:

This inspection was conducted by Jesse McLean, Inspector Specialist with Nova Scotia Environment, who may be contacted at:

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Nova Scotia Environment 60 Logan Road Bridgewater, N.S. B4V 3J8 Phone: (902) 543-4685 Fax: (902) 527-5480 http://www.gov.ns.ca/nse/

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60 Logan Road Bridgewater, N.S. B4V 3J8 Phone: (902) 543-4685 Fax: (902) 527-5480

Process RSN Number: 7845934

Environment Act DIRECTIVE

Sura Ali
February 07, 2014
7100 Jean Talon Est Anjou, Quebec H1M3R8
Limited -Single Property Affected
MILLLAKE RD. HUBBARDS, NS

Pursuant to Environment Act, 122A(1) the following action(s) must be completed by October 4, 2015:

Obtain a Site Professional to complete a remedial action plan report in accordance with PRO-600, Remedial Action Plan Protocol and submit to the undersigned.

Pursuant to Environment Act, 122A(1) the following action(s) must be completed by October 4, 2015:

Obtain a Site Professional to complete a record of site condition (RSC) in accordance with PRO-700, Confirmation of Remediation Protocol and submit to the undersigned.

Pursuant to Environment Act, 122A(1) the following action(s) must be completed by April 2, 2014:

Obtain a Site Professional to complete an environmental site assessment in accordance with PRO-200, Environmental Site Assessment for Limited Remediation Protocol and submit to the undersigned.

Pursuant to Environment Act, 122A(1) the following action(s) must be completed by October 4, 2015:

Obtain a Site Professional to complete a confirmation of remediation report in accordance with PRO-700, Confirmation of Remediation Protocol and submit to the undersigned.

The action(s) outlined in this Directive are the minimum required. Additional actions may be needed to address the non-compliance item(s) identified in this report. Where necessary, you may need to secure the services of a firm/person with sufficient knowledge, experience, and certification to address any item (s) of non-compliance.

Be advised that failing to undertake all action(s) within the time frame specified in this Directive is an offence and may result in further enforcement. An investigation involving the non- compliance item(s) identified in this report continues and is separate from the requirements of this Directive.

Signature of Issuing Inspector:

June Tar-

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This Directive was issued by Jesse McLean, Inspector Specialist with Nova Scotia Environment, who may be contacted at:

Nova Scotia Environment 60 Logan Road Bridgewater, N.S. B4V 3J8 Phone: (902) 543-4685 Fax: (902) 527-5480 http://www.gov.ns.ca/nse/

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Supporting text where applicable:

Prohibition s.67 - (1) No person shall knowingly release or permit the release into the environment of a substance in an amount, concentration or level or at a rate of release that causes or may cause an adverse effect, unless authorized by an approval or the regulations.(2) No person shall release or permit the release into the environment of a substance in an amount, concentration or level or at a rate of release that causes or may cause an the release or permit the release or permit the release into the environment of a substance in an amount, concentration or level or at a rate of release that causes or may cause an adverse effect, unless authorized by an approval or the regulations. Environment Act 1994-95, c. 1

Duty to take remedial measures s.71 - Any person responsible for the release of a substance under this Part shall, at that person's own cost, and as soon as that person knows or ought to have known of the release of a substance into the environment that has caused, is causing or may cause an adverse effect, (a) take all reasonable measures to(i) prevent, reduce and remedy the adverse effects of the substance, and (ii) remove or otherwise dispose of the substance in such a manner as to minimize adverse effects;(b) take any other measures required by an inspector or an administrator; and (c) rehabilitate the environment to a standard prescribed or adopted by the Department. Environment Act 1994-95, c. 1

Assistance to inspectors s.118 - The owner or occupier of any place, or any person the inspector reasonably believes is related to or associated with any activity at the place, in respect of which an inspector is exercising powers or carrying out duties pursuant to this Part shall(a)give the inspector all reasonable assistance to enable the inspector to exercise those powers and carry out those duties(b) furnish all information relative to the exercising of those powers and the carrying out of those duties that the inspector may reasonably require. Environment Act, 1994-95, c.1

Right of entry and inspection s.119 (1) - For the purpose of ensuring compliance with this Act, the regulations, a standard or an order made under Part XIII, an inspector, subject to Sections 22 and 120, may, at any reasonable time, (g) where the inspector believes that any thing may release, is releasing or has released into the environment a substance that may cause, is causing or has caused an adverse effect, (i) require the person having care, management or control of the thing to detain the thing at the place where it is found. Environment Act, 1994-95, c.1

Right of entry and inspection s.119 (1) - For the purpose of ensuring compliance with this Act, the regulations, a standard or an order made under Part Xili, an inspector, subject to Sections 22 and 120, may, at any reasonable time (h) require the production of any documents that are required to be kept pursuant to this Act or any other documents that are related to the purpose for which the inspector is exercising any power under clauses (a) to (g). Environment Act, 1994-95, c.1

Inspector Directives s. 122A (1) - An inspector may issue a directive to a person requiring the person to (a) take such measures in accordance with clause 71(b) as the inspector may specify; (b) furnish the inspector with information in accordance with clause 118(b); (c) detain a thing in accordance with subclause 119(1)(g)(i); (d) produce a document in accordance with clause 119(1)(h); or (e) take any action prescribed by the regulations in any circumstance prescribed by the regulations. (2) A directive is not subject to appeal or review under this Act. Environment Act, 1994-95, c.1

Folder RSN: 2801218

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March 28, 2014

45 Akerley Boulevard Dartmouth, Nova Scotia B3B 1J7 Telephone: (902) 468-1248 Fax: (902) 468-2207 www.CRAworld.com

Reference No. 059548-03

Imperial Oil Environmental Services 1 Duncan Mill Road North York, Ontario M3B 1Z2

Dear Ms. Hazell:

Re: Re-cast Data for the Former Imperial Oil Bulk Plant Property 64 Mill Lake Road No. 2, Hubbards, Nova Scotia (PID 60082138)

Conestoga-Rovers & Associates (CRA) is pleased to provide Imperial Oil with two figures displaying historical soil and groundwater petroleum hydrocarbon analytical data obtained through assessment of the former Imperial Oil bulk plant property located at 64 Mill Lake Road No. 2 in Hubbards, Nova Scotia. The historical soil and groundwater petroleum hydrocarbon data displayed on the attached figures has been compared to the most recent Nova Scotia Environment (NSE) Tier I Environmental Quality Standards (EQSs) for a commercial property with coarse-textured soil and potable groundwater usage.

We trust this submission meets with your requirements, however if you have any questions please contact the undersigned at your convenience.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

Scott Llewellyn, B.Sc., P.Geo.

MF/mb/2 Encl.



Imperial Oil 1 Duncan Mill Road North York, ON M3B 1Z2 P. W. Ingle Manager Environmental Services Facsimile: 416-442-5142

March 31, 2014

Via Purolator

Nova Scotia Environment Central Region 30 Damascus Road, Suite 115 Bedford Commons, Bedford, NS B4A 0C1

Re: Contaminated Sites Regulations – Submission of Assessment Checklists and Environmental Reports

To whom it may concern,

Pursuant to Section 13 (1) a of the Contaminated Sites Regulations, made under the Environment Act, Imperial Oil hereby submits the Assessment Checklists and associated Phase I and II Environmental Site Assessment reports under Limited Remediation pathway for the site:

• PID #60082138 64 Mill Lake Road No. 2, Hubbards, NS, B0J 1T0

The following documents are enclosed:

- Environmental Site Assessment for Limited Remediation Checklist (CHK-200)
- Phase 1 Environmental Site Assessment Checklist (CHK-300)
- Phase 2 Environmental Site Assessment Checklist (CHK-400)
- Phase I Environmental Site Assessment 64 Mill Lake Road, Hubbards Final Report by Dillon Consulting Limited dated November 2003
- Phase II Environmental Site Assessment 64 Mill Lake Road, Hubbards Final Report by Dillon Consulting Limited dated November 2003
- Re-cast Data for the Former Imperial Oil Bulk Plant Property, 64 Mill Lake Road No.2, Hubbards, Nova Scotia by Conestoga-Rovers & Associates dated March 28, 2014

Please contact the undersigned in case of any inquiries regarding this submission.

Sincerely yours,

Nancy Hazell Project Manager Imperial Oil Environmental Services

Cc: Scott Llewellyn, Conestoga-Rovers & Associates



For all sites undergoing L1, L2 or L3 Limited Remediation

Print

Instructions for completing this checklist

- ALL relevant Sections of the Environmental Site Assessment for Limited Remediation Checklist must be completed in entirety and must accompany the Environmental Site Assessment for Limited Remediation Report.
- · No changes to the Environmental Site Assessment for Limited Remediation Checklist are allowed
- Signatures on this form are required from the managing Site Professional and the Responsible Party, Site Owner or their Approved Agent
- All regulatory protocols must be followed and all forms/checklists must be completed separately for each property. This means that a source property and an impacted third party property must have all documents filed separately. Once the source property or impacted third party property is identified by the check box below, all subsequent reference on this form/checklist are to that site owner.
- · Forms/checklists must be complete prior to filing with the Minister

1 - Site Location and Contact Information

Site owner and details provided on this form are applicable to 🗹 Source Property **OR** 🖵 Impacted Third Party Property

Current Site Owner		
Contact Information	Name <u>Nancy Hazell</u>	Phone (416) 442-5008
	Email <u>nancy.hazell@esso.ca</u>	Fax (416) 442-5142
Site Location	Site Address 64 Mill Lake Road No. 2	City Hubbards
	Parcel Identification Number (PID): 60082138	Postal Code BOJ 1TO
Mailing Address	Company Name Imperial Oil	City <u>North York</u>
	Address <u>1 Duncan Mill Road</u>	Postal Code <u>M3B 1Z2</u>

Approved Agent (if acting on behalf of the owner)						
Contact Information	Name	Phone				
	Email	Fax				
Mailing Address	Company Name	City				
	Address	Postal Code				

Site Professional		
Contact Information	Name <u>Scott Llewellyn</u>	Phone (902) 468-1248
	Email <u>sllewellyn@craworld.com</u>	Fax (902) 468-2207
Mailing Address	Company Name <u>Conestoga-Rovers and Associates Ltd.</u>	City <i>Dartmouth</i>
	Address <u>45 Akerley Boulevard</u>	Postal Code <u>B3B 1J7</u>

2 - Environmental Site Assessment (ESA) Requirements for Limited Remediation

Type (Chec	of Environmental Site A sk type of ESA completed	ssessment conducted	l under Limited Remediation bonding section below)			
	I ESA 🛄 L2 ESA	L3 ESA				
L1 Environmental Site Assessment Requirements Supporting Reference Information Document provided					ence ment	
Confi Page has b <i>Limit</i>	rm the following inform Number where informa een completed in accor ed Remediation Protoco	ation has been submi tion is documented. 1 dance with the PRO-2 ol.	tted to the Department. Indicate Repo The Site Professional must ensure all 200, <i>Environmental Site Assessment f</i>	ort and Yes work for	Section	Page Number
Restr All av first k	ictions for use of L1 ailable records related to nown developed use to t) known or possible cc the conclusion of the F	ontamination of the property, must be o Phase 1 ESA, including the following	btained, reviewed and	reported, fro	om the
1	Contamination has not e subsurface have been fu contact with groundwate	extended below the wa ully investigated to ens er	ter table. All potential pathways in the sure contamination has not come into			



L1 Ei	ivironmental Site Assessment Requirements	Supporting Information provided	Refei Docu	rence ment
Confi Page has t <i>Limi</i>	rm the following information has been submitted to the Department. Indicate Report and Number where information is documented. The Site Professional must ensure all work been completed in accordance with the PRO-200, <i>Environmental Site Assessment for</i> ted Remediation Protocol.	Yes	Section	Page Number
2	Contaminants listed in Section 4.1 b) of the PRO-200, <i>Environmental Site Assessment for Limited Remediation Protocol</i> exceeding Tier 1 EQS criteria undergoing remediation were not present at a depth greater than 0.3 m from surface			
3	Contamination has not directly impacted a watercourse, wetland or potable water supply			
4	Contamination has not come in contact with bedrock on a potable site			
5	Measures greater than short-term emergency action and/or temporary excavation are not required to address vapours within a building			
Intru	sive Investigation			
6	All contamination has been delineated to appropriate Tier 1 EQS criteria specified in the Pro-100, <i>Notification of Contamination Protocol</i>			
7	With the exception of the evaluation process for inaccessible soils below building structures outlined in this PRO-200, <i>Environmental Site Assessment for Limited Remediation Protocol</i> , including the use of Tier 2 PSS tables where applicable, all contamination has been remediated to appropriate Tier 1 EQS criteria			
8	Confirmatory soil samples have been collected from the side walls and floor of the excavation in accordance with Table 1 (Confirmatory Sampling Requirements) of the PRO-700, <i>Confirmation of Remediation Protocol</i>			
9	Where contaminated soil below any part of a building footprint has been left in place, full delineation of contamination and verification through soil vapour, sub-slab or indoor air sampling that the indoor air quality is not affected above an acceptable level has been completed			
10	Where contaminated soil has extended to bedrock on non-potable sites and no evidence of free product is present, the site professional has used their professional judgement to determine whether a groundwater assessment is required. In cases where it is determined that a groundwater assessment is not required, the soil vapour/indoor air sampling requirements outlined in Section 4.2.3 of PRO-200, <i>Environmental Site Assessment for Limited Remediation Protocol</i> have been met			
11	Composite soil sampling procedures for volatile organic compounds have not been used			
12	On sites where there is a potable well or spring supplied water source, the well or spring has been analyzed for the contaminant being addressed in the soil			
13	Evaluation of soil vapour, sub-slab or indoor air accomplished through the collection and interpretation of empirical site data where contaminants in soil above the Tier 1 EQS, (including soil above the Tier 1 EQS and below the applicable Tier 2 PSS) is left below a building structure			
14	Evaluation of soil vapour, sub-slab or indoor air accomplished through the collection and interpretation of empirical site data where contaminated soil, containing gasoline or volatile organic compounds has extended to bedrock and a groundwater assessment has not been conducted on a non-potable site. In such instances, all buildings (dwellings) located within 30 meters of the source have been assessed			
15	Evaluation of soil vapour, sub-slab or indoor air accomplished through the collection and interpretation of empirical site data where building(s) (dwelling(s)) has a dirt floor, open sump, or rock foundation			
16	Soil vapour, sub-slab and indoor air sampling work followed the latest version of the Atlantic RBCA Guidance for Soil Vapour and Indoor Air Monitoring Assessments available from the Atlantic RBCA website (atlanticrbca.com)			
17	All sampling and analysis have conformed to the laboratory requirements identified in Section 4.2.4 of the PRO-200, <i>Environmental Site Assessment for Limited Remediation Protocol</i>			



L1 E	nvironmental Site Assessment Requirements	Supporting Information provided	Refei Docu	rence ment
Conf Page has I <i>Limi</i>	irm the following information has been submitted to the Department. Indicate Report and Number where information is documented. The Site Professional must ensure all work been completed in accordance with the PRO-200, <i>Environmental Site Assessment for</i> ted Remediation Protocol.	Yes	Section	Page Number
Repo	rting		1.011	
The e Regu the C	environmental site assessment, remedial action plan and confirmation report requirements of the <i>ulations</i> may be compiled and documented in a single report for an L1 limited remediation. The <i>Contaminated Sites Regulations</i> must be followed.	time requirem	ed Sites ents specifi	ed in
18	A cover page title that identifies the site location, site owner(s) and site name, if applicable			
19	Project background description			
20	Basic site information, including physical address, PID and GPS coordinates if available			
21	Summary of the results and findings of the L1 ESA			
22	Site plan(s) showing the site location, location of sample points. All spatial information must be represented on a scaled diagram			
23	Results of all analyses conducted must be displayed in a table and compared to relevant environmental quality standards, with exceedance values/data highlighted			
24	Interpretation and evaluation of the findings from the site investigation, which identify and describe any contaminants found at the site including concentrations, locations, possible sources, potential pathways and receptors of concern			
25	Clear and concise conclusions of the L1 ESA, including a summary of risks posed by contaminants remaining on site and potential risk to receptor(s) both on and off the property			
26	Recommendations regarding risks posed by any contaminants remaining on site, and recommended action(s)			
27	Excavation practices			
28	Soil sampling procedures used for each contaminant			
29	QA/QC procedures			
30	Copies of laboratory analytical data sheets			
31	Site professional sign-off, with original or electronic signatures, and a stamp/seal confirming the findings and conclusions contained in the report			
L2 E	nvironmental Site Assessment Requirements	Supporting	Refe	ence
		Information provided	Docu	ment
Conf Page has l <i>Limi</i>	irm the following information has been submitted to the Department. Indicate Report and Number where information is documented. The Site Professional must ensure all work been completed in accordance with the PRO-200, <i>Environmental Site Assessment for</i> ted Remediation Protocol.	Yes	Section	Page Number
1	Contamination associated with a known release or event from a single source			
Intru	sive Investigation			
2	Soil sampling conducted at source area			
3	Groundwater flow direction, velocity, hydraulic gradient, and elevation has been evaluated by the placement of at least 3 drilled boreholes and the installation of monitoring wells within the boreholes			
4	Determination has been made whether free product in soil or groundwater exist at the site			
5	Horizontal extent of soil contamination on and off the property, for each contaminant has been determined and described in text and on a graphical site plan			
6	The estimated area of soil contamination exceeding applicable environmental quality standards on and off the property have been calculated for each contaminant			
7	The vertical extent of soil contamination on and off the property has been determined, including the maximum depth at which contamination was identified, and confirmation that			

the vertical depth of contamination has been determined, using site profiles as appropriate



L2 Environmental Site Assessment Requirements			Refei Docu	rence ment
Conf Page has I <i>Limi</i>	irm the following information has been submitted to the Department. Indicate Report and Number where information is documented. The Site Professional must ensure all work been completed in accordance with the PRO-200, <i>Environmental Site Assessment for</i> ted Remediation Protocol.	Yes	Section	Page Number
8	The horizontal and vertical extent of groundwater contamination, exceeding applicable environmental quality standards has been determined, on and off the property for each contaminant, and is described in text and on a graphical site plan			
9	Any sediment or surface water contamination, exceeding applicable environmental quality standards has been determined, on and off the property for each contaminant, and is described on a graphical site plan, if applicable			
10	A description of regional drainage, geology and hydrogeology has been provided			
11	A description of local drainage, geology, hydrogeology, and water use (obtained through nonintrusive site inspection, intrusive site investigation and available site information) has been provided			
12	Laboratories that have performed analysis are accredited to ISO/IEC 17025 standards (and subsequent revisions) by the Standards Council of Canada (SCC) or the Canadian Association of Laboratory Accreditation Inc. (CALA)			
13	All sampling and analysis has been conducted in accordance with laboratory-approved recommendations concerning sample containers, storage and preservation			
14	Appropriate laboratory analytical methods have been used to ensure adequate conformance to data quality objectives, assessment endpoints (ecological or human health) and method/ reportable detection limits			
Repo	orting			
15	A cover page title that identifies a L2 ESA, the site location, site owner(s) and site name, if applicable			
16	Project background description			
17	Basic site information, including physical address, PID and GPS coordinates if available			
18	Summary of all preliminary work and field activities conducted at the site as part of the Limited Phase 2 ESA program			
19	Conceptual site model which represent an understanding of the site characteristics, including expected locations of contaminants, likely contaminant transport mechanisms, and the existence of potentially preferential pathways for contaminant transport to receptors			
20	A description of geological, hydrogeological and hydrological information as required by this PRO-200, <i>Environmental Site Assessment for Limited Remediation Protocol</i>			
21	Site plans showing the site location, location of sample points, groundwater elevation maps, and location(s) of samples exceeding the applicable regulatory criteria. Locations where contaminant concentrations exceed background values should also be identified. All spatial information must be represented on a scaled diagram			
22	Results of all analyses conducted must be displayed in a table and compared to relevant environmental quality standards, with exceedance values/data highlighted			
23	Interpretation and evaluation of the findings from the site investigation, which identify and describe any contaminants found at the site including concentrations, locations, source, potential pathways and receptors of concern			
24	Clear and concise conclusions of the Limited Phase 2 ESA, including a summary of risks posed by contaminants remaining on site and potential risk to receptor(s) both on and off the property			
25	Recommendations regarding risks posed by any contaminants remaining on site, and recommended action(s)			
26	A list of any references and supporting documentation used in the preparation of the Limited Phase 2 ESA report			
27	Complete test pit, borehole stratigraphic, and monitoring well installation logs			
28	Borehole drilling practices			
29	Excavation practices			



L2 Environmental Site Assessment Requirements		Supporting Information provided	Refei Docu	rence ment
Confirm the following information has been submitted to the Department. Indicate Report and Page Number where information is documented. The Site Professional must ensure all work has been completed in accordance with the PRO-200, <i>Environmental Site Assessment for Limited Remediation Protocol</i> .		Yes	Section	Page Number
30	Soil sampling procedures used for each contaminant			
31	Monitoring well installation, development and groundwater sampling procedures			
32	QA/QC procedures			
33	Copies of laboratory analytical data sheets			
34	34 Site professional sign-off, with original or electronic signatures, and a stamp/seal confirming the findings and conclusions contained in the report			
L3 Environmental Site Assessment Requirements		Supporting	Refe	rence

		provided	DUGU	mem
Confirm the following information has been submitted to the Department. Indicate Report and Page Number where information is documented. The Site Professional must ensure all work has been completed in accordance with the <i>Environmental Site Assessment for Limited Remediation Protocol.</i>		Yes	Section	Page Number
Inve	stigation			
1	Phase 1 ESA conducted in accordance with PRO-300, <i>Phase 1 ESA Protocol</i> Phase 2 ESA conducted in accordance with PRO-400, <i>Phase 2 ESA Protocol</i>	Z		
Repo	orting			
2	Phase 1 ESA reporting requirements completed in accordance with PRO-300, <i>Phase 1 ESA Protocol</i>	Ľ		
3	CHK-300, Phase 1 ESA checklist has been completed and appended to this checklist			
4	Phase 2 ESA reporting requirements conducted in accordance with PRO-400, <i>Phase 2 ESA Protocol</i>			
5	CHK-400, Phase 2 ESA checklist has been completed and appended to this checklist	Ľ		

3 - Declaration

Site Professional Declaration

I acknowledge it is an offence under Section 158 of the *Environment Act* to provide false or misleading information, and confirm to the best of my knowledge and belief the information provided in this form and supporting documentation is true and accurate and complies with the relevant provisions of the *Environment Act* and *Contaminated Sites Regulations*.

Name (Print)	Scott Llewellyn
--------------	-----------------

Professional R	egistration	Number/Stamp	<i>019/APGNS</i>
1 10100010110110110	ogiotiation	runnoon, otanno	

Signature

Date	03/27/2014
	MM/DD/YYYY

Declaration of Responsible Party, Site Owner or Approved Agent

Site Professional

acknowledge that the above Site Professional has been engaged and acts on my behalf [or, on behalf of <u>Imperial Oil</u> (insert name of site owner)] in preparing this Enivronmental Site Assessment for Limited Remediation Checklist.		
All impacted, or potentially impacted, third-party property owners have been formally not any contaminants migrating, or likely to migrate off-site	ified according to provincial requirements of	
Name (Print, indicate if Approved Agent)Nancy HazellAddress1 Duncan Mill Road, North York, Ontario M3B 1Z2	Signature Date <u>03/28/2014</u>	

Return completed form and associated documents to Regional Office.

To find your Regional Office go online at http://www.gov.ns.ca/nse/dept/division.emc.asp#central or call 1-877-936-8476





Phase 1 Environmental Site Assessment Checklist

NSE File #:

For all sites undergoing Full Property Remediation and L3 sites undergoing Limited Remediation

Instructions for completing this checklist

- ALL relevant Sections of the Phase 1 Environmental Site Assessment Checklist must be completed in entirety and must accompany the Phase 1 Environmental Site Assessment (ESA) Report
- No changes to the Phase 1 ESA Checklist are allowed
- Signatures on this form are required from the managing Site Professional and the Responsible Party, Site Owner or their Approved Agent
- All regulatory protocols must be followed and all forms/checklists must be completed separately for each property. This means that a source property and an impacted third party property must have all documents filed separately. Once the source property or impacted third party property is identified by the check box below, all subsequent reference on this form/checklist are to that site owner.
- · Forms/checklists must be complete prior to filing with the Minister

1 - Site Location and Contact Information

Site owner and details provided on this form are applicable to 🛛 Source Property 🛛 OR 🗋 Impacted Third Party Property

Current Site Owner		
Contact Information	Name Nancy Hazell	Phone (416) 442-5008
	Email <u>nancy.hazell@esso.ca</u>	Fax (416) 442-5142
Site Location	Site Address 64 Mill Lake Road No. 2	City Hubbards
	Parcel Identification Number (PID): 60082138	Postal Code BOJ 1TO
Mailing Address	Company Name Imperial Oil	City North York
	Address <u>1 Duncan Mill Road</u>	Postal Code <u>M3B 1Z2</u>

Approved Agent (if acting on the behalf of the owner)				
Contact Information	Name	Phone		
	Email	Fax		
Mailing Address	Company Name	City		
	Address	Postal Code		

Site Professional		
Contact Information	Name <u>Scott Llewellyn</u>	Phone (902) 468-1248
	Email _sllewellyn@craworld.com	Fax (902) 468-2207
Mailing Address	Company Name <u>Conestoga-Rovers and Associates Ltd.</u>	City <i>Dartmouth</i>
	Address 45 Akerley Boulevard	Postal Code B3B 1J7

2 - Site Assessment Requirements

Site Assessment Requirements		Supporting Information provided	Refe Docu	rence ment
Confirm the following information has been submitted to the Department. Indicate Report and Page Number where information is documented. The Site Professional must ensure all work has been completed in accordance with PRO-300, <i>Phase 1 Environmental Site Assessment Protocol</i> .		Yes	Section	Page Number
Reco All av first	r ds Review _/ ailable records related to known or possible contamination of the property, must be obtained, r known developed use to the conclusion of the Phase 1 ESA, including the following	eviewed and r	eported, fro	om the
1	Owner names and dates of ownership for the property based on a search of the property that commences with the date of the first known developed use of the property	Z	3.6	10-11
2	Any operators, leases, or tenants of the property owner, and a description of any operations or use of the property	Ľ	2.1	4
3	Aerial photographs that illustrate as much as possible the period from the study area's first developed use to the time of the Phase 1 ESA	Ľ	App A	
4	Site and building plans of past and existing property use, including fire insurance records, municipal land use plans, and any other information that may be available from historically archived sources	R	Арр В	



Phase 1 Environmental Site Assessment Checklist

Site Assessment Requirements			Refe Docu	rence Iment
Confi Page work <i>Asse</i>	rm the following information has been submitted to the Department. Indicate Report and Number where information is documented. The Site Professional must ensure all has been completed in accordance with PRO-300, <i>Phase 1 Environmental Site</i> ssment Protocol.	Yes	Section	Page Number
5	Maps and reports that provide regional information concerning geological conditions pertaining to the type of soil and bedrock in the area where the property is located	Z	2.3	7
6	Topographic maps		2.2	7
7	Environmental site assessment reports, or previously completed Phase 1 ESA reports		N/A	
8	Contaminated site remediation reports, including remedial action plans		N/A	
9	Reports prepared in response to an order or directive of an inspector, administrator or the Minister		N/A	
10	Environmental records obtained from government sources, including municipal, provincial or federal authorities and regulatory agencies	Ľ	App C	
11	Drilled well reports		N/A	
12	Any other reports, including releases and spills relating to the presence of a contaminant on, in or under the property, or the existence of an area of potential environmental concern that may or has caused contamination of the property		N/A	
13	Subsurface utility locations		F3	6
14	Hydraulic lift locations		N/A	
15	Any inventories of chemicals, chemical usage and chemical storage areas that have or may have caused contamination, including material safety data sheets	Ľ	3.8	11-12
16	Any records of above ground storage tanks and underground storage tanks		3.8	11-12
17	Any details of oil/water separators at the property including for each separator the location, installation date, source of incoming liquid and effluent discharge location	Ľ	<i>F3/3</i> .8	6/12
18	All vehicle and equipment maintenance areas, including the locations of maintenance, fluid storage, and waste storage areas		F3	6
19	Details of all spills including the dates, locations, materials involved, and volumes of material spilled		N/A	
20	Details of liquid discharge points such as water and French drains, including locations		2.4	7
21	Any process or property use related documents that may relate to potential or actual contamination, including waste management records, environmental monitoring data and environmental management system records		N/A	
22	Available records have been obtained, reviewed and reported for properties immediately adjacent to the subject property, or otherwise as determined and documented. Available records, including: aerial photographs, publically available municipal land use records and fire insurance plans, current and past ownership information related to property use, environmental records, including drilled water supply (well records), obtained from government sources, including municipal, provincial or federal authorities and regulatory agencies. environmental management system records	Z	3.0	8-14
23	All sources of information obtained and reviewed as part of the records review component must be documented have been included in the Phase 1 ESA report, including sources checked that provided no relevant information	Z	3.0	8-14
Site A site	Visit e visit has been conducted as part of a Phase 1 ESA to assess, document, collect and report on	the following,	as a minim	num
24	Photographs of the property and surrounding properties in all directions, including a written description of the photographs, with reference to any relevant interior or exterior structures or infrastructure on the property that may relate to potential or actual contamination of the site	Ľ	App A	
25	Confirmation of property land use and immediate surrounding land use, structures present on the property and their general location, and relevant site features, including a description of any drinking water supplies, watercourses present on site, and surface water drainage from the property, including storm water drainage	Z	4.1	15
26	Topographic conditions on and off the property have been observed and noted, including the site gradient, direction, and the type of vegetation or ground cover on the property	Ľ	2.0	4-7
27	Confirmation of water supply location and condition		4.2.3	16



Phase 1 Environmental Site Assessment Checklist

Site .	Assessment Requirements	Supporting Information provided	Refe Docu	rence ment
Confi Page work <i>Asse</i>	rm the following information has been submitted to the Department. Indicate Report and Number where information is documented. The Site Professional must ensure all has been completed in accordance with PRO-300, <i>Phase 1 Environmental Site</i> ssment Protocol.	Yes	Section	Page Number
28	Confirmation of the location and condition of structures used for any previous environmental activity including monitoring wells, remediation wells, in-situ treatment zones and vapour extraction systems		N/A	
29	Confirmation of the location and condition of any previous remediation excavations and soil removal		N/A	
30	Presence of any open subsurface features such as lagoons, pits, trenches and excavations		N/A	
31	If known, details of all storage tanks and containers, above and below ground at the property, including the material and method of construction of each, age, contents and volume, and whether the tank or container is in use or not	Z	3.8	11-12
32	Confirmation and approximate location of underground utility and service corridors, including sumps and floor drains, sewer, water, electrical or gas lines, and telephone/fibre optic infrastructure located on, in or under the property	Z	F3	6
33	Areas of stained soil, vegetation or pavement		4.2.15	17
34	Stressed vegetation		N/A	
35	Areas where fill and debris materials appear to have been placed or graded		4.2.10	16
36	Potentially contaminating activity	R	4.2	15-17
37	Details of any unidentified substances found at the property, including container type, volume and physical state (solids or liquids)		N/A	
38	Hazardous materials present on the property	Ľ	4.2	15-17
39	Presence of odours detected during the site visit that may be related to the property and potential for contamination		N/A	
40	Any limitations related to visual observations, including obstructions related to buildings, site features, safety issues impeding access, and weather related conditions affecting visibility and ground cover at the time of the site visit		N/A	
41	Confirmation of other significant information arising from the review of available records		N/A	
Inter	views			
42	A list of all persons identified to be interviewed and their current status or connection with the property in question	Ľ	3.5	10
43	A list of those persons identified but not interviewed, with reasons why they were not interviewed		N/A	
Repo Infor the fo	r ting mation obtained from the records review, site visit, and interviews has been summarized in a f ollowing:	inal report wh	ich provide)S
44	All the relevant findings consistent with the requirements of the Phase 1 ESA and presents these in a clear, organized manner that identifies the potential or actual contamination of the property, supported by the rationale and basis	Z	5.0	18
45	The potential or actual chemicals of concern and affected media identified at the property	ľ	5.0	18
46	A distinguishing of factual information from professional opinion		various	
47	The identification of the potential or actual contamination of the property, supported by the rationale	Ľ	5.0	18
48	The identification of the potential or actual chemicals of concern and affected media at the property	Ľ	5.0	18
49	All limitations to carrying out and fulfilling the requirements of performing the Phase 1 ESA in accordance with PRO-300, <i>Phase 1 ESA Protocol</i> , including: a description of the limitation related to the requirement, the rationale for not fulfilling the requirement and the significance of the limitation related to the findings	Z	6.0	19-20



3 - Declarations

Site Professional Declaration								
I acknowledge it is an offence under Section 158 of the <i>Environment Act</i> to provide false or misleading information, and confirm to the best of my knowledge and belief the information provided in this form and supporting documentation is true and accurate and complies with the relevant provisions of the <i>Environment Act</i> and <i>Contaminated Sites Regulations</i> .								
Name (Print) Scott Llewellyn	Professional Registration Number/Stamp <u>019/APGNS</u>							
Signature Site Professional	Date <u>03/27/2014</u> MM/DD/YYYY							
Declaration of Responsible Party, Site Owner or Approved Agent								
I acknowledge that the above Site Professional has been engaged and acts on my behalf [or, on behalf of <u>Imperial Oil</u> (insert name of site owner)] in preparing this Phase 1 ESA Checklist. All impacted, or potentially impacted, third-party property owners have been formally notified according to provincial requirements of								
Name (Print, indicate if Approved Agent) <u>Nancy Hazell</u>	Signature							
Address <u>1 Duncan Mill Road, North York, Ontario M3E</u>	Date <u>03/28/2014</u> MM/DD/YYYY							

Return completed form and associated documents to Regional Office.

To find your Regional Office go online at *http://www.gov.ns.ca/nse/dept/division.emc.asp#central* or call 1-877-936-8476





Phase 2 Environmental Site Assessment Checklist

NSE File #:

For all sites undergoing Full Property Remediation and L3 sites undergoing Limited Remediation

Instructions for completing this checklist

- ALL relevant Sections of the Phase 2 Environmental Site Assessment Checklist must be completed in entirety and must accompany the Phase 2 Environmental Site Assessment (ESA) Report
- No changes to the Phase 2 ESA Checklist are allowed
- Signatures on this form are required from the managing Site Professional and the Responsible Party, Site Owner or their Approved Agent
- All regulatory protocols must be followed and all forms/checklists must be completed separately for each property. This means that a source property and an impacted third party property must have all documents filed separately. Once the source property or impacted third party property is identified by the check box below, all subsequent reference on this form/checklist are to that site owner.
- · Forms/checklists must be complete prior to filing with the Minister

1 - Site Location and Contact Information

Site owner and details provided on this form are applicable to 🗹 Source Property **OR** 🖵 Impacted Third Party Property

Current Site Owner		
Contact Information	Name <u>Nancy Hazell</u>	Phone (416) 442-5008
	Email <u>nancy.hazell@esso.ca</u>	Fax (416) 442-5142
Site Location	Site Address 64 Mill Lake Road No. 2	City Hubbards
	Parcel Identification Number (PID): 60082138	Postal Code BOJ 1TO
Mailing Address	Company Name Imperial Oil	City North York
	Address <u>1 Duncan Mill Road</u>	Postal Code <u>M3B 1Z2</u>

Approved Agent (if acting on the behalf of the owner)								
Contact Information	Name	Phone						
	Email	Fax						
Mailing Address	Company Name	City						
	Address	Postal Code						

Site Professional		
Contact Information	Name Scott Llewellyn	Phone (902) 468-1248
	Email _sllewellyn@craworld.com	Fax (902) 468-2207
Mailing Address	Company Name <u>Conestoga-Rovers and Associates Ltd.</u>	City Dartmouth
	Address 45 Akerley Boulevard	Postal Code B3B 1J7

2 - Site Assessment Requirements

Site	Assessment Requirements	Supporting Information provided	Refe Docı	rence iment
Conf Page work <i>Asse</i>	irm the following information has been submitted to the Department. Indicate Report and e Number where information is documented. The Site Professional must ensure all c has been completed in accordance with PRO-400, <i>Phase 2 Environmental Site</i> essment Protocol.	Yes	Section	Page Number
Intru	sive Investigation			
1	Soil sampling conducted at each potential source area	Ľ	3.6	10-11
2	Groundwater flow direction, velocity, hydraulic gradient, and elevation has been evaluated by the placement of at least 3 drilled boreholes and the installation of monitoring wells within the boreholes.	Ľ	2.1	4
3	Determination has been made whether free product in soil or groundwater exist at the site	Ľ	App A	
4	Horizontal extent of soil contamination on and off the property, for each contaminant has been determined and described in text and on a graphical site plan	Ľ	App B	



Phase 2 Environmental Site Assessment Checklist

Site	Assessment Requirements	Supporting Reference Information Document provided		rence ment
Conf Page work <i>Asse</i>	irm the following information has been submitted to the Department. Indicate Report and P Number where information is documented. The Site Professional must ensure all has been completed in accordance with PRO-400, <i>Phase 2 Environmental Site</i> Issment Protocol.	Yes	Section	Page Number
5	The estimated area of soil contamination exceeding applicable environmental quality standards on and off the property have been calculated for each contaminant	Ľ	N/A	
6	The vertical extent of soil contamination on and off the property has been determined, including the maximum depth at which contamination was identified, and confirmation that the vertical depth of contamination has been determined, using site profiles as appropriate	Ľ	App II	
7	The horizontal and vertical extent of groundwater contamination, exceeding applicable environmental quality standards has been determined, on and off the property for each contaminant, and is described in text and on a graphical site plan		4.5	26-28
8	Any sediment or surface water contamination, exceeding applicable environmental quality standards has been determined, on and off the property for each contaminant, and is described on a graphical site plan, if applicable		N/A	
9	A description of regional drainage, geology and hydrogeology has been provided		<u>4.1, 4.2</u>	11
10	A description of local drainage, geology, hydrogeology, and water use (obtained through non-intrusive site inspection, intrusive site investigation and available site information) has been provided	Ľ	2.1	3
11	Laboratories that have performed analysis are accredited to ISO/IEC 17025 standards (and subsequent revisions) by the Standards Council of Canada (SCC) or the Canadian Association of Laboratory Accreditation Inc. (CALA)		App VII	
12	All sampling and analysis has been conducted in accordance with laboratory-approved recommendations concerning sample containers, storage and preservation		3.0	6-10
13	Appropriate laboratory analytical methods have been used to ensure adequate conformance to data quality objectives, assessment endpoints (ecological or human health) and method/ reportable detection limits	Ľ	App VII	
Repo	orting			
14	A cover page title that identifies a Phase 2 ESA, the site location, site owner(s) and site name, if applicable		Cover	
15	Project background description	Ľ	2.0	3
16	Basic site information, including physical address, PID and GPS coordinates if available	Ľ	2.1	3
17	Summary of the results and findings of the Phase 1 ESA	Ľ	2.2	5
18	Summary of all preliminary work and field activities conducted at the site as part of the Phase 2 ESA program	Ľ		i-ii
19	Conceptual site model which represent an understanding of the site characteristics, including expected locations of contaminants, likely contaminant transport mechanisms, and the existence of potentially preferential pathways for contaminant transport to receptors		N/A	
20	A description of geological, hydrogeological and hydrological information as required by this protocol	Ľ	4.1, 4.2	11
21	The choice and rationale for the sampling program, including a technical summary of areas and compounds of concern resulting from the Phase 1 ESA			i-ii
22	Site plans showing the site location, location of sample points, groundwater elevation maps, and location(s) of samples exceeding the applicable regulatory criteria. Locations where contaminant concentrations exceed background values should also be identified. All spatial information must be represented on a scaled diagram	Ľ	pg. 2, 4	, 8, 12
23	Results of all analyses conducted must be displayed in a table and compared to relevant environmental quality standards, with exceedance values/data highlighted	Ľ	4.0	15-28
24	Interpretation and evaluation of the findings from the site investigation, which identify and describe any contaminants found at the site including concentrations, locations, possible sources, potential pathways and receptors of concern	Ľ	4.4,4.5	14-26
25	Clear and concise conclusions of the Phase 2 ESA, including a summary of risks posed by contaminants remaining on site and potential risk to receptor(s) both on and off the property	Ľ	5.0	30-31
26	A list of any references and supporting documentation used in the preparation of the Phase 2 ESA report	Ľ	N/A	



Phase 2 Environmental Site Assessment Checklist

Site	Assessment Requirements	Supporting Information provided	Refe Docu	rence ment
Conf Page work <i>Asse</i>	irm the following information has been submitted to the Department. Indicate Report and P Number where information is documented. The Site Professional must ensure all has been completed in accordance with PRO-400, <i>Phase 2 Environmental Site</i> Issment Protocol.	Yes	Section	Page Number
27	Complete test pit, borehole stratigraphic, and monitoring well installation logs		App II	
28	Borehole drilling practices		3.1	6
29	Excavation practices		3.1	6
30	Soil sampling procedures used for each contaminant		3.2	6
31	Monitoring well installation, development and groundwater sampling procedures		3.3,3.4	7
32	QA/QC procedures		3.5	9
33	Copies of laboratory analytical data sheets		App VII	
34	Site professional sign-off, with original or electronic signatures, and a stamp/seal confirming the findings and conclusions contained in the report		Cover	

3 - Declarations

Site Professional Declaration								
I acknowledge it is an offence under Section 158 of the <i>Environment Act</i> to provide false or misleading information, and confirm to the best of my knowledge and belief the information provided in this form and supporting documentation is true and accurate and complies with the relevant provisions of the <i>Environment Act</i> and <i>Contaminated Sites Regulations</i> .								
Name (Print) Scott Llewellyn P	rofessional Registration Number/Stamp 019/APGNS							
Signature D	ate <u>03/27/2014</u> MM/DD/YYYY							
Declaration of Responsible Party, Site Owner or Approved Agent	to on my hohalf							
Declaration of Responsible Party, Site Owner or Approved Agent								
[or, on behalf of <i>Imperial Oil</i> (insert r	<i>name of site owner)</i>] in preparing this Phase 2 ESA Checklist.							
All impacted, or potentially impacted, third-party property owners have b any contaminants migrating, or likely to migrate off-site	een formally notified according to provincial requirements of							
Name (Print, indicate if Approved Agent) Nancy Hazell	Signature							
Address <u>1 Duncan Mill Road, North York, Ontario M3B 1Z</u>	Date <u>03/28/2014</u> MM/DD/YYYY							

Return completed form and associated documents to Regional Office.

To find your Regional Office go online at http://www.gov.ns.ca/nse/dept/division.emc.asp#central or call 1-877-936-8476



45 Akerley Boulevard Dartmouth, Nova Scotia B3B 1J7 Telephone: (902) 468-1248 Fax: (902) 468-2207 www.CRAworld.com

June 1, 2015

Reference No. 087042-01-15

Imperial Oil Environmental Services 600 Pleasant Street Dartmouth, Nova Scotia B2Y 3A7

<u>Title</u>: 2015 Groundwater Monitoring and Sampling Data Package – On-Site <u>Site Address</u>: 64 Mill Lake Road, No. 2, Hubbards, Nova Scotia <u>SAP Site Location Number</u>: 88000331 <u>Facility Type</u>: Former Imperial Bulk Plant <u>Limitation of Liability, Scope of Report and Third Party Reliance</u>: Appendix A <u>Sampling Events</u>: May 2015

Scope of Work

- Monitor all accessible monitoring wells for subsurface vapour concentrations, water levels and the presence or absence of free product.
- Collect groundwater samples from all accessible wells for laboratory analysis of benzene, toluene, ethylbenzene and xylenes (BTEX) and petroleum hydrocarbon (PHC) fractions.
- Collect groundwater samples from select wells for laboratory analysis of polycyclic aromatic hydrocarbons (PAH) and select metals.
- Compare the groundwater analytical results to the applicable criteria. For this Site, criteria concerning coarse-grained soils and commercial land use with potable groundwater were used.

Results

- Groundwater Monitoring (Date; Stratigraphic Unit; Depth to Groundwater Range; Groundwater Direction)
 - May 1, 2015; shallow overburden; 1.10 mbtr to 1.62 mbtr; northeast (Table 1)
- Monitoring Well Headspace Vapour (Date; Range)
 - May 1, 2015; <5 ppmv (Table 1)
- Free Product Occurrence (Date; Observations)
 - May 1, 2015; no measurable free product (Table 1 and Figure 4)

NOTICE: ACCESS TO INFORMATION ACT

These documents and the information contained in them are the property of Imperial Oil and any disclosure of same is governed by the provision of each of the applicable provincial or territorial Freedom of Information legislation, the Privacy Act (Canada) 1980-81-82-83, c.111 Sch. II "1", and the Access to Information Act (Canada) 1980-81-82-83, c.111, Sch I "1", as such legislation may be amended or replaced from time to time.

THIS REPORT CONTAINS PROVISIONS LIMITING LIABILITY, THE SCOPE OF THE REPORT AND THIRD PARTY RELIANCE



June 1, 2015

Reference No. 087042-01-15

- 2 -

- Groundwater Analytical Exceedances (Date: Wells)
 - May 1, 2015; no measureable exceedances (Tables 2-4 and Figures 4-6)

Methodology

Subsurface Vapour Concentrations

Immediately after removing the well caps, the maximum subsurface vapour concentrations in the wells were measured using a RKI Eagle[™] combustible gas detector that was operated in methane elimination mode. The collection tube of the RKI Eagle[™] was inserted into the riser pipes and the peak instrument reading recorded.

Combustible Gas Detector Calibrations

The RKI Eagle^M calibration was checked daily in the field, by checking the instrument response against a nominal 40% lower explosive limit (% LEL) concentration standard of n-hexane, delivered at the operational flow rate of the instrument. If the instrument reading was within ±10% of the gas standard value, then the instrument was deemed to be calibrated. However, if the reading was greater than ±10% of the gas standard value, then the instrument calibration was adjusted in the field until the instrument read within ±10% of the gas standard.

Depth to Groundwater and Free Product Thickness

The depths to the water table and presence or absence of free product in the wells were determined with a Solinst electronic interface probe (Model 122) that was cleaned with a non-toxic, biodegradable cleaner/degreaser, then rinsed with clean tap water between monitoring wells.

Purge Sampling Methodology

The monitoring wells were sampled utilizing the purge sampling methodology which includes the removal of three well volumes using dedicated polyethylene tubing and foot valve from each well prior to sampling. The purging procedure is intended to obtain a representative sample of formation groundwater and is the accepted sampling procedure by the Nova Scotia Environment (NSE), and generally accepted industry practices. All groundwater samples were collected using polyethylene tubing with foot valves or bailers that are individually dedicated to each monitoring well.



June 1, 2015

Reference No. 087042-01-15

- 3 -

Laboratory Analysis of Samples

Samples were collected in the appropriate sample containers, using the appropriate preservatives. All sample bottles were supplied by the laboratory. The groundwater samples were placed in coolers with ice immediately after they were collected. The samples were submitted to the Maxxam Analytics Inc. laboratory in Bedford, Nova Scotia. Maxxam is accredited by the Standards Council of Canada (SCC). Analytical methods used are referenced in the certificates of analysis presented in Appendix B.

Quality Assurance and Quality Control Results

The laboratory and field OA/QC discussions are presented in Appendix C. In summary, no QA/QC issues were identified that would materially affect the overall conclusions of the groundwater monitoring and sampling assessment presented in this report.

Closure

We trust the foregoing Information is satisfactory for your requirements. If you have any questions or concerns, please do not hesitate to contact the undersigned.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

Jeffery Veniot C.E.T. Author

Scott Llewellyn P. Geo. Reviewer

JV/mb/4 Encl.



⁰⁸⁷⁰⁴²⁻⁰¹⁻¹⁵ GIS-DA001 MAHY 21/2015





087042-01-15 GN-DA003 MAY 21/2015



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0.1 "a" - Nova Scotia Environment (NSE) 2013 Tier I Environmental Quality Standards (EQSs) for 0.1 a commercial property with coarse textured soll and potable groundwater, Table 4, July 6, 2014

Figure 4

FORMER IMPERIAL OIL BULK PLANT **IMPERIAL OIL** 64 Mill Lake Road No.2, Hubbards, Nova Scotia



087042-01-15 GN-DA005 MAY 21/2015

	FLAN	EI	NA	DE	PH	PV	P(a)A	PialP	Prhie	Bía h ilP	BUIE	BINE	Screen I	nterval: 1.	6-6.1mbgs	
<0.010	< 0.010	<0.010	<0.20	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	
ANTH	FLAN	FL	NA	PE	PH	PY	B[a]A	B[a]P	B[b]F	B[g,h, i]P	B[j]F	B[k]F	Screen I CH	nterval: 1. D[a,h]A	6-4.6mbgs	P
<0.010	<0.010	<0.010	<0.20	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	
RIA ^a 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		RDL 0.05 0.01 0														
- F <i>64</i>	POL 4 M	_Y(CY F(Lak	CL OR ke j	.IC XME <i>Ro</i> a	AF ER <i>ad</i>	roi Im <i>No</i>	МА РЕ 2 <i>.2,</i>	tic Ria <i>Hui</i>	: HY L O <i>bbai</i>	DR IL E IN <i>rds,</i>	OC BUL /IPE <i>Na</i>	F AR K F RI	igur BO PLA AL (<i>Sca</i>	e 5 NS NT OIL	





087042-01-15 GN-DA006 MAY 21/2015

"a" - Analyses are compared to the Nova Scotia Environment (NSE) Tier I Environmental Quality Standards (EQS) for a commercial property with coarse textured soil and potable

<2.0 <2.0 <1.0 <0.10

15

Figure 6

Screen Interval: 1.6-6.1mbos

<0.10 <2.0 <0.10 <2.0 89

GROUNDWATER ANALYTICAL RESULTS - METALS FORMER IMPERIAL OIL BULK PLANT **IMPERIAL OIL** 64 Mill Lake Road No.2, Hubbards, Nova Scotia

TABLE 1

GROUNDWATER MONITORING RESULTS

64 Mill Lake Road No. 2, Hubbards, Nova Scotia

MONITOR WELL ID	TOP OF PIPE ELEVATION ¹ (m)	GROUND SURFACE ELEVATION ¹ (m)	SCREEN INTERVAL (mbgs)	DATE (yyyy/mm/dd)	SUBSURFACE VAPOUR CONCENTRATIONS ²	FREE PRODUCT THICKNESSES (mm)	POTENTIO-METRIC DEPTH ³ (mbtr)	POTENTIO-METRIC ELEVATION ^{1, 3} (mald)
MW1	57.37	56.26	1.6-4.6	2015/05/01	<5	nd	1.48	55.88*
MW2	57.04	56.12	1.6-4.6	2015/05/01	<5	nd	1.42	55.62*
MW3	56.56	55.75	1.6-4.6	2015/05/01	<5	nd	1.33	55.22*
MW4	56.20	55.53	1.6-4.6	2015/05/01	<5	nd	1.38	54.82*
MW5	56.25	55.73	1.6-6.1	2015/05/01	<5	nd	1.62	54.63*
MW6	56.92	55.85	1.6-4.6	2015/05/01	<5	nd	1.10	55.82*

1 - Relative elevations were determined using a local benchmark (power pole across the street) having an assumed elevation of 54.928 metres above local datum (mald).

2 - ppmv if not indicated, or %LEL if indicated

3 - Calculated using product thicknesses corrected by a specific gravity of 0.75 $\rm g/cm^3$

m - metres

mm - millimetres

mbgs - metres below ground surface

mbtr - metres below top of riser

nd - Not Detected

* - Water level above top of screen

TABLE 2 GROUNDWATER ANALYTICAL RESULTS- SCREENING FOR HUMAN HEALTH

PETROLEUM HYDROCARBON PARAMETERS

64 Mill Lake Road No. 2, Hubbards, Nova Scotia

SAMPLE LOCATIONS		MW1	MW1	MW2	MW3	MWA	MW4	Criteria ^a
			Lab Duplicate			Field Duplicate		
						of MW3		
Maxxam ID		AFJ889	AFJ889	AFJ890	AFJ891	AFJ895	AFJ892	
Date Sampled (yyyy/mm/dd)		2015/05/01	2015/05/01	2015/05/01	2015/05/01	2015/05/01	2015/05/01	
PARAMETERS	RDL							
Benzene	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.005
Toluene	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.024
Ethylbenzene	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0016
Total Xylenes	0.002	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.002
Petroleum Hydrocarbons (C6 - C10)	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	NA
Petroleum Hydrocarbons (>C10 - C16)	0.05	<0.050		<0.050	<0.050	<0.050	<0.050	NA
Petroleum Hydrocarbons (>C16 - C21)	0.05	<0.050		<0.050	<0.050	<0.050	<0.050	NA
Petroleum Hydrocarbons (>C21 - C32)	0.1	<0.10		<0.10	<0.10	<0.10	<0.10	NA
Petroleum Hydrocarbons (Modified TPH)	0.1	< 0.10 ⁽²⁾		< 0.10 ⁽²⁾	< 0.10 ⁽²⁾	< 0.10 ⁽²⁾	< 0.10 ⁽²⁾	4.4/3.2/7.8

"a" - Analyses are compared to the Nova Scotia Environment (NSE) Tier I Environmental Quality Standards (EQS) for a commercial property with coarse grained/textured soil and potable groundwater

RDL - Reporting Detection Limit

NA - Not Applicable

"-" - Not analyzed

Results for all parameters are reported in milligrams per litre (mg/L)

MTPH - Modified Total Petroleum Hydrocarbons

"(1)" - MTPH result is compared to gasoline fraction criteria of 4.4 mg/L.

"(2)" - MTPH result is compared to diesel fraction criteria of 3.2 mg/L.

"(3)" - MTPH result is compared to lube oil fraction criteria of 7.8 mg/L.

BOLD - Exceeds applicable standard

TABLE 2 GROUNDWATER ANALYTICAL RESULTS- SCREENING FOR HUMAN HEALTH PETROLEUM HYDROCARBON PARAMETERS

64 Mill Lake Road No. 2, Hubbards, Nova Scotia

SAMPLE LOCATIONS		MW5	MW5	MW6	Criteria ^ª
			Lab Duplicate		
Maxxam ID		AFJ893	AFJ893	AFJ894	
Date Sampled (yyyy/mm/dd)		2015/05/01	2015/05/01	2015/05/01	
PARAMETERS	RDL				
Benzene	0.001	<0.0010		<0.0010	0.005
Toluene	0.001	<0.0010		<0.0010	0.024
Ethylbenzene	0.001	<0.0010		<0.0010	0.0016
Total Xylenes	0.002	<0.0020		<0.0020	0.02
Petroleum Hydrocarbons (C6 - C10)	0.01	<0.010		<0.010	NA
Petroleum Hydrocarbons (>C10 - C16)	0.05	<0.050	<0.050	0.29	NA
Petroleum Hydrocarbons (>C16 - C21)	0.05	<0.050	<0.050	0.11	NA
Petroleum Hydrocarbons (>C21 - C32)	0.1	<0.10	<0.10	<0.10	NA
Petroleum Hydrocarbons (Modified TPH)	0.1	< 0.10 ⁽²⁾		0.40 ⁽²⁾	4.4/3.2/7.8

"a" - Analyses are compared to the Nova Scotia Environment (NSE) Tier I Environmental Quality Standards (EQS) for a commercial property with coarse grained/textured soil and potable groundwater

RDL - Reporting Detection Limit

NA - Not Applicable

"-" - Not analyzed

Results for all parameters are reported in milligrams per litre (mg/L)

MTPH - Modified Total Petroleum Hydrocarbons

"(1)" - MTPH result is compared to gasoline fraction criteria of 4.4 mg/L.

"(2)" - MTPH result is compared to diesel fraction criteria of 3.2 mg/L.

"(3)" - MTPH result is compared to lube oil fraction criteria of 7.8 mg/L.

BOLD - Exceeds applicable standard

TABLE 3

GROUNDWATER ANALYTICAL RESULTS - SCREENING FOR HUMAN HEALTH POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) 64 Mill Lake Road No. 2, Hubbards, Nova Scotia

SAMPLE LOCATIONS		MW4	MW4	MW5	Criteria ^(a)
			Lab Duplicate		
Maxxam ID		AFJ892	AFJ892	AFJ893	
Date Sampled (yyyy/mm/dd)		2015/05/01	2015/05/01	2015/05/01	
PARAMETERS	RDL				
Non-Carcinogenic PAHs					
1-Methylnaphthalene	0.050	<0.050	<0.050	<0.050	12
2-Methylnaphthalene	0.050	<0.050	<0.050	<0.050	12
Acenaphthene	0.010	<0.010	<0.010	<0.010	1400
Acenaphthylene	0.010	<0.010	<0.010	<0.010	4.5
Anthracene	0.010	<0.010	<0.010	<0.010	no criteria
Fluoranthene	0.010	<0.010	<0.010	<0.010	no criteria
Fluorene	0.010	<0.010	<0.010	<0.010	940
Naphthalene	0.20	<0.20	<0.20	<0.20	470
Perylene	0.01	<0.010	<0.010	<0.010	no criteria
Phenanthrene	0.010	<0.010	<0.010	<0.010	no criteria
Pyrene	0.010	<0.010	<0.010	<0.010	710
Carcinogenic PAHs					
Benz(a)anthracene	0.010	<0.010	<0.010	<0.010	no criteria
Benzo(a)pyrene	0.010	<0.010	<0.010	<0.010	0.01
Benzo(b)fluoranthene	0.010	<0.010	<0.010	<0.010	no criteria
Benzo(g,h,i)perylene	0.010	<0.010	<0.010	<0.010	no criteria
Benzo(j)fluoranthene	0.010	<0.010	<0.010	<0.010	no criteria
Benzo(k)fluoranthene	0.010	<0.010	<0.010	<0.010	no criteria
Chrysene	0.010	<0.010	<0.010	<0.010	no criteria
Dibenz(a,h)anthracene	0.010	<0.010	<0.010	<0.010	no criteria
Indeno (1,2,3-cd) pyrene	0.010	<0.010	<0.010	<0.010	no criteria
B(a)P Total Potency Equivalents (TPE)	NA	NA	NA	NA	no criteria
Modified B(a)P TPE Concentration	NA	NA	NA	NA	no criteria

Note: Results for all parameters are reported in micrograms per litres (μ g/L)

"a" - Analyses are compared to the Nova Scotia Environment (NSE) Tier I Environmental Quality Standards (EQS) for a commercial property with coarse textured soil and potable groundwater, Table 4, July 6, 2013.

RDL - Reporting Detection Limit

Where parameter is not detected, TPE calculations use 1/2 the detection limit.

NA - not applicable

RDL - Reporting Detection Limit

BOLD - Exceeds applicable standard
TABLE 4

GROUNDWATER ANALYTICAL RESULTS - SCREENING FOR HUMAN HEALTH

METALS

64 Mill Lake Road No. 2, Hubbards, Nova Scotia

SAMPLE LOCATIONS		MW5	MW5	Criteria ^ª
			Lab Dup	
Maxxam ID		AFJ893	AFJ893	
Date Sampled (yyyy/mm/dd)		2015/05/01	2015/05/01	
PARAMETERS	RDL			
Aluminum	5.0	58	61	no criteria
Antimony	1.0	<1.0	<1.0	6
Arsenic	1.0	<1.0	<1.0	10
Barium	1.0	8.3	8.5	1000
Beryllium	1.0	<1.0	<1.0	4
Boron	50	<50	<50	5000
Cadmium	0.010	0.29	0.28	5
Chromium	1.0	<1.0	<1.0	50
Cobalt	0.40	<0.40	<0.40	10
Copper	2.0	<2.0	<2.0	no criteria
Iron	50	<50	<50	no criteria
Lead	0.50	<0.50	<0.50	10
Manganese	2.0	53	52	no criteria
Molybdenum	2.0	<2.0	<2.0	70
Nickel	2.0	<2.0	<2.0	100
Selenium	1.0	<1.0	<1.0	10
Silver	0.10	<0.10	<0.10	100
Strontium	2.0	15	15	4400
Thallium	0.10	<0.10	<0.10	2
Tin	2.0	<2.0	<2.0	4400
Uranium	0.10	<0.10	<0.10	20
Vanadium	2.0	<2.0	<2.0	6.2
Zinc	5.0	89	90	5000

Note: Results for all parameters are reported in micrograms per litres (μ g/L)

"a" - Analyses are compared to the Nova Scotia Environment (NSE) Tier I Environmental Quality Standards (EQS) for a commercial property with coarse textured soil and potable groundwater, Table 4, July 6, 2013.

RDL - Reporting Detection Limit

BOLD - Exceeds applicable standard

Appendix A

Limitation of Liability, Scope of Report and Third Party Reliance

Limitation of Liability, Scope of Report and Third Party Reliance

This report has been prepared and the work referred to in this report has been undertaken by Conestoga-Rovers & Associates Limited for Imperial Oil Limited. It is intended for the sole and exclusive use of Imperial Oil Limited, its affiliated companies and partners and their respective insurers, agents, employees and advisors (collectively, "Imperial Oil"). Any use, reliance on or decision made by any person other than Imperial Oil based on this report is the sole responsibility of such other person. Imperial Oil and Conestoga-Rovers & Associates Limited make no representation or warranty to any other person with regard to this report and the work referred to in this report and they accept no duty of care to any other person or any liability or responsibility whatsoever for any losses, expenses, damages, fines, penalties or other harm that may be suffered or incurred by any other person as a result of the use of, reliance on, any decision made or any action taken based on this report or the work referred to in this report.

The investigation undertaken by Conestoga-Rovers & Associates Limited with respect to this report and any conclusions or recommendations made in this report reflect Conestoga-Rovers & Associates Limited judgment based on the site conditions observed at the time of the site inspection on the date(s) set out in this report and on information examined at the time of preparation of this report. This report has been prepared for specific application to this site and it is based, in part, upon visual observation of the site, subsurface investigation at discrete locations and depths, and specific analysis of specific chemical parameters and materials during a specific time interval, all as described in this report. Unless otherwise stated, the findings cannot be extended to previous or future site conditions, portions of the site which were unavailable for direct investigation, subsurface locations which were not investigated directly, or chemical parameters, materials or analysis which were not addressed. Substances other than those addressed by the investigation may exist in areas of the site not investigated and concentrations of substances addressed which are different than those reported may exist in areas other than the locations from which samples were taken.

If site conditions or applicable standards change or if any additional information becomes available at a future date, modifications to the findings, conclusions and recommendations in this report may be necessary.

Other than by Imperial Oil, copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted without the express written permission of Conestoga-Rovers & Associates Limited. Nothing in this report is intended to constitute or provide a legal opinion.



Appendix B

Laboratory Certificates of Analysis



Attention:Scott Llewellyn

45 Akerley Blvd Dartmouth, NS Canada B3

Conestoga-Rovers and Associates Ltd

B3B 1J7

Task Order#: 4410275313 Line Item: 10 Site#: JW.00937 Site Location: 64 MILL LAKE ROAD NO. 2, HUBBARDS, NS Project #: 087042 Your C.O.C. #: BE06698, BE06696

> Report Date: 2015/05/22 Report #: R3437396 Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B582194 Received: 2015/05/05, 14:22

Sample Matrix: Water # Samples Received: 9

Analyses	Quantity	Laboratory Method	Primary Reference
TEH in Water (PIRI)	9	ATL SOP 00113	Atl. PIRI v3 m
Metals Water Diss. MS (as rec'd)	1	ATL SOP 00058	EPA 6020A R1 m
PAH in Water by GC/MS (SIM)	4	ATL SOP 00103	EPA 8270D m
VPH in Water (PIRI)	9	ATL SOP 00118	Atl. PIRI v3 m
Silica Gel Clean-up (Water)	9	ATL SOP 00113	EPA 3630C R3 m
ModTPH (T1) Calc. for Water	9	N/A	Atl. PIRI v3 m

Remarks:

All work recorded herein has been performed in accordance to the ISO 17025 standard. Methods used by Maxxam Analytics are based upon accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing.

Maxxam Analytics is accredited by Standards Council of Canada (SCC). Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract.

All data is in statistical control and has met all QC and method performance criteria unless otherwise flagged. All samples were analysed within hold time unless otherwise flagged. All soil samples for BTEX analysis were methanol extracted within 24 hours unless otherwise flagged.

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

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

Encryption Key

Michelle Hill

22 May 2015 15:55:54 -03:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Michelle Hill, Project Manager Email: MHill@maxxam.ca Phone# (902)420-0203 Ext:289

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



RBCA HYDROCARBONS IN WATER (WATER)

Maxxam ID		AFJ889	AFJ889	AFJ890	AFJ891	AFJ892		
Comercia a Data		2015/05/01	2015/05/01	2015/05/01	2015/05/01	2015/05/01		
Sampling Date		13:39	13:39	13:42	13:50	13:57		
COC Number		BE06698	BE06698	BE06698	BE06698	BE06698		
	Units	MW1	MW1 Lab-Dup	MW2	MW3	MW4	RDL	QC Batch
Benzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	4011615
Toluene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	4011615
Ethylbenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	4011615
Total Xylenes	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	4011615
C6 - C10 (less BTEX)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4011615
>C10-C16 Hydrocarbons	mg/L	<0.050		<0.050	<0.050	<0.050	0.050	4015225
>C16-C21 Hydrocarbons	mg/L	<0.050		<0.050	<0.050	<0.050	0.050	4015225
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.10</td><td></td><td><0.10</td><td><0.10</td><td><0.10</td><td>0.10</td><td>4015225</td></c32>	mg/L	<0.10		<0.10	<0.10	<0.10	0.10	4015225
Modified TPH (Tier1)	mg/L	<0.10		<0.10	<0.10	<0.10	0.10	4009561
Reached Baseline at C32	mg/L	NA		NA	NA	NA	N/A	4015225
Hydrocarbon Resemblance	mg/L	NA		NA	NA	NA	N/A	4015225
Extraction Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	83		84	82	85		4015225
n-Dotriacontane - Extractable	%	128		123	127	127 (1)		4015225
Instrument Surrogate Recovery (%)								
1,4-Difluorobenzene	%	98	98	97	96	97		4011615
4-Bromofluorobenzene	%	100	100	100	100	100		4011615
D4-1,2-Dichloroethane	%	96	97	96	96	96		4011615
Isobutylbenzene - Volatile	%	103	103	104	102	102		4011615
RDL = Reportable Detection Lim	nit					<u> </u>		<u></u>
QC Batch = Quality Control Batc	ch							

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) TEH sample contained sediment.



RBCA HYDROCARBONS IN WATER (WATER)

Maxxam ID		AFJ893	AFJ893	AFJ894		AFJ895	AFJ896		
Sampling Data		2015/05/01	2015/05/01	2015/05/01		2015/05/01	2015/05/01		
		13:59	13:59	14:07		13:00	14:00		
COC Number		BE06698	BE06698	BE06698		BE06698	BE06698		
	Units	MW5	MW5 Lab-Dup	MW6	QC Batch	MWA	FIELD BLANK	RDL	QC Batch
Benzene	mg/L	<0.0010		<0.0010	4011615	<0.0010	<0.0010	0.0010	4011615
Toluene	mg/L	<0.0010		<0.0010	4011615	<0.0010	<0.0010	0.0010	4011615
Ethylbenzene	mg/L	<0.0010		<0.0010	4011615	<0.0010	<0.0010	0.0010	4011615
Total Xylenes	mg/L	<0.0020		<0.0020	4011615	<0.0020	<0.0020	0.0020	4011615
C6 - C10 (less BTEX)	mg/L	<0.010		<0.010	4011615	<0.010	<0.010	0.010	4011615
>C10-C16 Hydrocarbons	mg/L	<0.050	<0.050	0.29	4011535	<0.050	<0.050	0.050	4015225
>C16-C21 Hydrocarbons	mg/L	<0.050	<0.050	0.11	4011535	<0.050	<0.050	0.050	4015225
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.10</td><td><0.10</td><td><0.10</td><td>4011535</td><td><0.10</td><td><0.10</td><td>0.10</td><td>4015225</td></c32>	mg/L	<0.10	<0.10	<0.10	4011535	<0.10	<0.10	0.10	4015225
Modified TPH (Tier1)	mg/L	<0.10		0.40	4009561	<0.10	<0.10	0.10	4009561
Reached Baseline at C32	mg/L	NA		Yes	4011535	NA	NA	N/A	4015225
Hydrocarbon Resemblance	mg/L	NA		COMMENT (1)	4011535	NA	NA	N/A	4015225
Extraction Surrogate Recovery (%)									
Isobutylbenzene - Extractable	%	88	91	98	4011535	82	80		4015225
n-Dotriacontane - Extractable	%	135 (2)	128	149 (2)	4011535	130	128		4015225
Instrument Surrogate Recovery (%)									
1,4-Difluorobenzene	%	98		97	4011615	97	96		4011615
4-Bromofluorobenzene	%	100		99	4011615	100	100		4011615
D4-1,2-Dichloroethane	%	96		97	4011615	95	96		4011615
Isobutylbenzene - Volatile	%	102		103	4011615	104	102		4011615

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) Weathered fuel oil fraction.

(2) TEH surrogate(s) not within acceptance limits. Insufficient sample to repeat.



Maxxam ID		AFJ897		
Sampling Date		2015/05/01 14:05		
COC Number		BE06696		
	Units	TRIP BLANK	RDL	QC Batch
Benzene	mg/L	<0.0010	0.0010	4011615
Toluene	mg/L	< 0.0010	0.0010	4011615
Ethylbenzene	mg/L	<0.0010	0.0010	4011615
Total Xylenes	mg/L	<0.0020	0.0020	4011615
C6 - C10 (less BTEX)	mg/L	<0.010	0.010	4011615
>C10-C16 Hydrocarbons	mg/L	<0.050	0.050	4015225
>C16-C21 Hydrocarbons	mg/L	<0.050	0.050	4015225
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.10</td><td>0.10</td><td>4015225</td></c32>	mg/L	<0.10	0.10	4015225
Modified TPH (Tier1)	mg/L	<0.10	0.10	4009561
Reached Baseline at C32	mg/L	NA	N/A	4015225
Hydrocarbon Resemblance	mg/L	NA	N/A	4015225
Extraction Surrogate Recovery (%)				
Isobutylbenzene - Extractable	%	78		4015225
n-Dotriacontane - Extractable	%	128		4015225
Instrument Surrogate Recovery (%)				
1,4-Difluorobenzene	%	97		4011615
4-Bromofluorobenzene	%	99		4011615
D4-1,2-Dichloroethane	%	96		4011615
Isobutylbenzene - Volatile	%	103		4011615
RDL = Reportable Detection Lim QC Batch = Quality Control Batc N/A = Not Applicable	it h			-

RBCA HYDROCARBONS IN WATER (WATER)



	2015/05/01 13:59	2015/05/01 13:59							
	BE06698	BE06698							
Units	MW5	MW5 Lab-Dup	RDL	QC Batch					
ug/L	58	61	5.0	4015053					
ug/L	<1.0	<1.0	1.0	4015053					
ug/L	<1.0	<1.0	1.0	4015053					
ug/L	8.3	8.5	1.0	4015053					
ug/L	<1.0	<1.0	1.0	4015053					
ug/L	<50	<50	50	4015053					
ug/L	0.29	0.28	0.010	4015053					
ug/L	<1.0	<1.0	1.0	4015053					
ug/L	<0.40	<0.40	0.40	4015053					
ug/L	<2.0	<2.0	2.0	4015053					
ug/L	<50	<50	50	4015053					
ug/L	<0.50	<0.50	0.50	4015053					
ug/L	53	52	2.0	4015053					
ug/L	<2.0	<2.0	2.0	4015053					
ug/L	<2.0	<2.0	2.0	4015053					
ug/L	<1.0	<1.0	1.0	4015053					
ug/L	<0.10	<0.10	0.10	4015053					
ug/L	15	15	2.0	4015053					
ug/L	<0.10	<0.10	0.10	4015053					
ug/L	<2.0	<2.0	2.0	4015053					
ug/L	<0.10	<0.10	0.10	4015053					
ug/L	<2.0	<2.0	2.0	4015053					
ug/L	89	90	5.0	4015053					
RDL = Reportable Detection Limit QC Batch = Quality Control Batch									
	Units ug/L ug/L	2013/03/01 13:59 BE06698 Units MW5 ug/L 58 ug/L 4.0 ug/L 4.0 ug/L 8.3 ug/L 4.0 L 4.0	2013/03/01 2013/03/01 13:59 13:59 BE06698 BE06698 Units MWS Lab-Dup ug/L 58 61 ug/L 4.0 <1.0	2013/03/01 2013/03/01 2013/03/01 13:59 13:59 BE06698 BE06698 Units MWS MWS RDL ug/L 58 61 5.0 ug/L <1.0					

ELEMENTS BY ICP/MS (WATER)



SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		AFJ892	AFJ892	AFJ893	AFJ896	AFJ897				
Sampling Date		2015/05/01	2015/05/01	2015/05/01	2015/05/01	2015/05/01				
		13:57	13:57	13:59	14:00	14:05				
COC Number		BE06698	BE06698	BE06698	BE06698	BE06696				
	Units	MW4	MW4 Lab-Dup	MW5	FIELD BLANK	TRIP BLANK	RDL	QC Batch		
1-Methylnaphthalene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4011960		
2-Methylnaphthalene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4011960		
Acenaphthene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4011960		
Acenaphthylene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4011960		
Anthracene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4011960		
Benzo(a)anthracene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4011960		
Benzo(a)pyrene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4011960		
Benzo(b)fluoranthene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4011960		
Benzo(g,h,i)perylene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4011960		
Benzo(j)fluoranthene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4011960		
Benzo(k)fluoranthene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4011960		
Chrysene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4011960		
Dibenz(a,h)anthracene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4011960		
Fluoranthene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4011960		
Fluorene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4011960		
Indeno(1,2,3-cd)pyrene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4011960		
Naphthalene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4011960		
Perylene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4011960		
Phenanthrene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4011960		
Pyrene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4011960		
Extraction Surrogate Recovery (%)										
D10-Anthracene	%	93	82	71	95	81		4011960		
D14-Terphenyl	%	102 (1)	82 (1)	74	100	82		4011960		
D8-Acenaphthylene	%	98	79	71	99	77		4011960		
RDL = Reportable Detection I	Reportable Detection Limit									

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

(1) PAH sample contained sediment.

A Bureau Veritas Group Comp Maxxam Job #: B582194 Report Date: 2015/05/22

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Max

Conestoga-Rovers and Associates Ltd Task Order#: 4410275313, Line Item: 10 Site#: JW.00937 Site Location: 64 MILL LAKE ROAD NO. 2, HUBBARDS, NS Project #: 087042

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	AFJ889 MW1 Water				Re	Collected: linquished: Received:	2015/05/01 2015/05/05 2015/05/05
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	4015225	2015/05/08	2015/05/09	Katelyn Ch	erwonick
VPH in Water (PIRI)		PTGC/MS	4011615	N/A	2015/05/07	Amanda Sv	wales
ModTPH (T1) Calc. for Wa	ater	CALC	4009561	N/A	2015/05/11	Automate	d Statchk
Maxxam ID: Sample ID: Matrix: Test Description	AFJ889 Dup MW1 Water	Instrumentation	Batch	Extracted	Re Date Analyzed	Collected: linquished: Received: Analyst	2015/05/01 2015/05/05 2015/05/05
VPH in Water (PIRI)		PTGC/MS	4011615	N/A	2015/05/07	Amanda Si	wales
Maxxam ID: Sample ID: Matrix:	AFJ890 MW2 Water				Re	Collected: linquished: Received:	2015/05/01 2015/05/05 2015/05/05
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	4015225	2015/05/08	2015/05/09	Katelyn Ch	erwonick
VPH in Water (PIRI)		PTGC/MS	4011615	N/A	2015/05/07	Amanda Sv	wales
ModTPH (T1) Calc. for Wa	ater	CALC	4009561	N/A	2015/05/11	Automated	d Statchk
Maxxam ID: Sample ID: Matrix:	AFJ891 MW3 Water				Re	Collected: linquished: Received:	2015/05/01 2015/05/05 2015/05/05
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	4015225	2015/05/08	2015/05/09	Katelyn Ch	erwonick
VPH in Water (PIRI)		PTGC/MS	4011615	N/A	2015/05/07	Amanda Sv	wales
ModTPH (T1) Calc. for Wa	ater	CALC	4009561	N/A	2015/05/11	Automated	d Statchk
Maxxam ID: Sample ID: Matrix:	AFJ892 MW4 Water				Re	Collected: linquished: Received:	2015/05/01 2015/05/05 2015/05/05
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	4015225	2015/05/08	2015/05/09	Katelyn Ch	erwonick
PAH in Water by GC/MS (SIM)	GC/MS	4011960	2015/05/06	2015/05/08	Hiroyuki Ir	amura
VPH in Water (PIRI)		PTGC/MS	4011615	N/A	2015/05/07	Amanda Sv	wales
ModTPH (T1) Calc. for Wa	ater	CALC	4009561	N/A	2015/05/11	Automated	d Statchk



TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	AFJ892 Dup MW4 Water				R	Collected: elinquished: Received:	2015/05/01 2015/05/05 2015/05/05
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
PAH in Water by GC/MS	(SIM)	GC/MS	4011960	2015/05/06	2015/05/08	Hiroyuki Ir	namura
Maxxam ID: Sample ID: Matrix:	AFJ893 MW5 Water				R	Collected: elinquished: Received:	2015/05/01 2015/05/05 2015/05/05
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	4011535	2015/05/06	2015/05/06	Katelyn Ch	nerwonick
Metals Water Diss. MS (a	as rec'd)	CICP/MS	4015053	N/A	2015/05/08	Mike Lebla	anc
PAH in Water by GC/MS	(SIM)	GC/MS	4011960	2015/05/06	2015/05/08	Hiroyuki Ir	namura
VPH in Water (PIRI)		PTGC/MS	4011615	N/A	2015/05/07	Amanda S	wales
ModTPH (T1) Calc. for W	ater	CALC	4009561	N/A	2015/05/08	Automate	d Statchk
Maxxam ID: Sample ID: Matrix:	AFJ893 Dup MW5 Water				R	Collected: elinquished: Received:	2015/05/01 2015/05/05 2015/05/05
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	4011535	2015/05/06	2015/05/06	Katelyn Ch	nerwonick
Metals Water Diss. MS (a	as rec'd)	CICP/MS	4015053	N/A	2015/05/08	Mike Lebla	anc
Maxxam ID: Sample ID: Matrix:	AFJ894 MW6 Water				R	Collected: elinquished: Received:	2015/05/01 2015/05/05 2015/05/05
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	4011535	2015/05/06	2015/05/06	Katelyn Ch	nerwonick
VPH in Water (PIRI)		PTGC/MS	4011615	N/A	2015/05/07	Amanda S	wales
ModTPH (T1) Calc. for W	ater	CALC	4009561	N/A	2015/05/08	Automate	d Statchk
Maxxam ID: Sample ID: Matrix:	AFJ895 MWA Water				R	Collected: elinquished: Received:	2015/05/01 2015/05/05 2015/05/05
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	4015225	2015/05/08	2015/05/09	Katelyn Ch	nerwonick
VPH in Water (PIRI)		DTGC/MS	1011615	NI/A	2015/05/07	Amanda S	walas
			4011015	N/A	2013/03/07	Amanua 3	wales



TEST SUMMARY

Maxxam ID:	AFJ896
Sample ID:	FIELD BLANK
Matrix:	Water

Collected:	2015/05/01
Relinquished:	2015/05/05
Received:	2015/05/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	4015225	2015/05/08	2015/05/09	Katelyn Cherwonick
PAH in Water by GC/MS (SIM)	GC/MS	4011960	2015/05/06	2015/05/08	Hiroyuki Inamura
VPH in Water (PIRI)	PTGC/MS	4011615	N/A	2015/05/07	Amanda Swales
ModTPH (T1) Calc. for Water	CALC	4009561	N/A	2015/05/11	Automated Statchk

Maxxam ID:	AFJ897
Sample ID:	TRIP BLANK
Matrix:	Water

Collected:	2015/05/01
Relinquished:	2015/05/05
Received:	2015/05/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	4015225	2015/05/08	2015/05/09	Katelyn Cherwonick
PAH in Water by GC/MS (SIM)	GC/MS	4011960	2015/05/06	2015/05/08	Hiroyuki Inamura
VPH in Water (PIRI)	PTGC/MS	4011615	N/A	2015/05/07	Amanda Swales
ModTPH (T1) Calc. for Water	CALC	4009561	N/A	2015/05/11	Automated Statchk



GENERAL COMMENTS

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

Package 1	3.0°C
Package 2	3.0°C

Silica gel clean-up performed on water extracts.

SQC trend rule failure for Copper, Batch 4015053. EWMA greater than 1.5 SD below the mean.

Revised report - Revision 1: Re-issued with signed data quality waiver. 2015/05/19 MHL

Revised report - Revision 2: Revised to remove the following metals from the metal scan: Na, K, Mg, Ca, P, Ti, Bi. Changes made as requested by D. MacDonald. 2015/05/22 MHL

Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	Units	QC Limits
4011535	KCR	Method Blank	n-Dotriacontane - Extractable	2015/05/07		130	%	30 - 130
			Isobutylbenzene - Extractable	2015/05/07		26 (1)		30 - 130
			>C10-C16 Hydrocarbons	2015/05/07	<0.050		mg/L	
			>C16-C21 Hydrocarbons	2015/05/07	<0.050		mg/L	
			>C21- <c32 hydrocarbons<="" td=""><td>2015/05/07</td><td><0.10</td><td></td><td>mg/L</td><td></td></c32>	2015/05/07	<0.10		mg/L	
4011615	ASL	Method Blank	1,4-Difluorobenzene	2015/05/07		95	%	70 - 130
			4-Bromofluorobenzene	2015/05/07		100	%	70 - 130
			D4-1,2-Dichloroethane	2015/05/07		94	%	70 - 130
			Isobutylbenzene - Volatile	2015/05/07		102	%	70 - 130
			Benzene	2015/05/07	<0.0010		mg/L	
			Toluene	2015/05/07	<0.0010		mg/L	
			Ethylbenzene	2015/05/07	<0.0010		mg/L	
			Total Xylenes	2015/05/07	< 0.0020		mg/L	
			C6 - C10 (less BTEX)	2015/05/07	< 0.010		mg/L	
4011960	HIN	Method Blank	D10-Anthracene	2015/05/08		103	%	30 - 130
			D14-Terphenyl	2015/05/08		103	%	30 - 130
			D8-Acenaphthylene	2015/05/08		100	%	30 - 130
			1-Methylnaphthalene	2015/05/08	<0.050		ug/L	
			2-Methylnaphthalene	2015/05/08	<0.050		ug/L	
			Acenaphthene	2015/05/08	<0.010		ug/L	
			Acenaphthylene	2015/05/08	< 0.010		ug/L	
			Anthracene	2015/05/08	<0.010		ug/L	
			Benzo(a)anthracene	2015/05/08	< 0.010		ug/L	
			Benzo(a)pyrene	2015/05/08	< 0.010		ug/L	
			Benzo(b)fluoranthene	2015/05/08	<0.010		ug/I	
			Benzo(g.h.i)pervlene	2015/05/08	< 0.010		ug/L	
			Benzo(i)fluoranthene	2015/05/08	< 0.010		ug/L	
			Benzo(k)fluoranthene	2015/05/08	< 0.010		ug/L	
			Chrysene	2015/05/08	< 0.010		ug/L	
			Dibenz(a,h)anthracene	2015/05/08	< 0.010		ug/L	
			Fluoranthene	2015/05/08	< 0.010			
			Fluorene	2015/05/08	<0.010		ug/I	
			Indeno(1 2 3-cd)pyrene	2015/05/08	<0.010		ug/l	
			Naphthalene	2015/05/08	<0.20		ug/l	
			Pervlene	2015/05/08	<0.010		ug/l	
			Phenanthrene	2015/05/08	<0.010		ug/l	
			Pyrene	2015/05/08	<0.010		110/L	
4015053	MIR	Method Blank	Dissolved Aluminum (Al)	2015/05/08	<5.0		110/L	
4013033	IVILD	Niethoù blank	Dissolved Antimony (Sh)	2015/05/08	<1.0		ug/L	
			Dissolved Arsenic (As)	2015/05/08	<1.0		ug/L	
			Dissolved Barium (Ba)	2015/05/08	<1.0		ug/L ug/l	
			Dissolved Beryllium (Be)	2015/05/08	<1.0		ug/L ug/l	
			Dissolved Boron (B)	2015/05/08	<50		ug/L uα/I	
			Dissolved Codmium (Cd)	2015/05/08	<0.010		ug/L	
			Dissolved Chromium (Cr)	2015/05/08	<0.010		ug/L	
			Dissolved Coholt (Co)	2015/05/08	<1.0		ug/L	
			Dissolved Copper (Cu)	2015/05/08 2015/05/08	<0.40		ug/L	
			Dissolved Iron (Eq)	2013/03/08	<2.U ∠E0		ug/L	
			Dissolved Load (Ph)	2015/05/08			ug/L	
			Dissolved Manganasa (Man)	2015/05/08	<0.50		ug/L	
			Dissolved Molyhdanym (Ma)	2015/05/08	<2.0		ug/L	
			Dissolved iviolybdenum (ivio)	2015/05/08	<2.0		ug/L	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	Units	QC Limits
			Dissolved Nickel (Ni)	2015/05/08	<2.0		ug/L	
			Dissolved Selenium (Se)	2015/05/08	<1.0		ug/L	
			Dissolved Silver (Ag)	2015/05/08	<0.10		ug/L	
			Dissolved Strontium (Sr)	2015/05/08	<2.0		ug/L	
			Dissolved Thallium (TI)	2015/05/08	<0.10		ug/L	
			Dissolved Tin (Sn)	2015/05/08	<2.0		ug/L	
			Dissolved Uranium (U)	2015/05/08	<0.10		ug/L	
			Dissolved Vanadium (V)	2015/05/08	<2.0		ug/L	
			Dissolved Zinc (Zn)	2015/05/08	<5.0		ug/L	
4015225	KCR	Method Blank	n-Dotriacontane - Extractable	2015/05/08		123	%	30 - 130
			Isobutylbenzene - Extractable	2015/05/08		96	%	30 - 130
			>C10-C16 Hydrocarbons	2015/05/08	<0.050		mg/L	
			>C16-C21 Hydrocarbons	2015/05/08	<0.050		mg/L	
			>C21- <c32 hydrocarbons<="" td=""><td>2015/05/08</td><td>< 0.10</td><td></td><td>mg/L</td><td></td></c32>	2015/05/08	< 0.10		mg/L	
4011615	ASL	RPD [AFJ889-02]	Benzene	2015/05/07	NC		%	40
			Toluene	2015/05/07	NC		%	40
			Ethylbenzene	2015/05/07	NC		%	40
			Total Xylenes	2015/05/07	NC		%	40
			C6 - C10 (less BTFX)	2015/05/07	NC		%	40
4011960	HIN	RPD [AEI892-03]	1-Methylnaphthalene	2015/05/08	NC		%	40
.011500			2-Methylnaphthalene	2015/05/08	NC		%	40
			Acenaphthene	2015/05/08	NC		%	40
			Acenaphthylene	2015/05/08	NC		%	40
			Anthracene	2015/05/08	NC		%	40
			Benzo(a)anthracene	2015/05/08	NC		%	40
			Benzo(a)pyrene	2015/05/08	NC		%	40
			Benzo(b)fluoranthene	2015/05/08	NC		%	40
			Benzo(g h i)pervlene	2015/05/08	NC		/0 %	40
			Bonzo(i)fluoranthono	2015/05/08	NC		70 0/	40
			Benzo(k)fluoranthene	2015/05/08	NC		/0 %	40
			Chrysono	2015/05/08	NC		/0 0/	40
			Dibonz(a h)anthracono	2015/05/08	NC		/0 0/	40
			Eluoranthana	2013/03/08	NC		/0 0/	40
			Eluorono	2013/03/08	NC		/0 0/	40
			Indono(1,2,2,cd)nyrono	2015/05/06	NC		70 0/	40
			Naphthalono	2015/05/06	NC		70 0/	40
			Dominalene	2015/05/08	NC		70 0/	40
			Perviene	2015/05/08	NC		70 0/	40
			Phenanthrene	2015/05/08	NC		% 0/	40
4011525	KCD		Pyrene	2015/05/08	NC		% 0/	40
4011535	KCK	RPD [AFJ893-01]	>C10-C16 Hydrocarbons	2015/05/06	NC		%	40
			>C16-C21 Hydrocarbons	2015/05/06	NC		%	40
4045052			>C21- <c32 hydrocarbons<="" td=""><td>2015/05/06</td><td>NC</td><td></td><td>%</td><td>40</td></c32>	2015/05/06	NC		%	40
4015053	IVILB	RPD [AFJ893-04]	Dissolved Aluminum (Al)	2015/05/08	4.0		%	20
			Dissolved Antimony (Sb)	2015/05/08	NC		%	20
			Dissolved Arsenic (As)	2015/05/08	NC		%	20
			Dissolved Barium (Ba)	2015/05/08	2.3		%	20
			Dissolved Beryllium (Be)	2015/05/08	NC		%	20
			Dissolved Boron (B)	2015/05/08	NC		%	20
			Dissolved Cadmium (Cd)	2015/05/08	2.4		%	20
			Dissolved Chromium (Cr)	2015/05/08	NC		%	20
			Dissolved Cobalt (Co)	2015/05/08	NC		%	20



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	Units	QC Limits
			Dissolved Copper (Cu)	2015/05/08	NC		%	20
			Dissolved Iron (Fe)	2015/05/08	NC		%	20
			Dissolved Lead (Pb)	2015/05/08	NC		%	20
			Dissolved Manganese (Mn)	2015/05/08	2.3		%	20
			Dissolved Molybdenum (Mo)	2015/05/08	NC		%	20
			Dissolved Nickel (Ni)	2015/05/08	NC		%	20
			Dissolved Selenium (Se)	2015/05/08	NC		%	20
			Dissolved Silver (Ag)	2015/05/08	NC		%	20
			Dissolved Strontium (Sr)	2015/05/08	2.5		%	20
			Dissolved Thallium (TI)	2015/05/08	NC		%	20
			Dissolved Tin (Sn)	2015/05/08	NC		%	20
			Dissolved Uranium (U)	2015/05/08	NC		%	20
			Dissolved Vanadium (V)	2015/05/08	NC		%	20
			Dissolved Zinc (Zn)	2015/05/08	0.45		%	20
4011535	KCR	Matrix Spike [AFJ894-01]	n-Dotriacontane - Extractable	2015/05/06		128	%	30 - 130
			Isobutylbenzene - Extractable	2015/05/06		95	%	30 - 130
			>C10-C16 Hydrocarbons	2015/05/06		78	%	70 - 130
			>C16-C21 Hydrocarbons	2015/05/06		90	%	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2015/05/06</td><td></td><td>104</td><td>%</td><td>70 - 130</td></c32>	2015/05/06		104	%	70 - 130
4011615	ASL	Matrix Spike [AFJ890-02]	1,4-Difluorobenzene	2015/05/07		95	%	70 - 130
			4-Bromofluorobenzene	2015/05/07		100	%	70 - 130
			D4-1,2-Dichloroethane	2015/05/07		94	%	70 - 130
			Isobutylbenzene - Volatile	2015/05/07		102	%	70 - 130
			Benzene	2015/05/07		108	%	70 - 130
			Toluene	2015/05/07		106	%	70 - 130
			Ethylbenzene	2015/05/07		105	%	70 - 130
			Total Xylenes	2015/05/07		106	%	70 - 130
4011960	HIN	Matrix Spike [AEI896-03]	D10-Anthracene	2015/05/11		120	%	30 - 130
.011000			D14-Ternhenvl	2015/05/11		112	%	30 - 130
			D8-Acenaphthylene	2015/05/11		101	%	30 - 130
			1-Methylnaphthalene	2015/05/11		85	%	30 - 130
			2-Methylnaphthalene	2015/05/11		92	%	30 - 130
			Acenanhthene	2015/05/11		94	%	30 - 130
			Acenaphthylene	2015/05/11		97	%	30 - 130
			Anthracene	2015/05/11		100	%	30 - 130
			Benzo(a)anthracene	2015/05/11		100	%	30 - 130
			Benzo(a)pyrepe	2015/05/11		01	%	30 - 130
			Benzo(b)fluoranthene	2015/05/11		86	/0 %	30 - 130
			Benzo(g h i)pervlene	2015/05/11		95	/0 %	30 - 130
			Benzo(i)fluoranthene	2015/05/11		100	/0 %	30 - 130
			Benzo(k)fluoranthono	2015/05/11		100	/0 0/	20 120
			Chrysona	2013/03/11		94	/0 0/	20 120
			Dibonz(a h)anthracono	2015/05/11		99 101	70 0/	20 120
			Eluoranthono	2013/03/11		101	/0 0/	20 120
			Fluorance	2015/05/11		102	70 0/	20 120
			Fluorene	2015/05/11		94	70 0/	30 - 130
			Manhthalana	2015/05/11		100	% ₀∕	30 - 130 20 - 130
			Dondono	2015/05/11		05 05	70 0/	20 120
			Perylene	2015/05/11		95	%	30 - 130
			Prienanthrene	2015/05/11		92	%	30 - 130
4045050		Matrix Calles [AE1002.04]	Pyrene	2015/05/11		103	%	30 - 130
4015053	IVILB	iviatrix Spike [AFJ893-04]	Dissolved Aluminum (Al)	2015/05/08		97	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	Units	QC Limits
			Dissolved Antimony (Sb)	2015/05/08		99	%	80 - 120
			Dissolved Arsenic (As)	2015/05/08		94	%	80 - 120
			Dissolved Barium (Ba)	2015/05/08		99	%	80 - 120
			Dissolved Beryllium (Be)	2015/05/08		100	%	80 - 120
			Dissolved Boron (B)	2015/05/08		93	%	80 - 120
			Dissolved Cadmium (Cd)	2015/05/08		100	%	80 - 120
			Dissolved Chromium (Cr)	2015/05/08		95	%	80 - 120
			Dissolved Cobalt (Co)	2015/05/08		95	%	80 - 120
			Dissolved Copper (Cu)	2015/05/08		93	%	80 - 120
			Dissolved Iron (Fe)	2015/05/08		101	%	80 - 120
			Dissolved Lead (Pb)	2015/05/08		99	%	80 - 120
			Dissolved Manganese (Mn)	2015/05/08		NC	%	80 - 120
			Dissolved Molybdenum (Mo)	2015/05/08		99	%	80 - 120
			Dissolved Nickel (Ni)	2015/05/08		98	%	80 - 120
			Dissolved Selenium (Se)	2015/05/08		93	%	80 - 120
			Dissolved Silver (Ag)	2015/05/08		101	%	80 - 120
			Dissolved Strontium (Sr)	2015/05/08		98	%	80 - 120
			Dissolved Thallium (TI)	2015/05/08		102	%	80 - 120
			Dissolved Tin (Sn)	2015/05/08		98	%	80 - 120
			Dissolved Uranium (U)	2015/05/08		104	%	80 - 120
			Dissolved Vanadium (V)	2015/05/08		98	%	80 - 120
			Dissolved Zinc (Zn)	2015/05/08		97	%	80 - 120
4011535	KCR	LCS	n-Dotriacontane - Extractable	2015/05/06		118	%	30 - 130
.011000		200	Isobutylbenzene - Extractable	2015/05/06		79	%	30 - 130
			>C10-C16 Hydrocarbons	2015/05/06		75	%	70 - 130
			>C16-C21 Hydrocarbons	2015/05/06		86	%	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2015/05/06</td><td></td><td>98</td><td>%</td><td>70 - 130</td></c32>	2015/05/06		98	%	70 - 130
4011615	ΔSI	105	1 4-Difluorobenzene	2015/05/07		99	%	70 - 130
4011013	/(JL	200	4-Bromofluorobenzene	2015/05/07		101	%	70 - 130
			D4-1 2-Dichloroethane	2015/05/07		101	%	70 - 130
			Isobutylbenzene - Volatile	2015/05/07		96	%	70 - 130
			Benzene	2015/05/07		111	%	70 - 130
			Toluene	2015/05/07		106	%	70 - 130
			Ethylbenzene	2015/05/07		100	%	70 - 130
				2015/05/07		102	/0 %	70 - 130
1011960	нім	105	D10-Anthracene	2015/05/07		9/	%	30 - 130
4011900	THIN	105	D10-Antinacene	2015/05/08		103	/0 %	30 - 130
			D14-repriety	2015/05/08		105	70 0/	20 120
			1 Mothylpaphthalono	2015/05/08		90	70 0/	20 120
			2 Mothylpaphthalono	2015/05/08		00	/0 0/	20 120
			Aconophthono	2015/05/08		92	/0 0/	20 120
			Acenaphthene	2015/05/06		97	70 0/	20 120
			Actinapricityiene	2015/05/08		94	70 0/	20 120
			Anundene	2012/02/08		00	70 0/	20 120
			Denzo(a)antiniduene Banzo(a)antinia	2015/05/08		67 02	70 0/	20 120
			Benzo(b)fluerenthene	2015/05/08		82	70 0/	30 - 130 20 - 120
				2015/05/08		/U	% 0/	30 - 130
			Benzo(g,n,l)perylene	2015/05/08		80	% 0/	30 - 130
			Benzo(J)nuorantnene	2015/05/08		80	%	30 - 130
			Chryster	2015/05/08		85	%	30 - 130
			Chrysene Diference (a. b.)	2015/05/08		89	%	30 - 130
			Dibenz(a,h)anthracene	2015/05/08		76	%	30 - 130



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	Units	QC Limits
			Fluoranthene	2015/05/08		92	%	30 - 130
			Fluorene	2015/05/08		96	%	30 - 130
			Indeno(1,2,3-cd)pyrene	2015/05/08		81	%	30 - 130
			Naphthalene	2015/05/08		94	%	30 - 130
			Perylene	2015/05/08		88	%	30 - 130
			Phenanthrene	2015/05/08		90	%	30 - 130
			Pyrene	2015/05/08		94	%	30 - 130
4015053	MLB	LCS	Dissolved Aluminum (Al)	2015/05/08		100	%	80 - 120
			Dissolved Antimony (Sb)	2015/05/08		101	%	80 - 120
			Dissolved Arsenic (As)	2015/05/08		93	%	80 - 120
			Dissolved Barium (Ba)	2015/05/08		100	%	80 - 120
			Dissolved Beryllium (Be)	2015/05/08		100	%	80 - 120
			Dissolved Boron (B)	2015/05/08		95	%	80 - 120
			Dissolved Cadmium (Cd)	2015/05/08		102	%	80 - 120
			Dissolved Chromium (Cr)	2015/05/08		94	%	80 - 120
			Dissolved Cobalt (Co)	2015/05/08		96	%	80 - 120
			Dissolved Copper (Cu)	2015/05/08		94	%	80 - 120
			Dissolved Iron (Fe)	2015/05/08		101	%	80 - 120
			Dissolved Lead (Pb)	2015/05/08		99	%	80 - 120
			Dissolved Manganese (Mn)	2015/05/08		97	%	80 - 120
			Dissolved Molybdenum (Mo)	2015/05/08		101	%	80 - 120
			Dissolved Nickel (Ni)	2015/05/08		97	%	80 - 120
			Dissolved Selenium (Se)	2015/05/08		92	%	80 - 120
			Dissolved Silver (Ag)	2015/05/08		101	%	80 - 120
			Dissolved Strontium (Sr)	2015/05/08		99	%	80 - 120
			Dissolved Thallium (Tl)	2015/05/08		102	%	80 - 120
			Dissolved Tin (Sn)	2015/05/08		98	%	80 - 120
			Dissolved Uranium (U)	2015/05/08		104	%	80 - 120
			Dissolved Vanadium (V)	2015/05/08		97	%	80 - 120
			Dissolved Zinc (Zn)	2015/05/08		99	%	80 - 120
4015225	KCR	LCS	n-Dotriacontane - Extractable	2015/05/08		111	%	30 - 130
			Isobutylbenzene - Extractable	2015/05/08		76	%	30 - 130
			>C10-C16 Hydrocarbons	2015/05/08		81	%	70 - 130
			>C16-C21 Hydrocarbons	2015/05/08		99	%	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2015/05/08</td><td></td><td>93</td><td>%</td><td>70 - 130</td></c32>	2015/05/08		93	%	70 - 130

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.

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

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

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

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

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

(1) TEH surrogate(s) not within acceptance limits. Samples tested had insufficient volume to repeat the analytical run.



VALIDATION SIGNATURE PAGE

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

una

Eric Dearman, Scientific Specialist

Kotomarie MacDonald

Rose MacDonald, Scientific Specialist (Organics)

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



DATA QUALITY WAIVER

2015/05/13 04:27 PM

Involce Clier Involce Clier Involce Proje	t Name: Imperial Oil L t ID #: 11700 ect Manager: Janice Jo	td hnston		si	ite Location: 64 MILL LA lient Project #: 087042	KE ROAD NO. 2, HUBBARDS, NS	Maxxam Job #: E	582194
Report To C Report To C Report To P Maxsam Pro	lient Name: Conestogi lient ID #: 15973 roject Manager: Scott ject Manager: Michell	e-Rovers and A Lieweflyn Ie Hill	ssociates Ltd	T. Q C T R	ask #: 4410275313 wote: 841983 OC/Submission #: 8606 AT: 8 Days wsh: No	698	Received By: A Received: 2 DQW #: 3 DQW Greated By: 1 DQW Greated: 3	Nyson Walters 1015/05/05 14:22 1282 Vichelle Hill 1015/05/13 14:19
Lab ID	Client Sample ID	Matrix	Test Code	Analysis Type	Parameters	Deviation	Root Cause	Potential Impact
AF3893	MW5	Water	EPHPIRI-W	ТРИС	n-Dotriacontane - Extractuble	65 Surrogate Recovery Above Control Limit	814 No Repeat-Insuit, Sample	parameters in this test in this sample.
AFJ894	MW6	Water	EPHPIRI-W	ТРНС	n-Dotriacontane - Extractable	#5 Surrogate Recovery Above Control Limit	#14.No Repeat-Insuff. Sample	This may represent a high bias for the parameters in this test in this sample.
Waiver Issue Signature: Data Quality Signature: Data Quality Signature:	d By: Waiver Bevlewed ar 	MUU nd Accepted B <u>Janala</u> Declined By:	. lliu N		Date: <u>2015/05/13 1</u> Date: <u>2015</u> Date:	6.25 105/14	Name: <u>Miche</u> Title: <u>Projes</u> Name: <u>()</u> Title: <u>()</u> Name: Title:	a Manager Snna MacDonald Jonmental Scientist
Comments /	Requested Actions:	-						

If this waiver is not returned within 7 calendar days of issuance, the associated data will be deemed acceptable as reported by the issuing laboratory. Closure of the Data Quality Waiver Request requires written acceptance, or declining with comments. Failure to return a signed waiver within 7 calendar days will be reported to imperial OII as a failure to close the Data Quality Waiver Request by the recipient of the data.

Maxxam Bedfa	Bluewa ord, NS maxxa	iter F S B4 amar	Roac 4B 1 halyt	d, Si G9 tics.	uite com	105 Ph	one: (90 Fax: (90 Free: 1-1)2) 42)2) 42 800-5	0-02	03 12 227			EX	CHA	IN-C	DF-C	USTO	AL L DDY	REC		IXX. D STE	D		Co	fC#	BE		56	98							
INVOICE INFORMATION				R	EPC	RT INFORM	ATION		1				_																00							
Company Name: 🕱 Imperial Oil 🛛 Exxo	inMobil	Con	npany	y Nar	ne:	CRA																														
Contact Name: JANICE JOHNSTON	4	Con	tact I	Name	S	COTT LIE	NELLYI	4	1	÷.	1			221			-		200		-	1	1				11									
Address: 600 PLEASANT ST. DARTMONTH, NS 824 327		Add	iress:	45	B	KERLEY TMOUTH 3B 1J7	, NS		c.	als				d (F/HCIO4)	-	a) 5 - C32)	S Fuel Oll Sp				1	-				1		23								
mail: janice.m.K.johnston@esso ph: (902) 420-7226	.ca	Ema Ph:	(40)	z) L	ue1	lyn@ceau -1248	world.	com	Dies Mata	Diss Meta	Method)			est Metho s (HNO3/F	Dron	Agricultura (BTEX, CI	Sotable), N EX C6 - CC	el TEH																		
Sampler Name (Print): RAISSA HART /MEUSSA FITZGE JEFF VENIOT	eard/	Cor	nsult	0870		042			Total or	Total or	Default	Default		cury able Dig Digest ediment	oligest w Level AA Nuble Bo CCME		Soil (Pc		UOIIP	L	24, 8260															
	-	MA	TRIX	-	ERS	SAMPL	ING	RED	honse	Choose	Digest (bev		s & Mer It Avalia s Total I s Total I cean Se	/apour	Hydro	carbon Low L	VPH, I	LIGIODAL		EPA 62			•												
FIELD SAMPLE ID	OUND	TER		1ER	ONTAIN	DATE	TIME 24 HR)	D FILTE RESERV	UIRED	SW-dy	Total I	Dissol	cury	Metal Defau Metal For O	Cold /	(Requ RBCA	Hydro Policy	BTEX	PAHs	PCBs	VOCs															
	GR	SUP	SOI	fo	0 #	2		A PIC		HC 1	Wa	ater	Mer	Metals	Soil	-		0	rganic	s	_	-														
MWI	X				6	2015/05/01	13:39									X																				
MW2	X				6	2015/05/01	13:42									X						-														
MWB	X				6	2015/05/01	13:50									X																				
MWH	X				8	2015/05/01	13:57									X			X																	
MW5	X				8	2015/05/01	13:59									X			X																	
MW5	X				1	2015/05/01	13:59	X		1	1	X											Γ													
MWb	X				6	2015/05/01	14:07									X										100										
MWA	X				6	2015/05/01	13:00									X										12		T								
FIELD BLANK				X	8	2015/05/01	14:00									X			>	(-															
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imall: jonice.m.k. johnston@es Ph: (902) 420-7226 Sampler Name (Print): RANSSA HAET /MELISSA FITZGE JEFF VENIOT	ERALD	Email: Ph: (Consu	go2) 4 Proje	yn @Claw 68-1248 ^{ct #:} 042	brld.co	<u>m</u>	Total or Diss Metal	Total or Diss Meta	Default Method)		cury bible Digest Methoo Digest ediments (HNO3/H	w Level AA Muble Boron CCME Agricultura	carbons (BTEX, C6 s Soli (Potabie), N5 evel BTEX C6 - C3	Vater Low Level TEH ation			24, 8260						
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DATA QUALITY REVIEW CHECKLIST - IMPERIAL OIL PROJECTS

Consultant: CRA Ltd	_	Sampling Date: <u>2015/05/01</u>					
Location: 64 Mill Lake Road, Hubbards, Nova	Laboratory : Maxxam Analytics (Bedford, NS)						
Consultant Project Number: 087042-01-15	_	Sample Submission Number: <u>B582194</u>					
Are All Laboratory QC Samples Within Acceptance Crit	teria (Yes, No	o, Not Applicable)?					
Yes No	NA	Comments					
Instrument Surrogate RecoveryXExtraction Surrogate RecoveryXMethod Blank ConcentrationXMatrix Duplicate RPDXMatrix Spike RecoveryXLab Control Sample RecoveryX		TEH surrogate(s) not within acceptance limits. Insufficient sample to repeat.					
Are All Field QC Samples Within Alert Limits (Yes, No.	, Not Applic	able)?					
Yes No	NA	Comments					
Field Blank ConcentrationXTrip Blank ConcentrationXField Duplicate RPDX		All field QC samples have met alert limits					
Has CoA been signed off (Yes/No)?: Has lab warranted all tests were in statistical control in C Has lab warranted all tests were analyzed following SOP Were all samples analyzed within hold times (Yes/No)?: All volatiles samples methanol extracted (if required) wit Is Chain of Custody completed and signed (Yes/No)?: Were sample temperatures acceptable when they reached	CoA (Yes/No ''s in CoA (Y thin 48 hours 1 lab (Yes/No	$\begin{array}{c c} Yes \\ \hline No \\ es/No)?: & \underline{Yes} \\ \hline Yes \\ \hline S (Yes/No)?: & \underline{Yes} \\ \hline Yes \\ \hline Yes \\ \hline Yes \\ \hline Yes \\ \hline \end{array}$					
Was a Data Quality Waiver (DQW) issued (Yes/No)?: Date Issued: <u>13-May-15</u>	_	Yes Date of Response: <u>14-May-15</u>					
Is data considered to be reliable (Yes/No)?: If answer is "No", describe and provide rationale:	Yes						
Data Reviewed by (Print): <i>Jeffery Veniot</i>		Data Reviewed by (Signature):					
Date: <u>2015/05/15</u>							

Data Quality Review Checklist (Rev 13

For Use on Imperial Oil Projects Only

Appendix C

Quality Assurance and Quality Control

Quality Assurance and Quality Control Discussion

There were no laboratory or field QA/QC issues identified in this report that require discussion.

The groundwater field QA/QC program consisted of one (1) field duplicate samples, one (1) field blank sample, and one (1) trip blank sample that were all submitted for laboratory analysis of BTEX and modified TPH. The field blank and tripblank samples were also submitted for PAH analysis.

For the field duplicate samples, evaluations of the QA/QC results were determined by calculating the relative percent difference (RPD) between the field duplicate and original sample results, and comparison of the RPD to designated alert limits.

RPD =
$$\left(\frac{(X_1 - X_2)}{(X_1 + X_2)} \right) X 100$$

Consistent with laboratory practices and to permit reliable calculations, an RPD is only calculated when the original and duplicate sample concentrations are at least 5 times the reportable detection limit (RDL).

The designated RPD alert limits for the groundwater samples are presented in Table C-2. The RPDs were either within the alert limits for all of the parameters that were analyzed or not calculable.

The water field blank and trip blank data were compared to the alert limits and are presented in Tables C-3 and C-4. As indicated, all of the results were within the alert limits.

The laboratory QA/QC program consisted of one or more of the following analysis (a) instrument and extraction surrogate recoveries for groundwater samples that were analyzed, and (b) the analysis of method blank, laboratory duplicate, matrix spike and/or laboratory control samples for the sample analytical batches that were analyzed. The laboratory QA/QC results are presented in the certificates of analysis (Appendix B).

No field or laboratory QA/QC issues were identified that would affect the overall conclusions presented in this report. The results reported are considered to be reliable.

FIELD AND LABORATORY QUALITY ASSURANCE AND QUALITY CONTROL ISSUES 64 Mill Lake Road No. 2, Hubbards, Nova Scotia

MAXXAM JOB #	LAB SAMPLE ID	DQW NUMBER	SAMPLE NAME	MATRIX	TEST AFFECTED	DEVIATION	INTERPRETATION
B582194	AFJ893	N/A	MW5	Ground Water	Copper	SQC trend rule failure for copper Batch 4015053. Exponentially- Weighted Moving Average (EWMA) greater than 1.5 SD below the mean	This has no effect on the interpretation of the data as there is no regulatory criteria for Copper in ground water.
B582194	AFJ893	2282	MW5	Ground Water	ТРНС	Surrogate Recovery Above Control Limit	This may represent a high bias for the parameters in this test in this sample. This has no effect on the interpretation of the data as the results were well below regulatory criteria
B582194	AFJ894	2282	MW6	Ground Water	ТРНС	Surrogate Recovery Above Control Limit	This may represent a high bias for the parameters in this test in this sample. This has no effect on the interpretation of the data as the results were well below regulatory criteria

RELATIVE PERCENT DIFFERENCE CALCULATIONS - GROUNDWATER FIELD DUPLICATE SAMPLES

PETROLEUM HYDROCARBON PARAMETERS

64 Mill Lake Road No. 2, Hubbards, Nova Scotia

SAMPLE LOCATIONS	MW3	RDL	MWA FIELD DUPLICATE of MW3	RDL	RPD	RPD ALERT LIMITS (%) ^(a)
Maxxam Sample ID Date Sampled (yyyy/mm/dd)	AFJ891 2015/05/01		AFJ895 2015/05/01			
PARAMETERS						
Benzene	<0.0010	0.0010	<0.0010	0.0010	NC	80
Toluene	<0.0010	0.0010	<0.0010	0.0010	NC	80
Ethylbenzene	<0.0010	0.0010	<0.0010	0.0010	NC	80
Total Xylenes	<0.0020	0.0020	<0.0020	0.0020	NC	80
Petroleum Hydrocarbons (C6 - C10)	<0.010	0.010	<0.010	0.010	NC	80
Petroleum Hydrocarbons (>C10 - C16)	<0.050	0.050	<0.050	0.050	NC	80
Petroleum Hydrocarbons (>C16 - C21)	<0.050	0.050	<0.050	0.050	NC	80
Petroleum Hydrocarbons (>C21 - C32)	<0.10	0.10	<0.10	0.10	NC	80
Petroleum Hydrocarbons (Modified TPH)	<0.10	0.10	<0.10	0.10	NC	80

a - Alert limits used for field duplicate samples

NA - Not Applicable

NC - Not Calculated

RDL - Reportable Detection Limit

RPD - Relative Percent Difference (not calculated when one or both results are less than 5X RDL)

"-" Not analyzed

Results for all parameters are reported in milligrams per litre (mg/L)

BOLD - Exceeds RPD alert limit

GROUNDWATER FIELD BLANK AND TRIP BLANK DATA

PETROLEUM HYDROCARBON PARAMETERS

64 Mill Lake Road No. 2, Hubbards, Nova Scotia

SAMPLE LOCATIONS		FIELD BLANK	EXCEEDS ALERT	TRIP BLANK	EXCEEDS ALERT
			LIMIT		LIMIT
Maxxam Sample ID		AFJ896		AFJ897	
Date Sampled (yyyy/mm/dd)		2015/05/01		2015/05/01	
PARAMETERS	RDL				
Benzene	0.0010	<0.0010	No	<0.0010	No
Toluene	0.0010	<0.0010	No	<0.0010	No
Ethylbenzene	0.0010	<0.0010	No	<0.0010	No
Total Xylenes	0.0020	<0.0020	No	<0.0020	No
Petroleum Hydrocarbons (C6 - C10)	0.010	<0.010	No	<0.010	No
Petroleum Hydrocarbons (>C10 - C16)	0.050	<0.050	No	<0.050	No
Petroleum Hydrocarbons (>C16 - C21)	0.050	<0.050	No	<0.050	No
Petroleum Hydrocarbons (>C21 - C32)	0.10	<0.10	No	<0.10	No
Petroleum Hydrocarbons (Modified TPH)	0.10	<0.10	No	<0.10	No

RDL - Reportable detection limit

"-" - Not Analyzed

Results for all parameters are reported in milligrams per litre (mg/L)

BOLD - Exceeds alert limit

Note - Alert limits for field blanks and trip blanks are 5x RDL for BTEX and TPH fractions

GROUNDWATER FIELD BLANK AND TRIP BLANK DATA POLYAROMATIC HYDROCARBON PARAMETERS 64 Mill Lake Road No. 2, Hubbards, Nova Scotia

SAMPLE LOCATIONS	RDL	MWB Field Blank	EXCEEDS ALERT LIMIT	MWC Trip Blank	EXCEEDS ALERT LIMIT
Maxxam Sample ID Date Sampled (yyyy/mm/dd)		AFJ896 2015/05/01		AFJ897 2015/05/01	
PARAMETER					
1-Methylnaphthalene	0.050	<0.050	No	<0.050	No
2-Methylnaphthalene	0.050	<0.050	No	<0.050	No
Acenaphthene	0.010	<0.010	No	<0.010	No
Acenaphthylene	0.010	<0.010	No	<0.010	No
Anthracene	0.010	<0.010	No	<0.010	No
Benzo(a)anthracene	0.010	<0.010	No	<0.010	No
Benzo(a)pyrene	0.010	<0.010	No	<0.010	No
Benzo(b)fluoranthene	0.010	<0.010	No	<0.010	No
Benzo(g,h,i)perylene	0.010	<0.010	No	<0.010	No
Benzo(j)fluoranthene	0.010	<0.010	No	<0.010	No
Benzo(k)fluoranthene	0.010	<0.010	No	<0.010	No
Chrysene	0.010	<0.010	No	<0.010	No
Dibenz(a,h)anthracene	0.010	<0.010	No	<0.010	No
Fluoranthene	0.010	<0.010	No	<0.010	No
Fluorene	0.010	<0.010	No	<0.010	No
Indeno(1,2,3-cd)pyrene	0.010	<0.010	No	<0.010	No
Naphthalene	0.200	<0.20	No	<0.20	No
Perylene	0.010	<0.010	No	<0.010	No
Phenanthrene	0.010	<0.010	No	<0.010	No
Pyrene	0.010	<0.010	No	<0.010	No

NA - Not Applicable

NC - Not Calculated

RDL - Reportable Detection Limit

"-" - Not analyzed

Results for all parameters are reported in micrograms per litres ($\mu g/L$)

BOLD - Exceeds alert limit

Note - Alert limits for field blanks and trip blanks are 5x RDL for PAH parameters



		Sample Name Sample Date	TP1/1 7/28/2003	TP1/3 7/28/2003	TP1/9 7/28/2003	TP2/1 7/28/2003	TP2/3 7/28/2003	TP2/3_Dup A (F/D) 7/28/2003	TPH Frac (TP2/3) 7/28/2003	TP3/1 7/28/2003	TP3/6 7/28/2003	TP4/1 7/28/2003	TP5/2 7/28/2003	TP5/2_Dup B (F/D) 7/28/2003
		Depth Interval	0 - 0.5 m	1 - 2 m	4 - 4.3 m	0 - 0.5 m	1 - 1.5 m	1 - 1.5 m	1 - 1.5 m	0 - 0.5 m	2.5 - 3 m	0 - 0.5 m	0.5 - 1 m	0.5 - 1 m
		Туре⁰	N	N	N	N	N	FD	N	N	N	N	N	FD
Parameter	Unit	NSE-EQS ¹												
Benzene	mg/kg	0.042	< 0.025	< 0.025	< 0.025	< 0.025	0.008	< 0.05	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.05
Toluene	mg/kg	0.35	< 0.025	< 0.025	< 0.025	< 0.025	0.054	< 0.2	0.055	0.211	< 0.025	< 0.025	< 0.025	< 0.2
Ethylbenzene	mg/kg	<u>0.065</u>	< 0.025	< 0.025	< 0.025	< 0.025	<u>2.14</u>	<u>2.47</u>	<u>2.14</u>	< 0.025	< 0.025	< 0.025	<u>0.211</u>	<u>0.181</u>
Xylenes	mg/kg	<u>11</u>	< 0.05	< 0.05	< 0.05	0.155	11	<u>12.9</u>	11	< 0.05	< 0.05	< 0.05	2.43	2.13
C6-C10	mg/kg	-	< 2.5	5.5	< 2.5	25	434	722	382	< 2.5	< 2.5	< 2.5	280	268
F1 (C6-C10) - BTEX	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-
F2 (C10-C16)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-
C10-C21	mg/kg	-	36	2.5	< 15	1100	5000	5700	4872	< 15	< 15	< 15	6000	5700
C16-C21	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-
C21-C32	mg/kg	-	52	170	< 15	430	520	620	450	29	< 15	< 15	480	460
Modified TPH (Tier 1)	mg/kg	<mark>870 (Gas)</mark> <u>1800 (Fuel)</u> 10000 (Lube)	88	420	< 32	1500	<u>6000</u>	<u>7100</u>	<u>5710</u>	< 32	< 32	< 32	<u>6700</u>	<u>6400</u>
Reached Baseline at C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrocarbon Resemblance	-	-	Fuel/Lube	Fuel	-	Fuel	Fuel	Fuel	Fuel	Lube	-	-	Fuel	Fuel

⁰ Type: N=Normal Sample; FD=Field Duplicate

¹ Nova Scotia Environment (NSE 2013) Table 1A Tier 1 Environmental Quality Standards for Soil at a Potable Site, Coarse Grained Soil, Commercial Land Use.

<u>BOLD</u> = Exceeds criteria.

		Sample Name Sample Date Depth Interval Type ⁰	TP5/4 7/28/2003 2 - 3 m N	TP6/5 7/28/2003 2 - 2.5 m N	TP7/2 7/28/2003 0.5 - 1 m N	TP8/3 7/28/2003 1 - 1.5 m N	TP9/1 7/28/2003 0.5 - 1 m N	TP9/5 7/28/2003 2.5 - 3 m N	TP10/1 7/28/2003 0.5 - 1 m N	TP10/5 7/28/2003 2 - 2.5 m N	TP11/2 7/28/2003 0.4 - 0.9 m N	TP11/5 7/28/2003 2 - 2.5 m N	TPH Frac (TP11/5) 7/28/2003 2 - 2.5 m N	TP11/5_Dup C (F/D) 7/28/2003 2 - 2.5 m FD
Parameter	Unit	NSE-EOS ¹												
Benzene	mg/kg	0.042	< 0.05	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Toluene	mg/kg	0.35	< 0.05	< 0.025	< 0.025	< 0.025	0.308	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Ethylbenzene	mg/kg	<u>0.065</u>	<u>1.83</u>	< 0.025	< 0.025	< 0.025	<u>0.157</u>	< 0.025	< 0.025	< 0.025	< 0.025	<u>0.383</u>	<u>0.357</u>	0.048
Xylenes	mg/kg	<u>11</u>	<u>15.9</u>	< 0.05	< 0.05	< 0.05	7.2	< 0.05	< 0.05	< 0.05	< 0.05	2.44	2.72	0.346
C6-C10	mg/kg	-	420	< 2.5	< 2.5	< 2.5	52.3	< 2.5	< 2.5	< 2.5	10.6	209	105.6	67.6
F1 (C6-C10) - BTEX	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-
F2 (C10-C16)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-
C10-C21	mg/kg	-	93	< 15	200	< 15	670	< 15	43	< 15	420	260	274.3	200
C16-C21	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-
C21-C32	mg/kg	-	< 15	< 15	33	< 15	82	< 15	28	< 15	84	21	< 15	20
Modified TPH (Tier 1)	mg/kg	<mark>870 (Gas)</mark> <u>1800 (Fuel)</u> 10000 (Lube)	510	< 32	230	< 32	810	< 32	70	< 32	510	490	380	290
Reached Baseline at C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrocarbon Resemblance	-	-	Fuel	-	Fuel	-	Fuel	-	Fuel	-	Fuel	Gas/Fuel	Gas/Fuel	Gas/Fuel

⁰ Type: N=Normal Sample; FD=Field Duplicate

¹ Nova Scotia Environment (NSE 2013) Table 1A Tier 1 Environmental Quality Standards for Soil at a Potable Site, Coarse Grained Soil, Commercial Land Use.

<u>BOLD</u> = Exceeds criteria.

		Sample Name	TP12/2	TP12/6	TP13/5	TP14/3	TP15/1	TP15/6	TP15/6_Dup D (F/D)	TP16/2	TP16/4	TP17/2	TP17/6	TP18/2	TP18/5
		Sample Date	7/31/2003	7/31/2003	7/31/2003	7/31/2003	7/31/2003	7/31/2003	7/31/2003	7/31/2003	7/31/2003	8/1/2003	8/1/2003	8/1/2003	8/1/2003
		Depth Interval	0.3 - 0.8 m	2 - 2.5 m	2 - 3 m	1 - 2 m	0 - 0.6 m	2.5 - 3.5 m	2.5 - 3.5 m	0.4 - 1 m	2 - 2.5 m	0.8 - 1 m	3 - 3.2 m	0.4 - 1 m	2.75 - 3 m
		Type⁰	N	N	N	N	N	N	FD	N	N	N	N	N	N
Parameter	Unit	NSE-EQS ¹													
Benzene	mg/kg	0.042	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Toluene	mg/kg	0.35	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Ethylbenzene	mg/kg	<u>0.065</u>	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Xylenes	mg/kg	<u>11</u>	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
C6-C10	mg/kg	-	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
F1 (C6-C10) - BTEX	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F2 (C10-C16)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C10-C21	mg/kg	-	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15
C16-C21	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C21-C32	mg/kg	-	17	< 15	< 15	< 15	< 15	< 15	< 15	46	< 15	< 15	< 15	18	< 15
Modified TPH (Tier 1)	mg/kg	<mark>870 (Gas)</mark> <u>1800 (Fuel)</u> 10000 (Lube)	< 32	< 32	< 32	< 32	< 32	< 32	< 32	46	< 32	< 32	< 32	< 32	< 32
Reached Baseline at C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrocarbon Resemblance	-	-	Lube	-	-	-	-	-	-	Lube	-	-	-	Lube	-

⁰ Type: N=Normal Sample; FD=Field Duplicate

¹ Nova Scotia Environment (NSE 2013) Table 1A Tier 1 Environmental Quality Standards for Soil at a Potable Site, Coarse Grained Soil, Commercial Land Use.

<u>BOLD</u> = Exceeds criteria.

		Sample Name	TP19/1	TP19/5	TP20/2	TP20/6	TP20/6_Dup E (F/D)	ST Base	ST E Wall	ST S Wall	TP21	TP21	TP21	TP22
		Sample Date	8/1/2003	8/1/2003	8/1/2003	8/1/2003	8/1/2003	7/28/2003	7/28/2003	7/28/2003	11/19/2012	11/19/2012	11/19/2012	11/19/2012
		Depth Interval	0 - 0.5 m	2 - 2.5 m	0.3 - 0.7 m	2.5 - 3.5 m	2.5 - 3.5 m	3.0 m	1 - 3 m	1 - 3 m	0 - 0.5 m	1 - 1.5 m	2.5 - 3 m	0.5 - 1 m
		Туре⁰	N	N	N	N	FD	N	N	N	N	N	N	N
Parameter	Unit	NSE-EQS ¹												
Benzene	mg/kg	0.042	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Toluene	mg/kg	0.35	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Ethylbenzene	mg/kg	<u>0.065</u>	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Xylenes	mg/kg	<u>11</u>	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
C6-C10	mg/kg	-	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	21.2	< 2.5	-	-	-	-
F1 (C6-C10) - BTEX	mg/kg	-	-	-	-	-	-	-	-	-	< 2.5	< 2.5	< 2.5	< 2.5
F2 (C10-C16)	mg/kg	-	-	-	-	-	-	-	-	-	< 10	< 10	< 10	< 10
C10-C21	mg/kg	-	< 15	< 15	< 15	< 15	< 15	19	1100	< 15	-	-	-	-
C16-C21	mg/kg	-	-	-	-	-	-	-	-	-	< 10	< 10	< 10	< 10
C21-C32	mg/kg	-	< 15	< 15	< 15	< 15	< 15	30	280	< 15	< 15	< 15	< 15	23
Modified TPH (Tier 1)	mg/kg	<mark>870 (Gas)</mark> <u>1800 (Fuel)</u> 10000 (Lube)	< 32	< 32	< 32	< 32	< 32	49	<u>1400</u>	< 32	<15	<15	<15	23
Reached Baseline at C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrocarbon Resemblance	-	-	-	-	-	-	-	Fuel/Lube	Gas	-	-	-	-	Lube

⁰ Type: N=Normal Sample; FD=Field Duplicate

¹ Nova Scotia Environment (NSE 2013) Table 1A Tier 1 Environmental Quality Standards for Soil at a Potable Site, Coarse Grained Soil, Commercial Land Use.

<u>BOLD</u> = Exceeds criteria.

		Sample Name	TP22	TP23	ТР23	TP23	TP24	TP24	TP24	TP24
		Sample Date	11/19/2012	11/19/2012	11/19/2012	11/19/2012	11/19/2012	11/19/2012	11/19/2012	11/19/2012
		Depth Interval	1.5 - 2 m	0 - 0.5 m	1 - 1.5 m	2.5 - 3 m	0.5 - 1 m	1 - 1.5 m	3 - 3.5 m	3 - 3.5 m
		Type ⁰	N	N	N	N	N	N	N	FD
Parameter	Unit	NSE-EQS ¹								
Benzene	mg/kg	0.042	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Toluene	mg/kg	0.35	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Ethylbenzene	mg/kg	<u>0.065</u>	< 0.025	< 0.025	< 0.025	< 0.025	<u>0.54</u>	<u>0.57</u>	< 0.025	< 0.025
Xylenes	mg/kg	<u>11</u>	< 0.05	< 0.05	< 0.05	< 0.05	2.2	4.8	0.072	< 0.05
C6-C10	mg/kg	-	-	-	-	-	-	-	-	-
F1 (C6-C10) - BTEX	mg/kg	-	< 2.5	< 2.5	< 2.5	< 2.5	230	520	28	3
F2 (C10-C16)	mg/kg	-	< 10	< 10	31	< 10	1100	400	110	2600
C10-C21	mg/kg	-	-	-	-	-	-	-	-	-
C16-C21	mg/kg	-	< 10	< 10	61	< 10	310	110	55	730
C21-C32	mg/kg	-	< 15	< 15	33	< 15	63	29	30	150
Modified TPH (Tier 1)	mg/kg	870 (Gas) 1800 (Fuel) 10000 (Lube)	<15	<15	130	<15	<u>1700</u>	<u>1100</u>	230	<u>3500</u>
Reached Baseline at C32	-	-	-	-	-	-	-	-	-	-
Hydrocarbon Resemblance	-	-	-	-	Fuel	-	Gas	Gas	Gas	Fuel

⁰ Type: N=Normal Sample; FD=Field Duplicate

¹ Nova Scotia Environment (NSE 2013) Table 1A Tier 1 Environmental Quality Standards for Soil at a Potable Site, Coarse Grained Soil, Commercial Land Use.

<u>BOLD</u> = Exceeds criteria.

'-' or NA = not applicable

Imperial Oil Limited
		_				
	2	Sample Name	TP2/3	TP3/6	TP15/1	TP16/2
		Sample Date	7/28/2003	7/28/2003	7/31/2003	7/31/2003
	D	epth Interval	1 - 1.5 m	2.5 - 3 m	0 - 0.6 m	0.4 - 1 m
		Type⁰	Ν	N	N	N
Parameter	Unit	NSE-EQS ¹				
Acenaphthene	mg/kg	8000	3	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	23	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	37000	0.61	< 0.05	< 0.05	< 0.05
Benzo(A)Anthracene	mg/kg	-	0.08	< 0.05	< 0.05	< 0.05
Benzo(A)Pyrene	mg/kg	-	0.08	< 0.05	< 0.05	< 0.05
Benzo(B)Fluoranthene	mg/kg	-	0.07	< 0.05	< 0.05	< 0.05
Benzo(G,H,I)Perylene	mg/kg	-	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(K)Fluoranthene	mg/kg	-	0.07	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	-	0.13	< 0.05	< 0.05	< 0.05
Dibenzo(A,H)Anthracene	mg/kg	-	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	5300	0.32	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	4100	6.7	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	-	< 0.05	< 0.05	< 0.05	< 0.05
Methylnaphthalene, 1-	mg/kg	<u>30</u>	<u>37</u>	< 0.05	< 0.05	< 0.05
Methylnaphthalene, 2-	mg/kg	<u>30</u>	<u>56</u>	< 0.05	< 0.05	< 0.05
Naphthalene	mg/kg	25	23	< 0.05	< 0.05	< 0.05
Perylene	mg/kg	-	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	17	13	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	3200	0.58	< 0.05	< 0.05	< 0.05

¹ Nova Scotia Environment Table 1A Tier I Environmental Quality Standards for Soil at a Potable Site, Coarse Grained Soil, Commercial Land Use.

<u>BOLD</u> = Exceeds criteria.

'-' or NA = not applicable

		Comula Nome	TD2/2	
		Sample Name	IP2/3	TP3/6
			7/28/2003	7/28/2003
		Depth Interval	1 - 1.5 m	2.5 - 3 m
		Type °	N	N
Parameter	Unit	NSE-EQS ¹		
Aluminum	mg/kg	15400	9500	4300
Antimony	mg/kg	63	< 2	< 2
Arsenic	mg/kg	31	5	7
Barium	mg/kg	15000	24	11
Beryllium	mg/kg	320	< 2	< 2
Boron	mg/kg	24000	< 5	< 5
Cadmium	mg/kg	49	< 0.3	< 0.3
Chromium	mg/kg	630	6	4
Cobalt	mg/kg	250	2	1
Copper	mg/kg	4000	6	5
Iron	mg/kg	11000	7100	4600
Lead	mg/kg	260	12	5.1
Manganese	mg/kg	-	150	100
Molybdenum	mg/kg	1200	< 2	< 2
Nickel	mg/kg	2200	5	3
Selenium	mg/kg	125	< 2	< 2
Silver	mg/kg	490	< 0.5	< 0.5
Strontium	mg/kg	9400	< 5	< 5
Thallium	mg/kg	1	0.1	< 0.1
Uranium	mg/kg	33	0.8	1.2
Vanadium	mg/kg	160	9	6
Zinc	mg/kg	47000	30	61

¹ Nova Scotia Environment Table 1A Tier I Environmental Quality Standards for Soil at a Potable Site, Coarse Grained Soil, Commercial Land Use.

'-' or NA = not applicable

IOL-CTC: Hubbards, NS Table 2.0: 2016 Phase II Soil Assessment Results PHCs

	-	Location ID Sample Date	TP16-01 7/28/2016	TP16-02 7/28/2016	TP16-03 7/28/2016	TP16-03 7/28/2016	TP16-04 7/27/2016	TP16-05 7/27/2016	TP16-05 7/27/2016		
	L	Type ⁰	4 - 5 m N	2.5 - 3 m N	N N	3 - 4 m N	3 - 4 m N	1 - 2 m N	3 - 4 m N		
Parameter	Unit	NSE-EQS ¹	Test-Pit Investigation								
Benzene	mg/kg	0.042	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025		
Toluene	mg/kg	0.35	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025		
Ethylbenzene	mg/kg	<u>0.065</u>	< 0.025	< 0.025	<u>0.072</u>	0.05	< 0.025	<u>0.36</u>	< 0.025		
Xylenes	mg/kg	11	< 0.050	< 0.050	0.36	0.41	< 0.050	0.83	0.068		
F1 (C6-C10) - BTEX	mg/kg	-	< 2.5	< 2.5	64	48	< 2.5	200	13		
F2 (C10-C16)	mg/kg	-	< 10	< 10	3600	9200	< 10	5500	440		
C16-C21	mg/kg	-	< 10	< 10	1100	2400	< 10	1700	160		
C21-C32	mg/kg	-	< 15	< 15	290	440	< 15	380	45		
Modified TPH (Tier 1)	mg/kg	Gas=870; Fuel=1800; Lube=10000	< 15	< 15	<u>5000</u>	<u>12000</u>	< 15	<u>7800</u>	660		
Reached Baseline at C32	-	-	-	-	YES	YES	-	YES	YES		
Hydrocarbon Resemblance	-	-	-	-	Fuel	Fuel	-	Fuel	Fuel		

⁰ Type: N=Normal Sample; FD=Field Duplicate

¹ Nova Scotia Environment (NSE 2013) Table 1A Tier 1 Environmental Quality Standards for Soil at a Potable Site, Coarse Grained Soil, Commercial Land Use.

<u>BOLD</u> = Exceeds criteria.

'-' or NA = not applicable

	Г	Location ID Sample Date Depth Interval	TP16-06 7/28/2016 2 - 3 m	TP16-06 7/28/2016 2 - 3 m	TP16-06 7/28/2016 3 - 4 m	TP16-07 7/27/2016 2 - 3 m	TP16-08 7/27/2016 3 - 4 m	TP16-09 7/27/2016 0 - 1 m	TP16-10 7/27/2016 3 - 3.5 m
		Type ^o	N	FD	N	N	N	N	N
Parameter	Unit	NSE-EQS ¹			Test-Pi	t Investigatio	n		
Benzene	mg/kg	0.042	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Toluene	mg/kg	0.35	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Ethylbenzene	mg/kg	<u>0.065</u>	<u>0.22</u>	<u>0.17</u>	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Xylenes	mg/kg	11	1.5	0.99	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
F1 (C6-C10) - BTEX	mg/kg	-	120	260	20	< 2.5	< 2.5	5	< 2.5
F2 (C10-C16)	mg/kg	-	490	180	14	< 10	< 10	23	< 10
C16-C21	mg/kg	-	200	86	26	< 10	< 10	32	20
C21-C32	mg/kg	-	46	19	21	< 15	< 15	45	21
Modified TPH (Tier 1)	mg/kg	Gas=870; Fuel=1800; Lube=10000	860	550	82	< 15	< 15	110	41
Reached Baseline at C32	-	-	YES	YES	YES	-	-	YES	YES
Hydrocarbon Resemblance	-	-	Fuel	Fuel	Fuel/Lube	-	-	Fuel/Lube	Fuel/Lube

¹ Nova Scotia Environment (NSE 2013) Table 1A Tier 1 Environmental Quality Standards for Soil at a Potable Site, Coarse Grained Soil, Commercial Land Use.

<u>BOLD</u> = Exceeds criteria.

'-' or NA = not applicable

IOL-CTC: Hubbards, NS Table 2.0: 2016 Phase II Soil Assessment Results PHCs

		Location ID	FA1	FA1	FA2	FA3	FA4	FA5	FA6	FA7	FA8	FA9	FA10	FA11
		Sample Date	10/18/2016	10/18/2016	10/18/2016	10/18/2016	10/18/2016	10/18/2016	10/18/2016	10/18/2016	10/18/2016	10/18/2016	10/18/2016	10/18/2016
		Depth Interval	0 - 1 m	0 - 1 m	0.5 - 1.5 m	1 - 2 m	0.5 - 1.5 m	0 - 1 m	0.5 - 1.5 m	0 - 1 m	1 - 2 m	1 - 2 m	0 - 0.5 m	2 m
		Type ⁰	N	FD	N	N	N	N	N	Ν	Ν	Ν	Ν	N
Parameter	Unit	NSE-EQS ¹					Former	Office / Ware	ehouse Invest	igation				
Benzene	mg/kg	0.042	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Toluene	mg/kg	0.35	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Ethylbenzene	mg/kg	<u>0.065</u>	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Xylenes	mg/kg	11	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
F1 (C6-C10) - BTEX	mg/kg	-	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
F2 (C10-C16)	mg/kg	-	< 10	< 10	< 10	< 10	31	84	< 10	< 10	< 10	< 10	< 10	< 10
C16-C21	mg/kg	-	36	11	< 10	< 10	100	670	< 10	13	< 10	27	< 10	< 10
C21-C32	mg/kg	-	310	81	64	31	270	430	< 15	33	28	60	70	< 15
		Gas=870;												
Modified TPH (Tier 1)	mg/kg	Fuel=1800 ;	340	92	64	31	400	1200	< 15	46	28	88	70	< 15
		Lube=10000												
Reached Baseline at C32	-	-	YES	YES	YES	YES	NO	YES	NA	YES	YES	YES	YES	-
Hydrocarbon Resemblance	-	-	Lube	Lube	Lube	Lube	Fuel/Lube	Fuel/Lube	NA	Lube	Lube	Lube	Lube	-

⁰ Type: N=Normal Sample; FD=Field Duplicate

¹ Nova Scotia Environment (NSE 2013) Table 1A Tier 1 Environmental Quality Standards for Soil at a Potable Site, Coarse Grained Soil, Commercial Land Use.

BOLD = Exceeds criteria.

'-' or NA = not applicable

		Location ID	FA12	STP-FA1	STP-FA2	STP-FA3	STP-FA4
		Sample Date	10/18/2016	10/18/2016	10/18/2016	10/18/2016	10/18/2016
	0	Depth Interval	2 m	-	-	-	-
		Type ⁰	N	Ν	N	N	N
Parameter	Unit	NSE-EQS ¹		Former Office	/ Warehouse	Investigation	า
Benzene	mg/kg	0.042	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Toluene	mg/kg	0.35	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Ethylbenzene	mg/kg	<u>0.065</u>	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Xylenes	mg/kg	11	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
F1 (C6-C10) - BTEX	mg/kg	-	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
F2 (C10-C16)	mg/kg	-	< 10	< 10	< 10	< 10	< 10
C16-C21	mg/kg	-	< 10	22	< 10	< 10	< 10
C21-C32	mg/kg	-	44	37	25	31	26
Modified TPH (Tier 1)	mg/kg	Gas=870; Fuel=1800;	44	59	25	31	26
(,	5	Lube=10000			-		-
Reached Baseline at C32	-	-	YES	YES	YES	YES	YES
Hydrocarbon Resemblance	-	-	Lube	Fuel/Lube	Lube	Lube	Lube

¹ Nova Scotia Environment (NSE 2013) Table 1A Tier 1 Environmental Quality Standards for Soil at a Potable Site, Coarse Grained Soil, Commercial Land Use.

<u>BOLD</u> = Exceeds criteria.

'-' or NA = not applicable

IOL-CTC: Hubbards, NS Table 2.0: 2016 Phase II Soil Assessment Results PHCs

		Location ID	EX3-1	EX3-2	EX3-3	EX3-4	EX3-5	EX3-5	EX3-6	EX3-6	EX3-7	EX3-8	EX3-9	EX3-10
		Sample Date	10/27/2016	10/27/2016	10/27/2016	10/27/2016	10/27/2016	10/27/2016	10/27/2016	10/27/2016	10/27/2016	10/27/2016	10/27/2016	10/27/2016
		Depth Interval	3 - 4 m	2.5 - 3.5 m	1 - 2 m	3.5 - 4.0 m	1 - 2 m	3 - 4 m	2.5 - 3.5 m	2.5 - 3.5 m	1 - 2 m	3.5 - 4 m	3 - 4 m	1.5 - 2.5 m
		Type ⁰	N	N	N	N	N	N	Ν	FD	N	Ν	N	N
Parameter	Unit	NSE-EQS ¹					Fo	rmer Tank Fa	rm Investigati	ion				
Benzene	mg/kg	0.042	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Toluene	mg/kg	0.35	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Ethylbenzene	mg/kg	<u>0.065</u>	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Xylenes	mg/kg	11	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
F1 (C6-C10) - BTEX	mg/kg	-	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	28	< 2.5	< 2.5
F2 (C10-C16)	mg/kg	-	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	1200	< 10	44
C16-C21	mg/kg	-	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	90	< 10	21
C21-C32	mg/kg	-	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15
		Gas=870;												
Modified TPH (Tier 1)	mg/kg	Fuel=1800 ;	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	1400	< 15	64
		Lube=10000												
Reached Baseline at C32	-	-	-	-	-	-	-	-	-	-	-	YES	-	YES
Hydrocarbon Resemblance	-	-	-	-	-	-	-	-	-	-	_	Fuel	_	Fuel

⁰ Type: N=Normal Sample; FD=Field Duplicate

¹ Nova Scotia Environment (NSE 2013) Table 1A Tier 1 Environmental Quality Standards for Soil at a Potable Site, Coarse Grained Soil, Commercial Land Use.

BOLD = Exceeds criteria.

'-' or NA = not applicable

IOL-CTC: Hubbards, NS Table 2.0: 2016 Phase II Soil Assessment Results PHCs

		Location ID	EX3-11	EX3-12	FWO-1	FWO-2	FWO-3	FWO-4	FWO-5	BH16-01		
		Sample Date Depth Interval	2 - 3 m	3.5 - 4 m	0.2-0.35 m	0.2-0.35 m	0.2-0.35 m	0.2-0.35 m	0.2-0.35 m	3.9-4.2 m		
		Type ⁰	N	N	N	N	Ν	N	Ν	N		
Parameter	Unit	NSE-EQS ¹				Former Waste Oil Storage Tank Investigation						
Benzene	mg/kg	0.042	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	<0.025		
Toluene	mg/kg	0.35	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	<0.025		
Ethylbenzene	mg/kg	<u>0.065</u>	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	<0.025		
Xylenes	mg/kg	11	< 0.050	< 0.050	0.2	< 0.050	< 0.050	< 0.050	< 0.050	<0.050		
F1 (C6-C10) - BTEX	mg/kg	-	< 2.5	< 2.5	130	< 2.5	< 2.5	< 2.5	< 2.5	<2.5		
F2 (C10-C16)	mg/kg	-	< 10	< 10	6700	33	30	< 10	89	<10		
C16-C21	mg/kg	-	< 10	< 10	4600	81	130	63	260	<10		
C21-C32	mg/kg	-	< 15	< 15	13000	380	790	640	1300	44		
Modified TPH (Tier 1)	mg/kg	Gas=870; Fuel=1800; Lube=10000	< 15	< 15	<u>25000</u>	490	950	700	1600	44		
Reached Baseline at C32	-	-	-	-	NO	YES	YES	YES	YES	YES		
Hydrocarbon Resemblance	-	-	-	-	Fuel/Lube	Fuel/Lube	Fuel/Lube	Lube	Fuel/Lube	Lube		

⁰ Type: N=Normal Sample; FD=Field Duplicate

¹ Nova Scotia Environment (NSE 2013) Table 1A Tier 1 Environmental Quality Standards for Soil at a Potable Site, Coarse Grained Soil, Commercial Land Use.

<u>BOLD</u> = Exceeds criteria.

'-' or NA = not applicable

AECOM

IOL-CTC: Hubbards, NS Table 2.0: 2016 Phase II Soil Assessment Results VOCs

	I	Location ID Sample Date Depth Interval	FA1-X 11/3/2016 0.3 - 0.4 m	FA4-X 11/3/2016 0.5 - 0.6 m	FA6-X 11/3/2016 0.5 - 0.6 m	FA7-X 11/3/2016 0.4 - 0.5 m	FA10-X 11/3/2016 0.3 - 0.4 m	FWO-1 11/3/2016 0.2-0.35 m
		Type [°]	N	N	N	N	N	N
Parameter	Unit	NSE-EQS ⁺						
Bromodichloromethane	ug/kg	1500	< 25	< 25	< 25	< 25	< 25	< 25
Bromoform	ug/kg	2300	< 25	< 25	< 25	< 25	< 25	< 25
Bromomethane	ug/kg	97	< 50	< 50	< 50	< 50	< 50	< 50
Carbon Tetrachloride	ug/kg	160	< 25	< 25	< 25	< 25	< 25	< 25
Chlorodibromomethane	ug/kg	1500	< 25	< 25	< 25	< 25	< 25	< 25
Chloroform	ug/kg	1000	< 25	< 25	< 25	< 25	< 25	< 25
Dibromoethane, 1,2- (EDB)	ug/kg	50	< 25	< 25	< 25	< 25	< 25	< 25
Dichlorobenzene, 1,2-	ug/kg	180	< 25	< 25	< 25	< 25	< 25	< 25
Dichlorobenzene, 1,3-	ug/kg	24000	< 25	< 25	< 25	< 25	< 25	< 25
Dichlorobenzene, 1,4-	ug/kg	98	< 25	< 25	< 25	< 25	< 25	< 25
Dichloroethane, 1,1-	ug/kg	470	< 25	< 25	< 25	< 25	< 25	< 25
Dichloroethane, 1,2-	ug/kg	50	< 25	< 25	< 25	28	< 25	< 25
Dichloroethene, 1,1-	ug/kg	240	< 25	< 25	< 25	< 25	< 25	< 25
Dichloroethene, Cis-1,2-	ug/kg	1900	< 25	< 25	< 25	< 25	< 25	< 25
Dichloroethene, Trans-1,2-	ug/kg	1900	< 25	< 25	< 25	< 25	< 25	< 25
Dichloromethane	ug/kg	320	< 50	< 50	< 50	< 50	< 50	< 50
Dichloropropane, 1,2-	ug/kg	540	< 25	< 25	< 25	< 25	< 25	< 25
Dichloropropene, 1,3-	ug/kg	1700	< 25	< 25	< 25	< 25	< 25	< 25
Methyl T-Butyl Ether (MTBE)	ug/kg	-	< 25	< 25	< 25	< 25	< 25	< 25
Monochlorobenzene	ug/kg	1100	< 25	< 25	< 25	< 25	< 25	< 25
Styrene	ug/kg	47000	< 25	< 25	< 25	< 25	< 25	< 25
Tetrachloroethane, 1,1,2,2-	ug/kg	140	< 25	< 25	< 25	< 25	< 25	< 25
Tetrachloroethene	ug/kg	1600	< 25	< 25	< 25	< 25	< 25	< 25
Trichloroethane, 1,1,1-	ug/kg	20000	< 25	< 25	< 25	< 25	< 25	< 25
Trichloroethane, 1,1,2-	ug/kg	540	< 25	< 25	< 25	< 25	< 25	< 25
Trichloroethylene	ug/kg	10	< 10	< 10	< 10	< 10	< 10	< 10
Vinvl Chloride	ug/kg	20	< 20	< 20	< 20	< 20	< 20	< 20
Benzene	ug/ka	42	< 25	< 25	< 25	< 25	< 25	< 25
Toluene	ug/ka	350	< 25	< 25	< 25	< 25	< 25	< 25
Ethylbenzene	ug/kg	65	< 25	< 25	< 25	< 25	< 25	< 25
Xylenes, Total	ug/kg	11000	< 50	< 50	< 50	< 50	< 50	210

⁰ Type: N=Normal Sample; FD=Field Duplicate ¹ Nova Scotia Environment Table 1A Tier 1 Environmental Quality Standards for Soil at a Potable Site, Coarse, Commercial

<u>BOLD</u> = Exceeds criteria.

'-' or NA = not applicable

FWO-5 11/3/2016
0.2-0.35 m
Ν
< 25
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< 25
< 25
< 10
< 20
< 25
< 25
< 25
< 50

IOL-CTC: Hubbards, NS Table 2.0: 2016 Phase II Soil Assessment Results PAHs

		Leastian ID								EVA/
			7/27/2016		FA4-X	FA0-X		FA10-X		
		Sample Date	//2//2016	11/3/2016	11/3/2016	11/3/2016	11/3/2016	11/3/2016	11/3/2016	11/3
		Depth Interval	0-1m	0.3 - 0.4 m	0.5 - 0.6 m	0.5 - 0.6 m	0.4 - 0.5 m	0.3 - 0.4 m	0.2-0.35 m	0.2-0
		Type °	N	N	N	N	N	N	N	
Parameter	Unit	NSE-EQS ¹								
Acenaphthene	mg/kg	8000	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.94	< 0
Acenaphthylene	mg/kg	23	< 0.010	< 0.010	< 0.010	< 0.010	< 0.031	< 0.010	< 1.7	< 0
Anthracene	mg/kg	37000	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 1.1	< 0
Benzo(A)Anthracene	mg/kg	-	0.057	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.046	< 0
Benzo(A)Pyrene	mg/kg	-	0.089	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.014	< 0
Benzo(a)pyrene total potency equivalents	mg/kg	5.3	0.13	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< (
Benzo(B)Fluoranthene	mg/kg	-	0.068	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.026	< 0
Benzo(G,H,I)Perylene	mg/kg	-	0.073	< 0.010	< 0.010	< 0.010	0.014	< 0.010	0.042	0.0
Benzo[j]fluoranthene	mg/kg	-	0.034	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0
Benzo(K)Fluoranthene	mg/kg	-	0.032	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0
Chrysene	mg/kg	-	0.062	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.26	< 0
Dibenzo(A,H)Anthracene	mg/kg	-	0.017	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0
Fluoranthene	mg/kg	5300	0.049	0.021	< 0.010	0.013	0.014	< 0.010	1.3	< 0
Fluorene	mg/kg	4100	< 0.010	< 0.010	< 0.010	< 0.018	< 0.034	< 0.010	< 2.4	< 0
Indeno(1,2,3-cd)pyrene	mg/kg	-	0.063	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0
Methylnaphthalene, 1-	mg/kg	30	0.014	0.019	< 0.010	< 0.010	0.11	< 0.010	5.7	< 0
Methylnaphthalene, 2-	mg/kg	30	< 0.010	< 0.010	< 0.010	< 0.010	0.046	< 0.010	5.3	< 0
Naphthalene	mg/kg	25	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 1.5	< 0
Phenanthrene	mg/kg	17	0.026	0.024	< 0.010	0.027	0.073	< 0.010	3.5	< 0
Pyrene	mg/kg	3200	0.050	0.016	< 0.010	0.013	0.015	< 0.010	1.4	0.0

⁰ Type: N=Normal Sample; FD=Field Duplicate

¹ Nova Scotia Environment Table 1A Tier 1 Environmental Quality Standards for Soil at a Potable Site, Coarse, Commercial

-' or NA = not applicable



AECOM

IOL-CTC: Hubbards, NS Table 2.0: 2016 Phase II Soil Assessment Results Metals

		Location ID	FA1-X	FA4-X	FA6-X	FA7-X	FA10-X	FWO-1	FWO-5
		Sample Date	11/3/2016	11/3/2016	11/3/2016	11/3/2016	11/3/2016	11/3/2016	11/3/2016
		Depth Interval	0.3 - 0.4 m	0.5 - 0.6 m	0.5 - 0.6 m	0.4 - 0.5 m	0.3 - 0.4 m	0.2-0.35 m	0.2-0.35 m
		Type ⁰	Ν	N	N	N	N	Ν	N
Parameter	Unit	NSE-EQS ¹							
Aluminum	mg/kg	15400	10000	9900	8300	7000	9000	7800	10000
Antimony	mg/kg	63	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Arsenic	mg/kg	31	5.7	2.9	7.6	6.9	5.0	5.7	8.4
Barium	mg/kg	15000	24	9.6	27	25	22	42	45
Beryllium	mg/kg	320	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Boron	mg/kg	24000	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Cadmium	mg/kg	49	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
Chromium	mg/kg	630	6.5	4.1	8.2	7.3	6.7	9.2	13
Cobalt	mg/kg	250	2.3	1.5	2.8	2.6	2.4	4.0	6.5
Copper	mg/kg	4000	5.4	2.7	6.6	6.4	5.0	8.3	11
Iron	mg/kg	<u>11000</u>	8500	5600	9200	7900	7800	11000	<u>15000</u>
Lead	mg/kg	260	9.8	5.4	8.5	11	9.8	18	14
Manganese	mg/kg	-	160	100	190	190	170	200	280
Mercury	mg/kg	24	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Molybdenum	mg/kg	1200	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Nickel	mg/kg	2200	4.6	2.5	5.1	5.1	4.6	7.5	12
Selenium	mg/kg	125	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Silver	mg/kg	490	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Strontium	mg/kg	9400	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	5.3
Thallium	mg/kg	1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.12	0.13
Tin	mg/kg	9400	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Uranium	mg/kg	33	0.92	0.77	0.97	0.95	0.88	0.95	0.86
Vanadium	mg/kg	160	10	7.8	11	9.6	10	14	21
Zinc	mg/kg	47000	35	12	29	25	32	43	55

⁰ Type: N=Normal Sample; FD=Field Duplicate

¹ Nova Scotia Environment Table 1A Tier 1 Environmental Quality Standards for Soil at a Potable Site, Coarse, Commercial

<u>BOLD</u> = Exceeds criteria.

-' or NA = not applicable

IOL-CTC: Hubbards, NS Table 2.0: 2016 Phase II Soil Assessment Results Glycols

		Location ID Sample Date Depth Interval Type ⁰	FA1-X 11/3/2016 0.3 - 0.4 m N	FA4-X 11/3/2016 0.5 - 0.6 m N	FA6-X 11/3/2016 0.5 - 0.6 m N	FA7-X 11/3/2016 0.4 - 0.5 m N	FA10-X 11/3/2016 0.3 - 0.4 m N	FWO-1 11/3/2016 0.2-0.35 m N	FWO-5 11/3/2016 0.2-0.35 m N
Parameter	Unit	NSE-EQS ¹							
Diethylene Glycol	mg/kg	-	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Ethylene Glycol	mg/kg	68	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Propylene Glycol	mg/kg	-	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Tetraethylene Glycol	mg/kg	-	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Triethylene Glycol	mg/kg	-	< 10	< 10	< 10	< 10	< 10	< 10	< 10

⁰ Type: N=Normal Sample; FD=Field Duplicate

¹ Nova Scotia Environment Table 1A Tier 1 Environmental Quality Standards for Soil at a Potable Site, Coarse, Commercial

-' or NA = not applicable

IOL-CTC: Hubbards, NS Table 2.0: 2016 Phase II Soil Assessment Results PCBs

		Location ID Sample Date Depth Interval Type ⁰	FA1-X 11/3/2016 0.3 - 0.4 m N	FA4-X 11/3/2016 0.5 - 0.6 m N	FA6-X 11/3/2016 0.5 - 0.6 m N	FA7-X 11/3/2016 0.4 - 0.5 m N	FA10-X 11/3/2016 0.3 - 0.4 m N	FWO-1 11/3/2016 0.2-0.35 m N	FWO-5 11/3/2016 0.2-0.35 m N
Parameter	Unit	NSE-EQS ¹							
Aroclor 1016	ug/g	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Aroclor 1221	ug/g	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Aroclor 1232	ug/g	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Aroclor 1242	ug/g	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Aroclor 1248	ug/g	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Aroclor 1254	ug/g	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Aroclor 1260	ug/g	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Polychlorinated Biphenyls (PCBs)	ug/g	33	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050

⁰ Type: N=Normal Sample; FD=Field Duplicate

¹ Nova Scotia Environment Table 1A Tier 1 Environmental Quality Standards for Soil at a Potable Site, Coarse, Commercial

'-' or NA = not applicable

IOL-CTC: Hubbards, NS Table 3.0: 2016/2020 Remedial Soil Assessment Results PHCs

	D	Location ID Sample Date epth Interval Type ⁰	EX1-2 10/20/2016 3.5 - 4 m N	EX1-4 10/21/2016 1.5 - 2.5 m N	EX1-4 10/21/2016 1.5 - 2.5 m FD	EX1-4 10/20/2016 4 m N	EX1-4 10/21/2016 4 m FD	EX1-5 10/20/2016 0 - 1 m N	EX1-6 10/20/2016 2.5 - 3.5 m N	EX1-6 10/20/2016 4 m N	EX1-7 10/20/2016 0 - 1 m N	EX1-8 10/20/2016 0.5 - 1.5 m N	EX1-8 10/20/2016 4 m N	EX1-10 10/20/2016 4 m N
Parameter	Unit	NSE-EQS ¹												
Benzene	mg/kg	0.042	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Toluene	mg/kg	0.35	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Ethylbenzene	mg/kg	0.065	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Xylenes	mg/kg	11	< 0.050	< 0.050	< 0.050	< 0.050	0.12	< 0.050	< 0.050	< 0.050	0.2	< 0.050	0.076	< 0.050
F1 (C6-C10) - BTEX	mg/kg	-	< 2.5	< 2.5	< 2.5	11	10	< 2.5	7.5	< 2.5	54	< 2.5	12	3.7
F2 (C10-C16)	mg/kg	-	< 10	< 10	< 10	22	110	60	35	< 10	190	< 10	230	290
C16-C21	mg/kg	-	< 10	< 10	< 10	13	51	110	18	< 10	76	< 10	76	110
C21-C32	mg/kg	-	< 15	< 15	< 15	< 15	< 15	32	< 15	< 15	< 15	< 15	17	24
Modified TPH (Tier 1)	mg/kg	Gas=870 Fuel=1800 Lube=10000	< 15	< 15	< 15	46	170	200	60	< 15	320	< 15	330	430
Reached Baseline at C32	-	-	NA	NA	NA	YES	YES	YES	YES	NA	YES	NA	YES	YES
Hydrocarbon Resemblance	-	-	NA	NA	NA	Fuel	Fuel	Fuel	Fuel	NA	Fuel	NA	Fuel	Fuel

⁰ Type: N=Normal Sample; FD=Field Duplicate

¹ Nova Scotia Environment Table 1A Tier 1 Environmental Quality Standards for Soil at a

Potable Site, Coarse, Commercial

<u>BOLD</u> = Exceeds criteria.

'-' or NA = not applicable

IOL-CTC: Hubbards, NS Table 3.0: 2016/2020 Remedial Soil Assessment Results PHCs

	De	Location ID Sample Date epth Interval Type ⁰	EX1-11 10/25/2016 1.5 - 2.5 m N	EX1-12 10/25/2016 2 - 3 m N	EX1-13 10/25/2016 2.5 - 3.5 m N	EX1-14 10/25/2016 2 - 3 m N	EX1-15 10/27/2016 2 - 3 m N	EX1-15 10/27/2016 2 - 3 m FD	EX1-16 10/27/2016 3.5 - 4.5 m N	EX1-17 10/27/2016 1 - 2 m N	EX1-17 10/27/2016 3 - 4 m N
Parameter	Unit	NSE-EQS ¹									
Benzene	mg/kg	0.042	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Toluene	mg/kg	0.35	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Ethylbenzene	mg/kg	0.065	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Xylenes	mg/kg	11	0.13	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
F1 (C6-C10) - BTEX	mg/kg	-	18	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
F2 (C10-C16)	mg/kg	-	56	14	< 10	< 10	< 10	< 10	17	< 10	25
C16-C21	mg/kg	-	28	15	< 10	< 10	< 10	< 10	18	15	23
C21-C32	mg/kg	-	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15
Modified TPH (Tier 1)	mg/kg	Gas=870 Fuel=1800 Lube=10000	100	29	< 15	< 15	< 15	< 15	35	< 15	48
Reached Baseline at C32	-	-	YES	YES	NA	NA	NA	NA	YES	NA	YES
Hydrocarbon Resemblance	-	-	Fuel	Fuel	NA	NA	NA	NA	Fuel	NA	Fuel

⁰ Type: N=Normal Sample; FD=Field Duplicate

¹ Nova Scotia Environment Table 1A Tier 1 Environmental Quality Standards for Soil at a

Potable Site, Coarse, Commercial

<u>BOLD</u> = Exceeds criteria.

'-' or NA = not applicable

	De	Location ID Sample Date epth Interval Type ⁰	EX1-1 10/20/2016 3 - 4 m N Interim	EX1-3 10/20/2016 2 - 3 m N Interim	EX1-9 10/20/2016 1 - 2 m N Interim	EX1-10 10/20/2016 1.5 - 2.5 m N Interim
Parameter	Unit	NSE-EQS ¹	Remedial Sample (Removed)	Remedial Sample (Removed)	Remedial Sample (Removed)	Remedial Sample (Removed)
Benzene	mg/kg	0.042	< 0.025	< 0.025	< 0.025	< 0.025
Toluene	mg/kg	0.35	< 0.025	< 0.025	< 0.025	< 0.025
Ethylbenzene	mg/kg	0.065	<u>0.16</u>	< 0.025	<u>0.31</u>	<u>0.16</u>
Xylenes	mg/kg	11	0.99	0.1	1.4	0.86
F1 (C6-C10) - BTEX	mg/kg	-	150	97	71	230
F2 (C10-C16)	mg/kg	-	390	2300	1300	1700
C16-C21	mg/kg	-	200	720	420	580
C21-C32	mg/kg	-	41	120	70	86
Modified TPH (Tier 1)	mg/kg	Gas=870 Fuel=1800 Lube=10000	780	<u>3200</u>	<u>1900</u>	<u>2600</u>
Reached Baseline at C32	-	-	YES	YES	YES	YES
Hydrocarbon Resemblance	-	-	Fuel	Fuel	Fuel	Fuel

¹ Nova Scotia Environment Table 1A Tier 1 Environmental Quality Standards for Soil at a

Potable Site, Coarse, Commercial

BOLD = Exceeds criteria.

'-' or NA = not applicable

	D	Location ID Sample Date epth Interval Type ⁰	EX2-1 10/21/2016 1 - 2 m N	EX2-2 10/21/2016 1 - 2 m N	EX2-2 10/21/2016 1 - 2 m FD	EX2-3 10/21/2016 0 - 1 m N	EX2-4 10/21/2016 1 - 2 m N	EX2-5 10/21/2016 2 m N	EX2-6 12/13/2016 2 m N
Parameter	Unit	NSE-EQS ¹							
Benzene	mg/kg	0.042	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Toluene	mg/kg	0.35	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Ethylbenzene	mg/kg	0.065	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Xylenes	mg/kg	11	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
F1 (C6-C10) - BTEX	mg/kg	-	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
F2 (C10-C16)	mg/kg	-	< 10	< 10	< 10	< 10	< 10	< 10	< 10
C16-C21	mg/kg	-	23	< 10	< 10	< 10	< 10	< 10	< 10
C21-C32	mg/kg	-	30	< 15	< 15	< 15	< 15	< 15	< 15
Modified TPH (Tier 1)	mg/kg	Gas=870 Fuel=1800 Lube=10000	53	< 15	< 15	< 15	< 15	< 15	< 15
Reached Baseline at C32	-	-	YES	NA	NA	NA	NA	NA	NA
Hydrocarbon Resemblance	-	-	Fuel/Lube	NA	NA	NA	NA	NA	NA

¹ Nova Scotia Environment Table 1A Tier 1 Environmental Quality Standards for Soil at a

Potable Site, Coarse, Commercial

<u>BOLD</u> = Exceeds criteria.

'-' or NA = not applicable

IOL-CTC: Hubbards, NS Table 3.0: 2016/2020 Remedial Soil Assessment Results PHCs

	De	Location ID Sample Date epth Interval Type ⁰	STP-EX1-1 10/19/2016 - N	STP-EX1-2 10/19/2016 - N	STP-EX1-2 10/20/2016 - N	STP-EX1-3 10/19/2016 - N	STP-EX1-3 10/25/2016 - N	STP-EX1-4 10/25/2016 - N	STP-EX1-1 10/20/2016 - N	STP-EX2-1 10/19/2016 - N	STP-EX2-2 10/19/2016 - N
Parameter	Unit	NSE-EQS ¹							Interim Remedial Sample (Removed)		
Benzene	mg/kg	0.042	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Toluene	mg/kg	0.35	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Ethylbenzene	mg/kg	0.065	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	<u>0.12</u>	< 0.025	< 0.025
Xylenes	mg/kg	11	< 0.050	0.16	< 0.050	< 0.050	< 0.050	< 0.050	0.61	< 0.050	< 0.050
F1 (C6-C10) - BTEX	mg/kg	-	< 2.5	17	18	< 2.5	< 2.5	3.4	43	< 2.5	< 2.5
F2 (C10-C16)	mg/kg	-	< 10	210	1000	54	170	110	890	< 10	170
C16-C21	mg/kg	-	< 10	120	400	44	88	54	310	30	150
C21-C32	mg/kg	-	< 15	39	64	19	25	18	56	51	32
Modified TPH (Tier 1)	mg/kg	Gas=870 Fuel=1800 Lube=10000	< 15	380	1500	120	280	190	1300	81	360
Reached Baseline at C32	-	-	NA	YES	YES	YES	YES	YES	YES	YES	YES
Hydrocarbon Resemblance	-	-	NA	Fuel	Fuel	Fuel	Fuel	Fuel	Fuel	Fuel/Lube	Fuel

⁰ Type: N=Normal Sample; FD=Field Duplicate

¹ Nova Scotia Environment Table 1A Tier 1 Environmental Quality Standards for Soil at a

Potable Site, Coarse, Commercial

BOLD = Exceeds criteria.

'-' or NA = not applicable

IOL-CTC: Hubbards, NS Table 3.0: 2016/2020 Remedial Soil Assessment Results PAHs

	: D	Sample Name Sample Date Pepth Interval	EX2-1 6/2/2020 1 - 2 m	EX2-2 6/2/2020 1 - 2 m	EX2-3 6/2/2020 0 - 1 m	EX2-3 6/2/2020 0 - 1 m	EX2-4 6/2/2020 1 - 2 m	EX2-5 6/2/2020 2 m	EX2-6 6/2/202 2 m
	-	Туре⁰	N	N	N	FD	N	N	N
Parameter	Unit	NSE-EQS ¹							
Acenaphthene	mg/kg	8000	<0.010	<0.010	<0.010	< 0.010	<0.010	<0.16	< 0.010
Acenaphthylene	mg/kg	23	<0.010	< 0.010	< 0.010	< 0.010	<0.010	<0.050	< 0.010
Anthracene	mg/kg	37000	<0.010	<0.010	< 0.010	< 0.010	<0.010	<0.10	< 0.010
Benzo(A)Anthracene	mg/kg	-	<0.010	<0.010	< 0.010	<0.010	<0.010	< 0.010	< 0.010
Benzo(A)Pyrene	mg/kg	-	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo(B)Fluoranthene	mg/kg	-	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo(G,H,I)Perylene	mg/kg	-	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo(J)Fluoranthene	mg/kg	-	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo(K)Fluoranthene	mg/kg	-	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Chrysene	mg/kg	-	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.012	< 0.010
Dibenzo(A,H)Anthracene	mg/kg	-	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Fluoranthene	mg/kg	5300	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	<0.040	< 0.010
Fluorene	mg/kg	4100	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	<0.54	0.033
Indeno(1,2,3-cd)pyrene	mg/kg	-	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Methylnaphthalene, 1-	mg/kg	30	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	1.1	< 0.010
Methylnaphthalene, 2-	mg/kg	30	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	1.2	< 0.010
Naphthalene	mg/kg	25	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	<0.15	< 0.010
Phenanthrene	mg/kg	17	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	<0.84	0.044
Pyrene	mg/kg	3200	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.039	< 0.010
Benzo(a)pyrene Total Potency Equiv.	mg/kg	5.3	< 0.03	<0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03

⁰ Type: N=Normal Sample; FD=Field Duplicate

¹ Nova Scotia Environment Table 1A Tier I Environmental Quality Standards for Soil at a Potable Site, Coarse Grained Soil, Commercial Land Use.

BOLD = Exceeds criteria.

'-' or NA = not applicable



IOL-CTC: Hubbards, NS Table 4.0: 2017 Phase II Soil Assessment Results PHC

		Location ID Sample Date	BH17-05 7/19/2017	BH17-05 7/19/2017	BH17-06 7/19/2017	BH17-06 7/19/2017	BH17-07 7/20/2017	BH17-07 7/20/2017	BH17-07 7/20/2017	MW17-04 7/19/2017	MW17-04 7/19/2017	MW17-04 7/19/2017	MW17-04 7/19/2017	MW17-05 7/20/2017	MW17-05 7/20/2017
		Depth Interval	1.2 - 1.8 m	3 - 3.6 m	1.2 - 1.8 m	4.2 - 4.8 m	1.2 - 1.8 m	2.4 - 3 m	3.6 - 4.2 m	0.6 - 1.2 m	1.8 - 2.4 m	3 - 3.6 m	4.2 - 4.8 m	2.4 - 3 m	3.9 - 4.2 m
		Туре	N	N	N	N	N	N	Ν	N	N	N	N	N	Ν
Parameter	Unit	NSE-EQS ¹													
Benzene	mg/kg	0.042	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Toluene	mg/kg	0.35	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Ethylbenzene	mg/kg	0.065	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Xylenes	mg/kg	11	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.06	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
F1 (C6-C10) - BTEX	mg/kg	-	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
F2 (C10-C16)	mg/kg	-	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	74	< 10	< 10	< 10	< 10
C16-C21	mg/kg	-	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	43	< 10	< 10	< 10	< 10
C21-C32	mg/kg	-	< 15	< 15	< 15	< 15	< 15	< 15	< 15	35	150	< 15	22	19	< 15
Modified TPH (Tier 1)	mg/kg	Gas=870; Fuel=1800; Lube=10000	< 15	< 15	< 15	< 15	< 15	< 15	< 15	35	260	< 15	22	19	< 15
Reached Baseline at C32	mg/kg	-	-	-	-	-	-	-	-	YES	YES	-	YES	YES	-
Hydrocarbon Resemblance	mg/kg	-	-	-	-	-	-	-	-	Lube	Fuel/Lube	-	Lube	Lube	-

Type: N=Normal Sample; FD=Field Duplicate

¹ Nova Scotia Environment (NSE 2013) Table 1A Tier 1 Environmental Quality Standards for Soil at a Potable Site, Coarse Grained Soil, Commercial Land Use.

<u>BOLD</u> = Exceeds criteria.

'-' or NA = not applicable

AECOM

Hubbards: Deliverable 9 - Update IOL-CTC: Hubbards, NS Table 4.0: 2017 Phase II Soil Assessment Results Metals

		Location ID	FWO-2	FWO-2	FWO-3	FWO-3	FWO-4	FWO-4	FWO-5	
		Sample Date	10/26/2017	10/26/2017	10/26/2017	10/26/2017	10/26/2017	10/26/2017	10/26/2017	1
		Depth Interval	0.2 - 0.35 m	0.35 - 0.5 m	0.2 - 0.35 m	0.35 - 0.5 m	0.2 - 0.35 m	0.35 - 0.5 m	0.3 - 0.5 m	(
		Type ⁰	Ν	Ν	N	N	Ν	Ν	N	
Parameter	Unit	NSE-EQS ¹								
Iron	mg/kg	<u>11000</u>	<u>23000</u>	<u>23000</u>	<u>25000</u>	<u>27000</u>	<u>30000</u>	<u>27000</u>	<u>23000</u>	

⁰ Type: N=Normal Sample; FD=Field Duplicate ¹ Nova Scotia Environment (NSE 2013) Table 1A Tier 1 Environmental Quality Standards for

Soil at a Potable Site, Coarse Grained Soil, Commercial Land Use.

<u>BOLD</u> = Exceeds criteria.

-' or NA = not applicable



AECOM

Hubbards: Deliverable 9 - Update IOL-CTC: Hubbards, NS Table 4.0: 2017 Phase II Soil Assessment Results Metals

		Location ID Sample Date Depth Interval Type ⁰	FWO-6 11/22/2017 0.2 - 0.35 m N	FWO-6 11/22/2017 0.35 - 0.5 m N	FWO-7 11/22/2017 0.2 - 0.35 m N	FWO-7 11/22/2017 0.35 - 0.5 m N	FWO-8 11/22/2017 0.2 - 0.35 N	FWO-8 11/22/2017 0.35 - 0.5 N
Parameter	Unit	NSE-EQS ¹						
Iron	mg/kg	<u>11000</u>	<u>24000</u>	<u>13000</u>	<u>21000</u>	11000	<u>13000</u>	8600

⁰ Type: N=Normal Sample; FD=Field Duplicate ¹ Nova Scotia Environment (NSE 2013) Table 1A Tier 1 Environmental Quality Standards for

Soil at a Potable Site, Coarse Grained Soil, Commercial Land Use.

<u>BOLD</u> = Exceeds criteria.

-' or NA = not applicable

IOL-CTC: Hubbards, NS Table 5.0: 2018 Remedial Soil Assessment Results PHC

		Location ID Sample Date	EX01-N01 8/7/2018	EX01-E01 8/7/2018	EX01-W01 8/7/2018	EX01-S01 8/7/2018	EX01-BS01 8/7/2018	IF01-01_04 8/2/2018
		Depth Interval	0.25-0.75 m	0.25-0.75 m	0.25-0.75 m	0.25-0.75 m	1.0 m	-
		Туре⁰	N	N	N	N	N	N
Parameter	Unit	NSE-EQS ¹						
Benzene	mg/kg	0.042	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Toluene	mg/kg	0.35	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Ethylbenzene	mg/kg	0.065	<0.025	< 0.025	<0.025	<0.025	<0.025	<0.025
Xylenes	mg/kg	11	<0.050	< 0.050	< 0.050	< 0.050	0.11	< 0.050
F1 (C6-C10) - BTEX	mg/kg	-	<2.5	<2.5	<2.5	<2.5	39	<2.5
F2 (C10-C16)	mg/kg	-	<10	<10	<10	<10	480	<10
C16-C21	mg/kg	-	<10	<10	<10	<10	220	<10
C21-C32	mg/kg	-	<15	<15	<15	21	520	<15
Modified TPH (Tier 1)	mg/kg	Gas=870; Fuel=1800; Lube=10000	<15	<15	<15	21	1300	<15
Reached Baseline at C32	-	-	-	-	-	Yes	Yes	-
Hydrocarbon Resemblance	-	-	-	-	-	Lube	Fuel/Lube	-

⁰ Type: N=Normal Sample; FD=Field Duplicate

 1 Nova Scotia Environment (NSE) Table 1A Tier 1

Environmental Quality Standards for Soil at a Potable Site, Coarse Grained Soil, Commercial Land Use.

-' or NA = not applicable

		Location ID Sample Date Depth Interval	IF01-01_04 8/2/2018 -
		Type ⁰	Ν
Parameter	Unit	NSE-EQS ¹	
Bromodichloromethane	ug/kg	1500	< 25
Bromoform	ug/kg	2300	< 25
Bromomethane	ug/kg	97	< 50
Carbon Tetrachloride	ug/kg	160	< 25
Chlorodibromomethane	ug/kg	1500	< 25
Chloroform	ug/kg	1000	< 25
Dibromoethane, 1,2- (EDB)	ug/kg	50	< 25
Dichlorobenzene, 1,2-	ug/kg	180	< 25
Dichlorobenzene, 1,3-	ug/kg	24000	< 25
Dichlorobenzene, 1,4-	ug/kg	98	< 25
Dichloroethane, 1,1-	ug/kg	470	< 25
Dichloroethane, 1,2-	ug/kg	50	< 25
Dichloroethene, 1,1-	ug/kg	240	< 25
Dichloroethene, Cis-1,2-	ug/kg	1900	< 25
Dichloroethene, Trans-1,2-	ug/kg	1900	< 25
Dichloromethane	ug/kg	320	< 50
Dichloropropane, 1,2-	ug/kg	540	< 25
Dichloropropene, 1,3-	ug/kg	1700	< 25
Methyl T-Butyl Ether (MTBE)	ug/kg	-	< 25
Monochlorobenzene	ug/kg	1100	< 25
Styrene	ug/kg	47000	< 25
Tetrachloroethane, 1,1,2,2-	ug/kg	140	< 25
Tetrachloroethene	ug/kg	1600	< 25
Trichloroethane, 1,1,1-	ug/kg	20000	< 25
Trichloroethane, 1,1,2-	ug/kg	540	< 25
Trichloroethylene	ug/kg	10	< 10
Vinyl Chloride	ug/kg	20	< 20
Benzene	ug/kg	42	< 25
Toluene	ug/kg	350	< 25
Ethylbenzene	ug/kg	65	< 25
Xylenes, Total	ug/kg	11000	< 50

¹ Nova Scotia Environment Table 1A Tier 1 Environmental Quality Standards for Soil at a Potable Site, Coarse, Commercial

-' or NA = not applicable

	I	Location ID Sample Date Depth Interval Type ⁰	IF01-01_04 8/2/2018 - N
Parameter	Unit	NSE-EQS ¹	
Acenaphthene	mg/kg	8000	<0.020
Acenaphthylene	mg/kg	23	<0.030
Anthracene	mg/kg	37000	<0.010
Benzo(A)Anthracene	mg/kg	-	<0.010
Benzo(A)Pyrene	mg/kg	-	<0.010
Benzo(a)pyrene total potency equivalents	mg/kg	5.3	<0.03
Benzo(B)Fluoranthene	mg/kg	-	<0.010
Benzo(G,H,I)Perylene	mg/kg	-	<0.010
Benzo[j]fluoranthene	mg/kg	-	<0.010
Benzo(K)Fluoranthene	mg/kg	-	<0.010
Chrysene	mg/kg	-	<0.010
Dibenzo(A,H)Anthracene	mg/kg	-	<0.010
Fluoranthene	mg/kg	5300	<0.010
Fluorene	mg/kg	4100	<0.010
Indeno(1,2,3-cd)pyrene	mg/kg	-	<0.010
Methylnaphthalene, 1-	mg/kg	30	<0.010
Methylnaphthalene, 2-	mg/kg	30	< 0.010
Naphthalene	mg/kg	25	<0.010
Phenanthrene	mg/kg	17	< 0.010
Pyrene	mg/kg	3200	< 0.010

¹ Nova Scotia Environment Table 1A Tier 1 Environmental Quality Standards for Soil at a Potable Site, Coarse, Commercial

-' or NA = not applicable

	ļ	Location ID Sample Date Depth Interval Type ⁰	IF01-01_04 8/2/2018 - N
Parameter	Unit	NSE-EQS ¹	
Aluminum	mg/kg	15400	6700
Antimony	mg/kg	63	<2.0
Arsenic	mg/kg	31	11
Barium	mg/kg	15000	14
Beryllium	mg/kg	320	<2.0
Boron	mg/kg	24000	<50
Cadmium	mg/kg	49	<0.30
Chromium	mg/kg	630	6.9
Cobalt	mg/kg	250	4.3
Copper	mg/kg	4000	9.5
Iron	mg/kg	11000	8400
Lead	mg/kg	260	8.7
Manganese	mg/kg	-	210
Mercury	mg/kg	24	<0.10
Molybdenum	mg/kg	1200	<2.0
Nickel	mg/kg	2200	8.0
Selenium	mg/kg	125	<1.0
Silver	mg/kg	490	<0.50
Strontium	mg/kg	9400	<5.0
Thallium	mg/kg	1	<0.10
Tin	mg/kg	9400	<2.0
Uranium	mg/kg	33	0.92
Vanadium	mg/kg	160	9.9
Zinc	mg/kg	47000	25

¹ Nova Scotia Environment Table 1A Tier 1 Environmental Quality Standards for Soil at a Potable Site, Coarse, Commercial

-' or NA = not applicable

		Location ID	MW1	MW1	MW1	MW1	MW2	MW2	MW2	MW2	MW2	MW2
		Sample Date	10/14/2015	12/15/2016	2/19/2019	5/6/2019	10/14/2015	10/14/2015	12/15/2016	7/27/2017	2/19/2019	5/6/2019
		Type ⁰	N	N	Ν	N	N	FD	N	N	Ν	Ν
Parameter	Unit	NSE-EQS ¹										
Benzene	mg/L	<u>0.005</u>	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Toluene	mg/L	0.024	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Ethylbenzene	mg/L	<u>0.0024</u>	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Xylenes	mg/L	0.3	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
F1 (C6-C10) - BTEX	mg/L	-	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
F2 (C10-C16)	mg/L	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
C16-C21	mg/L	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
C21-C32	mg/L	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Modified TPH (Tier 1)	mg/L	4.4 (Gas); 3.2 (Fuel); 7.8 (Lube)	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Reached Baseline at C32	-	-	-	-	-	-	-	-	-	_	-	-
Hydrocarbon Resemblance	-	-	-	-	-	-	-	-	-	-	-	-

⁰ Type: N=Normal Sample; FD=Field Duplicate ¹ Nova Scotia Environment Tier 1 Environmental Quality Standards for Groundwater at a Potable Site, Coarse,

Commercial (Table 4)

<u>BOLD</u> = Exceeds criteria.

-' or NA = not applicable

		Location ID	MW3	MW3	MW3	MW3	MW4	MW4	MW4	MW4	MW4
		Sample Date Type ⁰	10/14/2015 N	12/15/2016 N	2/19/2019 N	5/6/2019 N	10/14/2015 N	12/15/2010 N	10/24/2018 N	2/19/2019 N	5/6/2019 N
Parameter	Unit	NSE-EQS ¹									
Benzene	mg/L	<u>0.005</u>	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Toluene	mg/L	0.024	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Ethylbenzene	mg/L	<u>0.0024</u>	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Xylenes	mg/L	0.3	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
F1 (C6-C10) - BTEX	mg/L	-	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
F2 (C10-C16)	mg/L	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
C16-C21	mg/L	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	<0.050	<0.050	<0.050
C21-C32	mg/L	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Modified TPH (Tier 1)	mg/L	4.4 (Gas); <u>3.2 (Fuel)</u> ; 7.8 (Lube)	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Reached Baseline at C32	-	-	-	-	-	-	-	-	-	-	-
Hydrocarbon Resemblance	-	-	-	-	-	-	-	-	-	-	-

⁰ Type: N=Normal Sample; FD=Field Duplicate ¹ Nova Scotia Environment Tier 1 Environmental Quality Standards for Groundwater at a Potable Site, Coarse,

Commercial (Table 4)

<u>BOLD</u> = Exceeds criteria.

-' or NA = not applicable

		Location ID	MW5	MW5	MW5	MW5	MW6	MW6	MW6	MW6	MV
		Sample Date	10/14/2015	12/15/2016	2/19/2019	5/6/2019	10/14/2015	12/15/2016	1/11/2017	6/22/2017	6/22/
		Type ⁰	N	N	N	N	N	N	N	N	FI
Parameter	Unit	NSE-EQS ¹									
Benzene	mg/L	<u>0.005</u>	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0
Toluene	mg/L	0.024	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0
Ethylbenzene	mg/L	<u>0.0024</u>	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0
Xylenes	mg/L	0.3	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0
F1 (C6-C10) - BTEX	mg/L	-	< 0.010	< 0.010	< 0.010	< 0.010	0.044	0.049	0.076	0.027	0.0
F2 (C10-C16)	mg/L	-	< 0.050	< 0.050	< 0.050	< 0.050	4.6	7.3	7.6	2.6	2.
C16-C21	mg/L	-	<0.050	< 0.050	< 0.050	< 0.050	1.6	2.5	2	0.82	0.
C21-C32	mg/L	-	< 0.10	< 0.10	< 0.10	< 0.10	0.35	0.48	0.41	0.16	0.1
Modified TPH (Tier 1)	mg/L	4.4 (Gas); <u>3.2 (Fuel)</u> ; 7.8 (Lube)	< 0.10	< 0.10	< 0.10	< 0.10	<u>6.6</u>	<u>10</u>	<u>10</u>	<u>3.6</u>	3
Reached Baseline at C32	-	-	-	-	-	-	YES	YES	YES	YES	YE
Hydrocarbon Resemblance	-	-	-	-	-	-	Fuel	Fuel	Fuel	Fuel	Fu

⁰ Type: N=Normal Sample; FD=Field Duplicate ¹ Nova Scotia Environment Tier 1 Environmental Quality Standards for Groundwater at a Potable Site, Coarse,

Commercial (Table 4)

<u>BOLD</u> = Exceeds criteria.

-' or NA = not applicable



		Location ID	MW16-01	MW16-01	MW16-01	MW16-01	MW16-01	MW16-01	MW16-01	MW16-01	MW16-01	MW16-01
		Sample Date	12/15/2016	12/15/2016	1/11/2017	1/11/2017	6/22/2017	7/27/2017	3/14/2018	2/19/2019	2/19/2019	5/6/2019
		Type ⁰	Ν	FD	N	FD	N	N	N	N	FD	Ν
Parameter	Unit	NSE-EQS ¹										
Benzene	mg/L	<u>0.005</u>	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Toluene	mg/L	0.024	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Ethylbenzene	mg/L	<u>0.0024</u>	<u>0.0038</u>	<u>0.0037</u>	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Xylenes	mg/L	0.3	0.017	0.016	< 0.0020	< 0.0020	< 0.0020	< 0.0020	<0.0020	< 0.0020	< 0.0020	< 0.0020
F1 (C6-C10) - BTEX	mg/L	-	0.3	0.29	0.07	0.11	0.034	< 0.010	<0.010	< 0.010	< 0.010	< 0.010
F2 (C10-C16)	mg/L	-	4.5	4.5	2.9	3.6	0.86	< 0.050	0.15	< 0.050	< 0.050	< 0.050
C16-C21	mg/L	-	2.2	1.9	2	2.4	0.69	< 0.050	0.13	< 0.050	< 0.050	< 0.050
C21-C32	mg/L	-	0.31	0.35	0.33	0.4	0.13	< 0.10	<0.10	< 0.10	< 0.10	< 0.10
Modified TPH (Tier 1)	mg/L	4.4 (Gas); <u>3.2 (Fuel)</u> ; 7.8 (Lube)	<u>7.3</u>	<u>7.1</u>	<u>5.3</u>	<u>6.5</u>	1.7	< 0.10	0.29	< 0.10	< 0.10	< 0.10
Reached Baseline at C32	-	-	YES	YES	YES	YES	YES	-	Yes	-	-	-
Hydrocarbon Resemblance	-	-	Fuel	Fuel	Fuel	Fuel	Fuel	-	Fuel	-	-	-

⁰ Type: N=Normal Sample; FD=Field Duplicate ¹ Nova Scotia Environment Tier 1 Environmental Quality Standards for Groundwater at a Potable Site, Coarse, Commercial (Table 4)

<u>BOLD</u> = Exceeds criteria.

-' or NA = not applicable

		Location ID	MW16-02	MW16-02	MW16-02	MW16-02	MW16-03	MW16-03	MW16-03	MW16-03
		Sample Date	12/15/2016	7/27/2017	2/19/2019	5/6/2019	12/15/2016	7/27/2017	2/19/2019	5/6/2019
		Type ⁰	N	N	N	N	N	N	N	N
Parameter	Unit	NSE-EQS ¹								
Benzene	mg/L	<u>0.005</u>	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Toluene	mg/L	0.024	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Ethylbenzene	mg/L	<u>0.0024</u>	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Xylenes	mg/L	0.3	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
F1 (C6-C10) - BTEX	mg/L	-	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
F2 (C10-C16)	mg/L	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
C16-C21	mg/L	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
C21-C32	mg/L	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Modified TPH (Tier 1)	mg/L	4.4 (Gas); <u>3.2 (Fuel)</u> ; 7.8 (Lube)	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Reached Baseline at C32	-	-	-	-	-	-	-	-	-	-
Hydrocarbon Resemblance	-	-	-	-	-	-	-	-	-	-

⁰ Type: N=Normal Sample; FD=Field Duplicate ¹ Nova Scotia Environment Tier 1 Environmental Quality Standards for Groundwater at a Potable Site, Coarse, Commercial (Table 4)

<u>BOLD</u> = Exceeds criteria.

-' or NA = not applicable

		Location ID	MW17-01	MW17-01	MW17-01	MW17-01	MW17-01	MW17-01	MW17-01	MW17-01	MW17-01	MW17-01
		Sample Date	7/27/2017	9/20/2017	9/20/2017	3/14/2018	3/14/2018	6/5/2018	8/7/2018	10/24/2018	2/6/2019	5/6/2019
		Type ⁰	N	N	FD	N	FD	N	N	Ν	N	N
Parameter	Unit	NSE-EQS ¹										
Benzene	mg/L	<u>0.005</u>	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	< 0.0010	< 0.0010
Toluene	mg/L	0.024	0.006	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	<0.0010	<0.0010	< 0.0010	< 0.0010
Ethylbenzene	mg/L	<u>0.0024</u>	<u>0.0033</u>	0.0013	0.0011	< 0.0010	< 0.0010	< 0.0010	< 0.0010	<0.0010	< 0.0010	< 0.0010
Xylenes	mg/L	0.3	0.0041	< 0.0020	< 0.0020	<0.0020	< 0.0020	<0.0020	<0.0020	<0.0020	< 0.0020	< 0.0020
F1 (C6-C10) - BTEX	mg/L	-	0.29	0.14	0.12	0.05	0.066	0.054	< 0.010	0.092	< 0.010	< 0.010
F2 (C10-C16)	mg/L	-	1.7	14	19	3.6	4.1	5.4	4.0	10	< 0.050	< 0.050
C16-C21	mg/L	-	0.64	4.8	6.8	1.4	1.5	2.2	1.6	4	< 0.050	< 0.050
C21-C32	mg/L	-	0.2	1	1.6	0.34	0.38	0.5	0.39	1	< 0.10	< 0.10
Modified TPH (Tier 1)	mg/L	4.4 (Gas); <u>3.2 (Fuel)</u> ; 7.8 (Lube)	2.9	<u>21</u>	<u>27</u>	<u>5.3</u>	<u>6.1</u>	<u>8.2</u>	<u>6.0</u>	<u>15</u>	< 0.10	< 0.10
Reached Baseline at C32	-	-	YES	YES	YES	Yes	Yes	Yes	Yes	Yes	-	-
Hydrocarbon Resemblance	-	-	Fuel	Fuel	Fuel	Fuel	Fuel	Fuel	Fuel	Fuel	-	-

⁰ Type: N=Normal Sample; FD=Field Duplicate ¹ Nova Scotia Environment Tier 1 Environmental Quality Standards for Groundwater at a Potable Site, Coarse,

Commercial (Table 4)

<u>BOLD</u> = Exceeds criteria.

-' or NA = not applicable

		Location ID	MW17-02	MW17-02	MW17-02	MW17-02	MW17-02
		Sample Date	7/27/2017	9/20/2017	3/14/2018	2/19/2019	5/6/2019
		Type ⁰	N	N	N	N	Ν
Parameter	Unit	NSE-EQS ¹					
Benzene	mg/L	<u>0.005</u>	<u>0.0098</u>	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Toluene	mg/L	0.024	0.016	0.012	< 0.0010	< 0.0010	< 0.0010
Ethylbenzene	mg/L	<u>0.0024</u>	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Xylenes	mg/L	0.3	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
F1 (C6-C10) - BTEX	mg/L	-	0.019	0.01	< 0.010	< 0.010	< 0.010
F2 (C10-C16)	mg/L	-	0.073	0.087	< 0.050	< 0.050	< 0.050
C16-C21	mg/L	-	< 0.053	0.066	< 0.050	< 0.050	< 0.050
C21-C32	mg/L	-	< 0.11	< 0.10	< 0.10	< 0.10	< 0.10
Modified TPH (Tier 1)	mg/L	4.4 (Gas); <u>3.2 (Fuel)</u> ; 7.8 (Lube)	< 0.11	0.16	< 0.10	< 0.10	< 0.10
Reached Baseline at C32	_	-	YES	YES	-	-	-
Hydrocarbon Resemblance	-	-	Fuel	Fuel	-	-	-

⁰ Type: N=Normal Sample; FD=Field Duplicate ¹ Nova Scotia Environment Tier 1 Environmental Quality Standards for Groundwater at a Potable Site, Coarse, Commercial (Table 4)

<u>BOLD</u> = Exceeds criteria.

-' or NA = not applicable

		Location ID	MW17-03	MW17-03	MW17-03	MW17-03	MW17-03	MW17-03	MW17-03	MW17-03	MW17-03
		Sample Date	7/27/2017	7/27/2017	9/20/2017	3/14/2018	6/5/2018	8/7/2018	10/24/2018	2/6/2019	5/6/2019
		Type ⁰	N	FD	N	N	Ν	N	N	N	N
Parameter	Unit	NSE-EQS ¹									
Benzene	mg/L	<u>0.005</u>	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Toluene	mg/L	0.024	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Ethylbenzene	mg/L	<u>0.0024</u>	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Xylenes	mg/L	0.3	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
F1 (C6-C10) - BTEX	mg/L	-	0.092	0.086	0.061	0.021	0.042	< 0.010	0.057	< 0.010	< 0.010
F2 (C10-C16)	mg/L	-	4.4	9	5.5	0.82	3.4	0.93	2.9	< 0.050	< 0.050
C16-C21	mg/L	-	0.8	1.5	1.1	0.18	0.7	0.20	0.62	< 0.050	< 0.050
C21-C32	mg/L	-	0.16	0.2	0.2	< 0.10	< 0.11	< 0.10	0.12	< 0.10	< 0.10
Modified TPH (Tier 1)	mg/L	4.4 (Gas); <u>3.2 (Fuel)</u> ; 7.8 (Lube)	<u>5.4</u>	<u>11</u>	<u>6.9</u>	1	<u>4.2</u>	1.1	<u>3.7</u>	< 0.10	< 0.10
Reached Baseline at C32	-	-	YES	YES	YES	Yes	Yes	Yes	Yes	-	-
Hydrocarbon Resemblance	-	-	Fuel	Fuel	Fuel	Fuel	Fuel	Fuel	Fuel	-	-

⁰ Type: N=Normal Sample; FD=Field Duplicate ¹ Nova Scotia Environment Tier 1 Environmental Quality Standards for Groundwater at a Potable Site, Coarse,

Commercial (Table 4)

<u>BOLD</u> = Exceeds criteria.

-' or NA = not applicable

		Location ID	MW17-04	MW17-05	MW17-05	MW17-05	MW17-05	MW19-01	MW19-01	MW19-01	MW19-01
		Sample Date	7/27/2017	7/27/2017	2/19/2019	2/19/2019	5/6/2019	5/6/2019	5/6/2019	6/26/2019	8/14/2020
		Type ⁰	N	N	N	N	N	N	N	N	N
Parameter	Unit	NSE-EQS ¹									
Benzene	mg/L	<u>0.005</u>	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	<0.0010
Toluene	mg/L	0.024	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0073	0.007	< 0.0010	<0.0010
Ethylbenzene	mg/L	<u>0.0024</u>	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	<u>0.0045</u>	<u>0.0047</u>	< 0.0010	< 0.0010
Xylenes	mg/L	0.3	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	<0.0020
F1 (C6-C10) - BTEX	mg/L	-	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	<0.090
F2 (C10-C16)	mg/L	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	<0.050
C16-C21	mg/L	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	<0.050
C21-C32	mg/L	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	<0.090
Modified TPH (Tier 1)	mg/L	4.4 (Gas); 3.2 (Fuel); 7.8 (Lube)	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	<0.090
Reached Baseline at C32	-	-	-	-	-	-	-	-	-	-	-
Hydrocarbon Resemblance	-	-	-	-	-	-	-	-	-	-	-

⁰ Type: N=Normal Sample; FD=Field Duplicate ¹ Nova Scotia Environment Tier 1 Environmental Quality Standards for Groundwater at a Potable Site, Coarse, Commercial (Table 4)

<u>BOLD</u> = Exceeds criteria.

-' or NA = not applicable



Appendix E

LABORATORY CERTIFICATES OF ANALYSIS & DATA QUALITY REVIEW CHECKLISTS


Attention:Tim Bachiu

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8 Task Order#: N/A-CTC Site Site#: CTC Site Location: 64 MILL LAKE ROAD, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 533484-01-01

> Report Date: 2015/10/20 Report #: R3726834 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5K9078 Received: 2015/10/14, 16:13

Sample Matrix: Water # Samples Received: 8

Analyses	Quantity	Laboratory Method	Primary Reference
TEH in Water (PIRI)	8	ATL SOP 00113	Atl. RBCA v3 m
VPH in Water (PIRI)	8	ATL SOP 00118	Atl. RBCA v3 m
Silica Gel Clean-up (Water)	8	ATL SOP 00113	EPA 3630C R3 m
ModTPH (T1) Calc. for Water	8	N/A	Atl. RBCA v3 m

Remarks:

All work recorded herein has been performed in accordance to the ISO 17025 standard. Methods used by Maxxam Analytics are based upon accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing.

Maxxam Analytics is accredited by Standards Council of Canada (SCC). Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract.

All data is in statistical control and has met all QC and method performance criteria unless otherwise flagged. All samples were analysed within hold time unless otherwise flagged. All soil samples for BTEX analysis were methanol extracted within 24 hours unless otherwise flagged.

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

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

Encryption Key

Melissa DiPinto 20 Oct 2015 16:40:47 -03:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Melissa DiPinto, Project Manager Email: mdipinto@maxxam.ca Phone# (902) 420-0203

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



RBCA HYDROCARBONS IN WATER (WATER)

Maxxam ID		BDT105	BDT106	BDT107		BDT108	BDT109		
Sampling Date		2015/10/14	2015/10/14	2015/10/14		2015/10/14	2015/10/14		
		14:45	13:45	15:05		14:50	13:00		
COC Number		533484-01-01	533484-01-01	533484-01-01		533484-01-01	533484-01-01		
	UNITS	MW1	MW2	MW3	QC Batch	MW4	MW5	RDL	QC Batch
Petroleum Hydrocarbons									
Benzene	mg/L	<0.0010	<0.0010	<0.0010	4230690	<0.0010	<0.0010	0.0010	4230690
Toluene	mg/L	<0.0010	<0.0010	<0.0010	4230690	<0.0010	<0.0010	0.0010	4230690
Ethylbenzene	mg/L	<0.0010	<0.0010	<0.0010	4230690	<0.0010	<0.0010	0.0010	4230690
Total Xylenes	mg/L	<0.0020	<0.0020	<0.0020	4230690	<0.0020	<0.0020	0.0020	4230690
C6 - C10 (less BTEX)	mg/L	<0.010	<0.010	<0.010	4230690	<0.010	<0.010	0.010	4230690
>C10-C16 Hydrocarbons	mg/L	<0.050	<0.050	<0.050	4232277	<0.050	<0.050	0.050	4232285
>C16-C21 Hydrocarbons	mg/L	<0.050	<0.050	<0.050	4232277	<0.050	<0.050	0.050	4232285
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.10</td><td><0.10</td><td><0.10</td><td>4232277</td><td><0.10</td><td><0.10</td><td>0.10</td><td>4232285</td></c32>	mg/L	<0.10	<0.10	<0.10	4232277	<0.10	<0.10	0.10	4232285
Modified TPH (Tier1)	mg/L	<0.10	<0.10	<0.10	4229767	<0.10	<0.10	0.10	4229767
Reached Baseline at C32	mg/L	NA	NA	NA	4232277	NA	NA	N/A	4232285
Hydrocarbon Resemblance	mg/L	NA	NA	NA	4232277	NA	NA	N/A	4232285
Extraction									
Surrogate Recovery (%)									
Isobutylbenzene - Extractable	%	64 (1)	70	54 (1)	4232277	61 (1)	59 (2)		4232285
n-Dotriacontane - Extractable	%	110 (3)	103 (3)	102 (3)	4232277	113 (3)	117 (3)		4232285
Instrument									
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	99	100	100	4230690	98	100		4230690
4-Bromofluorobenzene	%	100	100	100	4230690	101	100		4230690
D4-1,2-Dichloroethane	%	98	97	99	4230690	97	99		4230690
Isobutylbenzene - Volatile	%	99 (4)	102	99 (4)	4230690	99 (4)	99		4230690

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) TEH surrogate(s) not within reference method but within client specified acceptance limits. Analysis was repeated with similar results.

(2) TEH surrogate(s) not within reference method but within client specified acceptance limits. Analysis was repeated.

(3) TEH sample contained sediment.

(4) VPH sample contained sediment.



RBCA HYDROCARBONS IN WATER (WATER)

Maxxam ID		BDT110	BDT111	BDT112		
Sampling Data		2015/10/14	2015/10/14	2015/10/14		
		14:20	13:45	15:20		
COC Number		533484-01-01	533484-01-01	533484-01-01		
	UNITS	MW6	MW-FD	TRIP BLANK	RDL	QC Batch
Petroleum Hydrocarbons						
Benzene	mg/L	<0.0010	<0.0010	<0.0010	0.0010	4230690
Toluene	mg/L	<0.0010	<0.0010	<0.0010	0.0010	4230690
Ethylbenzene	mg/L	<0.0010	<0.0010	<0.0010	0.0010	4230690
Total Xylenes	mg/L	<0.0020	<0.0020	<0.0020	0.0020	4230690
C6 - C10 (less BTEX)	mg/L	0.044	<0.010	<0.010	0.010	4230690
>C10-C16 Hydrocarbons	mg/L	4.6	<0.050	<0.050	0.050	4232285
>C16-C21 Hydrocarbons	mg/L	1.6	<0.050	<0.050	0.050	4232285
>C21- <c32 hydrocarbons<="" p=""></c32>	mg/L	0.35	<0.10	<0.10	0.10	4232285
Modified TPH (Tier1)	mg/L	6.6	<0.10	<0.10	0.10	4229767
Reached Baseline at C32	mg/L	Yes	NA	NA	N/A	4232285
Hydrocarbon Resemblance	mg/L	COMMENT (1)	NA	NA	N/A	4232285
Extraction						
Surrogate Recovery (%)						
Isobutylbenzene - Extractable	%	100	66 (2)	71		4232285
n-Dotriacontane - Extractable	%	121 (3)	113 (3)	111		4232285
Instrument						
Surrogate Recovery (%)						
1,4-Difluorobenzene	%	101	99	99		4230690
4-Bromofluorobenzene	%	99	100	100		4230690
D4-1,2-Dichloroethane	%	98	98	97		4230690
Isobutylbenzene - Volatile	%	86	100	101		4230690
RDL = Reportable Detection Lim	nit					
QC Batch = Quality Control Batc	:h					
N/A = Not Applicable						
(1) Fuel oil fraction.						

(2) TEH surrogate(s) not within reference method but within client specified acceptance limits. Analysis was repeated.

(3) TEH sample contained sediment.



Report Date: 2015/10/20

AECOM Canada Ltd. Task Order#: N/A-CTC Site Site#: CTC Site Location: 64 MILL LAKE ROAD, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID:	BDT105	Collected:	2015/10/14
Sample ID:	MW1	Relinquished:	2015/10/14
Matrix:	Water	Received:	2015/10/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	4232277	2015/10/16	2015/10/17	Bria Harvey
VPH in Water (PIRI)	PTGC/MS	4230690	N/A	2015/10/16	Amanda Swales
ModTPH (T1) Calc. for Water	CALC	4229767	N/A	2015/10/19	Automated Statchk

Maxxam ID:	BDT106
Sample ID:	MW2
Matrix:	Water

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	4232277	2015/10/16	2015/10/17	Bria Harvey
VPH in Water (PIRI)	PTGC/MS	4230690	N/A	2015/10/16	Amanda Swales
ModTPH (T1) Calc. for Water	CALC	4229767	N/A	2015/10/19	Automated Statchk

Maxxam ID:	BDT107	Collected:	2015/10/14
Sample ID:	MW3	Relinquished:	2015/10/14
Matrix:	Water	Received:	2015/10/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	4232277	2015/10/16	2015/10/17	Bria Harvey
VPH in Water (PIRI)	PTGC/MS	4230690	N/A	2015/10/16	Amanda Swales
ModTPH (T1) Calc. for Water	CALC	4229767	N/A	2015/10/19	Automated Statchk

Maxxam ID:	BDT108
Sample ID:	MW4
Matrix:	Water

VPH in Water (PIRI)

ModTPH (T1) Calc. for Water

Collected:	2015/10/14
Relinquished:	2015/10/14
Received:	2015/10/14

Amanda Swales

Automated Statchk

Collected: 2015/10/14

2015/10/14

2015/10/14

Relinquished:

Received:

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	4232285	2015/10/16	2015/10/16	Katelyn Cherwonick
VPH in Water (PIRI)	PTGC/MS	4230690	N/A	2015/10/16	Amanda Swales
ModTPH (T1) Calc. for Water	CALC	4229767	N/A	2015/10/19	Automated Statchk

Maxxam ID: Sample ID: Matrix:	BDT109 MW5 Water				C Relir F	Collected: Iquished: Received:	2015/10/14 2015/10/14 2015/10/14
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	4232285	2015/10/16	2015/10/16	Katelyn Ch	erwonick

N/A

N/A

2015/10/16

2015/10/19

4230690

4229767

PTGC/MS

CALC



Report Date: 2015/10/20

AECOM Canada Ltd. Task Order#: N/A-CTC Site Site#: CTC Site Location: 64 MILL LAKE ROAD, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID:	BDT110	Collected:	2015/10/14
Sample ID:	MW6	Relinquished:	2015/10/14
Matrix:	Water	Received:	2015/10/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	4232285	2015/10/16	2015/10/16	Katelyn Cherwonick
VPH in Water (PIRI)	PTGC/MS	4230690	N/A	2015/10/16	Amanda Swales
ModTPH (T1) Calc. for Water	CALC	4229767	N/A	2015/10/19	Automated Statchk

Maxxam ID:	BDT111
Sample ID:	MW-FD
Matrix:	Water

Collected: 2015/10/14 Relinquished: 2015/10/14 Received: 2015/10/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	4232285	2015/10/16	2015/10/16	Katelyn Cherwonick
VPH in Water (PIRI)	PTGC/MS	4230690	N/A	2015/10/16	Amanda Swales
ModTPH (T1) Calc. for Water	CALC	4229767	N/A	2015/10/19	Automated Statchk

Maxxam ID: Sample ID:	BDT112 TRIP BLANK				Reli	Collected: inquished:	2015/10/14 2015/10/14
Matrix:	Water					Received:	2015/10/14
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	

Test Description	Instrumentation	Datti	Extracted	Date Analyzeu	Andryst
TEH in Water (PIRI)	GC/FID	4232285	2015/10/16	2015/10/16	Katelyn Cherwonick
VPH in Water (PIRI)	PTGC/MS	4230690	N/A	2015/10/16	Amanda Swales
ModTPH (T1) Calc. for Water	CALC	4229767	N/A	2015/10/19	Automated Statchk



GENERAL COMMENTS

Each te	Each temperature is the average of up to three cooler temperatures taken at receipt									
	Package 1	12.7°C]							
Silica g	Silica gel clean-up performed on water extracts.									
Results	Results relate only to the items tested.									



QUALITY ASSURANCE REPORT

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
4230690	ASL	Method Blank	1,4-Difluorobenzene	2015/10/16		99	%	70 - 130
			4-Bromofluorobenzene	2015/10/16		101	%	70 - 130
			D4-1,2-Dichloroethane	2015/10/16		96	%	70 - 130
			Isobutylbenzene - Volatile	2015/10/16		103	%	70 - 130
			Benzene	2015/10/16	<0.0010		mg/L	
			Toluene	2015/10/16	<0.0010		mg/L	
			Ethylbenzene	2015/10/16	<0.0010		mg/L	
			Total Xylenes	2015/10/16	<0.0020		mg/L	
			C6 - C10 (less BTEX)	2015/10/16	<0.010		mg/L	
4232277	BHR	Method Blank	n-Dotriacontane - Extractable	2015/10/17		100	%	30 - 130
			Isobutylbenzene - Extractable	2015/10/17		48 (1)		30 - 130
			>C10-C16 Hydrocarbons	2015/10/17	<0.050		mg/L	
			>C16-C21 Hydrocarbons	2015/10/17	<0.050		mg/L	
			>C21- <c32 hydrocarbons<="" td=""><td>2015/10/17</td><td><0.10</td><td></td><td>mg/L</td><td></td></c32>	2015/10/17	<0.10		mg/L	
4232285	KCR	Method Blank	n-Dotriacontane - Extractable	2015/10/16		94	%	30 - 130
			Isobutylbenzene - Extractable	2015/10/16		64 (1)		30 - 130
			>C10-C16 Hydrocarbons	2015/10/16	<0.050		mg/L	
			>C16-C21 Hydrocarbons	2015/10/16	<0.050		mg/L	
			>C21- <c32 hydrocarbons<="" td=""><td>2015/10/16</td><td><0.10</td><td></td><td>mg/L</td><td></td></c32>	2015/10/16	<0.10		mg/L	
4230690	ASL	LCS	1,4-Difluorobenzene	2015/10/16		97	%	70 - 130
			4-Bromofluorobenzene	2015/10/16		100	%	70 - 130
			D4-1,2-Dichloroethane	2015/10/16		96	%	70 - 130
			Isobutylbenzene - Volatile	2015/10/16		102	%	70 - 130
			Benzene	2015/10/16		108	%	70 - 130
			Toluene	2015/10/16		111	%	70 - 130
			Ethylbenzene	2015/10/16		112	%	70 - 130
			Total Xylenes	2015/10/16		111	%	70 - 130
4232277	BHR	LCS	n-Dotriacontane - Extractable	2015/10/17		104	%	30 - 130
			Isobutylbenzene - Extractable	2015/10/17		64 (1)	%	30 - 130
			>C10-C16 Hydrocarbons	2015/10/17		81	%	70 - 130
			>C16-C21 Hydrocarbons	2015/10/17		93	%	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2015/10/17</td><td></td><td>83</td><td>%</td><td>70 - 130</td></c32>	2015/10/17		83	%	70 - 130
4232285	KCR	LCS	n-Dotriacontane - Extractable	2015/10/16		109	%	30 - 130
			Isobutylbenzene - Extractable	2015/10/16		62 (1)	%	30 - 130
			>C10-C16 Hydrocarbons	2015/10/16		90	%	70 - 130
			, >C16-C21 Hydrocarbons	2015/10/16		100	%	70 - 130
			, >C21- <c32 hydrocarbons<="" td=""><td>2015/10/16</td><td></td><td>112</td><td>%</td><td>70 - 130</td></c32>	2015/10/16		112	%	70 - 130

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.

(1) TEH surrogate(s) not within reference method but within client specified acceptance limits. Analysis was repeated.



VALIDATION SIGNATURE PAGE

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

Kosmarie Moe Donald

Rosemarie MacDonald, Scientific Specialist (Organics)

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

Maxiam	200 Bluewater Bedford, Nova www.maxxam	Road Scotia E .ca	34B 1G	Phone: (902) 420-0203 9 Fax: (902) 420-8612 Toll Free: (800) 565-7227					EXXONMOBIL/IMPERIAL OIL - MAXXAM CHAIN-OF-CUSTODY RECORD ANALYSIS REQUESTED											C of	Pag C # 533	01	533484				
INVOICE INFORMATIO	DN			REF	PORT INFORMA	TION		1																			
Company Name:AECOM Canada Lto	d.	Comp	any Na	me:AE	COM Canada Lt	d.																					
Contact Name: Tim Bachiu		Conta Tim Ba	ct Nam achiu	e:						5																	
Address:		Addre	ss:							¥																	
1701 Hollis Street		1701 Halifax	701 Hollis Street							W																	
Fmail: Timothy bachiu@aeco	m com	Email	Talifax NS B3J 3M8							PKI																	
Phone: (902) 428-2048 x		Phone		(902) 428-2048 x																						
Sampler Name (Print): 1	11 11	Consu	Itant P	roject	#: 60438249				/ater	N																	
Tim Bachiu / Graig	Hatt								s in V	Y																	
, 0	<u> </u>	MATRIX	1	ss	SAMPLIN	١G	ED 8	D	arbon	10																	
FIELD SAMPLE ID	ROUND WATE SLIREACE	SOIL	OTHER	CONTAINER	DATE	TIME (24 HR)	PRESERV	AB FILTRA	BCA Hydroci	SEI																	
1 MW1	6			*	2018/10/102	HHINAS	u.		X	./										-			-	-			
2 MW2	V	-		1	novertentoo	15-PART			х	1						-	-			-	-		-				
3 MW/3	V			0	15000/10/17	11.75		-	x	V /				\vdash		-+				-	-						
a MM/4	V			6	2011/10/17	11:00			x	V	·					-			-					-			
5 MW/5	V/			6	2013/10/17	17:30	_		x	V			_			-	-			-						-	
6 MW6	V	_		6	2010/10/19	13.00			X	V																	
7 MW/ED			-	0	2013/10/17	14:20		-	x	1		-		-			-									-	
8 Trip Blank	V		. /	6	auro/untal	15:47	_		x	V																	_
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64 Mill Lake Road, Hubbards, NS					- 01	1 1.	h.							N.J.							Al	JBMITT	ED	Stand	ard	(5 days)	Z
IOL STIE # (if applicable): N/A					Hti	antic	11	RI						Vo	ne						Er	ter N/A ater	for	Rush		(3 days)	
IOL PROJECT # (if applicable):																						~	,			(2 days) (1 day)	님
MAXXAM TASK ORDER # OR SERVI	CF ORDER #+	LINE ITE	M																			Ø			(s	ame day)	
N/A-CTC Site-						8										10	E-	YE	S						Date	Required	
COOLER ID: 2CL-1146	3		-	C	OOLER ID:									COOLER	D:	VEO	1 110										
PRESENT VES NO	P 12	13	13	P	RESENT	TES N	т	EMP	12		-	9	F	PRESENT	SEAL	TES	NU	TEM	P						MAXX.	AM JOB	Υ #
RELINQUISHED BY:	1	2	3	DAT	E:	TIME (2	4 HR)	R	1 ECEIV	ED BY	2	3	1	NTACT				DA	TE:	1		1E (24	HR)	RC	KONT	q	
1. hours Whith	Carel B	Hott		an	5/10/14	16 11	R	R	ara	10	estate	e.		KAR	a will	NC ALL	N)	20	elie	100	1	10/4/1 TR	3	103	SAM	0 MPLES	
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3. signature	Ţ.H.U	nled name			YYYYMMDD	HH	MM	3.			signatur	0			printe	ed name	2		YYYY/	AM/DD		HH:M	1M	6	m	Ah	/
COC - 1009 (2013) IOL - NS			White	Maxxam				Yello	w: Clien																		

ΑΞϹΟΜ

Consultant: Al	ЕСОМ			Sampling Date: 2015/10/14						
Location: 64	1 MILL LA	KE RD. N	NO2,	Laboratory: Maxxam						
н	UBBARD	S, NS								
Consultant Project Number: 60)438249			Sample Submission Number: B5K9078						
Are All Laboratory QC Samples V	Vithin Ac	ceptance	e Criteria	(Yes, No, Not Applicable)?						
	Yes	No	NA	Comments						
Instrument Surrogate Recovery	\boxtimes									
Extraction Surrogate Recovery		\boxtimes		TEH surrogate(s) not within reference method but within client						
				specified acceptance limits. Analysis was repeated with similar results						
Method Blank Concentration	\boxtimes									
Matrix Duplicate RPD		\boxtimes								
Matrix Spike Recovery		\boxtimes								
Lab Control Sample Recovery	\boxtimes									
Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?										
	Yes	No	NA	Comments						
Field Blank Concentration			\boxtimes							
Trip Blank Concentration	\boxtimes									
Field Duplicate RPD	\boxtimes									
Has CoA been signed off?				🛛 Yes 🗆 No						
Has lab warranted all tests were i	n statisti	cal contro	ol in CoA	? X Yes No						
Has lab warranted all tests were a	analyzed	following	g SOP's i	n CoA? Yes D No						
Were all samples analyzed within	hold tim	es?	-	⊠ Yes □ No						
All volatiles samples methanol ex	tracted (i	if require	d) within	48 hours? 🛛 Yes 🛛 No						
Is Chain of Custody completed a	nd signed	1? <u> </u>		⊠ Yes □ No						
Were sample temperatures accept	otable wh	en they	reached	lab? 🛛 Yes 🛛 No						
Is data considered to be reliable?	•		🛛 Yes	□ No						
If answer is "No", describe and p	ovide rat	ionale:								
Reviewed by (Print): Janie	ce Shea			Reviewed by (Signature): Janua Shea						
Date: Octo	ber 8, 20)19								



Attention:Tim Bachiu

B313M8

AECOM Canada Ltd IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA

Task Order#: IOL-CTC Site#: Site Location: 64 MILL LAKE RD NO.2, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 09771, 09772

> Report Date: 2016/08/11 Report #: R4105078 Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6F9144

Received: 2016/07/29, 09:16

Sample Matrix: Soil # Samples Received: 14

Analyses	Quantity	Laboratory Method	Primary Reference
B[a]P Total Potency Equivalent	1	N/A	CCME CSQG
TEH in Soil (PIRI) (1)	14	ATL SOP 00111	Atl. RBCA v3 m
Moisture	14	ATL SOP 00001	OMOE Handbook 1983 m
Double water wash (soil)	14	ATL SOP 00111	N/A
PAH Compounds by GCMS (SIM) (1)	1	ATL SOP 00102	EPA 8270D 2007 m
VPH in Soil (PIRI)	14	ATL SOP 00119	Atl. RBCA v3 m
Silica Gel Clean-up (Soil)	14	ATL SOP 00111	EPA 3630C R3 m
ModTPH (T1) Calc. for Soil	14	N/A	Atl. RBCA v3 m

Remarks:

All work recorded herein has been performed in accordance to the ISO 17025 standard. Methods used by Maxxam Analytics are based upon accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing.

Maxxam Analytics is accredited by Standards Council of Canada (SCC). Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract.

All data is in statistical control and has met all QC and method performance criteria unless otherwise flagged. All samples were analysed within hold time unless otherwise flagged. All soil samples for BTEX analysis were methanol extracted within 24 hours unless otherwise flagged.

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) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

heri Mackay Project Manager - Bedford 11 Aug 2016 16:25:43 -03:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Keri Mackay, Project Manager - Bedford Email: kmackay@maxxam.ca Phone# (902)420-0203 Ext:294 _____

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Page 1 of 17



RBCA HYDROCARBONS IN SOIL (SOIL)

Maxxam ID		CUG979	CUG979	CUG980	CUG981		CUG982		
Sampling Date		2016/07/28	2016/07/28	2016/07/28	2016/07/28		2016/07/28		
		10:00	10:00	11:00	17:50		18:00		
COC Number		09771	09771	09771	09771		09771		
	UNITS	TP16-01	TP16-01 Lab-Dup	TP16-02	TP16-03 (0-1M)	RDL	TP16-03 (3-4M)	RDL	QC Batch
Inorganics									
Moisture	%	9.7		15	10	1.0	21	1.0	4599552
Petroleum Hydrocarbons									
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	<0.025	0.025	4599562
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	<0.025	0.025	4599562
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	0.072	0.025	0.050	0.025	4599562
Total Xylenes	mg/kg	<0.050	<0.050	<0.050	0.36	0.050	0.41	0.050	4599562
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	<2.5	64	2.5	48	2.5	4599562
>C10-C16 Hydrocarbons	mg/kg	<10		<10	3600	10	9200 (1)	50	4602201
>C16-C21 Hydrocarbons	mg/kg	<10		<10	1100	10	2400	10	4602201
>C21- <c32 hydrocarbons<="" p=""></c32>	mg/kg	<15		<15	290	15	440	15	4602201
Modified TPH (Tier1)	mg/kg	<15		<15	5000	15	12000	50	4599420
Reached Baseline at C32	mg/kg	NA		NA	Yes	N/A	Yes	N/A	4602201
Hydrocarbon Resemblance	mg/kg	NA		NA	COMMENT (2)	N/A	COMMENT (2)	N/A	4602201
Extraction Surrogate Recovery (%)									
Isobutylbenzene - Extractable	%	86		89	89		67		4602201
n-Dotriacontane - Extractable	%	105		107	113		104		4602201
Isobutylbenzene - Volatile	%	94	94	107	50 (3)		63		4599562
Instrument Surrogate Recovery (%)									
1,4-Difluorobenzene	%	80	97	108	94		88		4599562
4-Bromofluorobenzene	%	95	114	110	98		98		4599562
D4-1,2-Dichloroethane	%	91	101	105	107		104		4599562

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) Elevated TEH RDL(s) due to sample dilution.

(2) Fuel oil fraction.

(3) VPH surrogate(s) not within reference method but within client specified acceptance limits. Analysis was repeated with similar results.



RBCA HYDROCARBONS IN SOIL (SOIL)

Maxxam ID		CUG983	CUG984	CUG985		CUG986		
Sampling Date		2016/07/27 16:30	2016/07/27 15:40	2016/07/27 16:00		2016/07/28 09:00		
COC Number		09771	09771	09771		09771		
	UNITS	TP16-04	TP16-05 (1-2M)	TP16-05 (3-4M)	RDL	TP16-06 (2-3M)	RDL	QC Batch
Inorganics								
Moisture	%	9.3	11	11	1.0	12	1.0	4599552
Petroleum Hydrocarbons								
Benzene	mg/kg	<0.025	<0.025	<0.025	0.025	<0.025	0.025	4599562
Toluene	mg/kg	<0.025	<0.025	<0.025	0.025	<0.025	0.025	4599562
Ethylbenzene	mg/kg	<0.025	0.36	<0.025	0.025	0.22	0.025	4599562
Total Xylenes	mg/kg	<0.050	0.83	0.068	0.050	1.5	0.050	4599562
C6 - C10 (less BTEX)	mg/kg	<2.5	200	13	2.5	120	25	4599562
>C10-C16 Hydrocarbons	mg/kg	<10	5500	440	10	490	10	4602201
>C16-C21 Hydrocarbons	mg/kg	<10	1700	160	10	200	10	4602201
>C21- <c32 hydrocarbons<="" p=""></c32>	mg/kg	<15	380	45	15	46	15	4602201
Modified TPH (Tier1)	mg/kg	<15	7800	660	15	860	25	4599420
Reached Baseline at C32	mg/kg	NA	Yes	Yes	N/A	Yes	N/A	4602201
Hydrocarbon Resemblance	mg/kg	NA	COMMENT (1)	COMMENT (1)	N/A	COMMENT (1)	N/A	4602201
Extraction Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	87	96	101		92		4602201
n-Dotriacontane - Extractable	%	102	117	109		97		4602201
Isobutylbenzene - Volatile	%	107	61	93		76		4599562
Instrument Surrogate Recovery (%)								
1,4-Difluorobenzene	%	95	83	86		90		4599562
4-Bromofluorobenzene	%	107	87	91		121		4599562
D4-1,2-Dichloroethane	%	101	91	90		94		4599562
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								
N/A = NOT Applicable								
(1) Fuel oil traction.								





RBCA HYDROCARBONS IN SOIL (SOIL)

Maxxam ID		CUG987	CUG988	CUG989		CUG990		
Sampling Date		2016/07/28 09:15	2016/07/27 15:05	2016/07/27 14:15		2016/07/27 14:00		
COC Number		09771	09771	09772		09772		
	UNITS	TP16-06 (3-4M)	TP16-07	TP16-08	QC Batch	TP16-09	RDL	QC Batch
Inorganics								
Moisture	%	14	8.9	12	4599552	17	1.0	4599552
Petroleum Hydrocarbons								
Benzene	mg/kg	<0.025	<0.025	<0.025	4599562	<0.025	0.025	4599562
Toluene	mg/kg	<0.025	<0.025	<0.025	4599562	<0.025	0.025	4599562
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	4599562	<0.025	0.025	4599562
Total Xylenes	mg/kg	<0.050	<0.050	<0.050	4599562	<0.050	0.050	4599562
C6 - C10 (less BTEX)	mg/kg	20	<2.5	<2.5	4599562	5.0	2.5	4599562
>C10-C16 Hydrocarbons	mg/kg	14	<10	<10	4602201	23	10	4603508
>C16-C21 Hydrocarbons	mg/kg	26	<10	<10	4602201	32	10	4603508
>C21- <c32 hydrocarbons<="" td=""><td>mg/kg</td><td>21</td><td><15</td><td><15</td><td>4602201</td><td>45</td><td>15</td><td>4603508</td></c32>	mg/kg	21	<15	<15	4602201	45	15	4603508
Modified TPH (Tier1)	mg/kg	82	<15	<15	4599420	110	15	4599420
Reached Baseline at C32	mg/kg	Yes	NA	NA	4602201	Yes	N/A	4603508
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	NA	NA	4602201	COMMENT (2)	N/A	4603508
Extraction Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	87	91	91	4602201	80		4603508
n-Dotriacontane - Extractable	%	102	104	102	4602201	121		4603508
Isobutylbenzene - Volatile	%	106	104	105	4599562	105		4599562
Instrument Surrogate Recovery (%)								
1,4-Difluorobenzene	%	110	108	102	4599562	107		4599562
4-Bromofluorobenzene	%	110	109	106	4599562	107		4599562
D4-1,2-Dichloroethane	%	108	104	97	4599562	102		4599562

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) One product in fuel / lube range.

(2) Weathered fuel oil fraction. Possible lube oil fraction.



RBCA HYDROCARBONS IN SOIL (SOIL)

Maxxam ID		CUG991	CUG992		
		2016/07/27	2016/07/28		
Sampling Date		16:01	09:10		
COC Number		09772	09772		
	UNITS	TP16-10	DUP A	RDL	QC Batch
Inorganics					
Moisture	%	14	10	1.0	4599822
Petroleum Hydrocarbons					
Benzene	mg/kg	<0.025	<0.025	0.025	4599562
Toluene	mg/kg	<0.025	<0.025	0.025	4599562
Ethylbenzene	mg/kg	<0.025	0.17	0.025	4599562
Total Xylenes	mg/kg	<0.050	0.99	0.050	4599562
C6 - C10 (less BTEX)	mg/kg	<2.5	260	2.5	4599562
>C10-C16 Hydrocarbons	mg/kg	<10	180	10	4603508
>C16-C21 Hydrocarbons	mg/kg	20	86	10	4603508
>C21- <c32 hydrocarbons<="" td=""><td>mg/kg</td><td>21</td><td>19</td><td>15</td><td>4603508</td></c32>	mg/kg	21	19	15	4603508
Modified TPH (Tier1)	mg/kg	41	550	15	4599420
Reached Baseline at C32	mg/kg	Yes	Yes	N/A	4603508
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	COMMENT (2)	N/A	4603508
Extraction					
Surrogate Recovery (%)					
Isobutylbenzene - Extractable	%	77	82		4603508
n-Dotriacontane - Extractable	%	110 (3)	111		4603508
Isobutylbenzene - Volatile	%	101	97		4599562
Instrument					
Surrogate Recovery (%)					
1,4-Difluorobenzene	%	108	108		4599562
4-Bromofluorobenzene	%	108	113		4599562
D4-1,2-Dichloroethane	%	102	102		4599562
RDL = Reportable Detection Lim	nit				
QC Batch = Quality Control Batc	:h				
N/A = Not Applicable					

(1) One product in fuel / lube range.

(2) Weathered fuel oil fraction.

(3) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.



Maxxam ID		CUG990	CUG990				
Sampling Data		2016/07/27	2016/07/27				
Sampling Date		14:00	14:00				
COC Number		09772	09772				
	UNITS	TP16-09	TP16-09 Lab-Dup	RDL	QC Batch		
Polyaromatic Hydrocarbons							
1-Methylnaphthalene	mg/kg	0.014	0.013	0.010	4605389		
2-Methylnaphthalene	mg/kg	<0.010	<0.010	0.010	4605389		
Acenaphthene	mg/kg	<0.010	<0.010	0.010	4605389		
Acenaphthylene	mg/kg	<0.010	<0.010	0.010	4605389		
Anthracene	mg/kg	<0.010	<0.010	0.010	4605389		
Fluoranthene	mg/kg	0.049	0.11	0.010	4605389		
Fluorene	mg/kg	<0.010	0.012	0.010	4605389		
Naphthalene	mg/kg	<0.010	<0.010	0.010	4605389		
Phenanthrene	mg/kg	0.026	0.046	0.010	4605389		
Pyrene	mg/kg	0.050	0.10	0.010	4605389		
Benzo(a)anthracene	mg/kg	0.057	0.092	0.010	4605389		
Benzo(a)pyrene	mg/kg	0.089	0.11	0.010	4605389		
Benzo(b)fluoranthene	mg/kg	0.068	0.095	0.010	4605389		
Benzo(g,h,i)perylene	mg/kg	0.073	0.094	0.010	4605389		
Benzo(j)fluoranthene	mg/kg	0.034	0.043	0.010	4605389		
Benzo(k)fluoranthene	mg/kg	0.032	0.043	0.010	4605389		
Chrysene	mg/kg	0.062	0.093	0.010	4605389		
Dibenz(a,h)anthracene	mg/kg	0.017	0.021	0.010	4605389		
Indeno(1,2,3-cd)pyrene	mg/kg	0.063	0.078	0.010	4605389		
Benzo(a)pyrene Total Potency Equiv.	mg/kg	0.13		0.03	4599527		
Extraction Surrogate Recovery (%)							
D10-Anthracene	%	87	89		4605389		
D14-Terphenyl (FS)	%	104	110		4605389		
D8-Acenaphthylene	%	96	108		4605389		
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							
Lab-Dup = Laboratory Initiated Duplicate							

SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)



ModTPH (T1) Calc. for Soil

Report Date: 2016/08/11

AECOM Canada Ltd Task Order#: IOL-CTC Site#: Site Location: 64 MILL LAKE RD NO.2, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	CUG979 TP16-01 Soil				I	Collected: Relinquished: Received:	2016/07/28 2016/07/29 2016/07/29
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4602201	2016/08/02	2016/08/03	Bria Harve	у
Moisture		BAL	4599552	N/A	2016/08/02	Victoria Le	gge
VPH in Soil (PIRI)		PTGC/MS	4599562	2016/07/29	2016/07/29	Thea Holla	ind
ModTPH (T1) Calc. for So	il	CALC	4599420	N/A	2016/08/03	Automate	d Statchk
Maxxam ID: Sample ID: Matrix:	CUG979 Dup TP16-01 Soil					Collected: Relinquished: Received:	2016/07/28 2016/07/29 2016/07/29
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
VPH in Soil (PIRI)		PTGC/MS	4599562	2016/07/29	2016/07/29	Thea Holla	ind
Maxxam ID: Sample ID: Matrix:	CUG980 TP16-02 Soil				I	Collected: Relinquished: Received:	2016/07/28 2016/07/29 2016/07/29
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4602201	2016/08/02	2016/08/03	Bria Harve	у
Moisture		BAL	4599552	N/A	2016/08/02	Victoria Le	gge
VPH in Soil (PIRI)		PTGC/MS	4599562	2016/07/29	2016/07/29	Thea Holla	ind
ModTPH (T1) Calc. for So	il	CALC	4599420	N/A	2016/08/03	Automate	d Statchk
Maxxam ID: Sample ID: Matrix:	CUG981 TP16-03 (0-1M) Soil				I	Collected: Relinquished: Received:	2016/07/28 2016/07/29 2016/07/29
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4602201	2016/08/02	2016/08/03	Bria Harve	у
Moisture		BAL	4599552	N/A	2016/08/02	Victoria Le	gge
VPH in Soil (PIRI)		PTGC/MS	4599562	2016/07/29	2016/08/03	Thea Holla	nd
ModTPH (T1) Calc. for So	il	CALC	4599420	N/A	2016/08/04	Automate	d Statchk
Maxxam ID: Sample ID: Matrix:	CUG982 TP16-03 (3-4M) Soil					Collected: Relinquished: Received:	2016/07/28 2016/07/29 2016/07/29
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4602201	2016/08/02	2016/08/03	Bria Harve	у
Moisture		BAL	4599552	N/A	2016/08/02	Victoria Le	gge
VPH in Soil (PIRI)		PTGC/MS	4599562	2016/07/29	2016/08/03	Thea Holla	ind

N/A

2016/08/04

Automated Statchk

4599420

CALC



Report Date: 2016/08/11

AECOM Canada Ltd Task Order#: IOL-CTC Site#: Site Location: 64 MILL LAKE RD NO.2, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID:	CUG983
Sample ID:	TP16-04
Matrix:	Soil

Collected:	2016/07/27
Relinguished:	2016/07/29
Received:	2016/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4602201	2016/08/02	2016/08/03	Bria Harvey
Moisture	BAL	4599552	N/A	2016/08/02	Victoria Legge
VPH in Soil (PIRI)	PTGC/MS	4599562	2016/07/29	2016/07/29	Thea Holland
ModTPH (T1) Calc. for Soil	CALC	4599420	N/A	2016/08/03	Automated Statchk

Maxxam ID: CUG984 Sample ID: TP16-05 (1-2M) Matrix: Soil

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4602201	2016/08/02	2016/08/03	Bria Harvey
Moisture	BAL	4599552	N/A	2016/08/02	Victoria Legge
VPH in Soil (PIRI)	PTGC/MS	4599562	2016/07/29	2016/08/03	Thea Holland
ModTPH (T1) Calc. for Soil	CALC	4599420	N/A	2016/08/04	Automated Statchk

Maxxam ID: CUG985 Sample ID: TP16-05 (3-4M) Matrix: Soil

 Collected:
 2016/07/27

 Relinquished:
 2016/07/29

 Received:
 2016/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4602201	2016/08/02	2016/08/03	Bria Harvey
Moisture	BAL	4599552	N/A	2016/08/02	Victoria Legge
VPH in Soil (PIRI)	PTGC/MS	4599562	2016/07/29	2016/07/29	Thea Holland
ModTPH (T1) Calc. for Soil	CALC	4599420	N/A	2016/08/03	Automated Statchk

Maxxam ID:	CUG986
Sample ID:	TP16-06 (2-3M)
Matrix:	Soil

Relinquished: 2016/07/29 Received: 2016/07/29

Collected: 2016/07/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4602201	2016/08/02	2016/08/03	Bria Harvey
Moisture	BAL	4599552	N/A	2016/08/02	Victoria Legge
VPH in Soil (PIRI)	PTGC/MS	4599562	2016/07/29	2016/08/03	Thea Holland
ModTPH (T1) Calc. for Soil	CALC	4599420	N/A	2016/08/04	Automated Statchk

at Description		Instrumentation	Dotob	Extracted	Data Analyzad	Analyst		
Matrix:	Soil					Received:	2016/07/29	
Sample ID:	TP16-06 (3-4M)				F	Relinquished:	2016/07/29	
Maxxam ID:	CUG987					Collected:	2016/07/28	

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4602201	2016/08/02	2016/08/03	Bria Harvey
Moisture	BAL	4599552	N/A	2016/08/02	Victoria Legge
VPH in Soil (PIRI)	PTGC/MS	4599562	2016/07/29	2016/07/29	Thea Holland
ModTPH (T1) Calc. for Soil	CALC	4599420	N/A	2016/08/03	Automated Statchk

Maxxam Analytics International Corporation o/a Maxxam Analytics 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.maxxamanalytics.com

Collected: 2016/07/27 Relinquished: 2016/07/29 Received: 2016/07/29



Report Date: 2016/08/11

AECOM Canada Ltd Task Order#: IOL-CTC Site#: Site Location: 64 MILL LAKE RD NO.2, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID:	CUG988		
Sample ID:	TP16-07		
Matrix:	Soil		

Collected:	2016/07/27
Relinquished:	2016/07/29
Received:	2016/07/29

Collected: 2016/07/27

Relinquished:

Received:

2016/07/29

2016/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4602201	2016/08/02	2016/08/03	Bria Harvey
Moisture	BAL	4599552	N/A	2016/08/02	Victoria Legge
VPH in Soil (PIRI)	PTGC/MS	4599562	2016/07/29	2016/07/29	Thea Holland
ModTPH (T1) Calc. for Soil	CALC	4599420	N/A	2016/08/03	Automated Statchk

Maxxam ID: CUG989 Sample ID: TP16-08 Matrix: Soil

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4602201	2016/08/02	2016/08/03	Bria Harvey
Moisture	BAL	4599552	N/A	2016/08/02	Victoria Legge
VPH in Soil (PIRI)	PTGC/MS	4599562	2016/07/29	2016/07/29	Thea Holland
ModTPH (T1) Calc. for Soil	CALC	4599420	N/A	2016/08/03	Automated Statchk

Maxxam ID:	CUG990
Sample ID:	TP16-09
Matrix:	Soil

Collected:	2016/07/27
Relinguished:	2016/07/29
Received:	2016/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
B[a]P Total Potency Equivalent	CALC	4599527	N/A	2016/08/11	Automated Statchk
TEH in Soil (PIRI)	GC/FID	4603508	2016/08/03	2016/08/03	Katelyn Cherwonick
Moisture	BAL	4599552	N/A	2016/08/02	Victoria Legge
PAH Compounds by GCMS (SIM)	GC/MS	4605389	2016/08/04	2016/08/10	Gina Thompson
VPH in Soil (PIRI)	PTGC/MS	4599562	2016/07/29	2016/07/29	Thea Holland
ModTPH (T1) Calc. for Soil	CALC	4599420	N/A	2016/08/04	Automated Statchk

Maxxam ID: Sample ID:	CUG990 Dup TP16-09				Rel	Collected: inquished:	2016/07/27 2016/07/29
Matrix:	Soil					Received:	2016/07/29
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	

_ ·					
PAH Compounds by GCMS (SIM)	GC/MS	4605389	2016/08/04	2016/08/10	Gina Thompson

Maxxam ID: CUG991 Sample ID: TP16-10 Matrix: Soil Collected: 2016/07/27 Relinquished: 2016/07/29 Received: 2016/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4603508	2016/08/03	2016/08/03	Katelyn Cherwonick
Moisture	BAL	4599822	N/A	2016/08/02	Victoria Legge
VPH in Soil (PIRI)	PTGC/MS	4599562	2016/07/29	2016/07/29	Thea Holland
ModTPH (T1) Calc. for Soil	CALC	4599420	N/A	2016/08/04	Automated Statchk



TEST SUMMARY

Maxxam ID:	CUG992
Sample ID:	DUP A
Matrix:	Soil

Collected:	2016/07/28
Relinquished:	2016/07/29
Received:	2016/07/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4603508	2016/08/03	2016/08/03	Katelyn Cherwonick
Moisture	BAL	4599822	N/A	2016/08/02	Victoria Legge
VPH in Soil (PIRI)	PTGC/MS	4599562	2016/07/29	2016/07/29	Thea Holland
ModTPH (T1) Calc. for Soil	CALC	4599420	N/A	2016/08/04	Automated Statchk



GENERAL COMMENTS

Each te	emperature is the	average of up to t	hree cooler temperatures taken at receipt
	Package 1	0.0°C	
Note: l labelle	abelling issue (lal d as per COC - Pro	bel missing and /o oceeded with anal	r incorrect) - TP16-03 (0-1m) on COC but TP16-03 (2-3m) on 1x40ml vial. All other containers for sample are ysis on remaining 40ml vial. Marked incorrectly labelled vial as do not use. Client informed.
Note: I analysi	abelling issue (lal s. Client informe	bel missing and /o d	r incorrect) - TP16-07 on COC and lid but no label on jar- labelled sample as TP16-07 and proceed with
Double	water wash and	silica gel clean-up	performed on soil extracts.
Result	s relate only to th	e items tested.	



QUALITY ASSURANCE REPORT

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
4599562	THL	Method Blank	1,4-Difluorobenzene	2016/07/29		101	%	60 - 140
			4-Bromofluorobenzene	2016/07/29		94	%	60 - 140
			D4-1,2-Dichloroethane	2016/07/29		98	%	60 - 140
			Isobutylbenzene - Volatile	2016/07/29		101	%	60 - 130
			Benzene	2016/07/29	<0.025		mg/kg	
			Toluene	2016/07/29	<0.025		mg/kg	
			Ethylbenzene	2016/07/29	<0.025		mg/kg	
			Total Xylenes	2016/07/29	<0.050		mg/kg	
			C6 - C10 (less BTEX)	2016/07/29	<2.5		mg/kg	
4602201	BHR	Method Blank	n-Dotriacontane - Extractable	2016/08/02		106	%	30 - 130
			Isobutylbenzene - Extractable	2016/08/02		91	%	30 - 130
			>C10-C16 Hydrocarbons	2016/08/02	<10		mg/kg	
			>C16-C21 Hydrocarbons	2016/08/02	<10		mg/kg	
			>C21- <c32 hydrocarbons<="" td=""><td>2016/08/02</td><td><15</td><td></td><td>mg/kg</td><td></td></c32>	2016/08/02	<15		mg/kg	
4603508	KCR	Method Blank	n-Dotriacontane - Extractable	2016/08/03		120	%	30 - 130
			Isobutylbenzene - Extractable	2016/08/03		80	%	30 - 130
			>C10-C16 Hydrocarbons	2016/08/03	<10		mg/kg	
			>C16-C21 Hydrocarbons	2016/08/03	<10		mg/kg	
			>C21- <c32 hydrocarbons<="" td=""><td>2016/08/03</td><td><15</td><td></td><td>mg/kg</td><td></td></c32>	2016/08/03	<15		mg/kg	
4605389	GTH	Method Blank	D10-Anthracene	2016/08/10		90	%	30 - 130
			D14-Terphenyl (FS)	2016/08/10		96	%	30 - 130
			D8-Acenaphthylene	2016/08/10		83	%	30 - 130
			1-Methylnaphthalene	2016/08/10	<0.010		mg/kg	
			2-Methylnaphthalene	2016/08/10	<0.010		mg/kg	
			Acenaphthene	2016/08/10	< 0.010		mg/kg	
			Acenaphthylene	2016/08/10	< 0.010		mg/kg	
			Anthracene	2016/08/10	<0.010		mg/kg	
			Fluoranthene	2016/08/10	<0.010		mg/kg	
			Fluorene	2016/08/10	< 0.010		mg/kg	
			Naphthalene	2016/08/10	< 0.010		mg/kg	
			Phenanthrene	2016/08/10	< 0.010		mg/kg	
			Pyrene	2016/08/10	< 0.010		mg/kg	
			Benzo(a)anthracene	2016/08/10	< 0.010		mg/kg	
			Benzo(a)pyrene	2016/08/10	< 0.010		mg/kg	
			Benzo(b)fluoranthene	2016/08/10	< 0.010		mg/kg	
			Benzo(g.h.i)pervlene	2016/08/10	< 0.010		mg/kg	
			Benzo(i)fluoranthene	2016/08/10	< 0.010		mg/kg	
			Benzo(k)fluoranthene	2016/08/10	< 0.010		mg/kg	
			Chrysene	2016/08/10	<0.010		mg/kg	
			Dibenz(a h)anthracene	2016/08/10	<0.010		mg/kg	
			Indeno(1.2.3-cd)pyrene	2016/08/10	<0.010		mø/kø	
4599562	тні	RPD [CUG979-02]	Benzene	2016/07/29	NC		%	50
4555502			Toluene	2016/07/29	NC		%	50
			Ethylbenzene	2016/07/29	NC		%	50
			Total Xylenes	2016/07/29	NC		%	50
			C6 - C10 (less BTEX)	2016/07/29	NC		%	50
4605380	GTH		1-Methylnanhthalene	2010/07/29	NC		/0 %	50
-005509	5111		2-Methylnaphthalene	2010/00/10	NC		%	50
				2010/00/10	NC		70 0/	50
				2010/00/10			/0 0/_	50
			Anthracene	2010/00/10			70 0/	50
			Antinacene	2010/08/10	NC		/0	50



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
			Fluoranthene	2016/08/10	NC		%	50
			Fluorene	2016/08/10	NC		%	50
			Naphthalene	2016/08/10	NC		%	50
			Phenanthrene	2016/08/10	NC		%	50
			Pyrene	2016/08/10	NC		%	50
			Benzo(a)anthracene	2016/08/10	47		%	50
			Benzo(a)pyrene	2016/08/10	24		%	50
			Benzo(b)fluoranthene	2016/08/10	33		%	50
			Benzo(g,h,i)perylene	2016/08/10	25		%	50
			Benzo(j)fluoranthene	2016/08/10	NC		%	50
			Benzo(k)fluoranthene	2016/08/10	NC		%	50
			Chrysene	2016/08/10	41		%	50
			, Dibenz(a.h)anthracene	2016/08/10	NC		%	50
			Indeno(1,2,3-cd)pyrene	2016/08/10	21		%	50
4599562	THL	Matrix Spike	1,4-Difluorobenzene	2016/07/29		103	%	60 - 140
		[00300-02]		2046/07/20		400	c /	CO 110
			4-Bromofluorobenzene	2016/07/29		100	%	60 - 140
			D4-1,2-Dichloroethane	2016/07/29		91	%	60 - 140
			Isobutylbenzene - Volatile	2016/07/29		102	%	60 - 130
			Benzene	2016/07/29		100	%	60 - 130
			Toluene	2016/07/29		100	%	60 - 130
			Ethylbenzene	2016/07/29		96	%	60 - 130
			Total Xylenes	2016/07/29		95	%	60 - 130
4605389	GTH	Matrix Spike [CUG990-03]	D10-Anthracene	2016/08/10		86	%	30 - 130
			D14-Terphenyl (FS)	2016/08/10		108	%	30 - 130
			D8-Acenaphthylene	2016/08/10		107	%	30 - 130
			1-Methylnaphthalene	2016/08/10		89	%	30 - 130
			2-Methylnaphthalene	2016/08/10		92	%	30 - 130
			Acenaphthene	2016/08/10		91	%	30 - 130
			Acenaphthylene	2016/08/10		98	%	30 - 130
			Anthracene	2016/08/10		88	%	30 - 130
			Fluoranthene	2016/08/10		90	%	30 - 130
			Fluorene	2016/08/10		102	%	30 - 130
			Naphthalene	2016/08/10		89	%	30 - 130
			Phenanthrene	2016/08/10		92	%	30 - 130
			Pyrene	2016/08/10		92	%	30 - 130
			Benzo(a)anthracene	2016/08/10		97	%	30 - 130
			Benzo(a)pyrene	2016/08/10		97	%	30 - 130
			Benzo(h)fluoranthene	2016/08/10		92	%	30 - 130
			Benzo(g h i)nervlene	2016/08/10		108	%	30 - 130
			Benzo(i)fluoranthene	2016/08/10		94	%	30 - 130
			Benzo(k)fluoranthene	2016/08/10		97	%	30 - 130
			Chrysene	2016/08/10		80	%	30 - 130
			Dihenz(a h)anthracene	2010/00/10		115	%	30 - 130
			Indeno(1.2.3-cd)nyrene	2016/08/10		115	%	30 - 130
4599562	тні	105	1 4-Difluorobenzene	2010/00/10		101	%	60 - 1/0
		105	4-Bromofluorohenzene	2010/07/29		101	%	60 - 1/0
			DI-1 2-Dichloroethane	2010/07/20		00	/u 0/	60 - 140
			Isohutylhenzene - Volatile	2010/07/29		90 QQ	%	60 - 120
			Bonzono	2016/07/29		99	/u 0/	60.140
L			DEIIZEIIE	2010/07/29		50	70	00 - 140



QUALITY ASSURANCE REPORT(CONT'D)

Batch Init QC Type Parameter Analyzed Value Recovery UNITS OCL limit Induces 2016/07/29 98 % 60-140 Ethylbenzene 2016/07/29 103 % 60-140 4602201 BHR LCS n-Dotriacontane - Extractable 2016/07/29 103 % 60-144 4602201 BHR LCS n-Dotriacontane - Extractable 2016/08/02 91 % 30-133 >C10-C16 Hydrocarbons 2016/08/02 92 % 30-133 >C10-C16 Hydrocarbons 2016/08/02 109 % 30-133 -C21-C32 Hydrocarbons 2016/08/02 109 % 30-133 >C10-C16 Hydrocarbons 2016/08/03 105 % 30-133 >C10-C16 Hydrocarbons 2016/08/03 91 % 30-133 >C10-C16 Hydrocarbons 2016/08/03 104 % 30-133 >C10-C16 Hydrocarbons 2016/08/10 78 % 30-133 >C10-C16 Hydrocarbons 2016/08/10 79 % 30-133	QA/QC				Date				
Toluene 2016/07/29 98 % 60 - 144 Ethylbenzen 2016/07/29 103 % 60 - 144 4602201 BHR <lcs< td=""> n-Dotriacontane - Extractable 2016/07/29 103 % 60 - 144 4602201 BHR<lcs< td=""> n-Dotriacontane - Extractable 2016/08/02 91 % 30 - 133 >C10-C16 Hydrocarbons 2016/08/02 93 % 30 - 133 >C10-C16 Hydrocarbons 2016/08/02 99 % 30 - 133 >C10-C16 Hydrocarbons 2016/08/02 89 % 30 - 133 sobutylbenzen - Extractable 2016/08/03 82 % 30 - 133 sobutylbenzen - Extractable 2016/08/03 98 % 30 - 133 sobutylbenzen - Extractable 2016/08/03 98 % 30 - 133 sobutylbenzen - Extractable 2016/08/03 98 % 30 - 133 sobutylbenzen - Extractable 2016/08/03 91 % 30 - 133 sobutylbenzen - Extractable 2016/08/10 78</lcs<></lcs<>	Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
Ethyberzene 2016/07/29 103 % 60-144 4602201 BHR LCS n-Dotriacontane - Extractable 2016/08/02 107 % 30-133 4602201 BHR LCS n-Dotriacontane - Extractable 2016/08/02 91 % 30-133 2010-015/08/02 92 % 30-133 >C10-C16 Hydrocarbons 2016/08/02 99 % 30-133 4603508 KCR LCS n-Dotriacontane - Extractable 2016/08/02 109 % 30-133 4603508 KCR LCS n-Dotriacontane - Extractable 2016/08/03 82 % 30-133 4603508 KCR LCS n-Dotriacontane - Extractable 2016/08/03 98 % 30-133 4605389 GTH LCS D10-Anthracene 2016/08/10 98 % 30-133 4605389 GTH LCS D10-Anthracene 2016/08/10 94 % 30-133 14-Terphenyl (FS) 2016/08/10 73 % 30-133 1.4 % 30-133 14-Terphenyl (FS) 2016/08/10 78 % 30-133 1.4 % 30-133 14-T				Toluene	2016/07/29		98	%	60 - 140
Total Xylenes 2016/07/29 103 % 60 - 144 4602201 BHR LCS n-Dotriacontane - Extractable 2016/08/02 91 % 30 - 133 >C10-C16 Hydrocarbons 2016/08/02 92 % 30 - 133 >C10-C12 Hydrocarbons 2016/08/02 92 % 30 - 133 >C10-C21 Hydrocarbons 2016/08/02 99 % 30 - 133 >C10-C21 Hydrocarbons 2016/08/02 109 % 30 - 133 >C10-C16 Hydrocarbons 2016/08/03 82 % 30 - 133 >C10-C16 Hydrocarbons 2016/08/03 98 % 30 - 133 >C10-C16 Hydrocarbons 2016/08/03 91 % 30 - 133 >C10-C12 Hydrocarbons 2016/08/10 98 % 30 - 133 4605389 GTH LCS D10-Anthracene 2016/08/10 79 % 30 - 133 14-Terphenyl (FS) 2016/08/10 73 % 30 - 133 1-Methylnaphthalene 2016/08/10 73 % <td< td=""><td></td><td></td><td></td><td>Ethylbenzene</td><td>2016/07/29</td><td></td><td>103</td><td>%</td><td>60 - 140</td></td<>				Ethylbenzene	2016/07/29		103	%	60 - 140
4602201 BHR LCS n-Dotriacontane - Extractable 2016/08/02 91 % 30 - 133 sobutylbenzene - Extractable 2016/08/02 92 % 30 - 133 >C10-C16 Hydrocarbons 2016/08/02 89 % 30 - 133 >C11-C32 Hydrocarbons 2016/08/02 89 % 30 - 133 >C21-C32 Hydrocarbons 2016/08/03 105 % 30 - 133 >C21-C32 Hydrocarbons 2016/08/03 105 % 30 - 133 >C10-C16 Hydrocarbons 2016/08/03 91 % 30 - 133 >C10-C16 Hydrocarbons 2016/08/03 91 % 30 - 133 >C10-C16 Hydrocarbons 2016/08/03 91 % 30 - 133 >C10-C21 Hydrocarbons 2016/08/10 91 % 30 - 133 >C10-C21 Hydrocarbons 2016/08/10 94 % 30 - 133 \$ D10-Anthracene 2016/08/10 73 % 30 - 133 \$ D10-Anthracene 2016/08/10 73 % 30 - 13				Total Xylenes	2016/07/29		103	%	60 - 140
Isobutylbenzene - Extractable 2016/08/02 91 % 30 - 130 >C10-C16 Hydrocarbons 2016/08/02 92 % 30 - 130 >C10-C16 Hydrocarbons 2016/08/02 99 % 30 - 130 >C10-C16 Hydrocarbons 2016/08/02 109 % 30 - 130 >C10-C16 Hydrocarbons 2016/08/03 105 % 30 - 130 Isobutylbenzene - Extractable 2016/08/03 105 % 30 - 130 >C10-C16 Hydrocarbons 2016/08/03 98 % 30 - 130 >C10-C16 Hydrocarbons 2016/08/03 91 % 30 - 130 4605389 GTH <lcs< td=""> D10-Anthracene 2016/08/10 94 % 30 - 130 4605389 GTH<lcs< td=""> D10-Anthracene 2016/08/10 74 % 30 - 130 4605389 GTH<lcs< td=""> D10-Anthracene 2016/08/10 74 % 30 - 130 1-Methylnaphthalene 2016/08/10 75 % 30 - 130 2-Methylnaphthalene 2016/08/10</lcs<></lcs<></lcs<>	4602201	BHR	LCS	n-Dotriacontane - Extractable	2016/08/02		107	%	30 - 130
>C10-C16 Hydrocarbons 2016/08/02 92 % 30 - 13C >C16-C21 Hydrocarbons 2016/08/02 89 % 30 - 13C 4603508 KCR LCS n-Dotriacontane - Extractable 2016/08/03 105 % 30 - 13C 4603508 KCR LCS n-Dotriacontane - Extractable 2016/08/03 82 % 30 - 13C 2016/08/03 91 % 30 - 13C > 30 - 13C >C10-C16 Hydrocarbons 2016/08/03 98 % 30 - 13C >C10-C16 Hydrocarbons 2016/08/03 91 % 30 - 13C >C10-C16 Hydrocarbons 2016/08/10 82 % 30 - 13C >C21-C32 Hydrocarbons 2016/08/10 94 % 30 - 13C >C10-Anthracene 2016/08/10 79 % 30 - 13C D10-Anthracene 2016/08/10 78 % 30 - 13C D8-Acenaphthylene 2016/08/10 78 % 30 - 13C 2-Methylnaphthalene 2016/08/10 78 % 3				Isobutylbenzene - Extractable	2016/08/02		91	%	30 - 130
>C16-C21 Hydrocarbons 2016/08/02 89 % 30 - 130 4603508 KCR LCS n-Dotriacontane - Extractable 2016/08/03 105 % 30 - 130 4603508 KCR LCS n-Dotriacontane - Extractable 2016/08/03 82 % 30 - 130 >C10-C16 Hydrocarbons 2016/08/03 98 % 30 - 130 >C10-C16 Hydrocarbons 2016/08/03 91 % 30 - 130 >C12-C32 Hydrocarbons 2016/08/03 104 % 30 - 130 >C21-C32 Hydrocarbons 2016/08/10 82 % 30 - 130 4605389 GTH LCS D10-Anthracene 2016/08/10 82 % 30 - 130 4605389 GTH LCS D10-Anthracene 2016/08/10 79 % 30 - 130 4605389 GTH LCS D14-Terphenyl (FS) 2016/08/10 79 % 30 - 130 104 Hydrocarbons 2016/08/10 78 % 30 - 130 1-Methylnaphth				>C10-C16 Hydrocarbons	2016/08/02		92	%	30 - 130
>C21- <c32 hydrocarbons<="" td=""> 2016/08/02 109 % 30 - 130 4603508 KCR LCS n-Dotriacontane - Extractable 2016/08/03 105 % 30 - 130 1500 Isobuttylbenzene - Extractable 2016/08/03 98 % 30 - 130 2 C10-C16 Hydrocarbons 2016/08/03 91 % 30 - 130 2 C10-C16 Hydrocarbons 2016/08/03 91 % 30 - 130 2 C12-C32 Hydrocarbons 2016/08/10 82 % 30 - 130 2 C12-C32 Hydrocarbons 2016/08/10 82 % 30 - 130 2 D10-Anthracene 2016/08/10 82 % 30 - 130 10 Methylnaphthalene 2016/08/10 73 % 30 - 130 2-Methylnaphthalene 2016/08/10 73 % 30 - 130 2-Methylnaphthalene 2016/08/10 75 % 30 - 130 Accnaphthylene 2016/08/10 76 % 30 - 130 Fluoranthene</c32>				>C16-C21 Hydrocarbons	2016/08/02		89	%	30 - 130
4603508 KCR LCS n-Dotriacontane - Extractable 2016/08/03 105 % 30 - 133 Isobutylbenzene - Extractable 2016/08/03 98 % 30 - 133 >C10-C16 Hydrocarbons 2016/08/03 98 % 30 - 133 >C10-C16 Hydrocarbons 2016/08/03 91 % 30 - 133 >C10-Anthracene 2016/08/10 82 % 30 - 133 4605389 GTH LCS D10-Anthracene 2016/08/10 82 % 30 - 133 D10-Anthracene 2016/08/10 94 % 30 - 133 0.133 D8-Acenaphthylene 2016/08/10 73 % 30 - 133 2-Methylnaphthalene 2016/08/10 73 % 30 - 133 2-Methylnaphthalene 2016/08/10 78 % 30 - 133 Acenaphthylene 2016/08/10 78 % 30 - 133 Acenaphthylene 2016/08/10 78 % 30 - 133 Fluorene 2016/08/10 75 % 30 - 133 Fluorene 2016/08/10 76 %				>C21- <c32 hydrocarbons<="" td=""><td>2016/08/02</td><td></td><td>109</td><td>%</td><td>30 - 130</td></c32>	2016/08/02		109	%	30 - 130
Isobutylbenzene - Extractable 2016/08/03 82 % 30 - 13C >C10-C16 Hydrocarbons 2016/08/03 98 % 30 - 13C >C16-C21 Hydrocarbons 2016/08/03 91 % 30 - 13C >C21- <c32 hydrocarbons<="" td=""> 2016/08/03 104 % 30 - 13C 4605389 GTH LCS D10-Anthracene 2016/08/10 94 % 30 - 13C 1-Methylnaphthalene 2016/08/10 94 % 30 - 13C 2-Methylnaphthalene 2016/08/10 72 % 30 - 13C 2-Methylnaphthalene 2016/08/10 73 % 30 - 13C 2-Methylnaphthalene 2016/08/10 78 % 30 - 13C Acenaphthylene 2016/08/10 78 % 30 - 13C Acenaphthylene 2016/08/10 78 % 30 - 13C Huoranthene 2016/08/10 77 % 30 - 13C Fluorene 2016/08/10 77 % 30 - 13C Fluorene 2016/08/10 <t< td=""><td>4603508</td><td>KCR</td><td>LCS</td><td>n-Dotriacontane - Extractable</td><td>2016/08/03</td><td></td><td>105</td><td>%</td><td>30 - 130</td></t<></c32>	4603508	KCR	LCS	n-Dotriacontane - Extractable	2016/08/03		105	%	30 - 130
>C10-C16 Hydrocarbons 2016/08/03 98 % 30 - 130 >C16-C21 Hydrocarbons 2016/08/03 91 % 30 - 130 4605389 GTH LCS D10-Anthracene 2016/08/10 82 % 30 - 130 10-Anthracene 2016/08/10 82 % 30 - 130 D14-Terphenyl (FS) 2016/08/10 72 % 30 - 130 D8-Acenaphthylene 2016/08/10 72 % 30 - 130 1-Methylnaphthalene 2016/08/10 73 % 30 - 130 2-Methylnaphthalene 2016/08/10 78 % 30 - 130 Acenaphthylene 2016/08/10 78 % 30 - 130 Acenaphthylene 2016/08/10 78 % 30 - 130 Acenaphthylene 2016/08/10 78 % 30 - 130 Fluoranthene 2016/08/10 78 % 30 - 130 Fluoranthene 2016/08/10 79 % 30 - 130 Fluorene 2016/08/10 79 %				Isobutylbenzene - Extractable	2016/08/03		82	%	30 - 130
>C16-C21 Hydrocarbons 2016/08/03 91 % 30 - 130 4605389 GTH LCS D10-Anthracene 2016/08/10 82 % 30 - 130 14-Terphenyl (FS) 2016/08/10 94 % 30 - 130 D14-Terphenyl (FS) 2016/08/10 94 % 30 - 130 D8-Acenaphthylene 2016/08/10 79 % 30 - 130 2-Methylnaphthalene 2016/08/10 72 % 30 - 130 2-Methylnaphthalene 2016/08/10 73 % 30 - 130 Acenaphthylene 2016/08/10 78 % 30 - 130 Acenaphthylene 2016/08/10 78 % 30 - 130 Acenaphthylene 2016/08/10 78 % 30 - 130 Fluoranthene 2016/08/10 78 % 30 - 130 Fluoranthene 2016/08/10 75 % 30 - 130 Pyrene 2016/08/10 77 % 30 - 130 Pyrene 2016/08/10 70 % 30 - 130 Pyrene 2016/08/10 70 % 30 - 130 Benzo(a)anthracene 2016/08/10 79 %				>C10-C16 Hydrocarbons	2016/08/03		98	%	30 - 130
>C21- <c32 hydrocarbons<="" th=""> 2016/08/03 104 % 30 - 130 4605389 GTH LCS D10-Anthracene 2016/08/10 94 % 30 - 130 D4-Terphenyl (FS) 2016/08/10 94 % 30 - 130 D8-Acenaphthylene 2016/08/10 79 % 30 - 130 1-Methylnaphthalene 2016/08/10 72 % 30 - 130 2-Methylnaphthalene 2016/08/10 73 % 30 - 130 Acenaphthylene 2016/08/10 78 % 30 - 130 Acenaphthylene 2016/08/10 78 % 30 - 130 Actenaphthylene 2016/08/10 78 % 30 - 130 Anthracene 2016/08/10 75 % 30 - 130 Fluoranthene 2016/08/10 77 % 30 - 130 Phenanthrene 2016/08/10 77 % 30 - 130 Pyrene 2016/08/10 79 % 30 - 130 Benzo(a)anthracene 2016/08/10 95 %</c32>				>C16-C21 Hydrocarbons	2016/08/03		91	%	30 - 130
4605389 GTH LCS D10-Anthracene 2016/08/10 82 % 30 - 130 D14-Terphenyl (FS) 2016/08/10 94 % 30 - 130 D8-Acenaphthylene 2016/08/10 72 % 30 - 130 1-Methylnaphthalene 2016/08/10 72 % 30 - 130 2-Methylnaphthalene 2016/08/10 73 % 30 - 130 Acenaphthylene 2016/08/10 78 % 30 - 130 Acenaphthylene 2016/08/10 78 % 30 - 130 Acenaphthylene 2016/08/10 78 % 30 - 130 Actenaphthylene 2016/08/10 78 % 30 - 130 Fluoranthene 2016/08/10 75 % 30 - 130 Fluorene 2016/08/10 93 % 30 - 130 Pyrene 2016/08/10 77 % 30 - 130 Pyrene 2016/08/10 79 % 30 - 130 Benzo(a)anthracene 2016/08/10 79 %				>C21- <c32 hydrocarbons<="" td=""><td>2016/08/03</td><td></td><td>104</td><td>%</td><td>30 - 130</td></c32>	2016/08/03		104	%	30 - 130
D14-Terphenyl (FS) 2016/08/10 94 % 30 - 130 D8-Acenaphthylene 2016/08/10 79 % 30 - 130 1-Methylnaphthalene 2016/08/10 72 % 30 - 130 2-Methylnaphthalene 2016/08/10 73 % 30 - 130 Acenaphthene 2016/08/10 78 % 30 - 130 Acenaphthylene 2016/08/10 78 % 30 - 130 Acenaphthylene 2016/08/10 78 % 30 - 130 Actenaphthylene 2016/08/10 75 % 30 - 130 Actenaphthylene 2016/08/10 75 % 30 - 130 Fluoranthene 2016/08/10 93 % 30 - 130 Fluorene 2016/08/10 77 % 30 - 130 Naphthalene 2016/08/10 77 % 30 - 130 Pyrene 2016/08/10 79 % 30 - 130 Pyrene 2016/08/10 79 % 30 - 130 Benzo(a)anthracene 2016/08/10 98 % 30 - 130 Benzo(a)pyr	4605389	GTH	LCS	D10-Anthracene	2016/08/10		82	%	30 - 130
D8-Acenaphthylene 2016/08/10 79 % 30 - 130 1-Methylnaphthalene 2016/08/10 72 % 30 - 130 2-Methylnaphthalene 2016/08/10 73 % 30 - 130 Acenaphthene 2016/08/10 78 % 30 - 130 Acenaphthylene 2016/08/10 78 % 30 - 130 Acenaphthylene 2016/08/10 75 % 30 - 130 Actor aphthylene 2016/08/10 75 % 30 - 130 Anthracene 2016/08/10 86 % 30 - 130 Fluoranthene 2016/08/10 93 % 30 - 130 Fluorene 2016/08/10 93 % 30 - 130 Naphthalene 2016/08/10 70 % 30 - 130 Pyrene 2016/08/10 70 % 30 - 130 Pyrene 2016/08/10 79 % 30 - 130 Benzo(a)anthracene 2016/08/10 95 % 30 - 130 Benzo(a)apyrene 2016/08/10 100 % 30 - 130 Benzo(b)fluoranth				D14-Terphenyl (FS)	2016/08/10		94	%	30 - 130
1-Methylnaphthalene 2016/08/10 72 % 30 - 130 2-Methylnaphthalene 2016/08/10 73 % 30 - 130 Acenaphthene 2016/08/10 78 % 30 - 130 Acenaphthylene 2016/08/10 75 % 30 - 130 Acenaphthylene 2016/08/10 75 % 30 - 130 Anthracene 2016/08/10 86 % 0 - 133 Fluoranthene 2016/08/10 93 % 0 - 130 Fluoranthene 2016/08/10 77 % 00 - 130 Fluorene 2016/08/10 77 % 00 - 130 Naphthalene 2016/08/10 70 % 00 - 130 Pyrene 2016/08/10 79 % 00 - 130 Benzo(a)anthracene 2016/08/10 95 % 00 - 130 Benzo(a)anthracene 2016/08/10 98 % 00 - 130 Benzo(a)apyrene 2016/08/10 98 % 00 - 130 Benzo(a)pyrene 2016/08/10 98 % 00 - 130 Benzo(a)pyrene 2016/08/10 103 % 00 - 130 Benzo(b)fluoranthene 2016/08/10 105 % 00 - 130				D8-Acenaphthylene	2016/08/10		79	%	30 - 130
2-Methylnaphthalene 2016/08/10 73 % 30 - 130 Acenaphthene 2016/08/10 78 % 30 - 130 Acenaphthylene 2016/08/10 75 % 30 - 130 Anthracene 2016/08/10 86 % 30 - 130 Fluoranthene 2016/08/10 86 % 30 - 130 Fluoranthene 2016/08/10 93 % 30 - 130 Fluoranthene 2016/08/10 77 % 30 - 130 Naphthalene 2016/08/10 77 % 30 - 130 Phenanthrene 2016/08/10 70 % 30 - 130 Pyrene 2016/08/10 79 % 30 - 130 Pyrene 2016/08/10 95 % 30 - 130 Benzo(a)anthracene 2016/08/10 95 % 30 - 130 Benzo(a)pyrene 2016/08/10 98 % 30 - 130 Benzo(a)pyrene 2016/08/10 103 % 30 - 130 Benzo(b)fluoranthene 2016/08/10 105 % 30 - 130 Benzo(c)jhluoranthene				1-Methylnaphthalene	2016/08/10		72	%	30 - 130
Acenaphthene 2016/08/10 78 % 30 - 130 Acenaphthylene 2016/08/10 75 % 30 - 130 Anthracene 2016/08/10 86 % 30 - 130 Fluoranthene 2016/08/10 93 % 30 - 130 Fluoranthene 2016/08/10 93 % 30 - 130 Fluorene 2016/08/10 77 % 30 - 130 Naphthalene 2016/08/10 70 % 30 - 130 Phenanthrene 2016/08/10 79 % 30 - 130 Pyrene 2016/08/10 79 % 30 - 130 Pyrene 2016/08/10 95 % 30 - 130 Benzo(a)anthracene 2016/08/10 95 % 30 - 130 Benzo(a)anthracene 2016/08/10 100 % 30 - 130 Benzo(a)anthracene 2016/08/10 103 % 30 - 130 Benzo(g),hi)perylene 2016/08/10 103 % 30 - 130 Benzo(g),hi)perylene 2016/08/10 92 % 30 - 130 Benzo(k)fluoran				2-Methylnaphthalene	2016/08/10		73	%	30 - 130
Acenaphthylene 2016/08/10 75 % 30 - 130 Anthracene 2016/08/10 86 % 30 - 130 Fluoranthene 2016/08/10 93 % 30 - 130 Fluorene 2016/08/10 77 % 30 - 130 Naphthalene 2016/08/10 77 % 30 - 130 Naphthalene 2016/08/10 70 % 30 - 130 Phenanthrene 2016/08/10 79 % 30 - 130 Pyrene 2016/08/10 79 % 30 - 130 Pyrene 2016/08/10 95 % 30 - 130 Benzo(a)anthracene 2016/08/10 95 % 30 - 130 Benzo(a)anthracene 2016/08/10 100 % 30 - 130 Benzo(a)apyrene 2016/08/10 103 % 30 - 130 Benzo(b)fluoranthene 2016/08/10 103 % 30 - 130 Benzo(k)fluoranthene 2016/08/10 98 % 30 - 130 Benzo(k)fluoranthene 2016/08/10 92 % 30 - 130 Benzo(k)flu				Acenaphthene	2016/08/10		78	%	30 - 130
Anthracene 2016/08/10 86 % 30 - 130 Fluoranthene 2016/08/10 93 % 30 - 130 Fluorene 2016/08/10 77 % 30 - 130 Naphthalene 2016/08/10 77 % 30 - 130 Phenanthrene 2016/08/10 70 % 30 - 130 Phenanthrene 2016/08/10 79 % 30 - 130 Pyrene 2016/08/10 79 % 30 - 130 Benzo(a)anthracene 2016/08/10 95 % 30 - 130 Benzo(a)pyrene 2016/08/10 100 % 30 - 130 Benzo(a)pyrene 2016/08/10 103 % 30 - 130 Benzo(b)fluoranthene 2016/08/10 103 % 30 - 130 Benzo(g,h,i)perylene 2016/08/10 105 % 30 - 130 Benzo(g,h,i)perylene 2016/08/10 92 % 30 - 130 Benzo(k)fluoranthene 2016/08/10 94 % 30 - 130 Benzo(k)fluoranthene 2016/08/10 85 % 30 - 130				Acenaphthylene	2016/08/10		75	%	30 - 130
Fluoranthene 2016/08/10 93 % 30 - 130 Fluorene 2016/08/10 77 % 30 - 130 Naphthalene 2016/08/10 70 % 30 - 130 Phenanthrene 2016/08/10 70 % 30 - 130 Pyrene 2016/08/10 79 % 30 - 130 Pyrene 2016/08/10 95 % 30 - 130 Benzo(a)anthracene 2016/08/10 100 % 30 - 130 Benzo(a)anthracene 2016/08/10 100 % 30 - 130 Benzo(a)pyrene 2016/08/10 103 % 30 - 130 Benzo(b)fluoranthene 2016/08/10 103 % 30 - 130 Benzo(g,h,i)perylene 2016/08/10 103 % 30 - 130 Benzo(k)fluoranthene 2016/08/10 92 % 30 - 130 Benzo(k)fluoranthene 2016/08/10 94 % 30 - 130 Benzo(k)fluoranthene 2016/08/10 85 % 30 - 130 Dibenz(a,h)anthracene 2016/08/10 85 % 30 - 130				Anthracene	2016/08/10		86	%	30 - 130
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Benzo(g,h,i)perylene 2016/08/10 105 % 30 - 130 Benzo(j)fluoranthene 2016/08/10 92 % 30 - 130 Benzo(k)fluoranthene 2016/08/10 94 % 30 - 130 Chrysene 2016/08/10 85 % 30 - 130 Dibenz(a,h)anthracene 2016/08/10 106 % 30 - 130 Indeno(1,2,3-cd)pyrene 2016/08/10 105 % 30 - 130				Benzo(b)fluoranthene	2016/08/10		103	%	30 - 130
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Benzo(k)fluoranthene 2016/08/10 94 % 30 - 130 Chrysene 2016/08/10 85 % 30 - 130 Dibenz(a,h)anthracene 2016/08/10 106 % 30 - 130 Indeno(1,2,3-cd)pyrene 2016/08/10 105 % 30 - 130				Benzo(j)fluoranthene	2016/08/10		92	%	30 - 130
Chrysene 2016/08/10 85 % 30 - 130 Dibenz(a,h)anthracene 2016/08/10 106 % 30 - 130 Indeno(1,2,3-cd)pyrene 2016/08/10 105 % 30 - 130				Benzo(k)fluoranthene	2016/08/10		94	%	30 - 130
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Indeno(1,2,3-cd)pyrene 2016/08/10 105 % 30 - 130				Dibenz(a,h)anthracene	2016/08/10		106	%	30 - 130
				Indeno(1,2,3-cd)pyrene	2016/08/10		105	%	30 - 130

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.

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



Report Date: 2016/08/11

AECOM Canada Ltd Task Order#: IOL-CTC Site#: Site Location: 64 MILL LAKE RD NO.2, HUBBARDS, NS Project #: 60438249

VALIDATION SIGNATURE PAGE

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

Kosmarie Moe Donald

Rosemarie MacDonald, Scientific Specialist (Organics)

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

Maxian 200 Bluewa Bedford, N www.maxx	ater Ro S B4B amanal	ad, Si 1G9 lytics.	uite com	105 Ph i Toll I	one: (90) Fax: (90) Free: 1-8	2) 42(2) 42(00-56)-020)-861)5-72	3 2 27		b	EXXO	N M CHA	OBI IN-	L/IN OF-C	IPE CUS	RIAL TOD	. OI Y R	L - I ECO	MAX) IRD	KAM		C of	C #	Pag	 0	of_ 97	2 71
INVOICE INFORMATION		R	EPC	RT INFORM	ATION					_					AN	ALY	SIS F	REQI	JESTI	ED							
Company Name: Imperial Oil ExxonMobil	Compa	any Nar	ne: ,	AECON	1																						
Contact Name: Timothy Baching	Conta	ot Name	8: T	inothy h	Bachin																						
Address: 1701 Hollis Street SH400, Halifax NS	Addres	\$170 100,	Ha	Hollis litar, A	Street S		<u>0</u>	sis					al)	s - C32)													
Email: timothy bachine eacton com	Email:	timo	thy	. bachine	eaecon	n.ax	Meta	Meta	(pod)		Detho		sultura	о М	æ												
Ph: 902 428 202 1	Ph: 9	02	40	8 2021			Diss	Dise	Meth		ald r		Agric	(81	el TE												
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\$)	MATR	EX .	RS	SAMPL	ING	No E	esoo	hoose	igest	pe	& Me	y - Lo	ed fo	Hydro	VPH, actior			EPA 6									
FIELD SAMPLE ID	ER	E E	ONTAINE	DATE V/MM/DD)	HIME 4 HR	ESERVE FILTRATT	UIRED p-30 Ch	-MS CI	Total D	Dissolv	Metals	Mercur Cold V	(Requir	RBCA NB Pot	TPH Fr	PAHs	PCBs	VOCs E									
GPA	SUF NAT	D E	0 #	1 Lu	. 0	S PE	RCA RCA	RCA	Wate	IS Sr	Me Me	tals So	pil		Or	ganica	3										
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2 TP16-02		X	3	2016/04/2-8	11:00									Х													
3 TP16-03 (0-3n)	\rangle	<	3	2016/07/28	A:50								2	X													
4 TP16-03(3-4m)	5	<	3	206/07/20	18:00									X													
5 TP16-04	2	X	3	206/07/27	-16:36									X													
6 TP16-05(1-2m)	2	(3	20407127	15:40								3	$\boldsymbol{<}$													
· TP16-05(3-4m)	\rangle	<	3	204727	16:00			, ă					>	X													
8 TP16-06(2-3m)		K	3	2011/7/28	9:00								X	Z													
· TP16-08(3-4m)		<	3	2016/7/28	9:15								1	X													
10 TP16-07	1	K	3	2066707	15:05									X													
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NAT - Fol - CtC	+ + LINE	II EIVI			G101-	PV.	0														t)			(1 (same	day) day)	
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INVOICE INFORMATION Company Name: Imperial Oil ExxonMobili Contact Name: Lines the Bachie	amanalyti	ics.com	loll	LYAAN T DUN		12				CHA	1114-0	r-Cl	1211	JDY	KEUL	JND					1	00	770
Company Name: Imperial Oil ExxonMobil	-	REPO	DRT INFORM	ATION	-565-72	21							ANAI	Veie	REO	LIEST	ren	С	of C	#	l	191	12
Contact Name: Timethy Baching	Company	Name:	AECON	1		1			1			T	1.1.1.1		F Killer Giff			TT					
	Contact N	Vame:	insthy	Bachia																			
Address: 1701 Hollis Street SH400 HoliFax NS	Address: SH40	1701 1701 H	Mollis lalifax	street	ø	st				5	u) - C32)												
Email: timothy, bachin egecom.cn	Email:	moth.	y. borchic	QARWA.G	~ Metal	Meta	(po		othor		X, C6												
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FIELD SAMPLE ID	FACE	ER	ATE (MM/DD)	IME 4 HR) 5 FILTER ESERVEI	HILTRATI JIRED P-30 Cho	p-MS Ch	Total Di	Dissolv	Metals	Mercun Cold Va	Require RBCA F	NB Pota BTEX, V	TPH Fre	PAHs	VOCs E								
	SUR WAT	# CO	D W	(2- RELL	REQU	RCA	Metal Wate	Marc	Me	tals S	lic		Orga	nics									
TP16-08	X	3	2016/07/27	14:15							X	/											
2 TP16-09	X	4	2016/07/07	14:00							X	-		X									
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OL SITE LOCATION B 4 Mill Lak Rd Mb. 2 H OL PROJECT # (If applicable) MAXXAM TASK ORDER # OR SER VICE ORDER	+ LINE ITE	-dr N EM	VS REGUL	ATORY CRIT ISE 74 Martic	ERIA / D TE& PEa	ETEC - 1 EZ		LIMIT	SS	PECI	AL INS	TRUC SA	TION	s ///				# JARS US NOT SUB ENTER N/ WATER	SED & MITTED A FOR	TUR Standa Rush	NARO rd (6 (3	UND T days) days) days) days) (1 day)	
NA-BOL-CLC																					(sam	e day)	
YES NO COOLER ID	#	0.00	DECEM	YES	NO C	OOLE	RID#			-				YES	NO	000	LER ID #	ŧ			Date Re	equired	
SEAL INTACT	0	DISEA	L PRESENT		TE	EMP				SEAL	INTACT	NT.	_		-	TEMP	P			L	AB US	E ONL	Y
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ΑΞϹΟΜ

Data Quality Review Checklist

Consultant: <u>Af</u> Location: 64	ECOM 4 MILL LA	AKE RD. I	NO2,	Sampling Date: 2016/07/27, 2016/07/28 Laboratory: Maxxam						
H	UBBARD!	S, <u>NS</u>		·						
Consultant Project Number: 60)438249			Sample Submission Number: B6F9144						
Are All Laboratory QC Samples V	Vithin Ac	ceptance	Criteria	(Yes, No, Not Applicable)?						
	Yes	No	NA	Comments						
Instrument Surrogate Recovery		\boxtimes		VPH surrogate(s) not within reference method but within client specified acceptance limits. Analysis was repeated with similar results.						
Extraction Surrogate Recovery										
Method Blank Concentration	\boxtimes									
Matrix Duplicate RPD				NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).						
Matrix Spike Recovery										
Lab Control Sample Recovery										
Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?										
ļ	Yes	No	NA	Comments						
Field Blank Concentration										
Trip Blank Concentration										
Field Duplicate RPD	\boxtimes									
Has CoA been signed off?				⊠ Yes □ No						
Has lab warranted all tests were a	n statistit analyzed	following	a SOP's i	?⊠ Yes □ Νο						
Were all samples analyzed within	hold tim	les?	1001 01	⊠ Yes □ No						
All volatiles samples methanol ex	tracted (i	if require	d) within	48 hours? ⊠ Yes □ No						
Is Chain of Custody completed ar	nd signed		<i>.</i>	⊠ Yes □ No						
Were sample temperatures accer	ptable wh	ien they	reached I	lab? 🛛 Yes 🛛 No						
Is data considered to be reliable? ⊠ Yes □ No If answer is "No", describe and provide rationale:										
Reviewed by (Print): Janiu Date: Octo	ce Shea bber 8, 20)19		Reviewed by (Signature):						



Attention:Tim Bachiu

B3J 3M8

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA

Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 577838-03-01, 577838-51-01

> Report Date: 2016/10/26 Report #: R4224061 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6M4914

Received: 2016/10/19, 09:30

Sample Matrix: Soil # Samples Received: 17

Analyses	Quantity	Laboratory Method	Primary Reference
TEH in Soil (PIRI) (1)	17	ATL SOP 00111	Atl. RBCA v3 m
Moisture	17	ATL SOP 00001	OMOE Handbook 1983 m
Double water wash (soil)	17	ATL SOP 00111	N/A
Silica Gel Clean-up (Soil)	17	ATL SOP 00111	EPA 3630C R3 m
ModTPH (T1) Calc. for Soil	17	N/A	Atl. RBCA v3 m
VPH in Soil (PIRI) - Field Preserved (2)	17	ATL SOP 00119	Atl. RBCA v3 m

Remarks:

All work recorded herein has been performed in accordance to the ISO 17025 standard. Methods used by Maxxam Analytics are based upon accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing.

Maxxam Analytics is accredited by Standards Council of Canada (SCC). Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract.

All data is in statistical control and has met all QC and method performance criteria unless otherwise flagged. All samples were analysed within hold time unless otherwise flagged. All soil samples for BTEX analysis were methanol extracted within 24 hours unless otherwise flagged.

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) Soils are reported on a dry weight basis unless otherwise specified.

(2) No lab extraction date is given for C6-C10/BTEX and VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.

Encryption Key

heri Mackay Project Manager - Bedford 26 Oct 2016 16:21:16 -03:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Keri Mackay, Project Manager - Bedford Email: kmackay@maxxam.ca Phone# (902)420-0203 Ext:294

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





Report Date: 2016/10/26

AECOM Canada Ltd. Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		DGT098	DGT098	DGT099	DGT100	DGT101		
Sampling Date		2016/10/18	2016/10/18	2016/10/18	2016/10/18	2016/10/18		
		16:30	16:30	16:45	16:55	17:05		
COC Number		577838-03-01	577838-03-01	577838-03-01	577838-03-01	577838-03-01		
	UNITS	FA1 (0.0-1.0)	FA1 (0.0-1.0) Lab-Dup	DUPA	FA2 (0.5-1.5)	FA3 (1.0-2.0)	RDL	QC Batch
Inorganics								
Moisture	%	19		12	11	18	1.0	4707902
Petroleum Hydrocarbons								
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	4713692
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	4713692
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	4713692
Total Xylenes	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4713692
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	<2.5	<2.5	<2.5	2.5	4713692
>C10-C16 Hydrocarbons	mg/kg	<10		<10	<10	<10	10	4716294
>C16-C21 Hydrocarbons	mg/kg	36		11	<10	<10	10	4716294
>C21- <c32 hydrocarbons<="" td=""><td>mg/kg</td><td>310</td><td></td><td>81</td><td>64</td><td>31</td><td>15</td><td>4716294</td></c32>	mg/kg	310		81	64	31	15	4716294
Modified TPH (Tier1)	mg/kg	340		92	64	31	15	4707791
Reached Baseline at C32	mg/kg	Yes		Yes	Yes	Yes	N/A	4716294
Hydrocarbon Resemblance	mg/kg	COMMENT (1)		COMMENT (1)	COMMENT (1)	COMMENT (1)	N/A	4716294
Extraction Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	90		90	93	91		4716294
n-Dotriacontane - Extractable	%	123		129	128	128		4716294
Isobutylbenzene - Volatile	%	119	121	112 (2)	101	104		4713692
Instrument Surrogate Recovery (%)								
1,4-Difluorobenzene	%	100	101	101	95	104		4713692
4-Bromofluorobenzene	%	104	103	106	97	109		4713692
D4-1,2-Dichloroethane	%	99	100	102	94	102		4713692

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) Lube oil fraction.

(2) VPH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.





RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		DGT102	DGT102		DGT103	DGT104	DGT105		
Sampling Date		2016/10/18 17:15	2016/10/18 17:15		2016/10/18 17:25	2016/10/18 17:30	2016/10/18 17:40		
COC Number		577838-03-01	577838-03-01		577838-03-01	577838-03-01	577838-03-01		
	UNITS	FA4 (0.5-1.5)	FA4 (0.5-1.5) Lab-Dup	QC Batch	FA11 (2.0)	FA5 (0.0-1.0)	FA12 (2.0)	RDL	QC Batch
Inorganics									
Moisture	%	13		4707902	20	24	20	1.0	4707902
Petroleum Hydrocarbons									
Benzene	mg/kg	<0.025		4713692	<0.025	<0.025	<0.025	0.025	4713692
Toluene	mg/kg	<0.025		4713692	<0.025	<0.025	<0.025	0.025	4713692
Ethylbenzene	mg/kg	<0.025		4713692	<0.025	<0.025	<0.025	0.025	4713692
Total Xylenes	mg/kg	<0.050		4713692	<0.050	<0.050	<0.050	0.050	4713692
C6 - C10 (less BTEX)	mg/kg	<2.5		4713692	<2.5	<2.5	<2.5	2.5	4713692
>C10-C16 Hydrocarbons	mg/kg	31	36	4714708	<10	84	<10	10	4716294
>C16-C21 Hydrocarbons	mg/kg	100	110	4714708	<10	670	<10	10	4716294
>C21- <c32 hydrocarbons<="" p=""></c32>	mg/kg	270	320	4714708	<15	430	44	15	4716294
Modified TPH (Tier1)	mg/kg	400		4707791	<15	1200	44	15	4707791
Reached Baseline at C32	mg/kg	No		4714708	NA	Yes	Yes	N/A	4716294
Hydrocarbon Resemblance	mg/kg	COMMENT (1)		4714708	NA	COMMENT (2)	COMMENT (3)	N/A	4716294
Extraction Surrogate Recovery (%)									
Isobutylbenzene - Extractable	%	72	71	4714708	91	97	92		4716294
n-Dotriacontane - Extractable	%	108	114	4714708	129	121	129		4716294
Isobutylbenzene - Volatile	%	87		4713692	120	120	95 (4)		4713692
Instrument Surrogate Recovery (%)									
1,4-Difluorobenzene	%	96		4713692	113	103	91		4713692
4-Bromofluorobenzene	%	99		4713692	118	106	96		4713692
D4-1,2-Dichloroethane	%	94		4713692	115	101	90		4713692

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) One product in fuel / lube range. Lube oil fraction.

(2) One product in fuel / lube range.

(3) Lube oil fraction.

(4) VPH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.



RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		DGT106	DGT107	DGT153	DGT154		
Sampling Date		2016/10/18 17:45	2016/10/18 17:55	2016/10/18 18:00	2016/10/18 18:10		
COC Number		577838-03-01	577838-03-01	577838-51-01	577838-51-01		
	UNITS	FA7 (0.0-1.0)	FA8 (1.0-2.0)	FA10 (0.0-0.5)	FA9 (1.0-2.0)	RDL	QC Batch
Inorganics							
Moisture	%	21	15	13	13	1.0	4707902
Petroleum Hydrocarbons							
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	4713692
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	4713692
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	4713692
Total Xylenes	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	4713692
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	<2.5	<2.5	2.5	4713692
>C10-C16 Hydrocarbons	mg/kg	<10	<10	<10	<10	10	4716294
>C16-C21 Hydrocarbons	mg/kg	13	<10	<10	27	10	4716294
>C21- <c32 hydrocarbons<="" p=""></c32>	mg/kg	33	28	70	60	15	4716294
Modified TPH (Tier1)	mg/kg	46	28	70	88	15	4707791
Reached Baseline at C32	mg/kg	Yes	Yes	Yes	Yes	N/A	4716294
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	COMMENT (1)	COMMENT (1)	COMMENT (1)	N/A	4716294
Extraction Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	92	90	93	95		4716294
n-Dotriacontane - Extractable	%	127	126	126	128		4716294
Isobutylbenzene - Volatile	%	112	105	102	106		4713692
Instrument Surrogate Recovery (%)							
1,4-Difluorobenzene	%	103	104	105	110		4713692
4-Bromofluorobenzene	%	107	109	109	116		4713692
D4-1,2-Dichloroethane	%	101	102	102	107		4713692
RDL = Reportable Detection Lim QC Batch = Quality Control Batc N/A = Not Applicable	nit ch						

N/A = Not Applicable (1) Lube oil fraction.



RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		DGT155	DGT155	DGT156	DGT157	DGT157		
Sampling Date		2016/10/18 18:15	2016/10/18 18:15	2016/10/18 18:20	2016/10/18 18:25	2016/10/18 18:25		
COC Number		577838-51-01	577838-51-01	577838-51-01	577838-51-01	577838-51-01		
	UNITS	FA6 (0.5-1.5)	FA6 (0.5-1.5) Lab-Dup	STP-FA1	STP-FA2	STP-FA2 Lab-Dup	RDL	QC Batch
Inorganics								
Moisture	%	19		17	12		1.0	4707902
Petroleum Hydrocarbons								
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025		0.025	4711882
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025		0.025	4711882
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	<0.025		0.025	4711882
Total Xylenes	mg/kg	<0.050	<0.050	<0.050	<0.050		0.050	4711882
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	<2.5	<2.5		2.5	4711882
>C10-C16 Hydrocarbons	mg/kg	<10		<10	<10	<10	10	4716294
>C16-C21 Hydrocarbons	mg/kg	<10		22	<10	<10	10	4716294
>C21- <c32 hydrocarbons<="" td=""><td>mg/kg</td><td><15</td><td></td><td>37</td><td>25</td><td>24</td><td>15</td><td>4716294</td></c32>	mg/kg	<15		37	25	24	15	4716294
Modified TPH (Tier1)	mg/kg	<15		59	25		15	4707791
Reached Baseline at C32	mg/kg	NA		Yes	Yes		N/A	4716294
Hydrocarbon Resemblance	mg/kg	NA		COMMENT (1)	COMMENT (2)		N/A	4716294
Extraction Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	97		93	89	90		4716294
n-Dotriacontane - Extractable	%	130		128	125 (3)	125 (3)		4716294
Isobutylbenzene - Volatile	%	108	105	108	110			4711882
Instrument Surrogate Recovery (%)								
1,4-Difluorobenzene	%	103	101	106	104			4711882
4-Bromofluorobenzene	%	105	102	110	105			4711882
D4-1,2-Dichloroethane	%	99	96	102	99			4711882

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

(1) One product in fuel / lube range. Possible lube oil fraction.

(2) Lube oil fraction.

(3) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.



Maxxam ID		DGT158	DGT159		
		2016/10/18	2016/10/18		
Sampling Date		18:30	18:35		
COC Number		577838-51-01	577838-51-01		
	UNITS	STP-FA3	STP-FA4	RDL	QC Batch
Inorganics					
Moisture	%	24	19	1.0	4707902
Petroleum Hydrocarbons					
Benzene	mg/kg	<0.025	<0.025	0.025	4711882
Toluene	mg/kg	<0.025	<0.025	0.025	4711882
Ethylbenzene	mg/kg	<0.025	<0.025	0.025	4711882
Total Xylenes	mg/kg	<0.050	<0.050	0.050	4711882
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	2.5	4711882
>C10-C16 Hydrocarbons	mg/kg	<10	<10	10	4716294
>C16-C21 Hydrocarbons	mg/kg	<10	<10	10	4716294
>C21- <c32 hydrocarbons<="" td=""><td>mg/kg</td><td>31</td><td>26</td><td>15</td><td>4716294</td></c32>	mg/kg	31	26	15	4716294
Modified TPH (Tier1)	mg/kg	31	26	15	4707791
Reached Baseline at C32	mg/kg	Yes	Yes	N/A	4716294
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	COMMENT (1)	N/A	4716294
Extraction Surrogate Recovery (%)					
Isobutylbenzene - Extractable	%	91	92		4716294
n-Dotriacontane - Extractable	%	129	128		4716294
Isobutylbenzene - Volatile	%	110	109		4711882
Instrument					
Surrogate Recovery (%)					
1,4-Difluorobenzene	%	98	97		4711882
4-Bromofluorobenzene	%	102	102		4711882
D4-1,2-Dichloroethane	%	98	97		4711882
RDL = Reportable Detection Lim	it				
QC Batch = Quality Control Batc	h				
N/A = Not Applicable					
(1) Lube oil fraction.					

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)



VPH in Soil (PIRI) - Field Preserved

Report Date: 2016/10/26

AECOM Canada Ltd. Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	DGT098 FA1 (0.0-1.0) Soil				R	Collected: elinquished: Received:	2016/10/18 2016/10/18 2016/10/19
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4716294	2016/10/25	2016/10/25	Crystal Ma	otthews
Moisture		BAL	4707902	N/A	2016/10/20	Victoria Le	egge
ModTPH (T1) Calc. for So	il	CALC	4707791	N/A	2016/10/26	Automate	d Statchk
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	4713692	N/A	2016/10/22	Michelle S	hearer
Maxxam ID: Sample ID: Matrix:	DGT098 Dup FA1 (0.0-1.0) Soil				R	Collected: elinquished: Received:	2016/10/18 2016/10/18 2016/10/19
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	4713692	N/A	2016/10/22	Michelle S	hearer
Maxxam ID: Sample ID: Matrix:	DGT099 DUPA Soil				R	Collected: elinquished: Received:	2016/10/18 2016/10/18 2016/10/19
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4716294	2016/10/25	2016/10/25	Crystal Ma	otthews
Moisture		BAL	4707902	N/A	2016/10/20	Victoria Le	egge
ModTPH (T1) Calc. for So	il	CALC	4707791	N/A	2016/10/26	Automate	d Statchk
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	4713692	N/A	2016/10/22	Michelle S	hearer
Maxxam ID: Sample ID: Matrix:	DGT100 FA2 (0.5-1.5) Soil				R	Collected: elinquished: Received:	2016/10/18 2016/10/18 2016/10/19
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4716294	2016/10/25	2016/10/25	Crystal Ma	itthews
Moisture		BAL	4707902	N/A	2016/10/20	Victoria Le	egge
ModTPH (T1) Calc. for So	il	CALC	4707791	N/A	2016/10/26	Automate	d Statchk
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	4713692	N/A	2016/10/22	Michelle S	hearer
Maxxam ID: Sample ID: Matrix:	DGT101 FA3 (1.0-2.0) Soil				R	Collected: elinquished: Received:	2016/10/18 2016/10/18 2016/10/19
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4716294	2016/10/25	2016/10/25	Crystal Ma	itthews
Moisture		BAL	4707902	N/A	2016/10/20	Victoria Le	egge
ModTPH (T1) Calc. for So	il	CALC	4707791	N/A	2016/10/26	Automate	d Statchk

N/A

2016/10/22

Michelle Shearer

4713692

PTGC/MS



VPH in Soil (PIRI) - Field Preserved

Report Date: 2016/10/26

AECOM Canada Ltd. Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	DGT102 FA4 (0.5-1.5) Soil				R	Collected: elinquished: Received:	2016/10/18 2016/10/18 2016/10/19
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4714708	2016/10/24	2016/10/24	Crystal Ma	atthews
Moisture		BAL	4707902	N/A	2016/10/20	Victoria Le	egge
ModTPH (T1) Calc. for So	il	CALC	4707791	N/A	2016/10/24	Automate	d Statchk
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	4713692	N/A	2016/10/22	Michelle S	hearer
Maxxam ID: Sample ID: Matrix:	DGT102 Dup FA4 (0.5-1.5) Soil				R	Collected: elinquished: Received:	2016/10/18 2016/10/18 2016/10/19
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4714708	2016/10/24	2016/10/24	Crystal Ma	atthews
Maxxam ID: Sample ID: Matrix:	DGT103 FA11 (2.0) Soil				F	Collected: elinquished: Received:	2016/10/18 2016/10/18 2016/10/19
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4716294	2016/10/25	2016/10/25	Crystal Ma	atthews
Moisture		BAL	4707902	N/A	2016/10/20	Victoria Le	egge
ModTPH (T1) Calc. for So	il	CALC	4707791	N/A	2016/10/26	Automate	d Statchk
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	4713692	N/A	2016/10/24	Michelle S	hearer
Maxxam ID: Sample ID: Matrix:	DGT104 FA5 (0.0-1.0) Soil				R	Collected: elinquished: Received:	2016/10/18 2016/10/18 2016/10/19
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4716294	2016/10/25	2016/10/25	Crystal Ma	atthews
Moisture		BAL	4707902	N/A	2016/10/20	Victoria Le	egge
ModTPH (T1) Calc. for So	il	CALC	4707791	N/A	2016/10/26	Automate	d Statchk
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	4713692	N/A	2016/10/22	Michelle S	ihearer
Maxxam ID: Sample ID: Matrix:	DGT105 FA12 (2.0) Soil				R	Collected: elinquished: Received:	2016/10/18 2016/10/18 2016/10/19
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4716294	2016/10/25	2016/10/25	Crystal Ma	atthews
Moisture		BAL	4707902	N/A	2016/10/20	Victoria Le	egge
ModTPH (T1) Calc. for So	il	CALC	4707791	N/A	2016/10/26	Automate	d Statchk

N/A

2016/10/22

Michelle Shearer

4713692

PTGC/MS
TEST SUMMARY

Maxxam ID:	DGT106
Sample ID:	FA7 (0.0-1.0)
Matrix:	Soil

Collected: 2016/10/18 Relinquished: 2016/10/18 **Received:** 2016/10/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4716294	2016/10/25	2016/10/25	Crystal Matthews
Moisture	BAL	4707902	N/A	2016/10/20	Victoria Legge
ModTPH (T1) Calc. for Soil	CALC	4707791	N/A	2016/10/26	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4713692	N/A	2016/10/22	Michelle Shearer

Maxxam ID: DGT107 Sample ID: FA8 (1.0-2.0) Matrix: Soil

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4716294	2016/10/25	2016/10/25	Crystal Matthews
Moisture	BAL	4707902	N/A	2016/10/20	Victoria Legge
ModTPH (T1) Calc. for Soil	CALC	4707791	N/A	2016/10/26	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4713692	N/A	2016/10/22	Michelle Shearer

Maxxam ID: DGT153 Sample ID: FA10 (0.0-0.5) Matrix: Soil

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4716294	2016/10/25	2016/10/25	Crystal Matthews
Moisture	BAL	4707902	N/A	2016/10/20	Victoria Legge
ModTPH (T1) Calc. for Soil	CALC	4707791	N/A	2016/10/26	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4713692	N/A	2016/10/22	Michelle Shearer

Maxxam ID:	DGT154
Sample ID:	FA9 (1.0-2.0)
Matrix:	Soil

Collected: 2016/10/18 **Relinquished: 2016/10/18** Received: 2016/10/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4716294	2016/10/25	2016/10/25	Crystal Matthews
Moisture	BAL	4707902	N/A	2016/10/20	Victoria Legge
ModTPH (T1) Calc. for Soil	CALC	4707791	N/A	2016/10/26	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4713692	N/A	2016/10/22	Michelle Shearer

Maxxam ID:	DGT155	Collected:	2016/10/18
Sample ID:	FA6 (0.5-1.5)	Relinquished:	2016/10/18
Matrix:	Soil	Received:	2016/10/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4716294	2016/10/25	2016/10/25	Crystal Matthews
Moisture	BAL	4707902	N/A	2016/10/20	Victoria Legge
ModTPH (T1) Calc. for Soil	CALC	4707791	N/A	2016/10/26	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4711882	N/A	2016/10/21	Michelle Shearer

Page 9 of 18

Maxxam Analytics International Corporation o/a Maxxam Analytics 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.maxxamanalytics.com



Report Date: 2016/10/26

Collected: 2016/10/18 **Relinquished:** 2016/10/18

Received: 2016/10/19

Relinquished: 2016/10/18 Received: 2016/10/19

Collected: 2016/10/18



AECOM Canada Ltd. Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	DGT155 Dup FA6 (0.5-1.5) Soil				Re	Collected: linquished: Received:	2016/10/18 2016/10/18 2016/10/19
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	4711882	N/A	2016/10/21	Michelle S	hearer
Maxxam ID: Sample ID: Matrix:	DGT156 STP-FA1 Soil				Re	Collected: linquished: Received:	2016/10/18 2016/10/18 2016/10/19
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4716294	2016/10/25	2016/10/25	Crystal Ma	tthews
Moisture		BAL	4707902	N/A	2016/10/20	Victoria Le	gge
ModTPH (T1) Calc. for So	il	CALC	4707791	N/A	2016/10/26	Automate	d Statchk
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	4711882	N/A	2016/10/21	Michelle S	hearer
Maxxam ID: Sample ID: Matrix:	DGT157 STP-FA2 Soil				Re	Collected: linquished: Received:	2016/10/18 2016/10/18 2016/10/19
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4716294	2016/10/25	2016/10/25	Crystal Ma	tthews
Moisture		BAL	4707902	N/A	2016/10/20	Victoria Le	gge
ModTPH (T1) Calc. for So	il	CALC	4707791	N/A	2016/10/26	Automate	d Statchk
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	4711882	N/A	2016/10/21	Michelle S	hearer
Maxxam ID: Sample ID: Matrix: Test Description	DGT157 Dup STP-FA2 Soil	Instrumentation	Batch	Extracted	Re Date Analyzed	Collected: linquished: Received: Analyst	2016/10/18 2016/10/18 2016/10/19
TEH in Soil (PIRI)		GC/FID	4716294	2016/10/25	2016/10/25	Crystal Ma	tthews
Maxxam ID: Sample ID: Matrix:	DGT158 STP-FA3 Soil				Re	Collected: linquished: Received:	2016/10/18 2016/10/18 2016/10/19
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4716294	2016/10/25	2016/10/25	Crystal Ma	tthews
Moisture		BAL	4707902	N/A	2016/10/20	Victoria Le	gge
ModTPH (T1) Calc. for So	il	CALC	4707791	N/A	2016/10/26	Automate	d Statchk
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	4711882	N/A	2016/10/21	Michelle S	hearer



AECOM Canada Ltd. Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID:	DGT159
Sample ID:	STP-FA4
Matrix:	Soil

Collected:	2016/10/18
Relinquished:	2016/10/18
Received:	2016/10/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4716294	2016/10/25	2016/10/25	Crystal Matthews
Moisture	BAL	4707902	N/A	2016/10/20	Victoria Legge
ModTPH (T1) Calc. for Soil	CALC	4707791	N/A	2016/10/26	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4711882	N/A	2016/10/21	Michelle Shearer



AECOM Canada Ltd. Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt												
Package 1 -0.7°C												
Double water wash and silica gel clean-up performed on soil extracts.												
Results relate only to the items tested.												



AECOM Canada Ltd. Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
4711882	MS3	Method Blank	1,4-Difluorobenzene	2016/10/21		96	%	60 - 140
			4-Bromofluorobenzene	2016/10/21		99	%	60 - 140
			D4-1,2-Dichloroethane	2016/10/21		94	%	60 - 140
			Isobutylbenzene - Volatile	2016/10/21		100	%	60 - 130
			Benzene	2016/10/21	<0.025		mg/kg	
			Toluene	2016/10/21	<0.025		mg/kg	
			Ethylbenzene	2016/10/21	<0.025		mg/kg	
			Total Xylenes	2016/10/21	<0.050		mg/kg	
			C6 - C10 (less BTEX)	2016/10/21	<2.5		mg/kg	
4713692	MS3	Method Blank	1,4-Difluorobenzene	2016/10/22		91	%	60 - 140
			4-Bromofluorobenzene	2016/10/22		92	%	60 - 140
			D4-1.2-Dichloroethane	2016/10/22		89	%	60 - 140
			Isobutylbenzene - Volatile	2016/10/22		89	%	60 - 130
			Benzene	2016/10/22	<0.025	05	mg/kg	00 100
			Toluene	2016/10/22	<0.025		mg/kg	
			Ethylbenzene	2010/10/22	<0.025		mg/kg	
				2010/10/22	<0.025		ma/ka	
			$C_{6} = C_{10} (loss BTEX)$	2010/10/22	<0.030		mg/kg	
1711700	CM	Mathad Blank	n Detriacontano Extractable	2010/10/22	N2.5	102	111g/ Kg 0/	20 120
4/14/08	CIVII			2010/10/24		105	70 0/	20 120
			SODULYIDENZENE - EXtractable	2010/10/24	-10	73	70 	30 - 130
			>C10-C16 Hydrocarbons	2016/10/24	<10		mg/kg	
				2016/10/24	<10		mg/kg	
			>C21- <c32 hydrocarbons<="" td=""><td>2016/10/24</td><td><15</td><td></td><td>mg/kg</td><td></td></c32>	2016/10/24	<15		mg/kg	
4716294	CIVII	Method Blank	n-Dotriacontane - Extractable	2016/10/25		116	%	30 - 130
			Isobutylbenzene - Extractable	2016/10/25	10	87	%	30 - 130
			>C10-C16 Hydrocarbons	2016/10/25	<10		mg/kg	
			>C16-C21 Hydrocarbons	2016/10/25	<10		mg/kg	
			>C21- <c32 hydrocarbons<="" p=""></c32>	2016/10/25	<15		mg/kg	
4713692	MS3	RPD [DGT098-02]	Benzene	2016/10/22	NC		%	50
			Toluene	2016/10/22	NC		%	50
			Ethylbenzene	2016/10/22	NC		%	50
			Total Xylenes	2016/10/22	NC		%	50
			C6 - C10 (less BTEX)	2016/10/22	NC		%	50
4714708	CMI	RPD [DGT102-01]	>C10-C16 Hydrocarbons	2016/10/24	NC		%	50
			>C16-C21 Hydrocarbons	2016/10/24	12		%	50
			>C21- <c32 hydrocarbons<="" p=""></c32>	2016/10/24	15		%	50
4711882	MS3	RPD [DGT155-02]	Benzene	2016/10/21	NC		%	50
			Toluene	2016/10/21	NC		%	50
			Ethylbenzene	2016/10/21	NC		%	50
			Total Xylenes	2016/10/21	NC		%	50
			C6 - C10 (less BTEX)	2016/10/21	NC		%	50
4716294	CMI	RPD [DGT157-01]	>C10-C16 Hydrocarbons	2016/10/25	NC		%	50
	-		>C16-C21 Hydrocarbons	2016/10/25	NC		%	50
			>C21- <c32 hydrocarbons<="" td=""><td>2016/10/25</td><td>NC</td><td></td><td>%</td><td>50</td></c32>	2016/10/25	NC		%	50
4711882	MS3	Matrix Spike [DGT155-02]	1.4-Difluorobenzene	2016/10/21	-	90	%	60 - 140
			4-Bromofluorobenzene	2016/10/21		93	%	60 - 140
			D4-1.2-Dichloroethane	2016/10/21		85	%	60 - 140
			Isobutylbenzene - Volatile	2016/10/21		88	%	60 - 130
			Renzene	2016/10/21		۵ <u>۵</u>	%	60 - 120
			Toluene	2010/10/21		92 80	/u 0/	60 - 130
			Ethylhonzono	2010/10/21		60	70 0/	60 120
			Luiyibelizelle	2010/10/21		90	70	00 - 130



AECOM Canada Ltd. Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT(CONT'D)

Batch Init QC Type Parameter Analyzed Value 4713692 MS3 Matrix Spike [DGT098-02] 1,4-Difluorobenzene 2016/10/22 4713692 MS3 Matrix Spike [DGT098-02] 1,4-Difluorobenzene 2016/10/22 D4-1,2-Dichloroethane 2016/10/22 Envene 2016/10/22 Benzene 2016/10/22 Envene 2016/10/22 4714708 CMI Matrix Spike [DGT102-01] n-Dotriacontane - Extractable 2016/10/24 4714708 CMI Matrix Spike [DGT157-01] n-Dotriacontane - Extractable 2016/10/24 4716294 CMI Matrix Spike [DGT157-01] n-Dotriacorabons 2016/10/25 4711882 MS3 LCS 1,4-Difluorobenzene 2016/10/25<	QA/QC				Date				
Total Xylenes 2016/10/21 4713692 MS3 Matrix Spike [DGT098-02] 1.4-Diffuorobenzene 2016/10/22 4-Bromofluorobenzene 2016/10/22 Benzene 2016/10/22 Benzene 2016/10/22 Benzene 2016/10/22 Total Xylenes 2016/10/22 Benzene 2016/10/22 4714708 CMI Matrix Spike [DGT102-01] n-Dotriacontane - Extractable 2016/10/24 4714708 CMI Matrix Spike [DGT157-01] n-Dotriacontane - Extractable 2016/10/24 4716294 CMI Matrix Spike [DGT157-01] n-Dotriacontane - Extractable 2016/10/24 4711882 MS3 LCS 1.4-Difluorobenzene 2016/10/25 4711882 MS3 LCS 1.4-Difluorobenzene 2016/10/25 4711882 MS3 LCS 1.4-Difluorobenzene 2016/10/25 4711882 MS3 LCS 1.4-Difluorobenzene 2016/10/21 4711882 MS3 LCS 1.4-Difluorobenzene 2016/10/21 4711882 MS3 LCS 1.4-Difluor	Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
4713692 MS3 Matrix Spike [DGT098-02] 1.4-Difluorobenzene 2016/10/22 4-Bromofluorobenzene 2016/10/22 150butylbenzene - Volatile 2016/10/22 Benzene 2016/10/22 Toluene 2016/10/22 Total Xylenes 2016/10/22 Total Xylenes 2016/10/22 4714708 CMI Matrix Spike [DGT102-01] n-Dotriacontane - Extractable 2016/10/24 4714708 CMI Matrix Spike [DGT102-01] n-Dotriacontane - Extractable 2016/10/24 4716294 CMI Matrix Spike [DGT107-01] n-Dotriacontane - Extractable 2016/10/24 4716294 CMI Matrix Spike [DGT157-01] n-Dotriacontane - Extractable 2016/10/25 4711882 MS3 LCS 1.4-Difluorobenzene 2016/10/25 4711882 MS3 LCS 1.4-Difluorobenzene 2016/10/21 4-12-Dichloroethane 2016/10/21 Benzene 2016/10/21 4-13692 MS3 LCS 1.4-Difluorobenzene 2016/10/21 Benzene 2016/10/21 Benzene 2016/10/21 File Benzene 2016/10/21 Benzene				Total Xylenes	2016/10/21		88	%	60 - 130
4-Bromofluorobenzene 2016/10/22 D4-1,2-Dichloroethane 2016/10/22 Isobutylbenzene - Volatile 2016/10/22 Benzene 2016/10/22 Toluene 2016/10/22 Ethylbenzene 2016/10/22 Toluene 2016/10/22 Ethylbenzene 2016/10/22 Total Xylenes 2016/10/24 SC10-C16 Hydrocarbons 2016/10/24 >C10-C16 Hydrocarbons 2016/10/24 >C16-C21 Hydrocarbons 2016/10/24 >C16-C21 Hydrocarbons 2016/10/25 >C10-C16 Hydrocarbons 2016/10/25 >C10-C16 Hydrocarbons 2016/10/25 >C10-C16 Hydrocarbons 2016/10/25 >C10-C16 Hydrocarbons 2016/10/25 >C10-C16 Hydrocarbons 2016/10/25 >C10-C16 Hydrocarbons 2016/10/25 >C10-C16 Hydrocarbons 2016/10/25 >C10-C16 Hydrocarbons 2016/10/21 Hydrocarbons 2016/10/21 Hydrocarbons 2016/10/21 Hydrocarbons 2016/10/21 Hydrocarbons 2016/10/21	4713692	MS3	Matrix Spike [DGT098-02]	1,4-Difluorobenzene	2016/10/22		100	%	60 - 140
4714708 CMI Matrix Spike [DGT157-01] D4-1,2-Dichloroethane 2016/10/22 4714708 CMI Matrix Spike [DGT102-01] n-Dotriacontane - Extractable 2016/10/22 4714708 CMI Matrix Spike [DGT102-01] n-Dotriacontane - Extractable 2016/10/24 4714708 CMI Matrix Spike [DGT102-01] n-Dotriacontane - Extractable 2016/10/24 4716294 CMI Matrix Spike [DGT157-01] n-Dotriacontane - Extractable 2016/10/24 4716294 CMI Matrix Spike [DGT157-01] n-Dotriacontane - Extractable 2016/10/25 4711882 MS3 LCS 1.4-Diffuorobenzene 2016/10/25 4711882 MS3 LCS 1.4-Diffuorobenzene 2016/10/25 4711882 MS3 LCS 1.4-Diffuorobenzene 2016/10/21 4713692 MS3 LCS 1.4-Diffuorobenzene 2016/10/21 4714708 CMI LCS 1.4-Diffuorobenzene 2016/10/21 4714708 CMI LCS 1.4-Diffuorobenzene 2016/10/21 4714708 CMI				4-Bromofluorobenzene	2016/10/22		106	%	60 - 140
4714708 CMI Matrix Spike [DGT102-01] Toluene 2016/10/22 4714708 CMI Matrix Spike [DGT102-01] n-Dotriacontane - Extractable 2016/10/22 4714708 CMI Matrix Spike [DGT102-01] n-Dotriacontane - Extractable 2016/10/24 4714708 CMI Matrix Spike [DGT102-01] n-Dotriacontane - Extractable 2016/10/24 4714708 CMI Matrix Spike [DGT157-01] n-Dotriacontane - Extractable 2016/10/24 4716294 CMI Matrix Spike [DGT157-01] n-Dotriacontane - Extractable 2016/10/25 4711882 M53 LCS 1,4-Difluorobenzene 2016/10/25 4711882 M53 LCS 1,4-Difluorobenzene 2016/10/21 4711892 M53 LCS 1,4-Difluorobenzene 2016/10/21 4711892 M53 L				D4-1,2-Dichloroethane	2016/10/22		88	%	60 - 140
4714708 CMI Matrix Spike [DGT102-01] n-Dotriacontane - Extractable 2016/10/22 4714708 CMI Matrix Spike [DGT102-01] n-Dotriacontane - Extractable 2016/10/24 4714708 CMI Matrix Spike [DGT102-01] n-Dotriacontane - Extractable 2016/10/24 4714708 CMI Matrix Spike [DGT102-01] n-Dotriacontane - Extractable 2016/10/24 4716294 CMI Matrix Spike [DGT157-01] n-Dotriacontane - Extractable 2016/10/25 4716294 CMI Matrix Spike [DGT157-01] n-Dotriacontane - Extractable 2016/10/25 4711882 M53 LCS 1,4-Difluorobenzene 2016/10/25 4711882 M53 LCS 1,4-Difluorobenzene 2016/10/21 4711882 M53 LCS 1,4-Difluorobenzene 2016/10/21 10uene 2016/10/21 D4-1,2-Dichloroethane 2016/10/21 10uene 2016/10/21 Total Xylenes 2016/10/21 10uene 2016/10/21 Total Xylenes 2016/10/21 114-Difluorobenzene 2016/10/21 2016/10/22				Isobutylbenzene - Volatile	2016/10/22		127	%	60 - 130
4714708 CMI Matrix Spike [DGT102-01] n-Dotriacontane - Extractable 2016/10/22 4714708 CMI Matrix Spike [DGT102-01] n-Dotriacontane - Extractable 2016/10/24 1 sobutylbenzene - Extractable 2016/10/24 2016/10/24 2 < COLCI6 Hydrocarbons				Benzene	2016/10/22		107	%	60 - 130
4714708 CMI Matrix Spike [DGT102-01] n-Dotriacontane - Extractable 2016/10/22 4714708 CMI Matrix Spike [DGT102-01] n-Dotriacontane - Extractable 2016/10/24 1sobutylbenzene - Extractable 2016/10/24 2016/10/24 >C10-C16 Hydrocarbons 2016/10/24 >C121-C23 Hydrocarbons 2016/10/24 >C16-C21 Hydrocarbons 2016/10/25 >C10-C16 Hydrocarbons 2016/10/25 >C10-C16 Hydrocarbons 2016/10/25 >C10-C16 Hydrocarbons 2016/10/25 >C10-C16 Hydrocarbons 2016/10/25 >C10-C16 Hydrocarbons 2016/10/25 >C10-C16 Hydrocarbons 2016/10/25 >C10-C16 Hydrocarbons 2016/10/25 >C10-C16 Hydrocarbons 2016/10/21 4711882 MS3 LCS 1,4-Difluorobenzene 2016/10/21 Benzene 2016/10/21 Benzene 2016/10/21 Total Xylenes 2016/10/21 2016/10/21 4713692 MS3 LCS 1,4-Difluorobenzene 2016/10/21 Benzene 2016/10/21 2016				Toluene	2016/10/22		104	%	60 - 130
Total Xylenes 2016/10/22 4714708 CMI Matrix Spike [DGT102-01] n-Dotriacontane - Extractable 2016/10/24 4714708 CMI Matrix Spike [DGT102-01] n-Dotriacontane - Extractable 2016/10/24 4716294 CMI Matrix Spike [DGT157-01] n-Dotriacontane - Extractable 2016/10/25 4716294 CMI Matrix Spike [DGT157-01] n-Dotriacontane - Extractable 2016/10/25 4711882 MS3 LCS 1,4-Difluorobenzene 2016/10/25 4711882 MS3 LCS 1,4-Difluorobenzene 2016/10/25 4711882 MS3 LCS 1,4-Difluorobenzene 2016/10/21 4713692 MS3 LCS 1,4-Difluorobenzene 2016/10/21 4713692 </td <td></td> <td></td> <td></td> <td>Ethylbenzene</td> <td>2016/10/22</td> <td></td> <td>104</td> <td>%</td> <td>60 - 130</td>				Ethylbenzene	2016/10/22		104	%	60 - 130
4714708 CMI Matrix Spike [DGT102-01] n-Dotriacontane - Extractable 2016/10/24 sobutylbenzene - Extractable 2016/10/24 s <c10-c16 hydrocarbons<="" td=""> 2016/10/24 s<c11-c32 hydrocarbons<="" td=""> 2016/10/24 4716294 CMI Matrix Spike [DGT157-01] n-Dotriacontane - Extractable 2016/10/25 s<c10-c16 hydrocarbons<="" td=""> 2016/10/25 >C10-C16 Hydrocarbons 2016/10/25 s<c11-c32 hydrocarbons<="" td=""> 2016/10/25 >C10-C16 Hydrocarbons 2016/10/25 s<c12-c32 hydrocarbons<="" td=""> 2016/10/25 >C10-C16 Hydrocarbons 2016/10/25 s<c12-c32 hydrocarbons<="" td=""> 2016/10/25 >C16-C21 Hydrocarbons 2016/10/25 4711882 MS3 LCS 1,4-Diffuorobenzene 2016/10/21 Benzene 2016/10/21 Benzene 2016/10/21 Isobutylbenzene - Volatile 2016/10/21 Benzene 2016/10/21 4713692 MS3 LCS 1,4-Diffuorobenzene 2016/10/21 Benzene 2016/10/22 4713692 MS3 LCS 1,4-Diffuorobenzene 2016/10/21 Benzene 2016/10/22 Benzene 2016/10/21 Isobutylb</c12-c32></c12-c32></c11-c32></c10-c16></c11-c32></c10-c16>				Total Xylenes	2016/10/22		103	%	60 - 130
Isobutylbenzene - Extractable 2016/10/24 >C10-C16 Hydrocarbons 2016/10/24 >C11-C32 Hydrocarbons 2016/10/24 4716294 CMI Matrix Spike [DGT157-01] n-Dotriacontane - Extractable 2016/10/25 Isobutylbenzene - Extractable 2016/10/25 >C10-C16 Hydrocarbons 2016/10/25 >C11-C32 Hydrocarbons 2016/10/25 4711882 MS3 <lcs< td=""> 1,4-Difluorobenzene 2016/10/21 4-1,2-Dichloroethane 2016/10/21 1 Benzene 2016/10/21 1 Folluene 2016/10/21 1 Folluene 2016/10/21 1 4713692 MS3<lcs< td=""> 1,4-Difluorobenzene 2016/10/21 4713692 MS3<lcs< td=""> 1,4-Difluorobenzene 2016/10/21 4714708 LCS 1,4-Difluorobenzene</lcs<></lcs<></lcs<>	4714708	CMI	Matrix Spike [DGT102-01]	n-Dotriacontane - Extractable	2016/10/24		114	%	30 - 130
+C10-C16 Hydrocarbons 2016/10/24 +C16-C21 Hydrocarbons 2016/10/24 +C16-C21 Hydrocarbons 2016/10/24 +C16-C22 Hydrocarbons 2016/10/25 +C16-C21 Hydrocarbons 2016/10/25 +Soutylbenzene - Extractable 2016/10/25 +Soutylbenzene - Extractable 2016/10/25 +C10-C16 Hydrocarbons 2016/10/25 +C10-C16 Hydrocarbons 2016/10/25 +C10-C16 Hydrocarbons 2016/10/25 +C10-C16 Hydrocarbons 2016/10/25 +C10-C21 Hydrocarbons 2016/10/25 +C10-C21 Hydrocarbons 2016/10/25 +T1882 MS3 LCS 1,4-Difluorobenzene 2016/10/21 +Formofluorobenzene 2016/10/21 Benzene 2016/10/21 +Formofluorobenzene 2016/10/21 Benzene 2016/10/21 +T0148 MS3 LCS 1,4-Difluorobenzene 2016/10/21 +Formofluorobenzene 2016/10/21 Benzene 2016/10/22 +Formofluorobenzene 2016/10/22 Benzene 2016/10/22 -Foreinsontane - Extractable <				Isobutylbenzene - Extractable	2016/10/24		74	%	30 - 130
+C16-C21 Hydrocarbons 2016/10/24 +716294 CMI Matrix Spike [DGT157-01] n-Dotriacontane - Extractable 2016/10/25 4716294 CMI Matrix Spike [DGT157-01] n-Dotriacontane - Extractable 2016/10/25 4716294 CMI Matrix Spike [DGT157-01] n-Dotriacontane - Extractable 2016/10/25 4711882 MS3 LCS 1,4-Difluorobenzene 2016/10/21 Benzene 2016/10/21 Benzene 2016/10/21 Benzene 2016/10/21 Ethylbenzene - Volatile 2016/10/21 4713692 MS3 LCS 1,4-Difluorobenzene 2016/10/21 4713692 MS3 LCS 1,4-Difluorobenzene 2016/10/21 4713692 MS3 LCS 1,4-Difluorobenzene 2016/10/22 4714708 CMI LCS n				>C10-C16 Hydrocarbons	2016/10/24		85	%	30 - 130
>C21- <c32 hydrocarbons<="" td=""> 2016/10/24 4716294 CMI Matrix Spike [DGT157-01] n-Dotriacontane - Extractable 2016/10/25 Isobutylbenzene - Extractable 2016/10/25 ><10/10/25</c32>				>C16-C21 Hydrocarbons	2016/10/24		78	%	30 - 130
4716294 CMI Matrix Spike [DGT157-01] n-Dotriacontane - Extractable 2016/10/25 Isobutylbenzene - Extractable 2016/10/25 >C10-C16 Hydrocarbons 2016/10/25 >C10-C16 Hydrocarbons 2016/10/25 >C10-C16 Hydrocarbons 2016/10/25 4711882 MS3 LCS 1,4-Difluorobenzene 2016/10/21 4-Bromofluorobenzene 2016/10/21 Benzene 2016/10/21 Isobutylbenzene - Volatile 2016/10/21 Benzene 2016/10/21 Isobutylbenzene - Volatile 2016/10/21 Ethylbenzene 2016/10/21 4713692 MS3 LCS 1,4-Difluorobenzene 2016/10/22 4713692 MS3 LCS 1,4-Difluorobenzene 2016/10/22 4713692 MS3 LCS 1,4-Difluorobenzene 2016/10/22 4714708 CMI LCS n-Dotriacontane - Extractable 2016/10/22				>C21- <c32 hydrocarbons<="" td=""><td>2016/10/24</td><td></td><td>NC</td><td>%</td><td>30 - 130</td></c32>	2016/10/24		NC	%	30 - 130
4711882 MS3 LCS 1.4-Difluorobenzene 2016/10/25 4711882 MS3 LCS 1.4-Difluorobenzene 2016/10/25 4711882 MS3 LCS 1.4-Difluorobenzene 2016/10/21 1sobutylbenzene - Volatile 2016/10/21 1.6 1.6 1sobutylbenzene - Volatile 2016/10/21 1.6 1.6 4713692 MS3 LCS 1.4-Difluorobenzene 2016/10/21 4713692 MS3 LCS 1.4-Difluorobenzene 2016/10/21 4713692 MS3 LCS 1.4-Difluorobenzene 2016/10/22 4713692 MS3 LCS 1.4-Difluorobenzene 2016/10/22 14-12-Dichloroethane 2016/10/22 1.6 1.6 150butylbenzene - Volatile 2016/10/22 1.6 1610uene	4716294	CMI	Matrix Spike [DGT157-01]	n-Dotriacontane - Extractable	2016/10/25		127 (1)	%	30 - 130
*C10-C16 Hydrocarbons 2016/10/25 *C12- <c32 hydrocarbons<="" td=""> 2016/10/25 *C21-<c32 hydrocarbons<="" td=""> 2016/10/21 *A711882 MS3 LCS 1,4-Difluorobenzene 2016/10/21 *ABromofluorobenzene 2016/10/21 </c32></c32>				Isobutylbenzene - Extractable	2016/10/25		93	%	30 - 130
*C16-C21 Hydrocarbons 2016/10/25 4711882 MS3 LCS 1,4-Difluorobenzene 2016/10/21 4-Bromofluorobenzene 2016/10/21 4-Bromofluorobenzene 2016/10/21 1-2-Dichloroethane 2016/10/21 1-2-Dichloroethane 2016/10/21 4713692 MS3 LCS 1,4-Difluorobenzene 2016/10/22 4713692 MS3 LCS 1,4-Difluorobenzene 2016/10/22 1-2-Dichloroethane 2016/10/22 D-4-1,2-Dichloroethane 2016/10/22 1-2-Dichloroethane 2016/10/22 D-4-1,2-Dichloroethane 2016/10/22 1-2-Dichloroethane 2016/10/22 D-4-1,2-Dichloroethane 2016/10/22 1-2-Dichloroethane 2016/10/22 D-4-1,2-Dichloroethane 2016/10/22				>C10-C16 Hydrocarbons	2016/10/25		108	%	30 - 130
4711882 MS3 LCS 1,4-Difluorobenzene 2016/10/25 4711882 MS3 LCS 1,4-Difluorobenzene 2016/10/21 4-Bromofluorobenzene 2016/10/21 D4-1,2-Dichloroethane 2016/10/21 Benzene 2016/10/21 Benzene 2016/10/21 Toluene 2016/10/21 Ethylbenzene - Volatile 2016/10/21 4713692 MS3 LCS 1,4-Difluorobenzene 2016/10/21 4713692 MS3 LCS 1,4-Difluorobenzene 2016/10/21 4713692 MS3 LCS 1,4-Difluorobenzene 2016/10/22 4714708 CM LCS 1,4-Difluorobenzene 2016/10/22 Benzene 2016/10/22 D4-1,2-Dichloroethane 2016/10/22 Isobutylbenzene - Volatile 2016/10/22 D4-1,2-Dichloroethane 2016/10/22 Isobutylbenzene - Volatile 2016/10/22 D4-1,2-Dichloroethane 2016/10/22 4714708 CMI LCS n-Dotriacontane - Extractable 2016/10/24 4714708 CMI LCS n-Dotriacontane - Extractable 2016/10/24 2016/10/24 >C10-C16 Hydrocar				>C16-C21 Hydrocarbons	2016/10/25		104	%	30 - 130
4711882 MS3 LCS 1,4-Difluorobenzene 2016/10/21 4-Bromofluorobenzene 2016/10/21 D4-1,2-Dichloroethane 2016/10/21 Isobutylbenzene - Volatile 2016/10/21 Benzene 2016/10/21 Benzene 2016/10/21 Ethylbenzene - Volatile 2016/10/21 4713692 MS3 LCS 1,4-Difluorobenzene 2016/10/21 4713692 MS3 LCS 1,4-Difluorobenzene 2016/10/22 4714708 CMI LCS 1,4-Difluorobenzene 2016/10/22 Benzene 2016/10/22 Ethylbenzene - Volatile 2016/10/22 4714708 CMI LCS n-Dotriacontane - Extractable 2016/10/24 4714708 CMI LCS n-Dotriacontane - Extractable 2016/10/24 4714708 CMI <				>C21- <c32 hydrocarbons<="" td=""><td>2016/10/25</td><td></td><td>112</td><td>%</td><td>30 - 130</td></c32>	2016/10/25		112	%	30 - 130
4-Bromofluorobenzene 2016/10/21 D4-1,2-Dichloroethane 2016/10/21 Isobutylbenzene - Volatile 2016/10/21 Benzene 2016/10/21 Toluene 2016/10/21 Ethylbenzene - 2016/10/21 Toluene Total Xylenes 2016/10/21 4713692 MS3 LCS 1,4-Difluorobenzene 2016/10/22 4-Bromofluorobenzene 2016/10/22 Benzene 2016/10/22 Benzene 2016/10/22 Benzene 2016/10/22 Benzene 2016/10/22 Benzene 2016/10/22 Benzene 2016/10/22 Isobutylbenzene - Volatile 2016/10/22 Benzene 2016/10/22 Benzene 2016/10/22 Toluene 2016/10/22 Benzene 2016/10/22 Total Xylenes 2016/10/22 Total Xylenes 2016/10/24 Schutylbenzene - Extractable 2016/10/24 Schutylbenzene - Extractable 2016/10/24 >C10-C16 Hydrocarbons 2016/	4711882	MS3	LCS	1,4-Difluorobenzene	2016/10/21		97	%	60 - 140
4713692 MS3 LCS 1,4-Difluorobenane 2016/10/21 4713692 MS3 LCS 1,4-Difluorobenzene 2016/10/21 4713692 MS3 LCS 1,4-Difluorobenzene 2016/10/21 4713692 MS3 LCS 1,4-Difluorobenzene 2016/10/22 4-Bromofluorobenzene 2016/10/22 2016/10/22 2016/10/22 4-Bromofluorobenzene 2016/10/22 2016/10/22 Benzene 2016/10/22 2016/10/22 Toluene 2016/10/22 2016/10/22 Total Xylenes 2016/10/22 2016/10/22 4714708 CMI LCS n-Dotriacontane - Extractable 2016/10/24 VC10-C16 Hydrocarbons 2016/10/24 >C10-C16 Hydrocarbons 2016/10/24 VC10-C21 Hydrocarbons 2016/10/24 >C16-C21 Hydrocarbons 2016/10/24				4-Bromofluorobenzene	2016/10/21		100	%	60 - 140
4713692 MS3 LCS 1,4-Difluorobenzene 2016/10/21 4713692 MS3 LCS 1,4-Difluorobenzene 2016/10/22 4714708 CMI LCS 1,4-Difluorobenzene 2016/10/22 Benzene 2016/10/22 Dd-1,2-Dichloroethane 2016/10/22 Benzene 2016/10/22 Benzene 2016/10/22 Isobutylbenzene - Volatile 2016/10/22 Ethylbenzene 2016/10/22 Benzene 2016/10/22 Toluene 2016/10/22 Toluene 2016/10/22 Total Xylenes 2016/10/22 4714708 CMI LCS n-Dotriacontane - Extractable 2016/10/24 4714708 CMI LCS n-Dotriacontane - Extractable 2016/10/24 4714708 CMI LCS n-Dotriacontane - Extractable 2016/10/24 </td <td></td> <td></td> <td></td> <td>D4-1,2-Dichloroethane</td> <td>2016/10/21</td> <td></td> <td>95</td> <td>%</td> <td>60 - 140</td>				D4-1,2-Dichloroethane	2016/10/21		95	%	60 - 140
4713692 MS3 LCS 1,4-Difluorobenzene 2016/10/21 4713692 MS3 LCS 1,4-Difluorobenzene 2016/10/22 4-Bromofluorobenzene 2016/10/22 4-Bromofluorobenzene 2016/10/22 1,4-Difluorobenzene 2016/10/22 2016/10/22 2016/10/22 1,4-Difluorobenzene 2016/10/22 2016/10/22 2016/10/22 1,2-Dichloroethane 2016/10/22 2016/10/22 2016/10/22 1,3-Difluoroethane 2016/10/22 2016/10/22 2016/10/22 1,3-Dichloroethane 2016/10/22 2016/10/22 2016/10/22 1,3-Ditylbenzene - Volatile 2016/10/22 2016/10/22 2016/10/22 1,3-Ditylbenzene 2016/10/22 2016/10/22 2016/10/22 1,4-Difluoroethane 2016/10/22 2016/10/22 2016/10/24 1,5-Ditylbenzene 1,5-Ditylbenzene 2016/10/24 2016/10/24 1,4-Difluoroethane 2016/10/24 2016/10/24 2016/10/24 1,4-Difluoroethane 2016/10/24 2016/10/24 2016/10/24 1,4-Difluoroethane				Isobutylbenzene - Volatile	2016/10/21		100	%	60 - 130
4713692 MS3 LCS 1,4-Difluorobenzene 2016/10/21 4713692 MS3 LCS 1,4-Difluorobenzene 2016/10/22 4-Bromofluorobenzene 2016/10/22 4-Bromofluorobenzene 2016/10/22 1,4-Difluorobenzene 2016/10/22 2016/10/22 2016/10/22 1,4-Difluorobenzene 2016/10/22 2016/10/22 2016/10/22 1,2-Dichloroethane 2016/10/22 2016/10/22 2016/10/22 1,50butylbenzene - Volatile 2016/10/22 2016/10/22 2016/10/22 1,714708 CMI LCS n-Dotriacontane - Extractable 2016/10/24 1,716294 CMI </td <td></td> <td></td> <td></td> <td>Benzene</td> <td>2016/10/21</td> <td></td> <td>99</td> <td>%</td> <td>60 - 140</td>				Benzene	2016/10/21		99	%	60 - 140
Ethylbenzene2016/10/214713692MS3LCS1,4-Difluorobenzene2016/10/224-Bromofluorobenzene2016/10/222016/10/222016/10/22D4-1,2-Dichloroethane2016/10/222016/10/22Isobutylbenzene - Volatile2016/10/222016/10/22Benzene2016/10/222016/10/22Toluene2016/10/222016/10/22Ethylbenzene - Extractable2016/10/224714708CMILCSn-Dotriacontane - Extractable2016/10/24Isobutylbenzene - Extractable2016/10/242016/10/244716294CMILCSn-Dotriacontane - Extractable2016/10/244716294CMILCSn-Dotriacontane - Extractable2016/10/244716294CMILCSn-Dotriacontane - Extractable2016/10/244716294CMILCSn-Dotriacontane - Extractable2016/10/244716294CMILCSn-Dotriacontane - Extractable2016/10/24				Toluene	2016/10/21		96	%	60 - 140
4713692MS3LCSTotal Xylenes2016/10/214713692MS3LCS1,4-Difluorobenzene2016/10/224-Bromofluorobenzene2016/10/22D4-1,2-Dichloroethane2016/10/22D4-1,2-Dichloroethane2016/10/22Benzene2016/10/22Toluene2016/10/22Ethylbenzene - Volatile2016/10/22Toluene2016/10/22Toluene2016/10/224714708CMILCSn-Dotriacontane - Extractable2016/10/24Isobutylbenzene - Extractable2016/10/242016/10/244714708CMILCSn-Dotriacontane - Extractable2016/10/244716294CMILCSn-Dotriacontane - Extractable2016/10/244716294CMILCSn-Dotriacontane - Extractable2016/10/244716294CMILCSn-Dotriacontane - Extractable2016/10/244716294CMILCSn-Dotriacontane - Extractable2016/10/24				Ethylbenzene	2016/10/21		100	%	60 - 140
4713692 MS3 LCS 1,4-Difluorobenzene 2016/10/22 4-Bromofluorobenzene 2016/10/22 D4-1,2-Dichloroethane 2016/10/22 Isobutylbenzene - Volatile 2016/10/22 Benzene 2016/10/22 Benzene 2016/10/22 Ethylbenzene 2016/10/22 Toluene 2016/10/22 Ethylbenzene 2016/10/22 4714708 CMI LCS n-Dotriacontane - Extractable 2016/10/24 Isobutylbenzene - Extractable 2016/10/24 Sc10-C16 Hydrocarbons 2016/10/24 -C10-C16 Hydrocarbons 2016/10/24 Sc10-C10-C16 Hydrocarbons 2016/10/24 -C16-C21 Hydrocarbons 2016/10/24 Sc10-C10-C16 Hydrocarbons 2016/10/24 -C10-C16 Hydrocarbons 2016/10/24 Sc10-C10-C16 Hydrocarbons 2016/10/24 -C16-C21 Hydrocarbons 2016/10/24 Sc10-C10-C16-C21 Hydrocarbons 2016/10/24 -C11-C32 Hydrocarbons 2016/10/24 Sc10-C10-C16-C21 Hydrocarbons 2016/10/24 -C11-C32 Hydrocarbons 2016/10/24 Sc10-C10-C16-C21 Hydrocarbons 2016/10/24 -C11-C32 Hydrocarbons <t< td=""><td></td><td></td><td></td><td>Total Xylenes</td><td>2016/10/21</td><td></td><td>100</td><td>%</td><td>60 - 140</td></t<>				Total Xylenes	2016/10/21		100	%	60 - 140
 4-Bromofluorobenzene 2016/10/22 D4-1,2-Dichloroethane 2016/10/22 Isobutylbenzene - Volatile 2016/10/22 Benzene 2016/10/22 Toluene 2016/10/22 Ethylbenzene 2016/10/22 Total Xylenes 2016/10/22 4714708 CMI LCS n-Dotriacontane - Extractable 2016/10/24 Isobutylbenzene - Extractable 2016/10/24 >C10-C16 Hydrocarbons 2016/10/24 >C16-C21 Hydrocarbons 2016/10/24 >C21-<c32 10="" 2016="" 24<="" hydrocarbons="" li=""> 4716294 CMI LCS n-Dotriacontane - Extractable 2016/10/24 </c32>	4713692	MS3	LCS	1,4-Difluorobenzene	2016/10/22		104	%	60 - 140
D4-1,2-Dichloroethane2016/10/22Isobutylbenzene - Volatile2016/10/22Benzene2016/10/22Toluene2016/10/22Ethylbenzene2016/10/22Total Xylenes2016/10/224714708CMILCSn-Dotriacontane - Extractable2016/10/24Isobutylbenzene - Extractable2016/10/24>C10-C16 Hydrocarbons2016/10/24>C16-C21 Hydrocarbons2016/10/24>C21- <c32 hydrocarbons<="" td="">2016/10/244716294CMILCSn-Dotriacontane - Extractable2016/10/24>C16-C21 Hydrocarbons2016/10/24>C21-<c32 hydrocarbons<="" td="">2016/10/242016/10/242016/10/24</c32></c32>				4-Bromofluorobenzene	2016/10/22		107	%	60 - 140
Isobutylbenzene - Volatile2016/10/22Benzene2016/10/22Toluene2016/10/22Ethylbenzene2016/10/22Total Xylenes2016/10/224714708CMILCSn-Dotriacontane - Extractable2016/10/24Isobutylbenzene - Extractable2016/10/24>C10-C16 Hydrocarbons2016/10/24>C16-C21 Hydrocarbons2016/10/24>C21- <c32 hydrocarbons<="" td="">2016/10/244716294CMILCSn-Dotriacontane - Extractable2016/10/242016/10/242016/10/24>C16-C21 Hydrocarbons2016/10/24>C21-<c32 hydrocarbons<="" td="">2016/10/242016/10/242016/10/24</c32></c32>				D4-1,2-Dichloroethane	2016/10/22		104	%	60 - 140
Benzene2016/10/22Toluene2016/10/22Ethylbenzene2016/10/22Total Xylenes2016/10/224714708CMILCSn-Dotriacontane - Extractable2016/10/24Isobutylbenzene - Extractable2016/10/24>C10-C16 Hydrocarbons2016/10/24>C16-C21 Hydrocarbons2016/10/24>C21- <c32 hydrocarbons<="" td="">2016/10/244716294CMILCSn-Dotriacontane - Extractable2016/10/242016/10/242016/10/24>C11SC11<tr< td=""><td></td><td></td><td></td><td>Isobutylbenzene - Volatile</td><td>2016/10/22</td><td></td><td>104</td><td>%</td><td>60 - 130</td></tr<></c32>				Isobutylbenzene - Volatile	2016/10/22		104	%	60 - 130
Toluene2016/10/22Ethylbenzene2016/10/22Total Xylenes2016/10/224714708CMILCSn-Dotriacontane - Extractable2016/10/24Isobutylbenzene - Extractable2016/10/24>C10-C16 Hydrocarbons2016/10/24>C16-C21 Hydrocarbons2016/10/24>C21- <c32 hydrocarbons<="" td="">2016/10/244716294CMILCSn-Dotriacontane - Extractable2016/10/242016/10/242016/10/24>C11SC11Participation2016/10/24>C21-<c32 hydrocarbons<="" td="">2016/10/242016/10/24SC11Participation2016/10/24Participation2016/10/24Participation2016/10/24Participation2016/10/24Participation2016/10/24Participation2016/10/24Participation2016/10/24Participation2016/10/24Participation2016/10/24Participation2016/10/24Participation2016/10/24Participation2016/10/24Participation2016/10/24Participation2016/10/24Participation2016/10/24Participation2016/10/24Participation2016/10/24Participation2016/10/24Participation2016/10/24Participation2016/10/25</c32></c32>				Benzene	2016/10/22		102	%	60 - 140
Ethylbenzene2016/10/22Total Xylenes2016/10/224714708CMILCSn-Dotriacontane - Extractable2016/10/24Isobutylbenzene - Extractable2016/10/24>C10-C16 Hydrocarbons2016/10/24>C16-C21 Hydrocarbons2016/10/24>C21- <c32 hydrocarbons<="" td="">2016/10/244716294CMILCSn-Dotriacontane - Extractable2016/10/24</c32>				Toluene	2016/10/22		100	%	60 - 140
Total Xylenes2016/10/224714708CMILCSn-Dotriacontane - Extractable2016/10/24Isobutylbenzene - Extractable2016/10/242016/10/24>C10-C16 Hydrocarbons2016/10/24>C16-C21 Hydrocarbons2016/10/24>C21- <c32 hydrocarbons<="" td="">2016/10/244716294CMILCSn-Dotriacontane - Extractable2016/10/24</c32>				Ethylbenzene	2016/10/22		104	%	60 - 140
4714708CMILCSn-Dotriacontane - Extractable2016/10/24Isobutylbenzene - Extractable2016/10/24>C10-C16 Hydrocarbons2016/10/24>C16-C21 Hydrocarbons2016/10/24>C21- <c32 hydrocarbons<="" td="">2016/10/244716294CMILCSn-Dotriacontane - Extractable2016/10/24</c32>				Total Xylenes	2016/10/22		104	%	60 - 140
Isobutylbenzene - Extractable2016/10/24>C10-C16 Hydrocarbons2016/10/24>C16-C21 Hydrocarbons2016/10/24>C21- <c32 hydrocarbons<="" td="">2016/10/244716294 CMI LCSn-Dotriacontane - Extractable2016/10/25</c32>	4714708	CMI	LCS	n-Dotriacontane - Extractable	2016/10/24		106	%	30 - 130
>C10-C16 Hydrocarbons 2016/10/24 >C16-C21 Hydrocarbons 2016/10/24 >C21- <c32 hydrocarbons<="" td=""> 2016/10/24 4716294 CMI LCS n-Dotriacontane - Extractable 2016/10/25</c32>				Isobutylbenzene - Extractable	2016/10/24		80	%	30 - 130
>C16-C21 Hydrocarbons 2016/10/24 >C21- <c32 hydrocarbons<="" td=""> 2016/10/24 4716294 CMI LCS n-Dotriacontane - Extractable 2016/10/25</c32>				>C10-C16 Hydrocarbons	2016/10/24		90	%	30 - 130
>C21- <c32 hydrocarbons<="" th="">2016/10/244716294 CMI LCSn-Dotriacontane - Extractable2016/10/25</c32>				- >C16-C21 Hydrocarbons	2016/10/24		87	%	30 - 130
4716294 CMI LCS n-Dotriacontane - Extractable 2016/10/25				- >C21- <c32 hydrocarbons<="" td=""><td>2016/10/24</td><td></td><td>65</td><td>%</td><td>30 - 130</td></c32>	2016/10/24		65	%	30 - 130
	4716294	CMI	LCS	n-Dotriacontane - Extractable	2016/10/25		126	%	30 - 130
Isobutylbenzene - Extractable 2016/10/25	-			Isobutylbenzene - Extractable	2016/10/25		90	%	30 - 130
>C10-C16 Hydrocarbons 2016/10/25				>C10-C16 Hydrocarbons	2016/10/25		111	%	30 - 130
>C16-C21 Hydrocarbons 2016/10/25				, >C16-C21 Hydrocarbons	2016/10/25		106	%	30 - 130



AECOM Canada Ltd. Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
			>C21- <c32 hydrocarbons<="" td=""><td>2016/10/25</td><td></td><td>113</td><td>%</td><td>30 - 130</td></c32>	2016/10/25		113	%	30 - 130

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.

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

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

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

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

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

(1) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.



Maxxam Job #: B6M4914 Report Date: 2016/10/26 AECOM Canada Ltd. Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

VALIDATION SIGNATURE PAGE

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

Olen 2 Howard

Alan Stewart, Organics Manager, Bedford

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

200 Bluewater Road Phone: (902) 420											EXXC	NMO	BIL/IMP	ERIA	L OIL	- MA	XXAI	M			Pr	age 🛛 of	2		
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	www.maxxam.	ca			Toll I	Free: 800-	563-6266					A	NALYSIS	REQL	JESTE	D				0	510#577	000-00-	.01	57	7838
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Contact Name:		Contac	ct Nam	ne:				-																	
Accounts Payable		Tim Ba	achiu																						
Address:		Addres	SS:																						
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1 FAI(0.0-1.0)		X		#	2016/10/18	16:36		X	2					1											
2 DUPA		1			YYYYMADD	16:45		1																	
3 EA2(05-15)			1		YYYYMMUDD	16.55										1									
4 FA3(10-20)					YYYYAMMOD	19:05										-									
5 FAY (05-15)					YYYYMMDD	17:15																		-	-
6 F411(2.0)					YYYYYAAHDD	17:25			1							1					-				
7 FA5(0.0-10)					YYYYAMOO	17:50				1				1											
* FAI2 (2.0)					YYYYAMADD	17:40																			
" FA7(0.0- (.))					YYYYMMDD	17:45																-			1
10 FAS (1,0-2,0)		V	1		min 100	17:55		V																	
IOL SITE LOCATION:	33 11	a.		110	F	REGULATO	DRY CRIT	ERIA/[DETEC	TION LI	NITS:	SPI	ECIAL INST	TRUCTI	ONS:					# JARS	USED		TURN	AROUND T	IME
64 Mill Lake Rd	nusba	uds	J	NS	1	11 1		\cap					1							SUBMIT	ITED	Stand	dard	(5 days)	ß
IOL PROJECT # (if applicable):					- /1	that	ic	Pir	5				10	One						Enter N. Water	A for	Rush	ł	(3 days)	
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COC - 1009 (2013) IOL - NS			White:	Maxxam			3	fellow Cliv	int	_			-									-1			

Maxlam	200 Bluewater Bedford, Nova www.maxxam.	ter Road Phone: (902) 420-0203 EXXONMOBIL/IMPERIAL OIL - MAXXAM wa Scotia B4B 1G9 Fax: (902) 420-8612 CHAIN-OF-CUSTODY RECORD um.ca Toll Free: 800-563-6266 ANALYSIS REQUESTED										И	c	P C of C # 57	ageZofZ 7838-51-01		577	577838						
INVOICE INFORMATION		0		REF	PORT INFORMA	TION														· · · · ·				
Company Name: AECOM Canada Ltd		Comp	bany Na	ime:AE	COM Canada L	ta.																		
Contact Name:		Conta	ict Nam	ne:	and the spectrum of the	-		-							_	-								-
Accounts Payable		Tim B	achiu					-																
Address:		Addre	SS:																					
1/01 Hollis Street Halifax NS B3 I 3M8		1/01 Halifa	V NS R	treet																				
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2 FAGC10-2.0)					WYYKKER REPORT	18:10													_					
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1 STP-FA)	1				1999/15886020	18:20																		
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IOL SITE LOCATION:				L	F	REGULATO	RY CRIT	ERIA / I	DETECT	TONLIN	AITS:		SPECIAL	INSTRU	CTIONS:				# JAR	S USED	T T	URNAR	DUND TIN	ME
64 Mill / cke Rd	. Mubb	15		115					2										AND N SUBM	NOT IITTED	Standar	d	(5 days)	X
IOL PROJECT # (if applicable):	1 10000	PUN		10	Λ	11.14	1	D.,					1	Vor	e				Enter M	N/A for	Rush		(3 days)	
NA- TOL- 141					A	IGht	C	rir	1						-				vvaler				(2 days)	
MAXXAM TASK ORDER # OR SERVICE	ORDER # + L	INE ITE	EM:	-															9	3		(sa	(1 day) me dav)	- 🕂
NA- TOL- PL																						144		
IVA LUC- CT						LVE0	Nologo	ED ID.							hung	110 00						Date	Required	
SEAL PRESENT	(ID:			SI	EAL PRESENT	TES	NO COO	LER ID:	- T				SEAL PRESE	NT	YES	NO CO	OLERID		T			LABUS		
SEAL INTACT TEMP	-1	-1	C	SE	EAL INTACT	CENT	TEM °C		.	2			SEAL INTAC		ENT		MP C	-		2		MAXXA	M JOB #	
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a Skitterine	255.0	ist name			KAKA KANAMADIS	2724	ANN .	2		Sugrado	 W			nonin	1.03774		8520	Addation		1.1212	- C/	6	PC	2001
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ΑΞϹΟΜ

Data Quality Review Checklist

Consultant: A Location: 64 H	ECOM 4 MILL LA UBBARD:	KE RD. N S, NS	102,	Laboratory: Maxxam						
Consultant Project Number: 60	0438249			Sample Submission Number: <u>B6M4914</u>						
Are All Laboratory QC Samples V	Vithin Ac	ceptance	Criteria	(Yes, No, Not Applicable)?						
	Yes	No	NA	Comments						
Instrument Surrogate Recovery	\boxtimes									
Extraction Surrogate Recovery										
Method Blank Concentration	\boxtimes									
Matrix Duplicate RPD		\boxtimes		NC (Duplicate RPD): The duplicate RPD was not calculated. The						
				concentration in the sample and/or duplicate was too low to permit a						
				reliable RPD calculation (one or both samples < 5x RDL).						
Matrix Spike Recovery		\boxtimes		NC (Matrix Spike): The recovery in the matrix spike was not calculated.						
				The relative difference between the concentration in the parent sample						
				and the spiked amount was too small to permit a reliable recovery						
				calculation (matrix spike concentration was less than 2x that of the						
				native sample concentration).						
Lab Control Sample Recovery	\boxtimes									
Are All Field QC Samples Within	Alert Lim	its (Yes,	No, Not	Applicable)?						
	Yes	No	NA	Comments						
Field Blank Concentration			\boxtimes							
Trip Blank Concentration			\boxtimes							
Field Duplicate RPD	\boxtimes									
Has CoA been signed off?				🛛 Yes 🗆 No						
Has lab warranted all tests were	in statisti	cal contro	ol in CoA	?						
Has lab warranted all tests were	analyzed	following	SOP's i	n CoA? Yes 🗆 No						
Were all samples analyzed within	n hold tim	es?		⊠ Yes □ No						
All volatiles samples methanol ex	tracted (i	f require	d) within	48 hours? 🛛 Yes 🛛 No						
Is Chain of Custody completed a	nd signed	1?		⊠ Yes 🗆 No						
Were sample temperatures accept	otable wh	en they	reached	lab? 🛛 Yes 🛛 No						
Is data considered to be reliable? If answer is "No", describe and pr	rovide rat	ionale:	⊠ Yes	□ No						
Reviewed by (Print): Janio Date: Octo	ce Shea bber 8, 20	019		Reviewed by (Signature):						



Attention:Tim Bachiu

B3J 3M8

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA

Task Order#: N/A-CTC SITE Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 577838-04-01

> Report Date: 2016/10/21 Report #: R4218527 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6M6142

Received: 2016/10/20, 09:16

Sample Matrix: Soil # Samples Received: 5

Analyses	Quantity	Laboratory Method	Primary Reference
TEH in Soil (PIRI) (1)	5	ATL SOP 00111	Atl. RBCA v3 m
Moisture	5	ATL SOP 00001	OMOE Handbook 1983 m
Double water wash (soil)	5	ATL SOP 00111	N/A
Silica Gel Clean-up (Soil)	5	ATL SOP 00111	EPA 3630C R3 m
ModTPH (T1) Calc. for Soil	5	N/A	Atl. RBCA v3 m
VPH in Soil (PIRI) - Field Preserved (2)	5	ATL SOP 00119	Atl. RBCA v3 m

Remarks:

All work recorded herein has been performed in accordance to the ISO 17025 standard. Methods used by Maxxam Analytics are based upon accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing.

Maxxam Analytics is accredited by Standards Council of Canada (SCC). Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract.

All data is in statistical control and has met all QC and method performance criteria unless otherwise flagged. All samples were analysed within hold time unless otherwise flagged. All soil samples for BTEX analysis were methanol extracted within 24 hours unless otherwise flagged.

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) Soils are reported on a dry weight basis unless otherwise specified.

(2) No lab extraction date is given for C6-C10/BTEX and VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.

Encryption Key

heri Mackay Project Manager - Bedford 21 Oct 2016 10:08:48 -03:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Keri Mackay, Project Manager - Bedford Email: kmackay@maxxam.ca Phone# (902)420-0203 Ext:294

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



RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		DGY243	DGY243	DGY244	DGY245	DGY246		
Sampling Date		2016/10/19 17:00	2016/10/19 17:00	2016/10/19 17:30	2016/10/19 18:00	2016/10/19 18:15		
COC Number		577838-04-01	577838-04-01	577838-04-01	577838-04-01	577838-04-01		
	UNITS	STP-EX1-1	STP-EX1-1 Lab-Dup	STP-EX1-2	STP-EX1-3	STP-EX2-1	RDL	QC Batch
Inorganics								
Moisture	%	17		8.7	15	9.5	1.0	4709645
Petroleum Hydrocarbons								
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	4709763
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	4709763
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	4709763
Total Xylenes	mg/kg	<0.050	<0.050	0.16	<0.050	<0.050	0.050	4709763
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	17	<2.5	<2.5	2.5	4709763
>C10-C16 Hydrocarbons	mg/kg	<10		210	54	<10	10	4709862
>C16-C21 Hydrocarbons	mg/kg	<10		120	44	30	10	4709862
>C21- <c32 hydrocarbons<="" p=""></c32>	mg/kg	<15		39	19	51	15	4709862
Modified TPH (Tier1)	mg/kg	<15		380	120	81	15	4709733
Reached Baseline at C32	mg/kg	NA		Yes	Yes	Yes	N/A	4709862
Hydrocarbon Resemblance	mg/kg	NA		COMMENT (1)	COMMENT (1)	COMMENT (2)	N/A	4709862
Extraction Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	73		87	83	80		4709862
n-Dotriacontane - Extractable	%	95		106	83 (3)	109		4709862
Isobutylbenzene - Volatile	%	121	105	94	123	111		4709763
Instrument Surrogate Recovery (%)								
1,4-Difluorobenzene	%	86	92	92	88	98		4709763
4-Bromofluorobenzene	%	85	90	93	87	91		4709763
D4-1,2-Dichloroethane	%	94	97	99	99	105		4709763

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) Weathered fuel oil fraction.

(2) One product in fuel / lube range. Possible lube oil fraction.

(3) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.



Maxxam ID		DGY247	DGY247		
Sampling Date		2016/10/19	2016/10/19		
		18:30	18:30		
COC Number		577838-04-01	577838-04-01		
	UNITS	STP-EX2-2	STP-EX2-2 Lab-Dup	RDL	QC Batch
Inorganics					
Moisture	%	31		1.0	4709645
Petroleum Hydrocarbons					
Benzene	mg/kg	<0.025		0.025	4709763
Toluene	mg/kg	<0.025		0.025	4709763
Ethylbenzene	mg/kg	<0.025		0.025	4709763
Total Xylenes	mg/kg	<0.050		0.050	4709763
C6 - C10 (less BTEX)	mg/kg	<2.5		2.5	4709763
>C10-C16 Hydrocarbons	mg/kg	170	140	10	4709862
>C16-C21 Hydrocarbons	mg/kg	150	130	10	4709862
>C21- <c32 hydrocarbons<="" td=""><td>mg/kg</td><td>32</td><td>31</td><td>15</td><td>4709862</td></c32>	mg/kg	32	31	15	4709862
Modified TPH (Tier1)	mg/kg	360		15	4709733
Reached Baseline at C32	mg/kg	Yes		N/A	4709862
Hydrocarbon Resemblance	mg/kg	COMMENT (1)		N/A	4709862
Extraction Surrogate Recovery (%)					
Isobutylbenzene - Extractable	%	81	82		4709862
n-Dotriacontane - Extractable	%	81 (2)	94 (2)		4709862
Isobutylbenzene - Volatile	%	99			4709763
Instrument Surrogate Recovery (%)					
1,4-Difluorobenzene	%	114			4709763
4-Bromofluorobenzene	%	124			4709763
D4-1,2-Dichloroethane	%	112			4709763
RDL = Reportable Detection Lim QC Batch = Quality Control Batc Lab-Dup = Laboratory Initiated	nit ch Duplicat	e			
(1) Weathered fuel oil fraction.					

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

(2) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.



VPH in Soil (PIRI) - Field Preserved

Report Date: 2016/10/21

AECOM Canada Ltd. Task Order#: N/A-CTC SITE Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	DGY243 STP-EX1-1 Soil				Re	Collected: elinquished: Received:	2016/10/19 2016/10/19 2016/10/20
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4709862	2016/10/20	2016/10/20	Marley Gi	dney
Moisture		BAL	4709645	N/A	2016/10/20	Victoria Le	egge
ModTPH (T1) Calc. for So	il	CALC	4709733	N/A	2016/10/21	Automate	d Statchk
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	4709763	N/A	2016/10/20	Thea Holla	and
Maxxam ID: Sample ID: Matrix:	DGY243 Dup STP-EX1-1 Soil				Re	Collected: elinquished: Received:	2016/10/19 2016/10/19 2016/10/20
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	4709763	N/A	2016/10/20	Thea Holla	and
Maxxam ID: Sample ID: Matrix:	DGY244 STP-EX1-2 Soil				Re	Collected: elinquished: Received:	2016/10/19 2016/10/19 2016/10/20
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4709862	2016/10/20	2016/10/20	Marley Gi	dney
Moisture		BAL	4709645	N/A	2016/10/20	Victoria Le	egge
ModTPH (T1) Calc. for So	il	CALC	4709733	N/A	2016/10/21	Automate	d Statchk
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	4709763	N/A	2016/10/20	Thea Holla	and
Maxxam ID: Sample ID: Matrix:	DGY245 STP-EX1-3 Soil				Re	Collected: elinquished: Received:	2016/10/19 2016/10/19 2016/10/20
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4709862	2016/10/20	2016/10/20	Marley Gi	dney
Moisture		BAL	4709645	N/A	2016/10/20	, Victoria Le	egge
ModTPH (T1) Calc. for So	il	CALC	4709733	N/A	2016/10/21	Automate	d Statchk
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	4709763	N/A	2016/10/20	Thea Holla	and
Maxxam ID: Sample ID: Matrix:	DGY246 STP-EX2-1 Soil				Re	Collected: elinquished: Received:	2016/10/19 2016/10/19 2016/10/20
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4709862	2016/10/20	2016/10/20	Marley Gi	dney
Moisture		BAL	4709645	N/A	2016/10/20	Victoria Le	egge
ModTPH (T1) Calc. for So	il	CALC	4709733	N/A	2016/10/21	Automate	d Statchk

N/A

2016/10/20

Thea Holland

4709763

PTGC/MS





AECOM Canada Ltd. Task Order#: N/A-CTC SITE Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	DGY247 STP-EX2-2 Soil				I	Collected: Relinquished: Received:	2016/10/19 2016/10/19 2016/10/20
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4709862	2016/10/20	2016/10/20	Marley Gi	dney
Moisture		BAL	4709645	N/A	2016/10/20	Victoria Le	egge
ModTPH (T1) Calc. for So	il	CALC	4709733	N/A	2016/10/21	Automate	d Statchk
VPH in Soil (PIRI) - Field P	Preserved	PTGC/MS	4709763	N/A	2016/10/20	Thea Holla	and
Maxxam ID: Sample ID: Matrix:	DGY247 Dup STP-EX2-2 Soil					Collected: Relinquished: Received:	2016/10/19 2016/10/19 2016/10/20
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4709862	2016/10/20	2016/10/20	Marley Gi	dney



AECOM Canada Ltd. Task Order#: N/A-CTC SITE Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt												
	Package 1 0.7°C											
Double	Double water wash and silica gel clean-up performed on soil extracts.											
Results	relate only to the i	tems tested.										



AECOM Canada Ltd. Task Order#: N/A-CTC SITE Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
4709763	THL	Method Blank	1,4-Difluorobenzene	2016/10/20		90	%	60 - 140
			4-Bromofluorobenzene	2016/10/20		91	%	60 - 140
			D4-1,2-Dichloroethane	2016/10/20		98	%	60 - 140
			Isobutylbenzene - Volatile	2016/10/20		109	%	60 - 130
			Benzene	2016/10/20	<0.025		mg/kg	
			Toluene	2016/10/20	<0.025		mg/kg	
			Ethylbenzene	2016/10/20	<0.025		mg/kg	
			Total Xylenes	2016/10/20	<0.050		mg/kg	
			C6 - C10 (less BTEX)	2016/10/20	<2.5		mg/kg	
4709862	MGN	Method Blank	n-Dotriacontane - Extractable	2016/10/20		97	%	30 - 130
			Isobutylbenzene - Extractable	2016/10/20		77	%	30 - 130
			>C10-C16 Hydrocarbons	2016/10/20	<10		mg/kg	
			>C16-C21 Hydrocarbons	2016/10/20	<10		mg/kg	
			>C21- <c32 hydrocarbons<="" td=""><td>2016/10/20</td><td><15</td><td></td><td>mg/kg</td><td></td></c32>	2016/10/20	<15		mg/kg	
4709763	THL	RPD [DGY243-02]	Benzene	2016/10/20	NC		%	50
			Toluene	2016/10/20	NC		%	50
			Ethylbenzene	2016/10/20	NC		%	50
			Total Xylenes	2016/10/20	NC		%	50
			C6 - C10 (less BTEX)	2016/10/20	NC		%	50
4709862	MGN	RPD [DGY247-01]	>C10-C16 Hydrocarbons	2016/10/20	18		%	50
			>C16-C21 Hydrocarbons	2016/10/20	14		%	50
			>C21- <c32 hydrocarbons<="" td=""><td>2016/10/20</td><td>NC</td><td></td><td>%</td><td>50</td></c32>	2016/10/20	NC		%	50
4709763	THL	Matrix Spike [DGY243-02]	1,4-Difluorobenzene	2016/10/20		88	%	60 - 140
			4-Bromofluorobenzene	2016/10/20		91	%	60 - 140
			D4-1,2-Dichloroethane	2016/10/20		95	%	60 - 140
			Isobutylbenzene - Volatile	2016/10/20		113	%	60 - 130
			Benzene	2016/10/20		97	%	60 - 130
			Toluene	2016/10/20		94	%	60 - 130
			Ethylbenzene	2016/10/20		96	%	60 - 130
			Total Xylenes	2016/10/20		95	%	60 - 130
4709862	MGN	Matrix Spike [DGY247-01]	n-Dotriacontane - Extractable	2016/10/20		90 (1)	%	30 - 130
			Isobutylbenzene - Extractable	2016/10/20		84	%	30 - 130
			>C10-C16 Hydrocarbons	2016/10/20		NC	%	30 - 130
			>C16-C21 Hydrocarbons	2016/10/20		90	%	30 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2016/10/20</td><td></td><td>90</td><td>%</td><td>30 - 130</td></c32>	2016/10/20		90	%	30 - 130
4709763	THL	LCS	1,4-Difluorobenzene	2016/10/20		88	%	60 - 140
			4-Bromofluorobenzene	2016/10/20		87	%	60 - 140
			D4-1,2-Dichloroethane	2016/10/20		97	%	60 - 140
			Isobutylbenzene - Volatile	2016/10/20		96	%	60 - 130
			Benzene	2016/10/20		91	%	60 - 140
			Toluene	2016/10/20		94	%	60 - 140
			Ethylbenzene	2016/10/20		98	%	60 - 140
			Total Xylenes	2016/10/20		92	%	60 - 140
4709862	MGN	LCS	n-Dotriacontane - Extractable	2016/10/20		91	%	30 - 130
			Isobutylbenzene - Extractable	2016/10/20		76	%	30 - 130
			>C10-C16 Hydrocarbons	2016/10/20		105	%	30 - 130
			>C16-C21 Hydrocarbons	2016/10/20		104	%	30 - 130



AECOM Canada Ltd. Task Order#: N/A-CTC SITE Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
			>C21- <c32 hydrocarbons<="" td=""><td>2016/10/20</td><td></td><td>97</td><td>%</td><td>30 - 130</td></c32>	2016/10/20		97	%	30 - 130

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.

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

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

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

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

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

(1) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.



Maxxam Job #: B6M6142 Report Date: 2016/10/21 AECOM Canada Ltd. Task Order#: N/A-CTC SITE Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

VALIDATION SIGNATURE PAGE

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

Philippe Deven

Phil Deveau, Scientific Specialist (Organics)

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

Maxiam Bedfor	uewater R rd, Nova S naxxam.c	Road Phone: (902) 420-0203 Scotia B4B 1G9 Fax: (902) 420-8612 ca Toll Free: 800-563-6266										EXXO	ONIV CHA	IOBIL	IMPE -CUS		OIL Y RE	- MA COR	XXAI D	И		C	Pa of C # 57	age (of 7838-04-0	1	57	7838
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Company Name: AECOM Canada Ltd		Compa	any Na	ime:AE	COM Canada Lt	td.																					
Contact Name:		Conta	ct Nam	ne:																							
Accounts Payable		Tim Ba	achiu	-																							
Address:		Addres	SS: Jallia C	treat																							
Halifax NS B3J 3M8		Halifax	(NS B	3J 3M8						- 1																	
Email: CANSSC.E-billing@aecom.com	n, timoth	Email:		Time	thy.bachiu@aec	om.com, L	.aura.Ma	cls g																			
Phone: (902) 428-2048 x		Phone	e:	(902) 428-2048 x			- u ple		<i>"</i>	(WIS																
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Alex Duguas			604	138	249					xtr	GCI	Pres															
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MALTON 141					119	anti	C F	in														Water				(2 days)	
MAXXAM TASK ORDER # OR SERVICE ORDE	FR # + 11		M																			0	-			(1 day)	
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NA- JOL-C+C	_					1			_				-												Dat	e Required	
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ΑΞϹΟΜ

Data Quality Review Checklist

Consultant: Al	ECOM			Sampling Date: 2016/10/19							
Location: 64	I MILL LA	KE RD. N 5, NS	102,	Laboratory: Maxxam							
Consultant Project Number: 60)438249			Sample Submission Number: B6M6142							
Are All Laboratory QC Samples V	Vithin Ac	ceptance	Criteria	(Yes, No, Not Applicable)?							
	Yes	No	NA	Comments							
Instrument Surrogate Recovery	\boxtimes										
Extraction Surrogate Recovery	\boxtimes										
Method Blank Concentration	\boxtimes										
Matrix Duplicate RPD		\boxtimes		NC (Duplicate RPD): The duplicate RPD was not calculated. The							
				concentration in the sample and/or duplicate was too low to permit a							
				reliable RPD calculation (one or both samples < 5x RDL).							
Matrix Spike Recovery		\boxtimes		NC (Matrix Spike): The recovery in the matrix spike was not calculated.							
				The relative difference between the concentration in the parent sample							
				and the spiked amount was too small to permit a reliable recovery							
				calculation (matrix spike concentration was less than 2x that of the							
				native sample concentration).							
Lab Control Sample Recovery	\boxtimes										
Are All Field QC Samples Within	Alert Lim	its (Yes,	No, Not	Applicable)?							
	Yes	No	NA	Comments							
Field Blank Concentration			\boxtimes								
Trip Blank Concentration			\boxtimes								
Field Duplicate RPD			\boxtimes								
Has CoA been signed off?				🛛 Yes 🗆 No							
Has lab warranted all tests were i	n statisti	cal contro	ol in CoA	?							
Has lab warranted all tests were a	analyzed	following	SOP's	in CoA?							
Were all samples analyzed within	hold tim	es?		⊠ Yes □ No							
All volatiles samples methanol ex	tracted (i	f require	d) within	48 hours? ⊠ Yes □ No							
Is Chain of Custody completed an	nd signed	1?		⊠ Yes □ No							
Were sample temperatures accept	otable wh	en they	reached	lab? 🛛 Yes 🛛 No							
Is data considered to be reliable?⊠ Yes □ No If answer is "No", describe and provide rationale:											
Reviewed by (Print): Jania Date: Octo	ce Shea ber 8, 20	019		Reviewed by (Signature):							

Maxam A Bureau Veritas Group Company

> Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

Attention:Tim Bachiu

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

Your C.O.C. #: 577838-05-01, 577838-50-01, 577838-07-01

Report Date: 2016/10/24 Report #: R4221439 Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6M7459 Received: 2016/10/21, 09:56

Sample Matrix: Soil

Samples Received: 24

Analyses	Quantity	Laboratory Method	Primary Reference
TEH in Soil (PIRI) (1)	24	ATL SOP 00111	Atl. RBCA v3 m
Moisture	24	ATL SOP 00001	OMOE Handbook 1983 m
Double water wash (soil)	24	ATL SOP 00111	N/A
Silica Gel Clean-up (Soil)	24	ATL SOP 00111	EPA 3630C R3 m
ModTPH (T1) Calc. for Soil	24	N/A	Atl. RBCA v3 m
VPH in Soil (PIRI) - Field Preserved (2)	24	ATL SOP 00119	Atl. RBCA v3 m

Remarks:

All work recorded herein has been performed in accordance to the ISO 17025 standard. Methods used by Maxxam Analytics are based upon accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing.

Maxxam Analytics is accredited by Standards Council of Canada (SCC). Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract.

All data is in statistical control and has met all QC and method performance criteria unless otherwise flagged. All samples were analysed within hold time unless otherwise flagged. All soil samples for BTEX analysis were methanol extracted within 24 hours unless otherwise flagged.

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) Soils are reported on a dry weight basis unless otherwise specified.

(2) No lab extraction date is given for C6-C10/BTEX and VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.



Attention:Tim Bachiu

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

Your C.O.C. #: 577838-05-01, 577838-50-01, 577838-07-01

Report Date: 2016/10/24 Report #: R4221439 Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6M7459 Received: 2016/10/21, 09:56

Encryption Key

heri Machay Keri MacKay Project Manager - Bedford 24 Oct 2016 16:41:31 -03:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Keri Mackay, Project Manager - Bedford Email: kmackay@maxxam.ca Phone# (902)420-0203 Ext:294

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



RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		DHE564	DHE565	DHE566	DHE567	DHE568		
Sampling Date		2016/10/20 17:02	2016/10/20 17:17	2016/10/20 17:27	2016/10/20 17:39	2016/10/20 17:51		
COC Number		577838-05-01	577838-05-01	577838-05-01	577838-05-01	577838-05-01		
	UNITS	EX1-7 (0.0-1.0)	EX1-8 (0.5-1.5)	EX1-8 (4.0)	EX1-9 (1.0-2.0)	EX1-10 (1.5-2.5)	RDL	QC Batch
Inorganics								
Moisture	%	36	19	10	8.1	6.4	1.0	4712148
Petroleum Hydrocarbons								
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	4711882
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	4711882
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	0.31	0.16	0.025	4711882
Total Xylenes	mg/kg	0.20	<0.050	0.076	1.4	0.86	0.050	4711882
C6 - C10 (less BTEX)	mg/kg	54	<2.5	12	71	230	2.5	4711882
>C10-C16 Hydrocarbons	mg/kg	190	<10	230	1300	1700	10	4712482
>C16-C21 Hydrocarbons	mg/kg	76	<10	76	420	580	10	4712482
>C21- <c32 hydrocarbons<="" p=""></c32>	mg/kg	<15	<15	17	70	86	15	4712482
Modified TPH (Tier1)	mg/kg	320	<15	330	1900	2600	15	4711912
Reached Baseline at C32	mg/kg	Yes	NA	Yes	Yes	Yes	N/A	4712482
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	NA	COMMENT (1)	COMMENT (1)	COMMENT (1)	N/A	4712482
Extraction Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	85	79	87	77	81		4712482
n-Dotriacontane - Extractable	%	110	104	104	105	100		4712482
Isobutylbenzene - Volatile	%	124	115	108	89	61		4711882
Instrument Surrogate Recovery (%)								
1,4-Difluorobenzene	%	93	102	108	105	98		4711882
4-Bromofluorobenzene	%	97	104	112	112	105		4711882
D4-1,2-Dichloroethane	%	94	99	103	100	100		4711882
RDL = Reportable Detection Lim QC Batch = Quality Control Batc	nit ch							

N/A = Not Applicable

(1) Weathered fuel oil fraction.





RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		DHE569	DHE570	DHE571	DHE572	DHE573		
Sampling Date		2016/10/20 18:00	2016/10/20 18:13	2016/10/20 18:25	2016/10/20 18:44	2016/10/20 18:54		
COC Number		577838-05-01	577838-05-01	577838-05-01	577838-05-01	577838-05-01		
	UNITS	EX1-10 (4.0)	EX1-3 (2.0-3.0)	EX1-2 (3.5-4.0)	EX1-1 (3.0-4.0)	EX1-4 (4.0)	RDL	QC Batch
Inorganics								
Moisture	%	12	7.2	8.1	12	12	1.0	4712353
Petroleum Hydrocarbons								
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	4711882
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	4711882
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	0.16	<0.025	0.025	4711882
Total Xylenes	mg/kg	<0.050	0.10	<0.050	0.99	<0.050	0.050	4711882
C6 - C10 (less BTEX)	mg/kg	3.7	97	<2.5	150	11	2.5	4711882
>C10-C16 Hydrocarbons	mg/kg	290	2300	<10	390	22	10	4712482
>C16-C21 Hydrocarbons	mg/kg	110	720	<10	200	13	10	4712482
>C21- <c32 hydrocarbons<="" td=""><td>mg/kg</td><td>24</td><td>120</td><td><15</td><td>41</td><td><15</td><td>15</td><td>4712482</td></c32>	mg/kg	24	120	<15	41	<15	15	4712482
Modified TPH (Tier1)	mg/kg	430	3200	<15	780	46	15	4711912
Reached Baseline at C32	mg/kg	Yes	Yes	NA	Yes	Yes	N/A	4712482
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	COMMENT (1)	NA	COMMENT (1)	COMMENT (1)	N/A	4712482
Extraction Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	84	77	83	82	85		4712482
n-Dotriacontane - Extractable	%	110	101	105	105	111		4712482
Isobutylbenzene - Volatile	%	103	57 (2)	104	96	103		4711882
Instrument Surrogate Recovery (%)								
1,4-Difluorobenzene	%	104	102	107	108	107		4711882
4-Bromofluorobenzene	%	106	94	108	110	110		4711882
D4-1,2-Dichloroethane	%	98	103	100	103	100		4711882

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Weathered fuel oil fraction.

(2) VPH surrogate(s) not within reference method but within client specified acceptance limits. Analysis was repeated with similar results.



RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		DHE573		DHE628		DHE629	DHE629		
Sampling Date		2016/10/20		2016/10/20		2016/10/20	2016/10/20		
		18:54		18:45		18:35	18:35		
COC Number		577838-05-01		577838-50-01		577838-50-01	577838-50-01		
	UNITS	EX1-4 (4.0) Lab-Dup	QC Batch	EX1-5 (0.0-1.0)	QC Batch	EX1-6 (2.5-3.5)	EX1-6 (2.5-3.5) Lab-Dup	RDL	QC Batch
Inorganics									
Moisture	%		4712353	8.0	4712148	12		1.0	4712148
Petroleum Hydrocarbons									
Benzene	mg/kg		4711882	<0.025	4711882	<0.025		0.025	4711882
Toluene	mg/kg		4711882	<0.025	4711882	<0.025		0.025	4711882
Ethylbenzene	mg/kg		4711882	<0.025	4711882	<0.025		0.025	4711882
Total Xylenes	mg/kg		4711882	<0.050	4711882	<0.050		0.050	4711882
C6 - C10 (less BTEX)	mg/kg		4711882	<2.5	4711882	7.5		2.5	4711882
>C10-C16 Hydrocarbons	mg/kg	20	4712482	60	4712482	35	29	10	4712472
>C16-C21 Hydrocarbons	mg/kg	<10	4712482	110	4712482	18	16	10	4712472
>C21- <c32 hydrocarbons<="" p=""></c32>	mg/kg	<15	4712482	32	4712482	<15	<15	15	4712472
Modified TPH (Tier1)	mg/kg		4711912	200	4711912	60		15	4711912
Reached Baseline at C32	mg/kg		4712482	Yes	4712482	Yes		N/A	4712472
Hydrocarbon Resemblance	mg/kg		4712482	COMMENT (1)	4712482	COMMENT (1)		N/A	4712472
Extraction Surrogate Recovery (%)									
Isobutylbenzene - Extractable	%	86	4712482	83	4712482	82	76		4712472
n-Dotriacontane - Extractable	%	109	4712482	105	4712482	114	112		4712472
Isobutylbenzene - Volatile	%		4711882	93	4711882	116			4711882
Instrument Surrogate Recovery (%)									
1,4-Difluorobenzene	%		4711882	95	4711882	111			4711882
4-Bromofluorobenzene	%		4711882	95	4711882	117			4711882
D4-1,2-Dichloroethane	%		4711882	88	4711882	103			4711882

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

(1) Weathered fuel oil fraction.



RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		DHE630	DHE631	DHE632	DHE633	DHE634		
Sampling Date		2016/10/20	2016/10/21	2016/10/21	2016/10/21	2016/10/21		
		18:40	08:15	08:15	08:34	07:10		
COC Number		577838-50-01	577838-50-01	577838-50-01	577838-50-01	577838-50-01		
	UNITS	EX1-6 (4.0)	EX1-4 (1.5-2.5)	DUP B	DUP C	EX2-1 (1.0-2.0)	RDL	QC Batch
Inorganics								
Moisture	%	6.6	5.7	6.2	8.2	12	1.0	4712148
Petroleum Hydrocarbons								
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	4711883
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	4711883
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	4711883
Total Xylenes	mg/kg	<0.050	<0.050	<0.050	0.12	<0.050	0.050	4711883
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	<2.5	10	<2.5	2.5	4711883
>C10-C16 Hydrocarbons	mg/kg	<10	<10	<10	110	<10	10	4712472
>C16-C21 Hydrocarbons	mg/kg	<10	<10	<10	51	23	10	4712472
>C21- <c32 hydrocarbons<="" td=""><td>mg/kg</td><td><15</td><td><15</td><td><15</td><td><15</td><td>30</td><td>15</td><td>4712472</td></c32>	mg/kg	<15	<15	<15	<15	30	15	4712472
Modified TPH (Tier1)	mg/kg	<15	<15	<15	170	53	15	4711912
Reached Baseline at C32	mg/kg	NA	NA	NA	Yes	Yes	N/A	4712472
Hydrocarbon Resemblance	mg/kg	NA	NA	NA	COMMENT (1)	COMMENT (2)	N/A	4712472
Extraction Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	76	78	79	80	75		4712472
n-Dotriacontane - Extractable	%	105	102	100	107	117		4712472
Isobutylbenzene - Volatile	%	101	103	105	97	105		4711883
Instrument Surrogate Recovery (%)								
1,4-Difluorobenzene	%	97	99	102	96	100		4711883
4-Bromofluorobenzene	%	98	100	102	98	102		4711883
D4-1,2-Dichloroethane	%	97	99	101	96	100		4711883

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Weathered fuel oil fraction.

(2) One product in fuel / lube range. Possible lube oil fraction.



RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		DHE635	DHE636	DHE637	DHE651	DHE652		
Sampling Date		2016/10/21 07:15	2016/10/21 07:20	2016/10/21 07:25	2016/10/21 07:30	2016/10/21 07:30		
COC Number		577838-50-01	577838-50-01	577838-50-01	577838-07-01	577838-07-01		
	UNITS	EX2-2 (1.0-2.0)	EX2-3 (0.0-1.0)	EX2-4 (1.0-2.0)	EX2-5 (2.0)	DUP D	RDL	QC Batch
Inorganics								
Moisture	%	9.7	10	13	7.9	9.4	1.0	4712148
Petroleum Hydrocarbons								
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	4711883
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	4711883
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	4711883
Total Xylenes	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4711883
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	<2.5	<2.5	<2.5	2.5	4711883
>C10-C16 Hydrocarbons	mg/kg	<10	<10	<10	<10	<10	10	4712472
>C16-C21 Hydrocarbons	mg/kg	<10	<10	<10	<10	<10	10	4712472
>C21- <c32 hydrocarbons<="" p=""></c32>	mg/kg	<15	<15	<15	<15	<15	15	4712472
Modified TPH (Tier1)	mg/kg	<15	<15	<15	<15	<15	15	4711912
Reached Baseline at C32	mg/kg	NA	NA	NA	NA	NA	N/A	4712472
Hydrocarbon Resemblance	mg/kg	NA	NA	NA	NA	NA	N/A	4712472
Extraction Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	77	77	98	77	77		4712472
n-Dotriacontane - Extractable	%	103	98	98	98	100		4712472
Isobutylbenzene - Volatile	%	105	103	102	103	102		4711883
Instrument Surrogate Recovery (%)								
1,4-Difluorobenzene	%	98	99	101	101	97		4711883
4-Bromofluorobenzene	%	100	99	103	101	98		4711883
D4-1,2-Dichloroethane	%	98	98	102	100	97		4711883
RDL = Reportable Detection Lim QC Batch = Quality Control Batc	nit :h							

N/A = Not Applicable



Maxxam ID		DHE653		DHE654							
		2016/10/20		2016/10/20							
Sampling Date		18:50		19:00							
COC Number		577838-07-01		577838-07-01							
	UNITS	STP-EX1-1	QC Batch	STP-EX1-2	RDL	QC Batch					
Inorganics											
Moisture	%	8.4	4712353	8.5	1.0	4712353					
Petroleum Hydrocarbons											
Benzene	mg/kg	<0.025	4713692	<0.025	0.025	4713692					
Toluene	mg/kg	<0.025	4713692	<0.025	0.025	4713692					
Ethylbenzene	mg/kg	0.12	4713692	<0.025	0.025	4713692					
Total Xylenes	mg/kg	0.61	4713692	<0.050	0.050	4713692					
C6 - C10 (less BTEX)	mg/kg	43	4713692	18	2.5	4713692					
>C10-C16 Hydrocarbons	mg/kg	890	4714289	1000	10	4714708					
>C16-C21 Hydrocarbons	mg/kg	310	4714289	400	10	4714708					
>C21- <c32 hydrocarbons<="" p=""></c32>	mg/kg	56	4714289	64	15	4714708					
Modified TPH (Tier1)	mg/kg	1300	4712333	1500	15	4712333					
Reached Baseline at C32	mg/kg	Yes	4714289	Yes	N/A	4714708					
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	4714289	COMMENT (1)	N/A	4714708					
Extraction Surrogate Recovery (%)											
Isobutylbenzene - Extractable	%	95	4714289	72		4714708					
n-Dotriacontane - Extractable	%	101	4714289	108		4714708					
Isobutylbenzene - Volatile	%	91	4713692	81		4713692					
Instrument	-										
Surrogate Recovery (%)											
1,4-Difluorobenzene	%	112	4713692	105		4713692					
4-Bromofluorobenzene	%	115	4713692	105		4713692					
D4-1,2-Dichloroethane	%	108	4713692	103		4713692					
RDL = Reportable Detection Limit											
QC Batch = Quality Control Batc	h										
N/A = Not Applicable											
(1) Weathered fuel oil fraction.											

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

TEST SUMMARY

Maxxam ID:	DHE564
Sample ID:	EX1-7 (0.0-1.0)
Matrix:	Soil

Collected:	2016/10/20
Relinquished:	2016/10/21
Received:	2016/10/21

Collected: 2016/10/20

Received: 2016/10/21

Collected: 2016/10/20

Relinquished:2016/10/21Received:2016/10/21

2016/10/21

Relinquished:

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4712482	2016/10/21	2016/10/24	Crystal Matthews
Moisture	BAL	4712148	N/A	2016/10/23	Kelsey MacGillivray
ModTPH (T1) Calc. for Soil	CALC	4711912	N/A	2016/10/24	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4711882	N/A	2016/10/24	Michelle Shearer

 Maxxam ID:
 DHE565

 Sample ID:
 EX1-8 (0.5-1.5)

 Matrix:
 Soil

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4712482	2016/10/21	2016/10/24	Crystal Matthews
Moisture	BAL	4712148	N/A	2016/10/23	Kelsey MacGillivray
ModTPH (T1) Calc. for Soil	CALC	4711912	N/A	2016/10/24	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4711882	N/A	2016/10/21	Michelle Shearer

Maxxam ID: DHE566 Sample ID: EX1-8 (4.0) Matrix: Soil

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4712482	2016/10/21	2016/10/24	Crystal Matthews
Moisture	BAL	4712148	N/A	2016/10/23	Kelsey MacGillivray
ModTPH (T1) Calc. for Soil	CALC	4711912	N/A	2016/10/24	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4711882	N/A	2016/10/21	Michelle Shearer

Maxxam ID:	DHE567
Sample ID:	EX1-9 (1.0-2.0)
Matrix:	Soil

Collected:	2016/10/20
Relinquished:	2016/10/21
Received:	2016/10/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4712482	2016/10/21	2016/10/24	Crystal Matthews
Moisture	BAL	4712148	N/A	2016/10/23	Kelsey MacGillivray
ModTPH (T1) Calc. for Soil	CALC	4711912	N/A	2016/10/24	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4711882	N/A	2016/10/21	Michelle Shearer

est Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
Maxxam ID: Sample ID: Matrix:	DHE568 EX1-10 (1.5-2.5) Soil				Re	Collected: linquished: Received:	2016/10/20 2016/10/21 2016/10/21

rest Description	instrumentation	Datti	Extracted	Date Analyzeu	Analyst
TEH in Soil (PIRI)	GC/FID	4712482	2016/10/21	2016/10/24	Crystal Matthews
Moisture	BAL	4712148	N/A	2016/10/23	Kelsey MacGillivray
ModTPH (T1) Calc. for Soil	CALC	4711912	N/A	2016/10/24	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4711882	N/A	2016/10/24	Michelle Shearer

Page 9 of 23

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TEST SUMMARY

Maxxam ID:	DHE569
Sample ID:	EX1-10 (4.0)
Matrix:	Soil

2016/10/20
2016/10/21
2016/10/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4712482	2016/10/21	2016/10/24	Crystal Matthews
Moisture	BAL	4712353	N/A	2016/10/24	Victoria Legge
ModTPH (T1) Calc. for Soil	CALC	4711912	N/A	2016/10/24	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4711882	N/A	2016/10/21	Michelle Shearer

Maxxam ID: DHE570 Sample ID: EX1-3 (2.0-3.0) Matrix: Soil

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4712482	2016/10/21	2016/10/24	Crystal Matthews
Moisture	BAL	4712353	N/A	2016/10/24	Victoria Legge
ModTPH (T1) Calc. for Soil	CALC	4711912	N/A	2016/10/24	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4711882	N/A	2016/10/22	Michelle Shearer

 Maxxam ID:
 DHE571

 Sample ID:
 EX1-2 (3.5-4.0)

 Matrix:
 Soil

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4712482	2016/10/21	2016/10/24	Crystal Matthews
Moisture	BAL	4712353	N/A	2016/10/24	Victoria Legge
ModTPH (T1) Calc. for Soil	CALC	4711912	N/A	2016/10/24	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4711882	N/A	2016/10/21	Michelle Shearer

Maxxam ID:	DHE572
Sample ID:	EX1-1 (3.0-4.0)
Matrix:	Soil

Collected:	2016/10/20
Relinquished:	2016/10/21
Received:	2016/10/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4712482	2016/10/21	2016/10/24	Crystal Matthews
Moisture	BAL	4712353	N/A	2016/10/24	Victoria Legge
ModTPH (T1) Calc. for Soil	CALC	4711912	N/A	2016/10/24	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4711882	N/A	2016/10/21	Michelle Shearer

Maxxam ID:	DHE573	Collected:	2016/10/20
Sample ID:	EX1-4 (4.0)	Relinquished:	2016/10/21
Matrix:	Soil	Received:	2016/10/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4712482	2016/10/21	2016/10/23	Crystal Matthews
Moisture	BAL	4712353	N/A	2016/10/24	Victoria Legge
ModTPH (T1) Calc. for Soil	CALC	4711912	N/A	2016/10/24	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4711882	N/A	2016/10/21	Michelle Shearer

Page 10 of 23

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Report Date: 2016/10/24

Relinquished: 2016/10/21 Received: 2016/10/21

Collected: 2016/10/20

 Collected:
 2016/10/20

 Relinquished:
 2016/10/21

 Received:
 2016/10/21



AECOM Canada Ltd. Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	DHE573 Dup EX1-4 (4.0) Soil				Re	Collected: elinquished: Received:	2016/10/20 2016/10/21 2016/10/21
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4712482	2016/10/21	2016/10/24	Crystal Ma	tthews
Maxxam ID: Sample ID: Matrix:	DHE628 EX1-5 (0.0-1.0) Soil				Re	Collected: linquished: Received:	2016/10/20 2016/10/21 2016/10/21
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4712482	2016/10/21	2016/10/24	Crystal Ma	itthews
Moisture		BAL	4712148	N/A	2016/10/23	Kelsey Ma	cGillivray
ModTPH (T1) Calc. for So	il	CALC	4711912	N/A	2016/10/24	Automate	d Statchk
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	4711882	N/A	2016/10/21	Michelle S	hearer
Maxxam ID: Sample ID: Matrix:	DHE629 EX1-6 (2.5-3.5) Soil				Re	Collected: linquished: Received:	2016/10/20 2016/10/21 2016/10/21
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4712472	2016/10/21	2016/10/24	Crystal Ma	tthews
Moisture		BAL	4712148	N/A	2016/10/23	Kelsey Ma	cGillivray
ModTPH (T1) Calc. for So	il	CALC	4711912	N/A	2016/10/24	Automate	d Statchk
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	4711882	N/A	2016/10/21	Michelle S	hearer
Maxxam ID: Sample ID: Matrix:	DHE629 Dup EX1-6 (2.5-3.5) Soil	Instrumontation	Patch	Extracted	Re	Collected: elinquished: Received:	2016/10/20 2016/10/21 2016/10/21
			4712472	2016/10/21	2016/10/24	Cructal Ma	tthowa
Maxxam ID: Sample ID: Matrix:	DHE630 EX1-6 (4.0) Soil	ערידע	4/124/2	2010/10/21	2010/10/24 Re	Collected: elinquished: Received:	2016/10/20 2016/10/21 2016/10/21
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4712472	2016/10/21	2016/10/24	Crystal Ma	tthews
Moisture		BAL	4712148	N/A	2016/10/23	Kelsey Ma	cGillivray
ModTPH (T1) Calc. for So	il	CALC	4711912	N/A	2016/10/24	Automate	d Statchk
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	4711883	N/A	2016/10/21	Thea Holla	ind

TEST SUMMARY

Maxxam ID:	DHE631
Sample ID:	EX1-4 (1.5-2.5)
Matrix:	Soil

Collected: 2016/10/21 **Relinquished:** 2016/10/21 **Received:** 2016/10/21

Collected: 2016/10/21

Received: 2016/10/21

Relinquished: 2016/10/21

 Collected:
 2016/10/21

 Relinquished:
 2016/10/21

 Received:
 2016/10/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4712472	2016/10/21	2016/10/24	Crystal Matthews
Moisture	BAL	4712148	N/A	2016/10/23	Kelsey MacGillivray
ModTPH (T1) Calc. for Soil	CALC	4711912	N/A	2016/10/24	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4711883	N/A	2016/10/21	Thea Holland

Maxxam ID: DHE632 Sample ID: DUP B Matrix: Soil

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4712472	2016/10/21	2016/10/24	Crystal Matthews
Moisture	BAL	4712148	N/A	2016/10/23	Kelsey MacGillivray
ModTPH (T1) Calc. for Soil	CALC	4711912	N/A	2016/10/24	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4711883	N/A	2016/10/21	Thea Holland

Maxxam ID:	DHE633
Sample ID:	DUP C
Matrix:	Soil

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4712472	2016/10/21	2016/10/24	Crystal Matthews
Moisture	BAL	4712148	N/A	2016/10/23	Kelsey MacGillivray
ModTPH (T1) Calc. for Soil	CALC	4711912	N/A	2016/10/24	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4711883	N/A	2016/10/21	Thea Holland

Maxxam ID:	DHE634
Sample ID:	EX2-1 (1.0-2.0)
Matrix:	Soil

Collected:	2016/10/21
Relinquished:	2016/10/21
Received:	2016/10/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4712472	2016/10/21	2016/10/24	Crystal Matthews
Moisture	BAL	4712148	N/A	2016/10/23	Kelsey MacGillivray
ModTPH (T1) Calc. for Soil	CALC	4711912	N/A	2016/10/24	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4711883	N/A	2016/10/21	Thea Holland

Maxxam ID: Sample ID: Matrix:	DHE635 EX2-2 (1.0-2.0) Soil			Collected: Relinquished: Received:	2016/10/21 2016/10/21 2016/10/21

lest Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4712472	2016/10/21	2016/10/24	Crystal Matthews
Moisture	BAL	4712148	N/A	2016/10/23	Kelsey MacGillivray
ModTPH (T1) Calc. for Soil	CALC	4711912	N/A	2016/10/24	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4711883	N/A	2016/10/22	Thea Holland

Page 12 of 23

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TEST SUMMARY

Maxxam ID:	DHE636
Sample ID:	EX2-3 (0.0-1.0)
Matrix:	Soil

Collected: 2016/10/21 Relinquished: 2016/10/21 Received: 2016/10/21

Collected:

Received:

Relinquished:

Relinguished:

2016/10/21

2016/10/21

2016/10/21

2016/10/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4712472	2016/10/21	2016/10/24	Crystal Matthews
Moisture	BAL	4712148	N/A	2016/10/23	Kelsey MacGillivray
ModTPH (T1) Calc. for Soil	CALC	4711912	N/A	2016/10/24	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4711883	N/A	2016/10/22	Thea Holland

Maxxam ID: DHE637 Sample ID: EX2-4 (1.0-2.0) Matrix: Soil

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4712472	2016/10/21	2016/10/24	Crystal Matthews
Moisture	BAL	4712148	N/A	2016/10/23	Kelsey MacGillivray
ModTPH (T1) Calc. for Soil	CALC	4711912	N/A	2016/10/24	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4711883	N/A	2016/10/22	Thea Holland

Maxxam ID: DHE651 Sample ID: EX2-5 (2.0) Matrix: Soil

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4712472	2016/10/21	2016/10/24	Crystal Matthews
Moisture	BAL	4712148	N/A	2016/10/23	Kelsey MacGillivray
ModTPH (T1) Calc. for Soil	CALC	4711912	N/A	2016/10/24	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4711883	N/A	2016/10/22	Thea Holland

Maxxam ID:	DHE652
Sample ID:	DUP D
Matrix:	Soil

Test Description TEH in Soil (PIRI) Moisture

ModTPH (T1) Calc. for Soil

VPH in Soil (PIRI) - Field Preserved

				Received: 2016/10/21	6/10/21	
Instrumentation	Batch	Extracted	Date Analyzed	Analyst		
GC/FID	4712472	2016/10/21	2016/10/24	Crystal Matthews		
BAL	4712148	N/A	2016/10/23	Kelsey MacGillivray		
CALC	4711912	N/A	2016/10/24	Automated Statchk		

2016/10/22

N/A

Maxxam ID:	DHE653	Collected:	2016/10/20
Sample ID:	STP-EX1-1	Relinguished:	2016/10/21
Matrix:	Soil	Received:	2016/10/21

4711883

PTGC/MS

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4714289	2016/10/23	2016/10/23	Crystal Matthews
Moisture	BAL	4712353	N/A	2016/10/24	Victoria Legge
ModTPH (T1) Calc. for Soil	CALC	4712333	N/A	2016/10/24	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4713692	N/A	2016/10/22	Michelle Shearer

Page 13 of 23

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Report Date: 2016/10/24

Collected: 2016/10/21

Collected: 2016/10/21

Received: 2016/10/21

Relinquished: 2016/10/21

Thea Holland



AECOM Canada Ltd. Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID:	DHE654
Sample ID:	STP-EX1-2
Matrix:	Soil

Collected:	2016/10/20
Relinquished:	2016/10/21
Received:	2016/10/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4714708	2016/10/24	2016/10/24	Crystal Matthews
Moisture	BAL	4712353	N/A	2016/10/24	Victoria Legge
ModTPH (T1) Calc. for Soil	CALC	4712333	N/A	2016/10/24	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4713692	N/A	2016/10/22	Michelle Shearer


GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt
Package 1 4.7°C
Note: C of C information incomplete - number of containers not listed on COC. Proceeded with analysis. Client informed.
Note: Labelling issue (label missing and /or incorrect) - STP-EX1-1 listed on COC but 2x60ml jars received labelled as STP-EX1-2 (vials were labelled correctly). No sample ids listed on lids of jars - Proceeded with sample that has faded marker on 60ml jar as EX1-1 and the other 60ml jar as EX1-2 as per A. Dguay. T. Bachiu informed regarding no labels on lids - Proceeded with analysis.
Note: Labelling issue (label missing and /or incorrect) - No sample ids written on lids -Proceeded with analysis. Client informed.
Double water wash and silica gel clean-up performed on soil extracts.
VPH (Samples DHE653-02, DHE654-02): Cold storage conditions for the methanol extracts exceeded acceptable temperature limits. Minimal impact on data quality.
Results relate only to the items tested.



AECOM Canada Ltd. Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
4711882	MS3	Method Blank	1,4-Difluorobenzene	2016/10/21		96	%	60 - 140
			4-Bromofluorobenzene	2016/10/21		99	%	60 - 140
			D4-1,2-Dichloroethane	2016/10/21		94	%	60 - 140
			Isobutylbenzene - Volatile	2016/10/21		100	%	60 - 130
			Benzene	2016/10/21	<0.025		mg/kg	
			Toluene	2016/10/21	<0.025		mg/kg	
			Ethylbenzene	2016/10/21	<0.025		mg/kg	
			Total Xylenes	2016/10/21	<0.050		mg/kg	
			C6 - C10 (less BTEX)	2016/10/21	<2.5		mg/kg	
4711883	THL	Method Blank	1,4-Difluorobenzene	2016/10/21		92	%	60 - 140
			4-Bromofluorobenzene	2016/10/21		90	%	60 - 140
			D4-1,2-Dichloroethane	2016/10/21		90	%	60 - 140
			lsobutylbenzene - Volatile	2016/10/21		93	%	60 - 130
			Benzene	2016/10/21	<0.025		mg/kg	
			Toluene	2016/10/21	< 0.025		mg/kg	
			Fthylbenzene	2016/10/21	< 0.025		mg/kg	
			Total Xylenes	2016/10/21	<0.050		mg/kg	
			C6 - C10 (less BTFX)	2016/10/21	<2.5		mg/kg	
4712472	CMI	Method Blank	n-Dotriacontane - Extractable	2016/10/23	-210	117	%	30 - 130
	••••		Isobutylbenzene - Extractable	2016/10/23		77	%	30 - 130
			>C10-C16 Hydrocarbons	2016/10/23	<10		mø/kø	50 150
			>C16-C21 Hydrocarbons	2016/10/23	<10		mø/kø	
			>C21- <c32 hydrocarbons<="" td=""><td>2010/10/23</td><td><15</td><td></td><td>mø/kø</td><td></td></c32>	2010/10/23	<15		mø/kø	
1712/82	СМІ	Method Blank	n-Dotriacontane - Extractable	2016/10/23	15	101	%	30 - 130
7712702	CIVII	Method Blank	Isobutylbenzene - Extractable	2016/10/23		77	%	30 - 130
			>C10-C16 Hydrocarbons	2016/10/23	<10	,,	mø/kø	50 150
			>C16-C21 Hydrocarbons	2010/10/23	<10		mø/kø	
			>C21- <c32 hydrocarbons<="" td=""><td>2010/10/23</td><td><15</td><td></td><td>mø/kø</td><td></td></c32>	2010/10/23	<15		mø/kø	
1713692	MS3	Method Blank	1 <i>A</i> -Difluorobenzene	2010/10/23	15	91	۳۳6/ Kg %	60 - 140
4713032	10133	Method Blank	4-Bromofluorobenzene	2016/10/22		92	%	60 - 140
			DA-1 2-Dichloroethane	2016/10/22		89	%	60 - 1/0
			Isobutylbenzene - Volatile	2010/10/22		89	%	60 - 130
			Benzene	2010/10/22	<0.025	05	ng/kg	00 150
			Toluene	2010/10/22	<0.025		ma/ka	
			Ethylbenzene	2010/10/22	<0.025		ma/ka	
				2010/10/22	<0.025		mg/kg	
			$C_{6} = C_{10} (loss PTEV)$	2010/10/22	<0.050		mg/kg	
1711280	CMI	Mothod Plank	n Dotriacontano Extractable	2010/10/22	N2.5	101	111g/ Kg 0/	20 120
4714203	CIVII	Methou Bialik		2010/10/23		101	/0 0/	20 120
			>C10 C16 Hydrocarbons	2010/10/23	<10	//	/0 ma/ka	30 - 130
			>CIO-CIO Hydrocarbons	2016/10/23	<10		mg/kg	
			>C10-C21 Hydrocarbons	2010/10/25	<10		ma/ka	
4714700	CNAL	Mathad Blank	>C21- <c32 hydrocarbons<="" td=""><td>2010/10/23</td><td><12</td><td>102</td><td>під/кд</td><td>20 120</td></c32>	2010/10/23	<12	102	під/кд	20 120
4/14/08	CIVII	IVIELITOU BIATIK		2016/10/24		103	70 0/	30 - 130
			SODULYIDEIIZEILE - EXtractable	2016/10/24	-10	73	70 	30 - 130
			>C10-C16 Hydrocarbons	2016/10/24	<10		mg/kg	
			>L1b-L21 Hydrocarbons	2016/10/24	<10		mg/kg	
4712402	C 1 1			2016/10/24	<15		mg/kg	50
4712482	CIVII	גרח [nff2/3-01]		2016/10/24	NC		%	50
			>C16-C21 Hydrocarbons	2016/10/24	NC		%	50
4740	<u> </u>		>C21- <c32 hydrocarbons<="" td=""><td>2016/10/24</td><td>NC</td><td></td><td>%</td><td>50</td></c32>	2016/10/24	NC		%	50
4712472	CMI	KPD [DHE629-01]	>C10-C16 Hydrocarbons	2016/10/24	NC		%	50



AECOM Canada Ltd. Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT(CONT'D)

Batch Init QC Type Parameter Analyzio Value Recovery UNITS OC Limits 4712472 CMI Matrix Spike [DHE629-01] n-Dotriacontane - Extractable 2016/10/24 NC % 50 4712472 CMI Matrix Spike [DHE629-01] n-Dotriacontane - Extractable 2016/10/24 81 % 30 - 130 50 >C16-C16 Hydrocarbons 2016/10/24 83 % 30 - 130 >C16-C16 Hydrocarbons 2016/10/24 81 % 30 - 130 >C16-C21 Hydrocarbons 2016/10/24 81 % 30 - 130 >C21-C32 Hydrocarbons 2016/10/24 81 % 30 - 130 >C16-C21 Hydrocarbons 2016/10/24 81 % 30 - 130 >C16-C21 Hydrocarbons 2016/10/24 84 % 30 - 130 >C16-C21 Hydrocarbons 2016/10/21 92 % 30 - 130 >C16-C21 Hydrocarbons 2016/10/21 92 % 60 - 140 4711882 M53 LCS <td< th=""></td<>
×C16-C21 Hydrocarbons 2016/10/24 NC % 50 4712472 CMI Matrix Spike [DHE629-0] n-Dotriacontane - Extractable 2016/10/24 NC % 50 4712472 CMI Matrix Spike [DHE629-0] n-Dotriacontane - Extractable 2016/10/24 118 % 30 - 130 ×C10-C16 Hydrocarbons 2016/10/24 81 % 30 - 130 ×C10-C16 Hydrocarbons 2016/10/24 81 % 30 - 130 ×C10-C23 Hydrocarbons 2016/10/24 81 % 30 - 130 ×C10-C16 Hydrocarbons 2016/10/24 87 % 30 - 130 ×C10-C16 Hydrocarbons 2016/10/24 87 % 30 - 130 ×C10-C16 Hydrocarbons 2016/10/24 92 % 30 - 130 ×C10-C16 Hydrocarbons 2016/10/24 84 % 30 - 130 ×C10-C16 Hydrocarbons 2016/10/24 92 % 30 - 130 ×C10-C21 Hydrocarbons 2016/10/21 97 % 60 - 140 isobutybenzene
<221-C32 Hydrocarbons 2016/10/24 NC % 50 4712472 CMI Matrix Spike [DHE62-901] n-Dotriacontane - Extractable 2016/10/24 118 % 30 - 130 500-UT/Biterane - Extractable 2016/10/24 81 % 30 - 130 5-C10-C16 Hydrocarbons 2016/10/24 83 % 30 - 130 5-C10-C16 Hydrocarbons 2016/10/24 81 % 30 - 130 5-C10-C16 Hydrocarbons 2016/10/24 81 % 30 - 130 5-C11-C21 Hydrocarbons 2016/10/24 87 % 30 - 130 5-C10-C16 Hydrocarbons 2016/10/24 87 % 30 - 130 5-C10-C16 Hydrocarbons 2016/10/24 87 % 30 - 130 5-C10-C21 Hydrocarbons 2016/10/24 84 % 30 - 130 5-C14-C21 Hydrocarbons 2016/10/21 97 % 60 - 140 4711882 MS3 LCS 1.4-Difluorobenzene 2016/10/21 100 % 60 - 140 4-12-Dichoroethane 20
4712472 CMI Matrix Spike [DHE629-01] n-Dotriacontane - Extractable isobutylbenzene - Extractable >C10-C16 Hydrocarbons 2016/10/24 81 % 30 - 130 4712482 CMI Matrix Spike [DHE573-01] n-Dotriacontane - Extractable >C10-C16 Hydrocarbons 2016/10/24 81 % 30 - 130 4712482 CMI Matrix Spike [DHE573-01] n-Dotriacontane - Extractable 2016/10/24 81 % 30 - 130 47112482 CMI Matrix Spike [DHE573-01] n-Dotriacontane - Extractable 2016/10/24 81 % 30 - 130 4711882 MS3 LCS 1/40/fdivocarbons 2016/10/24 87 % 30 - 130 4711882 MS3 LCS 1/40/fdivocarbons 2016/10/24 84 % 30 - 130 4711882 MS3 LCS 1/40/fdivocarbons 2016/10/21 97 % 60 - 140 4711882 MS3 LCS 1/40/fdivocarbons 2016/10/21 90 % 60 - 140 4711883 THL LCS 1/40/fdivocabenzene 2016/10/21 90 % 60 - 140 100 % 60 - 14
4712482 CMI Matrix Spike [DHES73-01] isobutylbenzene - Extractable >C10-C16 Hydrocarbons 2016/10/24 81 % 30 - 130 4712482 CMI Matrix Spike [DHES73-01] n-Dotriacontane - Extractable 2016/10/24 83 % 30 - 130 4712482 CMI Matrix Spike [DHES73-01] n-Dotriacontane - Extractable 2016/10/24 87 % 30 - 130 3c0-121-C32 Hydrocarbons 2016/10/24 87 % 30 - 130 >C10-C16 Hydrocarbons 2016/10/24 87 % 30 - 130 >C10-C16 Hydrocarbons 2016/10/24 84 % 30 - 130 >C10-C23 Hydrocarbons 2016/10/24 84 % 30 - 130 >C10-C32 Hydrocarbons 2016/10/21 97 % 60 - 140 DA1, 2-Dichlorobenzene 2016/10/21 97 % 60 - 140 D41, 2-Dichlorobenzene 2016/10/21 96 % 60 - 140 Benzene 2016/10/21 96 % 60 - 140 Toluene 2016/10/21 96
*C10-C16 Hydrocarbons 2016/10/24 85 % 30 - 130 *C10-C16 Hydrocarbons 2016/10/24 83 % 30 - 130 *C10-C16 Hydrocarbons 2016/10/24 81 % 30 - 130 4712482 CMI Matrix Spike [DHE573-01] n-Dotriacontane - Extractable 2016/10/24 81 % 30 - 130 5C10-C16 Hydrocarbons 2016/10/24 87 % 30 - 130 >C10-C16 Hydrocarbons 2016/10/24 87 % 30 - 130 >C10-C16 Hydrocarbons 2016/10/24 87 % 30 - 130 >C10-C16 Hydrocarbons 2016/10/24 84 % 30 - 130 >C10-C16 Hydrocarbons 2016/10/21 97 % 60 - 140 4711882 MS3 LCS 1.4-Difluorobenzene 2016/10/21 97 % 60 - 140 14-12-Dichlorobenzene 2016/10/21 97 % 60 - 140 140 150bttylbenzene - Volatile 2016/10/21 98 % 60 - 140 140 140 1
4712482 CMI Matrix Spike [DHE573-01] n-Dotriacontane - Extractable 2016/10/24 83 % 30 - 130 4712482 CMI Matrix Spike [DHE573-01] n-Dotriacontane - Extractable 2016/10/24 81 % 30 - 130 4712482 CMI Matrix Spike [DHE573-01] n-Dotriacontane - Extractable 2016/10/24 87 % 30 - 130 4711882 MS3 LCS 1.4-Difluorobenzene 2016/10/24 84 % 30 - 130 4711882 MS3 LCS 1.4-Difluorobenzene 2016/10/21 97 % 60 - 140 4-Bromofluorobenzene 2016/10/21 97 % 60 - 140 1sobutylbenzene - Volatile 2016/10/21 90 % 60 - 140 1sobutylbenzene - Volatile 2016/10/21 90 % 60 - 140 1sobutylbenzene - Volatile 2016/10/21 90 % 60 - 140 1sobutylbenzene - Volatile 2016/10/21 100 % 60 - 140 14-Difluorobenzene 2016/10/21 14
 >C21-<c32 hydrocarbons<="" li=""> 2016/10/24 81 30 - 130 30 - 140 <li< td=""></li<></c32>
4712482 CMI Matrix Spike [DHE573-01] n-Dotriacontane - Extractable 2016/10/24 113 % 30 - 130 1 Sobutylbenzene - Extractable 2016/10/24 87 % 30 - 130 2 Sc10-C16 Hydrocarbons 2016/10/24 92 % 30 - 130 2 Sc10-C16 Hydrocarbons 2016/10/24 92 % 30 - 130 3 Sc11-C21 Hydrocarbons 2016/10/24 84 % 30 - 130 4711882 MS3 LCS 1,4-Difluorobenzene 2016/10/21 97 % 60 - 140 4711882 MS3 LCS 1,4-Difluorobenzene 2016/10/21 100 % 60 - 140 14 Bronofluorobenzene 2016/10/21 100 % 60 - 140 15 Benzene 2016/10/21 100 % 60 - 140 1711883 THL LCS 1,4-Difluorobenzene 2016/10/21 100 % 60 - 140 16 Hylenzene 2016/10/21 100 % 60 - 140 1711883 THL LCS 1,4-Difluorobenzene
4711883 THL LCS 1,4-Difluorobenzene 2016/10/24 87 % 30 - 130 4711882 MS3 LCS 1,4-Difluorobenzene 2016/10/24 92 % 30 - 130 4711882 MS3 LCS 1,4-Difluorobenzene 2016/10/24 84 % 30 - 130 4711882 MS3 LCS 1,4-Difluorobenzene 2016/10/21 97 % 60 - 140 4-Bromofluorobenzene 2016/10/21 100 % 60 - 140 44-Bromofluorobenzene 2016/10/21 100 % 60 - 140 Benzene 2016/10/21 100 % 60 - 140 Toluene 2016/10/21 96 % 60 - 140 Toluene 2016/10/21 100 % 60 - 140 4711883 THL LCS 1,4-Difluorobenzene 2016/10/21 82 % 60 - 140 4711883 THL LCS 1,4-Difluorobenzene 2016/10/21 81 % 60 - 140 10-10-10
×C10-C16 Hydrocarbons 2016/10/24 104 % 30 - 130 ×C16-C21 Hydrocarbons 2016/10/24 92 % 30 - 130 ×C10-C32 Hydrocarbons 2016/10/24 92 % 30 - 130 ×C10-C32 Hydrocarbons 2016/10/24 84 % 30 - 130 ×C11-C32 Hydrocarbons 2016/10/21 97 % 60 - 140 4-Bromofluorobenzene 2016/10/21 100 % 60 - 140 D4-1,2-Dichloroethane 2016/10/21 100 % 60 - 140 Isobutylbenzene - Volatile 2016/10/21 99 % 60 - 140 Toluene 2016/10/21 90 % 60 - 140 Toluene 2016/10/21 90 % 60 - 140 Toluene 2016/10/21 100 % 60 - 140 Toluene 2016/10/21 100 % 60 - 140 Toluene 2016/10/21 100 % 60 - 140 4711883 THL LCS 1,4-Difluorobenzene 2016/10/21 81 % 60 - 140 Toluene 2016/10/21 100 % 60 - 140 140 04 + 1,2-Dichloroet
4711882 MS3 LCS 1,4-Difluorobenzene 2016/10/24 84 % 30 - 130 4711882 MS3 LCS 1,4-Difluorobenzene 2016/10/21 97 % 60 - 140 4-Bromofluorobenzene 2016/10/21 95 % 60 - 140 D4-1,2-Dichloroethane 2016/10/21 95 % 60 - 140 Benzene 2016/10/21 95 % 60 - 140 Isobutylbenzene - Volatile 2016/10/21 96 % 60 - 140 Benzene 2016/10/21 96 % 60 - 140 Toluene 2016/10/21 96 % 60 - 140 Ethylbenzene 2016/10/21 100 % 60 - 140 4711883 THL LCS 1,4-Difluorobenzene 2016/10/21 100 % 60 - 140 4711883 THL LCS 4-Bromofluorobenzene 2016/10/21 81 % 60 - 140 14-1,2-Dichloroethane 2016/10/21 81 % 60 - 140 14-1,2-Dichloroethane 2016/10/21 84 % 60 - 140 14-1,2-Dichloroethane 2016/10/21 <t< td=""></t<>
 C21-C32 Hydrocarbons 2016/10/24 84 30 - 130 4711882 MS3 LCS 1,4-Difluorobenzene 2016/10/21 97 60 - 140 4-Bormofluorobenzene 2016/10/21 95 60 - 140 D4-1,2-Dichloroethane 2016/10/21 96 60 - 140 100 60 - 140 140 /ul>
4711882 MS3 LCS 1,4-Diffuorobenzene 2016/10/21 97 % 60 140 4-Bromofluorobenzene 2016/10/21 100 % 60 140 D4-1,2-Dichloroethane 2016/10/21 100 % 60 140 Isobutylbenzene - Volatile 2016/10/21 99 % 60 140 Isobutylbenzene - Volatile 2016/10/21 99 % 60 140 Toluene 2016/10/21 99 % 60 140 Toluene 2016/10/21 96 % 60 140 Toluene 2016/10/21 96 % 60 140 Total Xylenes 2016/10/21 100 % 60 140 4711883 THL LCS 1,4-Difluorobenzene 2016/10/21 81 % 60 140 4711883 THL LCS 1,4-Difluorobenzene 2016/10/21 81 % 60 140 4711883 THL LCS 1,4-Difluorobenzene 2016/10/21 84 % 60 140 4711883 THL LCS 1,4-Difluorobenzene 2016/10/21 84 % 60
4-Bromofluorobenzene 2016/10/21 100 % 60 140 D4-1,2-Dichloroethane 2016/10/21 95 % 60 140 Jsobutylbenzene - Volatile 2016/10/21 99 % 60 140 Isobutylbenzene - Volatile 2016/10/21 99 % 60 140 Benzene 2016/10/21 99 % 60 140 Toluene 2016/10/21 99 % 60 140 Total Xylenes 2016/10/21 90 % 60 140 4711883 THL <lcs< td=""> 1,4-Difluorobenzene 2016/10/21 81 % 60 140 4711883 THL<lcs< td=""> 1,4-Difluorobenzene 2016/10/21 81 % 60 140 04-1,2-Dichloroethane 2016/10/21 81 % 60 140 D4-1,2-Dichloroethane 2016/10/21 81 % 60 140 D4-1,2-Dichloroethane 2016/10/21 84 % 60 140 D4-1,2-Dichloroethane 2016/10/21 79 % 60 140 Toluene 2016/10/21 79 % 60 140 Toluene <t< td=""></t<></lcs<></lcs<>
D4-1,2-Dichloroethane 2016/10/21 95 % 60-140 Isobutylbenzene - Volatile 2016/10/21 100 % 60-130 Benzene 2016/10/21 99 % 60-140 Toluene 2016/10/21 96 % 60-140 Toluene 2016/10/21 100 % 60-140 Total Xylenes 2016/10/21 100 % 60-140 4711883 THL <lcs< td=""> 1,4-Diffluorobenzene 2016/10/21 82 % 60-140 4711883 THL<lcs< td=""> 1,4-Diffluorobenzene 2016/10/21 81 % 60-140 4711883 THL<lcs< td=""> 1,4-Diffluorobenzene 2016/10/21 81 % 60-140 4711883 THL<lcs< td=""> 1,4-Diffluorobenzene 2016/10/21 84 % 60-140 Isobutylbenzene - Volatile 2016/10/21 84 % 60-140 Isobutylbenzene 2016/10/21 84 % 60-140 Total Xylenes 2016/10/21 84 %<!--</td--></lcs<></lcs<></lcs<></lcs<>
4711883 THL LCS No Field Definition 4711883 THL LCS 1,4-Diffuorobenzene 2016/10/21 99 % 60 - 140 4711883 THL LCS 1,4-Diffuorobenzene 2016/10/21 100 % 60 - 140 4711883 THL LCS 1,4-Diffuorobenzene 2016/10/21 100 % 60 - 140 4711883 THL LCS 1,4-Diffuorobenzene 2016/10/21 82 % 60 - 140 4711883 THL LCS 1,4-Diffuorobenzene 2016/10/21 81 % 60 - 140 4711883 THL LCS 1,4-Diffuorobenzene 2016/10/21 81 % 60 - 140 Benzene 2016/10/21 81 % 60 - 140 130 Benzene 2016/10/21 84 % 60 - 140 Isobutylbenzene - Volatile 2016/10/21 79 % 60 - 140 130 130 130 130 130 130 130 130 130<
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4711883 THL LCS 1,4-Difluore 2016/10/21 96 % 60 - 140 4711883 THL LCS 1,4-Difluorobenzene 2016/10/21 100 % 60 - 140 4711883 THL LCS 1,4-Difluorobenzene 2016/10/21 81 % 60 - 140 4711883 THL LCS 1,4-Difluorobenzene 2016/10/21 81 % 60 - 140 4711883 THL LCS 1,4-Difluorobenzene 2016/10/21 81 % 60 - 140 4711883 THL LCS 1,4-Difluorobenzene 2016/10/21 81 % 60 - 140 450butylbenzene - Volatile 2016/10/21 84 % 60 - 140 Benzene 2016/10/21 79 % 60 - 140 Toluene 2016/10/21 84 % 60 - 140 4712472 CMI LCS n-Dotriacontane - Extractable 2016/10/21 84 % 60 - 140 4712472 CMI LCS n-Dotriacontane - Extractable 2016/10/24 83 % 30 - 130 S
4711883 THL LCS 1,4-Difluorobenzene 2016/10/21 100 % 60 - 140 4711883 THL LCS 1,4-Difluorobenzene 2016/10/21 82 % 60 - 140 4711883 THL LCS 1,4-Difluorobenzene 2016/10/21 81 % 60 - 140 4-Bromofluorobenzene 2016/10/21 81 % 60 - 140 1sobutylbenzene - Volatile 2016/10/21 81 % 60 - 140 Isobutylbenzene - Volatile 2016/10/21 84 % 60 - 140 Benzene 2016/10/21 79 % 60 - 140 Total Xylenes 2016/10/21 79 % 60 - 140 Fthylbenzene 2016/10/21 79 % 60 - 140 Total Xylenes 2016/10/21 84 % 60 - 140 4712472 CMI LCS n-Dotriacontane - Extractable 2016/10/24 83 % 30 - 130 Isobutylbenzene - Extractable 2016/10/24 83 % 30 - 130 > 216-C21 Hydrocarbons 2016/10/24 81 % 30
4711883 THL LCS 100 % 60 140 4711883 THL LCS 1,4-Difluorobenzene 2016/10/21 82 % 60 140 4-Bromofluorobenzene 2016/10/21 81 % 60 140 D4-1,2-Dichloroethane 2016/10/21 81 % 60 140 D4-1,2-Dichloroethane 2016/10/21 81 % 60 140 Isobutylbenzene - Volatile 2016/10/21 84 % 60 140 Benzene 2016/10/21 79 % 60 140 Toluene 2016/10/21 79 % 60 140 Total Xylenes 2016/10/21 79 % 60 140 4712472 CMI LCS n-Dotriacontane - Extractable 2016/10/21 84 % 60 140 4712472 CMI LCS n-Dotriacontane - Extractable 2016/10/24 115 % 30 130 Isobutylbenzene - Extractable 2016/10/24 83 % 30 130 30 130
4711883 THL LCS 1,4-Difluorobenzene 2016/10/21 82 % 60 - 140 4-Bromofluorobenzene 2016/10/21 81 % 60 - 140 D4-1,2-Dichloroethane 2016/10/21 81 % 60 - 140 D4-1,2-Dichloroethane 2016/10/21 81 % 60 - 140 Isobutylbenzene - Volatile 2016/10/21 84 % 60 - 140 Benzene 2016/10/21 79 % 60 - 140 Toluene 2016/10/21 79 % 60 - 140 Ethylbenzene 2016/10/21 79 % 60 - 140 4712472 CMI LCS n-Dotriacontane - Extractable 2016/10/21 84 % 60 - 140 4712472 CMI LCS n-Dotriacontane - Extractable 2016/10/24 83 % 30 - 130 4712472 CMI LCS n-Dotriacontane - Extractable 2016/10/24 83 % 30 - 130 4712472 CMI LCS n-Dotriacontane - Extractable 2016/10/24 81 % 30 - 130 A10 Sc
4-Bromofluorobenzene 2016/10/21 81 % 60 140 D4-1,2-Dichlorobenzene 2016/10/21 81 % 60 140 Isobutylbenzene - Volatile 2016/10/21 84 % 60 130 Benzene 2016/10/21 79 % 60 140 Toluene 2016/10/21 79 % 60 140 Toluene 2016/10/21 79 % 60 140 4712472 CMI LCS n-Dotriacontane - Extractable 2016/10/21 84 % 60 140 4712472 CMI LCS n-Dotriacontane - Extractable 2016/10/24 115 % 30 130 AC10-C16 Hydrocarbons 2016/10/24 83 % 30 130 AC10-C16 Hydrocarbons 2016/10/24 81 % 30 130 AC10-C16 Hydrocarbons 2016/10/24 81 % 30 130 AC10-C16 Hydrocarbons 2016/10/24 72 % 30 30 130 AC10-C16 Hydrocarbons 2016/10/23 108 % 30 130 AC10-C16 Hydrocarbons 2016/10/23 108 % 30<
4712472 CMI LCS D4-1,2-Dichloroethane 2016/10/21 81 % 60 - 140 Isobutylbenzene - Volatile 2016/10/21 84 % 60 - 140 Benzene 2016/10/21 79 % 60 - 140 Toluene 2016/10/21 79 % 60 - 140 Toluene 2016/10/21 79 % 60 - 140 Total Xylenes 2016/10/21 84 % 60 - 140 4712472 CMI LCS n-Dotriacontane - Extractable 2016/10/21 84 % 60 - 140 4712472 CMI LCS n-Dotriacontane - Extractable 2016/10/24 84 % 60 - 140 4712472 CMI LCS n-Dotriacontane - Extractable 2016/10/24 83 % 30 - 130 Sobutylbenzene - Extractable 2016/10/24 83 % 30 - 130 >C16-C21 Hydrocarbons 2016/10/24 81 % 30 - 130 >C21- <c32 hydrocarbons<="" td=""> 2016/10/23 108 % 30 - 130 A712482 CMI LCS n-Dotriacontane - Extractable<</c32>
4712472 CMI LCS N-Dotriacontane Extractable 2016/10/21 84 % 60 - 130 4712482 CMI LCS n-Dotriacontane - Extractable 2016/10/21 79 % 60 - 140 4712472 CMI LCS n-Dotriacontane - Extractable 2016/10/21 84 % 60 - 140 4712472 CMI LCS n-Dotriacontane - Extractable 2016/10/21 84 % 60 - 140 4712472 CMI LCS n-Dotriacontane - Extractable 2016/10/21 84 % 60 - 140 4712472 CMI LCS n-Dotriacontane - Extractable 2016/10/24 115 % 30 - 130 Sobutylbenzene - Extractable 2016/10/24 83 % 30 - 130 4712482 CMI LCS n-Dotriacontane - Extractable 2016/10/24 81 % 30 - 130 4712482 CMI LCS n-Dotriacontane - Extractable 2016/10/23 108 % 30 - 130 Sobutylbenzene - Extractable 2016/10/23 108 % 30 - 130 30 - 130
4712472 CMI LCS n-Dotriacontane - Extractable 2016/10/21 79 % 60 - 140 4712482 CMI LCS n-Dotriacontane - Extractable 2016/10/21 84 % 60 - 140 4712472 CMI LCS n-Dotriacontane - Extractable 2016/10/21 84 % 60 - 140 4712472 CMI LCS n-Dotriacontane - Extractable 2016/10/24 115 % 30 - 130 4712472 CMI LCS n-Dotriacontane - Extractable 2016/10/24 83 % 30 - 130 4712472 CMI LCS n-Dotriacontane - Extractable 2016/10/24 83 % 30 - 130 4712472 CMI LCS n-Dotriacontane - Extractable 2016/10/24 85 % 30 - 130 AC10-C16 Hydrocarbons 2016/10/24 81 % 30 - 130 AC12- N-Dotriacontane - Extractable 2016/10/23 108 % 30 - 130 AC10-C16 Hydrocarbons 2016/10/23 108 % 30 - 130 AC10-C16 Hydrocarbons 2016/10/
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4712482 CMI LCS n-Dotriacontane - Extractable 2016/10/23 108 % 30 - 130 Isobutylbenzene - Extractable 2016/10/23 85 % 30 - 130 >C10-C16 Hydrocarbons 2016/10/23 96 % 30 - 130
Isobutylbenzene Extractable 2016/10/23 85 % 30 - 130 >C10-C16 Hydrocarbons 2016/10/23 96 % 30 - 130
>C10-C16 Hydrocarbons 2016/10/23 96 % 30 - 130
>C16-C21 Hydrocarbons 2016/10/23 91 % 30 - 130
>C1-C(3) Hydrocarbons 2016/10/23 85 % 30 - 130
4713692 MS3 LCS 1 4-Difluorobenzene 2016/10/22 104 % 60 - 140
4-Bromofluorobenzene 2016/10/22 107 % 60 - 140
D4-1 2-Dichloroethane 2016/10/22 104 % 60 - 140
Isobutylbenzene - Volatile 2016/10/22 104 % 60 - 130
Benzene 2016/10/22 102 % 60 - 140
Toluene 2016/10/22 100 % 60 - 140
Ethylbenzene 2016/10/22 104 % 60 - 140
Total Xvlenes 2016/10/22 104 % 60 - 140
4714289 CMI_LCS n-Dotriacontane - Extractable 2016/10/23 100 % 30 - 130
Isobutylbenzene - Extractable 2016/10/23 79 % 30 - 130
>C10-C16 Hydrocarbons 2016/10/23 88 % 30 - 130
>C16-C21 Hydrocarbons 2016/10/23 85 % 30 - 130
>C21- <c32 %="" -="" 10="" 130<="" 2016="" 23="" 30="" 80="" hydrocarbons="" td=""></c32>



AECOM Canada Ltd. Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
4714708	CMI	LCS	n-Dotriacontane - Extractable	2016/10/24		106	%	30 - 130
			Isobutylbenzene - Extractable	2016/10/24		80	%	30 - 130
			>C10-C16 Hydrocarbons	2016/10/24		90	%	30 - 130
			>C16-C21 Hydrocarbons	2016/10/24		87	%	30 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2016/10/24</td><td></td><td>65</td><td>%</td><td>30 - 130</td></c32>	2016/10/24		65	%	30 - 130

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.

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



AECOM Canada Ltd. Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

VALIDATION SIGNATURE PAGE

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

Oen 2 Howard

Alan Stewart, Organics Manager, Bedford

Deven 20

Phil Deveau, Scientific Specialist (Organics)

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



Success Through Science®

DATA QUALITY WAIVER

2016/10/24 04:26 PM

Invoice Clie Invoice Clie Invoice Pro	nt Name: AECOM Cana nt ID #: 30110 ject Manager: Accounts	da Ltd s Payable		S C	Maxxam Job #: B6M7459 Site Location: 64 MILL LAKE RD, HUBBARDS, NS Client Project #: 60438249						
Report To Report To Report To Maxxam Pr	Client Name: AECOM C Client ID #: 19160 Project Manager: Tim B oject Manager: Keri Ma	anada Ltd. Sachiu ackay		T C C F	rask #: N/A - CTC Quote: B62542 COC/Submission #: 5778 RAT: 3 Days Rush: Yes	338-05-01	Received Rece DQ DQW Created DQW Created	d By: Erica Chafe ived: 2016/10/21 09:56 W #: 2702 d By: Suzanne Rogers ated: 2016/10/24 15:25			
Lab ID	Client Sample ID	Matrix	Test Code	Analysis Type	Parameters	Deviation	Root Cause	Potential Impact			
DHE564	EX1-7 (0.0-1.0)	Soil	VPHMEOH-S	ТРНС	Sample	#11 Improper Sample Storage Conditions	#10 Lab Error	This may represent a low bias for parameters subject to volatilization or degradation.			
DHE568	EX1-10 (1.5-2.5)	Soil	VPHMEOH-S	ТРНС	Sample	#11 Improper Sample Storage Conditions	#10 Lab Error	This may represent a low bias for parameters subject to volatilization or degradation.			
Waiver Issu Signature:	ed By:	dizani	Roger	U	Date: 2016/10/24 1	5:28	Name: Title:	Suzanne Rogers Manager, Client Services			
Data Qualit	y Waiver Reviewed ar	nd Accepted I	Ву:				Name:				
Signature:					Date:		Title:				
Data Quality	y Waiver Reviewed and	Declined By:					Name:				
Signature:					Date:		Title:				
Comments ,	/ Requested Actions:										

If this waiver is not returned, or the undersigned Maxxam Analytics representative not contacted within 7 days of issuance, the issue will be regarded as closed and the associated data will be deemed acceptable as reported.

Maxlam	200 Bluewater Bedford, Nova www.maxxam.	Road Scotia B4B ⁻ ca	IG9	Pho F Toll F	ne: (902) 4 ax: (902) 4 Free: 800-5	20-0203 20-8612 63-6266		ê		EXX	ONN CHA	IOBIL/ IN-OF ANAL	IMPE -CUS YSIS F	RIAL TOD REQU	OIL · Y REC	MAX) CORD	КАМ		Pa C of C # 57	age \ of 7838-05-	3	- III	577838
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Contact Name:		Contact N	ame:				-													1			
Address:		Address:	1				-																
1701 Hollis Street		1701 Hollis	Street																				
Halifax NS B3J 3M8		Halifax NS	B3J 3M8																				
Email: CANSSC.E-billing@a	ecom.com, timoth	Email:	Time	othy.bachiu@aec	om.com, L	aura.Macl	s ('sa																
Phone: (902) 428-2048 x	8	Phone:	(902) 428-2048 x			eld p	ŝ	(WIS	7													
Sampler Name (Print):		Consultan	t Project	#: 438249			in Soll (fi	tr. ICPM	GCMS (S	reserved													
The projour	- 0	MATRIX		SAMPLI	NG	NO NO	suo	id Ex	s by (eld P													
FIELD SAMPLE ID	SROUND WATER SURFACE	VATER SOIL	¢ CONTAINERS	DATE (YYYYY/MM/DD)	TIME (24 HR)	FIELD FILTERE PRESERVEL LAB FILTRATIO	RCA Hydrocart	detals Solids Ac	AH Compound	/OCs in Soil - Fi													
1 EX1-7 (0.0-1.0)		×		2016/10/20	17:02	_	X																
2 FX1-8 (0.5-1.5)	*	X		2016/10/20	MANA		T																
3 FX1-8(110)		X		2016/10/20	17:27																		
4 511-9 (10-2.0)				2016/10/20	117:29			1	-						1								
5 EVI-10 (15-25		$ \hat{\mathbf{v}} $		anichalon	mel		11																
6 EVI-10 (10)	· · · · · · · · · · · · · · · · · · ·			aniatis lan	10-66		++-	-	-												- C - 1		
7 541 2 (0.0-2)	\sim			2010/10/20	10.00													_					
EXI-3 (2.0-5.0	<u>, </u>		+	2016/16/20	19.15		++								1								
* EXI-X (3.5-4.0	· · · · ·			2016/10/20	16:25		++	-															
* EXI-1 (3.0-4.01		_ <u>X</u> _	_	2016/10/20	18:44						1					-							
1º EXI-4 (4.0)		X		2014/10/20	18:54		V										1000	# 100	PO LISED		TUDNA	DOUNT	
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MaxJam	200 Bluewate Bedford, Nov www.maxxan	er Road va Scotia I n.ca	34B 1G	9	Pho F Toll	one: (902) ⁻ ax: (902) Free: 800-	420-0203 420-8612 563-6266				EXX	ONM CHA	IOBIL/ IN-OF ANAL	IMPER -CUST YSIS RI	RIAL (TODY EQUES	OIL - REC	MAXXA ORD	A <i>M</i>		Pa C of C # 57	ige 2 of 7838-50-	3 01	5	77838
INVOICE INFORMAT Company Name:AECOM Canada L	td	Comp	any Na	REPOR me:AECO	T INFORMA M Canada L	td.			1	1			1											
Contact Name:		Conta	ct Nam	ie:		-		-		-										_				
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Halifax NS B3J 3M8		Halifa	x NS B	3J 3M8																				
Email: CANSSC.E-billing@a	aecom.com, timol	th Email	:	Timothy.	bachiu@aeo	com.com, L	aura.Mac	ls ('sau																
Phone: (902) 428-2048 x		Phon	e:	(902) 42	8-2048 x			feld p	ş	(WIS	σ													
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2 EV1-6 (25-35) "	×		20	whoho	18:35		1																
3 EVI-6 (4.0)		X	-	20	6/10/20	18:00		+1																
4 EV1-4 (15-25	>	X	1	20	10/10/21	08:15		++	1			-									-			
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* EX2-2 (1.0-2.0)				20	16/10/21	07.15				-			-					_						-
* EXX-3 (0.0-1.0)		X		20	16/10/21	07:20			/	_														_
10 EX 2-4 (1.0-2.0)		X		20	16/10/2/	07:25		V		TIONU	MITC			INCTO					#.IA	RS USED		TUDNA	POLIND .	TIME
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INVOICE INFORMATION				RE	PORT INFORMA	TION		_														-	,				
Company Name: AECOM Canada Ltd		Compa	iny Na	me:AE	COM Canada L	td.																					
Contact Name:		Contac	t Nam	e:	1.00																						
Accounts Payable		Tim Ba	chiu																			-		-			
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Email: CANSSC.E-billing@aecom.com	m, timoth	Email:		Time	othy.bachiu@aed	om.com, L	aura.Ma	acls	es.)																		
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1 EX2-5 (2.0)		X			2016/10/21	07:30			X																		
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LU WILL AV RI 11 1	1.	NIC	-			LOOLAN	UKT CF		A / DL	TLOT		wino.		SPECIA	LINGT	RUGH	UNO.					AND N	OT	Stand	ard	(5 days)	
IOL PROJECT # (if applicable)	10.5	10	>		^		ĩ	~	7						1							Enter N	I/A for	Rush		(3 days)	
AIA-T.I. C.I.(P	Man	hr	Pi	ri					N	ONE	2						Water	2			(2 days)	
MAXYAM TASK OPDER # OR SERVICE OPI	DER #+1	INE ITE	M			n juni)	IC	1	1 /													4	S			(1 day)	
- AIA TOUS CIK	DEIN																							20	16/10	121	9621
VV4-LOL CEC						VEC	NOLCO		10.			_					VES	NOLC		ID:			_		Dat	e Required	
SEAL PRESENT	6	4	6	s	EAL PRESENT	TES	NOCO	JOLER	ID:	1	-	1	-	SEAL PR	ESENT		TES	NUC	JOLEK	ID:				-	LABI	JSE ONL	Ý
SEAL INTACT	1 1	2	3	1010	EAL INTACT	SENT	– "	°C	3		2		3	SEAL INT	ACT MEDIA P	RESENT		- '	°C	1		2	3		MAX	AM JOB	#
RELINQUISHED BY:				DAT	E:	TIME (2	4 HR)	R	CEIVE	ED BY	2							1	DATE:		_	TIME (2	24 HR)	1 1	BGM	1745	9
1. Melton	Novi	Jan	du	20	10/21	04	1:00	1.	And	to	Dynu.	118		Ai	(50M)	WA	DAG	25	20	10/10	121	09:0	36		SA	MPLES	1
2	print	hed of me	1	100	YYYYAMAOD	1.11	t-Albat	2.	0.00		aigeathi	0		1	p	intest na	une		766	SMMD	12	Ęų.	r.MM	LAB	ELED B	1: VERI	FIED BY:
3. signature	pitint	ed name			YYYYYAMOO	248	t habe	3.			tignálu	16			jP	linteed the	6111		-9787	YAMAD	D:	Bß	1.44W	8	C	14	\sim
COC - 1009 (2013) IOL - NS			White	Maxxan	0			Yello	w: Client	8																	

ΑΞϹΟΜ

Data Quality Review Checklist

Consultant: Al	ECOM			Sampling Date: 2016/10/20, 2016/10/21								
Location: 64	I MILL LA	\KE RD. N S <u>, NS</u>	NO2 <i>,</i>	Laboratory: Maxxam								
Consultant Project Number: 60)438249			Sample Submission Number: B6M7459								
Are All Laboratory QC Samples V	Nithin Ac	ceptance	e Criteria	(Yes, No, Not Applicable)?								
	Yes	No	NA	Comments								
Instrument Surrogate Recovery	\boxtimes											
Extraction Surrogate Recovery				VPH surrogate(s) not within reference method but within client specified acceptance limits. Analysis was repeated with similar results.								
Method Blank Concentration	\boxtimes											
Matrix Duplicate RPD			NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).									
Matrix Spike Recovery	\boxtimes											
Lab Control Sample Recovery	\boxtimes											
Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?												
ļ	Yes	No	NA	Comments								
Field Blank Concentration												
Trip Blank Concentration												
Field Duplicate RPD	\boxtimes											
Has CoA been signed off?	in ototioti			⊻ Yes □ No								
Has lab warranted all tests were a	n statisti enalyzed	following		$\begin{array}{cccccccccccccccccccccccccccccccccccc$								
Were all samples analyzed within	hold tim	ies?	y 001 0 1	⊠ Yes □ No								
All volatiles samples methanol ex	dracted (if require	d) within	48 hours? ⊠ Yes □ No								
Is Chain of Custody completed ar	nd signed	1?	-,	⊠ Yes □ No								
Were sample temperatures accer	ptable wh	ien they	reached I	lab?⊠ Yes □ No								
Is data considered to be reliable? If answer is "No", describe and pr	data considered to be reliable?⊠ Yes □ No answer is "No", describe and provide rationale:											
				Ι								
Reviewed by (Print): Janic Date: Octo	ce Shea ober 8, 20)19		Reviewed by (Signature):								



Attention:Tim Bachiu

B3J 3M8

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax. NS CANADA

Task Order#: CTC Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 577838-49-01

> Report Date: 2016/10/26 Report #: R4224245 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6N0599

Received: 2016/10/25, 16:59

Sample Matrix: Soil # Samples Received: 6

Analyses	Quantity	Laboratory Method	Primary Reference
TEH in Soil (PIRI) (1)	6	ATL SOP 00111	Atl. RBCA v3 m
Moisture	6	ATL SOP 00001	OMOE Handbook 1983 m
Double water wash (soil)	6	ATL SOP 00111	N/A
Silica Gel Clean-up (Soil)	6	ATL SOP 00111	EPA 3630C R3 m
ModTPH (T1) Calc. for Soil	6	N/A	Atl. RBCA v3 m
VPH in Soil (PIRI) - Field Preserved (2)	6	ATL SOP 00119	Atl. RBCA v3 m

Remarks:

All work recorded herein has been performed in accordance to the ISO 17025 standard. Methods used by Maxxam Analytics are based upon accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing.

Maxxam Analytics is accredited by Standards Council of Canada (SCC). Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract.

All data is in statistical control and has met all QC and method performance criteria unless otherwise flagged. All samples were analysed within hold time unless otherwise flagged. All soil samples for BTEX analysis were methanol extracted within 24 hours unless otherwise flagged.

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) Soils are reported on a dry weight basis unless otherwise specified.

(2) No lab extraction date is given for C6-C10/BTEX and VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.

Encryption Key

heri Mackay Project Manager - Bedford 26 Oct 2016 16:59:19 -03:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Keri Mackay, Project Manager - Bedford Email: kmackay@maxxam.ca Phone# (902)420-0203 Ext:294

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



RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		DHW248	DHW249	DHW250	DHW251	DHW252		
Sampling Date		2016/10/25 15:00	2016/10/25 15:10	2016/10/25 15:20	2016/10/25 15:30	2016/10/25 15:40		
COC Number		577838-49-01	577838-49-01	577838-49-01	577838-49-01	577838-49-01		
	UNITS	STP-EX1-3	STP-EX1-4	EX1-14 (2.0-3.0)	EX1-11 (1.5-2.5)	EX1-12 (2.0-3.0)	RDL	QC Batch
Inorganics								
Moisture	%	8.9	9.6	11	8.7	12	1.0	4718258
Petroleum Hydrocarbons								
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	4718281
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	4718281
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	4718281
Total Xylenes	mg/kg	<0.050	<0.050	<0.050	0.13	<0.050	0.050	4718281
C6 - C10 (less BTEX)	mg/kg	<2.5	3.4	<2.5	18	<2.5	2.5	4718281
>C10-C16 Hydrocarbons	mg/kg	170	110	<10	56	14	10	4718306
>C16-C21 Hydrocarbons	mg/kg	88	54	<10	28	15	10	4718306
>C21- <c32 hydrocarbons<="" p=""></c32>	mg/kg	25	18	<15	<15	<15	15	4718306
Modified TPH (Tier1)	mg/kg	280	190	<15	100	29	15	4717454
Reached Baseline at C32	mg/kg	Yes	Yes	NA	Yes	Yes	N/A	4718306
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	COMMENT (1)	NA	COMMENT (2)	COMMENT (2)	N/A	4718306
Extraction Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	91	88	87	85	86		4718306
n-Dotriacontane - Extractable	%	101	98	102	103	101		4718306
Isobutylbenzene - Volatile	%	97	98	103	96	100		4718281
Instrument Surrogate Recovery (%)								
1,4-Difluorobenzene	%	100	97	103	96	100		4718281
4-Bromofluorobenzene	%	103	99	105	98	103		4718281
D4-1,2-Dichloroethane	%	100	96	101	95	99		4718281
RDL = Reportable Detection Lim	it							

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Fuel oil fraction.

(2) Weathered fuel oil fraction.



Maxxam ID		DHW253		
Sampling Date		2016/10/25 15:50		
COC Number		577838-49-01		
	UNITS	EX1-13 (2.5-3.5)	RDL	QC Batch
Inorganics				
Moisture	%	8.9	1.0	4718258
Petroleum Hydrocarbons				
Benzene	mg/kg	<0.025	0.025	4718281
Toluene	mg/kg	<0.025	0.025	4718281
Ethylbenzene	mg/kg	<0.025	0.025	4718281
Total Xylenes	mg/kg	<0.050	0.050	4718281
C6 - C10 (less BTEX)	mg/kg	<2.5	2.5	4718281
>C10-C16 Hydrocarbons	mg/kg	<10	10	4718306
>C16-C21 Hydrocarbons	mg/kg	<10	10	4718306
>C21- <c32 hydrocarbons<="" td=""><td>mg/kg</td><td><15</td><td>15</td><td>4718306</td></c32>	mg/kg	<15	15	4718306
Modified TPH (Tier1)	mg/kg	<15	15	4717454
Reached Baseline at C32	mg/kg	NA	N/A	4718306
Hydrocarbon Resemblance	mg/kg	NA	N/A	4718306
Extraction Surrogate Recovery (%)				
Isobutylbenzene - Extractable	%	85		4718306
n-Dotriacontane - Extractable	%	107		4718306
Isobutylbenzene - Volatile	%	92		4718281
Instrument Surrogate Recovery (%)				
1,4-Difluorobenzene	%	91		4718281
4-Bromofluorobenzene	%	93		4718281
D4-1,2-Dichloroethane	%	91		4718281
RDL = Reportable Detection Lim QC Batch = Quality Control Batc	iit h			

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

2016/10/25 2016/10/25

2016/10/25

2016/10/25

AECOM Canada Ltd. Task Order#: CTC Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID:	DHW248	Collected:
Sample ID:	STP-EX1-3	Relinquished:
Matrix:	Soil	Received:

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4718306	2016/10/26	2016/10/26	Marley Gidney
Moisture	BAL	4718258	N/A	2016/10/26	Victoria Legge
ModTPH (T1) Calc. for Soil	CALC	4717454	N/A	2016/10/26	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4718281	N/A	2016/10/26	Michelle Shearer

Maxxam ID: DHW249 Sample ID: STP-EX1-4 Matrix: Soil

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4718306	2016/10/26	2016/10/26	Marley Gidney
Moisture	BAL	4718258	N/A	2016/10/26	Victoria Legge
ModTPH (T1) Calc. for Soil	CALC	4717454	N/A	2016/10/26	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4718281	N/A	2016/10/26	Michelle Shearer

Maxxam ID: DHW250 Sample ID: EX1-14 (2.0-3.0) Matrix: Soil

Test Description Instrumentation Batch Extracted **Date Analyzed** Analyst TEH in Soil (PIRI) GC/FID 4718306 2016/10/26 2016/10/26 Marley Gidney Victoria Legge Moisture BAL 4718258 N/A 2016/10/26 ModTPH (T1) Calc. for Soil 4717454 N/A 2016/10/26 CALC Automated Statchk VPH in Soil (PIRI) - Field Preserved PTGC/MS 4718281 2016/10/26 Michelle Shearer N/A

Maxxam ID:	DHW251
Sample ID:	EX1-11 (1.5-2.5)
Matrix:	Soil

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4718306	2016/10/26	2016/10/26	Marley Gidney
Moisture	BAL	4718258	N/A	2016/10/26	Victoria Legge
ModTPH (T1) Calc. for Soil	CALC	4717454	N/A	2016/10/26	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4718281	N/A	2016/10/26	Michelle Shearer

at Description		Instrumentation	Datah	Evtrated	Data Analyzad	Analust		
Matrix:	Soil					Received:	2016/10/25	
Sample ID:	EX1-12 (2.0-3.0)				R	elinguished:	2016/10/25	
Maxxam ID:	DHW252					Collected:	2016/10/25	

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4718306	2016/10/26	2016/10/26	Marley Gidney
Moisture	BAL	4718258	N/A	2016/10/26	Victoria Legge
ModTPH (T1) Calc. for Soil	CALC	4717454	N/A	2016/10/26	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4718281	N/A	2016/10/26	Michelle Shearer

Page 4 of 9

Maxxam Analytics International Corporation o/a Maxxam Analytics 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.maxxamanalytics.com



Report Date: 2016/10/26

Relinquished: 2016/10/25 Received: 2016/10/25

Collected:

Collected: 2016/10/25 2016/10/25 Received: 2016/10/25

Collected: 2016/10/25 Relinguished: 2016/10/25 Received: 2016/10/25

Relinguished:





TEST SUMMARY

Maxxam ID:	DHW253
Sample ID:	EX1-13 (2.5-3.5)
Matrix:	Soil

Collected:	2016/10/25
Relinquished:	2016/10/25
Received:	2016/10/25

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4718306	2016/10/26	2016/10/26	Marley Gidney
Moisture	BAL	4718258	N/A	2016/10/26	Victoria Legge
ModTPH (T1) Calc. for Soil	CALC	4717454	N/A	2016/10/26	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4718281	N/A	2016/10/26	Michelle Shearer



GENERAL COMMENTS

Each temp	perature is the aver	age of up to thr	ee cooler temperatures taken at receipt				
Pa	Package 1	2.7°C					
Note: Labe	Note: Labelling issue (label missing and /or incorrect) - lids of soil jars were not labelled. Proceed with analysis as per D. Heath.						
Double wa	Double water wash and silica gel clean-up performed on soil extracts.						
Results rel	Results relate only to the items tested.						



AECOM Canada Ltd. Task Order#: CTC Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
4718281	MS3	Method Blank	1,4-Difluorobenzene	2016/10/26		98	%	60 - 140
			4-Bromofluorobenzene	2016/10/26		100	%	60 - 140
			D4-1,2-Dichloroethane	2016/10/26		98	%	60 - 140
			Isobutylbenzene - Volatile	2016/10/26		97	%	60 - 130
			Benzene	2016/10/26	<0.025		mg/kg	
			Toluene	2016/10/26	<0.025		mg/kg	
			Ethylbenzene	2016/10/26	<0.025		mg/kg	
			Total Xylenes	2016/10/26	<0.050		mg/kg	
			C6 - C10 (less BTEX)	2016/10/26	<2.5		mg/kg	
4718306	MGN	Method Blank	n-Dotriacontane - Extractable	2016/10/26		97	%	30 - 130
			Isobutylbenzene - Extractable	2016/10/26		81	%	30 - 130
			>C10-C16 Hydrocarbons	2016/10/26	<10		mg/kg	
			>C16-C21 Hydrocarbons	2016/10/26	<10		mg/kg	
			>C21- <c32 hydrocarbons<="" p=""></c32>	2016/10/26	<15		mg/kg	
4718281	MS3	LCS	1,4-Difluorobenzene	2016/10/26		101	%	60 - 140
			4-Bromofluorobenzene	2016/10/26		102	%	60 - 140
			D4-1,2-Dichloroethane	2016/10/26		100	%	60 - 140
			Isobutylbenzene - Volatile	2016/10/26		96	%	60 - 130
			Benzene	2016/10/26		92	%	60 - 140
			Toluene	2016/10/26		92	%	60 - 140
			Ethylbenzene	2016/10/26		97	%	60 - 140
			Total Xylenes	2016/10/26		97	%	60 - 140
4718306	MGN	LCS	n-Dotriacontane - Extractable	2016/10/26		104	%	30 - 130
			Isobutylbenzene - Extractable	2016/10/26		86	%	30 - 130
			>C10-C16 Hydrocarbons	2016/10/26		111	%	30 - 130
			>C16-C21 Hydrocarbons	2016/10/26		97	%	30 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2016/10/26</td><td></td><td>81</td><td>%</td><td>30 - 130</td></c32>	2016/10/26		81	%	30 - 130
LCS: A bl	ank ma	atrix sample to which a	a known amount of the analyte, usually from	a second source, has bee	en added. Used	d to evaluate m	nethod a	ccuracy.

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.



AECOM Canada Ltd. Task Order#: CTC Site#: CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

VALIDATION SIGNATURE PAGE

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

Olen I Howard

Alan Stewart, Organics Manager, Bedford

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

	200 Bluewa Bedford, N www.maxx	ater Roa Iova Sco kam.ca	d tia B4	B 1G	9 BE	Pho F Toll	one: (902) Fax: (902) Free: 800-	420-020 420-861 563-626	03 12 66				EXX	ONN CHA	IOBIL AIN-OI ANAI	/IMPE -CUS	RIAI STOD REQU	L OIL OY RE ESTE	- M/ ECO/ D	XXA RD	М		с	Pi of C # 57	age l of 7838-49	I 01		57783	8
Company Name:AECOM Canada Lto	1	Co	mpar	ny Na	me:AE	COM Canada L	.td.						1		1				1	1			1						
Contact Name:		Co	ontact	Nam	e:				- N.																				
Accounts Payable		Tir	n Bac	hiu																									
Address:		Ac	Idress	3:						1																			
1701 Hollis Street Halifax NS B313M8		17	01 Ho	IS St	treet																								
Email: CANSSC.E-billing@ae	com.com, tim	noth En	nail:	10 00	Time	othy.bachiu@aed	com.com.	Laura M	acls	('ss																			
Phone: (902) 428-2048 x		P	one:		(902) 428-2048 x				id pre		ŵ																	
Sampler Name (Print):		Co	onsult	ant P	roject	#:				oil (fie	SMAC	IS (SI	pevu																
Alex Duguay					600	438249				s in So	xtr. IG	GCN	Prese																
j i i i ji ji	e.	MAT	RIX		s	SAMPLI	NG	ED &	NOI	rbons	cid E	ds by	field																
FIELD SAMPLE ID	SROUND WATER	SURFACE WATER	SOIL	OTHER	CONTAINER	DATE	TIME (24 HR)	IELD FILTER PRESERVE	LAB FILTRAT REQUIRED	BCA Hydroca	etals Solids A	AH Compound	OCs in Sail - F																
1 STP-FVI-3			X	_	3	2016/10/25	15:00	u.		×	2	<u> </u>	5		1				1		1								
2 STD-EVI-4			1		Ī	YYYYAMUDO	15:10			1													-						
3 EVI-14 (20.3.0)			$^{++}$			YYYYAMADD	15:10												-										
4 511-11 (15-2.5)			+	_		YXYYYMDD	15:30			+				-															
5 541-12(20-30)			11			YYYYMMODD	15:40	-	-										-										
· EXI-13(25-3.5)			L		t	YYY WWDD	15:50		-	t	-				-				1										
7						VYYYMMOD	HH MAR.			•				/	4				5	-						_	-		-
8						VY WANDO	HH MILT			/		1	1	-	1/				+	-		/	<u> </u>	/				+	
9					/	YYYYYMMDO	111.MM										/		1				+7		/				
10					/	YYYXMMMDD	HAL				<u>`</u>								C										\sim
IOL SITE LOCATION:						F	REGULAT	ORY CF	RITEF	RIA / DE	TECT	ION LIN	AITS:		SPECIA	LINST	RUCTIO	ONS:		1	1		# JARS	USED		TURN	AROUN		
64 Mill Lake 6	21 Hu	bbaro	151	15			A . /	4	1	~ 1						11.	00						SUBMI	TTED	Stand	lard	(5 da	ys)	
IOL PROJECT # (if applicable):							Atla	Atic	F	Set					6	100	n u	/					Enter N Water	I/A for	Rush		(3 da	ys)	
NA-TOL-	CHC						5110								11								3				(2 ua (1 d	ys) ay)	님
MAXXAM TASK ORDER # OR SERVIC	CE ORDER #	# + LINE	ITEM	t:																			60	m	2		(same d	ay)	Ð
VA- Idl- C	C+C																						ne	th.	all	Da	ate Requi	red	
YES NO COOL	ER ID:		_	11.00		CIL BROCHT	YES	NO CO	OOLE	R ID:								YES		OLER I	D:								
SEAL INTACT TEMP	3	3		2	- 5	EAL INTACT	OFNE		EMP °C			-			SEAL PRE	ACT			TE	MP						LAB	USE O	NLY DB #	
RELINQUISHED BY:	4	2		3	DAT	E:	TIME (2	24 HR)	R	ECEIV	ED BY	2	3)	COULING	MEDIA PR	RESENT			ATE:	1	2	TIME (2	3 24 HR)	0	ا هم ا	OF	:00	
1. aler	Ale.	× Du	Marke	ØW	20	16/10/25	16:	15	13	M	15	mo	0.)	M	ARVA	INN	(am)	A()	2011	010	25	161	59	-0	S	AMPLE	s	1
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3. signature		proded n	ame			YYYYMRODO	<i>\$41</i>	子如同	3.			sgnatu	(9)			.20	hizd na	77.E		1989-1			24	行動調測	M	NC		KG	
COC - 1009 (2013) IOL - NS				White:	Maxxam	8			Yell	ow: Clien	1				14														

ΑΞϹΟΜ

Data Quality Review Checklist

Consultant: <u>Al</u> Location: 64	ECOM 1 MILL LA	KE RD. N	102,	Sampling Date: 2016/10/25 Laboratory: Maxxam					
н	UBBARD	S, NS							
Consultant Project Number: 60)438249			Sample Submission Number: B6N0599					
Are All Laboratory QC Samples Within Acceptance Criteria (Yes, No, Not Applicable)?									
	Yes	No	NA	Comments					
Instrument Surrogate Recovery	\boxtimes								
Extraction Surrogate Recovery	\boxtimes								
Method Blank Concentration	\boxtimes								
Matrix Duplicate RPD			\boxtimes						
Matrix Spike Recovery			\boxtimes						
Lab Control Sample Recovery	\boxtimes								
Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?									
	Yes	No	NA	Comments					
Field Blank Concentration			\boxtimes						
Trip Blank Concentration			\boxtimes						
Field Duplicate RPD			\boxtimes						
Has CoA been signed off?	n ototiati			X Yes □ No					
Has lab warranted all tests were a	analyzed	following	n SOP's ii	$\square CoA? \qquad \square Yes \square No$					
Were all samples analyzed within	hold tim	es?	9001 01	⊠ Yes □ No					
All volatiles samples methanol ex	tracted (i	f require	d) within 4	48 hours? Xes					
Is Chain of Custody completed an	nd signed	1?		🛛 Yes 🛛 No					
Were sample temperatures accept	otable wh	en they	reached I	ab?⊠ Yes 🛛 No					
Is data considered to be reliable?			🛛 Yes	□ No					
If answer is "No", describe and pr	ovide rat	ionale:							
Reviewed by (Print): Janice Shea Reviewed by (Signature): Janua Shua.									



Attention:Tim Bachiu

B313M8

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax. NS CANADA

Task Order#: N/A-IOL CTC Site#: Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 577838-48-01

> Report Date: 2016/10/31 Report #: R4230146 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6N3457

Received: 2016/10/28, 09:39

Sample Matrix: Soil # Samples Received: 5

Analyses	Quantity	Laboratory Method	Primary Reference
TEH in Soil (PIRI) (1)	5	ATL SOP 00111	Atl. RBCA v3 m
Moisture	5	ATL SOP 00001	OMOE Handbook 1983 m
Double water wash (soil)	5	ATL SOP 00111	N/A
Silica Gel Clean-up (Soil)	5	ATL SOP 00111	EPA 3630C R3 m
ModTPH (T1) Calc. for Soil	5	N/A	Atl. RBCA v3 m
VPH in Soil (PIRI) - Field Preserved (2)	5	ATL SOP 00119	Atl. RBCA v3 m

Remarks:

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

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

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

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

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

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

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

(1) Soils are reported on a dry weight basis unless otherwise specified.

(2) No lab extraction date is given for C6-C10/BTEX and VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.



Task Order#: N/A-IOL CTC Site#: Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 577838-48-01

Attention:Tim Bachiu

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2016/10/31 Report #: R4230146 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6N3457 Received: 2016/10/28, 09:39

Encryption Key

heri Machay Keri MacKay Project Manager - Bedford 31 Oct 2016 17:08:35 -03:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Keri Mackay, Project Manager - Bedford Email: kmackay@maxxam.ca Phone# (902)420-0203 Ext:294

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



RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		DIM617	DIM617	DIM618	DIM618	DIM619		
Sampling Date		2016/10/27 10:15	2016/10/27 10:15	2016/10/27 10:30	2016/10/27 10:30	2016/10/27 10:45		
COC Number		577838-48-01	577838-48-01	577838-48-01	577838-48-01	577838-48-01		
	UNITS	EX1-15 (2.0-3.0)	EX1-15 (2.0-3.0) Lab-Dup	DUP E	DUP E Lab-Dup	EX1-17 (1.0-2.0)	RDL	QC Batch
Inorganics								
Moisture	%	10		8.5		9.9	1.0	4722548
Petroleum Hydrocarbons								
Benzene	mg/kg	<0.025	<0.025	<0.025		<0.025	0.025	4722598
Toluene	mg/kg	<0.025	<0.025	<0.025		<0.025	0.025	4722598
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025		<0.025	0.025	4722598
Total Xylenes	mg/kg	<0.050	<0.050	<0.050		<0.050	0.050	4722598
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	<2.5		<2.5	2.5	4722598
>C10-C16 Hydrocarbons	mg/kg	<10		<10	<10	<10	10	4722729
>C16-C21 Hydrocarbons	mg/kg	<10		<10	<10	15	10	4722729
>C21- <c32 hydrocarbons<="" p=""></c32>	mg/kg	<15		<15	<15	<15	15	4722729
Modified TPH (Tier1)	mg/kg	<15		<15		<15	15	4722468
Reached Baseline at C32	mg/kg	NA		NA		NA	N/A	4722729
Hydrocarbon Resemblance	mg/kg	NA		NA		NA	N/A	4722729
Extraction Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	76		78	80	75		4722729
n-Dotriacontane - Extractable	%	116		119	118	121		4722729
Isobutylbenzene - Volatile	%	105	101	96		98		4722598
Instrument Surrogate Recovery (%)								
1,4-Difluorobenzene	%	105	99	101		102		4722598
4-Bromofluorobenzene	%	106	100	103		103		4722598
D4-1,2-Dichloroethane	%	102	95	98		98		4722598

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable



Maxxam ID		DIM620	DIM621		
		2016/10/27	2016/10/27		
Sampling Date		11:00	11:15		
COC Number		577838-48-01	577838-48-01		
	UNITS	EX1-17 (3.0-4.0)	EX1-16 (3.5-4.5)	RDL	QC Batch
Inorganics					
Moisture	%	10	13	1.0	4722548
Petroleum Hydrocarbons					
Benzene	mg/kg	<0.025	<0.025	0.025	4722598
Toluene	mg/kg	<0.025	<0.025	0.025	4722598
Ethylbenzene	mg/kg	<0.025	<0.025	0.025	4722598
Total Xylenes	mg/kg	<0.050	<0.050	0.050	4722598
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	2.5	4722598
>C10-C16 Hydrocarbons	mg/kg	25	17	10	4722729
>C16-C21 Hydrocarbons	mg/kg	23	18	10	4722729
>C21- <c32 hydrocarbons<="" p=""></c32>	mg/kg	<15	<15	15	4722729
Modified TPH (Tier1)	mg/kg	48	35	15	4722468
Reached Baseline at C32	mg/kg	Yes	Yes	N/A	4722729
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	COMMENT (1)	N/A	4722729
Extraction Surrogate Recovery (%)					
Isobutylbenzene - Extractable	%	76	75		4722729
n-Dotriacontane - Extractable	%	115	118		4722729
Isobutylbenzene - Volatile	%	95	99		4722598
Instrument Surrogate Recovery (%)					
1,4-Difluorobenzene	%	97	100		4722598
4-Bromofluorobenzene	%	98	101		4722598
D4-1,2-Dichloroethane	%	93	95		4722598
RDL = Reportable Detection Lim QC Batch = Quality Control Batc N/A = Not Applicable (1) Weathered fuel oil fraction.	it h				

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)



AECOM Canada Ltd. Task Order#: N/A-IOL CTC Site#: Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	DIM617 EX1-15 (2.0-3.0) Soil				R	Collected: elinquished: Received:	2016/10/27 2016/10/27 2016/10/28
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4722729	2016/10/28	2016/10/28	Roy Devea	u
Moisture		BAL	4722548	N/A	2016/10/31	Kelsey Ma	cGillivray
ModTPH (T1) Calc. for So	il	CALC	4722468	N/A	2016/10/31	Automate	d Statchk
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	4722598	N/A	2016/10/28	Michelle S	hearer
Maxxam ID: Sample ID: Matrix:	DIM617 Dup EX1-15 (2.0-3.0) Soil				R	Collected: elinquished: Received:	2016/10/27 2016/10/27 2016/10/28
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	4722598	N/A	2016/10/28	Michelle S	hearer
Maxxam ID: Sample ID: Matrix:	DIM618 DUP E Soil				R	Collected: elinquished: Received:	2016/10/27 2016/10/27 2016/10/28
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4722729	2016/10/28	2016/10/28	Roy Devea	u
Moisture		BAL	4722548	N/A	2016/10/31	Kelsey Ma	cGillivray
ModTPH (T1) Calc. for So	il	CALC	4722468	N/A	2016/10/31	Automate	d Statchk
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	4722598	N/A	2016/10/28	Michelle S	hearer
Maxxam ID: Sample ID: Matrix:	DIM618 Dup DUP E Soil				R	Collected: elinquished: Received:	2016/10/27 2016/10/27 2016/10/28
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4722729	2016/10/28	2016/10/28	Roy Devea	u
Maxxam ID: Sample ID: Matrix:	DIM619 EX1-17 (1.0-2.0) Soil				R	Collected: elinquished: Received:	2016/10/27 2016/10/27 2016/10/28
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4722729	2016/10/28	2016/10/28	Roy Devea	u
Moisture		BAL	4722548	N/A	2016/10/31	Kelsey Ma	cGillivray
ModTPH (T1) Calc. for So	il	CALC	4722468	N/A	2016/10/31	Automate	d Statchk
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	4722598	N/A	2016/10/28	Michelle S	hearer



AECOM Canada Ltd. Task Order#: N/A-IOL CTC Site#: Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID:	DIM620
Sample ID:	EX1-17 (3.0-4.0)
Matrix:	Soil

Collected:	2016/10/27
Relinquished:	2016/10/27
Received:	2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4722729	2016/10/28	2016/10/29	Roy Deveau
Moisture	BAL	4722548	N/A	2016/10/31	Kelsey MacGillivray
ModTPH (T1) Calc. for Soil	CALC	4722468	N/A	2016/10/31	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4722598	N/A	2016/10/28	Michelle Shearer

Maxxam ID:	DIM621
Sample ID:	EX1-16 (3.5-4.5)
Matrix:	Soil

Collected:	2016/10/27
Relinquished:	2016/10/27
Received:	2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4722729	2016/10/28	2016/10/29	Roy Deveau
Moisture	BAL	4722548	N/A	2016/10/31	Kelsey MacGillivray
ModTPH (T1) Calc. for Soil	CALC	4722468	N/A	2016/10/31	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4722598	N/A	2016/10/28	Michelle Shearer



GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt									
	Package 1	1.7°C							
Double	Double water wash and silica gel clean-up performed on soil extracts.								
Results relate only to the items tested.									



QUALITY ASSURANCE REPORT

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
4722598	MS3	Method Blank	1,4-Difluorobenzene	2016/10/28		99	%	60 - 140
			4-Bromofluorobenzene	2016/10/28		99	%	60 - 140
			D4-1,2-Dichloroethane	2016/10/28		96	%	60 - 140
			Isobutylbenzene - Volatile	2016/10/28		96	%	60 - 130
			Benzene	2016/10/28	<0.025		mg/kg	
			Toluene	2016/10/28	<0.025		mg/kg	
			Ethylbenzene	2016/10/28	<0.025		mg/kg	
			Total Xylenes	2016/10/28	<0.050		mg/kg	
			C6 - C10 (less BTEX)	2016/10/28	<2.5		mg/kg	
4722729	RDE	Method Blank	n-Dotriacontane - Extractable	2016/10/28		111	%	30 - 130
			Isobutylbenzene - Extractable	2016/10/28		72	%	30 - 130
			>C10-C16 Hydrocarbons	2016/10/28	<10		mg/kg	
			>C16-C21 Hydrocarbons	2016/10/28	<10		mg/kg	
			>C21- <c32 hydrocarbons<="" td=""><td>2016/10/28</td><td><15</td><td></td><td>mg/kg</td><td></td></c32>	2016/10/28	<15		mg/kg	
4722598	MS3	RPD [DIM617-02]	Benzene	2016/10/28	NC		%	50
			Toluene	2016/10/28	NC		%	50
			Ethylbenzene	2016/10/28	NC		%	50
			Total Xylenes	2016/10/28	NC		%	50
			C6 - C10 (less BTEX)	2016/10/28	NC		%	50
4722729	RDE	RPD [DIM618-01]	>C10-C16 Hydrocarbons	2016/10/28	NC		%	50
			>C16-C21 Hydrocarbons	2016/10/28	NC		%	50
			>C21- <c32 hydrocarbons<="" td=""><td>2016/10/28</td><td>NC</td><td></td><td>%</td><td>50</td></c32>	2016/10/28	NC		%	50
4722598	MS3	Matrix Spike [DIM617-02]	1.4-Difluorobenzene	2016/10/28		100	%	60 - 140
			4-Bromofluorobenzene	2016/10/28		102	%	60 - 140
			D4-1 2-Dichloroethane	2016/10/28		95	%	60 - 140
			Isobutylbenzene - Volatile	2016/10/28		105	%	60 - 130
			Benzene	2016/10/28		95	%	60 - 130
			Toluene	2016/10/28		95	%	60 - 130
			Fthylbenzene	2016/10/28		97	%	60 - 130
			Total Xylenes	2016/10/28		96	%	60 - 130
4722729	RDF	Matrix Spike [DIM618-01]	n-Dotriacontane - Extractable	2016/10/28		119	%	30 - 130
1722725	ND L		Isobutylbenzene - Extractable	2016/10/28		81	%	30 - 130
			>C10-C16 Hydrocarbons	2016/10/28		115	%	30 - 130
			>C16-C21 Hydrocarbons	2016/10/28		108	%	30 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2016/10/28</td><td></td><td>120</td><td>%</td><td>30 - 130</td></c32>	2016/10/28		120	%	30 - 130
4722598	MS3	105	1 4-Difluorobenzene	2016/10/28		102	%	60 - 140
4722550	10133	200	1,4 Dinacioscilizene A-Bromofluorobenzene	2016/10/28		99	%	60 - 1/0
			DI-1 2-Dichloroethane	2010/10/28		99	%	60 - 140
			Isobutylbenzene - Volatile	2010/10/28		96	%	60 - 130
			Benzene	2016/10/28		85	%	60 - 1/0
			Toluene	2016/10/28		87	%	60 - 140
			Ethylbenzene	2010/10/20		07	70 0/	60 - 140
			Total Xylenes	2010/10/20		91 Q1	%	60 - 140
1722720		105	n-Dotriacontane - Extractable	2010/10/20		117	70 0/	20 - 120
4/22/29	NDE	200		2010/10/20		114 77	/0 0/_	20, 120
			SC10-C16 Hydrocarbons	2010/10/20		107	/0 0/_	20, 120
			>C16-C21 Hydrocarbons	2010/10/20		107	/0 0/	30 - 130
				2010/10/28		101	70	20 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC				Date							
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits			
			>C21- <c32 hydrocarbons<="" td=""><td>2016/10/28</td><td></td><td>115</td><td>%</td><td>30 - 130</td></c32>	2016/10/28		115	%	30 - 130			
Duplicate	Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.										
Matrix S	Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.										
LCS: A bl	ank ma	atrix sample t	o which a known amount of the analyte, usually from a	a second source, has bee	en added. Used	to evaluate m	nethod a	ccuracy.			
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 (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).											



AECOM Canada Ltd. Task Order#: N/A-IOL CTC Site#: Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

VALIDATION SIGNATURE PAGE

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

Kosmarie Moe Donald

Rosemarie MacDonald, Scientific Specialist (Organics)

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



Success Through Science®

DATA QUALITY WAIVER

2016/10/31 05:05 PM

Invoice Cite		40.144					Mouvour Lab #	DCN2457				
Invoice Clie Invoice Clie Invoice Pro	ent ID #: 30110 ject Manager: Accounts	s Payable		2	Maxxam Job #: B6N3457 Site Location: 64 MILL LAKE RD, HUBBARDS, NS Client Project #: 60438249							
Report To Report To Report To Maxxam Pr	Client Name: AECOM Ca Client ID #: 19160 Project Manager: Tim B roject Manager: Keri Ma	anada Ltd. Bachiu ackay			Fask #: N/A-IOL CTC Quote: B62542 COC/Submission #: 5778 TAT: 3 Days Rush: Yes	38-48-01	Received By: Received: DQW #: DQW Created By: DQW Created:	Received By: Erica Chafe Received: 2016/10/28 09:39 DQW #: 2714 DQW Created By: Keri Mackay DQW Created: 2016/10/31 16:36				
Lab ID	Client Sample ID	Matrix	Test Code	Analysis Type	Parameters	Deviation	Root Cause	Potential Impact				
DIM617	EX1-15 (2.0-3.0)	Soil	EPHPIRI-S	ТРНС	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	#10 Lab Error	This may represent a high bias for this parameter. However, since the results were non detect, there is no impact on data quality.				
DIM618	DUP E	Soil	EPHPIRI-S	ТРНС	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	#10 Lab Error	This may represent a high bias for this parameter. However, since the results were non detect, there is no impact on data quality.				
DIM619	EX1-17 (1.0-2.0)	Soil	EPHPIRI-S	ТРНС	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	#10 Lab Error	This may represent a high bias for this parameter. However, since the results were non detect, there is no impact on data quality.				
DIM620	EX1-17 (3.0-4.0)	Soil	EPHPIRI-S	ТРНС	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	#10 Lab Error	This may represent a high bias for this parameter. However, since the results were non detect, there is no impact on data quality.				
DIM621	EX1-16 (3.5-4.5)	Soil	EPHPIRI-S	ТРНС	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	#10 Lab Error	This may represent a high bias for this parameter. However, since the results were non detect, there is no impact on data quality.				



Success Through Science®

DATA QUALITY WAIVER

2016/10/31 05:05 PM

Invoice Client Name: AECOM Canada Ltd		Maxxam J	ob #: B6N3457
Invoice Client ID #: 30110	Site Location: 64 MILL LAKE RD, HUBBARDS, NS		
Invoice Proiect Manager: Accounts Pavable	Client Project #: 60438249		
	•		
	Task #: N/A-IOL CTC	Received	d By: Erica Chafe
Report To Client Name: AFCOM Canada Ltd.	Quote: B62542	Rece	ived: 2016/10/28 09:39
Report To Client ID # 19160	COC/Submission #: 577838-48-01		
Report To Project Manager: Tim Bachiu		DO	NW/ #· 2714
		DOW/ Creater	d By: Keri Mackay
Maxyam Project Manager: Keri Mackay	Push: Vos		a by. Ken Mackay
	Rusii. Tes	DQW CIE	ated: 2010/10/31 10:30
Waiver Issued By:		Name:	Keri Mackay
Signature: <u>Heri Wachay</u>	Date: 2016/10/31 16:39	Title:	Project Manager - Bedford
Data Quality Waiver Reviewed and Accepted By:		Name:	
Signature:	Date:	Title:	
Data Quality Waiver Reviewed and Declined By:		Name:	
Signature:	Date:	Title:	
Comments / Requested Actions:			

If this waiver is not returned, or the undersigned Maxxam Analytics representative not contacted within 7 days of issuance, the issue will be regarded as closed and the associated data will be deemed acceptable as reported.

	200 Bluewater I Bedford, Nova www.maxxam.o	Road Scotia B ca	4B 1G9	REP	Pho F Toll I PORT INFORMA	ne: (902) 4 ax: (902) 4 Free: 800-5 TION	20-0203 20-8612 563-6266				EXX	ONN CHA	IOBI IN-C ANA	L/IMPERI/ DF-CUSTC ALYSIS REG	AL OIL - DY REC	MAXXA ORD	М		Pa C of C # 57	age) of 7838-48-01	1	57783	38
Company Name:AECOM Canada L	td	Compa	any Nan	ie:AE	COM Canada L	td.																	
Contact Name:		Contac	ct Name	:				-															
Accounts Payable		Tim Ba	ichiu																				(-1)
Address:		Addres	SS: Iollie Str	oot												2							
Halifax NS B3J 3M8		Halifax	NS B3.	3M8																			
Email: CANSSC.E-billing@a	ecom.com, timoth	Email:		Timo	thy.bachiu@aec	om.com, L	aura.Macl	es.)		8													
Phone: (902) 428-2048 x		Phone		(902)	428-2048 x			eld pr	3	(W)													
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4 EX1-17(3.0.4).0					YYYY MMADD	10:00				_			_								_		
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NA-JOL- CAC	405 00050 # · I													1000				0	int		(1	day)	
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MA-JOL- CEO																		J	prs	100.00	Date Rec	uired	
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ΑΞϹΟΜ

Data Quality Review Checklist

Consultant: Al	ЕСОМ			Sampling Date: 2016/10/27						
Location: 64	1 MILL LA	KE RD. N	102,	Laboratory: Maxxam						
<u>HI</u>	UBBARDS	S, NS								
Consultant Project Number: 60)438249			Sample Submission Number: <u>B6N3457</u>						
Are All Laboratory QC Samples V	Vithin Ac	ceptance	Criteria	(Yes, No, Not Applicable)?						
	Yes	No	NA	Comments						
Instrument Surrogate Recovery	\boxtimes									
Extraction Surrogate Recovery	\boxtimes									
Method Blank Concentration	\boxtimes									
Matrix Duplicate RPD		\boxtimes		NC (Duplicate RPD): The duplicate RPD was not calculated. The						
				concentration in the sample and/or duplicate was too low to permit a						
				reliable RPD calculation (one or both samples < 5x RDL).						
Matrix Spike Recovery	\boxtimes									
Lab Control Sample Recovery	\boxtimes									
Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?										
	Yes	No	NA	Comments						
Field Blank Concentration			\boxtimes							
Trip Blank Concentration			\boxtimes							
Field Duplicate RPD	\boxtimes									
Has CoA been signed off?				🛛 Yes 🗆 No						
Has lab warranted all tests were i	n statisti	cal contro	ol in CoA	?X Yes 🗆 No						
Has lab warranted all tests were a	analyzed	following	g SOP's i	n CoA? 🛛 Yes 🛛 No						
Were all samples analyzed within	hold tim	es?		🛛 Yes 🛛 No						
All volatiles samples methanol ex	tracted (i	if require	d) within	48 hours? 🛛 Yes 🛛 No						
Is Chain of Custody completed an	nd signed	1?								
Were sample temperatures accept	otable wh	ien they i	reached	lab? 🛛 Yes 🛛 No						
Is data considered to be reliable?			🛛 Yes	□ No						
If answer is "No", describe and pr	ovide rat	ionale:								
Reviewed by (Print): Janio	Reviewed by (Print): Janice Shea Reviewed by (Signature): January Khuk									
Date: October 8, 2019										



Attention:Tim Bachiu

B3J 3M8

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax. NS CANADA

Task Order#: N/A-IOL CTC Site#: Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 577838-46-01, 577838-47-01

> Report Date: 2016/10/31 Report #: R4230179 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6N3491

Received: 2016/10/28, 09:41

Sample Matrix: Soil # Samples Received: 14

Analyses	Quantity	Laboratory Method	Primary Reference
TEH in Soil (PIRI) (1)	14	ATL SOP 00111	Atl. RBCA v3 m
Moisture	14	ATL SOP 00001	OMOE Handbook 1983 m
Double water wash (soil)	14	ATL SOP 00111	N/A
Silica Gel Clean-up (Soil)	14	ATL SOP 00111	EPA 3630C R3 m
ModTPH (T1) Calc. for Soil	14	N/A	Atl. RBCA v3 m
VPH in Soil (PIRI) - Field Preserved (2)	14	ATL SOP 00119	Atl. RBCA v3 m

Remarks:

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

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

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

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

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

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

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

(1) Soils are reported on a dry weight basis unless otherwise specified.

(2) No lab extraction date is given for C6-C10/BTEX and VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.



Task Order#: N/A-IOL CTC Site#: Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 577838-46-01, 577838-47-01

Attention:Tim Bachiu

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2016/10/31 Report #: R4230179 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6N3491 Received: 2016/10/28, 09:41

Encryption Key

heri Machay Keri MacKay Project Manager - Bedford 31 Oct 2016 17:16:35 -03:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Keri Mackay, Project Manager - Bedford Email: kmackay@maxxam.ca Phone# (902)420-0203 Ext:294

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


RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		DIM693	DIM694	DIM695	DIM696		DIM697		
Sampling Date		2016/10/27 16:10	2016/10/27 16:20	2016/10/27 16:30	2016/10/27 16:40		2016/10/27 16:50		
COC Number		577838-46-01	577838-46-01	577838-46-01	577838-46-01		577838-46-01		
	UNITS	EX3-1 (3.0-4.0)	EX3-2 (2.5-3.5)	EX3-3 (1.0-2.0)	EX3-4 (3.5-4.0)	QC Batch	EX3-5 (1.0-2.0)	RDL	QC Batch
Inorganics									
Moisture	%	8.2	11	12	13	4722671	10	1.0	4722671
Petroleum Hydrocarbons									
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	4722598	<0.025	0.025	4722598
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025	4722598	<0.025	0.025	4722598
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	<0.025	4722598	<0.025	0.025	4722598
Total Xylenes	mg/kg	<0.050	<0.050	<0.050	<0.050	4722598	<0.050	0.050	4722598
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	<2.5	<2.5	4722598	<2.5	2.5	4722598
>C10-C16 Hydrocarbons	mg/kg	<10	<10	<10	<10	4722729	<10	10	4722729
>C16-C21 Hydrocarbons	mg/kg	<10	<10	<10	<10	4722729	<10	10	4722729
>C21- <c32 hydrocarbons<="" p=""></c32>	mg/kg	<15	<15	<15	<15	4722729	<15	15	4722729
Modified TPH (Tier1)	mg/kg	<15	<15	<15	<15	4722468	<15	15	4722653
Reached Baseline at C32	mg/kg	NA	NA	NA	NA	4722729	NA	N/A	4722729
Hydrocarbon Resemblance	mg/kg	NA	NA	NA	NA	4722729	NA	N/A	4722729
Extraction Surrogate Recovery (%)									
Isobutylbenzene - Extractable	%	78	76	80	75	4722729	79		4722729
n-Dotriacontane - Extractable	%	115	115	118	117	4722729	117		4722729
Isobutylbenzene - Volatile	%	102 (1)	100	102	100	4722598	101 (1)		4722598
Instrument Surrogate Recovery (%)									
1,4-Difluorobenzene	%	96	102	105	104	4722598	94		4722598
4-Bromofluorobenzene	%	97	103	105	104	4722598	95		4722598
D4-1,2-Dichloroethane	%	94	98	101	99	4722598	92		4722598

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) VPH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.



RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		DIM698	DIM699	DIM700	DIM701	DIM702		
Sampling Date		2016/10/27 17:05	2016/10/27 17:15	2016/10/27 17:30	2016/10/27 17:45	2016/10/27 18:00		
COC Number		577838-46-01	577838-46-01	577838-46-01	577838-46-01	577838-46-01		
	UNITS	EX3-5 (3.0-4.0)	EX3-6 (2.5-3.5)	DUP F	EX3-7 (1.0-2.0)	EX3-8 (3.5-4.0)	RDL	QC Batch
Inorganics								
Moisture	%	9.5	8.7	8.0	17	12	1.0	4722671
Petroleum Hydrocarbons								
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	4722598
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	4722598
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	4722598
Total Xylenes	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4722598
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	<2.5	<2.5	28	2.5	4722598
>C10-C16 Hydrocarbons	mg/kg	<10	<10	<10	<10	1200	10	4722729
>C16-C21 Hydrocarbons	mg/kg	<10	<10	<10	<10	190	10	4722729
>C21- <c32 hydrocarbons<="" td=""><td>mg/kg</td><td><15</td><td><15</td><td><15</td><td><15</td><td><15</td><td>15</td><td>4722729</td></c32>	mg/kg	<15	<15	<15	<15	<15	15	4722729
Modified TPH (Tier1)	mg/kg	<15	<15	<15	<15	1400	15	4722653
Reached Baseline at C32	mg/kg	NA	NA	NA	NA	Yes	N/A	4722729
Hydrocarbon Resemblance	mg/kg	NA	NA	NA	NA	COMMENT (1)	N/A	4722729
Extraction Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	78	74	77	71	90		4722729
n-Dotriacontane - Extractable	%	115	114	116	109	108		4722729
Isobutylbenzene - Volatile	%	102 (2)	103 (2)	95	98	97		4722598
Instrument Surrogate Recovery (%)								
1,4-Difluorobenzene	%	96	94	101	103	107		4722598
4-Bromofluorobenzene	%	99	95	101	103	109		4722598
D4-1,2-Dichloroethane	%	94	92	96	98	103		4722598

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Fuel oil fraction.

(2) VPH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.



RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		DIM703	DIM704	DIM705	DIM706		
Sampling Date		2016/10/27 18:15	2016/10/27 18:30	2016/10/27 19:00	2016/10/27 19:15		
COC Number		577838-47-01	577838-47-01	577838-47-01	577838-47-01		
	UNITS	EX3-9 (3.0-4.0)	EX3-10 (1.5-2.5)	EX3-11 (2.0-3.0)	EX3-12 (3.5-4.0)	RDL	QC Batch
Inorganics							
Moisture	%	9.9	9.6	10	8.9	1.0	4722671
Petroleum Hydrocarbons							
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	4722598
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	4722598
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	4722598
Total Xylenes	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	4722598
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	<2.5	<2.5	2.5	4722598
>C10-C16 Hydrocarbons	mg/kg	<10	44	<10	<10	10	4722729
>C16-C21 Hydrocarbons	mg/kg	<10	21	<10	<10	10	4722729
>C21- <c32 hydrocarbons<="" td=""><td>mg/kg</td><td><15</td><td><15</td><td>15</td><td><15</td><td>15</td><td>4722729</td></c32>	mg/kg	<15	<15	15	<15	15	4722729
Modified TPH (Tier1)	mg/kg	<15	64	15	<15	15	4722653
Reached Baseline at C32	mg/kg	NA	Yes	NA	NA	N/A	4722729
Hydrocarbon Resemblance	mg/kg	NA	COMMENT (1)	NA	NA	N/A	4722729
Extraction Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	78	77	74	78		4722729
n-Dotriacontane - Extractable	%	114	125	125	113		4722729
Isobutylbenzene - Volatile	%	99	100	100	101		4722598
Instrument Surrogate Recovery (%)							
1,4-Difluorobenzene	%	105	107	106	108		4722598
4-Bromofluorobenzene	%	103	105	105	108		4722598
D4-1,2-Dichloroethane	%	100	102	101	104		4722598
RDL = Reportable Detection Lim QC Batch = Quality Control Batc N/A = Not Applicable	iit h						

(1) Weathered fuel oil fraction.



AECOM Canada Ltd. Task Order#: N/A-IOL CTC Site#: Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID:	DIM693
Sample ID:	EX3-1 (3.0-4.0)
Matrix:	Soil

Collected:	2016/10/27
Relinquished:	2016/10/28
Received:	2016/10/28

Collected: 2016/10/27

Received: 2016/10/28

2016/10/28

Relinquished:

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4722729	2016/10/28	2016/10/29	Roy Deveau
Moisture	BAL	4722671	N/A	2016/10/31	Alexander Nicol
ModTPH (T1) Calc. for Soil	CALC	4722468	N/A	2016/10/31	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4722598	N/A	2016/10/28	Michelle Shearer

Maxxam ID: DIM694 Sample ID: EX3-2 (2.5-3.5) Matrix: Soil

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4722729	2016/10/28	2016/10/29	Roy Deveau
Moisture	BAL	4722671	N/A	2016/10/31	Alexander Nicol
ModTPH (T1) Calc. for Soil	CALC	4722468	N/A	2016/10/31	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4722598	N/A	2016/10/29	Michelle Shearer

 Maxxam ID:
 DIM695

 Sample ID:
 EX3-3 (1.0-2.0)

 Matrix:
 Soil

 Collected:
 2016/10/27

 Relinquished:
 2016/10/28

 Received:
 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4722729	2016/10/28	2016/10/29	Roy Deveau
Moisture	BAL	4722671	N/A	2016/10/31	Alexander Nicol
ModTPH (T1) Calc. for Soil	CALC	4722468	N/A	2016/10/31	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4722598	N/A	2016/10/29	Michelle Shearer

Maxxam ID:	DIM696
Sample ID:	EX3-4 (3.5-4.0)
Matrix:	Soil

Collected:	2016/10/27
Relinquished:	2016/10/28
Received:	2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4722729	2016/10/28	2016/10/29	Roy Deveau
Moisture	BAL	4722671	N/A	2016/10/31	Alexander Nicol
ModTPH (T1) Calc. for Soil	CALC	4722468	N/A	2016/10/31	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4722598	N/A	2016/10/29	Michelle Shearer

Maxxam ID:	DIM697	Collected:	2016/10/27
Sample ID:	EX3-5 (1.0-2.0)	Relinquished:	2016/10/28
Matrix:	Soil	Received:	2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4722729	2016/10/28	2016/10/29	Roy Deveau
Moisture	BAL	4722671	N/A	2016/10/31	Alexander Nicol
ModTPH (T1) Calc. for Soil	CALC	4722653	N/A	2016/10/31	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4722598	N/A	2016/10/29	Michelle Shearer

Page 6 of 16



AECOM Canada Ltd. Task Order#: N/A-IOL CTC Site#: Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID:	DIM698
Sample ID:	EX3-5 (3.0-4.0)
Matrix:	Soil

Collected:	2016/10/27
Relinquished:	2016/10/28
Received:	2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4722729	2016/10/28	2016/10/29	Roy Deveau
Moisture	BAL	4722671	N/A	2016/10/31	Alexander Nicol
ModTPH (T1) Calc. for Soil	CALC	4722653	N/A	2016/10/31	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4722598	N/A	2016/10/29	Michelle Shearer

Maxxam ID: DIM699 Sample ID: EX3-6 (2.5-3.5) Matrix: Soil

Collected:	2016/10/27
Relinquished:	2016/10/28
Received:	2016/10/28

 Collected:
 2016/10/27

 Relinquished:
 2016/10/28

 Received:
 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4722729	2016/10/28	2016/10/29	Roy Deveau
Moisture	BAL	4722671	N/A	2016/10/31	Alexander Nicol
ModTPH (T1) Calc. for Soil	CALC	4722653	N/A	2016/10/31	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4722598	N/A	2016/10/29	Michelle Shearer

Maxxam ID:	DIM700
Sample ID:	DUP F
Matrix:	Soil

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4722729	2016/10/28	2016/10/29	Roy Deveau
Moisture	BAL	4722671	N/A	2016/10/31	Alexander Nicol
ModTPH (T1) Calc. for Soil	CALC	4722653	N/A	2016/10/31	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4722598	N/A	2016/10/29	Michelle Shearer

Maxxam ID:	DIM701
Sample ID:	EX3-7 (1.0-2.0)
Matrix:	Soil

Collected:	2016/10/27
Relinquished:	2016/10/28
Received:	2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4722729	2016/10/28	2016/10/29	Roy Deveau
Moisture	BAL	4722671	N/A	2016/10/31	Alexander Nicol
ModTPH (T1) Calc. for Soil	CALC	4722653	N/A	2016/10/31	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4722598	N/A	2016/10/29	Michelle Shearer

Maxxam ID:	DIM702	Collected:	2016/10/27
Sample ID:	EX3-8 (3.5-4.0)	Relinquished:	2016/10/28
Matrix:	Soil	Received:	2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4722729	2016/10/28	2016/10/29	Roy Deveau
Moisture	BAL	4722671	N/A	2016/10/31	Alexander Nicol
ModTPH (T1) Calc. for Soil	CALC	4722653	N/A	2016/10/31	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4722598	N/A	2016/10/29	Michelle Shearer



AECOM Canada Ltd. Task Order#: N/A-IOL CTC Site#: Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID:	DIM703
Sample ID:	EX3-9 (3.0-4.0)
Matrix:	Soil

Collected:	2016/10/27
Relinquished:	2016/10/28
Received:	2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4722729	2016/10/28	2016/10/29	Roy Deveau
Moisture	BAL	4722671	N/A	2016/10/31	Alexander Nicol
ModTPH (T1) Calc. for Soil	CALC	4722653	N/A	2016/10/31	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4722598	N/A	2016/10/29	Michelle Shearer

 Maxxam ID:
 DIM704

 Sample ID:
 EX3-10 (1.5-2.5)

 Matrix:
 Soil

Collected:	2016/10/27
Relinquished:	2016/10/28
Received:	2016/10/28

 Collected:
 2016/10/27

 Relinquished:
 2016/10/28

 Received:
 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4722729	2016/10/28	2016/10/29	Roy Deveau
Moisture	BAL	4722671	N/A	2016/10/31	Alexander Nicol
ModTPH (T1) Calc. for Soil	CALC	4722653	N/A	2016/10/31	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4722598	N/A	2016/10/29	Michelle Shearer

 Maxxam ID:
 DIM705

 Sample ID:
 EX3-11 (2.0-3.0)

 Matrix:
 Soil

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4722729	2016/10/28	2016/10/29	Roy Deveau
Moisture	BAL	4722671	N/A	2016/10/31	Alexander Nicol
ModTPH (T1) Calc. for Soil	CALC	4722653	N/A	2016/10/31	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4722598	N/A	2016/10/29	Michelle Shearer

Maxxam ID:	DIM706
Sample ID:	EX3-12 (3.5-4.0)
Matrix:	Soil

Collected:	2016/10/27
Relinquished:	2016/10/28
Received:	2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4722729	2016/10/28	2016/10/29	Roy Deveau
Moisture	BAL	4722671	N/A	2016/10/31	Alexander Nicol
ModTPH (T1) Calc. for Soil	CALC	4722653	N/A	2016/10/31	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4722598	N/A	2016/10/29	Michelle Shearer



GENERAL COMMENTS

Each te	Each temperature is the average of up to three cooler temperatures taken at receipt							
	Package 1 0.0°C							
Double	Double water wash and silica gel clean-up performed on soil extracts.							
Results	relate only to the it	ems tested.						



QUALITY ASSURANCE REPORT

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
4722598	MS3	Method Blank	1,4-Difluorobenzene	2016/10/28		99	%	60 - 140
			4-Bromofluorobenzene	2016/10/28		99	%	60 - 140
			D4-1,2-Dichloroethane	2016/10/28		96	%	60 - 140
			Isobutylbenzene - Volatile	2016/10/28		96	%	60 - 130
			Benzene	2016/10/28	<0.025		mg/kg	
			Toluene	2016/10/28	<0.025		mg/kg	
			Ethylbenzene	2016/10/28	<0.025		mg/kg	
			Total Xylenes	2016/10/28	<0.050		mg/kg	
			C6 - C10 (less BTEX)	2016/10/28	<2.5		mg/kg	
4722729	RDE	Method Blank	n-Dotriacontane - Extractable	2016/10/28		111	%	30 - 130
			Isobutylbenzene - Extractable	2016/10/28		72	%	30 - 130
			>C10-C16 Hydrocarbons	2016/10/28	<10		mg/kg	
			>C16-C21 Hydrocarbons	2016/10/28	<10		mg/kg	
			>C21- <c32 hydrocarbons<="" p=""></c32>	2016/10/28	<15		mg/kg	
4722598	MS3	LCS	1,4-Difluorobenzene	2016/10/28		102	%	60 - 140
			4-Bromofluorobenzene	2016/10/28		99	%	60 - 140
			D4-1,2-Dichloroethane	2016/10/28		99	%	60 - 140
			Isobutylbenzene - Volatile	2016/10/28		96	%	60 - 130
			Benzene	2016/10/28		85	%	60 - 140
			Toluene	2016/10/28		87	%	60 - 140
			Ethylbenzene	2016/10/28		91	%	60 - 140
			Total Xylenes	2016/10/28		91	%	60 - 140
4722729	RDE	LCS	n-Dotriacontane - Extractable	2016/10/28		112	%	30 - 130
			Isobutylbenzene - Extractable	2016/10/28		77	%	30 - 130
			>C10-C16 Hydrocarbons	2016/10/28		107	%	30 - 130
			>C16-C21 Hydrocarbons	2016/10/28		101	%	30 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2016/10/28</td><td></td><td>115</td><td>%</td><td>30 - 130</td></c32>	2016/10/28		115	%	30 - 130
LCS: A bla	ank ma	atrix sample to which a	a known amount of the analyte, usually from	a second source, has bee	en added. Used	d to evaluate m	nethod a	ccuracy.

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.



VALIDATION SIGNATURE PAGE

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

Kosmarie Moe Donald

Rosemarie MacDonald, Scientific Specialist (Organics)

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



Success Through Science®

DATA QUALITY WAIVER

2016/10/31 05:10 PM

Invoice Clie	nvoice Client Name: AECOM Canada Ltd Maxxam Job #: B6N3491												
Invoice Clie Invoice Pro	ent ID #: 30110 bject Manager: Accounts	s Payable			Site Location: 64 MILL LA Client Project #: 604382	KE RD, HUBBARDS, NS 49							
Report To Report To Report To Maxxam Pr	Client Name: AECOM C Client ID #: 19160 Project Manager: Tim B roject Manager: Keri Ma	anada Ltd. Bachiu ackay			Task #: N/A-IOL CTC Quote: B62542 COC/Submission #: 5778 TAT: 3 Days Rush: Yes	38-46-01	Received By Received DQW # DQW Created By DQW Created	: Alyson Walters : 2016/10/28 09:41 : 2715 : Keri Mackay : 2016/10/31 16:39					
Lab ID	Client Sample ID	Matrix	Test Code	Analysis Type	Parameters	Deviation	Root Cause	Potential Impact					
DIM693	EX3-1 (3.0-4.0)	Soil	EPHPIRI-S	ТРНС	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	#10 Lab Error	This may represent a high bias for this parameter. However, since the results were non detect, there is no impact on data quality.					
DIM694	EX3-2 (2.5-3.5)	Soil	EPHPIRI-S	ТРНС	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	#10 Lab Error	This may represent a high bias for this parameter. However, since the results were non detect, there is no impact on data quality.					
DIM695	EX3-3 (1.0-2.0)	Soil	EPHPIRI-S	ТРНС	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	#10 Lab Error	This may represent a high bias for this parameter. However, since the results were non detect, there is no impact on data quality.					
DIM696	EX3-4 (3.5-4.0)	Soil	EPHPIRI-S	ТРНС	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	#10 Lab Error	This may represent a high bias for this parameter. However, since the results were non detect, there is no impact on data quality.					
DIM697	EX3-5 (1.0-2.0)	Soil	EPHPIRI-S	ТРНС	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	#10 Lab Error	This may represent a high bias for this parameter. However, since the results were non detect, there is no impact on data quality.					
DIM698	EX3-5 (3.0-4.0)	Soil	EPHPIRI-S	ТРНС	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	#10 Lab Error	This may represent a high bias for this parameter. However, since the results were non detect, there is no impact on data quality.					
DIM699	EX3-6 (2.5-3.5)	Soil	EPHPIRI-S	ТРНС	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	nuing Calibration #10 Lab Error This may represent a high bias f on Failure (CCV) parameter. However, since the res non detect, there is no impact o quality.						
DIM700	DUP F	Soil	EPHPIRI-S	ТРНС	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	#10 Lab Error	This may represent a high bias for this parameter. However, since the results were non detect, there is no impact on data quality.					



Success Through Science®

DATA QUALITY WAIVER

2016/10/31 05:10 PM

Invoice Clie Invoice Clie Invoice Pro	ent Name: AECOM Cana ent ID #: 30110 ject Manager: Account:	ida Ltd s Payable			Site Location: 64 MILL LA Client Project #: 604382	AKE RD, HUBBARDS, NS 49	Maxxam Job #: B6N3491				
Report To Report To Report To Maxxam Pr	Client Name: AECOM C Client ID #: 19160 Project Manager: Tim E roject Manager: Keri Ma	anada Ltd. Bachiu ackay			Task #: N/A-IOL CTC Quote: B62542 COC/Submission #: 5778 TAT: 3 Days Rush: Yes	38-46-01	Received By Received DQW # DQW Created By DQW Created	: Alyson Walters : 2016/10/28 09:41 : 2715 : Keri Mackay : 2016/10/31 16:39			
DIM701	EX3-7 (1.0-2.0)	Soil	EPHPIRI-S	ТРНС	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	#10 Lab Error	This may represent a high bias for this parameter. However, since the results were non detect, there is no impact on data quality.			
DIM702	EX3-8 (3.5-4.0)	Soil	EPHPIRI-S	ТРНС	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	#10 Lab Error	This may represent a high bias for this parameter. However, since the results were non detect, there is no impact on data quality.			
DIM703	EX3-9 (3.0-4.0)	Soil	EPHPIRI-S	ТРНС	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	#10 Lab Error	This may represent a high bias for this parameter. However, since the results were non detect, there is no impact on data quality.			
DIM704	EX3-10 (1.5-2.5)	Soil	EPHPIRI-S	ТРНС	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	#10 Lab Error	This may represent a high bias for this parameter. However, since the results were non detect, there is no impact on data quality.			
DIM705	EX3-11 (2.0-3.0)	Soil	EPHPIRI-S	ТРНС	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	#10 Lab Error	This may represent a high bias for this parameter. However, since the results were non detect, there is no impact on data quality.			
DIM706 EX3-12 (3.5-4.0) Soil EPHPIRI-S TPI				ТРНС	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	This may represent a high bias for this parameter. However, since the results were non detect, there is no impact on data quality.				



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DATA QUALITY WAIVER

2016/10/31 05:10 PM

Invoice Client Name: AECOM Canada Ltd		Maxxam.	lob #: B6N3491			
Invoice Client ID #: 30110	Site Location: 64 MILL LAKE RD, HUBBARDS, NS					
Invoice Project Manager: Accounts Payable	Client Project #: 60438249					
	Task #: N/A-IOL CTC	Receive	d By: Alyson Walters			
Report To Client Name: AECOM Canada Ltd.	Quote: B62542	Rece	eived: 2016/10/28 09:41			
Report To Client ID #: 19160	COC/Submission #: 577838-46-01					
Report To Project Manager: Tim Bachiu		DC	QW #: 2715			
	TAT: 3 Davs	DQW Created By: Keri Mackay				
Maxxam Project Manager: Keri Mackay	Rush: Yes	DOW Cre	ated: 2016/10/31 16:39			
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Weiver leaved Du		Nome	Kari Maakay			
waiver issued by:		Name:	Keri Mackay			
Then Nachay_						
Signature:	Date: 2016/10/31 16:40	Title:	Project Manager - Bedford			
Data Quality Waiver Reviewed and Accepted By:		Name:				
	D .1.	- '				
Signature:		litle:				
Data Quality Waiver Reviewed and Declined By:		Name:				
Signature:	Date:	Title:				
Comments / Requested Actions:						

If this waiver is not returned, or the undersigned Maxxam Analytics representative not contacted within 7 days of issuance, the issue will be regarded as closed and the associated data will be deemed acceptable as reported.

Maxiam	200 Bluewat Bedford, No www.maxxa	ter Road ova Scotia im.ca	B4B 10	Phone: (902) 420-0203 3 1G9 Fax: (902) 420-8612 Toll Free: 800-563-6266 REPORT INFORMATION							EXX	ONN CHA	NOBI AIN-C AN	L/IMPERI DF-CUSTO ALYSIS REC	AL OIL DY RE DUESTEL	- MA. COR	XXAN D	1		Co	Pa of C # 577	ge ¹ of <u>2</u> '838-46-01	2	5	77838
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Contact Name:		Con	act Nan	ne:				-					_											_	
Address:		Add	ess:																						
1701 Hollis Street		1701	Hollis S	Street																					
Halifax NS B3J 3M8		Halif	ax NS B	3J 3M8				~																	
Email: CANSSC.E-billing@	gaecom.com, time	oth Ema	il:	Tim	othy.bachiu@aed	com.com, L	aura.Macls	pres																	
Phone: (902) 428-2048 x		Pho	ne:	(902	2) 428-2048 x			(field	SMG	(SIM	pa														
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	200 Bluewater I Bedford, Nova www.maxxam.c	Road Scotia B4B 1G ca	Phone: (902) 420-0203 a B4B 1G9 Fax: (902) 420-8612 Toll Free: 800-563-6266 REPORT INFORMATION							EXX	CHA	IOBIL IN-OI ANA	/IMPERI -CUSTO LYSIS REC	AL OI DDY F QUEST	IL - M RECO TED	AXXA RD	М		Pi C of C # 57	age 2 t 2 7838-47-01	I	57783	3 8
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Contact Name:		Contact Nam	ne:				-																
Accounts Payable		Tim Bachiu																					
Address:		Address:																					
1701 Hollis Street Halifax NS B3 L3M8		1/01 Hollis S Halifay NS B	treet																				
Email: CANSSC.E-billing@aecon	m.com. timoth	Email:	Timothy.t	bachiu@aecc	m.com. Laur	a Macis	('s																
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3 EX3-11(2.0-3.0)			89	rYYAMUD.	19:00																		
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	1	2 3	COOLIN	NG MEDIA PRESI	ENT	<u> </u>	1	(FD D)/	2		3	COOLING	MEDIA PRESE	NT		°C	4	2	3		AXXAM .	JOB #	
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COC - 1009 (2013) IOL - NS	1990	White	Maxxam	82294 CB0 75 CT0	1.5.1414	Ye Ye	allow: Clier	nt	1911				ACTIVENCE.	1-9433 D.851			r y y a tri bar dan anti			. 16			<u>_1</u>

ΑΞϹΟΜ

Data Quality Review Checklist

Consultant: Al Location: 64	ECOM 1 MILL LA	KE RD. N	102,	Sampling Date: Laboratory:	2016/10/27 Maxxam							
H	UBBARD	S, NS										
Consultant Project Number: 60)438249			Sample Submission Number:	B6N3491							
Are All Laboratory QC Samples V	Vithin Ac	ceptance	Criteria	(Yes, No, Not Applicable)?								
	Yes	No	NA	Commer	nts							
Instrument Surrogate Recovery	\boxtimes											
Extraction Surrogate Recovery	\boxtimes											
Method Blank Concentration	\boxtimes											
Matrix Duplicate RPD			\boxtimes									
Matrix Spike Recovery			\boxtimes									
Lab Control Sample Recovery	\boxtimes											
Are All Field QC Samples Within	Alert Lim	its (Yes,	No, Not A	Applicable)?								
Yes No NA Comments												
Field Blank Concentration			\boxtimes									
Trip Blank Concentration			\boxtimes									
Field Duplicate RPD	\boxtimes											
Has CoA been signed off?	n ototiati			X Yes								
Has lab warranted all tests were	n statistic analyzed	following										
Were all samples analyzed within	hold tim	es?	900131	× Yes								
All volatiles samples methanol ex	tracted (i	f require	d) within 4	48 hours?								
Is Chain of Custody completed ar	nd signed	1?	<i>.</i>	⊠ Yes	□ No							
Were sample temperatures accept	otable wh	en they i	reached I	ab?⊠ Yes	□ No							
Is data considered to be reliable?	,		🛛 Yes	🗆 No								
If answer is "No", describe and pr	ovide rat	ionale:										
Reviewed by (Print): Janio Date: Octo	Reviewed by (Print): Janice Shea Reviewed by (Signature): Janua Shea Date: October 8, 2019											



Attention:Tim Bachiu

B3J 3M8

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax. NS CANADA

Task Order#: N/A-CTC SITE Site#: Site Location: 64 MILL LAKE ROAD NO 2, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 577838-09-01

> Report Date: 2016/11/14 Report #: R4246406 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6N9476

Received: 2016/11/04, 10:39

Sample Matrix: Soil # Samples Received: 10

Analyses	Quantity	Laboratory Method	Primary Reference
B[a]P Total Potency Equivalent	7	N/A	CCME CSQG
1,3-Dichloropropene Sum (soil)	7	N/A	Auto Calc.
TEH in Soil (PIRI) (2)	5	ATL SOP 00111	Atl. RBCA v3 m
Glycol in Soil (1)	7		
Metals Solids Acid Extr. ICPMS	7	ATL SOP 00058	EPA 6020A R1 m
Moisture	10	ATL SOP 00001	OMOE Handbook 1983 m
Double water wash (soil)	5	ATL SOP 00111	N/A
PAH Compounds by GCMS (SIM) (2)	7	ATL SOP 00102	EPA 8270D 2007 m
PCBs in soil by GC/ECD (2)	7	ATL SOP 00106	EPA 8082A m
PCB Aroclor sum (soil)	7	N/A	Auto Calc.
Silica Gel Clean-up (Soil)	5	ATL SOP 00111	EPA 3630C R3 m
ModTPH (T1) Calc. for Soil	5	N/A	Atl. RBCA v3.1 m
VOCs in Soil - Field Preserved (3)	7	ATL SOP 00133	EPA 8260C R3 m
VPH in Soil (PIRI) - Field Preserved (3)	5	ATL SOP 00119	Atl. RBCA v3.1 m

Remarks:

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

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

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

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



Task Order#: N/A-CTC SITE Site#: Site Location: 64 MILL LAKE ROAD NO 2, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 577838-09-01

Attention:Tim Bachiu

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2016/11/14 Report #: R4246406 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6N9476

Received: 2016/11/04, 10:39

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 Bedford to Calgary Subcontract

(2) Soils are reported on a dry weight basis unless otherwise specified.

(3) No lab extraction date is given for C6-C10/BTEX and VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.

Encryption Key

heri Machay Keri MacKay Project Manager - Bedford 14 Nov 2016 16:49:01

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Keri Mackay, Project Manager - Bedford Email: kmackay@maxxam.ca Phone# (902)420-0203 Ext:294

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



RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		DJR532	DJR532		DJR533	DJR534	DJR535		
Sampling Date		2016/11/03	2016/11/03		2016/11/03	2016/11/03	2016/11/03		
		15:10	15:10		15:35	15:50	16:05		
COC Number		577838-09-01	577838-09-01		577838-09-01	577838-09-01	577838-09-01		
	UNITS	FWO-1	FWO-1 Lab-Dup	RDL	FWO-2	FWO-3	FWO-4	RDL	QC Batch
Inorganics									
Moisture	%	8.2		1.0	13	12	13	1.0	4733800
Petroleum Hydrocarbons									
Benzene	mg/kg	<0.025	<0.025	0.025	<0.025	<0.025	<0.025	0.025	4736411
Toluene	mg/kg	<0.025	<0.025	0.025	<0.025	<0.025	<0.025	0.025	4736411
Ethylbenzene	mg/kg	<0.025	<0.025	0.025	<0.025	<0.025	<0.025	0.025	4736411
Total Xylenes	mg/kg	0.20	0.21	0.050	<0.050	<0.050	<0.050	0.050	4736411
C6 - C10 (less BTEX)	mg/kg	130	140	2.5	<2.5	<2.5	<2.5	2.5	4736411
>C10-C16 Hydrocarbons	mg/kg	6700 (1)	5200 (1)	100	33	30	<10	10	4738467
>C16-C21 Hydrocarbons	mg/kg	4600 (1)	3500 (1)	100	81	130	63	10	4738467
>C21- <c32 hydrocarbons<="" p=""></c32>	mg/kg	13000 (1)	10000 (1)	150	380	790	640	15	4738467
Modified TPH (Tier1)	mg/kg	25000		150	490	950	700	15	4733394
Reached Baseline at C32	mg/kg	No		N/A	Yes	Yes	Yes	N/A	4738467
Hydrocarbon Resemblance	mg/kg	COMMENT (2)		N/A	COMMENT (2)	COMMENT (2)	COMMENT (3)	N/A	4738467
Extraction Surrogate Recovery (%)									
Isobutylbenzene - Extractable	%	64	67		87	95	93		4738467
n-Dotriacontane - Extractable	%	80 (4)	94 (4)		127	130	111		4738467
Isobutylbenzene - Volatile	%	47 (5)	50 (5)		100	102	97		4736411
Instrument Surrogate Recovery (%)									
1,4-Difluorobenzene	%	105	111		100	106	103		4736411
4-Bromofluorobenzene	%	102	108		101	107	106		4736411
D4-1,2-Dichloroethane	%	103	108		96	102	99		4736411

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) Elevated TEH RDL(s) due to sample dilution.

(2) Weathered fuel oil fraction. Lube oil fraction.

(3) Lube oil fraction.

(4) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.

(5) VPH surrogate(s) not within reference method but within client specified acceptance limits. Analysis was repeated with similar results.



Maxxam ID		DJR536		
Sampling Data		2016/11/03		
		16:20		
COC Number		577838-09-01		
	UNITS	FWO-5	RDL	QC Batch
Inorganics				
Moisture	%	13	1.0	4733800
Petroleum Hydrocarbons				
Benzene	mg/kg	<0.025	0.025	4736411
Toluene	mg/kg	<0.025	0.025	4736411
Ethylbenzene	mg/kg	<0.025	0.025	4736411
Total Xylenes	mg/kg	<0.050	0.050	4736411
C6 - C10 (less BTEX)	mg/kg	<2.5	2.5	4736411
>C10-C16 Hydrocarbons	mg/kg	89	10	4738467
>C16-C21 Hydrocarbons	mg/kg	260	10	4738467
>C21- <c32 hydrocarbons<="" td=""><td>mg/kg</td><td>1300</td><td>15</td><td>4738467</td></c32>	mg/kg	1300	15	4738467
Modified TPH (Tier1)	mg/kg	1600	15	4733394
Reached Baseline at C32	mg/kg	Yes	N/A	4738467
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	N/A	4738467
Extraction				
Surrogate Recovery (%)				
Isobutylbenzene - Extractable	%	90		4738467
n-Dotriacontane - Extractable	%	126		4738467
Isobutylbenzene - Volatile	%	98		4736411
Instrument				
Surrogate Recovery (%)				
1,4-Difluorobenzene	%	110		4736411
4-Bromofluorobenzene	%	109		4736411
D4-1,2-Dichloroethane	%	106		4736411
RDL = Reportable Detection Lim	it			
QC Batch = Quality Control Batc	h			
N/A = Not Applicable				
(1) Weathered fuel oil fraction.	Lube oil	fraction.		

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)



ATLANTIC VOC IN SOIL (FIELD PRES.)

Maxxam ID		DJR532	DJR532	DJR536	DJR537	DJR538		
Sampling Date		2016/11/03 15:10	2016/11/03 15:10	2016/11/03 16:20	2016/11/03 16:00	2016/11/03 15:00		
COC Number		577838-09-01	577838-09-01	577838-09-01	577838-09-01	577838-09-01		
	UNITS	FWO-1	FWO-1 Lab-Dup	FWO-5	FA1-X (0.3-0.4)	FA6-X (0.5-0.6)	RDL	QC Batch
Volatile Organics								
1,1,1-Trichloroethane	ug/kg	<25	<25	<25	<25	<25	25	4740267
1,1,2,2-Tetrachloroethane	ug/kg	<25	<25	<25	<25	<25	25	4740267
1,1,2-Trichloroethane	ug/kg	<25	<25	<25	<25	<25	25	4740267
1,1-Dichloroethane	ug/kg	<25	<25	<25	<25	<25	25	4740267
1,1-Dichloroethylene	ug/kg	<25	<25	<25	<25	<25	25	4740267
1,2-Dichlorobenzene	ug/kg	<25	<25	<25	<25	<25	25	4740267
1,2-Dichloroethane	ug/kg	<25	<25	<25	<25	<25	25	4740267
1,2-Dichloropropane	ug/kg	<25	<25	<25	<25	<25	25	4740267
1,3-Dichlorobenzene	ug/kg	<25	<25	<25	<25	<25	25	4740267
1,3-Dichloropropene (total)	ug/kg	<25		<25	<25	<25	25	4733722
1,4-Dichlorobenzene	ug/kg	<25	<25	<25	<25	<25	25	4740267
Benzene	ug/kg	<25	<25	<25	<25	<25	25	4740267
Bromodichloromethane	ug/kg	<25	<25	<25	<25	<25	25	4740267
Bromoform	ug/kg	<25	<25	<25	<25	<25	25	4740267
Bromomethane	ug/kg	<50	<50	<50	<50	<50	50	4740267
Carbon Tetrachloride	ug/kg	<25	<25	<25	<25	<25	25	4740267
Chlorobenzene	ug/kg	<25	<25	<25	<25	<25	25	4740267
Chloroform	ug/kg	<25	<25	<25	<25	<25	25	4740267
cis-1,2-Dichloroethylene	ug/kg	<25	<25	<25	<25	<25	25	4740267
Dibromochloromethane	ug/kg	<25	<25	<25	<25	<25	25	4740267
Ethylbenzene	ug/kg	<25	<25	<25	<25	<25	25	4740267
Ethylene Dibromide	ug/kg	<25	<25	<25	<25	<25	25	4740267
Methyl t-butyl ether (MTBE)	ug/kg	<25	<25	<25	<25	<25	25	4740267
Methylene Chloride(Dichloromethane)	ug/kg	<50	<50	<50	<50	<50	50	4740267
Styrene	ug/kg	<25	<25	<25	<25	<25	25	4740267
Tetrachloroethylene	ug/kg	<25	<25	<25	<25	<25	25	4740267
Toluene	ug/kg	<25	<25	<25	<25	<25	25	4740267
Total Xylenes	ug/kg	210	240	<50	<50	<50	50	4740267
trans-1,2-Dichloroethylene	ug/kg	<25	<25	<25	<25	<25	25	4740267
Trichloroethylene	ug/kg	<10	<10	<10	<10	<10	10	4740267
Vinyl Chloride	ug/kg	<20	<20	<20	<20	<20	20	4740267
RDL = Reportable Detection Limit QC Batch = Quality Control Batch								

Lab-Dup = Laboratory Initiated Duplicate



ATLANTIC VOC IN SOIL (FIELD PRES.)

Maxxam ID		DJR532	DJR532	DJR536	DJR537	DJR538		
Sampling Data		2016/11/03	2016/11/03	2016/11/03	2016/11/03	2016/11/03		
		15:10	15:10	16:20	16:00	15:00		
COC Number		577838-09-01	577838-09-01	577838-09-01	577838-09-01	577838-09-01		
	UNITS	FWO-1	FWO-1 Lab-Dup	FWO-5	FA1-X (0.3-0.4)	FA6-X (0.5-0.6)	RDL	QC Batch
Extraction								
Surrogate Recovery (%)								
D10-o-Xylene	%	103	126	108	115	111		4740267
Instrument								
Surrogate Recovery (%)								
4-Bromofluorobenzene	%	99	99	100 (1)	98	99 (1)		4740267
D4-1,2-Dichloroethane	%	96	97	83	87	86		4740267
D8-Toluene	%	101	100	99	98	99		4740267

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

(1) VOC samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.



ATLANTIC VOC IN SOIL (FIELD PRES.)

Maxxam ID		DJR539	DJR540	DJR541		
Sampling Date		2016/11/03	2016/11/03	2016/11/03		
		16:30	14:30	15:30		
COC Number		577838-09-01	577838-09-01	577838-09-01		
	UNITS	FA10-X (0.3-0.4)	FA4-X (0.5-0.6)	FA7-X (0.4-0.5)	RDL	QC Batch
Volatile Organics						
1,1,1-Trichloroethane	ug/kg	<25	<25	<25	25	4740267
1,1,2,2-Tetrachloroethane	ug/kg	<25	<25	<25	25	4740267
1,1,2-Trichloroethane	ug/kg	<25	<25	<25	25	4740267
1,1-Dichloroethane	ug/kg	<25	<25	<25	25	4740267
1,1-Dichloroethylene	ug/kg	<25	<25	<25	25	4740267
1,2-Dichlorobenzene	ug/kg	<25	<25	<25	25	4740267
1,2-Dichloroethane	ug/kg	<25	<25	28	25	4740267
1,2-Dichloropropane	ug/kg	<25	<25	<25	25	4740267
1,3-Dichlorobenzene	ug/kg	<25	<25	<25	25	4740267
1,3-Dichloropropene (total)	ug/kg	<25	<25	<25	25	4733722
1,4-Dichlorobenzene	ug/kg	<25	<25	<25	25	4740267
Benzene	ug/kg	<25	<25	<25	25	4740267
Bromodichloromethane	ug/kg	<25	<25	<25	25	4740267
Bromoform	ug/kg	<25	<25	<25	25	4740267
Bromomethane	ug/kg	<50	<50	<50	50	4740267
Carbon Tetrachloride	ug/kg	<25	<25	<25	25	4740267
Chlorobenzene	ug/kg	<25	<25	<25	25	4740267
Chloroform	ug/kg	<25	<25	<25	25	4740267
cis-1,2-Dichloroethylene	ug/kg	<25	<25	<25	25	4740267
Dibromochloromethane	ug/kg	<25	<25	<25	25	4740267
Ethylbenzene	ug/kg	<25	<25	<25	25	4740267
Ethylene Dibromide	ug/kg	<25	<25	<25	25	4740267
Methyl t-butyl ether (MTBE)	ug/kg	<25	<25	<25	25	4740267
Methylene Chloride(Dichloromethane)	ug/kg	<50	<50	<50	50	4740267
Styrene	ug/kg	<25	<25	<25	25	4740267
Tetrachloroethylene	ug/kg	<25	<25	<25	25	4740267
Toluene	ug/kg	<25	<25	<25	25	4740267
Total Xylenes	ug/kg	<50	<50	<50	50	4740267
trans-1,2-Dichloroethylene	ug/kg	<25	<25	<25	25	4740267
Trichloroethylene	ug/kg	<10	<10	<10	10	4740267
Vinyl Chloride	ug/kg	<20	<20	<20	20	4740267
RDL = Reportable Detection Limit	•	•		•		•
QC Batch = Quality Control Batch						



ATLANTIC VOC IN SOIL (FIELD PRES.)

Maxxam ID		DJR539	DJR540	DJR541		
Sampling Date		2016/11/03	2016/11/03	2016/11/03		
COC Number		577838-09-01	577838-09-01	577838-09-01		
	UNITS	FA10-X (0.3-0.4)	FA4-X (0.5-0.6)	FA7-X (0.4-0.5)	RDL	QC Batch
Extraction Surrogate Recovery (%)						
D10-o-Xylene	%	111	108	114		4740267
Instrument Surrogate Recovery (%)						
4-Bromofluorobenzene	%	101	99	100		4740267
D4-1,2-Dichloroethane	%	87	90	88		4740267
D8-Toluene	%	100	99	99		4740267
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						



RESULTS OF ANALYSES OF SOIL

Maxxam ID		DJR532	DJR536	DJR537	DJR538	DJR539			
Sampling Data		2016/11/03	2016/11/03	2016/11/03	2016/11/03	2016/11/03			
		15:10	16:20	16:00	15:00	16:30			
COC Number		577838-09-01	577838-09-01	577838-09-01	577838-09-01	577838-09-01			
	UNITS	FWO-1	FWO-5	FA1-X (0.3-0.4)	FA6-X (0.5-0.6)	FA10-X (0.3-0.4)	RDL	QC Batch	
Inorganics									
Moisture	%			14	11	12	1.0	4733800	
Subcontracted Analysis									
Subcontract Parameter	N/A	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	N/A	4739158	
RDL = Reportable Detection Limit									

QC Batch = Quality Control Batch

N/A = Not Applicable

Maxxam ID		DJR540	DJR541						
Sampling Data		2016/11/03	2016/11/03						
Sampling Date		14:30	15:30						
COC Number		577838-09-01	577838-09-01						
	UNITS	FA4-X (0.5-0.6)	FA7-X (0.4-0.5)	RDL	QC Batch				
Inorganics									
Moisture	%	15	19	1.0	4733800				
Subcontracted Analysis									
Subcontract Parameter	N/A	ATTACHED	ATTACHED	N/A	4739158				
RDL = Reportable Detection L	imit								
QC Batch = Quality Control Batch									
N/A = Not Applicable									





ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		DJR532	DJR536	DJR537	DJR538	DJR539		
Sampling Date		2016/11/03 15:10	2016/11/03 16:20	2016/11/03 16:00	2016/11/03 15:00	2016/11/03 16:30		
COC Number		577838-09-01	577838-09-01	577838-09-01	577838-09-01	577838-09-01		
	UNITS	FWO-1	FWO-5	FA1-X (0.3-0.4)	FA6-X (0.5-0.6)	FA10-X (0.3-0.4)	RDL	QC Batch
Metals								
Acid Extractable Aluminum (Al)	mg/kg	7800	10000	10000	8300	9000	10	4736448
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	4736448
Acid Extractable Arsenic (As)	mg/kg	5.7	8.4	5.7	7.6	5.0	2.0	4736448
Acid Extractable Barium (Ba)	mg/kg	42	45	24	27	22	5.0	4736448
Acid Extractable Beryllium (Be)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	4736448
Acid Extractable Boron (B)	mg/kg	<50	<50	<50	<50	<50	50	4736448
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	0.30	4736448
Acid Extractable Chromium (Cr)	mg/kg	9.2	13	6.5	8.2	6.7	2.0	4736448
Acid Extractable Cobalt (Co)	mg/kg	4.0	6.5	2.3	2.8	2.4	1.0	4736448
Acid Extractable Copper (Cu)	mg/kg	8.3	11	5.4	6.6	5.0	2.0	4736448
Acid Extractable Iron (Fe)	mg/kg	11000	15000	8500	9200	7800	50	4736448
Acid Extractable Lead (Pb)	mg/kg	18	14	9.8	8.5	9.8	0.50	4736448
Acid Extractable Manganese (Mn)	mg/kg	200	280	160	190	170	2.0	4736448
Acid Extractable Mercury (Hg)	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	4736448
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	4736448
Acid Extractable Nickel (Ni)	mg/kg	7.5	12	4.6	5.1	4.6	2.0	4736448
Acid Extractable Selenium (Se)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4736448
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4736448
Acid Extractable Strontium (Sr)	mg/kg	<5.0	5.3	<5.0	<5.0	<5.0	5.0	4736448
Acid Extractable Thallium (TI)	mg/kg	0.12	0.13	<0.10	<0.10	<0.10	0.10	4736448
Acid Extractable Tin (Sn)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	4736448
Acid Extractable Uranium (U)	mg/kg	0.95	0.86	0.92	0.97	0.88	0.10	4736448
Acid Extractable Vanadium (V)	mg/kg	14	21	10	11	10	2.0	4736448
Acid Extractable Zinc (Zn)	mg/kg	43	55	35	29	32	5.0	4736448
RDL = Reportable Detection Limit								

QC Batch = Quality Control Batch



ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		DIR539	DIR540	DIR541		
		2016/11/02	2016/11/02	2016/11/02		
Sampling Date		16:30	14:30	15:30		
COC Number		577838-09-01	577838-09-01	577838-09-01		
		FA10-X				
	UNITS	(0.3-0.4)	FA4-X (0.5-0.6)	FA7-X (0.4-0.5)	RDL	QC Batch
		Lab-Dup				
Metals						
Acid Extractable Aluminum (Al)	mg/kg	8900	9900	7000	10	4736448
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	<2.0	2.0	4736448
Acid Extractable Arsenic (As)	mg/kg	5.4	2.9	6.9	2.0	4736448
Acid Extractable Barium (Ba)	mg/kg	20	9.6	25	5.0	4736448
Acid Extractable Beryllium (Be)	mg/kg	<2.0	<2.0	<2.0	2.0	4736448
Acid Extractable Boron (B)	mg/kg	<50	<50	<50	50	4736448
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	<0.30	<0.30	0.30	4736448
Acid Extractable Chromium (Cr)	mg/kg	6.1	4.1	7.3	2.0	4736448
Acid Extractable Cobalt (Co)	mg/kg	2.3	1.5	2.6	1.0	4736448
Acid Extractable Copper (Cu)	mg/kg	5.0	2.7	6.4	2.0	4736448
Acid Extractable Iron (Fe)	mg/kg	7500	5600	7900	50	4736448
Acid Extractable Lead (Pb)	mg/kg	8.7	5.4	11	0.50	4736448
Acid Extractable Manganese (Mn)	mg/kg	170	100	190	2.0	4736448
Acid Extractable Mercury (Hg)	mg/kg	<0.10	<0.10	<0.10	0.10	4736448
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	<2.0	<2.0	2.0	4736448
Acid Extractable Nickel (Ni)	mg/kg	4.4	2.5	5.1	2.0	4736448
Acid Extractable Selenium (Se)	mg/kg	<1.0	<1.0	<1.0	1.0	4736448
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	<0.50	0.50	4736448
Acid Extractable Strontium (Sr)	mg/kg	<5.0	<5.0	<5.0	5.0	4736448
Acid Extractable Thallium (Tl)	mg/kg	<0.10	<0.10	<0.10	0.10	4736448
Acid Extractable Tin (Sn)	mg/kg	<2.0	<2.0	<2.0	2.0	4736448
Acid Extractable Uranium (U)	mg/kg	0.98	0.77	0.95	0.10	4736448
Acid Extractable Vanadium (V)	mg/kg	9.7	7.8	9.6	2.0	4736448
Acid Extractable Zinc (Zn)	mg/kg	35	12	25	5.0	4736448
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						

Lab-Dup = Laboratory Initiated Duplicate



SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		DJR532		DJR532		DJR536	DJR537		
Sampling Data		2016/11/03		2016/11/03		2016/11/03	2016/11/03		
		15:10		15:10		16:20	16:00		
COC Number		577838-09-01		577838-09-01		577838-09-01	577838-09-01		
	UNITS	FWO-1	RDL	FWO-1 Lab-Dup	RDL	FWO-5	FA1-X (0.3-0.4)	RDL	QC Batch
Polyaromatic Hydrocarbons									
1-Methylnaphthalene	mg/kg	5.7	0.010	5.2	0.010	<0.010	0.019	0.010	4736533
2-Methylnaphthalene	mg/kg	5.3	0.010	4.8	0.010	<0.010	<0.010	0.010	4736533
Acenaphthene	mg/kg	<0.94 (1)	0.94	<0.91 (1)	0.91	<0.010	<0.010	0.010	4736533
Acenaphthylene	mg/kg	<1.7 (1)	1.7	<1.6 (1)	1.6	<0.010	<0.010	0.010	4736533
Anthracene	mg/kg	<1.1 (1)	1.1	<0.99 (1)	0.99	<0.010	<0.010	0.010	4736533
Fluoranthene	mg/kg	1.3	0.010	1.1	0.010	<0.010	0.021	0.010	4736533
Fluorene	mg/kg	<2.4 (1)	2.4	<2.2 (1)	2.2	<0.010	<0.010	0.010	4736533
Naphthalene	mg/kg	<1.5 (1)	1.5	<1.3 (1)	1.3	<0.010	<0.010	0.010	4736533
Phenanthrene	mg/kg	3.5	0.010	3.1	0.010	<0.010	0.024	0.010	4736533
Pyrene	mg/kg	1.4	0.010	1.2	0.010	0.015	0.016	0.010	4736533
Benzo(a)anthracene	mg/kg	0.046	0.010	0.039	0.010	<0.010	<0.010	0.010	4736533
Benzo(a)pyrene	mg/kg	0.014	0.010	0.013	0.010	<0.010	<0.010	0.010	4736533
Benzo(b)fluoranthene	mg/kg	0.026	0.010	0.025	0.010	<0.010	<0.010	0.010	4736533
Benzo(g,h,i)perylene	mg/kg	0.042	0.010	0.039	0.010	0.015	<0.010	0.010	4736533
Benzo(j)fluoranthene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	<0.010	0.010	4736533
Benzo(k)fluoranthene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	<0.010	0.010	4736533
Chrysene	mg/kg	0.26	0.010	0.23	0.010	<0.010	<0.010	0.010	4736533
Dibenz(a,h)anthracene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	<0.010	0.010	4736533
Indeno(1,2,3-cd)pyrene	mg/kg	<0.010	0.010	<0.010	0.010	<0.010	<0.010	0.010	4736533
Benzo(a)pyrene Total Potency Equiv.	mg/kg	<0.03	0.03			<0.03	<0.03	0.03	4733721
Extraction Surrogate Recovery (%)									
D10-Anthracene	%	81		80		98	95		4736533
D14-Terphenyl (FS)	%	115		112		103	95		4736533
D8-Acenaphthylene	%	111		109		93	90		4736533
RDL = Reportable Detection Limit		ł	<u>.</u>	ł	<u>.</u>	<u>.</u>	ł	ļ	

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

(1) Elevated PAH RDL(s) due to matrix / co-extractive interference.





SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Sampling Date 2016/11/03 2016/11/03 2016/11/03 2016/11/03 2016/11/03 2016/11/03 2016/11/03 2016/11/03 2016/11/03 2016/11/03 2016/11/03 15/33 0 CC Number 577838-00-01 577838	Maxxam ID		DJR538		DJR539	DJR540		DJR541		
CO Number 577838-09-01 577838-09-01 577838-09-01 577838-09-01 FOR FA7-X (0.4-0.5) RD QC Bath Polyaromatic Hydrocarbons mg/kg <0.010	Sampling Date		2016/11/03 15:00		2016/11/03 16:30	2016/11/03 14:30		2016/11/03 15:30		
UNITSFAG-X (0.5-0.6)FADFAD-X (0.3-0.4)FAU-X (0.5-0.6)RDFAT-X (0.4-0.5)RDQC batchPolyaromatic Hydrocarbonsmg/kg<.0.010	COC Number		577838-09-01		577838-09-01	577838-09-01		577838-09-01		
Polyaromatic Hydrocarbons mg/kg <.0.010 0.010 <0.010 <0.010 0.010 <t< td=""><td></td><td>UNITS</td><td>FA6-X (0.5-0.6)</td><td>RDL</td><td>FA10-X (0.3-0.4)</td><td>FA4-X (0.5-0.6)</td><td>RDL</td><td>FA7-X (0.4-0.5)</td><td>RDL</td><td>QC Batch</td></t<>		UNITS	FA6-X (0.5-0.6)	RDL	FA10-X (0.3-0.4)	FA4-X (0.5-0.6)	RDL	FA7-X (0.4-0.5)	RDL	QC Batch
I-Methylnaphthalene mg/kg <0.010 0.010 <0.010 <0.010 0.010	Polyaromatic Hydrocarbons									
Parter mg/kg <0.010 0.010 <0.010 0.010 0.010 0.010 4736533 Acenaphthene mg/kg <0.010	1-Methylnaphthalene	mg/kg	<0.010	0.010	<0.010	<0.010	0.010	0.11	0.010	4736533
Accenaphthene mg/kg <0.010 0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0	2-Methylnaphthalene	mg/kg	<0.010	0.010	<0.010	<0.010	0.010	0.046	0.010	4736533
Accenaphthylene mg/kg <0.010 0.010 <0.010 <0.010 <0.010 <0.011 0.031 4736533 Anthracene mg/kg <0.010	Acenaphthene	mg/kg	<0.010	0.010	<0.010	<0.010	0.010	<0.010	0.010	4736533
Anthracene mg/kg <0.010 0.010 <0.010 <0.010 0.010 <0.010 0.010 4736533 Fluoranthene mg/kg 0.013 0.010 <0.010	Acenaphthylene	mg/kg	<0.010	0.010	<0.010	<0.010	0.010	<0.031 (1)	0.031	4736533
Fluoranthene mg/kg 0.013 0.010 <0.010 <0.010 0.011 0.014 0.010 4736533 Fluorene mg/kg <0.018 (1)	Anthracene	mg/kg	<0.010	0.010	<0.010	<0.010	0.010	<0.010	0.010	4736533
Fluorene mg/kg <0.018 (1) 0.018 <0.010 <0.010 <0.034 (1) 0.034 4736533 Naphthalene mg/kg <0.010	Fluoranthene	mg/kg	0.013	0.010	<0.010	<0.010	0.010	0.014	0.010	4736533
Naphthalene mg/kg <0.010 0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.0	Fluorene	mg/kg	<0.018 (1)	0.018	<0.010	<0.010	0.010	<0.034 (1)	0.034	4736533
Phenanthrene mg/kg 0.027 0.010 <0.010 <0.010 0.010 0.013 0.010 4736533 Pyrene mg/kg 0.013 0.010 <0.010	Naphthalene	mg/kg	<0.010	0.010	<0.010	<0.010	0.010	<0.010	0.010	4736533
pyrenemg/kg0.0130.010<0.010<0.0100.0100.0150.0104736533Benzo(a)anthracenemg/kg<0.010	Phenanthrene	mg/kg	0.027	0.010	<0.010	<0.010	0.010	0.073	0.010	4736533
Banzo(a)anthracene mg/kg <0.010 0.010 <0.010 0.010 <0.010 0.010 <0.010 0.010 4736533 Benzo(a)pyrene mg/kg <0.010	Pyrene	mg/kg	0.013	0.010	<0.010	<0.010	0.010	0.015	0.010	4736533
Banzo(a)pyrene mg/kg <0.010 0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <	Benzo(a)anthracene	mg/kg	<0.010	0.010	<0.010	<0.010	0.010	<0.010	0.010	4736533
Benzo(b)fluoranthenemg/kg<0.0100.010<0.010<0.010<0.010<0.010<136533Benzo(g,h,i)perylenemg/kg<0.010	Benzo(a)pyrene	mg/kg	<0.010	0.010	<0.010	<0.010	0.010	<0.010	0.010	4736533
Banzo(g,h,i)perylene mg/kg <0.010 0.010 <0.010 0.010 0.014 0.010 4736533 Banzo(j)fluoranthene mg/kg <0.010	Benzo(b)fluoranthene	mg/kg	<0.010	0.010	<0.010	<0.010	0.010	<0.010	0.010	4736533
Benzo(j)fluoranthene mg/kg <0.010 0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	Benzo(g,h,i)perylene	mg/kg	<0.010	0.010	<0.010	<0.010	0.010	0.014	0.010	4736533
Benzo(k)fluoranthene mg/kg <0.010 0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	Benzo(j)fluoranthene	mg/kg	<0.010	0.010	<0.010	<0.010	0.010	<0.010	0.010	4736533
Chrysene mg/kg <0.010 0.010 <0.010 0.010 <0.010 0.010 4736533 Dibenz(a,h)anthracene mg/kg <0.010	Benzo(k)fluoranthene	mg/kg	<0.010	0.010	<0.010	<0.010	0.010	<0.010	0.010	4736533
Dibenz(a,h)anthracene mg/kg <0.010 0.010 <0.010 0.010 <0.010 0.010 4736533 ndeno(1,2,3-cd)pyrene mg/kg <0.010	Chrysene	mg/kg	<0.010	0.010	<0.010	<0.010	0.010	<0.010	0.010	4736533
ndeno(1,2,3-cd)pyrene mg/kg <0.010 0.010 <0.010 0.010 <0.010 4736533 Benzo(a)pyrene Total Potency Equiv. mg/kg <0.03	Dibenz(a,h)anthracene	mg/kg	<0.010	0.010	<0.010	<0.010	0.010	<0.010	0.010	4736533
Benzo(a) pyrene Total Potency Equiv. mg/kg <0.03 0.03 <0.03 <0.03 <0.03 <0.03 4733721 Extraction Surrogate Recovery (%) M M M M M 92 90 87 4736533 D10-Anthracene % 96 96 91 92 91 92 4736533 D14-Terphenyl (FS) % 89 89 86 87 4736533	Indeno(1,2,3-cd)pyrene	mg/kg	<0.010	0.010	<0.010	<0.010	0.010	<0.010	0.010	4736533
Extraction Image: Supersogate Recovery (%) Image: Supersogate Recovery (%) <td>Benzo(a)pyrene Total Potency Equiv.</td> <td>mg/kg</td> <td><0.03</td> <td>0.03</td> <td><0.03</td> <td><0.03</td> <td>0.03</td> <td><0.03</td> <td>0.03</td> <td>4733721</td>	Benzo(a)pyrene Total Potency Equiv.	mg/kg	<0.03	0.03	<0.03	<0.03	0.03	<0.03	0.03	4733721
Surrogate Recovery (%) % 94 92 90 87 4736533 D10-Anthracene % 96 96 91 92 4736533 D14-Terphenyl (FS) % 89 89 86 87 4736533	Extraction									
D10-Anthracene % 94 92 90 87 4736533 D14-Terphenyl (FS) % 96 96 91 92 4736533 D8-Acenaphthylene % 89 89 86 87 4736533	Surrogate Recovery (%)									
D14-Terphenyl (FS) % 96 96 91 92 4736533 D8-Acenaphthylene % 89 89 86 87 4736533	D10-Anthracene	%	94		92	90		87		4736533
D8-Acenaphthylene % 89 89 86 87 4736533	D14-Terphenyl (FS)	%	96		96	91		92		4736533
	D8-Acenaphthylene	%	89		89	86		87		4736533
<pre>{DL = Reportable Detection Limit</pre>	RDL = Reportable Detection Limit									

QC Batch = Quality Control Batch

(1) Elevated PAH RDL(s) due to matrix / co-extractive interference.



POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		DJR532	DJR532	DJR536	DJR537	DJR538	DJR539		
Sampling Date		2016/11/03 15:10	2016/11/03 15:10	2016/11/03 16:20	2016/11/03 16:00	2016/11/03 15:00	2016/11/03 16:30		
COC Number		577838-09-01	577838-09-01	577838-09-01	577838-09-01	577838-09-01	577838-09-01		
	UNITS	FWO-1	FWO-1 Lab-Dup	FWO-5	FA1-X (0.3-0.4)	FA6-X (0.5-0.6)	FA10-X (0.3-0.4)	RDL	QC Batch
PCBs									
Aroclor 1016	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4736349
Aroclor 1221	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4736349
Aroclor 1232	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4736349
Aroclor 1248	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4736349
Aroclor 1242	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4736349
Aroclor 1254	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4736349
Aroclor 1260	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4736349
Calculated Total PCB	ug/g	<0.050		<0.050	<0.050	<0.050	<0.050	0.050	4733723
Extraction Surrogate Recovery (%)									
Decachlorobiphenyl	%	87	85	99	103	106	110		4736349

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

Maxxam ID		DJR540	DJR541						
Sampling Date		2016/11/03 14:30	2016/11/03 15:30						
COC Number		577838-09-01	577838-09-01						
	UNITS	FA4-X (0.5-0.6)	FA7-X (0.4-0.5)	RDL	QC Batch				
PCBs									
Aroclor 1016	ug/g	<0.050	<0.050	0.050	4736349				
Aroclor 1221	ug/g	<0.050	<0.050	0.050	4736349				
Aroclor 1232	ug/g	<0.050	<0.050	0.050	4736349				
Aroclor 1248	ug/g	<0.050	<0.050	0.050	4736349				
Aroclor 1242	ug/g	<0.050	<0.050	0.050	4736349				
Aroclor 1254	ug/g	<0.050	<0.050	0.050	4736349				
Aroclor 1260	ug/g	<0.050	<0.050	0.050	4736349				
Calculated Total PCB	ug/g	<0.050	<0.050	0.050	4733723				
Extraction									
Surrogate Recovery (%)									
Decachlorobiphenyl	%	103	111		4736349				
RDL = Reportable Detection Limit									
QC Batch = Quality Control B	atch								



AECOM Canada Ltd. Task Order#: N/A-CTC SITE Site#: Site Location: 64 MILL LAKE ROAD NO 2, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID:	DJR532
Sample ID:	FWO-1
Matrix:	Soil

Collected:	2016/11/03
Relinquished:	2016/11/04
Received:	2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
B[a]P Total Potency Equivalent	CALC	4733721	N/A	2016/11/14	Automated Statchk
1,3-Dichloropropene Sum (soil)	CALC	4733722	N/A	2016/11/10	Automated Statchk
TEH in Soil (PIRI)	GC/FID	4738467	2016/11/08	2016/11/10	Crystal Matthews
Glycol in Soil		4739158	2016/11/08	2016/11/09	Eric Dearman
Metals Solids Acid Extr. ICPMS	ICP/MS	4736448	2016/11/07	2016/11/07	Bryon Angevine
Moisture	BAL	4733800	N/A	2016/11/06	Victoria Legge
PAH Compounds by GCMS (SIM)	GC/MS	4736533	2016/11/07	2016/11/10	Gina Thompson
PCBs in soil by GC/ECD	GC/ECD	4736349	2016/11/07	2016/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	4733723	N/A	2016/11/10	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	4733394	N/A	2016/11/10	Automated Statchk
VOCs in Soil - Field Preserved	HS/MS	4740267	N/A	2016/11/09	Shawn Helmkay
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4736411	N/A	2016/11/08	Michelle Shearer

Maxxam ID:	DJR532 Dup
Sample ID:	FWO-1
Matrix:	Soil

Collected:	2016/11/03
Relinquished:	2016/11/04
Received:	2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4738467	2016/11/08	2016/11/10	Crystal Matthews
PAH Compounds by GCMS (SIM)	GC/MS	4736533	2016/11/07	2016/11/10	Gina Thompson
PCBs in soil by GC/ECD	GC/ECD	4736349	2016/11/07	2016/11/10	Lisa Gates
VOCs in Soil - Field Preserved	HS/MS	4740267	N/A	2016/11/09	Shawn Helmkay
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4736411	N/A	2016/11/08	Michelle Shearer

Maxxam ID:	DJR533	Collected:	2016/11/03
Sample ID:	FWO-2	Relinquished:	2016/11/04
Matrix:	Soil	Received:	2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4738467	2016/11/08	2016/11/10	Crystal Matthews
Moisture	BAL	4733800	N/A	2016/11/06	Victoria Legge
ModTPH (T1) Calc. for Soil	CALC	4733394	N/A	2016/11/10	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4736411	N/A	2016/11/07	Michelle Shearer

Maxxam ID:	DJR534
Sample ID:	FWO-3
Matrix:	Soil

Collected:	2016/11/03
Relinquished:	2016/11/04
Received:	2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4738467	2016/11/08	2016/11/09	Crystal Matthews
Moisture	BAL	4733800	N/A	2016/11/06	Victoria Legge
ModTPH (T1) Calc. for Soil	CALC	4733394	N/A	2016/11/10	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4736411	N/A	2016/11/07	Michelle Shearer

Page 15 of 29



AECOM Canada Ltd. Task Order#: N/A-CTC SITE Site#: Site Location: 64 MILL LAKE ROAD NO 2, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID:	DJR535
Sample ID:	FWO-4
Matrix:	Soil

Collected:	2016/11/03
Relinquished:	2016/11/04
Received:	2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4738467	2016/11/08	2016/11/09	Crystal Matthews
Moisture	BAL	4733800	N/A	2016/11/06	Victoria Legge
ModTPH (T1) Calc. for Soil	CALC	4733394	N/A	2016/11/10	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4736411	N/A	2016/11/08	Michelle Shearer

Maxxam ID:	DJR536
Sample ID:	FWO-5
Matrix:	Soil

Collected:	2016/11/03
Relinquished:	2016/11/04
Received:	2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
B[a]P Total Potency Equivalent	CALC	4733721	N/A	2016/11/14	Automated Statchk
1,3-Dichloropropene Sum (soil)	CALC	4733722	N/A	2016/11/10	Automated Statchk
TEH in Soil (PIRI)	GC/FID	4738467	2016/11/08	2016/11/09	Crystal Matthews
Glycol in Soil		4739158	2016/11/08	2016/11/09	Eric Dearman
Metals Solids Acid Extr. ICPMS	ICP/MS	4736448	2016/11/07	2016/11/07	Bryon Angevine
Moisture	BAL	4733800	N/A	2016/11/06	Victoria Legge
PAH Compounds by GCMS (SIM)	GC/MS	4736533	2016/11/07	2016/11/10	Gina Thompson
PCBs in soil by GC/ECD	GC/ECD	4736349	2016/11/07	2016/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	4733723	N/A	2016/11/10	Automated Statchk
ModTPH (T1) Calc. for Soil	CALC	4733394	N/A	2016/11/10	Automated Statchk
VOCs in Soil - Field Preserved	HS/MS	4740267	N/A	2016/11/09	Shawn Helmkay
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4736411	N/A	2016/11/08	Michelle Shearer

Maxxam ID:	DJR537
Sample ID:	FA1-X (0.3-0.4)
Matrix:	Soil

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Collected:	2016/11/03
Relinquished:	2016/11/04
Received:	2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
B[a]P Total Potency Equivalent	CALC	4733721	N/A	2016/11/14	Automated Statchk
1,3-Dichloropropene Sum (soil)	CALC	4733722	N/A	2016/11/10	Automated Statchk
Glycol in Soil		4739158	2016/11/08	2016/11/09	Eric Dearman
Metals Solids Acid Extr. ICPMS	ICP/MS	4736448	2016/11/07	2016/11/07	Bryon Angevine
Moisture	BAL	4733800	N/A	2016/11/06	Victoria Legge
PAH Compounds by GCMS (SIM)	GC/MS	4736533	2016/11/07	2016/11/10	Gina Thompson
PCBs in soil by GC/ECD	GC/ECD	4736349	2016/11/07	2016/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	4733723	N/A	2016/11/10	Automated Statchk
VOCs in Soil - Field Preserved	HS/MS	4740267	N/A	2016/11/09	Shawn Helmkay

ant Decembration		 Datah	Contract and	Data Analyzad	6		
Matrix:	Soil				Received:	2016/11/04	
Sample ID:	FA6-X (0.5-0.6)			R	elinquished:	2016/11/04	
Maxxam ID:	DIR538				Collected:	2016/11/03	

Test Description	instrumentation	Datch	Extracted	Date Analyzed	Analyst
B[a]P Total Potency Equivalent	CALC	4733721	N/A	2016/11/14	Automated Statchk
		Page 16 of	29		



AECOM Canada Ltd. Task Order#: N/A-CTC SITE Site#: Site Location: 64 MILL LAKE ROAD NO 2, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID:	DJR538
Sample ID:	FA6-X (0.5-0.6)
Matrix:	Soil

Collected:	2016/11/03
Relinquished:	2016/11/04
Received:	2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum (soil)	CALC	4733722	N/A	2016/11/10	Automated Statchk
Glycol in Soil		4739158	2016/11/08	2016/11/09	Eric Dearman
Metals Solids Acid Extr. ICPMS	ICP/MS	4736448	2016/11/07	2016/11/07	Bryon Angevine
Moisture	BAL	4733800	N/A	2016/11/06	Victoria Legge
PAH Compounds by GCMS (SIM)	GC/MS	4736533	2016/11/07	2016/11/11	Gina Thompson
PCBs in soil by GC/ECD	GC/ECD	4736349	2016/11/07	2016/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	4733723	N/A	2016/11/10	Automated Statchk
VOCs in Soil - Field Preserved	HS/MS	4740267	N/A	2016/11/09	Shawn Helmkay

Maxxam ID:	DJR539
Sample ID:	FA10-X (0.3-0.4)
Matrix:	Soil

Collected: 2016/11/03 Relinquished: 2016/11/04 Received: 2016/11/04

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Maxxam ID: Sample ID: Matrix:	DJR539 Dup FA10-X (0.3-0.4) Soil			Re	Collected: linquished: Received:	2016/11/03 2016/11/04 2016/11/04	
Test Decemination		 Datah	Fortune at a d	Data Analyzad	Analist		

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Solids Acid Extr. ICPMS	ICP/MS	4736448	2016/11/07	2016/11/07	Bryon Angevine

 Maxxam ID:
 DJR540

 Sample ID:
 FA4-X (0.5-0.6)

 Matrix:
 Soil

Collected: 2016/11/03 Relinquished: 2016/11/04 Received: 2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
B[a]P Total Potency Equivalent	CALC	4733721	N/A	2016/11/14	Automated Statchk
1,3-Dichloropropene Sum (soil)	CALC	4733722	N/A	2016/11/10	Automated Statchk
Glycol in Soil		4739158	2016/11/08	2016/11/09	Eric Dearman
Metals Solids Acid Extr. ICPMS	ICP/MS	4736448	2016/11/07	2016/11/07	Bryon Angevine
Moisture	BAL	4733800	N/A	2016/11/06	Victoria Legge
PAH Compounds by GCMS (SIM)	GC/MS	4736533	2016/11/07	2016/11/11	Gina Thompson
PCBs in soil by GC/ECD	GC/ECD	4736349	2016/11/07	2016/11/10	Lisa Gates
PCB Aroclor sum (soil)	CALC	4733723	N/A	2016/11/10	Automated Statchk

Page 17 of 29



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AECOM Canada Ltd. Task Order#: N/A-CTC SITE Site#: Site Location: 64 MILL LAKE ROAD NO 2, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	DJR540 FA4-X (0.5-0.6) Soil				Re	Collected: linquished: Received:	2016/11/03 2016/11/04 2016/11/04	
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst		
VOCs in Soil - Field Preser	rved	HS/MS	4740267	N/A	2016/11/09	Shawn Hel	mkay	
Maxxam ID: Sample ID: Matrix:	DJR541 FA7-X (0.4-0.5) Soil				Re	Collected: linquished: Received:	2016/11/03 2016/11/04 2016/11/04	
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst		
B[a]P Total Potency Equiv	valent	CALC	4733721	N/A	2016/11/14	Automated	d Statchk	
1,3-Dichloropropene Sum	n (soil)	CALC	4733722	N/A	2016/11/10	Automated	d Statchk	
Glycol in Soil			4739158	2016/11/08	2016/11/09	Eric Dearm	ian	
Metals Solids Acid Extr. IC	CPMS	ICP/MS	4736448	2016/11/07	2016/11/07	Bryon Ang	evine	
Moisture		BAL	4733800	N/A	2016/11/06	Victoria Le	gge	
PAH Compounds by GCM	IS (SIM)	GC/MS	4736533	2016/11/07	2016/11/11	Gina Thom	ipson	
PCBs in soil by GC/ECD		GC/ECD	4736349	2016/11/07	2016/11/10	Lisa Gates		
PCB Aroclor sum (soil)		CALC	4733723	N/A	2016/11/10	Automated	d Statchk	
VOCs in Soil - Field Preser	rved	HS/MS	4740267	N/A	2016/11/09	Shawn Hel	mkay	



GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt									
	Package 1 1.0°C								
Double	Double water wash and silica gel clean-up performed on soil extracts.								
Results	s relate only to the	items tested.							



QUALITY ASSURANCE REPORT

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
4736349	LGE	Method Blank	Decachlorobiphenyl	2016/11/10		96	%	30 - 130
			Aroclor 1016	2016/11/10	<0.050		ug/g	
			Aroclor 1221	2016/11/10	<0.050		ug/g	
			Aroclor 1232	2016/11/10	<0.050		ug/g	
			Aroclor 1248	2016/11/10	<0.050		ug/g	
			Aroclor 1242	2016/11/10	<0.050		ug/g	
			Aroclor 1254	2016/11/10	<0.050		ug/g	
			Aroclor 1260	2016/11/10	<0.050		ug/g	
4736411	MS3	Method Blank	1,4-Difluorobenzene	2016/11/07		104	%	60 - 140
			4-Bromofluorobenzene	2016/11/07		105	%	60 - 140
			D4-1,2-Dichloroethane	2016/11/07		104	%	60 - 140
			Isobutylbenzene - Volatile	2016/11/07		100	%	60 - 130
			Benzene	2016/11/07	<0.025		mg/kg	
			Toluene	2016/11/07	<0.025		mg/kg	
			Ethylbenzene	2016/11/07	<0.025		mg/kg	
			Total Xylenes	2016/11/07	<0.050		mg/kg	
			C6 - C10 (less BTEX)	2016/11/07	<2.5		mg/kg	
4736448	BAN	Method Blank	Acid Extractable Aluminum (Al)	2016/11/08	<10		mg/kg	
			Acid Extractable Antimony (Sb)	2016/11/08	<2.0		mg/kg	
			Acid Extractable Arsenic (As)	2016/11/08	<2.0		mg/kg	
			Acid Extractable Barium (Ba)	2016/11/08	<5.0		mg/kg	
			Acid Extractable Beryllium (Be)	2016/11/08	<2.0		mg/kg	
			Acid Extractable Boron (B)	2016/11/08	<50		mg/kg	
			Acid Extractable Cadmium (Cd)	2016/11/08	< 0.30		mg/kg	
			Acid Extractable Chromium (Cr)	2016/11/08	<2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2016/11/08	<1.0		mg/kg	
			Acid Extractable Copper (Cu)	2016/11/08	<2.0		mg/kg	
			Acid Extractable Iron (Fe)	2016/11/08	<50		mg/kg	
			Acid Extractable Lead (Pb)	2016/11/08	<0.50		mg/kg	
			Acid Extractable Manganese (Mn)	2016/11/08	<2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2016/11/08	<0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2016/11/08	<2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2016/11/08	<2.0		mø/kø	
			Acid Extractable Selenium (Se)	2016/11/08	<1.0		mø/kø	
			Acid Extractable Silver (Ag)	2016/11/08	<0.50		mg/kg	
			Acid Extractable Strontium (Sr)	2016/11/08	<5.0		mø/kø	
			Acid Extractable Thallium (TI)	2016/11/08	<0.10		ma/ka	
			Acid Extractable Tin (Sn)	2016/11/08	<2.10		mg/kg	
			Acid Extractable Uranium (11)	2010/11/08	<0.10		ma/ka	
			Acid Extractable Vanadium (V)	2010/11/08	<2.0		mg/kg	
			Acid Extractable Validuum (V)	2010/11/08	<2.0		mg/kg	
4726522	стц	Mathad Blank	D10 Anthracano	2010/11/08	<5.0	101	111g/ Kg 0/	20 120
4730333	GIII	Method Blank	D10-Antillacene	2010/11/10		101	/0 0/	20 120
			D14-Terpitetiyi (F3)	2010/11/10		100	70 0/	20 120
			1 Mothylaanhthalana	2010/11/10	-0.010	55	70 ma/ka	20 - 130
				2010/11/10			mg/kg	
			2-ivieurymaphthalene Aconophthane	2010/11/10	<0.010		mg/kg	
			Acenaphthene	2010/11/10	<0.010		mg/kg	
			Acenaphinylefie	2010/11/10	<0.010		mg/kg	
			Anthracene	2016/11/10	<0.010		mg/kg	
			Fluoranthene	2016/11/10	<0.010		mg/kg	
			Fluorene	2016/11/10	< 0.010		mg/kg	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
			Naphthalene	2016/11/10	<0.010		mg/kg	
			Phenanthrene	2016/11/10	<0.010		mg/kg	
			Pyrene	2016/11/10	<0.010		mg/kg	
			Benzo(a)anthracene	2016/11/10	<0.010		mg/kg	
			Benzo(a)pyrene	2016/11/10	<0.010		mg/kg	
			Benzo(b)fluoranthene	2016/11/10	<0.010		mg/kg	
			Benzo(g,h,i)perylene	2016/11/10	<0.010		mg/kg	
			Benzo(j)fluoranthene	2016/11/10	<0.010		mg/kg	
			Benzo(k)fluoranthene	2016/11/10	<0.010		mg/kg	
			Chrysene	2016/11/10	<0.010		mg/kg	
			Dibenz(a,h)anthracene	2016/11/10	<0.010		mg/kg	
			Indeno(1.2.3-cd)pyrene	2016/11/10	<0.010		mg/kg	
4738467	CMI	Method Blank	n-Dotriacontane - Extractable	2016/11/09		121	%	30 - 130
	•		Isobutylbenzene - Extractable	2016/11/09		83	%	30 - 130
			>C10-C16 Hydrocarbons	2016/11/09	<10		mg/kg	
			>C16-C21 Hydrocarbons	2016/11/09	<10		mg/kg	
			>C21- <c32 hydrocarbons<="" td=""><td>2016/11/09</td><td><15</td><td></td><td>mg/kg</td><td></td></c32>	2016/11/09	<15		mg/kg	
4740267	SHL	Method Blank	4-Bromofluorobenzene	2016/11/09	-10	99	%	60 - 140
			D10-o-Xvlene	2016/11/09		101	%	30 - 130
			D4-1.2-Dichloroethane	2016/11/09		94	%	60 - 140
			D8-Toluene	2016/11/09		101	%	60 - 140
			1.1.1-Trichloroethane	2016/11/09	<25	101	ug/kg	00 110
			1 1 2 2-Tetrachloroethane	2016/11/09	<25		.uø/kø	
			1 1 2-Trichloroethane	2016/11/09	<25		110/kg	
			1 1-Dichloroethane	2016/11/09	<25		110/kg	
			1 1-Dichloroethylene	2016/11/09	<25		ug/kg	
			1 2-Dichlorobenzene	2016/11/09	<25		ug/kg	
			1.2-Dichloroethane	2016/11/09	<25		ug/kg	
			1.2 Dichloropropage	2016/11/09	<25		ug/kg	
			1 3-Dichlorobenzene	2010/11/09	<25		ug/kg ug/kg	
			1,4-Dichlorobenzene	2016/11/09	<25			
			1,4-Dichlorobenzene Benzene	2010/11/09	<25		ug/kg	
			Bromodichloromothano	2010/11/09	<25		ug/kg	
			Bromoform	2010/11/09	<25		ug/kg	
			Bromomothano	2016/11/09	<25		ug/kg	
			Bromometriane Carbon Tatrashlarida	2010/11/09	<30		ug/kg	
				2010/11/09	<25		ug/kg	
			Chloroform	2016/11/09	<25		ug/kg	
			chioroform sis 1.2 Disblareathylana	2016/11/09	<25		ug/kg	
			CIS-1,2-DICHIOFOEthylene	2016/11/09	<25		ug/kg	
			Dibromocniorometnane	2016/11/09	<25		ug/kg	
			Ethylbenzene Ethylbenz Dibergeride	2016/11/09	<25		ug/kg	
			Ethylene Dibromide	2016/11/09	<25		ug/kg	
			Methyl t-butyl etner (MIBE)	2016/11/09	<25		ug/kg	
			ivietnyiene Chioride(Dichloromethane)	2016/11/09	<50		ug/kg	
			Styrene	2016/11/09	<25		ug/kg	
			Tetrachioroethylene	2016/11/09	<25		ug/kg	
			Total Vulance	2016/11/09	<25		ug/Kg	
			I Uldi Ayienes	2010/11/09	<0U		ug/Kg	
			trans-1,2-Dichloroethylene	2016/11/09	<25		ug/Kg	
				2016/11/09	<10		ug/Kg	
			vinyi Chioride	2016/11/09	<20		ug/kg	


QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
4736349	LGE	RPD [DJR532-01]	Aroclor 1016	2016/11/10	NC		%	50
			Aroclor 1221	2016/11/10	NC		%	50
			Aroclor 1232	2016/11/10	NC		%	50
			Aroclor 1248	2016/11/10	NC		%	50
			Aroclor 1242	2016/11/10	NC		%	50
			Aroclor 1254	2016/11/10	NC		%	50
			Aroclor 1260	2016/11/10	NC		%	50
4736411	MS3	RPD [DJR532-02]	Benzene	2016/11/08	NC		%	50
			Toluene	2016/11/08	NC		%	50
			Ethylbenzene	2016/11/08	NC		%	50
			Total Xylenes	2016/11/08	NC		%	50
			C6 - C10 (less BTEX)	2016/11/08	7.5		%	50
4736533	GTH	RPD [DJR532-01]	1-Methylnaphthalene	2016/11/10	10		%	50
			2-Methylnaphthalene	2016/11/10	9.5		%	50
			Acenaphthene	2016/11/10	NC (1)		%	50
			Acenaphthylene	2016/11/10	NC (1)		%	50
			Anthracene	2016/11/10	NC (1)		%	50
			Fluoranthene	2016/11/10	12		%	50
			Fluorene	2016/11/10	NC (1)		%	50
			Naphthalene	2016/11/10	NC (1)		%	50
			Phenanthrene	2016/11/10	12		%	50
			Pyrene	2016/11/10	10		%	50
			Benzo(a)anthracene	2016/11/10	NC		%	50
			Benzo(a)pyrene	2016/11/10	NC		%	50
			Benzo(b)fluoranthene	2016/11/10	NC		%	50
			Benzo(g,h,i)perylene	2016/11/10	NC		%	50
			Benzo(j)fluoranthene	2016/11/10	NC		%	50
			Benzo(k)fluoranthene	2016/11/10	NC		%	50
			Chrysene	2016/11/10	13		%	50
			Dibenz(a,h)anthracene	2016/11/10	NC		%	50
			Indeno(1,2,3-cd)pyrene	2016/11/10	NC		%	50
4738467	CMI	RPD [DJR532-01]	>C10-C16 Hydrocarbons	2016/11/10	25 (2)		%	50
			>C16-C21 Hydrocarbons	2016/11/10	29 (2)		%	50
			>C21- <c32 hydrocarbons<="" td=""><td>2016/11/10</td><td>27 (2)</td><td></td><td>%</td><td>50</td></c32>	2016/11/10	27 (2)		%	50
4740267	SHL	RPD [DJR532-04]	1,1,1-Trichloroethane	2016/11/09	NC		%	50
			1,1,2,2-Tetrachloroethane	2016/11/09	NC		%	50
			1,1,2-Trichloroethane	2016/11/09	NC		%	50
			1,1-Dichloroethane	2016/11/09	NC		%	50
			1,1-Dichloroethylene	2016/11/09	NC		%	50
			1,2-Dichlorobenzene	2016/11/09	NC		%	50
			1,2-Dichloroethane	2016/11/09	NC		%	50
			1,2-Dichloropropane	2016/11/09	NC		%	50
			1,3-Dichlorobenzene	2016/11/09	NC		%	50
			1,4-Dichlorobenzene	2016/11/09	NC		%	50
			Benzene	2016/11/09	NC		%	50
			Bromodichloromethane	2016/11/09	NC		%	50
			Bromoform	2016/11/09	NC		%	50
			Bromomethane	2016/11/09	NC		%	60
			Carbon Tetrachloride	2016/11/09	NC		%	50
			Chlorobenzene	2016/11/09	NC		%	50
			Chloroform	2016/11/09	NC		%	50



QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
			cis-1,2-Dichloroethylene	2016/11/09	NC		%	50
			Dibromochloromethane	2016/11/09	NC		%	50
			Ethylbenzene	2016/11/09	NC		%	50
			Ethylene Dibromide	2016/11/09	NC		%	50
			Methyl t-butyl ether (MTBE)	2016/11/09	NC		%	50
			Methylene Chloride(Dichloromethane)	2016/11/09	NC		%	50
			Styrene	2016/11/09	NC		%	50
			Tetrachloroethylene	2016/11/09	NC		%	50
			Toluene	2016/11/09	NC		%	50
			Total Xylenes	2016/11/09	NC		%	50
			trans-1,2-Dichloroethylene	2016/11/09	NC		%	50
			Trichloroethylene	2016/11/09	NC		%	50
			Vinyl Chloride	2016/11/09	NC		%	60
4736448	BAN	RPD [DJR539-01]	Acid Extractable Aluminum (Al)	2016/11/07	0.76		%	35
			Acid Extractable Antimony (Sb)	2016/11/07	NC		%	35
			Acid Extractable Arsenic (As)	2016/11/07	NC		%	35
			Acid Extractable Barium (Ba)	2016/11/07	NC		%	35
			Acid Extractable Beryllium (Be)	2016/11/07	NC		%	35
			Acid Extractable Boron (B)	2016/11/07	NC		%	35
			Acid Extractable Cadmium (Cd)	2016/11/07	NC		%	35
			Acid Extractable Chromium (Cr)	2016/11/07	NC		%	35
			Acid Extractable Cobalt (Co)	2016/11/07	NC		%	35
			Acid Extractable Copper (Cu)	2016/11/07	NC		%	35
			Acid Extractable Iron (Fe)	2016/11/07	4.7		%	35
			Acid Extractable Lead (Pb)	2016/11/07	12		%	35
			Acid Extractable Manganese (Mn)	2016/11/07	1.7		%	35
			Acid Extractable Mercury (Hg)	2016/11/07	NC		%	35
			Acid Extractable Molvbdenum (Mo)	2016/11/07	NC		%	35
			Acid Extractable Nickel (Ni)	2016/11/07	NC		%	35
			Acid Extractable Selenium (Se)	2016/11/07	NC		%	35
			Acid Extractable Silver (Ag)	2016/11/07	NC		%	35
			Acid Extractable Strontium (Sr)	2016/11/07	NC		%	35
			Acid Extractable Thallium (TI)	2016/11/07	NC		%	35
			Acid Extractable Tin (Sn)	2016/11/07	NC		%	35
			Acid Extractable Uranium (U)	2016/11/07	11		%	35
			Acid Extractable Vanadium (V)	2016/11/07	NC		%	35
			Acid Extractable Zinc (Zn)	2016/11/07	73		%	35
4736349	LGE	Matrix Snike [DIR532-01]	Decachlorobinhenyl	2016/11/10	7.5	82	%	30 - 130
+7505+5	LOL		Aroclor 1254	2016/11/10		69 (3)	%	30 - 130
4736411	MS3	Matrix Snike [DIR532-02]	1 4-Difluorobenzene	2016/11/08		107	%	60 - 140
4750411	14133		1,4 Dindorobenzene	2016/11/08		107	%	60 - 140
			P1-1 2-Dichloroethane	2010/11/08		100	70 %	60 - 140
			Isobutylbenzene - Volatile	2010/11/08		52 (A)	%	60 - 140
			Benzene	2010/11/08		103	70 %	60 - 130
			Toluene	2010/11/00		105	70 0/	60 - 130 60 - 120
			Ethylhenzene	2010/11/00		80 21	/0 0/	60 - 130
			Total Xylenes	2010/11/00		07 97	70 0/	60 - 120
1726110	BVV	Matrix Snike [DIDE20 01]	Acid Extractable Antimony (Sh)	2010/11/00		07	/0 0/	75.12
4730446	DAN	[10-בכבענת] אווג אווימנווג	Acid Extractable Arconic (Ac)	2010/11/07		55 101	70 0/	75 - 125 75 - 125
			Acid Extractable Parium (Pa)	2010/11/07		101	70 0/	75 125
			Acid Extractable Barilling (Ba)	2010/11/07		99 105	% 0/	75 - 125
			ACIU EXITACIADIE BELYIIIUM (BE)	2010/11/07		102	70	72 - 125



QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Boron (B)	2016/11/07		106	%	75 - 125
			Acid Extractable Cadmium (Cd)	2016/11/07		98	%	75 - 125
			Acid Extractable Chromium (Cr)	2016/11/07		104	%	75 - 125
			Acid Extractable Cobalt (Co)	2016/11/07		100	%	75 - 125
			Acid Extractable Copper (Cu)	2016/11/07		100	%	75 - 125
			Acid Extractable Lead (Pb)	2016/11/07		98	%	75 - 125
			Acid Extractable Manganese (Mn)	2016/11/07		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2016/11/07		97	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2016/11/07		107	%	75 - 125
			Acid Extractable Nickel (Ni)	2016/11/07		101	%	75 - 125
			Acid Extractable Selenium (Se)	2016/11/07		102	%	75 - 125
			Acid Extractable Silver (Ag)	2016/11/07		102	%	75 - 125
			Acid Extractable Strontium (Sr)	2016/11/07		102	%	75 - 125
			Acid Extractable Thallium (Tl)	2016/11/07		103	%	75 - 125
			Acid Extractable Tin (Sn)	2016/11/07		97	%	75 - 125
			Acid Extractable Uranium (U)	2016/11/07		106	%	75 - 125
			Acid Extractable Vanadium (V)	2016/11/07		102	%	75 - 125
			Acid Extractable Zinc (Zn)	2016/11/07		NC	%	75 - 125
4736533	GTH	Matrix Spike [DJR532-01]	D10-Anthracene	2016/11/10		81	%	30 - 130
			D14-Terphenyl (FS)	2016/11/10		115	%	30 - 130
			D8-Acenaphthylene	2016/11/10		108	%	30 - 130
			1-Methylnaphthalene	2016/11/10		NC	%	30 - 130
			2-Methylnaphthalene	2016/11/10		NC	%	30 - 130
			Acenaphthene	2016/11/10		104	%	30 - 130
			Acenaphthylene	2016/11/10		NC	%	30 - 130
			Anthracene	2016/11/10		101	%	30 - 130
			Fluoranthene	2016/11/10		NC	%	30 - 130
			Fluorene	2016/11/10		NC	%	30 - 130
			Naphthalene	2016/11/10		NC	%	30 - 130
			Phenanthrene	2016/11/10		NC	%	30 - 130
			Pvrene	2016/11/10		NC	%	30 - 130
			Benzo(a)anthracene	2016/11/10		140 (5)	%	30 - 130
			Benzo(a)pyrene	2016/11/10		95	%	30 - 130
			Benzo(b)fluoranthene	2016/11/10		92	%	30 - 130
			Benzo(g,h,i)pervlene	2016/11/10		106	%	30 - 130
			Benzo(i)fluoranthene	2016/11/10		92	%	30 - 130
			Benzo(k)fluoranthene	2016/11/10		99	%	30 - 130
			Chrysene	2016/11/10		122	%	30 - 130
			Dibenz(a h)anthracene	2016/11/10		122	%	30 - 130
			Indeno(1 2 3-cd)pyrene	2016/11/10		113	%	30 - 130
1738/67	СМІ	Matrix Snike [DIR532-01]	n-Dotriacontane - Extractable	2016/11/10		68 (6)	%	30 - 130
4730407	Civii		Isobutylbenzene - Extractable	2016/11/10		68	%	30 - 130
			>C10-C16 Hydrocarbons	2016/11/10		NC (2)	%	30 - 130
			>C16-C21 Hydrocarbons	2010/11/10		NC (2)	/u %	30 - 130
			>C21- <c22 hydrocarbons<="" td=""><td>2010/11/10</td><td></td><td>NC (2)</td><td>/u 0/</td><td>20 - 120</td></c22>	2010/11/10		NC (2)	/u 0/	20 - 120
1710267	ςш	Matrix Snike [DIR522.04]		2010/11/10		101	/0 0/	60 - 1 <i>1</i> 0
+/4020/	JIIL	שומנווא שואפ נטותטטב-14	D10-o-Xylene	2010/11/09		102	/0 0/	20 - 120
			D1-1 2-Dichloroethano	2010/11/03		8C 100	/0 0/	60. 140
				2010/11/09		00 100	70 0/	60 140
			1 1 1 Trichloroothana	2010/11/09		100	70 0/	60 140
			1,1,1-THUIHOI OELIIdile	2010/11/09		100	70 0/	60 140
l			1,1,2,2-Tetrachioroethane	2010/11/09		90	70	00 - 140



QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
			1,1,2-Trichloroethane	2016/11/09		93	%	60 - 140
			1,1-Dichloroethane	2016/11/09		97	%	60 - 140
			1,1-Dichloroethylene	2016/11/09		96	%	60 - 140
			1,2-Dichlorobenzene	2016/11/09		88	%	60 - 140
			1,2-Dichloroethane	2016/11/09		82	%	60 - 140
			1,2-Dichloropropane	2016/11/09		88	%	60 - 140
			1,3-Dichlorobenzene	2016/11/09		81	%	60 - 140
			1,4-Dichlorobenzene	2016/11/09		85	%	60 - 140
			Benzene	2016/11/09		92	%	60 - 140
			Bromodichloromethane	2016/11/09		91	%	60 - 140
			Bromoform	2016/11/09		85	%	60 - 140
			Bromomethane	2016/11/09		96	%	30 - 150
			Carbon Tetrachloride	2016/11/09		96	%	60 - 140
			Chlorobenzene	2016/11/09		96	%	60 - 140
			Chloroform	2016/11/09		93	%	60 - 140
			cis-1.2-Dichloroethylene	2016/11/09		105	%	60 - 140
			Dibromochloromethane	2016/11/09		97	%	60 - 140
			Ethylbenzene	2016/11/09		92	%	60 - 140
			Ethylene Dibromide	2016/11/09		96	%	60 - 140
			Methyl t-butyl ether (MTBF)	2016/11/09		95	%	60 - 140
			Methylene Chloride(Dichloromethane	2016/11/09		103	%	60 - 140
			Styrene	2016/11/09		99	%	60 - 140
			Tetrachloroethylene	2016/11/09		88	%	60 - 140
			Toluene	2016/11/09		96	%	60 - 140
			trans-1 2-Dichloroethylene	2016/11/09		107	%	60 - 140
			Trichloroethylene	2016/11/09		107	%	60 - 140
			Vinyl Chloride	2016/11/09		83	%	30 - 150
17363/19	LGE		Decachlorobinhenvl	2016/11/10		102	%	30 - 130
4730343	LOL	LCJ	Aroclor 1254	2016/11/10		102	%	30 - 130
1736111	MC3		1 4-Difluorobenzene	2010/11/10		102	70 %	50 - 130 60 - 140
4730411	10133	LCJ	1,4-Dinuolosenzene 4-Bromofluorobenzene	2010/11/07		102	70 %	60 - 140
			A-Bromondorobenzene	2010/11/07		101	70 0/	60 140
				2010/11/07		100	/0 0/	60 120
			Bonzono	2010/11/07		90	70 0/	60 140
			Belizene	2016/11/07		90	70 0/	60 - 140
			Toluene	2016/11/07		97	70 0/	60 - 140
				2016/11/07		100	70 0/	60 - 140
4706440		1.00	Lotal Xylenes	2016/11/07		100	%	60 - 140 75 - 425
4736448	BAN	LCS	Acid Extractable Antimony (SD)	2016/11/07		100	%	75 - 125
			Acid Extractable Arsenic (As)	2016/11/07		100	%	75 - 125
			Acid Extractable Barium (Ba)	2016/11/07		102	%	75 - 125
			Acid Extractable Beryllium (Be)	2016/11/07		105	%	75 - 125
			Acid Extractable Boron (B)	2016/11/0/		107	%	/5 - 125
			Acid Extractable Cadmium (Cd)	2016/11/0/		98	%	/5 - 125
			Acid Extractable Chromium (Cr)	2016/11/0/		99	%	/5 - 125
			Acid Extractable Cobalt (Co)	2016/11/07		98	%	/5 - 125
			Acid Extractable Copper (Cu)	2016/11/07		99	%	75 - 125
			Acid Extractable Lead (Pb)	2016/11/07		99	%	/5 - 125
			Acid Extractable Manganese (Mn)	2016/11/07		99	%	75 - 125
			Acid Extractable Mercury (Hg)	2016/11/07		100	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2016/11/07		102	%	75 - 125
			Acid Extractable Nickel (Ni)	2016/11/07		100	%	75 - 125



QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Selenium (Se)	2016/11/07		100	%	75 - 125
			Acid Extractable Silver (Ag)	2016/11/07		100	%	75 - 125
			Acid Extractable Strontium (Sr)	2016/11/07		99	%	75 - 125
			Acid Extractable Thallium (TI)	2016/11/07		101	%	75 - 125
			Acid Extractable Tin (Sn)	2016/11/07		91	%	75 - 125
			Acid Extractable Uranium (U)	2016/11/07		100	%	75 - 125
			Acid Extractable Vanadium (V)	2016/11/07		101	%	75 - 125
			Acid Extractable Zinc (Zn)	2016/11/07		102	%	75 - 125
4736533	GTH		D10-Anthracene	2016/11/10		87	%	30 - 130
	••••	200	D14-Terphenyl (FS)	2016/11/10		94	%	30 - 130
			D8-Acenanhthylene	2016/11/10		94	%	30 - 130
			1-Methylnanhthalene	2016/11/10		88	%	30 - 130
			2-Methylnaphthalene	2016/11/10		96	%	30 - 130
			Acenanhthene	2016/11/10		96	%	30 - 130
			Acenaphthylene	2016/11/10		97	%	30 - 130
			Anthracene	2016/11/10		97	%	30 - 130
			Fluoranthene	2016/11/10		103	70 %	30 - 130
			Fluorene	2016/11/10		105	%	30 - 130
			Nanhthalene	2016/11/10		80	70 %	30 - 130
			Dhenanthrene	2016/11/10		107	70 %	30 - 130
			Purono	2010/11/10		107	70 0/	20 120
			Renzo(a)anthracene	2010/11/10		101	/0 %	30 - 130
			Benzo(a)pyrene	2010/11/10		07	70 %	30 - 130
			Benzo(a)pyrene	2010/11/10		57 101	/0 0/	20 120
			Benzo(b)ndorantinene Benzo(g h i)pendope	2010/11/10		101	/0 0/	20 120
			Benzo(i)fluoranthono	2010/11/10		105	70 0/	20 120
			Benzo(k)fluoranthono	2010/11/10		95 102	70 0/	20 120
			Chrysone	2010/11/10		103	70 0/	30 - 130
			Chrysene Diberra(a, b) anthrasana	2010/11/10		100	70 0/	30 - 130
			Dibenz(a,n)anthracene	2016/11/10		124	% 0/	30 - 130
4720467	C 1 4	1.00	indeno(1,2,3-cd)pyrene	2016/11/10		112	%	30 - 130
4/3846/	CIVII	LCS	n-Dotriacontane - Extractable	2016/11/09		114	%	30 - 130
			Isobutyibenzene - Extractable	2016/11/09		90	%	30 - 130
			>CIU-CI6 Hydrocarbons	2016/11/09		104	%	30 - 130
			>C16-C21 Hydrocarbons	2016/11/09		88	%	30 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2016/11/09</td><td></td><td>70</td><td>%</td><td>30 - 130</td></c32>	2016/11/09		70	%	30 - 130
4/4026/	SHL	LCS	4-Bromofluorobenzene	2016/11/09		99	%	60 - 140
			D10-o-Xylene	2016/11/09		108	%	30 - 130
			D4-1,2-Dichloroethane	2016/11/09		97	%	60 - 140
			D8-Toluene	2016/11/09		100	%	60 - 140
			1,1,1-Trichloroethane	2016/11/09		101	%	60 - 140
			1,1,2,2-Tetrachloroethane	2016/11/09		90	%	60 - 140
			1,1,2-Trichloroethane	2016/11/09		94	%	60 - 140
			1,1-Dichloroethane	2016/11/09		101	%	60 - 140
			1,1-Dichloroethylene	2016/11/09		101	%	60 - 140
			1,2-Dichlorobenzene	2016/11/09		86	%	60 - 140
			1,2-Dichloroethane	2016/11/09		90	%	60 - 140
			1,2-Dichloropropane	2016/11/09		93	%	60 - 140
			1,3-Dichlorobenzene	2016/11/09		87	%	60 - 140
			1,4-Dichlorobenzene	2016/11/09		88	%	60 - 140
			Benzene	2016/11/09		95	%	60 - 140
			Bromodichloromethane	2016/11/09		94	%	60 - 140



Report Date: 2016/11/14

AECOM Canada Ltd. Task Order#: N/A-CTC SITE Site#: Site Location: 64 MILL LAKE ROAD NO 2, HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
			Bromoform	2016/11/09		82	%	60 - 140
			Bromomethane	2016/11/09		98	%	30 - 150
			Carbon Tetrachloride	2016/11/09		99	%	60 - 140
			Chlorobenzene	2016/11/09		93	%	60 - 140
			Chloroform	2016/11/09		94	%	60 - 140
			cis-1,2-Dichloroethylene	2016/11/09		99	%	60 - 140
			Dibromochloromethane	2016/11/09		91	%	60 - 140
			Ethylbenzene	2016/11/09		98	%	60 - 140
			Ethylene Dibromide	2016/11/09		95	%	60 - 140
			Methyl t-butyl ether (MTBE)	2016/11/09		93	%	60 - 140
			Methylene Chloride(Dichloromethane	2016/11/09		103	%	60 - 140
			Styrene	2016/11/09		95	%	60 - 140
			Tetrachloroethylene	2016/11/09		99	%	60 - 140
			Toluene	2016/11/09		97	%	60 - 140
			trans-1,2-Dichloroethylene	2016/11/09		102	%	60 - 140
			Trichloroethylene	2016/11/09		101	%	60 - 140
			Vinyl Chloride	2016/11/09		89	%	30 - 150

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.

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

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

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

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

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

(1) Elevated PAH RDL(s) due to matrix / co-extractive interference.

(2) Elevated TEH RDL(s) due to sample dilution.

(3) Matrix Spike: results not within reference method but within client specified acceptance limits. Analysis was repeated with similar results.

(4) VPH surrogate(s) not within reference method but within client specified acceptance limits. Analysis was repeated with similar results.

(5) Matrix Spike: < 10 % of compounds in multi-component analysis in violation.

(6) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.



Report Date: 2016/11/14

AECOM Canada Ltd. Task Order#: N/A-CTC SITE Site#: Site Location: 64 MILL LAKE ROAD NO 2, HUBBARDS, NS Project #: 60438249

VALIDATION SIGNATURE PAGE

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

ina

Eric Dearman, Scientific Specialist

Kosmarie Mac Donald

Rosemarie MacDonald, Scientific Specialist (Organics)

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

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Phone: (902) 428-2048 x Phone: (902) 428-2048 x						(field	SWC	NIS+	bed				Va.													
Sampler Name (Print): Craine Hatt Consultant Project #: 60438249							II Sol	191	SCMS	uese				S												
		MA	TRIX			SAMPLIN	NG	80.	No.	suoo	tid-Ex.	- And	eld-Pi			18	5	0								
FIELD SAMPLE ID	GROUND WATER	SURFACE WATER	SOIL	OTHER	# CONTAINERS	DATE (YYYY/MM/DD)	TIME (24 HR)	FIELD FILTERE PRESERVED	REQUIRED	RCA Hydrocarb	Vetels-Solids-Ac	AAH-Compounds	/OCs-in-Soil-Fi	PCBS	PAHS	Voc 3	Meta	Gyco								
1 E U O - 1			X		6	2016 11:03	15 10			X	-			X	X	X	×	X								1
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10 FA/-X (0.4-0.	5)		X		3	2016 11 03	15 30							X	X	X	X	X			# 1	ADGUISED		TUDNA		
IOL SITE LOCATION: 64 Mill Lake Road No 2 IOL PROJECT # (If applicable): MAXXAM TASK ORDER # OR SERVICE O N/A - CTC	, Huk C RDER # Site	bar #+lin z~	ds,	N.S M:	5	R	A.	lanti	c F	R		JN LIN	115:	s	PECIA	LINST		lan	e		AN SU Ent Wa	D NOT BMITTED er N/A for ter	Stand Rush	tard	(5 days) (3 days) (2 days) (1 day) same day)	
YES NO COOLER IE	D:						YES	NO CO	OLER I	D:								YES N	0 000	LER ID:			_			
SEAL PRESENT TEMP	2		1	D	sis	EAL PRESENT EAL INTACT		TE	MP	a				s	EAL PRE	SENT CT	DEACHT		TEM	P	2	2		LAB L MAXX	AM JOB #	
RELINQUISHED BY:	1	2	6	3	DAT	E:	TIME (2	4 HR)	REC	EIVED	BY:	Z		a <u>C</u>	OOLING	MEDIA P	RESENT	L	DA	TE:	TIM	E (24 HR)	RI	MAL	76	
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3. signalura		bolates	l name			YYYYMMDDD	HH	-Miller	3.		1	sghalor	6			jä	inted na	πe		YYYY YAMAND D		SPI AR	A	N	K	5
COC - 1009 (2013) IOL - NS				White:	Maxxam	5			Yellow:	Client				8												

ΑΞϹΟΜ

Data Quality Review Checklist

Consultant: A	ECOM			Sampling Date: 2016/11/03
Location: 64	4 MILL LA	KE RD. N	102,	Laboratory: Maxxam
<u></u>	UBBARD	S, NS		
Consultant Project Number: 60	0438249			Sample Submission Number: B6N9476
Are All Laboratory QC Samples V	Vithin Ac	ceptance	Criteria	(Yes, No, Not Applicable)?
	Yes	No	NA	Comments
Instrument Surrogate Recovery	\boxtimes			
Extraction Surrogate Recovery		\boxtimes		VPH surrogate(s) not within reference method but within client
				specified acceptance limits. Analysis was repeated with similar results.
Method Blank Concentration	\boxtimes			
Matrix Duplicate RPD		\boxtimes		NC (Duplicate RPD): The duplicate RPD was not calculated. The
				concentration in the sample and/or duplicate was too low to permit a
				reliable RPD calculation (one or both samples < 5x RDL).
Matrix Spike Recovery		\boxtimes		NC (Matrix Spike): The recovery in the matrix spike was not calculated.
				The relative difference between the concentration in the parent sample
				and the spiked amount was too small to permit a reliable recovery
				calculation (matrix spike concentration was less than 2x that of the
				native sample concentration)
				Results not within reference method but within client specified
				accentance limits. Analysis was repeated with similar results
Lab Control Sample Recovery				
Are All Field QC Samples Within	Alert Lim	its (Yes,	No, Not	Applicable)?
	Yes	No	NA	Comments
Field Blank Concentration			\boxtimes	
Trip Blank Concentration			\boxtimes	
Field Duplicate RPD			\boxtimes	
Has CoA been signed off?				
Has lab warranted all tests were	in statisti	cal contro	ol in CoA	? ⊠ Yes □ No
Has lab warranted all tests were	analvzed	following	a SOP's i	in CoA? ⊠ Yes □ No
Were all samples analyzed within	hold tim	es?	,	⊠ Yes □ No
All volatiles samples methanol ex	tracted (f reauire	d) within	48 hours? ⊠ Yes □ No
Is Chain of Custody completed a	nd signed	1?	-,	⊠ Yes □ No
Were sample temperatures acce	ptable wh	en they	reached	lab? 🛛 Yes 🗆 No
Is data considered to be reliable?)	-		
If answer is "No" describe and n	rovide rat	ionale	I U3	
n anower is two, describe and pl				
Reviewed by (Print): Jani	ce Shea			Reviewed by (Signature): Janua Shea
Date: Octo	ber 8. 20)19		
0000	,	-		52 ⁰⁰



Task Order#: Site#: CTC Site Location: 64 MILL LAKE ROAD NO 2, HUBBARDS, NS Project #: DB6N9476(60438249) Your C.O.C. #: DB6N9476-D060-01-01

Attention:BEDFORD CLIENT SERVICE

MAXXAM ANALYTICS (Imperial Oil) BEDFORD - IOL/ESSO/EXXON 200 BLUEWATER ROAD SUITE 105 BEDFORD, NS CANADA B4B 1G9

> Report Date: 2016/11/10 Report #: R2298666 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B699793

Received: 2016/11/08, 09:00

Sample Matrix: Soil # Samples Received: 7

Analyses	Quantity	Laboratory Method	Primary Reference
Glycols in Soil by GC/FID	7	CAL SOP-00093	EPA 8015D R4 m
Moisture	7	AB SOP-00002	CCME PHC-CWS m

Remarks:

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

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

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

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

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

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

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

Encryption Key

Rhecie Phayouphone Project Manager 10 Nov 2016 15:45:48 -07:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Rhecie Phayouphone, Project Manager Email: RPhayouphone@maxxam.ca Phone# (403)735-2283

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



RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		PZ2952	PZ2953	PZ2954		
Sampling Date		2016/11/03 15:10	2016/11/03 16:20	2016/11/03 16:00		
COC Number		DB6N9476-D060-01-01	DB6N9476-D060-01-01	DB6N9476-D060-01-01		
	UNITS	FWO-1 (DJR532)	FWO-5 (DJR536)	FA1-X (0.3-0.4) (DJR537)	RDL	QC Batch
Physical Properties						
N 4 - tota and	0/	0 E	14	16	0.30	8464662
woisture	%	0.5	14	10	0.50	0.0.00

Maxxam ID PZ2955 PZ2955 PZ2956 2016/11/03 2016/11/03 2016/11/03 Sampling Date 15:00 15:00 16:30 COC Number DB6N9476-D060-01-01 DB6N9476-D060-01-01 DB6N9476-D060-01-01 FA6-X (0.5-0.6) FA6-X (0.5-0.6) FA10-X (0.3-0.4) UNITS (DJR538) RDL QC Batch (DJR538) (DJR539) Lab-Dup **Physical Properties** Moisture 0.30 8464662 % 13 13 12

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

Maxxam ID		PZ2957	PZ2958							
Sampling Date		2016/11/03 14:30	2016/11/03 15:30							
COC Number		DB6N9476-D060-01-01	DB6N9476-D060-01-01							
	UNITS	FA4-X (0.5-0.6) (DJR540)	FA7-X (0.4-0.5) (DJR541)	RDL	QC Batch					
Physical Properties										
Moisture	%	15	19	0.30	8464662					
RDL = Reportable Detection Limit										



GLYCOLS BY GC-FID (SOIL)

Maxxam ID		PZ2952	PZ2952	PZ2953		
Sampling Date		2016/11/03 15:10	2016/11/03 15:10	2016/11/03 16:20		
COC Number		DB6N9476-D060-01-01	DB6N9476-D060-01-01	DB6N9476-D060-01-01		
	UNITS	FWO-1 (DJR532)	FWO-1 (DJR532) Lab-Dup	FWO-5 (DJR536)	RDL	QC Batch
Glycols						
Extractable (Water) Ethylene Glycol	mg/kg	<10	<10	<10	10	8464996
Extractable (Water) Diethylene Glycol	mg/kg	<10	<10	<10	10	8464996
Extractable (Water) Triethylene Glycol	mg/kg	<10	<10	<10	10	8464996
Extractable (Water) Tetraethylene Glycol	mg/kg	<10	<10	<10	10	8464996
Extractable (Water) Propylene Glycol	mg/kg	<10	<10	<10	10	8464996
Extraction Surrogate Recovery (%)						
Extractable (Water) Methyl Sulfone (sur.)	%	90	93	87		8464996
RDL = Reportable Detection Limit						

Lab-Dup = Laboratory Initiated Duplicate

						-
Maxxam ID		PZ2954	PZ2955	PZ2956		
Sampling Data		2016/11/03	2016/11/03	2016/11/03		
		16:00	15:00	16:30		
COC Number		DB6N9476-D060-01-01	DB6N9476-D060-01-01	DB6N9476-D060-01-01		
	UNITS	FA1-X (0.3-0.4) (DJR537)	FA6-X (0.5-0.6) (DJR538)	FA10-X (0.3-0.4) (DJR539)	RDL	QC Batch
Glycols						
Extractable (Water) Ethylene Glycol	mg/kg	<10	<10	<10	10	8464996
Extractable (Water) Diethylene Glycol	mg/kg	<10	<10	<10	10	8464996
Extractable (Water) Triethylene Glycol	mg/kg	<10	<10	<10	10	8464996
Extractable (Water) Tetraethylene Glycol	mg/kg	<10	<10	<10	10	8464996
Extractable (Water) Propylene Glycol	mg/kg	<10	<10	<10	10	8464996
Extraction						
Surrogate Recovery (%)						
Extractable (Water) Methyl Sulfone (sur.)	%	89	96	93		8464996
RDL = Reportable Detection Limit						



GLYCOLS BY GC-FID (SOIL)

Maxxam ID		PZ2957	PZ2958		
Sampling Date		2016/11/03 14:30	2016/11/03 15:30		
COC Number		DB6N9476-D060-01-01	DB6N9476-D060-01-01		
	UNITS	FA4-X (0.5-0.6) (DJR540)	FA7-X (0.4-0.5) (DJR541)	RDL	QC Batch
Glycols					
Extractable (Water) Ethylene Glycol	mg/kg	<10	<10	10	8464996
Extractable (Water) Diethylene Glycol	mg/kg	<10	<10	10	8464996
Extractable (Water) Triethylene Glycol	mg/kg	<10	<10	10	8464996
Extractable (Water) Tetraethylene Glycol	mg/kg	<10	<10	10	8464996
Extractable (Water) Propylene Glycol	mg/kg	<10	<10	10	8464996
Extraction					
Surrogate Recovery (%)					
Extractable (Water) Methyl Sulfone (sur.)	%	94	90		8464996
RDL = Reportable Detection Limit					



Report Date: 2016/11/10

MAXXAM ANALYTICS (Imperial Oil) Task Order#: Site#: CTC Site Location: 64 MILL LAKE ROAD NO 2, HUBBARDS, NS Project #: DB6N9476(60438249)

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	PZ2952 FWO-1 (DJR532) Soil				R	Collected: elinquished: Received:	2016/11/03 2016/11/07 2016/11/08
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
Glycols in Soil by GC/FID		GC/FID	8464996	2016/11/09	2016/11/09	Darrus On	g
Moisture		BAL	8464662	N/A	2016/11/09	Sohel (Mu	hammed) Rana
Maxxam ID: Sample ID: Matrix: Test Description	PZ2952 Dup FWO-1 (DJR532) Soil	Instrumentation	Batch	Extracted	R Date Analyzed	Collected: elinquished: Received: Analyst	2016/11/03 2016/11/07 2016/11/08
Glycols in Soil by GC/EID		GC/FID	8464996	2016/11/09	2016/11/09	Darrus On	σ
Maxxam ID: Sample ID: Matrix:	PZ2953 FWO-5 (DJR536) Soil				R	Collected: elinquished: Received:	2016/11/03 2016/11/07 2016/11/08
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
Glycols in Soil by GC/FID		GC/FID	8464996	2016/11/09	2016/11/09	Darrus On	g
Moisture		BAL	8464662	N/A	2016/11/09	Sohel (Mu	hammed) Rana
Maxxam ID: Sample ID: Matrix:	PZ2954 FA1-X (0.3-0.4) (DJR Soil	537)			R	Collected: elinquished: Received:	2016/11/03 2016/11/07 2016/11/08
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
Glycols in Soil by GC/FID		GC/FID	8464996	2016/11/09	2016/11/09	Darrus On	g
Moisture		BAL	8464662	N/A	2016/11/09	Sohel (Mu	hammed) Rana
Maxxam ID: Sample ID: Matrix:	PZ2955 FA6-X (0.5-0.6) (DJR Soil	538)			R	Collected: elinquished: Received:	2016/11/03 2016/11/07 2016/11/08
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
Glycols in Soil by GC/FID		GC/FID	8464996	2016/11/09	2016/11/09	Darrus On	g
Moisture		BAL	8464662	N/A	2016/11/09	Sohel (Mu	hammed) Rana
Maxxam ID: Sample ID: Matrix:	PZ2955 Dup FA6-X (0.5-0.6) (DJR Soil	538)			R	Collected: elinquished: Received:	2016/11/03 2016/11/07 2016/11/08
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
Moisture		BAL	8464662	N/A	2016/11/09	Sohel (Mu	hammed) Rana



Report Date: 2016/11/10

MAXXAM ANALYTICS (Imperial Oil) Task Order#: Site#: CTC Site Location: 64 MILL LAKE ROAD NO 2, HUBBARDS, NS Project #: DB6N9476(60438249)

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	PZ2956 FA10-X (0.3-0.4) (DJR Soil	539)			Re	Collected: elinquished: Received:	2016/11/03 2016/11/07 2016/11/08
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
Glycols in Soil by GC/FID		GC/FID	8464996	2016/11/09	2016/11/09	Darrus Ong	5
Moisture		BAL	8464662	N/A	2016/11/09	Sohel (Muh	nammed) Rana
Maxxam ID: Sample ID: Matrix:	PZ2957 FA4-X (0.5-0.6) (DJR5 Soil	40)			Re	Collected: elinquished: Received:	2016/11/03 2016/11/07 2016/11/08
			- · · ·	Future stand			
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
Test Description Glycols in Soil by GC/FID		GC/FID	8464996	2016/11/09	2016/11/09	Analyst Darrus Ong	5
Test Description Glycols in Soil by GC/FID Moisture		GC/FID BAL	8464996 8464662	2016/11/09 N/A	2016/11/09 2016/11/09	Analyst Darrus Ong Sohel (Muh	s nammed) Rana
Test Description Glycols in Soil by GC/FID Moisture Maxxam ID: Sample ID: Matrix:	PZ2958 FA7-X (0.4-0.5) (DJR5 Soil	GC/FID BAL 41)	8464996 8464662	2016/11/09 N/A	2016/11/09 2016/11/09 2016/11/09	Analyst Darrus Ong Sohel (Muh Collected: elinquished: Received:	ammed) Rana 2016/11/03 2016/11/07 2016/11/08
Test Description Glycols in Soil by GC/FID Moisture Maxxam ID: Sample ID: Matrix: Test Description	PZ2958 FA7-X (0.4-0.5) (DJR5 Soil	Instrumentation GC/FID BAL 41) Instrumentation	Batch 8464996 8464662 Batch	Extracted 2016/11/09 N/A Extracted	Date Analyzed 2016/11/09 2016/11/09 Re Date Analyzed	Analyst Darrus Ong Sohel (Muh Collected: elinquished: Received: Analyst	2016/11/03 2016/11/07 2016/11/08
Test Description Glycols in Soil by GC/FID Moisture Maxxam ID: Sample ID: Matrix: Test Description Glycols in Soil by GC/FID	PZ2958 FA7-X (0.4-0.5) (DJR5 Soil	Instrumentation GC/FID BAL 41) Instrumentation GC/FID	Batch 8464996 8464662 Batch 8464996	Extracted 2016/11/09 N/A Extracted 2016/11/09	Date Analyzed 2016/11/09 2016/11/09 Bate Analyzed Date Analyzed 2016/11/09	Analyst Darrus Ong Sohel (Muh Collected: elinquished: Received: Analyst Darrus Ong	2016/11/03 2016/11/03 2016/11/07 2016/11/08



GENERAL COMMENTS

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

 Package 1
 3.0°C

 Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
8464662	SRB	Method Blank	Moisture	2016/11/09	<0.30		%	
8464996	D01	Method Blank	Extractable (Water) Methyl Sulfone (sur.)	2016/11/09		96	%	50 - 130
			Extractable (Water) Ethylene Glycol	2016/11/09	<10		mg/kg	
			Extractable (Water) Diethylene Glycol	2016/11/09	<10		mg/kg	
			Extractable (Water) Triethylene Glycol	2016/11/09	<10		mg/kg	
			Extractable (Water) Tetraethylene Glycol	2016/11/09	<10		mg/kg	
			Extractable (Water) Propylene Glycol	2016/11/09	<10		mg/kg	
8464996	D01	RPD [PZ2952-01]	Extractable (Water) Ethylene Glycol	2016/11/09	NC		%	50
			Extractable (Water) Diethylene Glycol	2016/11/09	NC		%	50
			Extractable (Water) Triethylene Glycol	2016/11/09	NC		%	50
			Extractable (Water) Tetraethylene Glycol	2016/11/09	NC		%	50
			Extractable (Water) Propylene Glycol	2016/11/09	NC		%	50
8464662	SRB	RPD [PZ2955-01]	Moisture	2016/11/09	0		%	20
8464996	D01	Matrix Spike [PZ2952-01]	Extractable (Water) Methyl Sulfone (sur.)	2016/11/09		93	%	50 - 130
			Extractable (Water) Ethylene Glycol	2016/11/09		91	%	30 - 130
			Extractable (Water) Diethylene Glycol	2016/11/09		89	%	30 - 130
			Extractable (Water) Triethylene Glycol	2016/11/09		87	%	30 - 130
			Extractable (Water) Tetraethylene Glycol	2016/11/09		98	%	30 - 130
			Extractable (Water) Propylene Glycol	2016/11/09		89	%	30 - 130
8464996	D01	LCS	Extractable (Water) Methyl Sulfone (sur.)	2016/11/09		96	%	50 - 130
			Extractable (Water) Ethylene Glycol	2016/11/09		93	%	30 - 130
			Extractable (Water) Diethylene Glycol	2016/11/09		90	%	30 - 130
			Extractable (Water) Triethylene Glycol	2016/11/09		94	%	30 - 130
			Extractable (Water) Tetraethylene Glycol	2016/11/09		103	%	30 - 130
			Extractable (Water) Propylene Glycol	2016/11/09		89	%	30 - 130

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.

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



Report Date: 2016/11/10

MAXXAM ANALYTICS (Imperial Oil) Task Order#: Site#: CTC Site Location: 64 MILL LAKE ROAD NO 2, HUBBARDS, NS Project #: DB6N9476(60438249)

VALIDATION SIGNATURE PAGE

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

Dennis Ngondu, B.Sc., P.Chem., QP, Supervisor, Organics

1/2 micatelk

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

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

A Bureau Veritas Group Company Calgary, AB, Tel: (403) 21	9-3650																			
REPORT INFORMATION								AN	ALYSIS F	REQUEST	ED	1			Job Barco	de Label	1			
Company: Maxxam									- 45			91.								
Address: 200 Bluewater Road, Bedford, Nov	a Scotia, B	4B 1G9							3											
Contact Name: Keri Mackay								φL.												
Email: kmackay@maxxam.ca, BClientSvcS	ubContr@	maxxam.ca											0.01							
Phone: (902) 420-0203 ext. 294																				
Maxxam Project #: B6N9476																				
Client Invoice To: AECOM Canada Ltd (30110)					_															
Client Report To: AECOM Canada Ltd. (19160)		20	Incl. on	Report? Yes	/ No															
# SAMPLE ID	MATRIX	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	SAMPLER INITIALS	# CONT.	Glycol in Soil								ADDITIC	ONAL SAMP	LE INFORMATION				
1 DJR532-FWO-1	SOIL	2016/11/03	15:10	СН	1	х														
2 DJR536-FWO-5	SOIL	2016/11/03	16:20	CH	1	х														
3 DIR537-EA1-X (0.3-0.4)	SOIL	2016/11/03	16:00	СН	1	х														
4 DIR538-FA6-X (0.5-0.6)	SOIL	2016/11/03	15:00	СН	1	х														
5 DID520-EA10-X (0.3-0.4)	SOIL	2016/11/03	16:30	CH	1	X											1		2	
C DIREAD FAA X (0.5-0.4)	SOIL	2016/11/03	14.30	СН	1	X													τ.	
2 DIREAL FAC X (0.4.0 F)	SOIL	2016/11/02	15:20	СН	1	X			-							- A	1			
/ UJN341-FA7-A (U.4-0.5)	JUIL	2010/11/05	15.50	50	-												1			
0			_														-	•		1
3								-	-										*	2
		PEG	LILATORY	RITERIA		175	SPECIAL IN	STRUCT	TIONS					REQUIRED EDD	s	TURNAROUND TIME	1.1		(*) 2	
51 ELUCATION: 54 MILLI LAKE ROAD NO 2. HUBBARDS. NS		IOL I	Protocol		3000		Please info	rm Max	xam imr	nediately	y if you	are not a	accredited	National Excel (N001)				· ·	
SITE #:	THE LOCAL	1.02.030					for the req	uested	test(s).					AECOM Equis 4-	File'	Rush Required				
N/A							**Please re	eturn a	copy of t	his form	with th	e report.		(A099)		0010/11/11				
PROJECT #:															-	2016/11/14	2.29			
60438249	_														Di-	Date Required				
PO/AFE, TASK ORDER/SERVICE ORDER, LINE ITEM:															PIE	will be incurred.		1		
	-	COOLERID				_			0015	R ID.						ECEIVING LAB LISE ONLY				
YES NO 1 2	3	COULER ID:		YES NO			1 2	3				YES I	NO	1 2	3.	LELIVING LAD USE UNLT	_			
Custody Seal Present Temp: 3 2	3	Custody Seal, F	resent		Ten	np:			Custor	ly Seal Pr	resent tact		Temp	2:		Maxxam Job #	-			
Cooling Media Present ("C)		Cooling Media	Present		100	1			Coolin	g Media	Present		(0)		- 6	3699793				
RELINQUISHED BY: (SIGN & PRINT)	DATE:	(YYYY/MM/DD)	TIME: (H	HH:MM)	RECE	IVED B	: (SIGN & PRIN	IT)			i i i	DAT	TE: (YYYY/N	1M/DD) TIME: (H	H:MM)	Samples Labels Verifier	4			
1 ALA BATERD ANCON WAISCOS	101	6/11/07	11:2	1.	4)	k	ろへ	XHL	6.00	5802	7	0	016/1	1/08 098	0	abelled By: By:				
Through that winders	w	VIII	11.0		1		00	13.1 M			1		- 9/1	100		160 AV2				

ΑΞϹΟΜ

Data Quality Review Checklist

Consultant: Al	ЕСОМ			Sampling Date: 2016/11/03
Location: 64	MILL LA	KE RD. N	102,	Laboratory: Maxxam
H	JBBARD	5, NS		
Consultant Project Number: 60	438249			Sample Submission Number: B699793
Are All Laboratory QC Samples V	Vithin Ac	ceptance	Criteria	(Yes, No, Not Applicable)?
	Yes	No	NA	Comments
Instrument Surrogate Recovery			\boxtimes	
Extraction Surrogate Recovery	\boxtimes			
Method Blank Concentration	\boxtimes			
Matrix Duplicate RPD		\boxtimes		NC (Duplicate RPD): The duplicate RPD was not calculated. The
				concentration in the sample and/or duplicate was too low to permit a
				reliable RPD calculation (one or both samples < 5x RDL).
Matrix Spike Recovery	\boxtimes			
Lab Control Sample Recovery	\boxtimes			
Are All Field QC Samples Within	Alert Lim	its (Yes,	No, Not	Applicable)?
	Yes	No	NA	Comments
Field Blank Concentration			\square	
Trip Blank Concentration			\boxtimes	
Field Duplicate RPD			\boxtimes	
Has CoA been signed off?				🛛 Yes 🗆 No
Has lab warranted all tests were i	n statisti	cal contro	ol in CoA	? 🛛 Yes 🗆 No
Has lab warranted all tests were a	analyzed	following	g SOP's i	in CoA? 🛛 Yes 🛛 No
Were all samples analyzed within	hold tim	es?		
All volatiles samples methanol ex	tracted (i	f require	d) within	48 hours? 🛛 Yes 🛛 No
Is Chain of Custody completed an	nd signed	l?		🔤 🛛 Yes 🛛 No
Were sample temperatures accept	otable wh	ien they	reached	lab? 🛛 Yes 🗆 No
Is data considered to be reliable?			⊠ Yes	□ No
If answer is "No", describe and pr	ovide rat	ionale:		
Reviewed by (Print): Janio	ce Shea			Reviewed by (Signature):
Date: Nove	ember 13	, 2019		V



Attention:Tim Bachiu

B313M8

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax. NS CANADA

Task Order#: N/A-CTC SITE Site#: Site Location: 64 MILL LAKE ROAD NO 2, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 588912-01-01

> Report Date: 2016/12/15 Report #: R4288498 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6R2115 Received: 2016/12/14, 15:37

Sample Matrix: Soil # Samples Received: 1

Analyses	Quantity	Laboratory Method	Primary Reference
TEH in Soil (PIRI) (1)	1	ATL SOP 00111	Atl. RBCA v3 m
Moisture	1	ATL SOP 00001	OMOE Handbook 1983 m
Double water wash (soil)	1	ATL SOP 00111	N/A
Silica Gel Clean-up (Soil)	1	ATL SOP 00111	EPA 3630C R3 m
ModTPH (T1) Calc. for Soil	1	N/A	Atl. RBCA v3.1 m
VPH in Soil (PIRI) - Field Preserved (2)	1	ATL SOP 00119	Atl. RBCA v3.1 m

Remarks:

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

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

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

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

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

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

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

(1) Soils are reported on a dry weight basis unless otherwise specified.

(2) No lab extraction date is given for C6-C10/BTEX and VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.



Task Order#: N/A-CTC SITE Site#: Site Location: 64 MILL LAKE ROAD NO 2, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 588912-01-01

Attention:Tim Bachiu

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2016/12/15 Report #: R4288498 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6R2115 Received: 2016/12/14, 15:37

Encryption Key

heri Machay Keri MacKay Project Manager - Bedford 15 Dec 2016 16:13:58

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Keri Mackay, Project Manager - Bedford Email: kmackay@maxxam.ca Phone# (902)420-0203 Ext:294

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RBCA HYDROCARBONS IN SOIL (FIELD PRES.) DPY779 DPY779 Maxxam ID 2016/12/14 2016/12/14 Sampling Date 10:00 10:00 588912-01-01 COC Number 588912-01-01 EX2-6 UNITS EX2-6 RDL QC Batch Lab-Dup Inorganics Moisture % 14 1.0 4792351 Petroleum Hydrocarbons Benzene <0.025 < 0.025 0.025 4793669 mg/kg Toluene mg/kg < 0.025 <0.025 0.025 4793669 Ethylbenzene mg/kg < 0.025 <0.025 0.025 4793669 Total Xylenes mg/kg < 0.050 <0.050 0.050 4793669 C6 - C10 (less BTEX) mg/kg <2.5 <2.5 2.5 4793669 >C10-C16 Hydrocarbons <10 <10 10 4793719 mg/kg >C16-C21 Hydrocarbons mg/kg <10 <10 10 4793719 >C21-<C32 Hydrocarbons mg/kg <15 <15 15 4793719 Modified TPH (Tier1) mg/kg <15 15 4791835 Reached Baseline at C32 mg/kg NA N/A 4793719 Hydrocarbon Resemblance NA N/A 4793719 mg/kg Extraction Surrogate Recovery (%) Isobutylbenzene - Extractable % 83 85 4793719 n-Dotriacontane - Extractable 105 (1) 4793719 % 111 (1) Isobutylbenzene - Volatile 95 4793669 % 107 Instrument Surrogate Recovery (%) 1,4-Difluorobenzene 104 94 4793669 % 4-Bromofluorobenzene % 108 96 4793669 D4-1,2-Dichloroethane % 99 91 4793669

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

(1) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.



Report Date: 2016/12/15

AECOM Canada Ltd. Task Order#: N/A-CTC SITE Site#: Site Location: 64 MILL LAKE ROAD NO 2, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID:	DPY779
Sample ID:	EX2-6
Matrix:	Soil

Collected:	2016/12/14
Relinquished:	2016/12/14
Received:	2016/12/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4793719	2016/12/15	2016/12/15	Marley Gidney
Moisture	BAL	4792351	N/A	2016/12/15	Victoria Legge
ModTPH (T1) Calc. for Soil	CALC	4791835	N/A	2016/12/15	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4793669	N/A	2016/12/15	Thea Holland

Maxxam ID: Sample ID: Matrix:	DPY779 Dup EX2-6 Soil				Re	Collected: 2016/12/14 linquished: 2016/12/14 Received: 2016/12/14	
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	4793719	2016/12/15	2016/12/15	Marley Gidney	
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	4793669	N/A	2016/12/15	Thea Holland	



GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt								
	Package 1	3.0°C						
Double water wash and silica gel clean-up performed on soil extracts.								
Results relate only to the items tested.								



Report Date: 2016/12/15

AECOM Canada Ltd. Task Order#: N/A-CTC SITE Site#: Site Location: 64 MILL LAKE ROAD NO 2, HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
4793669	THL	Method Blank	1,4-Difluorobenzene	2016/12/15		101	%	60 - 140
			4-Bromofluorobenzene	2016/12/15		101	%	60 - 140
			D4-1,2-Dichloroethane	2016/12/15		99	%	60 - 140
			Isobutylbenzene - Volatile	2016/12/15		99	%	60 - 130
			Benzene	2016/12/15	<0.025		mg/kg	
			Toluene	2016/12/15	<0.025		mg/kg	
			Ethylbenzene	2016/12/15	<0.025		mg/kg	
			Total Xylenes	2016/12/15	<0.050		mg/kg	
			C6 - C10 (less BTEX)	2016/12/15	<2.5		mg/kg	
4793719	MGN	Method Blank	n-Dotriacontane - Extractable	2016/12/15		108	%	30 - 130
			Isobutylbenzene - Extractable	2016/12/15		84	%	30 - 130
			>C10-C16 Hydrocarbons	2016/12/15	<10		mg/kg	
			>C16-C21 Hydrocarbons	2016/12/15	<10		mg/kg	
			>C21- <c32 hydrocarbons<="" td=""><td>2016/12/15</td><td><15</td><td></td><td>mg/kg</td><td></td></c32>	2016/12/15	<15		mg/kg	
4793669	THL	RPD [DPY779-02]	Benzene	2016/12/15	NC		%	50
			Toluene	2016/12/15	NC		%	50
			Ethylbenzene	2016/12/15	NC		%	50
			Total Xylenes	2016/12/15	NC		%	50
			C6 - C10 (less BTFX)	2016/12/15	NC		%	50
4793719	MGN	RPD [DPY779-01]	>C10-C16 Hydrocarbons	2016/12/15	NC		%	50
			>C16-C21 Hydrocarbons	2016/12/15	NC		%	50
			>C21- <c32 hydrocarbons<="" td=""><td>2016/12/15</td><td>NC</td><td></td><td>%</td><td>50</td></c32>	2016/12/15	NC		%	50
4793669	тні	Matrix Spike [DPY779-02]	1 4-Difluorobenzene	2016/12/15		104	%	60 - 140
1755005			4-Bromofluorobenzene	2016/12/15		108	%	60 - 140
			D4-1 2-Dichloroethane	2016/12/15		99	%	60 - 140
			Isobutylbenzene - Volatile	2016/12/15		105	%	60 - 130
			Benzene	2016/12/15		101	%	60 - 130
			Toluene	2010/12/15		101	%	60 - 130
			Fthylbenzene	2010/12/15		105	%	60 - 130
			Total Xylenes	2010/12/15		103	%	60 - 130
4793719	MGN	Matrix Snike [DPV779-01]	n-Dotriacontane - Extractable	2016/12/15		109 (1)	%	30 - 130
4755715	WIGH		Isobutylbenzene - Extractable	2010/12/15		86	%	30 - 130
			>C10-C16 Hydrocarbons	2010/12/15		87	%	30 - 130
			>C16-C21 Hydrocarbons	2010/12/15		99	%	30 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2010/12/15</td><td></td><td>82</td><td>%</td><td>30 - 130</td></c32>	2010/12/15		82	%	30 - 130
1793669	тні	105	1 4-Difluorobenzene	2010/12/15		79	%	60 - 1/0
4755005		265	1,4 Dindorobenzene A-Bromofluorobenzene	2010/12/15		80	%	60 - 140
			A 1 2 Dichloroothano	2010/12/15		79	70 0/	60 140
			Isobutylbenzene - Volatile	2010/12/13		78	/0 %	60 - 130
			Bonzono	2010/12/15		75	70 0/	60 140
			Toluono	2010/12/13		72	/0 0/	60 140
			Ethylhonzono	2010/12/15		/0	70 0/	60 140
				2010/12/15		10	70 0/	60 140
4702710		105	n Dotriacontano Extractable	2010/12/15		00 111	70 0/	20 120
4/93/19	NDIVI			2010/12/15		111	70 0/	20 120
			Sobutybenzene - Extractable	2016/12/15		80	% 0/	30 - 130
			>CIO-CIO Hydrogarbana	2010/12/15		80 100	% 0/	30 - 130 20 - 130
			>CID-CZI HyurOCarbons	2016/12/15		102	%	30 - 130



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC				Date						
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits		
			>C21- <c32 hydrocarbons<="" td=""><td>2016/12/15</td><td></td><td>86</td><td>%</td><td>30 - 130</td></c32>	2016/12/15		86	%	30 - 130		
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.										
Matrix S	Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.									
LCS: A bl	ank ma	atrix sample t	o which a known amount of the analyte, usually from a	a second source, has bee	en added. Used	l to evaluate m	ethod a	ccuracy.		
Method	Blank:	A blank matr	ix containing all reagents used in the analytical proced	ure. Used to identify lab	oratory contar	nination.				
Surrogat	Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.									
NC (Dupl calculation	NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).									
	مسماه	a wara avtraa	tad using a flat had chalker instead of the appalarated r	nachanical chakar dua t	- matrix incom	natibility				

(1) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.



Report Date: 2016/12/15

AECOM Canada Ltd. Task Order#: N/A-CTC SITE Site#: Site Location: 64 MILL LAKE ROAD NO 2, HUBBARDS, NS Project #: 60438249

VALIDATION SIGNATURE PAGE

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

Kosmarie Moe Donald

Rosemarie MacDonald, Scientific Specialist (Organics)

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Maxiam Be) Bluewa dford, N w.maxx	ater Ro Iova Sc am.ca	ad otia B	4B 1G	9	Pho F Toll F	ne: (902) ax: (902) ree: 800-	420-02 420-86 563-62	203 512 266		EXXONI CH	AIN-O AIN-O ANA	L/IMPERIAL F-CUSTOD	. OIL - I Y RECO ESTED	MAXXAN ORD	Л	Pa C of C # 588	ge of 912-01-0	1	5889	12
INVOICE INFORMATION			ompa	nv Na	REI	COM Canada L		_				1			_						
		27	-ompe	ing ne																	
Contact Name:		C	Contac	t Nan	ne:					R								- L			
Address:		A	Addres	SS:						5											
1701 Hollis Street		1	701 H	Iollis S	treet					3											
Halifax NS B3J 3M8		ŀ	lalifax	NS B	3J 3M8					9					-						
Email: Derek.Heath@aecom.com		E	Email:		Time	othy.bachiu@aec	com.com, L	aura.	MacIs	G											
Phone: (902) 428-2048 x		F	hone	:	(902	2) 428-2048 x				õ											
Sampler Name (Print): Cala Hat	t	C	onsu	Itant F	Project	# 6043	3874	9		10											
- d non	1	MA	TRIX			SAMPLI	NG	80	z	1						1. I.		- 1			
FIELD SAMPLE ID	BROUND WATER	SURFACE WATER	SOIL	OTHER	CONTAINERS	DATE YYYY/MM/DD)	TIME (24 HR)	FIELD FILTERE	LAB FILTRATIC REQUIRED	RBCH											
1 EX2-6			X		3	2016/12/14	10 pr			X											1
2						YYYWIAMIDD	HIGARN			~		+			_			-			
3						YYY MARDO	HAR MAN												-		
4		+	-			VYVVVAALASTIN)	HI-MA					-						-			
5					-	V T CO TRANSPORT	Line hand					-						-			
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		-	-			K Y Y YOMADGALI	5414 (MPR)										_				
8	_					YYGYGRIREDO	用於南部														
9						YYYYMMADER	Hirt.494														
10						1777 (AR\$0101)	3403,0467														
IOL SITE LOCATION:	T	Ē T	1	hle		F	REGULAT	ORY	CRITEF	RIA / DI	ECTION LIMITS:	SPEC	IAL INSTRUCTIO	ONS:			# JARS USED	-	TURNAF	ROUND TIN	/E
6418111 Lake Road Wod	, Hu	bay	rds,	NS)												SUBMITTED	Stand	ard	(5 days)	
IOL PROJECT # (if applicable):	(AH.	+	P	PI			()	0			Water	1 YUSH		(3 days) (2 days)	H
		# + 1 15	EITE	N.4.			1-1-10	n lic	-1				Von	e			2			(1 day)	
N/A - CTC Site -													0	De	C 15	ame day)	×				
YES NO COOLER I	D:						YES	NO	COOLE	R ID:				YES NO	COOLER ID):					
SEAL PRESENT TEMP	3	3		3	co los	EAL PRESENT			TEMP			SEAL P	RESENT		TEMP				LABU	ISE ONLY	
	<u>a</u>		2	3		COOLING MEDIA PRE	SENT			1	2 3	COOLIN	NG MEDIA PRESENT			1	2 3	0.	INIAXX	AIVI JOB #	
1 bonh Halt	10	· Seriel	1+	<i>t</i> .	26	16 12 14	15	15	1	ECEN)	Base	1	Vienta	ASE	Jair 9	12/14		150	152	115	
2 Sicinature	010	191	IAT!		00	VVVV MANDED	12	12 FAIAI	1.	_/'	7 Marchine		FIMOR	HEC	20167	12/14	13 101	LAB	SAI	VERIFI	ED BY
3 signatura		BRIDE	1 manner			YYYY YMANDOD	Ell	H-AHAR	2.		signative		product ride	718	444	(ARACH)	HIT AND	A)	P	2001.
COC - 1009 (2013) IOL - NS				White	Maxxan	1			J.	low Clier			2717/08-08 7620				(ALIVERIAL)	istr	-	A	<u> </u>

ΑΞϹΟΜ

Data Quality Review Checklist

Consultant: Al	ECOM			Sampling Date: 2016/12/14					
Location: 64	I MILL LA	KE RD. N	102,	Laboratory: Maxxam					
<u>HI</u>	JBBARDS	5, NS							
Consultant Project Number: 60	438249			Sample Submission Number: B6R2115					
Are All Laboratory QC Samples V	Vithin Ac	ceptance	Criteria	(Yes, No, Not Applicable)?					
	Yes	No	NA	Comments					
Instrument Surrogate Recovery	\boxtimes								
Extraction Surrogate Recovery	\boxtimes								
Method Blank Concentration	\boxtimes								
Matrix Duplicate RPD		\boxtimes		NC (Duplicate RPD): The duplicate RPD was not calculated. The					
				concentration in the sample and/or duplicate was too low to permit a					
				reliable RPD calculation (one or both samples < 5x RDL).					
Matrix Spike Recovery	\boxtimes								
Lab Control Sample Recovery	\boxtimes								
Are All Field QC Samples Within	Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?								
	Yes	No	NA	Comments					
Field Blank Concentration			\boxtimes						
Trip Blank Concentration			\boxtimes						
Field Duplicate RPD			\boxtimes						
Has CoA been signed off?				🛛 Yes 🗆 No					
Has lab warranted all tests were i	n statisti	cal contro	ol in CoA	? Xes 🗆 No					
Has lab warranted all tests were a	analyzed	following	g SOP's i	n CoA? 🛛 Yes 🛛 No					
Were all samples analyzed within	hold tim	es?		Yes 🛛 No					
All volatiles samples methanol ex	tracted (i	f require	d) within	48 hours? 🛛 Yes 🛛 No					
Is Chain of Custody completed an	nd signed	l?		⊠ Yes 🗆 No					
Were sample temperatures accept	otable wh	ien they i	reached	lab? 🛛 Yes 🗆 No					
Is data considered to be reliable?			🛛 Yes	□ No					
If answer is "No", describe and pr	ovide rat	ionale:							
	0			Die Harris Auto					
Reviewed by (Print): Janio	ce Shea			Reviewed by (Signature): Yanua Shila					
Date: October 8, 2019									



Task Order#: N/A-CTC SITE Site#: CTC Site Location: 64 MILL LAKE ROAD NO2, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 588912-01-01

Attention:Tim Bachiu

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2016/12/19 Report #: R4293249 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6R2142 Received: 2016/12/14, 15:37

Received. 2010/12/14, 15.5

Sample Matrix: Soil # Samples Received: 1

Analyses	Quantity	Laboratory Method	Primary Reference
TEH in Soil (PIRI) (1)	1	ATL SOP 00111	Atl. RBCA v3 m
Moisture	1	ATL SOP 00001	OMOE Handbook 1983 m
Double water wash (soil)	1	ATL SOP 00111	N/A
Silica Gel Clean-up (Soil)	1	ATL SOP 00111	EPA 3630C R3 m
ModTPH (T1) Calc. for Soil	1	N/A	Atl. RBCA v3.1 m
VPH in Soil (PIRI) - Field Preserved (2)	1	ATL SOP 00119	Atl. RBCA v3.1 m

Remarks:

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

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

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

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

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

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

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

(1) Soils are reported on a dry weight basis unless otherwise specified.

(2) No lab extraction date is given for C6-C10/BTEX and VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.



Task Order#: N/A-CTC SITE Site#: CTC Site Location: 64 MILL LAKE ROAD NO2, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 588912-01-01

Attention:Tim Bachiu

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2016/12/19 Report #: R4293249 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6R2142 Received: 2016/12/14, 15:37

Encryption Key

heri Machay ^{Keri MacKay} Project Manager - Bedford 19 Dec 2016 11:40:28

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Keri Mackay, Project Manager - Bedford Email: kmackay@maxxam.ca Phone# (902)420-0203 Ext:294

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



Maxxam ID		DPY889						
Sampling Date		2016/12/13						
		09:30						
COC Number		588912-01-01						
	UNITS	BH16-01 (3.9-4.2M)	RDL	QC Batch				
Inorganics								
Moisture	%	14	1.0	4792351				
Petroleum Hydrocarbons								
Benzene	mg/kg	<0.025	0.025	4793669				
Toluene	mg/kg	<0.025	0.025	4793669				
Ethylbenzene	mg/kg	<0.025	0.025	4793669				
Total Xylenes	mg/kg	<0.050	0.050	4793669				
C6 - C10 (less BTEX)	mg/kg	<2.5	2.5	4793669				
>C10-C16 Hydrocarbons	mg/kg	<10	10	4793719				
>C16-C21 Hydrocarbons	mg/kg	<10	10	4793719				
>C21- <c32 hydrocarbons<="" td=""><td>mg/kg</td><td>44</td><td>15</td><td>4793719</td></c32>	mg/kg	44	15	4793719				
Modified TPH (Tier1)	mg/kg	44	15	4791835				
Reached Baseline at C32	mg/kg	Yes	N/A	4793719				
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	N/A	4793719				
Extraction								
Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	88		4793719				
n-Dotriacontane - Extractable	%	116		4793719				
Isobutylbenzene - Volatile	%	109		4793669				
Instrument								
Surrogate Recovery (%)								
1,4-Difluorobenzene	%	115		4793669				
4-Bromofluorobenzene	%	120		4793669				
D4-1,2-Dichloroethane	%	112		4793669				
RDL = Reportable Detection Lim	it							
QC Batch = Quality Control Batch								
N/A = Not Applicable								
(1) Lube oil fraction.								

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)





TEST SUMMARY

Maxxam ID:	DPY889
Sample ID:	BH16-01 (3.9-4.2M)
Matrix:	Soil

Collected:	2016/12/13
Relinquished:	2016/12/14
Received:	2016/12/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	4793719	2016/12/15	2016/12/15	Marley Gidney
Moisture	BAL	4792351	N/A	2016/12/15	Victoria Legge
ModTPH (T1) Calc. for Soil	CALC	4791835	N/A	2016/12/15	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	4793669	N/A	2016/12/15	Thea Holland



GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt								
	Package 1	3.0°C						
Double water wash and silica gel clean-up performed on soil extracts.								
Results relate only to the items tested.								



QUALITY ASSURANCE REPORT

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
4793669	THL	Method Blank	1,4-Difluorobenzene	2016/12/15		101	%	60 - 140
			4-Bromofluorobenzene	2016/12/15		101	%	60 - 140
			D4-1,2-Dichloroethane	2016/12/15		99	%	60 - 140
			Isobutylbenzene - Volatile	2016/12/15		99	%	60 - 130
			Benzene	2016/12/15	<0.025		mg/kg	
			Toluene	2016/12/15	<0.025		mg/kg	
			Ethylbenzene	2016/12/15	<0.025		mg/kg	
			Total Xylenes	2016/12/15	<0.050		mg/kg	
			C6 - C10 (less BTEX)	2016/12/15	<2.5		mg/kg	
4793719	MGN	Method Blank	n-Dotriacontane - Extractable	2016/12/15		108	%	30 - 130
			Isobutylbenzene - Extractable	2016/12/15		84	%	30 - 130
			>C10-C16 Hydrocarbons	2016/12/15	<10		mg/kg	
			>C16-C21 Hydrocarbons	2016/12/15	<10		mg/kg	
			>C21- <c32 hydrocarbons<="" td=""><td>2016/12/15</td><td><15</td><td></td><td>mg/kg</td><td></td></c32>	2016/12/15	<15		mg/kg	
4793669	THL	LCS	1,4-Difluorobenzene	2016/12/15		79	%	60 - 140
			4-Bromofluorobenzene	2016/12/15		80	%	60 - 140
			D4-1,2-Dichloroethane	2016/12/15		78	%	60 - 140
			Isobutylbenzene - Volatile	2016/12/15		75	%	60 - 130
			Benzene	2016/12/15		72	%	60 - 140
			Toluene	2016/12/15		78	%	60 - 140
			Ethylbenzene	2016/12/15		81	%	60 - 140
			Total Xylenes	2016/12/15		83	%	60 - 140
4793719	MGN	LCS	n-Dotriacontane - Extractable	2016/12/15		111	%	30 - 130
			Isobutylbenzene - Extractable	2016/12/15		86	%	30 - 130
			>C10-C16 Hydrocarbons	2016/12/15		86	%	30 - 130
			>C16-C21 Hydrocarbons	2016/12/15		102	%	30 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2016/12/15</td><td></td><td>86</td><td>%</td><td>30 - 130</td></c32>	2016/12/15		86	%	30 - 130
LCS: A bl	ank ma	trix sample to which a	a known amount of the analyte, usually from a	a second source, has bee	en added. Used	d to evaluate m	nethod a	ccuracy.

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.


Report Date: 2016/12/19

AECOM Canada Ltd. Task Order#: N/A-CTC SITE Site#: CTC Site Location: 64 MILL LAKE ROAD NO2, HUBBARDS, NS Project #: 60438249

VALIDATION SIGNATURE PAGE

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

Philippe Deven

Phil Deveau, Scientific Specialist (Organics)

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

Maxlam	200 Bluew Bedford, N www.max	ater Ro Nova So kam.ca	oad cotia B	4B 1G	9	Pho F Toll I	one: (902) ² ax: (902) Free: 800-	420-02 420-86 563-62	D203 EXXONMOBIL/IMPERIAL OIL - MAXXAM Pa 8612 CHAIN-OF-CUSTODY RECORD C of C # 581 6266 ANALYSIS REQUESTED C of C # 581				Page o 588912-0	of . 01-01	588	912					
INVOICE INFORMATIC	ON				RE	PORT INFORMA	TION														0.12
Company Name: AECOM Canada Ltd	1	0	Compa	any Na	me:AE	COM Canada L	td.											1			
Contact Name: Derek Heath			Contac Tim Ba	t Nam chiu	ne:		-		_	105											
Address:		/	Addres	s:					_	\subset											
1701 Hollis Street Halifax NS B3J 3M8			1701 H Halifax	Iollis S	treet					5					1						
Email: Derek.Heath@aecom.c	com	E	Email:		Time	othy.bachiu@aed	com.com, l	_aura.M	Macls	B											
Phone: (902) 428-2048 x		-	Phone	:	(902) 428-2048 x				ar											
Sampler Name (Print):		0	Consu	Itant F	roject	#: 10128	22110	e.	-	00											
Graig Hatt			TOW			60422	1244	1.0	_	1g											
0	02	MA	TRIX	-	ŝ	SAMPLI	NG	ED	NOL	Ť											
FIELD SAMPLE ID	SROUND WATE	SURFACE WATER	SOIL	OTHER	CONTAINER	DATE	TIME (24 HR)	PRESERV	LAB FILTRA' REQUIRE	RBCA											
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3				-		YYYYAMGA.	1-11-1.0504													1 0	+ +
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5						YYYYYMM/DD	HAT MAN	-							-			+	+		
6			-			Y SYMMODE:	HERMO	-										+	+		+
7						13/9/5/68/000	HH MM	-													
8			-			WYYYMMOD.	月日本新聞											+	+		+
9.	1.4.1	-		-		TYYYMMODO	HEMM	-											+		+
10				-	-	YPY YEMLED B	FIFT MAN					_			-			+	-		
IOL SITE LOCATION:			-				REGULAT	ORY C		IA / DI	ON LIMITS: SF	PECIAL INSTR	RUCTIONS:				# JARS USED	<u>, </u>	TURM	I I NAROUND TI	ME
64 Mill Lake Kond	Nod .t	lubb	ards	, N	5						and the second sec	1 4	10	LL C	10	1	AND NOT SUBMITTED	Sta	andard	(5 days)	X
IOL PROJECT # (if applicable):		100		1			MI	Ŀ.	PII	DI		LIMITER	a Quan	117Y OT	0Vm	1L	Enter N/A for Water	Ru	sh	(3 days)	
C	TC						Ficlar	VIC	-17	C		jar to	Sample	BH16-0	1/29-4	120				(2 days) (1 day)	님
MAXXAM TASK ORDER # OR SERVIO	CE ORDER	# + LIN	IE ITEI	M:								0	Join pro		1011	lon'	10			(same day)	
N/A - CTC	Site	~																-		Date Required	
YES NO COOL	ER ID:						YES	NO	COOLER	R ID:			YES I	O COOLER	ID:						
SEAL PRESENT	3	-	3	3	S	EAL PRESENT EAL INTACT	_		TEMP		SE	AL PRESENT		TEMP					LA	BUSE ONLY	+
RELINQUISHED BY:	1	_	2	3	DAT	OOLING MEDIA PRE E:	SENT TIME (24 HR)		1 FCFIV	2 3 CC	DOLING MEDIA PI	RESENT	DATE	1	2	3 3 TIME (24 HP		210	000 W 000 #	8
1. hour but	Cin	GH	ntt		20	16 12 14	195	IE	1	L	B	16 17	1 BRACE	2011	105/0	4	15-12-1	-1-1	JOK	SAMPLES	
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COC - 1009 (2013) IOL - NS				Mahito	Mount		1		1.0.1	and Chier									16		

ΑΞϹΟΜ

Data Quality Review Checklist

Consultant: Al Location: 64	ECOM	KE RD. N	102.	Sampling Date: Laboratory:	2016/12/13 Maxxam		
HI	JBBARDS	S, NS	,				
Consultant Project Number: 60	438249			Sample Submission Number:	B6R2142		
Are All Laboratory QC Samples Within Acceptance Criteria (Yes, No, Not Applicable)?							
	Yes	No	NA	Commer	nts		
Instrument Surrogate Recovery	\boxtimes						
Extraction Surrogate Recovery	\boxtimes						
Method Blank Concentration							
Matrix Duplicate RPD			\boxtimes				
Matrix Spike Recovery			\boxtimes				
Lab Control Sample Recovery	\boxtimes						
Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?							
	Yes	No	NA	Commer	nts		
Field Blank Concentration			\boxtimes				
Trip Blank Concentration			\boxtimes				
Field Duplicate RPD			\boxtimes				
Has Call been signed off?							
Has lab warranted all tests were i	n statisti	cal contro	al in CoA				
Has lab warranted all tests were a	analvzed	following	a SOP's ii	n CoA?	□ No		
Were all samples analyzed within	hold tim	es?		🛛 Yes	□ No		
All volatiles samples methanol ex	tracted (i	f require	d) within	48 hours? Xes	□ No		
Is Chain of Custody completed ar	nd signed	l?		🛛 Yes	□ No		
Were sample temperatures accept	otable wh	en they	reached I	ab?⊠ Yes	□ No		
Is data considered to be reliable?			🛛 Yes	🗆 No			
If answer is "No", describe and pr	ovide rat	ionale:					
Reviewed by (Print): Janice Shea Reviewed by (Signature): Januar Shea Date: October 8, 2019							



Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD. NO2, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 620379-04-01, 620379-05-01

Attention:Tim Bachiu

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2017/07/27 Report #: R4617046 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7F5655 Received: 2017/07/21, 16:15

Sample Matrix: Soil # Samples Received: 13

Analyses	Quantity	Laboratory Method	Primary Reference
TEH in Soil (PIRI) (1)	13	ATL SOP 00111	Atl. RBCA v3.1 m
Moisture	13	ATL SOP 00001	OMOE Handbook 1983 m
Double water wash (soil)	13	ATL SOP 00111	N/A
Silica Gel Clean-up (Soil)	13	ATL SOP 00111	EPA 3630C R3 m
ModTPH (T1) Calc. for Soil	13	N/A	Atl. RBCA v3.1 m
VPH in Soil (PIRI) - Field Preserved (2)	13	ATL SOP 00119	Atl. RBCA v3.1 m

Remarks:

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

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

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

Results relate to samples tested.

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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) Soils are reported on a dry weight basis unless otherwise specified.

(2) No lab extraction date is given for C6-C10/BTEX and VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.



Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD. NO2, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 620379-04-01, 620379-05-01

Attention:Tim Bachiu

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2017/07/27 Report #: R4617046 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7F5655 Received: 2017/07/21, 16:15

Encryption Key

heri Machay Keri MacKay Project Manager - Bedford 27 Jul 2017 13:39:21

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Keri Mackay, Project Manager - Bedford Email: kmackay@maxxam.ca Phone# (902)420-0203 Ext:294

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RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		EUH704	EUH705	EUH706	EUH706		
Compling Data		2017/07/19	2017/07/19	2017/07/20	2017/07/20		
		16:50	16:05	12:45	12:45		
COC Number		620379-04-01	620379-04-01	620379-04-01	620379-04-01		
					BH17-07		
	UNITS	BH17-06 (4.2-4.8)	BH17-06 (1.2-1.8)	BH17-07 (3.6-4.2)	(3.6-4.2) Lab-Dup	RDL	QC Batch
Inorganics							
Moisture	%	9.1	13	9.3		1.0	5085205
Petroleum Hydrocarbons							
Benzene	mg/kg	<0.025	<0.025	<0.025		0.025	5087014
Toluene	mg/kg	<0.025	<0.025	<0.025		0.025	5087014
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025		0.025	5087014
Total Xylenes	mg/kg	<0.050	<0.050	<0.050		0.050	5087014
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	<2.5		2.5	5087014
>C10-C16 Hydrocarbons	mg/kg	<10	<10	<10	<10	10	5090621
>C16-C21 Hydrocarbons	mg/kg	<10	<10	<10	<10	10	5090621
>C21- <c32 hydrocarbons<="" td=""><td>mg/kg</td><td><15</td><td><15</td><td><15</td><td><15</td><td>15</td><td>5090621</td></c32>	mg/kg	<15	<15	<15	<15	15	5090621
Modified TPH (Tier1)	mg/kg	<15	<15	<15		15	5084174
Reached Baseline at C32	mg/kg	NA	NA	NA		N/A	5090621
Hydrocarbon Resemblance	mg/kg	NA	NA	NA		N/A	5090621
Extraction							
Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	75	81	76	76		5090621
n-Dotriacontane - Extractable	%	107 (1)	109	105 (1)	106 (1)		5090621
Isobutylbenzene - Volatile	%	99	102	101 (2)			5087014
Instrument Surrogate Recovery (%)							
1,4-Difluorobenzene	%	99	96	98			5087014
4-Bromofluorobenzene	%	101	97	99			5087014
D4-1,2-Dichloroethane	%	99	95	98			5087014

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

(1) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.

(2) VPH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.



RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		EUH707	EUH708	EUH709		EUH710		
Sampling Date		2017/07/20	2017/07/19	2017/07/19		2017/07/19		
		12:20	11:40	12:10		11:20		
COC Number		620379-04-01	620379-04-01	620379-04-01		620379-04-01		
	UNITS	BH17-07 (2.4-3.0)	MW17-04 (1.8-2.4)	MW17-04 (3.0-3.6)	QC Batch	MW17-04 (0.6-1.2)	RDL	QC Batch
Inorganics								
Moisture	%	12	9.4	9.0	5085205	26	1.0	5085205
Petroleum Hydrocarbons								
Benzene	mg/kg	<0.025	<0.025	<0.025	5087014	<0.025	0.025	5087014
Toluene	mg/kg	<0.025	<0.025	<0.025	5087014	<0.025	0.025	5087014
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	5087014	<0.025	0.025	5087014
Total Xylenes	mg/kg	<0.050	<0.050	<0.050	5087014	0.060	0.050	5087014
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	<2.5	5087014	<2.5	2.5	5087014
>C10-C16 Hydrocarbons	mg/kg	<10	74	<10	5090621	<10	10	5090621
>C16-C21 Hydrocarbons	mg/kg	<10	43	<10	5090621	<10	10	5090621
>C21- <c32 hydrocarbons<="" td=""><td>mg/kg</td><td><15</td><td>150</td><td><15</td><td>5090621</td><td>35</td><td>15</td><td>5090621</td></c32>	mg/kg	<15	150	<15	5090621	35	15	5090621
Modified TPH (Tier1)	mg/kg	<15	260	<15	5084174	35	15	5085173
Reached Baseline at C32	mg/kg	NA	Yes	NA	5090621	Yes	N/A	5090621
Hydrocarbon Resemblance	mg/kg	NA	COMMENT (1)	NA	5090621	COMMENT (2)	N/A	5090621
Extraction Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	80	76	80	5090621	86		5090621
n-Dotriacontane - Extractable	%	105	110	110	5090621	118		5090621
Isobutylbenzene - Volatile	%	104	97 (3)	102	5087014	107		5087014
Instrument Surrogate Recovery (%)								
1,4-Difluorobenzene	%	97	94	98	5087014	102		5087014
4-Bromofluorobenzene	%	99	95	98	5087014	105		5087014
D4-1,2-Dichloroethane	%	98	93	97	5087014	102		5087014

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) One product in fuel oil range. Lube oil fraction.

(2) Lube oil fraction.

(3) VPH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.



RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		EUH711	EUH711	EUH712	EUH713		
Sampling Date		2017/07/19	2017/07/19	2017/07/19	2017/07/19		
		15:00	15:00	15:10	12:45		
COC Number		620379-04-01	620379-04-01	620379-04-01	620379-04-01		
			BH17-05				
	UNITS	BH17-05 (1.2-1.8)	(1.2-1.8)	BH17-05 (3.0-3.6)	MW17-04 (4.2-4.8)	RDL	QC Batch
			Lab-Dup				
Inorganics							
Moisture	%	14	12	9.9	9.0	1.0	5085205
Petroleum Hydrocarbons							
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	5087014
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	5087014
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	5087014
Total Xylenes	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	5087014
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	<2.5	<2.5	2.5	5087014
>C10-C16 Hydrocarbons	mg/kg	<10		<10	<10	10	5090621
>C16-C21 Hydrocarbons	mg/kg	<10		<10	<10	10	5090621
>C21- <c32 hydrocarbons<="" td=""><td>mg/kg</td><td><15</td><td></td><td><15</td><td>22</td><td>15</td><td>5090621</td></c32>	mg/kg	<15		<15	22	15	5090621
Modified TPH (Tier1)	mg/kg	<15		<15	22	15	5085173
Reached Baseline at C32	mg/kg	NA		NA	Yes	N/A	5090621
Hydrocarbon Resemblance	mg/kg	NA		NA	COMMENT (1)	N/A	5090621
Extraction							
Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	83		81	83		5090621
n-Dotriacontane - Extractable	%	111		108	110		5090621
Isobutylbenzene - Volatile	%	104	106	102	104 (2)		5087014
Instrument							
Surrogate Recovery (%)							
1,4-Difluorobenzene	%	101	106	99	101		5087014
4-Bromofluorobenzene	%	104	108	101	98		5087014
D4-1,2-Dichloroethane	%	101	104	99	96		5087014

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) Lube oil fraction.

(2) VPH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.



RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		EUH741	EUH742	EUH743		
Sampling Data		2017/07/20	2017/07/20	2017/07/20		
		11:50	10:00	09:40		
COC Number		620379-05-01	620379-05-01	620379-05-01		
	UNITS	BH17-07 (1.2-1.8)	MW17-05 (3.9-4.2)	MW17-05 (2.4-3.0)	RDL	QC Batch
Inorganics						
Moisture	%	13	11	11	1.0	5085205
Petroleum Hydrocarbons						
Benzene	mg/kg	<0.025	<0.025	<0.025	0.025	5087014
Toluene	mg/kg	<0.025	<0.025	<0.025	0.025	5087014
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	0.025	5087014
Total Xylenes	mg/kg	<0.050	<0.050	<0.050	0.050	5087014
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	<2.5	2.5	5087014
>C10-C16 Hydrocarbons	mg/kg	<10	<10	<10	10	5090621
>C16-C21 Hydrocarbons	mg/kg	<10	<10	<10	10	5090621
>C21- <c32 hydrocarbons<="" p=""></c32>	mg/kg	<15	<15	19	15	5090621
Modified TPH (Tier1)	mg/kg	<15	<15	19	15	5085173
Reached Baseline at C32	mg/kg	NA	NA	Yes	N/A	5090621
Hydrocarbon Resemblance	mg/kg	NA	NA	COMMENT (1)	N/A	5090621
Extraction						
Surrogate Recovery (%)						
Isobutylbenzene - Extractable	%	81	84	83		5090621
n-Dotriacontane - Extractable	%	112 (2)	105	104		5090621
Isobutylbenzene - Volatile	%	104	104 (3)	103 (3)		5087014
Instrument Surrogate Recovery (%)						
1,4-Difluorobenzene	%	98	100	98		5087014
4-Bromofluorobenzene	%	98	101	99		5087014
D4-1,2-Dichloroethane	%	96	99	98		5087014

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Lube oil fraction.

(2) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.

(3) VPH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.



TEST SUMMARY

Maxxam ID:	EUH704
Sample ID:	BH17-06 (4.2-4.8)
Matrix:	Soil

Collected:	2017/07/19
Relinquished:	2017/07/21
Received:	2017/07/21

Collected: 2017/07/19

2017/07/21

2017/07/21

Relinquished:

Received:

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5090621	2017/07/26	2017/07/26	Marley Gidney
Moisture	BAL	5085205	N/A	2017/07/24	Jacob Henley
ModTPH (T1) Calc. for Soil	CALC	5084174	N/A	2017/07/27	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5087014	N/A	2017/07/24	Shawn Helmkay

Maxxam ID: EUH705 Sample ID: BH17-06 (1.2-1.8) Matrix: Soil

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5090621	2017/07/26	2017/07/26	Marley Gidney
Moisture	BAL	5085205	N/A	2017/07/24	Jacob Henley
ModTPH (T1) Calc. for Soil	CALC	5084174	N/A	2017/07/27	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5087014	N/A	2017/07/24	Shawn Helmkay

Maxxam ID: EUH706 Sample ID: BH17-07 (3.6-4.2) Matrix: Soil

VPH in Soil (PIRI) - Field Preserved

Collected: 2017/07/20 Relinquished: 2017/07/21 Received: 2017/07/21

Shawn Helmkay

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5090621	2017/07/26	2017/07/26	Marley Gidney
Moisture	BAL	5085205	N/A	2017/07/24	Jacob Henley
ModTPH (T1) Calc. for Soil	CALC	5084174	N/A	2017/07/27	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5087014	N/A	2017/07/24	Shawn Helmkay

Maxxam ID: Sample ID: Matrix:	EUH706 Dup BH17-07 (3.6-4.2) Soil				Rel	Collected: inquished: Received:	2017/07/20 2017/07/21 2017/07/21
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	

TEH in Soil (PIRI)		GC/FID	5090621	2017/07/26	2017/07/26	Marley Gidney
Maxxam ID: Sample ID: Matrix:	EUH707 BH17-07 (2.4-3.0) Soil				Re	Collected: 2017/07/20 elinquished: 2017/07/21 Received: 2017/07/21
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)		GC/FID	5090621	2017/07/26	2017/07/26	Marley Gidney
Moisture		BAL	5085205	N/A	2017/07/24	Jacob Henley
ModTPH (T1) Calc. for So	il	CALC	5084174	N/A	2017/07/27	Automated Statchk

N/A

2017/07/24

5087014

PTGC/MS



TEST SUMMARY

Maxxam ID:	EUH708
Sample ID:	MW17-04 (1.8-2.4)
Matrix:	Soil

Collected:	2017/07/19
Relinquished:	2017/07/21
Received:	2017/07/21

Collected: 2017/07/19

Collected: 2017/07/19

Received: 2017/07/21

2017/07/21

2017/07/21

2017/07/21

Relinquished:

Relinguished:

Analyst

Date Analyzed

2017/07/26

2017/07/24

2017/07/27

2017/07/24

Received:

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5090621	2017/07/26	2017/07/26	Marley Gidney
Moisture	BAL	5085205	N/A	2017/07/24	Jacob Henley
ModTPH (T1) Calc. for Soil	CALC	5084174	N/A	2017/07/27	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5087014	N/A	2017/07/24	Shawn Helmkay

 Maxxam ID:
 EUH709

 Sample ID:
 MW17-04 (3.0-3.6)

 Matrix:
 Soil

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5090621	2017/07/26	2017/07/26	Marley Gidney
Moisture	BAL	5085205	N/A	2017/07/24	Jacob Henley
ModTPH (T1) Calc. for Soil	CALC	5084174	N/A	2017/07/27	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5087014	N/A	2017/07/24	Shawn Helmkay

Extracted

N/A

N/A

N/A

2017/07/26

Batch

5090621

5085205

5085173

5087014

Instrumentation

GC/FID

BAL

CALC

PTGC/MS

 Maxxam ID:
 EUH710

 Sample ID:
 MW17-04 (0.6-1.2)

 Matrix:
 Soil

Test Description

TEH in Soil (PIRI)

ModTPH (T1) Calc. for Soil

VPH in Soil (PIRI) - Field Preserved

Moisture

Automated Statchk Shawn Helmkay

Marley Gidney

Jacob Henley

 Maxxam ID:
 EUH711

 Sample ID:
 BH17-05 (1.2-1.8)

 Matrix:
 Soil

Collected: 2017/07/19 Relinquished: 2017/07/21 Received: 2017/07/21

1	Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
-	TEH in Soil (PIRI)	GC/FID	5090621	2017/07/26	2017/07/26	Marley Gidney
I	Moisture	BAL	5085205	N/A	2017/07/24	Jacob Henley
1	ModTPH (T1) Calc. for Soil	CALC	5085173	N/A	2017/07/27	Automated Statchk
١	VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5087014	N/A	2017/07/24	Shawn Helmkay
١	VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5087014	N/A	2017/07/24	Shawn Helmkay

Maxxam ID: Sample ID: Matrix:	EUH711 Dup BH17-05 (1.2-1.8) Soil				Rel	Collected: inquished: Received:	2017/07/19 2017/07/21 2017/07/21
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
Moisture		BAL	5085205	N/A	2017/07/24	Jacob Hen	ley
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	5087014	N/A	2017/07/24	Shawn He	lmkay



TEST SUMMARY

Maxxam ID:	EUH712
Sample ID:	BH17-05 (3.0-3.6)
Matrix:	Soil

Collected	2017/07/19
Relinguished:	2017/07/21
Received:	2017/07/21

Collected: 2017/07/19 Relinquished: 2017/07/21

Received: 2017/07/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5090621	2017/07/26	2017/07/26	Marley Gidney
Moisture	BAL	5085205	N/A	2017/07/24	Jacob Henley
ModTPH (T1) Calc. for Soil	CALC	5085173	N/A	2017/07/27	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5087014	N/A	2017/07/24	Shawn Helmkay

 Maxxam ID:
 EUH713

 Sample ID:
 MW17-04 (4.2-4.8)

 Matrix:
 Soil

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5090621	2017/07/26	2017/07/26	Marley Gidney
Moisture	BAL	5085205	N/A	2017/07/24	Jacob Henley
ModTPH (T1) Calc. for Soil	CALC	5085173	N/A	2017/07/27	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5087014	N/A	2017/07/24	Shawn Helmkay

Maxxam ID: EUH741 Sample ID: BH17-07 (1.2-1.8) Matrix: Soil
 Collected:
 2017/07/20

 Relinquished:
 2017/07/21

 Received:
 2017/07/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5090621	2017/07/26	2017/07/26	Marley Gidney
Moisture	BAL	5085205	N/A	2017/07/24	Jacob Henley
ModTPH (T1) Calc. for Soil	CALC	5085173	N/A	2017/07/27	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5087014	N/A	2017/07/24	Shawn Helmkay

Maxxam ID:	EUH742
Sample ID:	MW17-05 (3.9-4.2)
Matrix:	Soil

Collected: 2017/07/20 Relinquished: 2017/07/21 Received: 2017/07/21

Instrumentation	Batch	Extracted	Date Analyzed	Analyst
GC/FID	5090621	2017/07/26	2017/07/26	Marley Gidney
BAL	5085205	N/A	2017/07/24	Jacob Henley
CALC	5085173	N/A	2017/07/27	Automated Statchk
PTGC/MS	5087014	N/A	2017/07/24	Shawn Helmkay
	Instrumentation GC/FID BAL CALC PTGC/MS	Instrumentation Batch GC/FID 5090621 BAL 5085205 CALC 5085173 PTGC/MS 5087014	Instrumentation Batch Extracted GC/FID 5090621 2017/07/26 BAL 5085205 N/A CALC 5085173 N/A PTGC/MS 5087014 N/A	Instrumentation Batch Extracted Date Analyzed GC/FID 5090621 2017/07/26 2017/07/26 BAL 5085205 N/A 2017/07/24 CALC 5085173 N/A 2017/07/27 PTGC/MS 5087014 N/A 2017/07/24

t Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst		
Matrix:	Soil					Received:	2017/07/21	
Maxxam ID: Sample ID:	EUH743 MW17-05 (2.4-3.0)				Re	Collected: linquished:	2017/07/20 2017/07/21	
Mayyam ID:	FLIH7/12					Collected	2017/07/2	n

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5090621	2017/07/26	2017/07/26	Marley Gidney
Moisture	BAL	5085205	N/A	2017/07/24	Jacob Henley
ModTPH (T1) Calc. for Soil	CALC	5085173	N/A	2017/07/27	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5087014	N/A	2017/07/24	Shawn Helmkay

Page 9 of 15

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt											
Package 15.7°C											
Note: Sample incorrectly preserved (or presence of headspace) - One of two vials recieved for sample MW17-04 (0.6-1.2) came without MeOH preservative in the vial. Analysis proceeded on remaining vial received. TEH Analysis:											
Double water wash and silica gel clean-up performed on soil extracts.											
Results relate only to the items tested.											



QUALITY ASSURANCE REPORT

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
5087014	SHL	Method Blank	1,4-Difluorobenzene	2017/07/24		101	%	60 - 140
			4-Bromofluorobenzene	2017/07/24		100	%	60 - 140
			D4-1,2-Dichloroethane	2017/07/24		100	%	60 - 140
			Isobutylbenzene - Volatile	2017/07/24		101	%	60 - 130
			Benzene	2017/07/24	<0.025		mg/kg	
			Toluene	2017/07/24	<0.025		mg/kg	
			Ethylbenzene	2017/07/24	<0.025		mg/kg	
			Total Xylenes	2017/07/24	<0.050		mg/kg	
			C6 - C10 (less BTEX)	2017/07/24	<2.5		mg/kg	
5090621	MGN	Method Blank	n-Dotriacontane - Extractable	2017/07/26		105	%	30 - 130
			Isobutylbenzene - Extractable	2017/07/26		79	%	30 - 130
			>C10-C16 Hydrocarbons	2017/07/26	<10		mg/kg	
			>C16-C21 Hydrocarbons	2017/07/26	<10		mg/kg	
			>C21- <c32 hydrocarbons<="" td=""><td>2017/07/26</td><td><15</td><td></td><td>mg/kg</td><td></td></c32>	2017/07/26	<15		mg/kg	
5090621	MGN	RPD [EUH706-01]	>C10-C16 Hydrocarbons	2017/07/26	NC		%	50
			>C16-C21 Hydrocarbons	2017/07/26	NC		%	50
			>C21- <c32 hydrocarbons<="" td=""><td>2017/07/26</td><td>NC</td><td></td><td>%</td><td>50</td></c32>	2017/07/26	NC		%	50
5085205	JHY	RPD [EUH711-01]	Moisture	2017/07/24	21		%	25
5087014	SHL	RPD [EUH711-02]	Benzene	2017/07/24	NC		%	50
			Toluene	2017/07/24	NC		%	50
			Ethylbenzene	2017/07/24	NC		%	50
			Total Xylenes	2017/07/24	NC		%	50
			C6 - C10 (less BTEX)	2017/07/24	NC		%	50
5087014	SHL	Matrix Spike [EUH711-02]	1,4-Difluorobenzene	2017/07/24		96	%	60 - 140
			4-Bromofluorobenzene	2017/07/24		98	%	60 - 140
			D4-1,2-Dichloroethane	2017/07/24		95	%	60 - 140
			Isobutylbenzene - Volatile	2017/07/24		100	%	60 - 130
			Benzene	2017/07/24		88	%	60 - 130
			Toluene	2017/07/24		88	%	60 - 130
			Ethylbenzene	2017/07/24		94	%	60 - 130
			Total Xylenes	2017/07/24		93	%	60 - 130
5090621	MGN	Matrix Spike [EUH706-01]	n-Dotriacontane - Extractable	2017/07/26		109 (1)	%	30 - 130
			Isobutylbenzene - Extractable	2017/07/26		77	%	30 - 130
			>C10-C16 Hydrocarbons	2017/07/26		88	%	30 - 130
			>C16-C21 Hydrocarbons	2017/07/26		85	%	30 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2017/07/26</td><td></td><td>101</td><td>%</td><td>30 - 130</td></c32>	2017/07/26		101	%	30 - 130
5087014	SHL	LCS	1,4-Difluorobenzene	2017/07/24		96	%	60 - 140
			4-Bromofluorobenzene	2017/07/24		95	%	60 - 140
			D4-1,2-Dichloroethane	2017/07/24		96	%	60 - 140
			Isobutylbenzene - Volatile	2017/07/24		99	%	60 - 130
			Benzene	2017/07/24		90	%	60 - 140
			Toluene	2017/07/24		93	%	60 - 140
			Ethylbenzene	2017/07/24		100	%	60 - 140
			Total Xylenes	2017/07/24		97	%	60 - 140
5090621	MGN	LCS	n-Dotriacontane - Extractable	2017/07/26		109	%	30 - 130
			Isobutylbenzene - Extractable	2017/07/26		80	%	30 - 130
			>C10-C16 Hydrocarbons	2017/07/26		90	%	30 - 130
			>C16-C21 Hydrocarbons	2017/07/26		86	%	30 - 130



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC												
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits				
			>C21- <c32 hydrocarbons<="" td=""><td>2017/07/26</td><td></td><td>105</td><td>%</td><td>30 - 130</td></c32>	2017/07/26		105	%	30 - 130				
Duplicate	Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.											
Matrix Sp	Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.											
LCS: A bla	LCS: 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 I	Blank: A	A blank matrix co	ontaining all reagents used in the analytical procedure	e. Used to identify laboratory	contamination	1.						
Surrogate	e: A pu	re or isotopically	labeled compound whose behavior mirrors the analysis	ytes of interest. Used to evalu	ate extraction	efficiency.						
NC (Dupl differenc	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) TEH 9	(1) TEH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.											



VALIDATION SIGNATURE PAGE

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

Philips Deven

Phil Deveau, Scientific Specialist (Organics)

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

Maxam 200 Bluewater Bedford, Nova www.maxxam.	Road Phone: (902) 420-0203 Scotia B4B 1G9 Fax: (902) 420-8612 ca Toll Free: 800-563-6266 REPORT INFORMATION FREE NOT TOWN								EXXONMOBIL/IMPERIAL OIL - MAXXAM CHAIN-OF-CUSTODY RECORD ANALYSIS REQUESTED								F C of C # 62	age of 20379-04	Q 01	62	0379		
Company Name:AECOM Canada Ltd	Compa	ny Nam	e:AECC	M Canada Ltd.	ON					1	- 1			-				-					_
Contact Name: Tim Bachiu Address: 1701 Hollis Street Halifax NS B3J 3M8	Contac Tim Bar Addres 1701 He Halifax	Contact Name: Tim Bachiu Address: 1701 Hollis Street Halifax NS B3J 3M8																					
Email: Timothy.bachiu@aecom.com	Email:	imail: Timothy.bachiu@aecom.com, Laura.MacIsaac@																					
Phone: (902) 428-2048 x Sampler Name (Print):	Phone: Consul	tant Pro	(902) piect #:	428-2048 x 60438249				i) (fie	Nater														
SraigHat1	MATRIX	_		SAMPLIN	G			us in	uns in														
FIELD SAMPLE ID	WATER WATER	OTHER	CONTAINERS	(TYYYYMM/DD)	TIME (24 HR)	FIELD FILTERED & PRESERVED	LAB FILTRATION REQUIRED	RBCA Hydrocarbo	RBCA Hydrocarbo														
× 1 BH17-06/4,2-48)	X		Ž	2017 07 19	16:50			X		Í	Í				ÌÌ	Í						- İ	1
2 BH17-06(12-1.8)	X		2	20170719	1605			X															
3 BH17-67/3.6-42)	X		3	20170720	12:45			X															
4 BH17-07 (24-3.0)	X		3	20170720	12:20			X															-
5 MW17-04 (1.8-2,4)	X		3	20170719	11:40			X															
* MW17-04 (3.0-3.6)	X		3	20170719	12:10			X															
× 7 MW17-64 (0.6-6.2)	X		3	70170719	1120			X															
× * BH17-05/12-18)	X		3	20170719	15:00			X				1											
· BHI7-05 (30-3,6)	X		3	20170719	15:10			X															
10 MW17-04 (4,2-48)	X		3	2017 07 19	12:45			X															
IOL SITÉ LOCATION: 64 Mill Lake Rd. NO2, Hubbards, NS IOL PROJECT # (if applicable): CTC MAXXAM TASK ORDER # OR SERVICE ORDER # + LINE ITE N/A - CTC-	EM:			/	REGULA	tic	P	ria / de R	TECTI	ON LIMITS	S	SPE	CIAL INST	VONQ	S:				# JARS USED AND NOT SUBMITTED Enter N/A for Water	Stan Rush	TURNA dard 1	ROUND T (5 days) (3 days) (2 days) (1 day) (same day)	
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1. hing Hother Craig	Hatt		20	070721	15	:45	1	L	m	00	noar	\mathcal{O}	MARY	ANNCO	MEA	221	2170	1/21	16:15		SA	MPLES	
3.					-	-	3			-						_	-		1.17	- (() ()	VEN	JB
* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTE AT WWW.MAXXAM.CA/TERMS.	D ON THIS	CHAIN	OF CUST	ODY IS SUBJECT TO	MAXXAM'S	STANDA	ARD TEI	RMS AND	COND	TIONS. SIG	SNING OF T	THIS CHAIN	OF CUSTO	DY DOCUM	IENT IS AC	KNOWLED	SMENT AND	DACCEPT	ANCE OF OUR TER	MS WHICH	ARE AVAIL	ABLE FOR	VIEWING

COC - 1009 (2016) IOL - NS

White. Maxxam

Yellow: Client

Maxiam Bedfo	uewat rd, No naxxa	ter Roi ova Sc am.ca	Road Phone: (902) 420-0203 Scotia B4B 1G9 Fax: (902) 420-8612 ca Toll Free: 800-563-6266										EXXONMOBIL/IMPERIAL OIL - MAXXAM CHAIN-OF-CUSTODY RECORD ANALYSIS REQUESTED								Pa C of C # 620	igeZof 0379-05-	2_ 01		620379	
					RE	EPORT INFORMAT	ION																			
Company Name:AECOM Canada Ltd		C	ompar	ny Nam	ie:AECC	OM Canada Ltd.																				
Contact Name:		C	ontact	Name	:																	1				
Address:		A	ddress	s:																						
1701 Hollis Street		1	701 Ho	ollis Stre	eet				- 1																	
Fmail: Timothy bachiu@aecom.com		F	mail.	NS B31	Timo	thy bachiu@aacom	com Laura	Marles	2200	res.)																
							acce	ield pi																		
Sampler Name (Print):		C	onsult	ant Pro	(902) oject #:	60438249				Soil (f	Water															
Craig Mati		MA	TRIX			SAMPLIN	IG			US ID	us in															
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3 MU17-05/39-11			V		2	2017/07/00	10 200			V	-					-	-+									
4 m117 DE (24-30)	-	-	\odot		3	20170720	a un			\Leftrightarrow	<u> </u>	-					-			-		_				
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IOL SITE LOCATION: 64 Mill Lake Rd. NO2, Hubbards, NS							REGUL/	ATORY	CRITE	ria / Di	ETECTIO	N LIMIT	S:	SPECI	L INSTRUCT	TIONS:					# JA	NOT	Stan	TURN lard	AROUND (5 da	TIME
IOL PROJECT # (if applicable):					_										N	0					SUE	MITTED	Rush		(3 da	ys)
СТС							NIL	P	DU	21				ř.	IVOVO	×.					Wat	er			(2 da	ys)
MAXXAM TASK ORDER # OR SERVICE ORDER # +	LINE	ITEM:					FILLIA	ALC	PIA	-1												~			(1 d (same d	ay) 🗆 ay) 🗖
N/A - CTC-																						()	-			
	_																						_	D	ate Requi	ired
YES NO COOLER ID:	-					SEAL PRESENT	YES	NO	COOLE	R ID:				SEAL P	RESENT	Y	ES NO	COOL	ER ID:					1.03		II V
SEAL INTACT	2	6	2	6	a loo	SEAL INTACT			TEMP					SEAL I	TACT			TEMP	2				-	MA	XXAM JO)B#
* RELINQUISHED BY:		2	2	3		COULING MEDIA PRE	TIME (24 HP		RECEN	/ED BY	2	3	COOLI	IG MEDIA PRE	SENT			1 F	_	2	3 (24 HP)	- 2'	TER	1.51	5
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3.						1.00			3.														- (11)		KB
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COC - 1009 (2016) IOL - NS

White: Maxxam

Yellow Client

Data Quality Review Checklist

Consultant: <u>Al</u> Location: 64 Hi	ECOM 1 MILL LA UBBARD	AKE RD. N S, NS	102,	Sampling Date: 2017/07/19, 2017/07/20 Laboratory: Maxxam							
Consultant Project Number: 60)438249			Sample Submission Number: B7F5655							
Are All Laboratory QC Samples V	Vithin Ac	ceptance	Criteria	(Yes, No, Not Applicable)?							
	Yes	No	NA	Comments							
Instrument Surrogate Recovery	\boxtimes										
Extraction Surrogate Recovery	\boxtimes										
Method Blank Concentration	\boxtimes										
Matrix Duplicate RPD			\boxtimes								
Matrix Spike Recovery	\boxtimes										
Lab Control Sample Recovery	\boxtimes										
Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?											
	Yes	No	NA	Comments							
Field Blank Concentration			\boxtimes								
Trip Blank Concentration			\boxtimes								
Field Duplicate RPD			\boxtimes								
Has CoA been signed off?				⊠ Yes □ No							
Has lab warranted all tests were i	n statisti	cal contro	ol in CoA′	?⊠ Yes 🗆 No							
Has lab warranted all tests were a	analyzed	following	g SOP's ii	n CoA? 🛛 Yes 🛛 No							
Were all samples analyzed within	hold tim	es?		🔤 Yes 🗆 No							
All volatiles samples methanol ex	tracted (i	if required	d) within 4	48 hours? Xes							
Is Chain of Custody completed an	nd signed	1?									
vvere sample temperatures accept	otable wr	ien they i	reached I	ad?⊠Yes ⊔No							
Is data considered to be reliable?			⊠ Yes	□ No							
If answer is "No", describe and pr	ovide rat	ionale:									
Reviewed by (Print): Jania Date: Augu	ce Shea ust 14, 20)17		Reviewed by (Signature):							



Task Order#: N/A - IOL - CTC Site#: N/A - IOL - CTC Site Location: 64 MILL LAKE RD., HUBBARDS, NS Project #: 60438249 Your C.O.C. #: BE08553

Attention:Tim Bachiu

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2017/11/14 Report #: R4856444 Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B7N8682 Received: 2017/10/26, 12:09

Sample Matrix: Soil # Samples Received: 7

Analyses	Quantity	Laboratory Method	Primary Reference
Metals Solids Acid Extr. ICPMS	7	ATL SOP 00058	EPA 6020A R1 m

Remarks:

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

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

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

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

Results relate to samples tested.

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

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

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

Encryption Key

heri Mackay ^{Keri MacKay} Project Manager - Bedford 14 Nov 2017 22:15:44

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Keri Mackay, Project Manager - Bedford Email: kmackay@maxxam.ca Phone# (902)420-0203 Ext:294

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Page 1 of 9



ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		FKO334	FKO334	FKO335		FKO336		
Sampling Date		2017/10/26 09:30	2017/10/26 09:30	2017/10/26 10:00		2017/10/26 10:15		
COC Number		BE08553	BE08553	BE08553		BE08553		
	UNITS	FWO-5 (0.3-0.5)	FWO-5 (0.3-0.5) Lab-Dup	FWO-4 (0.2-0.35)	QC Batch	FWO-4 (0.35-0.5)	RDL	QC Batch
Metals								
Acid Extractable Iron (Fe)	mg/kg	23000	23000	30000	5234502	27000	50	5262354

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

Maxxam ID		FKO337		FKO338		FKO339		
Sampling Date		2017/10/26 10:30		2017/10/26 10:35		2017/10/26 10:40		
COC Number		BE08553		BE08553		BE08553		
	UNITS	FWO-2 (0.2-0.35)	QC Batch	FWO-2 (0.35-0.5)	QC Batch	FWO-3 (0.2-0.35)	RDL	QC Batch
Metals								
Acid Extractable Iron (Fe)	mg/kg	23000	5234502	23000	5262354	25000	50	5234502

QC Batch = Quality Control Batch

	FKO340		
	2017/10/26		
	11:00		
	BE08553		
UNITS	FWO-3 (0.35-0.5)	RDL	QC Batch
mg/kg	27000	50	5262354
imit			
itch			
	UNITS mg/kg imit tch	FKO340 2017/10/26 11:00 BE08553 UNITS FWO-3 (0.35-0.5) mg/kg 27000 imit tch	FKO340 2017/10/26 11:00 BE08553 UNITS FWO-3 (0.35-0.5) RDL mg/kg 27000 50 imit tch 50



Report Date: 2017/11/14

AECOM Canada Ltd. Task Order#: N/A - IOL - CTC Site#: N/A - IOL - CTC Site Location: 64 MILL LAKE RD., HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	FKO334 FWO-5 (0.3-0.5) Soil				Re	Collected: elinquished: Received:	2017/10/26 2017/10/26 2017/10/26
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
Metals Solids Acid Extr. IC	CPMS	ICP/MS	5234502	2017/10/27	2017/10/27	Bryon Ang	evine
Maxxam ID: Sample ID: Matrix:	FKO334 Dup FWO-5 (0.3-0.5) Soil				Re	Collected: elinquished: Received:	2017/10/26 2017/10/26 2017/10/26
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
Metals Solids Acid Extr. IC	CPMS	ICP/MS	5234502	2017/10/27	2017/10/27	Bryon Ang	evine
Maxxam ID: Sample ID: Matrix: Test Description	FKO335 FWO-4 (0.2-0.35) Soil	Instrumentation	Batch	Extracted	Re Date Analyzed	Collected: elinquished: Received: Analyst	2017/10/26 2017/10/26 2017/10/26
Metals Solids Acid Extr. IC	CPMS	ICP/MS	5234502	2017/10/27	2017/10/27	Bryon Ang	evine
Maxxam ID: Sample ID: Matrix:	FKO336 FWO-4 (0.35-0.5) Soil				Re	Collected: elinquished: Received:	2017/10/26 2017/10/26 2017/10/26
						necciveu.	2017/10/20
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	2017/10/20
Test Description Metals Solids Acid Extr. IC	CPMS	Instrumentation ICP/MS	Batch 5262354	Extracted 2017/11/13	Date Analyzed 2017/11/13	Analyst Bryon Ang	evine
Test Description Metals Solids Acid Extr. IC Maxxam ID: Sample ID: Matrix:	FKO337 FWO-2 (0.2-0.35) Soil	Instrumentation ICP/MS	Batch 5262354	Extracted 2017/11/13	Date Analyzed 2017/11/13 Re	Analyst Bryon Ang Collected: elinquished: Received:	2017/10/26 2017/10/26 2017/10/26 2017/10/26
Test Description Metals Solids Acid Extr. IC Maxxam ID: Sample ID: Matrix: Test Description	FKO337 FWO-2 (0.2-0.35) Soil	Instrumentation ICP/MS Instrumentation	Batch 5262354 Batch	Extracted 2017/11/13 Extracted	Date Analyzed 2017/11/13 Re Date Analyzed	Analyst Bryon Ang Collected: elinquished: Received: Analyst	2017/10/26 2017/10/26 2017/10/26
Test Description Metals Solids Acid Extr. 10 Maxxam ID: Sample ID: Matrix: Test Description Metals Solids Acid Extr. 10	FKO337 FWO-2 (0.2-0.35) Soil	Instrumentation ICP/MS Instrumentation ICP/MS	Batch 5262354 Batch 5234502	Extracted 2017/11/13 Extracted 2017/10/27	Date Analyzed 2017/11/13 Re Date Analyzed 2017/10/27	Analyst Bryon Ang Collected: elinquished: Received: Analyst Bryon Ang	evine 2017/10/26 2017/10/26 2017/10/26 evine
Test Description Metals Solids Acid Extr. IC Maxxam ID: Sample ID: Matrix: Test Description Metals Solids Acid Extr. IC Maxxam ID: Sample ID: Matrix:	FKO337 FWO-2 (0.2-0.35) Soil CPMS FKO338 FWO-2 (0.35-0.5) Soil	Instrumentation ICP/MS Instrumentation ICP/MS	Batch 5262354 Batch 5234502	Extracted 2017/11/13 Extracted 2017/10/27	Date Analyzed 2017/11/13 Re Date Analyzed 2017/10/27 Re	Analyst Bryon Ang Collected: elinquished: Received: Analyst Bryon Ang Collected: elinquished: Received:	evine 2017/10/26 2017/10/26 2017/10/26 2017/10/26 2017/10/26 2017/10/26
Test Description Metals Solids Acid Extr. 10 Maxxam ID: Sample ID: Matrix: Test Description Metals Solids Acid Extr. 10 Maxxam ID: Sample ID: Matrix: Test Description	FKO337 FWO-2 (0.2-0.35) Soil CPMS FKO338 FWO-2 (0.35-0.5) Soil	Instrumentation ICP/MS Instrumentation ICP/MS	Batch 5262354 Batch 5234502 Batch	Extracted 2017/11/13 Extracted 2017/10/27 Extracted	Date Analyzed 2017/11/13 Re Date Analyzed 2017/10/27 Re Date Analyzed	Analyst Bryon Ang Collected: elinquished: Received: Analyst Bryon Ang Collected: elinquished: Received: Analyst	2017/10/26 2017/10/26 2017/10/26 2017/10/26 2017/10/26 2017/10/26 2017/10/26
Test Description Metals Solids Acid Extr. 10 Maxxam ID: Sample ID: Matrix: Test Description Metals Solids Acid Extr. 10 Maxxam ID: Sample ID: Matrix: Test Description Metals Solids Acid Extr. 10	FKO337 FWO-2 (0.2-0.35) Soil CPMS FKO338 FWO-2 (0.35-0.5) Soil	Instrumentation ICP/MS Instrumentation ICP/MS Instrumentation ICP/MS	Batch 5262354 Batch 5234502 Batch 5262354	Extracted 2017/11/13 Extracted 2017/10/27 Extracted 2017/11/13	Date Analyzed 2017/11/13 Re Date Analyzed 2017/10/27 Re Date Analyzed 2017/10/27	Analyst Bryon Ang Collected: elinquished: Received: Analyst Bryon Ang Collected: elinquished: Received: Analyst Bryon Ang	evine 2017/10/26 2017/10/26 2017/10/26 evine 2017/10/26 2017/10/26 2017/10/26 2017/10/26 evine
Test Description Metals Solids Acid Extr. IC Maxxam ID: Sample ID: Matrix: Test Description Metals Solids Acid Extr. IC Maxxam ID: Sample ID: Matrix: Test Description Metals Solids Acid Extr. IC Maxxam ID: Sample ID: Matrix:	EPMS FKO337 FWO-2 (0.2-0.35) Soil CPMS FKO338 FWO-2 (0.35-0.5) Soil CPMS FKO339 FWO-3 (0.2-0.35) Soil	Instrumentation ICP/MS Instrumentation ICP/MS Instrumentation ICP/MS	Batch 5262354 Batch 5234502 Batch 5262354	Extracted 2017/11/13 Extracted 2017/10/27 Extracted 2017/11/13	Date Analyzed 2017/11/13 Re Date Analyzed 2017/10/27 Re Date Analyzed 2017/11/13 Re	Analyst Bryon Ang Collected: elinquished: Received: Analyst Bryon Ang Collected: elinquished: Received: Analyst Bryon Ang Collected: elinquished: Received:	2017/10/26 2017/10/26 2017/10/26 2017/10/26 2017/10/26 2017/10/26 2017/10/26 2017/10/26 2017/10/26 2017/10/26 2017/10/26 2017/10/26 2017/10/26 2017/10/26 2017/10/26
Test Description Metals Solids Acid Extr. 10 Maxxam ID: Sample ID: Matrix: Test Description Metals Solids Acid Extr. 10 Maxxam ID: Sample ID: Matrix: Test Description Metals Solids Acid Extr. 10 Maxxam ID: Sample ID: Matrix: Test Description	FKO337 FWO-2 (0.2-0.35) Soil CPMS FKO338 FWO-2 (0.35-0.5) Soil CPMS FKO339 FWO-3 (0.2-0.35) Soil	Instrumentation ICP/MS Instrumentation ICP/MS Instrumentation ICP/MS INSTRUMENTATION	Batch 5262354 Batch 5234502 Batch 5262354	Extracted 2017/11/13 Extracted 2017/10/27 Extracted 2017/11/13	Date Analyzed 2017/11/13 2017/11/13 Re Date Analyzed 2017/10/27 Re Date Analyzed 2017/11/13 Re Date Analyzed 2017/11/13 Re Date Analyzed 2017/11/13	Analyst Bryon Ang Collected: elinquished: Received: Analyst Bryon Ang Collected: elinquished: Received: Analyst Bryon Ang Collected: elinquished: Received: Analyst Analyst	2017/10/26 2017/10/26 2017/10/26 2017/10/26 2017/10/26 2017/10/26 2017/10/26 2017/10/26 2017/10/26 2017/10/26



Metals Solids Acid Extr. ICPMS

AECOM Canada Ltd. Task Order#: N/A - IOL - CTC Site#: N/A - IOL - CTC Site Location: 64 MILL LAKE RD., HUBBARDS, NS Project #: 60438249

Bryon Angevine

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	FKO340 FWO-3 (0.35-0.5) Soil				Reli	Collected: nquished: Received:	2017/10/26 2017/10/26 2017/10/26	
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst		

2017/11/13

2017/11/13

5262354

ICP/MS



GENERAL COMMENTS

Each temp	perature is the ave	rage of up to thr	ree cooler temperatures taken at receipt
P	Package 1	1.0°C	
Note: Labe proceeded	elling issue (label m I using ids on lids a	issing and /or in nd COC.	correct) - sample ID only listed on soil jar lids. No sample labels are present on the soil jars. Analysis
Note: Anal analysis ch	lysis required not li necked off on COC.	sted or clearly s Samples placed	pecified on C of C - Samples FWO-4 (0.35-0.5), FWO-2 (0.35-0.5), and FWO-3 (0.35-0.5) had both hold and I on HOLD pending analysis of remaining samples as per client instruction.
Note: C of	C information inco	mplete - Incorre	ect sampling date used on AARF. Full address not listed on AARF. Analysis proceeded.
Note: C of	C not signed/dated	d by Consultant -	- Incorrect date format used when relinquishing the AARF. Analysis proceeded.
Revised re J. Taylor. 2	port issued to inclu 2017-11-09 KMA	ide additional iro	on analysis on samples FWO-4(0.35-0.5), FW0-2(0.35-0.5) and FW0-3(0.35-0.5) as per AARF submitted by
Results re	elate only to the ite	ems tested.	



QUALITY ASSURANCE REPORT

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
5234502	BAN	Method Blank	Acid Extractable Iron (Fe)	2017/10/27	<50		mg/kg	
5262354	BAN	Method Blank	Acid Extractable Iron (Fe)	2017/11/13	<50		mg/kg	
5234502	BAN	RPD [FKO334-01]	Acid Extractable Iron (Fe)	2017/10/27	0.098		%	35
Duplicate	e: Paire	d analysis of a separate p	ortion of the same sample. Used to evalua	te the variance in the measure	ment.			
Method E	Blank: A	A blank matrix containing	all reagents used in the analytical procedu	re. Used to identify laboratory	contaminatior	1.		

Maxxam Analytics International Corporation o/a Maxxam Analytics 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.maxxamanalytics.com



Report Date: 2017/11/14

AECOM Canada Ltd. Task Order#: N/A - IOL - CTC Site#: N/A - IOL - CTC Site Location: 64 MILL LAKE RD., HUBBARDS, NS Project #: 60438249

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

Jim King, Inorganics Manager, Bedford

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

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200 Bluewater Road, Suite 105 Bedford, NS B4B 1G9 www.maxxamanalytics.com

Phone: (902) 420-0203 Fax: (902) 420-8612 Toll Free: 1-800-565-7227

EXXON MOBIL/IMPERIAL OIL - MAXXAM CHAIN-OF-CUSTODY RECORD

Page 1 of 1

INVOICE INFORMATION	-	COOPT NECT	ATION						ANALISIS	REQUESTED	CorC		0000
	F	REPORT INFORM	INTON	10	-	1 1 1				Q	ý.		
Company Name: La Imperiar Oil La ExcopMobil	Company Na	me: A12(0.1) (ANADAC	H)						City	fle		
Contact Name: MCLOUNK KOUPUDIE	Contact Nam	e: Timotha r	sachin						1	0	(0)		
Address: 1701 Hollin Street	Address: 170) Ho	Ilis Strat						04)	OII Sb	4	Y		
Hallax NS B35 3MB	Hall:Fay	x NS .B3.	J 3Mg	co.	s			I)	Fuel 2	(1	152		
Email: CANBSC, E-billing Calcom. Com	Email: +	other baching	0. Decom	letal	Meta	ত	sthoo)3/H	CS CS	Eu la	in the second se		
Ph: 902 438 2043	Ph: 400	438 2048	22 CAL POINT	SS N	liss	etho	t Me	HNC HNC	able C6	đ			
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2)	MATRIX	SAMPL	ING BO	ON	asoot	gest (& Mer	/ - Lovar	Hydroo anbon ow Le PH, L	PA 62	N.		
FIELD SAMPLE ID	ER ER	INTAINE ATE AM/DD)	IME t HR) FILTER ESERVE	ILTRATI	-MS CF	Total Di Dissolvi	Metals Default	Mercun Mercun Cold Va Hot Wa	Hydroce Policy L NB Pote BTEX, V	PAHS PCBS VOCS E	2		
GRO	SUR WAT WAT SOIL	# CO	T (24 FIELD & PRI	REOL	RCAF	Metals Water	Merci	etals Soil	0	rganics	PH-H		
1 FWO-5(030.5)	X	1 13/10/20	07:30							X			
2 FWO-4(02-0.35)		97154015D	10:00										
3FWO-4(0.35-0.5)		YY/instituti	10:15								X		
4FW0-2(0.2-0.35)		1997) 4880 2327	1030										
5FW10-2(0,35.0.5)		TYPHIMITID	10:35								X		
"FWO-3(02-035)		ÝY MRVIDD	10:40								1		
1FW0-3(0.35-0.5)	1	VYY CODD	11:00							J.	X		
8		12/4007007	-HTELLEN			-							
9/		- Misaion	miliant	_	1								
10L SITE LOCATION	hards	NS REGUL	ATORY CRITI	ERIA / D	ETE	CTION LIN	ITS SP	ECIAL INSTR	UCTIONS		# JARS USED &	TURNARC	DUND TIME
IOL SITE # (if applicable)	parioj	AH	antic	Pir	1		H	'dd Sa	NDe-	do not	NOT SUBMITTED ENTER N/A FOR	0	*
IOL PROJECT # (if applicable)							1	in an	alysis i	intil	WATER	Standard (5 days) 🕰
DA- for CFC							f	Mapr	Instru	ctown 5	O	Hush (2 days)
MAXXAM TASK ORDER # OR SER VICE ORDER #	+ LINE ITEM							a me	monv		-		(1 day)
P/T					_		1	ICE - YES				lsar	ne day) 🗔
CUSTODY SEAL YES NO	2 2	GOOLER ID #	VEC NO				1	COOLER ID #	Internet Laboration			Date F	lequired
PRESENT X TEMP 5 ($) 0 \rangle$	PRESENT	TES NU	TEMP				CUSTODY SEAL	YES NO	TEMP		LAB US	SE ONLY
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Maxiam	EXXONMO	OBIL / IMPE	RIAL OIL	- MAXXAM	ADDITIC		ANAL roject N	/SIS R lanage	EQUE r:	ST RECO Diana Ru	RD mman		Page	<u>1</u> of <u>1</u>
Company Name:	AECOM Canada	Ltd.			-	IOLS	ite Loca	ion:	64	Mill Lak	e Road			-
Contact Name:	Jason Taylor				_	IOL S	ite #:	880	00331	1 - CTC				
Consultant Project #:	60438249					IOL P	roject #	c	тс		_			-
Maxxam Joh #:	B7N8682				5		ask Ord	ar or Se	arvica	Order #	CTC			-
Please complete this form on a r	per job basis - i.e. one form	per original Ma	wam Job#)		-	Line	item (if :	nolica	ble):	N/A				-
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Rush	(3 days)	Γ						ADDITI	ONAL	ANALYSIS	REQUEST			
	(2 days)	F											LAB US	SE ONLY
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Date Required :	(same day)	3 I				≩						pa	VES	NO
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	Atlantic PIRI			SAMPLIN	NG	ic Pl						prev	N	A
				DATE	Time	anti						ple	plot	
CLIENT SAMPLE ID	Original COC #	LAB ID	Matrix	(YYYY/MM/DD)	HH:MM	Atl		-				San	5 SPECIAL II	NSTRUCTIONS
FWO-4 (0.35 - 0.5)	BE08553	FKO336	Soil	10/26/2017	10:15	х							Y	
FWO-2 (0.35 - 0.5)	BE08553	FKO338	Soil	10/26/2017	10:35	x							Y	
-WO-3 (0.35 - 0.5)	BE08553	FKO340	Soil	10/26/2017	11:00	x							Y	
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									1					
						-			+					
REQUESTED BY: (Please Sign & Print)	Jason Taylor	aron Jayon	DAT (YY)	E: YY/MM/DD)	1	11/7	7/2017		TIME (HH:I	MM)	09:1	.0		
RECEIVED BY: (Please Sign & Print)	nuone	20		re: ry/mm/dd)	20		hle	8	TIME (HH:I	: MM)	10':	21		

COR FCD-00106 / 6

ΑΞϹΟΜ

Data Quality Review Checklist

Consultant: Al	ECOM			Sampling Date:	2017/10/26					
Location: 64	I MILL LA	KE RD. N	102,	Laboratory:	Maxxam					
HI Consultant Project Number: 60	UBBARD	5, NS		Sample Submission Number:	P7N9692					
Consultant Project Number.	9430249				B/N0002					
Are All Laboratory QC Samples V	Vithin Ac	ceptance	e Criteria	(Yes, No, Not Applicable)?						
	Yes	No	NA	Commer	nts					
Instrument Surrogate Recovery										
Extraction Surrogate Recovery			\boxtimes							
Method Blank Concentration	\boxtimes									
Matrix Duplicate RPD	\boxtimes									
Matrix Spike Recovery			\boxtimes							
Lab Control Sample Recovery			\boxtimes							
Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?										
	Yes	No	NA	Commer	nts					
Field Blank Concentration			\boxtimes							
Trip Blank Concentration			\boxtimes							
Field Duplicate RPD			\boxtimes							
Lion Co A boon signed off?										
Has CoA been signed off?	n etatieti	cal contr		X Yes ? ⊠ Ves						
Has lab warranted all tests were a	analyzed	following	n SOP's ii	n CoA?						
Were all samples analyzed within	hold tim	es?	,	⊠ Yes						
All volatiles samples methanol ex	tracted (i	f require	d) within	48 hours? Yes						
Is Chain of Custody completed ar	nd signed	1?	<i>.</i>	⊠ Yes	🗆 No					
Were sample temperatures accept	otable wh	en they	reached l	ab?⊠ Yes	□ No					
Is data considered to be reliable?			🛛 Yes							
If answer is "No", describe and pr	ovide rat	ionale:								
				1	· 11					
Reviewed by (Print): Janio	ce Shea			Reviewed by (Signature):	mue Shea					
Date: Octo	ber 8, 20)19		V						



Task Order#: N/A-CTC Site#: NA-IOL-CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: BE08554

Attention:Tim Bachiu

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2017/11/30 Report #: R4881393 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7Q3314

Received: 2017/11/22, 15:20

Sample Matrix: Soil # Samples Received: 7

Analyses	Quantity	Laboratory Method	Primary Reference
Metals Solids Acid Extr. ICPMS	7	ATL SOP 00058	EPA 6020A R1 m
HCI/HNO3/H2O2 Unified Soil Digest (<2mm)	7	ATL SOP 00061	BC SALM R2015 m

Remarks:

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

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

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

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

Results relate to samples tested.

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

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

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



Task Order#: N/A-CTC Site#: NA-IOL-CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: BE08554

Attention:Tim Bachiu

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2017/11/30 Report #: R4881393 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7Q3314 Received: 2017/11/22, 15:20

Encryption Key

heri Machay Keri MacKay Project Manager - Bedford 30 Nov 2017 12:29:07

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Keri Mackay, Project Manager - Bedford Email: kmackay@maxxam.ca Phone# (902)420-0203 Ext:294

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



ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		FPK621	FPK622	FPK623	FPK623	FPK624		
Sampling Date		2017/11/22 09:00	2017/11/22 09:45	2017/11/22 10:30	2017/11/22 10:30	2017/11/22 11:00		
COC Number		BE08554	BE08554	BE08554	BE08554	BE08554		
	UNITS	FWO-5 (0.5-0.7)	FWO-6 (0.2-0.35)	FWO-6 (0.35-0.5)	FWO-6 (0.35-0.5) Lab-Dup	FWO-7 (0.2-0.35)	RDL	QC Batch
Metals								
Acid Extractable Iron (Fe)	mg/kg	8700	24000	13000	13000	21000	50	5285603

RDL = Reportable Detection Limit QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

Maxxam ID		FPK625	FPK626	FPK627		
Sampling Date		2017/11/22 11:30	2017/11/22 12:45	2017/11/22 13:45		
COC Number		BE08554	BE08554	BE08554		
	UNITS	FWO-7 (0.35-0.5)	FWO-8 (0.2-0.35)	FWO-8 (0.35-0.5)	RDL	QC Batch
Metals						
Acid Extractable Iron (Fe)	mg/kg	11000	13000	8600	50	5285603
RDL = Reportable Detection QC Batch = Quality Control B	Limit atch		·			



Report Date: 2017/11/30

AECOM Canada Ltd. Task Order#: N/A-CTC Site#: NA-IOL-CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	FPK621 FWO-5 (0.5-0.7) Soil				Re	Collected: elinquished: Received:	2017/11/22 2017/11/22 2017/11/22
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
Metals Solids Acid Extr. IC	CPMS	ICP/MS	5285603	2017/11/27	2017/11/28	Bryon Ang	evine
Maxxam ID: Sample ID: Matrix:	FPK622 FWO-6 (0.2-0.35) Soil				Re	Collected: elinquished: Received:	2017/11/22 2017/11/22 2017/11/22
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
Metals Solids Acid Extr. IC	CPMS	ICP/MS	5285603	2017/11/27	2017/11/28	Bryon Ang	evine
Maxxam ID: Sample ID: Matrix: Test Description	FPK623 FWO-6 (0.35-0.5) Soil	Instrumentation	Batch	Extracted	Re Date Analyzed	Collected: elinquished: Received: Analyst	2017/11/22 2017/11/22 2017/11/22
Metals Solids Acid Extr. IC	CPMS	ICP/MS	5285603	2017/11/27	2017/11/28	Brvon Ang	evine
Maxxam ID: Sample ID: Matrix	FPK623 Dup FWO-6 (0.35-0.5) Soil				Re	Collected: elinquished:	2017/11/22 2017/11/22
Width X.	5011					Received:	2017/11/22
Test Description	501	Instrumentation	Batch	Extracted	Date Analyzed	Analyst	2017/11/22
Test Description Metals Solids Acid Extr. IG	CPMS	Instrumentation ICP/MS	Batch 5285603	Extracted 2017/11/27	Date Analyzed 2017/11/28	Analyst Bryon Ang	evine
Test Description Metals Solids Acid Extr. IC Maxxam ID: Sample ID: Matrix:	FPK624 FWO-7 (0.2-0.35) Soil	Instrumentation ICP/MS	Batch 5285603	Extracted 2017/11/27	Date Analyzed 2017/11/28 Re	Analyst Bryon Ang Collected: elinquished: Received:	2017/11/22 evine 2017/11/22 2017/11/22 2017/11/22
Test Description Metals Solids Acid Extr. IC Maxxam ID: Sample ID: Matrix: Test Description	FPK624 FWO-7 (0.2-0.35) Soil	Instrumentation ICP/MS	Batch 5285603 Batch	Extracted 2017/11/27 Extracted	Date Analyzed 2017/11/28 Re Date Analyzed	Analyst Bryon Ang Collected: elinquished: Received: Analyst	2017/11/22 2017/11/22 2017/11/22 2017/11/22
Test Description Metals Solids Acid Extr. 10 Maxxam ID: Sample ID: Matrix: Test Description Metals Solids Acid Extr. 10	FPK624 FWO-7 (0.2-0.35) Soil	Instrumentation ICP/MS Instrumentation ICP/MS	Batch 5285603 Batch 5285603	Extracted 2017/11/27 Extracted 2017/11/27	Date Analyzed 2017/11/28 Re Date Analyzed 2017/11/28	Analyst Bryon Ang Collected: elinquished: Received: Analyst Bryon Ang	2017/11/22 evine 2017/11/22 2017/11/22 2017/11/22 evine
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Test Description Metals Solids Acid Extr. IC Maxxam ID: Sample ID: Matrix: Test Description Metals Solids Acid Extr. IC Maxxam ID: Sample ID: Matrix: Test Description	FPK624 FWO-7 (0.2-0.35) Soil CPMS FPK625 FWO-7 (0.35-0.5) Soil	Instrumentation ICP/MS Instrumentation ICP/MS INSTRUMENTATION	Batch 5285603 Batch 5285603 Batch	Extracted 2017/11/27 Extracted 2017/11/27 Extracted	Date Analyzed 2017/11/28 Re Date Analyzed 2017/11/28 Re Date Analyzed	Collected: Analyst Bryon Ang Collected: elinquished: Received: Analyst Bryon Ang Collected: elinquished: Received: Analyst	2017/11/22 evine 2017/11/22 2017/11/22 2017/11/22 2017/11/22 2017/11/22 2017/11/22
Test Description Metals Solids Acid Extr. IO Maxxam ID: Sample ID: Matrix: Test Description Metals Solids Acid Extr. IO Maxxam ID: Sample ID: Matrix: Test Description Metals Solids Acid Extr. IO	FPK624 FWO-7 (0.2-0.35) Soil CPMS FPK625 FWO-7 (0.35-0.5) Soil	Instrumentation ICP/MS Instrumentation ICP/MS Instrumentation ICP/MS	Batch 5285603 Batch 5285603 Batch 5285603	Extracted 2017/11/27 Extracted 2017/11/27 Extracted 2017/11/27	Date Analyzed 2017/11/28 Re Date Analyzed 2017/11/28 Re Date Analyzed 2017/11/28	Collected: Bryon Ang Collected: elinquished: Received: Analyst Bryon Ang Collected: elinquished: Received: Analyst Bryon Ang	2017/11/22 evine 2017/11/22 2017/11/22 2017/11/22 evine 2017/11/22 2017/11/22 2017/11/22 evine
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Test Description Metals Solids Acid Extr. IO Maxxam ID: Sample ID: Matrix: Test Description Metals Solids Acid Extr. IO Maxxam ID: Sample ID: Matrix: Test Description Metals Solids Acid Extr. IO Maxxam ID: Sample ID: Matrix: Test Description	FPK624 FWO-7 (0.2-0.35) Soil CPMS FPK625 FWO-7 (0.35-0.5) Soil CPMS FPK626 FWO-8 (0.2-0.35) Soil	Instrumentation ICP/MS Instrumentation ICP/MS Instrumentation ICP/MS INSTRUMENTATION	Batch 5285603 Batch 5285603 5285603 5285603	Extracted 2017/11/27 Extracted 2017/11/27 Extracted 2017/11/27	Date Analyzed 2017/11/28 Ref Date Analyzed 2017/11/28 Ref 2017/11/28 Ref Date Analyzed	Collected: Analyst Bryon Ang Collected: elinquished: Received: Analyst Bryon Ang Collected: elinquished: Received: Analyst Bryon Ang Collected: elinquished: Received: Analyst	2017/11/22 evine 2017/11/22 2017/11/22 2017/11/22 2017/11/22 2017/11/22 2017/11/22 2017/11/22 2017/11/22 2017/11/22 2017/11/22



Metals Solids Acid Extr. ICPMS

AECOM Canada Ltd. Task Order#: N/A-CTC Site#: NA-IOL-CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

Bryon Angevine

TEST SUMMARY

Maxxam ID:	FPK627		Collected:				2017/11/22		
Sample ID:	FWO-8 (0.35-0.5)		Relinquished:				2017/11/22		
Matrix:	Soil		Received:				2017/11/22		
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst			

2017/11/27

2017/11/28

5285603

ICP/MS



GENERAL COMMENTS

Each te	emperature is the	average of up to t	hree cooler temperatures taken at receipt				
	Package 1	0.3°C					
Results	relate only to th	e items tested.					



QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits		
5285603	BAN	Method Blank	Acid Extractable Iron (Fe)	2017/11/28	<50		mg/kg			
5285603	BAN	RPD [FPK623-01]	Acid Extractable Iron (Fe)	2017/11/28	2.0		%	35		
Duplicate	Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement. 3000000000000000000000000000000000000									

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


Report Date: 2017/11/30

AECOM Canada Ltd. Task Order#: N/A-CTC Site#: NA-IOL-CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

VALIDATION SIGNATURE PAGE

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

ma

Eric Dearman, Scientific Specialist

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



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200 Bluewater Road, Suite 105 Bedford, NS B4B 1G9 www.maxxamanalytics.com

Phone: (902) 420-0203 Fax: (902) 420-8612 Toll Free: 1-800-565-7227

EXXON MOBIL/IMPERIAL OIL - MAXXAM CHAIN-OF-CUSTODY RECORD

Page / of / cofc# BE 08554

ANALYSIS REQUESTED INVOICE INFORMATION REPORT INFORMATION Company Name: AECOM CONDER LID. PNO Company Name: Imperial Oll ExxonMobil Contact Name: Timoth 1 Bachiu Contact Name: Timothy Baching Oil Spill 400 Metals & Mercury Default Available Digest Method Effault Available Digest Method For Ocean Sediments (HNO3/HF/HC)O4) Mercury - Low Level Cold Medour Ara Hot Water Soluble Boron (Required for CCME Agricultural) Address: 1701 Holo St Address: 17-01 HOILDS ST Halfax NS Halfax NS C32) Inel Total or Diss Metals Metals - 90 NS 032 Depst Hydrocarbons Soil (Potable), N Policy Low Level BTEX C6 - C NB Potable Water BTEX, VPH, Low Level TEH Email: fimothy box hus e geomion Email: timothy, bachy eacon com Total Digest (Default Method) RBCA Hydrocarbons (BTEX, Ph: 902 428 Ph: 902 428 2021 2021 RCAp-30 Choose Total or Diss Sampler Name (Print): Consultant Project #: VOCs EPA 624, 8260 Hublou 60438249 Alex Duguan TPH Fractionation RCAp-MS Choose FIELD FILTERED & PRESERVED LAB FILTRATION REQUIRED MATRIX SAMPLING # CONTAINERS Dissolved Medals PAHS DATE (YYYMM/DD) PCBs GROUND WATER SURFACE WATER FIELD SAMPLE ID TIME (24 HR) OTHER Nn SOIL Metals Merc Metals Soil Organics Water FWQ5 (0.5 0.7) 17/11/22 9:00 FWD-6(0.2-0.35) 9444 YER/ADA FW0-610.35-0.5 10:30 VY/MIN/DO FWD-7102.0.351 11:00 YYTEMATOD 11:30 FUD 7(0.35. 0.5 FUD-3(0.).0. 12145 2971 1000 FWD. 8(0.35-0.5 1 YY 1 4100 MAS IOL SITE LOCATION **REGULATORY CRITERIA / DETECTION LIMITS** SPECIAL INSTRUCTIONS # JARS USED & TURNAROUND TIME Hubbarde NIS 64 Mill Lake NOT SUBMITTED IOL SITE # (if applicable) MA - T - C+C IOL PROJECT # (if applicable) MA - T - C+C ENTER N/A FOR None Standard (5 days) V WATER Atlantic Pin Rush (3 days) (2 days) MAXXAM TASK ORDER # OR SER VICE ORDER # + LINE ITEM (1 day) (same day) MA: 040 Ta. ICE-YES COOLER ID # COOLER ID # COOLER ID # Date Required CUSTODY SEAL YES NO CUSTODY SEAL YES CUSTODY SEAL YES NO NO LAB USE ONLY PRESENT V TEMP 0 \mathcal{C} PRESENT TEMP PRESENT TEMP MAXXAM JOB # INTACT INTACT INTACT V 2 2 3 3 3314 RELINQUISHED BY: DATE: TIME (24 HR) RECEIVED BY: DATE: TIME (24 HR) tw MARYANN 15:20 2017/11/ 22 15:00 1. Mimeau SAMPLES Data 2017/11/22 VERIFIED LABELED printed name WWWWWW VYT PIRMA BY ØY. YYYYY/MAT/DE 3

COC - 1009 (2013) IOL - NS

2

3.

Yellow: Client

White: Maxxam

ΑΞϹΟΜ

Data Quality Review Checklist

Consultant: AECOM Location: 64 MILL LAKE RD. NO2,			NO2 <i>,</i>	Laboratory: Maxxam		
Consultant Project Number: 60438249				Sample Submission Number: B7Q3314		
Are All Laboratory QC Samples Within Acceptance Criteria (Yes, No, Not Applicable)?						
	Yes	No	NA	Comments		
Instrument Surrogate Recovery			\boxtimes			
Extraction Surrogate Recovery			\boxtimes			
Method Blank Concentration	\boxtimes					
Matrix Duplicate RPD	\boxtimes					
Matrix Spike Recovery			\boxtimes			
Lab Control Sample Recovery			\boxtimes			
Are All Field QC Samples Within	Alert Lim	its (Yes,	No, Not /	Applicable)?		
	Yes	No	NA	Comments		
Field Blank Concentration			\boxtimes			
Trip Blank Concentration			\boxtimes			
Field Duplicate RPD			\boxtimes			
Has CoA been signed off?	n statisti		ol in CoA	X Yes □ No		
Has lab warranted all tests were a	analyzed	following	n SOP's ii	$\square \ \square \$		
Were all samples analyzed within	hold tim	es?	g e e : e	⊠ Yes □ No		
All volatiles samples methanol ex	tracted (i	f require	d) within	48 hours? 🛛 Yes 🛛 No		
Is Chain of Custody completed an	nd signed	1?		⊠ Yes □ No		
Were sample temperatures accept	otable wh	en they	reached I	lab?⊠ Yes 🛛 No		
Is data considered to be reliable?			🛛 Yes	□ No		
If answer is "No", describe and pr	ovide rat	ionale:				
Reviewed by (Print): Janice Shea Reviewed by (Signature): Janua Shea Date: October 8, 2019						



Attention: Jason Taylor

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8 Task Order#: N/A- CTC Site#: Site Location: 64 MILL LAKE RD., HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 09425

> Report Date: 2018/08/07 Report #: R5345389 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8J6141 Received: 2018/08/02, 14:14

Sample Matrix: Soil # Samples Received: 1

Analyses	Quanti	ty Laboratory Method	Primary Reference
B[a]P Total Potency Equivalent	1	N/A	CCME CSQG
1,3-Dichloropropene Sum (soil)	1	N/A	Auto Calc.
TEH in Soil (PIRI) (1)	1	ATL SOP 00111	Atl. RBCA v3.1 m
Metals Solids Acid Extr. ICPMS	1	ATL SOP 00058	EPA 6020A R1 m
Moisture	1	ATL SOP 00001	OMOE Handbook 1983 m
Double water wash (soil)	1	ATL SOP 00111	N/A
PAH Compounds by GCMS (SIM) (1)	1	ATL SOP 00102	EPA 8270D 2014 m
Silica Gel Clean-up (Soil)	1	ATL SOP 00111	EPA 3630C R3 m
ModTPH (T1) Calc. for Soil	1	N/A	Atl. RBCA v3.1 m
VOCs in Soil - Field Preserved (2)	1	ATL SOP 00133	EPA 8260C R3 m
VPH in Soil (PIRI) - Field Preserved (2)	1	ATL SOP 00119	Atl. RBCA v3.1 m

Remarks:

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

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

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

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

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

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.

Page 1 of 18



Task Order#: N/A- CTC Site#: Site Location: 64 MILL LAKE RD., HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 09425

Attention: Jason Taylor

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2018/08/07 Report #: R5345389 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8J6141

Received: 2018/08/02, 14:14

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

(1) Soils are reported on a dry weight basis unless otherwise specified.

(2) No lab extraction date is given for C6-C10/BTEX and VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.

Encryption Key

Sara Mason Project Manager 07 Aug 2018 17:11:38

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Sara Mason, Project Manager Email: smason@maxxam.ca Phone# (902)420-0203

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



AECOM Canada Ltd. Task Order#: N/A- CTC Site#: Site Location: 64 MILL LAKE RD., HUBBARDS, NS Project #: 60438249

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		HJN403			HJN403		
Sampling Date		2018/08/02			2018/08/02		
		13:00			13:00		
COC Number		09425			09425		
	UNITS	IF01-01_04	RDL	QC Batch	IF01-01_04 Lab-Dup	RDL	QC Batch
Inorganics							
Moisture	%	7.3	1.0	5661241			
Petroleum Hydrocarbons							
Benzene	mg/kg	<0.025	0.025	5663053	<0.025	0.025	5663053
Toluene	mg/kg	<0.025	0.025	5663053	<0.025	0.025	5663053
Ethylbenzene	mg/kg	<0.025	0.025	5663053	<0.025	0.025	5663053
Total Xylenes	mg/kg	<0.050	0.050	5663053	<0.050	0.050	5663053
C6 - C10 (less BTEX)	mg/kg	<2.5	2.5	5663053	<2.5	2.5	5663053
>C10-C16 Hydrocarbons	mg/kg	<10	10	5663112			
>C16-C21 Hydrocarbons	mg/kg	<10	10	5663112			
>C21- <c32 hydrocarbons<="" p=""></c32>	mg/kg	<15	15	5663112			
Modified TPH (Tier1)	mg/kg	<15	15	5660654			
Reached Baseline at C32	mg/kg	NA	N/A	5663112			
Hydrocarbon Resemblance	mg/kg	NA	N/A	5663112			
Extraction Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	68		5663112			
n-Dotriacontane - Extractable	%	109		5663112			
Isobutylbenzene - Volatile	%	112		5663053	112		5663053
Instrument Surrogate Recovery (%)							
1,4-Difluorobenzene	%	106		5663053	103		5663053
4-Bromofluorobenzene	%	112		5663053	108		5663053
D4-1,2-Dichloroethane	%	100		5663053	98		5663053
RDL = Reportable Detection Lim	nit		•			•	
QC Batch = Quality Control Bate	h						
Lab-Dup = Laboratory Initiated	Duplicat	e					
N/A = Not Applicable							



AECOM Canada Ltd. Task Order#: N/A- CTC Site#: Site Location: 64 MILL LAKE RD., HUBBARDS, NS Project #: 60438249

ATLANTIC VOC IN SOIL (FIELD PRES.)

Maxxam ID		HJN403			HJN403			
Sampling Data		2018/08/02			2018/08/02			
		13:00			13:00			
COC Number		09425			09425			
	UNITS	IF01-01_04	RDL	QC Batch	IF01-01_04 Lab-Dup	RDL	QC Batch	
Volatile Organics								
1,1,1-Trichloroethane	ug/kg	<25	25	5662880	<25	25	5662880	
1,1,2,2-Tetrachloroethane	ug/kg	<25	25	5662880	<25	25	5662880	
1,1,2-Trichloroethane	ug/kg	<25	25	5662880	<25	25	5662880	
1,1-Dichloroethane	ug/kg	<25	25	5662880	<25	25	5662880	
1,1-Dichloroethylene	ug/kg	<25	25	5662880	<25	25	5662880	
1,2-Dichlorobenzene	ug/kg	<25	25	5662880	<25	25	5662880	
1,2-Dichloroethane	ug/kg	<25	25	5662880	<25	25	5662880	
1,2-Dichloropropane	ug/kg	<25	25	5662880	<25	25	5662880	
1,3-Dichlorobenzene	ug/kg	<25	25	5662880	<25	25	5662880	
1,3-Dichloropropene (total)	ug/kg	<25	25	5661607				
1,4-Dichlorobenzene	ug/kg	<25	25	5662880	<25	25	5662880	
Benzene	ug/kg	<25	25	5662880	<25	25	5662880	
Bromodichloromethane	ug/kg	<25	25	5662880	<25	25	5662880	
Bromoform	ug/kg	<25	25	5662880	<25	25	5662880	
Bromomethane	ug/kg	<50	50	5662880	<50	50	5662880	
Carbon Tetrachloride	ug/kg	<25	25	5662880	<25	25	5662880	
Chlorobenzene	ug/kg	<25	25	5662880	<25	25	5662880	
Chloroform	ug/kg	<25	25	5662880	<25	25	5662880	
cis-1,2-Dichloroethylene	ug/kg	<25	25	5662880	<25	25	5662880	
Dibromochloromethane	ug/kg	<25	25	5662880	<25	25	5662880	
Ethylbenzene	ug/kg	<25	25	5662880	<25	25	5662880	
Ethylene Dibromide	ug/kg	<25	25	5662880	<25	25	5662880	
Methyl t-butyl ether (MTBE)	ug/kg	<25	25	5662880	<25	25	5662880	
Methylene Chloride(Dichloromethane)	ug/kg	<25	25	5662880	<25	25	5662880	
Styrene	ug/kg	<25	25	5662880	<25	25	5662880	
Tetrachloroethylene	ug/kg	<25	25	5662880	<25	25	5662880	
Toluene	ug/kg	<25	25	5662880	<25	25	5662880	
Total Xylenes	ug/kg	<50	50	5662880	<50	50	5662880	
trans-1,2-Dichloroethylene	ug/kg	<25	25	5662880	<25	25	5662880	
Trichloroethylene	ug/kg	<10	10	5662880	<10	10	5662880	
Vinyl Chloride	ug/kg	<20	20	5662880	<20	20	5662880	
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								
Lab-Dup = Laboratory Initiated Duplicate								



AECOM Canada Ltd. Task Order#: N/A- CTC Site#: Site Location: 64 MILL LAKE RD., HUBBARDS, NS Project #: 60438249

ATLANTIC VOC IN SOIL (FIELD PRES.)

Maxxam ID		HJN403			HJN403		
Sampling Data		2018/08/02			2018/08/02		
		13:00			13:00		
COC Number		09425			09425		
	UNITS	IF01-01_04	RDL	QC Batch	IF01-01_04 Lab-Dup	RDL	QC Batch
Extraction							
Surrogate Recovery (%)							
D10-o-Xylene	%	115		5662880	115		5662880
Instrument							
Surrogate Recovery (%)							
4-Bromofluorobenzene	%	105		5662880	105		5662880
D4-1,2-Dichloroethane	%	88		5662880	89		5662880
D8-Toluene	%	104		5662880	104		5662880
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							
Lab-Dup = Laboratory Initiated Duplicate							



AECOM Canada Ltd. Task Order#: N/A- CTC Site#: Site Location: 64 MILL LAKE RD., HUBBARDS, NS Project #: 60438249

Maxxam ID		HJN403		
Compling Data		2018/08/02		
		13:00		
COC Number		09425		
	UNITS	IF01-01_04	RDL	QC Batch
Metals				
Acid Extractable Aluminum (Al)	mg/kg	6700	10	5662886
Acid Extractable Antimony (Sb)	mg/kg	<2.0	2.0	5662886
Acid Extractable Arsenic (As)	mg/kg	11	2.0	5662886
Acid Extractable Barium (Ba)	mg/kg	14	5.0	5662886
Acid Extractable Beryllium (Be)	mg/kg	<2.0	2.0	5662886
Acid Extractable Boron (B)	mg/kg	<50	50	5662886
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	0.30	5662886
Acid Extractable Chromium (Cr)	mg/kg	6.9	2.0	5662886
Acid Extractable Cobalt (Co)	mg/kg	4.3	1.0	5662886
Acid Extractable Copper (Cu)	mg/kg	9.5	2.0	5662886
Acid Extractable Iron (Fe)	mg/kg	8400	50	5662886
Acid Extractable Lead (Pb)	mg/kg	8.7	0.50	5662886
Acid Extractable Manganese (Mn)	mg/kg	210	2.0	5662886
Acid Extractable Mercury (Hg)	mg/kg	<0.10	0.10	5662886
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	2.0	5662886
Acid Extractable Nickel (Ni)	mg/kg	8.0	2.0	5662886
Acid Extractable Selenium (Se)	mg/kg	<1.0	1.0	5662886
Acid Extractable Silver (Ag)	mg/kg	<0.50	0.50	5662886
Acid Extractable Strontium (Sr)	mg/kg	<5.0	5.0	5662886
Acid Extractable Thallium (Tl)	mg/kg	<0.10	0.10	5662886
Acid Extractable Tin (Sn)	mg/kg	<2.0	2.0	5662886
Acid Extractable Uranium (U)	mg/kg	0.92	0.10	5662886
Acid Extractable Vanadium (V)	mg/kg	9.9	2.0	5662886
Acid Extractable Zinc (Zn)	mg/kg	25	5.0	5662886
RDL = Reportable Detection Limit	•			
QC Batch = Quality Control Batch				

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)



AECOM Canada Ltd. Task Order#: N/A- CTC Site#: Site Location: 64 MILL LAKE RD., HUBBARDS, NS Project #: 60438249

SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		HJN403			HJN403		
		2018/08/02			2018/08/02		
Sampling Date		13:00			13:00		
COC Number		09425			09425		
	UNITS	IF01-01_04	RDL	QC Batch	IF01-01_04 Lab-Dup	RDL	QC Batch
Polyaromatic Hydrocarbons							
1-Methylnaphthalene	mg/kg	<0.010	0.010	5663941	<0.010	0.010	5663941
2-Methylnaphthalene	mg/kg	<0.010	0.010	5663941	<0.010	0.010	5663941
Acenaphthene	mg/kg	<0.020 (1)	0.020	5663941	<0.020 (1)	0.020	5663941
Acenaphthylene	mg/kg	<0.030 (1)	0.030	5663941	<0.010	0.010	5663941
Anthracene	mg/kg	<0.010	0.010	5663941	<0.010	0.010	5663941
Fluoranthene	mg/kg	<0.010	0.010	5663941	<0.010	0.010	5663941
Fluorene	mg/kg	<0.010	0.010	5663941	<0.010	0.010	5663941
Naphthalene	mg/kg	<0.010	0.010	5663941	<0.010	0.010	5663941
Phenanthrene	mg/kg	<0.010	0.010	5663941	<0.010	0.010	5663941
Pyrene	mg/kg	<0.010	0.010	5663941	<0.010	0.010	5663941
Benzo(a)anthracene	mg/kg	<0.010	0.010	5663941	<0.010	0.010	5663941
Benzo(a)pyrene	mg/kg	<0.010	0.010	5663941	<0.010	0.010	5663941
Benzo(b)fluoranthene	mg/kg	<0.010	0.010	5663941	<0.010	0.010	5663941
Benzo(g,h,i)perylene	mg/kg	<0.010	0.010	5663941	<0.010	0.010	5663941
Benzo(j)fluoranthene	mg/kg	<0.010	0.010	5663941	<0.010	0.010	5663941
Benzo(k)fluoranthene	mg/kg	<0.010	0.010	5663941	<0.010	0.010	5663941
Chrysene	mg/kg	<0.010	0.010	5663941	<0.010	0.010	5663941
Dibenz(a,h)anthracene	mg/kg	<0.010	0.010	5663941	<0.010	0.010	5663941
Indeno(1,2,3-cd)pyrene	mg/kg	<0.010	0.010	5663941	<0.010	0.010	5663941
Benzo(a)pyrene Total Potency Equiv.	mg/kg	<0.03	0.03	5661606			
Extraction							
Surrogate Recovery (%)							
D10-Anthracene	%	91		5663941	90		5663941
D14-Terphenyl (FS)	%	92		5663941	91		5663941
D8-Acenaphthylene	%	88		5663941	90		5663941
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							
Lab-Dup = Laboratory Initiated Duplica	ate						
(1) Elevated PAH RDL(s) due to matrix / co-extractive interference.							



AECOM Canada Ltd. Task Order#: N/A- CTC Site#: Site Location: 64 MILL LAKE RD., HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID:	HJN403
Sample ID:	IF01-01_04
Matrix:	Soil

Collected:	2018/08/02
Relinquished:	2018/08/02
Received:	2018/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
B[a]P Total Potency Equivalent	CALC	5661606	N/A	2018/08/07	Automated Statchk
1,3-Dichloropropene Sum (soil)	CALC	5661607	N/A	2018/08/07	Automated Statchk
TEH in Soil (PIRI)	GC/FID	5663112	2018/08/03	2018/08/04	Marley Gidney
Metals Solids Acid Extr. ICPMS	ICP/MS	5662886	2018/08/03	2018/08/03	Bryon Angevine
Moisture	BAL	5661241	N/A	2018/08/03	Selina Dunbar
PAH Compounds by GCMS (SIM)	GC/MS	5663941	2018/08/03	2018/08/05	Kelly Gale
ModTPH (T1) Calc. for Soil	CALC	5660654	N/A	2018/08/07	Automated Statchk
VOCs in Soil - Field Preserved	HS/MS	5662880	N/A	2018/08/03	Amanda Swales
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5663053	N/A	2018/08/03	Shawn Helmkay

Maxxam ID:	HJN403 Dup
Sample ID:	IF01-01_04
Matrix:	Soil

Collected:	2018/08/02
Relinquished:	2018/08/02
Received:	2018/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds by GCMS (SIM)	GC/MS	5663941	2018/08/03	2018/08/05	Kelly Gale
VOCs in Soil - Field Preserved	HS/MS	5662880	N/A	2018/08/03	Amanda Swales
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5663053	N/A	2018/08/03	Shawn Helmkay



AECOM Canada Ltd. Task Order#: N/A- CTC Site#: Site Location: 64 MILL LAKE RD., HUBBARDS, NS Project #: 60438249

GENERAL COMMENTS

Each te	emperature is the a	average of up to	three cooler temperatures taken at receipt
	Package 1	15.0°C	
Double	water wash and si	ilica gel clean-up	performed on soil extracts.
Note: L	abelling issue (labe	el missing and /o	r incorrect)- Soil jar labelled on side of container only, no sample ID on jar lid. Proceeded with analysis.
Result	s relate only to the	e items tested.	



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AECOM Canada Ltd. Task Order#: N/A- CTC Site#: Site Location: 64 MILL LAKE RD., HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	OC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	OC Limits
5662880	ASL	Method Blank	4-Bromofluorobenzene	2018/08/03	, and c	105	%	60 - 140
			D10-o-Xvlene	2018/08/03		102	%	60 - 130
			D4-1.2-Dichloroethane	2018/08/03		86	%	60 - 140
			D8-Toluene	2018/08/03		105	%	60 - 140
			1,1,1-Trichloroethane	2018/08/03	<25		ug/kg	
			1,1,2,2-Tetrachloroethane	2018/08/03	<25		ug/kg	
			1,1,2-Trichloroethane	2018/08/03	<25		ug/kg	
			1,1-Dichloroethane	2018/08/03	<25		ug/kg	
			1,1-Dichloroethylene	2018/08/03	<25		ug/kg	
			1,2-Dichlorobenzene	2018/08/03	<25		ug/kg	
			1,2-Dichloroethane	2018/08/03	<25		ug/kg	
			1,2-Dichloropropane	2018/08/03	<25		ug/kg	
			1,3-Dichlorobenzene	2018/08/03	<25		ug/kg	
			1,4-Dichlorobenzene	2018/08/03	<25		ug/kg	
			Benzene	2018/08/03	<25		ug/kg	
			Bromodichloromethane	2018/08/03	<25		ug/kg	
			Bromoform	2018/08/03	<25		ug/kg	
			Bromomethane	2018/08/03	<50		ug/kg	
			Carbon Tetrachloride	2018/08/03	<25		ug/kg	
			Chlorobenzene	2018/08/03	<25		ug/kg	
			Chloroform	2018/08/03	<25		ug/kg	
			cis-1,2-Dichloroethylene	2018/08/03	<25		ug/kg	
			Dibromochloromethane	2018/08/03	<25		ug/kg	
			Ethylbenzene	2018/08/03	<25		ug/kg	
			Ethylene Dibromide	2018/08/03	<25		ug/kg	
			Methyl t-butyl ether (MTBE)	2018/08/03	<25		ug/kg	
			Methylene Chloride(Dichloromethane)	2018/08/03	<25		ug/kg	
			Styrene	2018/08/03	<25		ug/kg	
			Tetrachloroethylene	2018/08/03	<25		ug/kg	
			Toluene	2018/08/03	<25		ug/kg	
			Total Xylenes	2018/08/03	<50		ug/kg	
			trans-1,2-Dichloroethylene	2018/08/03	<25		ug/kg	
			Trichloroethylene	2018/08/03	<10		ug/kg	
			Vinyl Chloride	2018/08/03	<20		ug/kg	
5662886	BAN	Method Blank	Acid Extractable Aluminum (Al)	2018/08/03	<10		mg/kg	
			Acid Extractable Antimony (Sb)	2018/08/03	<2.0		mg/kg	
			Acid Extractable Arsenic (As)	2018/08/03	<2.0		mg/kg	
			Acid Extractable Barium (Ba)	2018/08/03	<5.0		mg/kg	
			Acid Extractable Beryllium (Be)	2018/08/03	<2.0		mg/kg	
			Acid Extractable Boron (B)	2018/08/03	<50		mg/kg	
			Acid Extractable Cadmium (Cd)	2018/08/03	<0.30		mg/kg	
			Acid Extractable Chromium (Cr)	2018/08/03	<2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2018/08/03	<1.0		mg/kg	
			Acid Extractable Copper (Cu)	2018/08/03	<2.0		mg/kg	
			Acid Extractable Iron (Fe)	2018/08/03	<50		mg/kg	
			Acid Extractable Lead (Pb)	2018/08/03	<0.50		mg/kg	
			Acid Extractable Manganese (Mn)	2018/08/03	<2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2018/08/03	<0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2018/08/03	<2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2018/08/03	<2.0		mg/kg	
			Acid Extractable Selenium (Se)	2018/08/03	<1.0		mg/kg	



AECOM Canada Ltd. Task Order#: N/A- CTC Site#: Site Location: 64 MILL LAKE RD., HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analvzed	Value	Recoverv	UNITS	QC Limits
			Acid Extractable Silver (Ag)	2018/08/03	<0.50		mg/kg	4 0
			Acid Extractable Strontium (Sr)	2018/08/03	<5.0		mg/kg	
			Acid Extractable Thallium (TI)	2018/08/03	<0.10		mg/kg	
			Acid Extractable Tin (Sn)	2018/08/03	<2.0		mg/kg	
			Acid Extractable Uranium (U)	2018/08/03	<0.10		mg/kg	
			Acid Extractable Vanadium (V)	2018/08/03	<2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2018/08/03	<5.0		mg/kg	
5663053	SHL	Method Blank	1.4-Difluorobenzene	2018/08/03		93	%	60 - 140
			4-Bromofluorobenzene	2018/08/03		96	%	60 - 140
			D4-1.2-Dichloroethane	2018/08/03		89	%	60 - 140
			Isobutylbenzene - Volatile	2018/08/03		93	%	60 - 130
			Benzene	2018/08/03	<0.025		mg/kg	
			Toluene	2018/08/03	< 0.025		mg/kg	
			Ethylbenzene	2018/08/03	< 0.025		mg/kg	
			Total Xylenes	2018/08/03	< 0.050		mg/kg	
			C6 - C10 (less BTEX)	2018/08/03	<2.5		mg/kg	
5663112	MGN	Method Blank	n-Dotriacontane - Extractable	2018/08/04	-210	113	%	60 - 130
			Isobutylbenzene - Extractable	2018/08/04		71	%	60 - 130
			>C10-C16 Hydrocarbons	2018/08/04	<10		mg/kg	
			>C16-C21 Hydrocarbons	2018/08/04	<10		mg/kg	
			>C21- <c32 hydrocarbons<="" td=""><td>2018/08/04</td><td><15</td><td></td><td>mg/kg</td><td></td></c32>	2018/08/04	<15		mg/kg	
5663941	KKE	Method Blank	D10-Anthracene	2018/08/05		92	%	50 - 130
			D14-Terphenyl (FS)	2018/08/05		100	%	50 - 130
			D8-Acenaphthylene	2018/08/05		93	%	50 - 130
			1-Methylnaphthalene	2018/08/05	< 0.010		mg/kg	
			2-Methylnaphthalene	2018/08/05	< 0.010		mg/kg	
			Acenaphthene	2018/08/05	< 0.010		mg/kg	
			Acenaphthylene	2018/08/05	< 0.010		mg/kg	
			Anthracene	2018/08/05	< 0.010		mg/kg	
			Fluoranthene	2018/08/05	< 0.010		mg/kg	
			Fluorene	2018/08/05	< 0.010		mg/kg	
			Naphthalene	2018/08/05	< 0.010		mg/kg	
			Phenanthrene	2018/08/05	< 0.010		mg/kg	
			Pyrene	2018/08/05	<0.010		mg/kg	
			, Benzo(a)anthracene	2018/08/05	<0.010		mg/kg	
			Benzo(a)pyrene	2018/08/05	<0.010		mg/kg	
			Benzo(b)fluoranthene	2018/08/05	<0.010		mg/kg	
			Benzo(g,h,i)perylene	2018/08/05	<0.010		mg/kg	
			Benzo(j)fluoranthene	2018/08/05	<0.010		mg/kg	
			Benzo(k)fluoranthene	2018/08/05	<0.010		mg/kg	
			Chrysene	2018/08/05	<0.010		mg/kg	
			Dibenz(a,h)anthracene	2018/08/05	<0.010		mg/kg	
			Indeno(1,2,3-cd)pyrene	2018/08/05	<0.010		mg/kg	
5662880	ASL	RPD [HJN403-03]	1,1,1-Trichloroethane	2018/08/03	NC		%	50
		- •	1,1,2,2-Tetrachloroethane	2018/08/03	NC		%	50
			1,1,2-Trichloroethane	2018/08/03	NC		%	50
			1,1-Dichloroethane	2018/08/03	NC		%	50
			1,1-Dichloroethylene	2018/08/03	NC		%	50
			1,2-Dichlorobenzene	2018/08/03	NC		%	50
			1,2-Dichloroethane	2018/08/03	NC		%	50
			1,2-Dichloropropane	2018/08/03	NC		%	50



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AECOM Canada Ltd. Task Order#: N/A- CTC Site#: Site Location: 64 MILL LAKE RD., HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	OC Type	Parameter	Date Analyzed	Value	Recoverv	UNITS	OC Limits
Butten		de type	1.3-Dichlorobenzene	2018/08/03	NC	necovery	%	50
			1.4-Dichlorobenzene	2018/08/03	NC		%	50
			Benzene	2018/08/03	NC		%	50
			Bromodichloromethane	2018/08/03	NC		%	50
			Bromoform	2018/08/03	NC		%	50
			Bromomethane	2018/08/03	NC		%	60
			Carbon Tetrachloride	2018/08/03	NC		%	50
			Chlorobenzene	2018/08/03	NC		%	50
			Chloroform	2018/08/03	NC		%	50
			cis-1.2-Dichloroethylene	2018/08/03	NC		%	50
			Dibromochloromethane	2018/08/03	NC		%	50
			Ethylbenzene	2018/08/03	NC		%	50
			Ethylene Dibromide	2018/08/03	NC		%	50
			Methyl t-butyl ether (MTBE)	2018/08/03	NC		%	50
			Methylene Chloride(Dichloromethane)	2018/08/03	NC		%	50
			Styrene	2018/08/03	NC		%	50
			Tetrachloroethylene	2018/08/03	NC		%	50
			Toluene	2018/08/03	NC		%	50
			Total Xylenes	2018/08/03	NC		%	50
			trans-1,2-Dichloroethylene	2018/08/03	NC		%	50
			Trichloroethylene	2018/08/03	NC		%	50
			Vinyl Chloride	2018/08/03	NC		%	60
5663053	SHL	RPD [HJN403-02]	Benzene	2018/08/03	NC		%	50
			Toluene	2018/08/03	NC		%	50
			Ethylbenzene	2018/08/03	NC		%	50
			Total Xylenes	2018/08/03	NC		%	50
			C6 - C10 (less BTEX)	2018/08/03	NC		%	50
5663941	KKE	RPD [HJN403-01]	1-Methylnaphthalene	2018/08/05	NC		%	50
			2-Methylnaphthalene	2018/08/05	NC		%	50
			Acenaphthene	2018/08/05	NC (1)		%	50
			Acenaphthylene	2018/08/05	NC		%	50
			Anthracene	2018/08/05	NC		%	50
			Fluoranthene	2018/08/05	NC		%	50
			Fluorene	2018/08/05	NC		%	50
			Naphthalene	2018/08/05	NC		%	50
			Phenanthrene	2018/08/05	NC		%	50
			Pyrene	2018/08/05	NC		%	50
			Benzo(a)anthracene	2018/08/05	NC		%	50
			Benzo(a)pyrene	2018/08/05	NC		%	50
			Benzo(b)fluoranthene	2018/08/05	NC		%	50
			Benzo(g,h,i)perylene	2018/08/05	NC		%	50
			Benzo(j)fluoranthene	2018/08/05	NC		%	50
			Benzo(k)fluoranthene	2018/08/05	NC		%	50
			Chrysene	2018/08/05	NC		%	50
			Dibenz(a,h)anthracene	2018/08/05	NC		%	50
			Indeno(1,2,3-cd)pyrene	2018/08/05	NC		%	50
5662880	ASL	Matrix Spike [HJN403-03]	4-Bromofluorobenzene	2018/08/03		108	%	60 - 140
			D10-o-Xylene	2018/08/03		120	%	60 - 130
			D4-1,2-Dichloroethane	2018/08/03		91	%	60 - 140
			D8-Toluene	2018/08/03		104	%	60 - 140
			1,1,1-Trichloroethane	2018/08/03		107	%	60 - 140



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AECOM Canada Ltd. Task Order#: N/A- CTC Site#: Site Location: 64 MILL LAKE RD., HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT(CONT'D)

Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
-		···	1,1,2,2-Tetrachloroethane	2018/08/03		91	%	60 - 140
			1,1,2-Trichloroethane	2018/08/03		96	%	60 - 140
			1,1-Dichloroethane	2018/08/03		108	%	60 - 140
			1,1-Dichloroethylene	2018/08/03		101	%	60 - 140
			1,2-Dichlorobenzene	2018/08/03		103	%	60 - 140
			1,2-Dichloroethane	2018/08/03		97	%	60 - 140
			1,2-Dichloropropane	2018/08/03		93	%	60 - 140
			1,3-Dichlorobenzene	2018/08/03		107	%	60 - 140
			1,4-Dichlorobenzene	2018/08/03		107	%	60 - 140
			Benzene	2018/08/03		101	%	60 - 140
			Bromodichloromethane	2018/08/03		92	%	60 - 140
			Bromoform	2018/08/03		100	%	60 - 140
			Bromomethane	2018/08/03		89	%	60 - 140
			Carbon Tetrachloride	2018/08/03		104	%	60 - 140
			Chlorobenzene	2018/08/03		109	%	60 - 140
			Chloroform	2018/08/03		95	%	60 - 140
			cis-1,2-Dichloroethylene	2018/08/03		111	%	60 - 140
			Dibromochloromethane	2018/08/03		98	%	60 - 140
			Ethylbenzene	2018/08/03		121	%	60 - 140
			Ethylene Dibromide	2018/08/03		102	%	60 - 140
			Methyl t-butyl ether (MTBE)	2018/08/03		115	%	60 - 140
			Methylene Chloride(Dichloromethane)	2018/08/03		99	%	60 - 140
			Styrene	2018/08/03		122	%	60 - 140
			Tetrachloroethylene	2018/08/03		107	%	60 - 140
			Toluene	2018/08/03		114	%	60 - 140
			trans-1,2-Dichloroethylene	2018/08/03		101	%	60 - 140
			Trichloroethylene	2018/08/03		108	%	60 - 140
			Vinyl Chloride	2018/08/03		82	%	60 - 140
5663053	SHL	Matrix Spike [HJN403-02]	1,4-Difluorobenzene	2018/08/03		103	%	60 - 140
			4-Bromofluorobenzene	2018/08/03		103	%	60 - 140
			D4-1,2-Dichloroethane	2018/08/03		92	%	60 - 140
			lsobutylbenzene - Volatile	2018/08/03		113	%	60 - 130
			Benzene	2018/08/03		95	%	60 - 130
			l oluene	2018/08/03		97	%	60 - 130
			Ethylbenzene	2018/08/03		105	%	60 - 130
5662044			lotal Xylenes	2018/08/03		101	%	60 - 130
5663941	KKE	Matrix Spike [HJN403-01]	D10-Anthracene	2018/08/05		88	%	50 - 130
			D14-Terphenyi (FS)	2018/08/05		95	70 0/	50 - 130
			1 Mothylaphthalana	2018/08/05		95	70 0/	50 - 130
			1-Methylnaphthalene	2018/08/05		100	%	50 - 130
			2-methymaphthalene	2018/08/05		105	% 0/	50 - 130
			Acenaphthelene	2018/08/05		103	/0	50 - 150
			Anthracono	2018/08/05		21	/0	50 - 150
			Fluoranthene	2010/00/03		01 01	/0 0/_	50 - 130
			Fluorene	2018/08/05		65 170	/0 %	50 - 130
			Nanhthalene	2018/08/05		103	/0 %	50 - 130
			Phenanthrene	2018/08/05		86 102	/0 %	50 - 130
			Pyrene	2018/08/05		80 83	%	50 - 130
			Benzo(a)anthracene	2018/08/05		83	%	50 - 130
			Benzo(a)pyrene	2018/08/05		110	%	50 - 130
				2020/00/00		110	/0	55 150



AECOM Canada Ltd. Task Order#: N/A- CTC Site#: Site Location: 64 MILL LAKE RD., HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	OC Type	Parameter	Date Analyzed	Value	Recoverv	UNITS	OC Limits
Butch	iiiit	de type	Benzo(b)fluoranthene	2018/08/05	Vulue	128	%	50 - 130
			Benzo(g,h,i)pervlene	2018/08/05		127	%	50 - 130
			Benzo(i)fluoranthene	2018/08/05		120	%	50 - 130
			Benzo(k)fluoranthene	2018/08/05		126	%	50 - 130
			Chrvsene	2018/08/05		90	%	50 - 130
			Dibenz(a.h)anthracene	2018/08/05		114	%	50 - 130
			Indeno(1.2.3-cd)pyrene	2018/08/05		107	%	50 - 130
5662880	ASL	LCS	4-Bromofluorobenzene	2018/08/03		107	%	60 - 140
			D10-o-Xylene	2018/08/03		104	%	60 - 130
			D4-1,2-Dichloroethane	2018/08/03		90	%	60 - 140
			D8-Toluene	2018/08/03		104	%	60 - 140
			1.1.1-Trichloroethane	2018/08/03		92	%	60 - 130
			1,1,2,2-Tetrachloroethane	2018/08/03		78	%	60 - 130
			1,1,2-Trichloroethane	2018/08/03		83	%	60 - 130
			1,1-Dichloroethane	2018/08/03		95	%	60 - 130
			1,1-Dichloroethylene	2018/08/03		89	%	60 - 130
			1,2-Dichlorobenzene	2018/08/03		90	%	60 - 130
			1,2-Dichloroethane	2018/08/03		84	%	60 - 130
			1,2-Dichloropropane	2018/08/03		81	%	60 - 130
			1,3-Dichlorobenzene	2018/08/03		95	%	60 - 130
			1,4-Dichlorobenzene	2018/08/03		95	%	60 - 130
			Benzene	2018/08/03		89	%	60 - 130
			Bromodichloromethane	2018/08/03		80	%	60 - 130
			Bromoform	2018/08/03		85	%	60 - 130
			Bromomethane	2018/08/03		81	%	60 - 140
			Carbon Tetrachloride	2018/08/03		89	%	60 - 130
			Chlorobenzene	2018/08/03		95	%	60 - 130
			Chloroform	2018/08/03		83	%	60 - 130
			cis-1,2-Dichloroethylene	2018/08/03		97	%	60 - 130
			Dibromochloromethane	2018/08/03		84	%	60 - 130
			Ethylbenzene	2018/08/03		106	%	60 - 130
			Ethylene Dibromide	2018/08/03		89	%	60 - 130
			Methyl t-butyl ether (MTBE)	2018/08/03		101	%	60 - 130
			Methylene Chloride(Dichloromethane)	2018/08/03		88	%	60 - 130
			Styrene	2018/08/03		108	%	60 - 130
			Tetrachloroethylene	2018/08/03		93	%	60 - 130
			Toluene	2018/08/03		100	%	60 - 130
			trans-1,2-Dichloroethylene	2018/08/03		89	%	60 - 130
			Trichloroethylene	2018/08/03		93	%	60 - 130
			Vinyl Chloride	2018/08/03		75	%	60 - 140
5662886	BAN	LCS	Acid Extractable Antimony (Sb)	2018/08/03		108	%	75 - 125
			Acid Extractable Arsenic (As)	2018/08/03		106	%	75 - 125
			Acid Extractable Barium (Ba)	2018/08/03		101	%	75 - 125
			Acid Extractable Beryllium (Be)	2018/08/03		104	%	75 - 125
			Acid Extractable Boron (B)	2018/08/03		109	%	75 - 125
			Acid Extractable Cadmium (Cd)	2018/08/03		105	%	75 - 125
			Acid Extractable Chromium (Cr)	2018/08/03		103	%	75 - 125
			Acid Extractable Cobalt (Co)	2018/08/03		104	%	75 - 125
			Acid Extractable Copper (Cu)	2018/08/03		103	%	75 - 125
			Acid Extractable Lead (Pb)	2018/08/03		102	%	75 - 125
			Acid Extractable Manganese (Mn)	2018/08/03		105	%	75 - 125



AECOM Canada Ltd. Task Order#: N/A- CTC Site#: Site Location: 64 MILL LAKE RD., HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Mercury (Hg)	2018/08/03		107	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2018/08/03		105	%	75 - 125
			Acid Extractable Nickel (Ni)	2018/08/03		105	%	75 - 125
			Acid Extractable Selenium (Se)	2018/08/03		106	%	75 - 125
			Acid Extractable Silver (Ag)	2018/08/03		105	%	75 - 125
			Acid Extractable Strontium (Sr)	2018/08/03		105	%	75 - 125
			Acid Extractable Thallium (Tl)	2018/08/03		106	%	75 - 125
			Acid Extractable Tin (Sn)	2018/08/03		105	%	75 - 125
			Acid Extractable Uranium (U)	2018/08/03		102	%	75 - 125
			Acid Extractable Vanadium (V)	2018/08/03		104	%	75 - 125
			Acid Extractable Zinc (Zn)	2018/08/03		105	%	75 - 125
5663053	SHL	LCS	1,4-Difluorobenzene	2018/08/03		101	%	60 - 140
			4-Bromofluorobenzene	2018/08/03		100	%	60 - 140
			D4-1,2-Dichloroethane	2018/08/03		93	%	60 - 140
			Isobutylbenzene - Volatile	2018/08/03		101	%	60 - 130
			Benzene	2018/08/03		102	%	60 - 140
			Toluene	2018/08/03		106	%	60 - 140
			Ethylbenzene	2018/08/03		110	%	60 - 140
			Total Xylenes	2018/08/03		108	%	60 - 140
5663112	MGN	LCS	n-Dotriacontane - Extractable	2018/08/04		126	%	60 - 130
			Isobutylbenzene - Extractable	2018/08/04		82	%	60 - 130
			>C10-C16 Hydrocarbons	2018/08/04		109	%	60 - 130
			>C16-C21 Hydrocarbons	2018/08/04		90	%	60 - 130
			>C21- <c32 hydrocarbons<="" p=""></c32>	2018/08/04		102	%	60 - 130
5663941	KKE	LCS	D10-Anthracene	2018/08/05		86	%	50 - 130
			D14-Terphenyl (FS)	2018/08/05		89	%	50 - 130
			D8-Acenaphthylene	2018/08/05		91	%	50 - 130
			1-Methylnaphthalene	2018/08/05		100	%	50 - 130
			2-Methylnaphthalene	2018/08/05		104	%	50 - 130
			Acenaphthene	2018/08/05		103	%	50 - 130
			Acenaphthylene	2018/08/05		104	%	50 - 130
			Anthracene	2018/08/05		76	%	50 - 130
			Fluoranthene	2018/08/05		81	%	50 - 130
			Fluorene	2018/08/05		125	%	50 - 130
			Naphthalene	2018/08/05		106	%	50 - 130
			Phenanthrene	2018/08/05		83	%	50 - 130
			Pyrene	2018/08/05		78	%	50 - 130
			Benzo(a)anthracene	2018/08/05		80	%	50 - 130
			Benzo(a)pyrene	2018/08/05		109	%	50 - 130
			Benzo(b)fluoranthene	2018/08/05		127	%	50 - 130
			Benzo(g,h,i)perylene	2018/08/05		127	%	50 - 130
			Benzo(j)fluoranthene	2018/08/05		119	%	50 - 130
			Benzo(k)fluoranthene	2018/08/05		123	%	50 - 130
			Chrysene	2018/08/05		87	%	50 - 130
			Dibenz(a,h)anthracene	2018/08/05		110	%	50 - 130



AECOM Canada Ltd. Task Order#: N/A- CTC Site#: Site Location: 64 MILL LAKE RD., HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Indeno(1,2,3-cd)pyrene	2018/08/05		105	%	50 - 130
Duplicate	: Paire	d analysis of a se	parate portion of the same sample. Used to evalu	ate the variance in the measure	ment.			
Matrix Sp	ike: A	sample to which a	a known amount of the analyte of interest has be	en added. Used to evaluate sam	ple matrix inte	rference.		
LCS: A bla	nk mat	rix sample to whi	ich a known amount of the analyte, usually from	a second source, has been addec	l. Used to evalu	uate method acc	uracy.	
Method I	Blank: A	A blank matrix co	ntaining all reagents used in the analytical procee	lure. Used to identify laboratory	contamination			
Surrogate	e: A pui	re or isotopically	labeled compound whose behavior mirrors the a	nalytes of interest. Used to evalu	ate extraction	efficiency.		
NC (Dupli differenc	cate RP e <= 2x	PD): The duplicate RDL).	RPD was not calculated. The concentration in th	e sample and/or duplicate was to	oo low to perm	iit a reliable RPD	calculatio	n (absolute
(1) Eleva	ted PA	H RDL(s) due to	matrix / co-extractive interference.					



AECOM Canada Ltd. Task Order#: N/A- CTC Site#: Site Location: 64 MILL LAKE RD., HUBBARDS, NS Project #: 60438249

VALIDATION SIGNATURE PAGE

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

anna

Eric Dearman, Scientific Specialist

Kosmarie Mac Donald

Rosemarie MacDonald, Scientific Specialist (Organics)

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

Maxia Buresu Veritas Group Company 200 Bluewa Bedford, NS www.maxxa	ter Roac 3 B4B 1 amanalyt	l, Suite G9 ics.cor	105 Ph n Toll I	ione: (902 Fax: (902 Free: 1-80	2) 420-(2) 420-{ 00-565	0203 8612 -722	7		E	xxo	N M CHA	OB IN-	IL/II OF-	MPI CU	ERI/ STO	IL O DY	IL - RECI	MAXXAN ORD	W	CofC	F #	age_	•	of_1	5
INVOICE INFORMATION		REP	ORT INFORM	ATION									-	A	NAL	/SIS	REQ	UESTED		0010	π	_			í.
Company Name: Imperial OP ExxonMobil	Company	/ Name:	AECOI	M																					
Contact Name: Juson Tululor	Contact	Name:	Jason To	14 loc																					
Address:	Address:			J										-1											
17701 Hollis st. Hulifax NS	1701	Hol	lis sb. H	elifia N	S	<i>u</i>	sla			-10		()1	5 - C32)												
Email: CanSCC, e-billing Gacom, com	Email:	ason	Taulor 26	JARCOM	in	Aetal	Meta	Ð		atho		litura	S, Ce	-			1								
Ph: 902-428-2029	Ph: 9	02-4	28.2029			iss N	Diss	letho		E B		grict	BIE	臣											
Sampler Name (Print):	Consult	ant Proj	ect #:			5	lor	ult N		ctab	le l	AE A) suo	eve			093								
Kury MiNe.)		604	38249			otal	Tota	Defa		cury	AA Le	and Solution	arbo	ow l	ation		4, 85								
2	MATRIX	0.	SAMPL	ING C	z	Se	eso	est ()		Mer cid e	- Lo	for So	droc	NH.	tions		A 62								
		H H	ĝ		ATIO	Choc	Cho	Dige		ult a	Vap	Nate	AHY	VPL (, VP	Frac		E.	E 1 1							
FIELD SAMPLE ID	RACE	H	WIN	HR)	E B B B B B B B B B B B B B B B B B B B	-30	-MS	Total	≧	Meta	Merc	Red	BBC		H	HW	000								
REC LANCE	VATE	E DO	D	T (24	HE HE	CAP	CAP	Metals	lercu	Me	tals Se	oil	- 1.		Oman	ice									
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IOL SITE LOCATION	11 1	A 10	REGUL	ATORY CF	RITERIA	/ DE	TEC	TION L	IMIT	s s	PECI	AL I	NSTF	RUCT	TIONS	S			#	JARS USED &	TU	IRNA	ROUN	D TIME	1
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MAXXAM TASK ORDER # OR SER VICE ORDER #	+ LINE IT	EM											41	£X.	Du	gua	y (a)a	Ccom.cov	n	FD			(2 day	/s) 🐹	
AIA																0.00				4	L a	(same d	ay) 🗌	
YES NO COOLER ID	#			YE	ES NO		OLE	RID#		_	1				_	YES	NC	COOLERI	ID #		- <u>A</u> -	17 Dat	12011	B	
SEAL PRESENT	57	SE	AL PRESENT			TE	MP	1			SEAL	PRE	SENT				1.0	TEMP				LAB	USE C	NLY	
COOLING MEDIA PRESENT	21,6	3 4SE	AL INTACT	RESENT		°(C		2	9	SEAL	INTA	ACT	A DD	COENT			°C			MAX	XAM	JOB #	1	1
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ΑΞϹΟΜ

Consultant: A	ECOM			Sampling Date: 2018/08/07						
Location: 64	1 Mill La	ake Roa	d Hubba	rds Laboratory: Maxxam						
Ni Osnaulius i Divisi Numburg	5			Devela Orbertechen Neuropen						
Consultant Project Number: 60)438249			Sample Submission Number: B8J6141						
Are All Laboratory QC Samples V	Vithin Ac	ceptance	Criteria	(Yes, No, Not Applicable)?						
	Yes	No	NA	Comments						
Instrument Surrogate Recovery	\boxtimes									
Extraction Surrogate Recovery	\boxtimes									
Method Blank Concentration	\boxtimes									
Matrix Duplicate RPD	\boxtimes									
Matrix Spike Recovery	\boxtimes									
Lab Control Sample Recovery	\boxtimes									
Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?										
	Yes	No	NA	Comments						
Field Blank Concentration			\boxtimes							
Trip Blank Concentration			\boxtimes							
Field Duplicate RPD			\boxtimes							
Has Call been signed off?										
Has lab warranted all tests were i	in statisti	cal contro	al in CoA	$\mathbb{Z} \qquad \qquad \mathbb{Z} \qquad \mathbb{Y}_{PS} \qquad \mathbb{D} \qquad No$						
Has lab warranted all tests were	analvzed	following	a SOP's ii	n CoA? X Yes No						
Were all samples analyzed within	hold tim	es?		🛛 Yes 🗆 No						
All volatiles samples methanol ex	tracted (i	if require	d) within 4	48 hours? 🛛 Yes 🛛 No						
Is Chain of Custody completed an	nd signed	ł?		⊠ Yes □ No						
Were sample temperatures accept	otable wh	nen they i	reached I	ab? Ves 🛛 No						
Is data considered to be reliable?	,		🛛 Yes	□ No						
If answer is "No", describe and p	rovide rat	ionale:								
Sample was 15°, CoC notes that	cooling n	nedia wa	s present	, sample was received 1 hour after sampling.						
				March Martin						
Reviewed by (Print): Sara	h MacNe	eil		Reviewed by (Signature):						
Date: 2018	Date: 2018 09 17									

1



Attention: Jason Taylor

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8 Task Order#: IOL-CTC-NA Site#: IOL-CTC-NA Site Location: 64 MILL LAKE RD NO2, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 09868

> Report Date: 2018/08/16 Report #: R5358489 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8K1764

Received: 2018/08/08, 16:39

Sample Matrix: Soil # Samples Received: 5

Analyses	Quan	tity Laboratory Method	Primary Reference	
TEH in Soil (PIRI) (1)	5	ATL SOP 00111	Atl. RBCA v3.1 m	
Moisture	5	ATL SOP 00001	OMOE Handbook 1983 m	
Double water wash (soil)	5	ATL SOP 00111	N/A	
Silica Gel Clean-up (Soil)	5	ATL SOP 00111	EPA 3630C R3 m	
ModTPH (T1) Calc. for Soil	5	N/A	Atl. RBCA v3.1 m	
VPH in Soil (PIRI) - Field Preserved (2)	5	ATL SOP 00119	Atl. RBCA v3.1 m	

Sample Matrix: Water # Samples Received: 2

Analyses	Quanti	ty Laboratory Method	Primary Reference
TEH in Water (PIRI)	2	ATL SOP 00113	Atl. RBCA v3.1 m
VPH in Water (PIRI)	2	ATL SOP 00118	Atl. RBCA v3.1 m
Silica Gel Clean-up (Water)	2	ATL SOP 00113	EPA 3630C R3 m
ModTPH (T1) Calc. for Water	2	N/A	Atl. RBCA v3 m

Remarks:

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

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

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



Task Order#: IOL-CTC-NA Site#: IOL-CTC-NA Site Location: 64 MILL LAKE RD NO2, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 09868

Attention: Jason Taylor

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2018/08/16 Report #: R5358489 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8K1764

Received: 2018/08/08, 16:39

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

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

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) Soils are reported on a dry weight basis unless otherwise specified.

(2) No lab extraction date is given for C6-C10/BTEX and VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.

Encryption Key

Sara Mason Project Manager 16 Aug 2018 10:32:25

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Sara Mason, Project Manager Email: smason@maxxam.ca Phone# (902)420-0203

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



AECOM Canada Ltd. Task Order#: IOL-CTC-NA Site#: IOL-CTC-NA Site Location: 64 MILL LAKE RD NO2, HUBBARDS, NS Project #: 60438249

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		HKT286			HKT286		
Sampling Date		2018/08/07			2018/08/07		
		10:30			10:30		
COC Number		09868			09868		
	UNITS	EX01-N01-0.25-0.75	RDL	QC Batch	EX01-N01-0.25-0.75 Lab-Dup	RDL	QC Batch
Inorganics							
Moisture	%	9.0	1.0	5670750	8.9	1.0	5670750
Petroleum Hydrocarbons							
Benzene	mg/kg	<0.025	0.025	5677941	<0.025	0.025	5677941
Toluene	mg/kg	<0.025	0.025	5677941	<0.025	0.025	5677941
Ethylbenzene	mg/kg	<0.025	0.025	5677941	<0.025	0.025	5677941
Total Xylenes	mg/kg	<0.050	0.050	5677941	<0.050	0.050	5677941
C6 - C10 (less BTEX)	mg/kg	<2.5	2.5	5677941	<2.5	2.5	5677941
>C10-C16 Hydrocarbons	mg/kg	<10	10	5675208			
>C16-C21 Hydrocarbons	mg/kg	<10	10	5675208			
>C21- <c32 hydrocarbons<="" p=""></c32>	mg/kg	<15	15	5675208			
Modified TPH (Tier1)	mg/kg	<15	15	5670492			
Reached Baseline at C32	mg/kg	NA	N/A	5675208			
Hydrocarbon Resemblance	mg/kg	NA	N/A	5675208			
Extraction							
Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	82		5675208			
n-Dotriacontane - Extractable	%	87		5675208			
Isobutylbenzene - Volatile	%	124		5677941	119		5677941
Instrument Surrogate Recovery (%)							
1,4-Difluorobenzene	%	98		5677941	94		5677941
4-Bromofluorobenzene	%	103		5677941	101		5677941
D4-1,2-Dichloroethane	%	95		5677941	91		5677941
RDI = Reportable Detection Limit							
QC Batch = Quality Control Batc	:h						

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable



AECOM Canada Ltd. Task Order#: IOL-CTC-NA Site#: IOL-CTC-NA Site Location: 64 MILL LAKE RD NO2, HUBBARDS, NS Project #: 60438249

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		HKT287	HKT288	HKT289	HKT290		
Sampling Date		2018/08/07 11:00	2018/08/07 11:30	2018/08/07 12:00	2018/08/07 12:30		
COC Number		09868	09868	09868	09868		
	UNITS	EX01-E01-0.25-0.75	EX01-W01-0.25-0.75	EX01-S01-0.25-0.75	EX01-BS01-1.0	RDL	QC Batch
Inorganics							
Moisture	%	8.6	8.4	10	15	1.0	5670750
Petroleum Hydrocarbons							
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	5677941
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	5677941
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	5677941
Total Xylenes	mg/kg	<0.050	<0.050	<0.050	0.11	0.050	5677941
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	<2.5	39	2.5	5677941
>C10-C16 Hydrocarbons	mg/kg	<10	<10	<10	480	10	5675208
>C16-C21 Hydrocarbons	mg/kg	<10	<10	<10	220	10	5675208
>C21- <c32 hydrocarbons<="" td=""><td>mg/kg</td><td><15</td><td><15</td><td>21</td><td>520</td><td>15</td><td>5675208</td></c32>	mg/kg	<15	<15	21	520	15	5675208
Modified TPH (Tier1)	mg/kg	<15	<15	21	1300	15	5670492
Reached Baseline at C32	mg/kg	NA	NA	Yes	Yes	N/A	5675208
Hydrocarbon Resemblance	mg/kg	NA	NA	COMMENT (1)	COMMENT (2)	N/A	5675208
Extraction Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	84	82	86	90		5675208
n-Dotriacontane - Extractable	%	87	85	99	84		5675208
Isobutylbenzene - Volatile	%	109	112	107 (3)	88		5677941
Instrument Surrogate Recovery (%)							
1,4-Difluorobenzene	%	100	99	89	94		5677941
4-Bromofluorobenzene	%	108	105	93	100		5677941
D4-1,2-Dichloroethane	%	97	98	86	92		5677941

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Possible lube oil fraction.

(2) One product in fuel oil range. Lube oil fraction.

(3) VPH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.



AECOM Canada Ltd. Task Order#: IOL-CTC-NA Site#: IOL-CTC-NA Site Location: 64 MILL LAKE RD NO2, HUBBARDS, NS Project #: 60438249

Maxxam ID		HKT290					
Sampling Date		2018/08/07					
		12:30					
COC Number		09868					
	UNITS	EX01-BS01-1.0 Lab-Dup	RDL	QC Batch			
Petroleum Hydrocarbons							
>C10-C16 Hydrocarbons	mg/kg	410	10	5675208			
>C16-C21 Hydrocarbons	mg/kg	190	10	5675208			
>C21- <c32 hydrocarbons<="" p=""></c32>	mg/kg	450	15	5675208			
Extraction							
Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	88		5675208			
n-Dotriacontane - Extractable	%	79		5675208			
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							
Lab-Dup = Laboratory Initiated I	Duplicat	e					

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)



AECOM Canada Ltd. Task Order#: IOL-CTC-NA Site#: IOL-CTC-NA Site Location: 64 MILL LAKE RD NO2, HUBBARDS, NS Project #: 60438249

RBCA HYDROCARBONS IN WATER (WATER)

				r			
Maxxam ID		HKT291	HKT292				
Sampling Date		2018/08/07	2018/08/07				
		13:00	14:00				
COC Number		09868	09868				
	UNITS	MW17-01	MW17-03	RDL	QC Batch		
Petroleum Hydrocarbons							
Benzene	mg/L	<0.0010	<0.0010	0.0010	5672991		
Toluene	mg/L	<0.0010	<0.0010	0.0010	5672991		
Ethylbenzene	mg/L	<0.0010	<0.0010	0.0010	5672991		
Total Xylenes	mg/L	<0.0020	<0.0020	0.0020	5672991		
C6 - C10 (less BTEX)	mg/L	<0.010	<0.010	0.010	5672991		
>C10-C16 Hydrocarbons	mg/L	4.0	0.93	0.050	5678141		
>C16-C21 Hydrocarbons	mg/L	1.6	0.20	0.050	5678141		
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td>0.39</td><td><0.10</td><td>0.10</td><td>5678141</td></c32>	mg/L	0.39	<0.10	0.10	5678141		
Modified TPH (Tier1)	mg/L	6.0	1.1	0.10	5670573		
Reached Baseline at C32	mg/L	Yes	Yes	N/A	5678141		
Hydrocarbon Resemblance	mg/L	COMMENT (1)	COMMENT (1)	N/A	5678141		
Extraction							
Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	108	106		5678141		
n-Dotriacontane - Extractable	%	115 (2)	111 (2)		5678141		
Instrument							
Surrogate Recovery (%)							
1,4-Difluorobenzene	%	101	100		5672991		
4-Bromofluorobenzene	%	97	97		5672991		
D4-1,2-Dichloroethane	%	98	98		5672991		
Isobutylbenzene - Volatile	%	99	100		5672991		
RDL = Reportable Detection Lim	it						
QC Batch = Quality Control Batc	h						
N/A = Not Applicable							
(1) Weathered fuel oil fraction.							
(2) TEH sample contained sedim	ient.						



AECOM Canada Ltd. Task Order#: IOL-CTC-NA Site#: IOL-CTC-NA Site Location: 64 MILL LAKE RD NO2, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	HKT286 EX01-N01-0.25-0.75 Soil				R	Collected: 2018/08/07 elinquished: 2018/08/08 Received: 2018/08/08	
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	5675208	2018/08/11	2018/08/14	Marsha (Skinner) Harnum	
Moisture		BAL	5670750	N/A	2018/08/10	Selina Dunbar	
ModTPH (T1) Calc. for So	il	CALC	5670492	N/A	2018/08/15	Automated Statchk	
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	5677941	N/A	2018/08/14	Shawn Helmkay	
Maxxam ID: Sample ID: Matrix:	HKT286 Dup EX01-N01-0.25-0.75 Soil				R	Collected: 2018/08/07 elinquished: 2018/08/08 Received: 2018/08/08	
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
Moisture		BAL	5670750	N/A	2018/08/10	Selina Dunbar	
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	5677941	N/A	2018/08/14	Shawn Helmkay	
Maxxam ID: Sample ID: Matrix:	HKT287 EX01-E01-0.25-0.75 Soil				R	Collected: 2018/08/07 elinquished: 2018/08/08 Received: 2018/08/08	

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5675208	2018/08/11	2018/08/14	Marsha (Skinner) Harnum
Moisture	BAL	5670750	N/A	2018/08/10	Selina Dunbar
ModTPH (T1) Calc. for Soil	CALC	5670492	N/A	2018/08/15	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5677941	N/A	2018/08/14	Shawn Helmkay

Maxxam ID: HKT288 Sample ID: EX01-W01-0.25-0.75 Matrix: Soil

Collected: 2018/08/07 Relinquished: 2018/08/08 2018/08/08 Received:

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5675208	2018/08/11	2018/08/14	Marsha (Skinner) Harnum
Moisture	BAL	5670750	N/A	2018/08/10	Selina Dunbar
ModTPH (T1) Calc. for Soil	CALC	5670492	N/A	2018/08/15	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5677941	N/A	2018/08/14	Shawn Helmkay

Maxxam ID:	HKT289
Sample ID:	EX01-S01-0.25-0.75
Matrix:	Soil

Collected:	2018/08/07
Relinguished:	2018/08/08
Received:	2018/08/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5675208	2018/08/11	2018/08/14	Marsha (Skinner) Harnum
Moisture	BAL	5670750	N/A	2018/08/10	Selina Dunbar
ModTPH (T1) Calc. for Soil	CALC	5670492	N/A	2018/08/15	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5677941	N/A	2018/08/14	Shawn Helmkay



AECOM Canada Ltd. Task Order#: IOL-CTC-NA Site#: IOL-CTC-NA Site Location: 64 MILL LAKE RD NO2, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	HKT290 EX01-BS01-1.0 Soil				Re	Collected: elinquished: Received:	2018/08/07 2018/08/08 2018/08/08
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	5675208	2018/08/11	2018/08/14	Marsha (S	kinner) Harnum
Moisture		BAL	5670750	N/A	2018/08/10	Selina Dur	nbar
ModTPH (T1) Calc. for So	il	CALC	5670492	N/A	2018/08/15	Automate	d Statchk
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	5677941	N/A	2018/08/14	Shawn He	Imkay
Maxxam ID: Sample ID: Matrix:	HKT290 Dup EX01-BS01-1.0 Soil				R	Collected: elinquished: Received:	2018/08/07 2018/08/08 2018/08/08
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	5675208	2018/08/11	2018/08/14	Marsha (S	kinner) Harnum
Maxxam ID: Sample ID: Matrix:	HKT291 MW17-01 Water				Re	Collected: elinquished: Received:	2018/08/07 2018/08/08 2018/08/08
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	5678141	2018/08/14	2018/08/14	Michelle S	hearer
VPH in Water (PIRI)		PTGC/MS	5672991	N/A	2018/08/11	Thea Holla	and
ModTPH (T1) Calc. for Wa	ater	CALC	5670573	N/A	2018/08/15	Automate	d Statchk
Maxxam ID: Sample ID: Matrix:	HKT292 MW17-03 Water				Re	Collected: elinquished: Received:	2018/08/07 2018/08/08 2018/08/08
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	5678141	2018/08/14	2018/08/14	Michelle S	hearer
VPH in Water (PIRI)		PTGC/MS	5672991	N/A	2018/08/11	Thea Holla	and
ModTPH (T1) Calc. for Wa	ater	CALC	5670573	N/A	2018/08/15	Automate	d Statchk



AECOM Canada Ltd. Task Order#: IOL-CTC-NA Site#: IOL-CTC-NA Site Location: 64 MILL LAKE RD NO2, HUBBARDS, NS Project #: 60438249

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt										
	Package 1 8.0°C									
Note: In Double Silica ge	nsufficient numbe water wash and s el clean-up perfor	er of bottles- MW silica gel clean-up med on water ex	17-01 and MW17-03 - only 3x40ml vials received for RBCA. Proceeded with analysis. performed on soil extracts. racts.							
Result	Results relate only to the items tested.									



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AECOM Canada Ltd. Task Order#: IOL-CTC-NA Site#: IOL-CTC-NA Site Location: 64 MILL LAKE RD NO2, HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT

QA/QC Batch	Init		Parameter	Date Analyzed	Value	Recovery		OC Limits
5672991	THI	Method Blank	1.4-Difluorobenzene	2018/08/11	value	102	%	70 - 130
0072001			4-Bromofluorobenzene	2018/08/11		98	%	70 - 130
			D4-1.2-Dichloroethane	2018/08/11		97	%	70 - 130
			Isobutylbenzene - Volatile	2018/08/11		113	%	70 - 130
			Benzene	2018/08/11	< 0.0010		mg/L	
			Toluene	2018/08/11	< 0.0010		mg/L	
			Ethylbenzene	2018/08/11	< 0.0010		mg/L	
			Total Xvlenes	2018/08/11	< 0.0020		mg/L	
			C6 - C10 (less BTEX)	2018/08/11	<0.010		mg/L	
5675208	MSK	Method Blank	n-Dotriacontane - Extractable	2018/08/14		88	%	60 - 130
			Isobutvlbenzene - Extractable	2018/08/14		79	%	60 - 130
			>C10-C16 Hydrocarbons	2018/08/14	<10		mg/kg	
			>C16-C21 Hydrocarbons	2018/08/14	<10		mg/kg	
			>C21- <c32 hydrocarbons<="" td=""><td>2018/08/14</td><td><15</td><td></td><td>mg/kg</td><td></td></c32>	2018/08/14	<15		mg/kg	
5677941	SHL	Method Blank	, 1,4-Difluorobenzene	2018/08/14		85	%	60 - 140
			4-Bromofluorobenzene	2018/08/14		88	%	60 - 140
			D4-1,2-Dichloroethane	2018/08/14		82	%	60 - 140
			Isobutylbenzene - Volatile	2018/08/14		83	%	60 - 130
			Benzene	2018/08/14	<0.025		mg/kg	
			Toluene	2018/08/14	<0.025		mg/kg	
			Ethylbenzene	2018/08/14	<0.025		mg/kg	
			Total Xylenes	2018/08/14	<0.050		mg/kg	
			C6 - C10 (less BTEX)	2018/08/14	<2.5		mg/kg	
5678141	MS3	Method Blank	n-Dotriacontane - Extractable	2018/08/14		107	%	70 - 130
			Isobutylbenzene - Extractable	2018/08/14		102	%	70 - 130
			>C10-C16 Hydrocarbons	2018/08/14	<0.050		mg/L	
			>C16-C21 Hydrocarbons	2018/08/14	<0.050		mg/L	
			>C21- <c32 hydrocarbons<="" td=""><td>2018/08/14</td><td><0.10</td><td></td><td>mg/L</td><td></td></c32>	2018/08/14	<0.10		mg/L	
5670750	SDN	RPD [HKT286-01]	Moisture	2018/08/10	1.1		%	25
5677941	SHL	RPD [HKT286-02]	Benzene	2018/08/14	NC		%	50
			Toluene	2018/08/14	NC		%	50
			Ethylbenzene	2018/08/14	NC		%	50
			Total Xylenes	2018/08/14	NC		%	50
			C6 - C10 (less BTEX)	2018/08/14	NC		%	50
5675208	MSK	RPD [HKT290-01]	>C10-C16 Hydrocarbons	2018/08/14	16		%	50
			>C16-C21 Hydrocarbons	2018/08/14	17		%	50
			>C21- <c32 hydrocarbons<="" td=""><td>2018/08/14</td><td>15</td><td></td><td>%</td><td>50</td></c32>	2018/08/14	15		%	50
5675208	MSK	Matrix Spike [HKT290-01]	n-Dotriacontane - Extractable	2018/08/14		80	%	60 - 130
			Isobutylbenzene - Extractable	2018/08/14		86	%	60 - 130
			>C10-C16 Hydrocarbons	2018/08/14		NC	%	30 - 130
			>C16-C21 Hydrocarbons	2018/08/14		70	%	30 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2018/08/14</td><td></td><td>NC</td><td>%</td><td>30 - 130</td></c32>	2018/08/14		NC	%	30 - 130
5677941	SHL	Matrix Spike [HKT286-02]	1,4-Difluorobenzene	2018/08/14		92	%	60 - 140
			4-Bromofluorobenzene	2018/08/14		98	%	60 - 140
			D4-1,2-Dichloroethane	2018/08/14		87	%	60 - 140
			Isobutylbenzene - Volatile	2018/08/14		125	%	60 - 130
			Benzene	2018/08/14		93	%	60 - 130
			Toluene	2018/08/14		93	%	60 - 130
			Ethylbenzene	2018/08/14		96	%	60 - 130
			Total Xylenes	2018/08/14		94	%	60 - 130
5672991	THL	LCS	1,4-Difluorobenzene	2018/08/11		103	%	70 - 130



AECOM Canada Ltd. Task Order#: IOL-CTC-NA Site#: IOL-CTC-NA Site Location: 64 MILL LAKE RD NO2, HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			4-Bromofluorobenzene	2018/08/11		96	%	70 - 130
			D4-1,2-Dichloroethane	2018/08/11		107	%	70 - 130
			Isobutylbenzene - Volatile	2018/08/11		101	%	70 - 130
			Benzene	2018/08/11		113	%	70 - 130
			Toluene	2018/08/11		110	%	70 - 130
			Ethylbenzene	2018/08/11		105	%	70 - 130
			Total Xylenes	2018/08/11		106	%	70 - 130
5675208	MSK	LCS	n-Dotriacontane - Extractable	2018/08/14		86	%	60 - 130
			Isobutylbenzene - Extractable	2018/08/14		84	%	60 - 130
			>C10-C16 Hydrocarbons	2018/08/14		94	%	60 - 130
			>C16-C21 Hydrocarbons	2018/08/14		89	%	60 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2018/08/14</td><td></td><td>95</td><td>%</td><td>60 - 130</td></c32>	2018/08/14		95	%	60 - 130
5677941	SHL	LCS	1,4-Difluorobenzene	2018/08/14		76	%	60 - 140
			4-Bromofluorobenzene	2018/08/14		79	%	60 - 140
			D4-1,2-Dichloroethane	2018/08/14		73	%	60 - 140
			Isobutylbenzene - Volatile	2018/08/14		77	%	60 - 130
			Benzene	2018/08/14		78	%	60 - 140
			Toluene	2018/08/14		84	%	60 - 140
			Ethylbenzene	2018/08/14		80	%	60 - 140
			Total Xylenes	2018/08/14		80	%	60 - 140
5678141	MS3	LCS	n-Dotriacontane - Extractable	2018/08/14		117	%	70 - 130
			Isobutylbenzene - Extractable	2018/08/14		98	%	70 - 130
			>C10-C16 Hydrocarbons	2018/08/14		101	%	70 - 130
			>C16-C21 Hydrocarbons	2018/08/14		93	%	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2018/08/14</td><td></td><td>100</td><td>%</td><td>70 - 130</td></c32>	2018/08/14		100	%	70 - 130

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.

LCS: 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).



AECOM Canada Ltd. Task Order#: IOL-CTC-NA Site#: IOL-CTC-NA Site Location: 64 MILL LAKE RD NO2, HUBBARDS, NS Project #: 60438249

VALIDATION SIGNATURE PAGE

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

Kosmarie MacDonald

Rosemarie MacDonald, Scientific Specialist (Organics)

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

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Lot C+C-NA				Λ	M. I.	, 1	le.									J	1	10				WATER	VA FOH	Rush		(3 days	3)
MAXXAM TASK ORDER # OR SER VICE ORDE	R#+	LINE I	TEM	17	Plan/1	CI	C.A.: (A.)									1						X	-			(2 days	
FOL- CHC- NA																									(s	(1 day ame day	
YES NO COOLEF	ID #					YES	NO C	OOLE	R ID #								YE	S N	O	COOLE	R ID #	6			Date	Require	d
SEAL PRESENT	11	6	Ch's	EAL PRESENT			TE	MP				SE	AL PRE	SENT				_		TEMP		-		1	LAB	JSE ON	ILY
COOLING MEDIA PRESENT	1	2	3 C	OOLING MEDIA	PRESENT			°C	π.	2	3	CO	OLING	MEDI	A PRI	ESENT	-		-	°C	1	2	3	MAX	KAM	JOB #	
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ΑΞϹΟΜ

Consultant: Al Location: 64	ECOM 1 Mill La	ake Roa	d Hubba	rds Laboratory: Maxxam						
N										
Consultant Project Number: 60)438249			Sample Submission Number: B8K1764						
Are All Laboratory QC Samples V	Vithin Ac	ceptance	Criteria	(Yes, No, Not Applicable)?						
	Yes	No	NA	Comments						
Instrument Surrogate Recovery	\boxtimes									
Extraction Surrogate Recovery	\boxtimes									
Method Blank Concentration	\boxtimes									
Matrix Duplicate RPD	\boxtimes									
Matrix Spike Recovery	\boxtimes									
Lab Control Sample Recovery	\boxtimes									
Are All Field QC Samples Within	Alert Lim	its (Yes,	No, Not A	Applicable)?						
	Yes	No	NA	Comments						
Field Blank Concentration			\boxtimes							
Trip Blank Concentration			\boxtimes							
Field Duplicate RPD			\boxtimes							
Has CoA been signed off?				🛛 Yes 🗆 No						
Has lab warranted all tests were i	n statisti	cal contro	ol in CoA	?						
Has lab warranted all tests were a	analyzed	following	g SOP's ii	n CoA?X Yes 🛛 No						
Were all samples analyzed within	hold tim	es?		🛛 Yes 🛛 No						
All volatiles samples methanol ex	tracted (i	f require	d) within 4	48 hours? 🛛 Yes 🛛 No						
Is Chain of Custody completed a	nd signed	l?		X Yes 🗆 No						
vvere sample temperatures accept	otable wh	ien they i	reached I	ab?X Yes 🗆 No						
Is data considered to be reliable?			🛛 Yes	□ No						
If answer is "No", describe and pr	ovide rat	ionale:								
See comment above.										
				-						
<u> </u>										
Reviewed by (Print): Sara	h MacNe	eil		Reviewed by (Signature): Starah Machail						
Date: 2018	Date: 2018 09 17									

1


Attention:Tim Bachiu

B3J 3M8

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax. NS CANADA

Task Order#: N/A-CTC SITE Site#: CTC Site Location: 64 MILL LAKE ROAD NO 2, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 588912-01-01

> Report Date: 2016/12/16 Report #: R4290158 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6R3168

Received: 2016/12/15, 15:17

Sample Matrix: Water # Samples Received: 10

Analyses	Quantity	Laboratory Method	Primary Reference
1,3-Dichloropropene Sum (water)	2	N/A	Auto Calc.
TEH in Water (PIRI)	10	ATL SOP 00113	Atl. RBCA v3 m
Metals Water Diss. MS (as rec'd)	2	ATL SOP 00058	EPA 6020A R1 m
VPH in Water (PIRI)	10	ATL SOP 00118	Atl. RBCA v3 m
Silica Gel Clean-up (Water)	10	ATL SOP 00113	EPA 3630C R3 m
ModTPH (T1) Calc. for Water	10	N/A	Atl. RBCA v3 m
Volatile Organic Compounds in Water	2	ATL SOP 00133	EPA 8260C R3 m

Remarks:

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

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

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

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

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

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

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



Task Order#: N/A-CTC SITE Site#: CTC Site Location: 64 MILL LAKE ROAD NO 2, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 588912-01-01

Attention:Tim Bachiu

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2016/12/16 Report #: R4290158 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6R3168 Received: 2016/12/15, 15:17

Encryption Key

heri Machay Keri MacKay Project Manager - Bedford 16 Dec 2016 16:37:42

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Keri Mackay, Project Manager - Bedford Email: kmackay@maxxam.ca Phone# (902)420-0203 Ext:294

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



RBCA HYDROCARBONS IN WATER (WATER)

Maxxam ID		DQD842	DQD843	DQD844	DQD845	DQD846	DQD847		
Sampling Date		2016/12/15	2016/12/15	2016/12/15	2016/12/15	2016/12/15	2016/12/15		
		12:35	12:45	13:06	13:30	13:15	14:00		
COC Number		588912-01-01	588912-01-01	588912-01-01	588912-01-01	588912-01-01	588912-01-01		
	UNITS	MW1	MW2	MW3	MW4	MW5	MW6	RDL	QC Batch
Petroleum Hydrocarbons									
Benzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	4794011
Toluene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	4794011
Ethylbenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	4794011
Total Xylenes	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	4794011
C6 - C10 (less BTEX)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.049	0.010	4794011
>C10-C16 Hydrocarbons	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	7.3	0.050	4794548
>C16-C21 Hydrocarbons	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	2.5	0.050	4794548
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.10</td><td><0.10</td><td><0.10</td><td><0.10</td><td><0.10</td><td>0.48</td><td>0.10</td><td>4794548</td></c32>	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.48	0.10	4794548
Modified TPH (Tier1)	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	10	0.10	4793907
Reached Baseline at C32	mg/L	NA	NA	NA	NA	NA	Yes	N/A	4794548
Hydrocarbon Resemblance	mg/L	NA	NA	NA	NA	NA	COMMENT (1)	N/A	4794548
Extraction Surrogate Recovery (%)									
Isobutylbenzene - Extractable	%	95	95	98	105	98	108		4794548
n-Dotriacontane - Extractable	%	128 (2)	127 (2)	107 (2)	119 (2)	115	103		4794548
Instrument Surrogate Recovery (%)									
1,4-Difluorobenzene	%	103	105	104	104	105	105		4794011
4-Bromofluorobenzene	%	100	99	99	100	99	98		4794011
D4-1,2-Dichloroethane	%	100	100	99	100	100	101		4794011
Isobutylbenzene - Volatile	%	102	102	102	101	102	92		4794011
PDI - Poportable Detection Lin	i+		•	•	•				

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Weathered fuel oil fraction.

(2) TEH sample contained sediment.



RBCA HYDROCARBONS IN WATER (WATER)

Maxxam ID		DQD848		DQD849	DQD850	DQD850		
Compling Data		2016/12/15		2016/12/15	2016/12/15	2016/12/15		
		13:50		13:45	12:55	12:55		
COC Number		588912-01-01		588912-01-01	588912-01-01	588912-01-01		
	UNITS	MW16-01	RDL	MW16-02	MW16-03	MW16-03 Lab-Dup	RDL	QC Batch
Petroleum Hydrocarbons								
Benzene	mg/L	<0.0010	0.0010	<0.0010	<0.0010		0.0010	4794011
Toluene	mg/L	<0.0010	0.0010	<0.0010	<0.0010		0.0010	4794011
Ethylbenzene	mg/L	0.0038	0.0010	<0.0010	<0.0010		0.0010	4794011
Total Xylenes	mg/L	0.017	0.0020	<0.0020	<0.0020		0.0020	4794011
C6 - C10 (less BTEX)	mg/L	0.30	0.10	<0.010	<0.010		0.010	4794011
>C10-C16 Hydrocarbons	mg/L	4.5	0.050	<0.050	<0.050	<0.050	0.050	4794548
>C16-C21 Hydrocarbons	mg/L	2.2	0.050	<0.050	<0.050	<0.050	0.050	4794548
>C21- <c32 hydrocarbons<="" p=""></c32>	mg/L	0.31	0.10	<0.10	<0.10	<0.10	0.10	4794548
Modified TPH (Tier1)	mg/L	7.3	0.10	<0.10	<0.10		0.10	4793907
Reached Baseline at C32	mg/L	Yes	N/A	NA	NA		N/A	4794548
Hydrocarbon Resemblance	mg/L	COMMENT (1)	N/A	NA	NA		N/A	4794548
Extraction Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	97		82	99	104		4794548
n-Dotriacontane - Extractable	%	116		118 (2)	110	128		4794548
Instrument Surrogate Recovery (%)								
1,4-Difluorobenzene	%	105		106	104			4794011
4-Bromofluorobenzene	%	105		98	99			4794011
D4-1,2-Dichloroethane	%	100		101	100			4794011
Isobutylbenzene - Volatile	%	93		98 (3)	103			4794011
RDL = Reportable Detection Lim	nit							

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) Weathered fuel oil fraction.

(2) TEH sample contained sediment.

(3) VPH sample contained sediment.



Maxxam ID		DQD851				
Sampling Date		2016/12/15 13:50				
COC Number		588912-01-01				
	UNITS	DUP 1	RDL	QC Batch		
Petroleum Hydrocarbons						
Benzene	mg/L	<0.0010	0.0010	4794011		
Toluene	mg/L	<0.0010	0.0010	4794011		
Ethylbenzene	mg/L	0.0037	0.0010	4794011		
Total Xylenes	mg/L	0.016	0.0020	4794011		
C6 - C10 (less BTEX)	mg/L	0.29	0.10	4794011		
>C10-C16 Hydrocarbons	mg/L	4.5	0.050	4794548		
>C16-C21 Hydrocarbons	mg/L	1.9	0.050	4794548		
>C21- <c32 hydrocarbons<="" p=""></c32>	mg/L	0.35	0.10	4794548		
Modified TPH (Tier1)	mg/L	7.1	0.10	4793907		
Reached Baseline at C32	mg/L	Yes	N/A	4794548		
Hydrocarbon Resemblance	mg/L	COMMENT (1)	N/A	4794548		
Extraction						
Surrogate Recovery (%)						
Isobutylbenzene - Extractable	%	106		4794548		
n-Dotriacontane - Extractable	%	122		4794548		
Instrument Surrogate Recovery (%)						
1,4-Difluorobenzene	%	104		4794011		
4-Bromofluorobenzene	%	105		4794011		
D4-1,2-Dichloroethane	%	99		4794011		
Isobutylbenzene - Volatile	%	91		4794011		
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable (1) Weathered fuel oil fraction.						

RBCA HYDROCARBONS IN WATER (WATER)



ATLANTIC VOC IN WATER (WATER)

Maxxam ID		DQD845	DQD850		
Sampling Date		2016/12/15	2016/12/15		
		13:30	12:55		
COC Number		588912-01-01	588912-01-01		
	UNITS	MW4	MW16-03	RDL	QC Batch
Volatile Organics					
1,1,1-Trichloroethane	ug/L	<1.0	<1.0	1.0	4794277
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	0.50	4794277
1,1,2-Trichloroethane	ug/L	<1.0	<1.0	1.0	4794277
1,1-Dichloroethane	ug/L	<2.0	<2.0	2.0	4794277
1,1-Dichloroethylene	ug/L	<0.50	<0.50	0.50	4794277
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	4794277
1,2-Dichloroethane	ug/L	<1.0	<1.0	1.0	4794277
1,2-Dichloropropane	ug/L	<0.50	<0.50	0.50	4794277
1,3-Dichlorobenzene	ug/L	<1.0	<1.0	1.0	4794277
1,3-Dichloropropene (total)	ug/L	<0.50	<0.50	0.50	4794545
1,4-Dichlorobenzene	ug/L	<1.0	<1.0	1.0	4794277
Benzene	ug/L	<1.0	<1.0	1.0	4794277
Bromodichloromethane	ug/L	<1.0	<1.0	1.0	4794277
Bromoform	ug/L	<1.0	<1.0	1.0	4794277
Bromomethane	ug/L	<0.50	<0.50	0.50	4794277
Carbon Tetrachloride	ug/L	<0.50	<0.50	0.50	4794277
Chlorobenzene	ug/L	<1.0	<1.0	1.0	4794277
Chloroethane	ug/L	<8.0	<8.0	8.0	4794277
Chloroform	ug/L	<1.0	<1.0	1.0	4794277
Chloromethane	ug/L	<8.0	<8.0	8.0	4794277
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	0.50	4794277
Dibromochloromethane	ug/L	<1.0	<1.0	1.0	4794277
Ethylbenzene	ug/L	<1.0	<1.0	1.0	4794277
Ethylene Dibromide	ug/L	<0.20	<0.20	0.20	4794277
Methyl t-butyl ether (MTBE)	ug/L	<2.0	<2.0	2.0	4794277
Methylene Chloride(Dichloromethane)	ug/L	<3.0	<3.0	3.0	4794277
Styrene	ug/L	<1.0	<1.0	1.0	4794277
Tetrachloroethylene	ug/L	<1.0	<1.0	1.0	4794277
Toluene	ug/L	<1.0	<1.0	1.0	4794277
Total Xylenes	ug/L	<1.0	<1.0	1.0	4794277
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	0.50	4794277
Trichloroethylene	ug/L	<1.0	<1.0	1.0	4794277
Vinyl Chloride	ug/L	<0.50	<0.50	0.50	4794277
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					



ATLANTIC VOC IN WATER (WATER)

Maxxam ID		DQD845	DQD850		
Sampling Date		2016/12/15 13:30	2016/12/15 12:55		
COC Number		588912-01-01	588912-01-01		
	UNITS	MW4	MW16-03	RDL	QC Batch
Instrument Surrogate Recovery (%)					
4-Bromofluorobenzene	%	98 (1)	97		4794277
D4-1,2-Dichloroethane	%	104	106		4794277
D8-Toluene	%	100	100		4794277
RDL = Reportable Detection Limit QC Batch = Quality Control Batch (1) VOC sample contained sediment.					



Maxyam ID	1							
		2016/12/15						
Sampling Date		13:30	13:30	12:55				
COC Number		588912-01-01	588912-01-01	588912-01-01				
	UNITS	MW4	MW4 Lab-Dup	MW16-03	RDL	QC Batch		
Metals								
Dissolved Aluminum (Al)	ug/L	71	70	84	5.0	4795881		
Dissolved Antimony (Sb)	ug/L	<1.0	<1.0	<1.0	1.0	4795881		
Dissolved Arsenic (As)	ug/L	<1.0	<1.0	5.8	1.0	4795881		
Dissolved Barium (Ba)	ug/L	9.5	9.6	73	1.0	4795881		
Dissolved Beryllium (Be)	ug/L	<1.0	<1.0	<1.0	1.0	4795881		
Dissolved Bismuth (Bi)	ug/L	<2.0	<2.0	<2.0	2.0	4795881		
Dissolved Boron (B)	ug/L	<50	<50	<50	50	4795881		
Dissolved Cadmium (Cd)	ug/L	0.18	0.19	0.067	0.010	4795881		
Dissolved Calcium (Ca)	ug/L	12000	12000	13000	100	4795881		
Dissolved Chromium (Cr)	ug/L	<1.0	<1.0	1.8	1.0	4795881		
Dissolved Cobalt (Co)	ug/L	<0.40	<0.40	9.1	0.40	4795881		
Dissolved Copper (Cu)	ug/L	<2.0	<2.0	<2.0	2.0	4795881		
Dissolved Iron (Fe)	ug/L	290	290	10000	50	4795881		
Dissolved Lead (Pb)	ug/L	<0.50	<0.50	<0.50	0.50	4795881		
Dissolved Magnesium (Mg)	ug/L	510	510	3300	100	4795881		
Dissolved Manganese (Mn)	ug/L	21	21	3200	2.0	4795881		
Dissolved Molybdenum (Mo)	ug/L	<2.0	<2.0	<2.0	2.0	4795881		
Dissolved Nickel (Ni)	ug/L	<2.0	<2.0	3.7	2.0	4795881		
Dissolved Phosphorus (P)	ug/L	<100	<100	<100	100	4795881		
Dissolved Potassium (K)	ug/L	1200	1200	3600	100	4795881		
Dissolved Selenium (Se)	ug/L	<1.0	<1.0	<1.0	1.0	4795881		
Dissolved Silver (Ag)	ug/L	<0.10	<0.10	<0.10	0.10	4795881		
Dissolved Sodium (Na)	ug/L	2000	2000	6600	100	4795881		
Dissolved Strontium (Sr)	ug/L	21	21	55	2.0	4795881		
Dissolved Thallium (Tl)	ug/L	<0.10	<0.10	<0.10	0.10	4795881		
Dissolved Tin (Sn)	ug/L	<2.0	<2.0	<2.0	2.0	4795881		
Dissolved Titanium (Ti)	ug/L	<2.0	<2.0	<2.0	2.0	4795881		
Dissolved Uranium (U)	ug/L	<0.10	<0.10	0.22	0.10	4795881		
Dissolved Vanadium (V)	ug/L	<2.0	<2.0	<2.0	2.0	4795881		
Dissolved Zinc (Zn)	ug/L	66	64	8.1	5.0	4795881		
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate								

ELEMENTS BY ICP/MS (WATER)



Report Date: 2016/12/16

AECOM Canada Ltd. Task Order#: N/A-CTC SITE Site#: CTC Site Location: 64 MILL LAKE ROAD NO 2, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID:	DQD842	Collected:	2016/12/15
Sample ID:	MW1	Relinquished:	2016/12/15
Matrix:	Water	Received:	2016/12/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	4794548	2016/12/15	2016/12/16	Katherine Bekkers
VPH in Water (PIRI)	PTGC/MS	4794011	N/A	2016/12/16	Amanda Swales
ModTPH (T1) Calc. for Water	CALC	4793907	N/A	2016/12/16	Automated Statchk

Maxxam ID:	DQD843
Sample ID:	MW2
Matrix:	Water

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	4794548	2016/12/15	2016/12/16	Katherine Bekkers
VPH in Water (PIRI)	PTGC/MS	4794011	N/A	2016/12/16	Amanda Swales
ModTPH (T1) Calc. for Water	CALC	4793907	N/A	2016/12/16	Automated Statchk

Maxxam ID:	DQD844	Collected:	2016/12/15
Sample ID:	MW3	Relinguished:	2016/12/15
Matrix:	Water	Received:	2016/12/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	4794548	2016/12/15	2016/12/16	Katherine Bekkers
VPH in Water (PIRI)	PTGC/MS	4794011	N/A	2016/12/16	Amanda Swales
ModTPH (T1) Calc. for Water	CALC	4793907	N/A	2016/12/16	Automated Statchk

Maxxam ID:	DQD845
Sample ID:	MW4
Matrix:	Water

Collected:	2016/12/15
Relinquished:	2016/12/15
Received:	2016/12/15

 Collected:
 2016/12/15

 Relinquished:
 2016/12/15

 Received:
 2016/12/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum (water)	CALC	4794545	N/A	2016/12/16	Automated Statchk
TEH in Water (PIRI)	GC/FID	4794548	2016/12/15	2016/12/16	Katherine Bekkers
Metals Water Diss. MS (as rec'd)	CICP/MS	4795881	N/A	2016/12/16	Bryon Angevine
VPH in Water (PIRI)	PTGC/MS	4794011	N/A	2016/12/16	Amanda Swales
ModTPH (T1) Calc. for Water	CALC	4793907	N/A	2016/12/16	Automated Statchk
Volatile Organic Compounds in Water	HS/MS	4794277	N/A	2016/12/15	Shawn Helmkay

Maxxam ID: Sample ID: Matrix:	DQD845 Dup MW4 Water				C Relir I	Collected: nquished: Received:	2016/12/15 2016/12/15 2016/12/15
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
Metals Water Diss. MS (a	s rec'd)	CICP/MS	4795881	N/A	2016/12/16	Bryon Ang	evine



Report Date: 2016/12/16

AECOM Canada Ltd. Task Order#: N/A-CTC SITE Site#: CTC Site Location: 64 MILL LAKE ROAD NO 2, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	DQD846 MW5 Water				R	Collected: elinquished: Received:	2016/12/15 2016/12/15 2016/12/15	
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst		

	motianentation	Baten	Extracted	Bate / maryzeu	, and you
TEH in Water (PIRI)	GC/FID	4794548	2016/12/15	2016/12/16	Katherine Bekkers
VPH in Water (PIRI)	PTGC/MS	4794011	N/A	2016/12/16	Amanda Swales
ModTPH (T1) Calc. for Water	CALC	4793907	N/A	2016/12/16	Automated Statchk

Maxxam ID:	DQD847
Sample ID:	MW6
Matrix:	Water

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	4794548	2016/12/15	2016/12/16	Katherine Bekkers
VPH in Water (PIRI)	PTGC/MS	4794011	N/A	2016/12/16	Amanda Swales
ModTPH (T1) Calc. for Water	CALC	4793907	N/A	2016/12/16	Automated Statchk

Maxxam ID:	DQD848	Collected:	2016/12/15
Sample ID:	MW16-01	Relinquished:	2016/12/15
Matrix:	Water	Received:	2016/12/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	4794548	2016/12/15	2016/12/16	Katherine Bekkers
VPH in Water (PIRI)	PTGC/MS	4794011	N/A	2016/12/16	Amanda Swales
ModTPH (T1) Calc. for Water	CALC	4793907	N/A	2016/12/16	Automated Statchk

Maxxam ID:	DQD849
Sample ID:	MW16-02
Matrix:	Water

Collected:	2016/12/15
Relinquished:	2016/12/15
Received:	2016/12/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	4794548	2016/12/15	2016/12/16	Katherine Bekkers
VPH in Water (PIRI)	PTGC/MS	4794011	N/A	2016/12/16	Amanda Swales
ModTPH (T1) Calc. for Water	CALC	4793907	N/A	2016/12/16	Automated Statchk

Maxxam ID: DQD850 Sample ID: MW16-03 Matrix: Water

Collected: 2016/12/15 Relinquished: 2016/12/15 Received: 2016/12/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum (water)	CALC	4794545	N/A	2016/12/16	Automated Statchk
TEH in Water (PIRI)	GC/FID	4794548	2016/12/15	2016/12/16	Katherine Bekkers
Metals Water Diss. MS (as rec'd)	CICP/MS	4795881	N/A	2016/12/16	Bryon Angevine
VPH in Water (PIRI)	PTGC/MS	4794011	N/A	2016/12/16	Amanda Swales
ModTPH (T1) Calc. for Water	CALC	4793907	N/A	2016/12/16	Automated Statchk
Volatile Organic Compounds in Water	HS/MS	4794277	N/A	2016/12/15	Shawn Helmkay

Collected: 2016/12/15 Relinquished: 2016/12/15 Received: 2016/12/15

Received: 2016/12/15



Report Date: 2016/12/16

AECOM Canada Ltd. Task Order#: N/A-CTC SITE Site#: CTC Site Location: 64 MILL LAKE ROAD NO 2, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	DQD850 Dup MW16-03 Water				Rel	Collected: linquished: Received:	2016/12/15 2016/12/15 2016/12/15
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	4794548	2016/12/15	2016/12/16	Katherine	Bekkers
Maxxam ID: Sample ID: Matrix:	DQD851 DUP 1 Water				Rel	Collected: linquished: Received:	2016/12/15 2016/12/15 2016/12/15
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	4794548	2016/12/15	2016/12/16	Katherine	Bekkers
VPH in Water (PIRI)		PTGC/MS	4794011	N/A	2016/12/16	Amanda Sv	wales
ModTPH (T1) Calc. for Wa	ater	CALC	4793907	N/A	2016/12/16	Automate	d Statchk



GENERAL COMMENTS

Each te	Each temperature is the average of up to three cooler temperatures taken at receipt								
	Package 1	3.3°C]						
Silica g	Silica gel clean-up performed on water extracts.								
Results relate only to the items tested.									

Maxxam Analytics International Corporation o/a Maxxam Analytics 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.maxxamanalytics.com



QUALITY ASSURANCE REPORT

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
4794011	ASL	Method Blank	1,4-Difluorobenzene	2016/12/16		103	%	70 - 130
			4-Bromofluorobenzene	2016/12/16		96	%	70 - 130
			D4-1,2-Dichloroethane	2016/12/16		102	%	70 - 130
			Isobutylbenzene - Volatile	2016/12/16		108	%	70 - 130
			Benzene	2016/12/16	<0.0010		mg/L	
			Toluene	2016/12/16	<0.0010		mg/L	
			Ethylbenzene	2016/12/16	<0.0010		mg/L	
			Total Xylenes	2016/12/16	<0.0020		mg/L	
			C6 - C10 (less BTEX)	2016/12/16	<0.010		mg/L	
4794277	SHL	Method Blank	4-Bromofluorobenzene	2016/12/15		99	%	70 - 130
			D4-1,2-Dichloroethane	2016/12/15		100	%	70 - 130
			D8-Toluene	2016/12/15		102	%	70 - 130
			1,1,1-Trichloroethane	2016/12/15	<1.0		ug/L	
			1,1,2,2-Tetrachloroethane	2016/12/15	<0.50		ug/L	
			1,1,2-Trichloroethane	2016/12/15	<1.0		ug/L	
			1.1-Dichloroethane	2016/12/15	<2.0		ug/L	
			1.1-Dichloroethylene	2016/12/15	<0.50		ug/L	
			1.2-Dichlorobenzene	2016/12/15	< 0.50		ug/L	
			1.2-Dichloroethane	2016/12/15	<1.0		ug/L	
			1.2-Dichloropropane	2016/12/15	< 0.50		ug/L	
			1.3-Dichlorobenzene	2016/12/15	<1.0		ug/L	
			1.4-Dichlorobenzene	2016/12/15	<1.0		ug/L	
			Benzene	2016/12/15	<1.0		ug/l	
			Bromodichloromethane	2016/12/15	<1.0		ug/I	
			Bromoform	2016/12/15	<1.0			
			Bromomethane	2016/12/15	<0.50		ug/l	
			Carbon Tetrachloride	2016/12/15	<0.50		ug/l	
			Chlorobenzene	2016/12/15	<10		ug/L	
			Chloroethane	2016/12/15	< 8.0		ug/⊑ ug/l	
			Chloroform	2016/12/15	<1.0		ug/⊑ ug/l	
			Chloromethane	2010/12/15	< 8.0		ug/L	
			cis-1 2-Dichloroethylene	2010/12/15	<0.0		ug/L	
			Dibromochloromethane	2010/12/15	<0.50		ug/L	
			Ethylbenzene	2010/12/15	<1.0		ug/∟ ug/l	
			Ethylene Dibromide	2010/12/15	<0.20		ug/∟ ug/l	
			Mothyl t butyl other (MTRE)	2010/12/15	<0.20		ug/∟ ug/l	
			Methylene Chloride (Dichleremethane)	2010/12/15	<2.0		ug/L	
			Sturopo	2010/12/13	<3.0		ug/L	
			Tetrachloroothylopo	2010/12/15	<1.0		ug/L	
			Teluene	2010/12/15	<1.0		ug/L	
			Total Videnas	2010/12/15	<1.0		ug/L	
			Total Xylenes	2016/12/15	<1.0		ug/L	
			trans-1,2-Dichloroethylene	2016/12/15	<0.50		ug/L	
				2016/12/15	<1.0		ug/L	
4704540	KDK	Matha al Diavila	vinyi Chioride	2016/12/15	<0.50	407	ug/L	20 420
4794548	КВК	Method Blank	n-Dotriacontane - Extractable	2016/12/16		107	%	30 - 130
			ISODUTYIDENZENE - EXTRACTABLE	2016/12/16	-0.050	89	%	30 - 130
				2016/12/16	<0.050		mg/L	
			>C16-C21 Hydrocarbons	2016/12/16	<0.050		mg/L	
4705004	D • • •		>L21- <l32 hydrocarbons<="" td=""><td>2016/12/16</td><td><0.10</td><td></td><td>mg/L</td><td></td></l32>	2016/12/16	<0.10		mg/L	
4795881	BAN	wethod Blank	Dissolved Aluminum (Al)	2016/12/16	<5.0		ug/L	
<u> </u>			Dissolved Antimony (Sb)	2016/12/16	<1.0		ug/L	

Maxxam Analytics International Corporation o/a Maxxam Analytics 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.maxxamanalytics.com



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC				Date			
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery UNITS	QC Limits
			Dissolved Arsenic (As)	2016/12/16	<1.0	ug/L	
			Dissolved Barium (Ba)	2016/12/16	<1.0	ug/L	
			Dissolved Beryllium (Be)	2016/12/16	<1.0	ug/L	
			Dissolved Bismuth (Bi)	2016/12/16	<2.0	ug/L	
			Dissolved Boron (B)	2016/12/16	<50	ug/L	
			Dissolved Cadmium (Cd)	2016/12/16	<0.010	ug/L	
			Dissolved Calcium (Ca)	2016/12/16	<100	ug/L	
			Dissolved Chromium (Cr)	2016/12/16	<1.0	ug/L	
			Dissolved Cobalt (Co)	2016/12/16	< 0.40	ug/l	
			Dissolved Copper (Cu)	2016/12/16	<2.0	ug/l	
			Dissolved Iron (Fe)	2016/12/16	<50	ug/l	
			Dissolved Lead (Pb)	2016/12/16	<0.50	ug/l	
			Dissolved Magnesium (Mg)	2016/12/16	<100	ug/L	
			Dissolved Magnesian (Mg)	2016/12/16	<20	ug/L	
			Dissolved Maliganese (Mil)	2010/12/10	<2.0	ug/L	
			Dissolved Nickol (Ni)	2010/12/10	<2.0	ug/L	
			Dissolved Nickel (N)	2010/12/10	<2.0	ug/L	
			Dissolved Phospholas (P)	2010/12/10	<100	ug/L	
			Dissolved Folgssium (K)	2010/12/10	<100	ug/L	
			Dissolved Selenium (Se)	2010/12/10	<1.0	ug/L	
			Dissolved Silver (Ag)	2016/12/16	<0.10	ug/L	
			Dissolved Sodium (Na)	2016/12/16	<100	ug/L	
			Dissolved Strontium (Sr)	2016/12/16	<2.0	ug/L	
			Dissolved Inallium (11)	2016/12/16	<0.10	ug/L	
			Dissolved Lin (Sn)	2016/12/16	<2.0	ug/L	
			Dissolved Litanium (Li)	2016/12/16	<2.0	ug/L	
			Dissolved Uranium (U)	2016/12/16	<0.10	ug/L	
			Dissolved Vanadium (V)	2016/12/16	<2.0	ug/L	
			Dissolved Zinc (Zn)	2016/12/16	<5.0	ug/L	
4795881	BAN	RPD [DQD845-04]	Dissolved Aluminum (Al)	2016/12/16	1.4	%	20
			Dissolved Antimony (Sb)	2016/12/16	NC	%	20
			Dissolved Arsenic (As)	2016/12/16	NC	%	20
			Dissolved Barium (Ba)	2016/12/16	0.53	%	20
			Dissolved Beryllium (Be)	2016/12/16	NC	%	20
			Dissolved Bismuth (Bi)	2016/12/16	NC	%	20
			Dissolved Boron (B)	2016/12/16	NC	%	20
			Dissolved Cadmium (Cd)	2016/12/16	5.8	%	20
			Dissolved Calcium (Ca)	2016/12/16	0.26	%	20
			Dissolved Chromium (Cr)	2016/12/16	NC	%	20
			Dissolved Cobalt (Co)	2016/12/16	NC	%	20
			Dissolved Copper (Cu)	2016/12/16	NC	%	20
			Dissolved Iron (Fe)	2016/12/16	0.053	%	20
			Dissolved Lead (Pb)	2016/12/16	NC	%	20
			Dissolved Magnesium (Mg)	2016/12/16	0.41	%	20
			Dissolved Manganese (Mn)	2016/12/16	0.43	%	20
			Dissolved Molybdenum (Mo)	2016/12/16	NC	%	20
			Dissolved Nickel (Ni)	2016/12/16	NC	%	20
			Dissolved Phosphorus (P)	2016/12/16	NC	%	20
			Dissolved Potassium (K)	2016/12/16	1.6	%	20
			Dissolved Selenium (Se)	2016/12/16	NC	%	20
			Dissolved Silver (Ag)	2016/12/16	NC	%	20
			Dissolved Sodium (Na)	2016/12/16	0.11	%	20



QUALITY ASSURANCE REPORT(CONT'D)

Batch Init QC Type Parameter Analyzed Value Recovery UNITS QC Limits Dissolved Strontium (Ir) 2016/12/16 1.0 % 20 Dissolved TinSin() 2016/12/16 N.C % 20 Dissolved Tranium (II) 2016/12/16 N.C % 20 Dissolved Vanadium (V) 2016/12/16 N.C % 20 4794548 KBK RPD [DQDB50-01] >C10-C16 Hydrocarbons 2016/12/16 N.C % 40 >C16-C21 Hydrocarbons 2016/12/16 N.C % 40 724548 KBK Matrix Spike 0-Dotriacontane - Extractable 2016/12/16 N.C % 40 100407106 N.C % 40 -2016/12/16 N.C % 40 4794548 KBK Matrix Spike 0016/12/16 N.C % 40 -2016/12/16 N.C % 40 -2016/12/16 N.C % 40 -2016/12/16 100 %	QA/QC				Date				
Dissolved Strontlum (Sr) 2016/12/16 1.0 % 20 Dissolved Thallium (Ti) 2016/12/15 N.C % 20 Dissolved Thallium (Ti) 2016/12/16 N.C % 20 Dissolved Titanium (U) 2016/12/16 N.C % 20 Dissolved Vanadium (V) 2016/12/16 N.C % 20 Dissolved Zin: (Zin) 2016/12/16 N.C % 20 A794548 KBK RPD [DQD050-01] > C16 C21 Hydrocarbons 2016/12/16 N.C % 40 4794548 KBK Matrix Spike [DQD851-01] n-Dotriacortane - Extractable 2016/12/16 N.C % 40 ><21.5-C21 Hydrocarbons 2016/12/16 N.C % 70-130 s21.5-C16 Hydrocarbons 2016/12/16 N.C % 80-120 Dissolved Anninum (A) 2016/12/16 10.4 % 80-120 Dissolved Anninum (R) 2016/12/16 10.4 % 80-120 Dissolved Anninum (R) 2016/12/16	Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
Pissolved Thin (Ti) 2016/12/16 NC % 20 Dissolved Tinnium (Ti) 2016/12/16 NC % 20 Dissolved Vanandium (U) 2016/12/16 NC % 20 14794548 KBK RPD [DQD850-01] >C10-C16 hydrocarbons 2016/12/16 NC % 40 >C12-C21 Hydrocarbons 2016/12/16 NC % 40 >C12-C21 Hydrocarbons 2016/12/16 NC % 40 >C12-C21 Hydrocarbons 2016/12/16 NC % 40 >C12-C21 Hydrocarbons 2016/12/16 NC % 40 >C12-C21 Hydrocarbons 2016/12/16 NC % 70-130 >C16-C21 Hydrocarbons 2016/12/16 NC % 80-130 >C12-C21 Hydrocarbons 2016/12/16 NC % 80-120 >C12-C21 Hydrocarbons 2016/12/16 104 % 80-120 >C12-C21 Hydrocarbons 2016/12/16 104 % 80-120 Dissolved Antimony (Sb)				Dissolved Strontium (Sr)	2016/12/16	1.0		%	20
Pissohed Tin (Sn) 2016/12/16 NC % 20 Dissohed Tinnium (TI) 2016/12/16 NC % 20 Dissohed Zinc (Zn) 2016/12/16 NC % 20 Dissohed Zinc (Zn) 2016/12/16 NC % 20 A794548 KBK RPD [DQD850-01] >C10-C16 Hydrocarbons 2016/12/16 NC % 40 4794548 KBK Matrix Spike n-Dotriacontane - Extractable 2016/12/16 NC % 40 4794548 KBK Matrix Spike n-Dotriacontane - Extractable 2016/12/16 NC % 70-130 Sobury/Benzene - Extractable 2016/12/16 NC % 70-130 >C21-C21 Hydrocarbons 2016/12/16 88 % 70-130 >C21-C21 Hydrocarbons 2016/12/16 81 % 70-130 >C21-C21 Hydrocarbons 2016/12/16 84 80-120 Dissohed Arsenic (As) 2016/12/16 84 80-120 Dissohed Arsenic (As) 2016/12/16 <td></td> <td></td> <td></td> <td>Dissolved Thallium (Tl)</td> <td>2016/12/16</td> <td>NC</td> <td></td> <td>%</td> <td>20</td>				Dissolved Thallium (Tl)	2016/12/16	NC		%	20
Pissolved Trainium (Ti) 2016/12/16 NC % 20 Dissolved Vanandium (U) 2016/12/16 NC % 20 4794548 KBK RPD [DQD850-01] >C10-C16 Hydrocarbons 2016/12/16 NC % 40 4794548 KBK Matrix Spike n-Dotriacorbans 2016/12/16 NC % 40 4794548 KBK Matrix Spike n-Dotriacorbans 2016/12/16 NC % 40 4794548 KBK Matrix Spike n-Dotriacorbans 2016/12/16 NC % 40 4795581 BAN Matrix Spike Dissolved Atriminum (A) 2016/12/16 NC % 70-130 2C1-C21 Hydrocarbons 2016/12/16 NC % 70-130 >C21-C21 Hydrocarbons 2016/12/16 NC % 80-120 100004 Solved Atriminum (S1) 2016/12/16 104 % 80-120 101004 Dissolved Atriminum (S1) 2016/12/16 104 % 80-120 1010				Dissolved Tin (Sn)	2016/12/16	NC		%	20
Pissolved Uranium (U) 2016/12/16 NC % 20 4794548 KBK RPD [DQD850-01] >C10-C16 Hydrocarbons 2016/12/16 NC % 40 4794548 KBK RPD [DQD850-01] >C10-C16 Hydrocarbons 2016/12/16 NC % 40 4794548 KBK Matrix Spike Dotrizontane - Extractable 2016/12/16 NC % 40 4794548 KBK Matrix Spike Dotrizontane - Extractable 2016/12/16 NC % 40 10QD851-01] Isobutylbenzene - Extractable 2016/12/16 NC % 70-130 210C161 Hydrocarbons 2016/12/16 81 % 70-130 2102083-04] Dissolved Aluminum (A) 2016/12/16 88 % 80-120 Dissolved Aluminum (A) 2016/12/16 98 % 80-120 Dissolved Antimony (Sb) 2016/12/16 98 % 80-120 Dissolved Barium (Ba) 2016/12/16 98 % 80-120 <t< td=""><td></td><td></td><td></td><td>Dissolved Titanium (Ti)</td><td>2016/12/16</td><td>NC</td><td></td><td>%</td><td>20</td></t<>				Dissolved Titanium (Ti)	2016/12/16	NC		%	20
4794548 KBK RPD [DQD850-01] Dissolved Zirc (2n) 2016/12/16 NC % 20 4794548 KBK RPD [DQD850-01] >C10-C16 Hydrocarbons 2016/12/16 NC % 40 4794548 KBK Matrix Spike [DQD851-01] n-Dotriacorbane 2016/12/16 NC % 40 4794548 KBK Matrix Spike [DQD851-01] n-Dotriacorbane 2016/12/16 NC % 40 4794548 KBK Matrix Spike [DQD851-01] n-Dotriacorbans 2016/12/16 NC % 30 - 130 x-21x-C32 Hydrocarbons 2016/12/16 NC % 70 - 130 x-21x-C32 Hydrocarbons 2016/12/16 88 % 70 - 130 x-21x-C32 Hydrocarbons 2016/12/16 88 % 70 - 130 x-21x-C32 Hydrocarbons 2016/12/16 80 80 - 120 Dissolved Antimory (Sb) 2016/12/16 98 % 80 - 120 Dissolved Arsenic (As) 2016/12/16 98 % 80 - 120				Dissolved Uranium (U)	2016/12/16	NC		%	20
4794548 KBK RPD [DQD850-01] >C10-C16 Hydrocarbons 2016/12/16 NC % 40 4794548 KBK RPD [DQD850-01] >C10-C16 Hydrocarbons 2016/12/16 NC % 40 4794548 KBK Matrix Spike n-Dotriacontane - Extractable 2016/12/16 NC % 40 4794548 KBK Matrix Spike n-Dotriacontane - Extractable 2016/12/16 NC % 40 10QD851-01] isobutylbercene - Extractable 2016/12/16 NC % 70 - 130 >C10-C16 Hydrocarbons 2016/12/16 NC % 70 - 130 >C10-C21-C32 Hydrocarbons 2016/12/16 88 % 70 - 130 21C4-C32 Hydrocarbons 2016/12/16 88 % 70 - 130 21C4-C32 Hydrocarbons 2016/12/16 88 % 70 - 130 21C4-C32 Hydrocarbons 2016/12/16 80 % 70 - 130 21C4-C32 Hydrocarbons 2016/12/16 80 % 70 - 130 21C4-C32 Hydrocarbo				Dissolved Vanadium (V)	2016/12/16	NC		%	20
4794548 KBK RPD [DQD850-01] >C10-C16 Hydrocarbons 2016/12/16 NC % 40 4794548 KBK Matrix Spile n-Obtriacontane - Extractable 2016/12/16 NC % 40 4794548 KBK Matrix Spile n-Obtriacontane - Extractable 2016/12/16 NC % 30 - 130 1000051-01] isobutylbenzene - Extractable 2016/12/16 103 % 30 - 130 2010-121 Hydrocarbons 2016/12/16 103 % 10 - 130 2021-C52 Hydrocarbons 2016/12/16 81 % 70 - 130 2021-C52 Hydrocarbons 2016/12/16 98 % 80 - 120 Dissolved Atuminum (Al) 2016/12/16 98 % 80 - 120 Dissolved Atuminum (Ba) 2016/12/16 98 % 80 - 120 Dissolved Beryllium (Be) 2016/12/16 98 % 80 - 120 Dissolved Caromium (Cr) 2016/12/16 98 % 80 - 120 Dissolved Caromium (Cr) 2016/12/16 98				Dissolved Zinc (Zn)	2016/12/16	2.2		%	20
PC16+C21 Hydrocarbons 2016/12/16 NC % 40 4794548 KBK Matrix Spike (DQD851-01) n-Dotriacontane - Extractable 2016/12/16 NC % 40 4794548 KBK Matrix Spike (DQD851-01) isobutylbenzene - Extractable 2016/12/16 NC % 30 - 130 2016/12/16 NC % 70 - 130 >C1 - C32 Hydrocarbons 2016/12/16 NC % 80 - 130 2015/12/16 NM NC % 80 - 120 % 80 - 120 4795881 BAN Matrix Spike (DQD845-04) Dissolved Aluminum (A) 2016/12/16 104 % 80 - 120 Dissolved Artimony (Sb) 2016/12/16 96 % 80 - 120 Dissolved Barium (Ba) 2016/12/16 96 % 80 - 120 Dissolved Beryllium (Be) 2016/12/16 96 % 80 - 120 Dissolved Chromium (Cr) 2016/12/16 96 % 80 - 120 Dissolved Chromium (Cr) 2016/12/16 96 % 80 - 120	4794548	КВК	RPD [DQD850-01]	>C10-C16 Hydrocarbons	2016/12/16	NC		%	40
479548 KBK Matrix Spike [DQD851-01] Notriacontane - Extractable 2016/12/16 120 % 30 - 130 479548 KBK Matrix Spike [DQD851-01] Isobutylbenzene - Extractable 2016/12/16 103 % 30 - 130 2010-121/16 NC % 70 - 130 >C10 - C18 Hydrocarbons 2016/12/16 88 % 70 - 130 >C12 - C23 Hydrocarbons 2016/12/16 81 % 70 - 130 >C12 - C23 Hydrocarbons 2016/12/16 81 % 80 - 120 Dissolved Auminum (AI) 2016/12/16 104 % 80 - 120 Dissolved Arminory (Sb) 2016/12/16 98 % 80 - 120 Dissolved Barium (Ba) 2016/12/16 98 % 80 - 120 Dissolved Barium (Ba) 2016/12/16 98 % 80 - 120 Dissolved Cabrium (Ca) 2016/12/16 98 % 80 - 120 Dissolved Cabrium (Cd) 2016/12/16 98 % 80 - 120 Dissolved Cabrati (Co) 2016/12/16 <t< td=""><td></td><td></td><td>-</td><td>>C16-C21 Hydrocarbons</td><td>2016/12/16</td><td>NC</td><td></td><td>%</td><td>40</td></t<>			-	>C16-C21 Hydrocarbons	2016/12/16	NC		%	40
4794548 KBK Matrix Spike [DQD851-01] n-Dotriacontane - Extractable 2016/12/16 120 % 30 - 130 ><10-0-C16 Hydrocarbons				>C21- <c32 hydrocarbons<="" td=""><td>2016/12/16</td><td>NC</td><td></td><td>%</td><td>40</td></c32>	2016/12/16	NC		%	40
Isobutybenzene - Extractable 2016/12/16 103 % 30 - 130 >C10-C16 Hydrocarbons 2016/12/16 NC % 70 - 130 >C12-C21 Hydrocarbons 2016/12/16 88 % 70 - 130 >C12-C22 Hydrocarbons 2016/12/16 81 % 70 - 130 A795881 BAN Matrix Spike Dissolved Antimony (Sb) 2016/12/16 98 % 80 - 120 Dissolved Antimony (Sb) 2016/12/16 98 % 80 - 120 Dissolved Arsenic (As) 2016/12/16 98 % 80 - 120 Dissolved Barium (Ba) 2016/12/16 96 % 80 - 120 Dissolved Boron (B) 2016/12/16 98 % 80 - 120 Dissolved Cardinium (Cd) 2016/12/16 98 % 80 - 120 Dissolved Cardinium (Cf) 2016/12/16 98 % 80 - 120 Dissolved Copper (Cu) 2016/12/16 98 % 80 - 120 Dissolved Cardinium (Cf) 2016/12/16 98 % 80 - 120<	4794548	КВК	Matrix Spike [DQD851-01]	n-Dotriacontane - Extractable	2016/12/16		120	%	30 - 130
><10-C16 Hydrocarbons				Isobutylbenzene - Extractable	2016/12/16		103	%	30 - 130
>C16-C21 Hydrocarbons 2016/12/16 88 % 70 - 130 4795881 BAN Matrix Spike [DQD845-04] Dissolved Aluminum (A) 2016/12/16 100 % 80 - 120 5000000000000000000000000000000000000				>C10-C16 Hydrocarbons	2016/12/16		NC	%	70 - 130
*C21-C32 Hydrocarbons 2016/12/16 81 % 70 - 130 4795881 BAN Matrix Spike [DQD845-04] Dissolved Aluminum (Al) 2016/12/16 100 % 80 - 120 Dissolved Antimony (Sb) 2016/12/16 98 % 80 - 120 Dissolved Arsenic (As) 2016/12/16 95 % 80 - 120 Dissolved Barylini (Ba) 2016/12/16 96 % 80 - 120 Dissolved Barylini (Ba) 2016/12/16 96 % 80 - 120 Dissolved Barylini (Ba) 2016/12/16 96 % 80 - 120 Dissolved Boron (B) 2016/12/16 98 % 80 - 120 Dissolved Cadmium (Cd) 2016/12/16 98 % 80 - 120 Dissolved Cadmium (Cr) 2016/12/16 98 % 80 - 120 Dissolved Cadmium (Cr) 2016/12/16 98 % 80 - 120 Dissolved Cadmium (Cr) 2016/12/16 98 % 80 - 120 Dissolved Magnesume (Mg) 2016/12/16 98 %				>C16-C21 Hydrocarbons	2016/12/16		88	%	70 - 130
4795881 BAN Matrix Spike [DQD845-04] Dissolved Aluminum (Al) 2016/12/16 100 % 80 - 120 bissolved Antimony (Sb) 2016/12/16 104 % 80 - 120 Dissolved Arsenic (As) 2016/12/16 98 % 80 - 120 Dissolved Barium (Ba) 2016/12/16 96 % 80 - 120 Dissolved Bismuth (Bi) 2016/12/16 96 % 80 - 120 Dissolved Bismuth (Bi) 2016/12/16 104 % 80 - 120 Dissolved Bismuth (Cd) 2016/12/16 104 % 80 - 120 Dissolved Boron (B) 2016/12/16 98 % 80 - 120 Dissolved Chromium (Cd) 2016/12/16 98 % 80 - 120 Dissolved Chromium (Cr) 2016/12/16 96 % 80 - 120 Dissolved Chromium (Mg) 2016/12/16 96 % 80 - 120 Dissolved Marganese (Mn) 2016/12/16 97 % 80 - 120 Dissolved Marganese (Mn) 2016/12/16 97 %				- >C21- <c32 hydrocarbons<="" td=""><td>2016/12/16</td><td></td><td>81</td><td>%</td><td>70 - 130</td></c32>	2016/12/16		81	%	70 - 130
Dissolved Antimony (Sb) 2016/12/16 104 % 80 - 120 Dissolved Arsenic (As) 2016/12/16 98 % 80 - 120 Dissolved Barium (Ba) 2016/12/16 95 % 80 - 120 Dissolved Beryllium (Be) 2016/12/16 96 % 80 - 120 Dissolved Boron (B) 2016/12/16 104 % 80 - 120 Dissolved Cadmium (Cd) 2016/12/16 98 % 80 - 120 Dissolved Cadmium (Cd) 2016/12/16 98 % 80 - 120 Dissolved Chromium (Cr) 2016/12/16 98 % 80 - 120 Dissolved Chromium (Cr) 2016/12/16 96 % 80 - 120 Dissolved Cobalt (Co) 2016/12/16 96 % 80 - 120 Dissolved Iron (Fe) 2016/12/16 98 % 80 - 120 Dissolved Magnesium (Mg) 2016/12/16 98 % 80 - 120 Dissolved Magnese (Mn) 2016/12/16 97 % 80 - 120 Dissolved Molyddenum (Mo) 201	4795881	BAN	Matrix Spike [DQD845-04]	Dissolved Aluminum (Al)	2016/12/16		100	%	80 - 120
Dissolved Arsenic (As) 2016/12/16 98 % 80-120 Dissolved Baryllium (Ba) 2016/12/16 95 % 80-120 Dissolved Beryllium (Be) 2016/12/16 96 % 80-120 Dissolved Beryllium (Bi) 2016/12/16 96 % 80-120 Dissolved Boron (B) 2016/12/16 98 % 80-120 Dissolved Calcium (Cd) 2016/12/16 98 % 80-120 Dissolved Calcium (Ca) 2016/12/16 98 % 80-120 Dissolved Calcium (Ca) 2016/12/16 96 % 80-120 Dissolved Chromium (Cr) 2016/12/16 96 % 80-120 Dissolved Copper (Cu) 2016/12/16 96 % 80-120 Dissolved Magnesium (Mg) 2016/12/16 98 % 80-120 Dissolved Magnesium (Mg) 2016/12/16 98 % 80-120 Dissolved Molybdenum (Mo) 2016/12/16 98 % 80-120 Dissolved Molybdenum (Mo) 2016/12/16				Dissolved Antimony (Sb)	2016/12/16		104	%	80 - 120
Dissolved Barium (Ba) 2016/12/16 95 % 80 - 120 Dissolved Barium (Ba) 2016/12/16 96 % 80 - 120 Dissolved Bismuth (Bi) 2016/12/16 96 % 80 - 120 Dissolved Bismuth (Bi) 2016/12/16 98 % 80 - 120 Dissolved Cardmium (Cd) 2016/12/16 98 % 80 - 120 Dissolved Calcium (Ca) 2016/12/16 98 % 80 - 120 Dissolved Calcium (Ca) 2016/12/16 96 % 80 - 120 Dissolved Copper (Cu) 2016/12/16 96 % 80 - 120 Dissolved Copper (Cu) 2016/12/16 96 % 80 - 120 Dissolved Magnesium (Mg) 2016/12/16 98 % 80 - 120 Dissolved Magnese (Mn) 2016/12/16 98 % 80 - 120 Dissolved Magnesium (Mg) 2016/12/16 98 % 80 - 120 Dissolved Magnesium (Mo) 2016/12/16 97 % 80 - 120 Dissolved Posphorus (P) 201				Dissolved Arsenic (As)	2016/12/16		98	%	80 - 120
Dissolved Beryllinur (Be) 2016/12/16 96 % 80 - 120 Dissolved Beryllinur (Bi) 2016/12/16 104 % 80 - 120 Dissolved Calmium (Cd) 2016/12/16 104 % 80 - 120 Dissolved Calmium (Cd) 2016/12/16 100 % 80 - 120 Dissolved Calcium (Ca) 2016/12/16 98 % 80 - 120 Dissolved Calcium (Ca) 2016/12/16 96 % 80 - 120 Dissolved Cobalt (Co) 2016/12/16 96 % 80 - 120 Dissolved Copper (Cu) 2016/12/16 96 % 80 - 120 Dissolved Copper (Cu) 2016/12/16 98 % 80 - 120 Dissolved Magnesium (Mg) 2016/12/16 102 % 80 - 120 Dissolved Manganese (Mn) 2016/12/16 102 % 80 - 120 Dissolved Molybdenum (Mo) 2016/12/16 101 % 80 - 120 Dissolved Phosphorus (P) 2016/12/16 105 % 80 - 120 Dissolved Phosphorus (P) <td></td> <td></td> <td></td> <td>Dissolved Barium (Ba)</td> <td>2016/12/16</td> <td></td> <td>95</td> <td>%</td> <td>80 - 120</td>				Dissolved Barium (Ba)	2016/12/16		95	%	80 - 120
Dissolved Bismuth (Bi) 2016/12/16 104 % 80 - 120 Dissolved Boron (B) 2016/12/16 98 % 80 - 120 Dissolved Cadmium (Cd) 2016/12/16 100 % 80 - 120 Dissolved Calcium (Ca) 2016/12/16 98 % 80 - 120 Dissolved Colatium (Cr) 2016/12/16 96 % 80 - 120 Dissolved Cobalt (Co) 2016/12/16 96 % 80 - 120 Dissolved Cobalt (Co) 2016/12/16 96 % 80 - 120 Dissolved Copper (Cu) 2016/12/16 96 % 80 - 120 Dissolved Icon (Fe) 2016/12/16 98 % 80 - 120 Dissolved Magnesium (Mg) 2016/12/16 98 % 80 - 120 Dissolved Magnese (Mn) 2016/12/16 102 % 80 - 120 Dissolved Nickel (Ni) 2016/12/16 101 % 80 - 120 Dissolved Phosphorus (P) 2016/12/16 101 % 80 - 120 Dissolved Potassium (K) 2016/12/16 105 % 80 - 120 Dissolved Sodium (Na) 2016/12/16 97 % 80 - 120 Dissolved Sodium (Na) 2016/12/16 97 % 80 - 120				Dissolved Bervllium (Be)	2016/12/16		96	%	80 - 120
Dissolved Boron (B) 2016/12/16 98 % 80 120 Dissolved Cadmium (Cd) 2016/12/16 100 % 80 120 Dissolved Calcium (Ca) 2016/12/16 98 % 80 120 Dissolved Calcium (Ca) 2016/12/16 96 % 80 120 Dissolved Cobalt (Co) 2016/12/16 96 % 80 120 Dissolved Copper (Cu) 2016/12/16 98 % 80 120 Dissolved Iron (Fe) 2016/12/16 98 % 80 120 Dissolved Magnesium (Mg) 2016/12/16 102 % 80 120 Dissolved Magnesium (Mg) 2016/12/16 101 % 80 120 Dissolved Molybdenum (Mo) 2016/12/16 101 % 80 120 Dissolved Phosphorus (P) 2016/12/16 105 % 80 120 Dissolved Potasium (K) 2016/12/16 105 % 80 120 Dissolved St				Dissolved Bismuth (Bi)	2016/12/16		104	%	80 - 120
Dissolved Cadmium (Cd) 2116/12/16 100 % 80 120 Dissolved Cadmium (Ca) 2016/12/16 98 % 80 120 Dissolved Chromium (Cr) 2016/12/16 96 % 80 120 Dissolved Cobalt (Co) 2016/12/16 96 % 80 120 Dissolved Cobalt (Co) 2016/12/16 96 % 80 120 Dissolved Copper (Cu) 2016/12/16 98 % 80 120 Dissolved Lead (Pb) 2016/12/16 98 % 80 120 Dissolved Magnesium (Mg) 2016/12/16 102 % 80 120 Dissolved Magnese (Mn) 2016/12/16 101 % 80 120 Dissolved Phosphorus (P) 2016/12/16 101 % 80 120 Dissolved Phosphorus (P) 2016/12/16 105 % 80 120 Dissolved Selenium (Se) 2016/12/16 106 % 0 120 Dissolved Silver (Ag) 2016/12/16 96 % 0 120 Dissolved Strontium (Sr) 2016/12/16 <t< td=""><td></td><td></td><td></td><td>Dissolved Boron (B)</td><td>2016/12/16</td><td></td><td>98</td><td>%</td><td>80 - 120</td></t<>				Dissolved Boron (B)	2016/12/16		98	%	80 - 120
Dissolved Calcium (Ca) 2016/12/16 98 % 80 - 120 Dissolved Chromium (Cr) 2016/12/16 96 % 80 - 120 Dissolved Cobalt (Co) 2016/12/16 96 % 80 - 120 Dissolved Copper (Cu) 2016/12/16 96 % 80 - 120 Dissolved Iron (Fe) 2016/12/16 96 % 80 - 120 Dissolved Iead (Pb) 2016/12/16 99 % 80 - 120 Dissolved Magnesium (Mg) 2016/12/16 102 % 80 - 120 Dissolved Magnese (Mn) 2016/12/16 102 % 80 - 120 Dissolved Magnese (Mn) 2016/12/16 101 % 80 - 120 Dissolved Nolybdenum (Mo) 2016/12/16 101 % 80 - 120 Dissolved Nolybdenum (Mo) 2016/12/16 105 % 80 - 120 Dissolved Phosphorus (P) 2016/12/16 105 % 80 - 120 Dissolved Phosphorus (P) 2016/12/16 106 % 80 - 120 Dissolved Strontium (Se) 2016/12/16 96 % 80 - 120 Dissolved Strontium (Sr) 2016/12/16 97 % 80 - 120 Dissolved Strontium (Sr) 2016/12/16 98 % 80 - 120				Dissolved Cadmium (Cd)	2016/12/16		100	%	80 - 120
Dissolved Chromium (Cr) 2016/12/16 96 % 80 - 120 Dissolved Cobalt (Co) 2016/12/16 96 % 80 - 120 Dissolved Copper (Cu) 2016/12/16 96 % 80 - 120 Dissolved Iron (Fe) 2016/12/16 96 % 80 - 120 Dissolved Iron (Fe) 2016/12/16 96 % 80 - 120 Dissolved Magnesium (Mg) 2016/12/16 102 % 80 - 120 Dissolved Magnesium (Mg) 2016/12/16 102 % 80 - 120 Dissolved Magnese (Mn) 2016/12/16 101 % 80 - 120 Dissolved Molybdenum (Mo) 2016/12/16 101 % 80 - 120 Dissolved Nolybdenum (Mo) 2016/12/16 101 % 80 - 120 Dissolved Phosphorus (P) 2016/12/16 105 % 80 - 120 Dissolved Phosphorus (P) 2016/12/16 96 % 80 - 120 Dissolved Strontium (Se) 2016/12/16 97 % 80 - 120 Dissolved Strontium (Sr) 2016/12/16 98 % 80 - 120 Dissolved				Dissolved Calcium (Ca)	2016/12/16		98	%	80 - 120
Dissolved Cobalt (Co) 2016/12/16 96 % 80-120 Dissolved Copper (Cu) 2016/12/16 96 % 80-120 Dissolved Iron (Fe) 2016/12/16 98 % 80-120 Dissolved Lead (Pb) 2016/12/16 99 % 80-120 Dissolved Magnesium (Mg) 2016/12/16 99 % 80-120 Dissolved Magnese (Mn) 2016/12/16 102 % 80-120 Dissolved Magnese (Mn) 2016/12/16 101 % 80-120 Dissolved Nolybdenum (Mo) 2016/12/16 101 % 80-120 Dissolved Nolybdenum (Mo) 2016/12/16 101 % 80-120 Dissolved Phosphorus (P) 2016/12/16 105 % 80-120 Dissolved Potassium (K) 2016/12/16 106 % 80-120 Dissolved Soluer (Ag) 2016/12/16 96 % 80-120 Dissolved Strontium (Sr) 2016/12/16 97 % 80-120 Dissolved Thallium (TI) 2016/12/16 104 % 80-120 Dissolved Titanium (Ti) 2016				Dissolved Chromium (Cr)	2016/12/16		96	%	80 - 120
Dissolved Copper (Cu) 2016/12/16 96 % 80 - 120 Dissolved Iron (Fe) 2016/12/16 98 % 80 - 120 Dissolved Lead (Pb) 2016/12/16 99 % 80 - 120 Dissolved Magnesium (Mg) 2016/12/16 102 % 80 - 120 Dissolved Magnesium (Mg) 2016/12/16 102 % 80 - 120 Dissolved Magnesium (Mg) 2016/12/16 101 % 80 - 120 Dissolved Magnese (Mn) 2016/12/16 101 % 80 - 120 Dissolved Nolybdenum (Mo) 2016/12/16 97 % 80 - 120 Dissolved Potsphorus (P) 2016/12/16 105 % 80 - 120 Dissolved Potsphorus (P) 2016/12/16 106 % 80 - 120 Dissolved Selenium (Se) 2016/12/16 96 % 80 - 120 Dissolved Sodium (Na) 2016/12/16 97 % 80 - 120 Dissolved Strontium (Sr) 2016/12/16 96 % 80 - 120 Dissolved Strontium (Sr) 2016/12/16 98 % 80 - 120 Dissolved Tinalium (TI) 2016/12/16 104 % 80 - 120 Dissolved Tinalium (TI) 2016/12/16 104 % 80 - 1				Dissolved Cobalt (Co)	2016/12/16		96	%	80 - 120
Dissolved Iron (Fe) 2016/12/16 98 % 80 - 120 Dissolved Lead (Pb) 2016/12/16 99 % 80 - 120 Dissolved Magnesium (Mg) 2016/12/16 102 % 80 - 120 Dissolved Magnesium (Mg) 2016/12/16 102 % 80 - 120 Dissolved Manganese (Mn) 2016/12/16 101 % 80 - 120 Dissolved Mickel (Ni) 2016/12/16 101 % 80 - 120 Dissolved Nickel (Ni) 2016/12/16 101 % 80 - 120 Dissolved Potassium (K) 2016/12/16 105 % 80 - 120 Dissolved Potassium (K) 2016/12/16 105 % 80 - 120 Dissolved Selenium (Se) 2016/12/16 106 % 80 - 120 Dissolved Sodium (Na) 2016/12/16 96 % 80 - 120 Dissolved Strontium (Sr) 2016/12/16 98 % 80 - 120 Dissolved Tranium (Ti) 2016/12/16 98 % 80 - 120 Dissolved Tranium (Ti) 2016/12/16 98 % 80 - 120 Dissolved Tinaium				Dissolved Copper (Cu)	2016/12/16		96	%	80 - 120
Dissolved Lead (Pb) 2016/12/16 99 % 80 - 120 Dissolved Magnesium (Mg) 2016/12/16 102 % 80 - 120 Dissolved Manganese (Mn) 2016/12/16 98 % 80 - 120 Dissolved Molybdenum (Mo) 2016/12/16 101 % 80 - 120 Dissolved Nolybdenum (Mo) 2016/12/16 101 % 80 - 120 Dissolved Nickel (Ni) 2016/12/16 101 % 80 - 120 Dissolved Phosphorus (P) 2016/12/16 105 % 80 - 120 Dissolved Potassium (K) 2016/12/16 106 % 80 - 120 Dissolved Selenium (Se) 2016/12/16 96 % 80 - 120 Dissolved Soliver (Ag) 2016/12/16 96 % 80 - 120 Dissolved Soliver (Ag) 2016/12/16 98 % 80 - 120 Dissolved Strontium (Sr) 2016/12/16 98 % 80 - 120 Dissolved Tranium (TI) 2016/12/16 104 % 80 - 120 Dissolved Tranium (Ti) 2016/12/16 105 % 80 - 120 Dissolved Tranium (Ti) 2016/12/16 105 % 80 - 120 Dissolved Tranium (V) 2016/12/16 97 % 80 - 1				Dissolved Iron (Fe)	2016/12/16		98	%	80 - 120
Dissolved Magnesium (Mg)2016/12/16102%80 - 120Dissolved Manganese (Mn)2016/12/1698%80 - 120Dissolved Molybdenum (Mo)2016/12/16101%80 - 120Dissolved Nickel (Ni)2016/12/16101%80 - 120Dissolved Nickel (Ni)2016/12/1697%80 - 120Dissolved Phosphorus (P)2016/12/16105%80 - 120Dissolved Potassium (K)2016/12/16106%80 - 120Dissolved Selenium (Se)2016/12/1697%80 - 120Dissolved Soliuer (Ag)2016/12/1696%80 - 120Dissolved Solium (Na)2016/12/1699%80 - 120Dissolved Strontium (Sr)2016/12/1698%80 - 120Dissolved Thallium (TI)2016/12/16104%80 - 120Dissolved Tin (Sn)2016/12/16105%80 - 120Dissolved Tin (Sn)2016/12/1698%80 - 120Dissolved Tin (Sn)2016/12/1698%80 - 120Dissolved Tinaum (Ti)2016/12/1698%80 - 120Dissolved Vanadium (V)2016/12/1697%80 - 120Dissolved Vanadium (V)2016/12/1697%80 - 120Dissolved Tinc (Zn)2016/12/1697%80 - 120Dissolved Vanadium (V)2016/12/1697%80 - 120Dissolved Vanadium (V)2016/12/1697%80 - 120 <td></td> <td></td> <td></td> <td>Dissolved Lead (Pb)</td> <td>2016/12/16</td> <td></td> <td>99</td> <td>%</td> <td>80 - 120</td>				Dissolved Lead (Pb)	2016/12/16		99	%	80 - 120
Dissolved Marganese (Mn)2016/12/1698% 80 - 120Dissolved Molybdenum (Mo)2016/12/16101% 80 - 120Dissolved Nickel (Ni)2016/12/1697% 80 - 120Dissolved Phosphorus (P)2016/12/16105% 80 - 120Dissolved Potassium (K)2016/12/16106% 80 - 120Dissolved Selenium (Se)2016/12/1697% 80 - 120Dissolved Soliver (Ag)2016/12/1696% 80 - 120Dissolved Solium (Na)2016/12/1699% 80 - 120Dissolved Strontium (Sr)2016/12/1698% 80 - 120Dissolved Thallium (TI)2016/12/1698% 80 - 120Dissolved Titanium (Ti)2016/12/1698% 80 - 120Dissolved Titanium (V)2016/12/16105% 80 - 120Dissolved Titanium (V)2016/12/1697% 80 - 120Dissolved Zinc (Zn)2016/12/1699% 80 - 120				Dissolved Magnesium (Mg)	2016/12/16		102	%	80 - 120
Dissolved Molybdenum (Mo)2016/12/16101%80 - 120Dissolved Nickel (Ni)2016/12/1697%80 - 120Dissolved Phosphorus (P)2016/12/16105%80 - 120Dissolved Potassium (K)2016/12/16106%80 - 120Dissolved Selenium (Se)2016/12/1697%80 - 120Dissolved Silver (Ag)2016/12/1696%80 - 120Dissolved Sodium (Na)2016/12/1696%80 - 120Dissolved Strontium (Sr)2016/12/1698%80 - 120Dissolved Thallium (TI)2016/12/1698%80 - 120Dissolved Titanium (Ti)2016/12/16104%80 - 120Dissolved Titanium (V)2016/12/16105%80 - 120Dissolved Titanium (V)2016/12/1698%80 - 120Dissolved Zinc (Zn)2016/12/1699%80 - 120				Dissolved Manganese (Mn)	2016/12/16		98	%	80 - 120
Dissolved Nickel (Ni)2016/12/1697%80 - 120Dissolved Phosphorus (P)2016/12/16105%80 - 120Dissolved Potassium (K)2016/12/16106%80 - 120Dissolved Selenium (Se)2016/12/1697%80 - 120Dissolved Silver (Ag)2016/12/1696%80 - 120Dissolved Solved Silver (Ag)2016/12/1696%80 - 120Dissolved Silver (Ag)2016/12/1698%80 - 120Dissolved Strontium (Sr)2016/12/1698%80 - 120Dissolved Thallium (Tl)2016/12/16104%80 - 120Dissolved Titanium (Ti)2016/12/16105%80 - 120Dissolved Titanium (Ti)2016/12/16105%80 - 120Dissolved Titanium (Ti)2016/12/1698%80 - 120Dissolved Titanium (V)2016/12/1697%80 - 120Dissolved Vanadium (V)2016/12/1697%80 - 120Dissolved Zinc (Zn)2016/12/1697%80 - 120				Dissolved Molybdenum (Mo)	2016/12/16		101	%	80 - 120
Dissolved Phosphorus (P) 2016/12/16 105 % 80 - 120 Dissolved Potassium (K) 2016/12/16 106 % 80 - 120 Dissolved Selenium (Se) 2016/12/16 97 % 80 - 120 Dissolved Silver (Ag) 2016/12/16 96 % 80 - 120 Dissolved Solium (Na) 2016/12/16 96 % 80 - 120 Dissolved Solium (Na) 2016/12/16 98 % 80 - 120 Dissolved Strontium (Sr) 2016/12/16 98 % 80 - 120 Dissolved Thallium (Tl) 2016/12/16 104 % 80 - 120 Dissolved Titanium (Tl) 2016/12/16 104 % 80 - 120 Dissolved Titanium (Ti) 2016/12/16 105 % 80 - 120 Dissolved Uranium (V) 2016/12/16 98 % 80 - 120 Dissolved Vanadium (V) 2016/12/16 97 % 80 - 120 Dissolved Zinc (Zn) 2016/12/16 97 % 80 - 120				Dissolved Nickel (Ni)	2016/12/16		97	%	80 - 120
Dissolved Potassium (K)2016/12/16106%80 - 120Dissolved Selenium (Se)2016/12/1697%80 - 120Dissolved Silver (Ag)2016/12/1696%80 - 120Dissolved Sodium (Na)2016/12/1696%80 - 120Dissolved Sodium (Na)2016/12/1699%80 - 120Dissolved Strontium (Sr)2016/12/1698%80 - 120Dissolved Thallium (Tl)2016/12/16104%80 - 120Dissolved Titanium (Ti)2016/12/16105%80 - 120Dissolved Titanium (Ti)2016/12/1698%80 - 120Dissolved Titanium (V)2016/12/1697%80 - 120Dissolved Zinc (Zn)2016/12/1699%80 - 120				Dissolved Phosphorus (P)	2016/12/16		105	%	80 - 120
Dissolved Selenium (Se)2016/12/1697%80 - 120Dissolved Silver (Ag)2016/12/1696%80 - 120Dissolved Sodium (Na)2016/12/1699%80 - 120Dissolved Sodium (Na)2016/12/1699%80 - 120Dissolved Strontium (Sr)2016/12/1698%80 - 120Dissolved Thallium (Tl)2016/12/16104%80 - 120Dissolved Titanium (Ti)2016/12/16105%80 - 120Dissolved Titanium (Ti)2016/12/1698%80 - 120Dissolved Vanadium (V)2016/12/1697%80 - 120Dissolved Zinc (Zn)2016/12/1699%80 - 120				Dissolved Potassium (K)	2016/12/16		106	%	80 - 120
Dissolved Silver (Ag)2016/12/1696% 80 - 120Dissolved Sodium (Na)2016/12/1699% 80 - 120Dissolved Strontium (Sr)2016/12/1698% 80 - 120Dissolved Strontium (TI)2016/12/16104% 80 - 120Dissolved Tin (Sn)2016/12/16105% 80 - 120Dissolved Titanium (Ti)2016/12/16105% 80 - 120Dissolved Vanaium (V)2016/12/1698% 80 - 120Dissolved Uranium (V)2016/12/1697% 80 - 120Dissolved Zinc (Zn)2016/12/1699% 80 - 120				Dissolved Selenium (Se)	2016/12/16		97	%	80 - 120
Dissolved Sodium (Na) 2016/12/16 99 % 80 - 120 Dissolved Strontium (Sr) 2016/12/16 98 % 80 - 120 Dissolved Thallium (TI) 2016/12/16 104 % 80 - 120 Dissolved Tin (Sn) 2016/12/16 105 % 80 - 120 Dissolved Titanium (Ti) 2016/12/16 105 % 80 - 120 Dissolved Vanaium (V) 2016/12/16 98 % 80 - 120 Dissolved Vanaium (V) 2016/12/16 97 % 80 - 120 Dissolved Zinc (Zn) 2016/12/16 99 % 80 - 120				Dissolved Silver (Ag)	2016/12/16		96	%	80 - 120
Dissolved Strontium (N)2016/12/16357680120Dissolved Strontium (Sr)2016/12/1698%80 - 120Dissolved Thallium (TI)2016/12/16104%80 - 120Dissolved Tin (Sn)2016/12/16105%80 - 120Dissolved Titanium (Ti)2016/12/1698%80 - 120Dissolved Uranium (U)2016/12/16106%80 - 120Dissolved Vanadium (V)2016/12/1697%80 - 120Dissolved Zinc (Zn)2016/12/1699%80 - 120				Dissolved Sodium (Na)	2016/12/16		99	%	80 - 120
Dissolved Thallium (TI) 2016/12/16 30 70 80 120 Dissolved Thallium (TI) 2016/12/16 104 % 80 - 120 Dissolved Tin (Sn) 2016/12/16 105 % 80 - 120 Dissolved Titanium (Ti) 2016/12/16 98 % 80 - 120 Dissolved Uranium (U) 2016/12/16 98 % 80 - 120 Dissolved Vanadium (V) 2016/12/16 106 % 80 - 120 Dissolved Zinc (Zn) 2016/12/16 97 % 80 - 120				Dissolved Stroptium (Sr)	2016/12/16		98	%	80 - 120
Dissolved Tin (Sn) 2016/12/16 105 % 80 120 Dissolved Tin (Sn) 2016/12/16 105 % 80 120 Dissolved Titanium (Ti) 2016/12/16 98 % 80 120 Dissolved Uranium (U) 2016/12/16 106 % 80 120 Dissolved Vanadium (V) 2016/12/16 97 % 80 120 Dissolved Zinc (Zn) 2016/12/16 99 % 80 120				Dissolved Thallium (TI)	2016/12/16		104	%	80 - 120
Dissolved Titanium (Ti) 2016/12/16 98 % 80 - 120 Dissolved Titanium (U) 2016/12/16 106 % 80 - 120 Dissolved Uranium (U) 2016/12/16 106 % 80 - 120 Dissolved Vanadium (V) 2016/12/16 97 % 80 - 120 Dissolved Zinc (Zn) 2016/12/16 99 % 80 - 120				Dissolved Tin (Sn)	2016/12/16		105	%	80 - 120
Dissolved Uranium (U) 2016/12/16 106 % 80 - 120 Dissolved Vanadium (V) 2016/12/16 97 % 80 - 120 Dissolved Zinc (Zn) 2016/12/16 99 % 80 - 120				Dissolved Titanium (Ti)	2016/12/16		98	%	80 - 120
Dissolved Vanadium (V) 2016/12/16 97 % 80 - 120 Dissolved Zinc (Zn) 2016/12/16 99 % 80 - 120				Dissolved Uranium (II)	2016/12/16		106	%	80 - 120
Dissolved Zinc (Zn)2016/12/16377880120				Dissolved Vanadium (V)	2016/12/16		97	%	80 - 120
				Dissolved Zinc (7n)	2016/12/16		99	%	80 - 120
4794011 ASL LCS 1.4-Difluorobenzene 2016/12/16 102 % 70 - 130	4794011	ASI	LCS	1.4-Difluorobenzene	2016/12/16		102	%	70 - 130
4-Bromofluorobenzene 2016/12/16 102 % 70 130				4-Bromofluorobenzene	2016/12/16		108	%	70 - 130
D4-1.2-Dichloroethane 2016/12/16 102 % 70 - 130				D4-1.2-Dichloroethane	2016/12/16		102	%	70 - 130
Isobutylbenzene - Volatile 2016/12/16 105 % 70 - 130				Isobutylbenzene - Volatile	2016/12/16		105	%	70 - 130



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
			Benzene	2016/12/16		82	%	70 - 130
			Toluene	2016/12/16		87	%	70 - 130
			Ethylbenzene	2016/12/16		88	%	70 - 130
			Total Xylenes	2016/12/16		88	%	70 - 130
4794277	SHL	LCS	4-Bromofluorobenzene	2016/12/15		99	%	70 - 130
			D4-1,2-Dichloroethane	2016/12/15		98	%	70 - 130
			D8-Toluene	2016/12/15		101	%	70 - 130
			1,1,1-Trichloroethane	2016/12/15		91	%	70 - 130
			1,1,2,2-Tetrachloroethane	2016/12/15		97	%	70 - 130
			1,1,2-Trichloroethane	2016/12/15		94	%	70 - 130
			1,1-Dichloroethane	2016/12/15		97	%	70 - 130
			1.1-Dichloroethylene	2016/12/15		93	%	70 - 130
			1.2-Dichlorobenzene	2016/12/15		84	%	70 - 130
			1.2-Dichloroethane	2016/12/15		91	%	70 - 130
			1.2-Dichloropropane	2016/12/15		93	%	70 - 130
			1.3-Dichlorobenzene	2016/12/15		85	%	70 - 130
			1 4-Dichlorobenzene	2016/12/15		85	%	70 - 130
			Benzene	2016/12/15		91	%	70 - 130
			Bromodichloromethane	2016/12/15		91	%	70 - 130
			Bromoform	2016/12/15		93	%	70 - 130
			Bromomethane	2010/12/15		86	%	50 - 150
			Carbon Tetrachloride	2010/12/15		88	%	70 - 130
			Chlorobenzene	2010/12/15		87	%	70 - 130
			Chloroethane	2010/12/15		86	%	50 - 150
			Chloroform	2010/12/15		90	%	70 - 130
			Chloromethane	2010/12/15		88	/0 %	50 - 150
				2010/12/15		96	/0 %	70 - 130
			Dibromochloromothano	2010/12/15		90	70 0/	70 120
			Ethylhopzopo	2010/12/15		92	70 0/	70 - 150
			Ethylopo Dibromido	2010/12/15		90	70 0/	70 - 130
			Mothyl t butyl othor (MTRE)	2010/12/13		99	/0 0/	70 - 130
			Methylene Chleride (Dishleremethane)	2010/12/15		90	70 0/	70 - 150
			Methylene Chioride(Dichioromethane)	2016/12/15		92	% 0/	70 - 130
			Styrene	2016/12/15		97	% 0/	70 - 130
			Tetrachioroethylene	2016/12/15		95	%	70 - 130
			Toluene	2016/12/15		99	%	70 - 130
			trans-1,2-Dichloroethylene	2016/12/15		90	%	70 - 130
			Irichloroethylene	2016/12/15		93	%	70 - 130
170 15 10	WD W		Vinyl Chloride	2016/12/15		83	%	50 - 150
4794548	КВК	LCS	n-Dotriacontane - Extractable	2016/12/16		123	%	30 - 130
			Isobutylbenzene - Extractable	2016/12/16		90	%	30 - 130
			>C10-C16 Hydrocarbons	2016/12/16		96	%	70 - 130
			>C16-C21 Hydrocarbons	2016/12/16		78	%	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2016/12/16</td><td></td><td>90</td><td>%</td><td>70 - 130</td></c32>	2016/12/16		90	%	70 - 130
4795881	BAN	LCS	Dissolved Aluminum (Al)	2016/12/16		101	%	80 - 120
			Dissolved Antimony (Sb)	2016/12/16		103	%	80 - 120
			Dissolved Arsenic (As)	2016/12/16		96	%	80 - 120
			Dissolved Barium (Ba)	2016/12/16		93	%	80 - 120
			Dissolved Beryllium (Be)	2016/12/16		94	%	80 - 120
			Dissolved Bismuth (Bi)	2016/12/16		103	%	80 - 120
			Dissolved Boron (B)	2016/12/16		100	%	80 - 120
			Dissolved Cadmium (Cd)	2016/12/16		96	%	80 - 120



Maxxam Job #: B6R3168 Report Date: 2016/12/16 AECOM Canada Ltd. Task Order#: N/A-CTC SITE Site#: CTC Site Location: 64 MILL LAKE ROAD NO 2, HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Calcium (Ca)	2016/12/16		98	%	80 - 120
			Dissolved Chromium (Cr)	2016/12/16		94	%	80 - 120
			Dissolved Cobalt (Co)	2016/12/16		94	%	80 - 120
			Dissolved Copper (Cu)	2016/12/16		95	%	80 - 120
			Dissolved Iron (Fe)	2016/12/16		101	%	80 - 120
			Dissolved Lead (Pb)	2016/12/16		96	%	80 - 120
			Dissolved Magnesium (Mg)	2016/12/16		101	%	80 - 120
			Dissolved Manganese (Mn)	2016/12/16		96	%	80 - 120
			Dissolved Molybdenum (Mo)	2016/12/16		103	%	80 - 120
			Dissolved Nickel (Ni)	2016/12/16		96	%	80 - 120
			Dissolved Phosphorus (P)	2016/12/16		100	%	80 - 120
			Dissolved Potassium (K)	2016/12/16		105	%	80 - 120
			Dissolved Selenium (Se)	2016/12/16		94	%	80 - 120
			Dissolved Silver (Ag)	2016/12/16		93	%	80 - 120
			Dissolved Sodium (Na)	2016/12/16		99	%	80 - 120
			Dissolved Strontium (Sr)	2016/12/16		96	%	80 - 120
			Dissolved Thallium (TI)	2016/12/16		101	%	80 - 120
			Dissolved Tin (Sn)	2016/12/16		103	%	80 - 120
			Dissolved Titanium (Ti)	2016/12/16		95	%	80 - 120
			Dissolved Uranium (U)	2016/12/16		101	%	80 - 120
			Dissolved Vanadium (V)	2016/12/16		93	%	80 - 120
			Dissolved Zinc (Zn)	2016/12/16		98	%	80 - 120

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.

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

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

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

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

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



VALIDATION SIGNATURE PAGE

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

Mike Mac Gille

Mike MacGillivray, Scientific Specialist (Inorganics)

lype Deven

Phil Deveau, Scientific Specialist (Organics)

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

Maxyam	200 Bluewa Bedford, N www.maxx	water Road Phone: (902) 420-0203 Nova Scotia B4B 1G9 Fax: (902) 420-8612 xxam.ca Toll Free: 800-563-6266								EXXONMOBIL/IMPERIAL OIL - MAXXAM Page CHAIN-OF-CUSTODY RECORD C of C # 5889 ANALYSIS REQUESTED								e of 1		58891	12			
INVOICE INFORMATIO	N	REPORT INFORMATION																						
Company Name: AECOM Canada Ltd		C	Company Name: AECOM Canada Ltd.																					
Contact Name: Derek Heath		C	ontac	t Name	e:					ATA														
Address:		A	ddres	s:	-					2			-											
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Halifax NS B3J 3M8	18.000		lalifax	NS B3	J 3M8				4	3 0	3	1	3											
Email: Derek.Heath@aecom.c	om	E	mail:		Time	thy.bachiu@aeco	om.com, L	aura.Ma	cls	2 -	2	C	2						1 1					
Phone: (902) 428-2048 x		F	hone:	tent D	(902) 428-2048 x	_	_	č		3	1												
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	-10						Ht	anti	CF	IK					Iver	e				n			(1 day)	
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N/A-C	TCS	ite	1																			Date F	Required	
YES NO COOL	ER ID:	1				CAL DOCOPALT	YES	NO CO	OLER ID:		_			AL ODFORME		YES NO	COOLE	R ID:		_				
SEAL PRESENT	P N	3 3 SEAL PRESENT TE						MP C	1	2	3	SE/	AL INTACT	PRESENT		TEMP °C	1	2	3		MAXXA	M JOB #		
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COC - 1009 (2013) IOL - NS				White:	Maxxam				Yellow: C	ient														

ΑΞϹΟΜ

Data Quality Review Checklist

Consultant: Al	ЕСОМ			Sampling Date: 2016/12/15							
Location: 64	A MILL LA	AKE ROA	AD NO 2	Laboratory: Maxxam							
н											
Consultant Project Number: 60)438249			Sample Submission Number: B6R3168							
Are All Laboratory QC Samples V	Vithin Ac	ceptance	e Criteria	(Yes, No, Not Applicable)?							
	Yes	No	NA	Comments							
Instrument Surrogate Recovery											
Extraction Surrogate Recovery	\boxtimes										
Method Blank Concentration	\boxtimes										
Matrix Duplicate RPD		\boxtimes		NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).							
Matrix Spike Recovery Image: Spike Reco											
Lab Control Sample Recovery	Lab Control Sample Recovery										
Are All Field QC Samples Within	Alert Lim	its (Yes,	No, Not	Applicable)?							
Field Blank Concentration	res		NA M	Comments							
Trip Blank Concentration											
Field Duplicate RPD											
Has CoA been signed off? Xes No Has lab warranted all tests were in statistical control in CoA? Yes No Has lab warranted all tests were analyzed following SOP's in CoA? Yes No Were all samples analyzed within hold times? Yes No All volatiles samples methanol extracted (if required) within 48 hours? Yes No Is Chain of Custody completed and signed? Yes No Were sample temperatures acceptable when they reached lab? Yes No											
Is data considered to be reliable? ⊠ Yes ⊔ No If answer is "No", describe and provide rationale:											
Reviewed by (Print): Janice Shea Reviewed by (Signature): Janua Shua.											



Attention:Tim Bachiu

B3J 3M8

AECOM Canada Ltd IOL Cost to Closure Work 1701 Hollis Street Halifax. NS CANADA

Task Order#: N/A-CTC SITE Site#: Site Location: 64 MILL LAKE RD, NO 2. HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 09791

> Report Date: 2017/01/16 Report #: R4326500 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B705977 Received: 2017/01/11, 13:49

Sample Matrix: Water # Samples Received: 3

Analyses	Quantity	Laboratory Method	Primary Reference
TEH in Water (PIRI)	3	ATL SOP 00113	Atl. RBCA v3 m
VPH in Water (PIRI)	3	ATL SOP 00118	Atl. RBCA v3 m
Silica Gel Clean-up (Water)	3	ATL SOP 00113	EPA 3630C R3 m
ModTPH (T1) Calc. for Water	3	N/A	Atl. RBCA v3 m

Remarks:

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

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

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

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

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

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

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



Task Order#: N/A-CTC SITE Site#: Site Location: 64 MILL LAKE RD, NO 2. HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 09791

Attention:Tim Bachiu

AECOM Canada Ltd IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2017/01/16 Report #: R4326500 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B705977 Received: 2017/01/11, 13:49

Encryption Key

heri Machay Keri MacKay Project Manager - Bedford 16 Jan 2017 15:48:32

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Keri Mackay, Project Manager - Bedford Email: kmackay@maxxam.ca Phone# (902)420-0203 Ext:294

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RBCA HYDROCARBONS IN WATER (WATER)

Maxxam ID		DSW161	DSW162	DSW163		
Sampling Date		2017/01/11	2017/01/11	2017/01/11		
		11:55	12:05	12:05		
COC Number		09791	09791	09791		
	UNITS	MW6	MW16-01	DUPLICATE 1	RDL	QC Batch
Petroleum Hydrocarbons						
Benzene	mg/L	<0.0010	<0.0010	<0.0010	0.0010	4822028
Toluene	mg/L	<0.0010	<0.0010	<0.0010	0.0010	4822028
Ethylbenzene	mg/L	<0.0010	<0.0010	<0.0010	0.0010	4822028
Total Xylenes	mg/L	<0.0020	<0.0020	<0.0020	0.0020	4822028
C6 - C10 (less BTEX)	mg/L	0.076	0.070	0.11	0.010	4822028
>C10-C16 Hydrocarbons	mg/L	7.6	2.9	3.6	0.050	4822387
>C16-C21 Hydrocarbons	mg/L	2.0	2.0	2.4	0.050	4822387
>C21- <c32 hydrocarbons<="" p=""></c32>	mg/L	0.41	0.33	0.40	0.10	4822387
Modified TPH (Tier1)	mg/L	10	5.3	6.5	0.10	4820694
Reached Baseline at C32	mg/L	Yes	Yes	Yes	N/A	4822387
Hydrocarbon Resemblance	mg/L	COMMENT (1)	COMMENT (1)	COMMENT (1)	N/A	4822387
Extraction						
Surrogate Recovery (%)						
Isobutylbenzene - Extractable	%	89	89	94		4822387
n-Dotriacontane - Extractable	%	106 (2)	105 (2)	110 (2)		4822387
Instrument Surrogate Recovery (%)						
1,4-Difluorobenzene	%	99	100	103		4822028
4-Bromofluorobenzene	%	84	83	84		4822028
D4-1,2-Dichloroethane	%	101	103	105		4822028
Isobutylbenzene - Volatile	%	82	83	85		4822028
RDL = Reportable Detection Lim QC Batch = Quality Control Batc	nit ch					
N/A = Not Applicable						
(1) Weathered fuel oil fraction.						
(2) TEH sample contained sedim	nent.					



TEST SUMMARY

Maxxam ID:	DSW161	Collected:	2017/01/11
Sample ID:	MW6	Relinquished:	2017/01/11
Matrix:	Water	Received:	2017/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	4822387	2017/01/12	2017/01/13	Ashley Matheson
VPH in Water (PIRI)	PTGC/MS	4822028	N/A	2017/01/13	Jackie Pia
ModTPH (T1) Calc. for Water	CALC	4820694	N/A	2017/01/16	Automated Statchk

Maxxam ID:	DSW162
Sample ID:	MW16-01
Matrix:	Water

Collected: 2017/01/11 Relinquished: 2017/01/11 Received: 2017/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	4822387	2017/01/12	2017/01/13	Ashley Matheson
VPH in Water (PIRI)	PTGC/MS	4822028	N/A	2017/01/13	Jackie Pia
ModTPH (T1) Calc. for Water	CALC	4820694	N/A	2017/01/16	Automated Statchk

Maxxam ID: Sample ID: Matrix:	DSW163 DUPLICATE 1 Water				R	Collected: elinquished: Received:	2017/01/11 2017/01/11 2017/01/11	
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst		
TEH in Water (PIRI)		GC/FID	4822387	2017/01/12	2017/01/13	Ashlev Ma	theson	

lest beschption	instrumentation	Daten	LAUACIEU	Date Analyzeu	Analyst
TEH in Water (PIRI)	GC/FID	4822387	2017/01/12	2017/01/13	Ashley Matheson
VPH in Water (PIRI)	PTGC/MS	4822028	N/A	2017/01/13	Jackie Pia
ModTPH (T1) Calc. for Water	CALC	4820694	N/A	2017/01/16	Automated Statchk



GENERAL COMMENTS

Each	temperature is the	average of up to	three cooler temperatures taken at receipt
	Package 1	5.3°C	
Note PAH/ conta	Sample incorrectly PCB bottle that doe iner on receipt at t	y preserved (or pr es not contain pre he lab.	esence of headspace): 'Duplicate 1' - one of the 250 mL bottles for hydrocarbons was not preserved (it is our servative). The preserved container was marked as 'USE FIRST' and added preservative to the other
Silica	gel clean-up perfo	rmed on water ex	tracts.
Resu	Its relate only to th	e items tested.	



QUALITY ASSURANCE REPORT

QA/QC				Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	UNITS	QC Limits
4822028	JPA	Method Blank	1,4-Difluorobenzene	2017/01/13		99	%	70 - 130
			4-Bromofluorobenzene	2017/01/13		82	%	70 - 130
			D4-1,2-Dichloroethane	2017/01/13		102	%	70 - 130
			Isobutylbenzene - Volatile	2017/01/13		97	%	70 - 130
			Benzene	2017/01/13	<0.0010		mg/L	
			Toluene	2017/01/13	<0.0010		mg/L	
			Ethylbenzene	2017/01/13	<0.0010		mg/L	
			Total Xylenes	2017/01/13	<0.0020		mg/L	
			C6 - C10 (less BTEX)	2017/01/13	<0.010		mg/L	
4822387	AJS	Method Blank	n-Dotriacontane - Extractable	2017/01/13		109	%	30 - 130
			Isobutylbenzene - Extractable	2017/01/13		90	%	30 - 130
			>C10-C16 Hydrocarbons	2017/01/13	<0.050		mg/L	
			>C16-C21 Hydrocarbons	2017/01/13	<0.050		mg/L	
			>C21- <c32 hydrocarbons<="" td=""><td>2017/01/13</td><td><0.10</td><td></td><td>mg/L</td><td></td></c32>	2017/01/13	<0.10		mg/L	
4822028	JPA	LCS	1,4-Difluorobenzene	2017/01/13		98	%	70 - 130
			4-Bromofluorobenzene	2017/01/13		81	%	70 - 130
			D4-1,2-Dichloroethane	2017/01/13		101	%	70 - 130
			Isobutylbenzene - Volatile	2017/01/13		93	%	70 - 130
			Benzene	2017/01/13		104	%	70 - 130
			Toluene	2017/01/13		107	%	70 - 130
			Ethylbenzene	2017/01/13		105	%	70 - 130
			Total Xylenes	2017/01/13		103	%	70 - 130
4822387	AJS	LCS	n-Dotriacontane - Extractable	2017/01/13		108	%	30 - 130
			Isobutylbenzene - Extractable	2017/01/13		89	%	30 - 130
			>C10-C16 Hydrocarbons	2017/01/13		103	%	70 - 130
			>C16-C21 Hydrocarbons	2017/01/13		86	%	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2017/01/13</td><td></td><td>100</td><td>%</td><td>70 - 130</td></c32>	2017/01/13		100	%	70 - 130
LCS: A bla	ank ma	atrix sample to which a	a known amount of the analyte, usually from	a second source, has be	en added. Used	l to evaluate m	nethod a	ccuracy.

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.



VALIDATION SIGNATURE PAGE

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

Philippe Deven

Phil Deveau, Scientific Specialist (Organics)

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Maxiam 200 Blu Bedford www.m	iewa 1, NS axxa	ter R 3 B4 aman	oad B 1 alyt	l, Su G9 ics.c	iite com	105 Ph Toll I	ione: (Fax: (Free: 1	902) 4 902) 4 -800-	20-0 20-8 565	0203 3612 -722	7		E	XXO	n m Chai	DBIL 'N-O	L/IM DF-C	PER UST	IAL OD Y	OIL (RE	- 1 :CO	NAXXAI RD	M	C	of C	P #	age_	of	/ / / / / / / / / / / / / / / / / / / /
INVOICE INFORMATION				R	EPO	RT INFORM	ATION											ANA	LYS	SR	EQL	JESTED		00					
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Contact Name: Accounts Payable	_	Cont	act N	Vame	;]	im Bach	1u									2	M)a					10							
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					NER	â		VED	ATION	Choo	Cho	l Dige		als & ruft ac	- Vapo Nater	uired A Hu	Potab	Fract		0	S EPA	q							
FIELD SAMPLE ID	OND	FACE	-	H	NTAI	ATE	A HB)	ESER	JIRECTR	0-30	SM-0	Total	È	Meta	Merch Cold	(Reg RBC	NB P	HE	PAHs	PCB	VOC	ŝ							
	GRO	SUR	SOIL	OTH	# CO	a	1(2,	RIELL & PRI	REOL	RCA	RCAF	Metals Water	Merci	Me	tals So	I		Orga	anics										
1 MW6	×				5	2017 01 11	11:5	5								X	<					X							
2 MW16-01	X				5	20170111	12:0	5								X	<					X			-				
· Duplicate 1	X				5	20170111	12:0	5								X	(1	X						1	
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IOL SITE LOCATION		and	C	N	S	REGUL	ATORY	CRITI	ERIA	/ DE	TEC	TION L	IMITS	S S	PECIA	LINS	STRUG	CTIO	VS		-		#.	JARS US	ED &	TUP	NAR	OUND T	IME
IOL PROJECT # (If applicable)	AUT	2(M ()	12)	IN	2		0.1	ï		~ 7	21												NI El	OT SUBN	FOR	Standa	ard	(5 days)	X
MAXXAM TASK ORDER # OR SER VICE ORD	ER #	+ LIN	EITT	EM			At	anti	ct	-11	-1												W	ATER	ă	Rush		(3 days) (2 days)	
N/A-CTC-							2																	NF	7		lee	(1 day)	Ē
YES NO COOL	ER ID #	ŧ	-					YES	NO	co	OLE	RID #							Y	FS	NO	COOLEB I	7.4				loc.	nne day)	
SEAL PRESENT	F	5	1	2	SEAL	PRESENT				TEN	AP				SEAL I	RESE	NT		- 280		no.	TEMP	2.17		-	L	AB U	SE ONL	Y
COOLING MEDIA PRESENT	1	2		3	COO	LING MEDIA PI	RESENT			•0	2	8	2	3	SEAL I	NTAC'	t Edia P	RESEM	JT.	_		°C		2	9	MAXX	(AM J	OB #	
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COC - 1009 (04/2018) IOL-NS								White:	Maxxa	ITT			Yello	w: Clien	t								-						

ΑΞϹΟΜ

Data Quality Review Checklist

Consultant: Al	ECOM			Sampling Date:	2017/01/11					
Location: 64	MILL LA	AKE ROA	AD NO 2,	Laboratory:	Maxxam					
н	JBBARD	S, NS								
Consultant Project Number: 60	438249			Sample Submission Number:	B705977					
Are All Laboratory QC Samples Within Acceptance Criteria (Yes, No, Not Applicable)?										
	Yes	No	NA	Commer	nts					
Instrument Surrogate Recovery	\boxtimes									
Extraction Surrogate Recovery	\boxtimes									
Method Blank Concentration	\boxtimes									
Matrix Duplicate RPD			\boxtimes							
Matrix Spike Recovery			\boxtimes							
Lab Control Sample Recovery	\boxtimes									
Are All Field QC Samples Within	Alert Lim	its (Yes,	No, Not /	Applicable)?						
	Yes	No	NA	Commer	nts					
Field Blank Concentration			\boxtimes							
Trip Blank Concentration			\boxtimes							
Field Duplicate RPD	\boxtimes									
Has CoA been signed off?				⊠ Yes	□ No					
Has lab warranted all tests were i	n statisti	cal contro	ol in CoA	?⊠ Yes	🗆 No					
Has lab warranted all tests were a	analyzed	following	g SOP's ii	n CoA?⊠ Yes	🗆 No					
Were all samples analyzed within	hold tim	es?		⊠ Yes	□ No					
All volatiles samples methanol ex	tracted (i	f require	d) within	48 hours? Xes	□ No					
Is Chain of Custody completed ar	nd signed	1?			□ No					
Were sample temperatures accept	otable wh	ien they i	reached I	ab? Yes	□ No					
Is data considered to be reliable?			⊠ Yes	□ No						
If answer is "No", describe and pr	ovide rat	ionale:								
				/	· Ale					
Reviewed by (Print): Janio	ce Shea			Reviewed by (Signature):	mue Shea.					
Date: 2019)/02/27			V						



Task Order#: N/A-CTC SITE-Site#: CTC Site Location: 64 MILL LAKE RD NO 2, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 585945-02-01

Attention:Tim Bachiu

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2017/06/27 Report #: R4559915 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7D0352

Received: 2017/06/22, 12:57

Sample Matrix: Water # Samples Received: 3

Analyses	Quantity	Laboratory Method	Primary Reference
TEH in Water (PIRI)	3	ATL SOP 00113	Atl. RBCA v3.1 m
VPH in Water (PIRI)	3	ATL SOP 00118	Atl. RBCA v3.1 m
Silica Gel Clean-up (Water)	3	ATL SOP 00113	EPA 3630C R3 m
ModTPH (T1) Calc. for Water	3	N/A	Atl. RBCA v3 m

Remarks:

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

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

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

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

Results relate to samples tested.

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

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

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



Task Order#: N/A-CTC SITE-Site#: CTC Site Location: 64 MILL LAKE RD NO 2, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 585945-02-01

Attention:Tim Bachiu

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2017/06/27 Report #: R4559915 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7D0352 Received: 2017/06/22, 12:57

Encryption Key

Michelle Hill Project Manager 27 Jun 2017 16:11:29

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Keri Mackay, Project Manager - Bedford Email: kmackay@maxxam.ca Phone# (902)420-0203 Ext:294

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



RBCA HYDROCARBONS IN WATER (WATER)

Maxxam ID		EPN215	EPN216	EPN217		
Sampling Date		2017/06/22 10:50	2017/06/22 10:55	2017/06/22 11:00		
COC Number		585945-02-01	585945-02-01	585945-02-01		
	UNITS	MW6	DUP1	MW16-01	RDL	QC Batch
Petroleum Hydrocarbons						
Benzene	mg/L	<0.0010	<0.0010	<0.0010	0.0010	5042350
Toluene	mg/L	<0.0010	<0.0010	<0.0010	0.0010	5042350
Ethylbenzene	mg/L	<0.0010	<0.0010	<0.0010	0.0010	5042350
Total Xylenes	mg/L	<0.0020	<0.0020	<0.0020	0.0020	5042350
C6 - C10 (less BTEX)	mg/L	0.027	0.031	0.034	0.010	5042350
>C10-C16 Hydrocarbons	mg/L	2.6	2.1	0.86	0.050	5042292
>C16-C21 Hydrocarbons	mg/L	0.82	0.70	0.69	0.050	5042292
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td>0.16</td><td>0.15</td><td>0.13</td><td>0.10</td><td>5042292</td></c32>	mg/L	0.16	0.15	0.13	0.10	5042292
Modified TPH (Tier1)	mg/L	3.6	3.0	1.7	0.10	5040312
Reached Baseline at C32	mg/L	Yes	Yes	Yes	N/A	5042292
Hydrocarbon Resemblance	mg/L	COMMENT (1)	COMMENT (1)	COMMENT (2)	N/A	5042292
Extraction						
Surrogate Recovery (%)						
Isobutylbenzene - Extractable	%	92	89	84		5042292
n-Dotriacontane - Extractable	%	99 (3)	100	87		5042292
Instrument Surrogate Recovery (%)						
1,4-Difluorobenzene	%	100	100	99		5042350
4-Bromofluorobenzene	%	99	100	101		5042350
D4-1,2-Dichloroethane	%	92	94	92		5042350
Isobutylbenzene - Volatile	%	92	90	93 (4)		5042350
RDL = Reportable Detection Lim	nit					
QC Batch = Quality Control Bate	h					
N/A = Not Applicable						
(1) Weathered fuel oil fraction.						
(2) One product in fuel oil range	2.					
(3) TEH sample contained sedim	nent.					
(4) VPH sample contained sedin	nent.					



TEST SUMMARY

Maxxam ID:	EPN215	Collected:	2017/06/22
Sample ID:	MW6	Relinquished:	2017/06/22
Matrix:	Water	Received:	2017/06/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	5042292	2017/06/23	2017/06/24	Marsha (Skinner) Harnum
VPH in Water (PIRI)	PTGC/MS	5042350	N/A	2017/06/23	Jackie Pia
ModTPH (T1) Calc. for Water	CALC	5040312	N/A	2017/06/26	Automated Statchk

Maxxam ID:	EPN216
Sample ID:	DUP1
Matrix:	Water

Collected:	2017/06/22
Relinquished:	2017/06/22
Received:	2017/06/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	5042292	2017/06/23	2017/06/24	Marsha (Skinner) Harnum
VPH in Water (PIRI)	PTGC/MS	5042350	N/A	2017/06/23	Jackie Pia
ModTPH (T1) Calc. for Water	CALC	5040312	N/A	2017/06/26	Automated Statchk

Maxxam ID: Sample ID:	EPN217 MW16-01				Re	Collected: linguished:	2017/06/22 2017/06/22
Matrix:	Water					Received:	2017/06/22
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)			5042292	2017/06/23	2017/06/24	Marcha (S	kinner) Harnum

	motranientation	Batteri	Excludeced	Bateralayzea	, and you
TEH in Water (PIRI)	GC/FID	5042292	2017/06/23	2017/06/24	Marsha (Skinner) Harnum
VPH in Water (PIRI)	PTGC/MS	5042350	N/A	2017/06/23	Jackie Pia
ModTPH (T1) Calc. for Water	CALC	5040312	N/A	2017/06/26	Automated Statchk



GENERAL COMMENTS

Each te	emperature is the	average of up to t	rree cooler temperatures taken at receipt
	Package 1	11.7°C]
Silica g	el clean-up perfor	med on water ext	– racts.
Result	s relate only to the	e items tested.	



QUALITY ASSURANCE REPORT

QA/QC Batch	Init	OC Type	Parameter	Date Analyzed	Value	Recovery		OC Limite
5042292	MSK	Method Blank	n-Dotriacontane - Extractable	2017/06/23	Value	84	%	30 - 130
			Isobutylbenzene - Extractable	2017/06/23		84	%	30 - 130
			>C10-C16 Hydrocarbons	2017/06/23	<0.050	-	mg/L	
			>C16-C21 Hydrocarbons	2017/06/23	< 0.050		mg/l	
			>C21- <c32 hydrocarbons<="" td=""><td>2017/06/23</td><td><0.10</td><td></td><td>mg/l</td><td></td></c32>	2017/06/23	<0.10		mg/l	
5042350	IPA	Method Blank	1.4-Difluorobenzene	2017/06/23		99	%	70 - 130
	••••		4-Bromofluorobenzene	2017/06/23		99	%	70 - 130
			D4-1.2-Dichloroethane	2017/06/23		91	%	70 - 130
			Isobutylbenzene - Volatile	2017/06/23		95	%	70 - 130
			Benzene	2017/06/23	<0.0010		mg/L	
			Toluene	2017/06/23	< 0.0010		mg/L	
			Ethylbenzene	2017/06/23	< 0.0010		mg/L	
			Total Xylenes	2017/06/23	<0.0020		mg/L	
			C6 - C10 (less BTEX)	2017/06/23	<0.010		mg/L	
5042292	MSK	LCS	n-Dotriacontane - Extractable	2017/06/23		93	%	30 - 130
			Isobutylbenzene - Extractable	2017/06/23		85	%	30 - 130
			>C10-C16 Hydrocarbons	2017/06/23		93	%	70 - 130
			>C16-C21 Hydrocarbons	2017/06/23		91	%	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2017/06/23</td><td></td><td>100</td><td>%</td><td>70 - 130</td></c32>	2017/06/23		100	%	70 - 130
5042350	JPA	LCS	1,4-Difluorobenzene	2017/06/23		98	%	70 - 130
			4-Bromofluorobenzene	2017/06/23		98	%	70 - 130
			D4-1,2-Dichloroethane	2017/06/23		92	%	70 - 130
			Isobutylbenzene - Volatile	2017/06/23		96	%	70 - 130
			Benzene	2017/06/23		117	%	70 - 130
			Toluene	2017/06/23		118	%	70 - 130
			Ethylbenzene	2017/06/23		117	%	70 - 130
			Total Xylenes	2017/06/23		116	%	70 - 130

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.



VALIDATION SIGNATURE PAGE

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

Philips Deven

Phil Deveau, Scientific Specialist (Organics)

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.
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Contac	Accounts Pay	rable	C	ontaci	t Nam	e: Tin	n Bachiu				y lub	1	-													
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Phone	: (902) 428- 200 2	048x	P	hone:		902-	- 428 - 2	048x			8	5	-													
Sampl	er Name (Print):	Hatt	C	onsul	tant P	roject	#: 60438249				Hydr	North I	2 E													1.1
	U U		MAT	TRIX		10	SAMPLI	NG	800	NO	T	10	5													
	FIELD SAMPLE ID	SROUNDWATER	SURFACE WATER	SOIL	OTHER	CONTAINERS	DATE	TIME (24 HR)	PRESERVE	LAB FILTRATI REQUIRED	RBCF	V	7													
1	mult	X				1	2017 01 22	10:50			X	X	Ť		1	t i i							Ť			
2	Qual	Ŷ				6	20170622	10:55			X	X			-								-			
3	MU16-01	\rightarrow				6	20170677	11:00			X	Ń	-													
4	MIMIO- OI	^		_		0	DUITONAL	11.00			/	1	-													
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IOL PF	ROJECT # (if applicable):	Id Noz,	Hubl	cavd	5, N	JS	′	Ał	ant	ÌC	PI	K)	TION	LIMITS:	SPEG	N	lone				AND NO SUBMIT Enter N// Water	T TED A for	Stand Rush	ard	(5 days (3 days (2 days (1 day	N X i) X i) I i) I i) I i) I i) I i) I ii) I iii) I iii) I iii) I
MAXX. -	AM TASK ORDER # OR SERV N/A - CT	C Site	# + LIN	e itei	M:																h	/4	_	Da	(same day	0 🗖
	YES NO COO	DLER ID:						YES	NO	COOLE	R ID:						YES NO	COOLE	R ID:							
SEAL PI SEAL IN COOLIN	TACT	B	10	C	14		EAL PRESENT EAL INTACT OOLING MEDIA PRE	SENT		TEMP °C	1			2 3	SEAL P SEAL IN COOLIN	RESENT NTACT NG MEDIA PRESENT		TEMP °C	1	2		3		LAB MAX	USE ON XAM JO	LY B#
RELI	NQUISHED BY:					DAT	E:,	TIME (2	4 HR)		RECEIN	VEDE	BY:					DATE		J	TIME (24	HR)	B	+Dx	035	2.
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3.	000 (2013) IOL - NS				507 m 20					3				1. I.									N	JK		KU

ΑΞϹΟΜ

Data Quality Review Checklist

Consultant: A Location: 64	ECOM 4 MILL LA		AD NO 2,	Sampling Date: 2017/06/22 Laboratory: Maxxam							
Consultant Project Number: 60)438249	0, 110		Sample Submission Number: B7D0352							
Are All Laboratory QC Samples V	Vithin Ac	ceptance	Criteria	(Yes, No, Not Applicable)?							
	Yes	No	NA	Comments							
Instrument Surrogate Recovery	\boxtimes										
Extraction Surrogate Recovery	\boxtimes										
Method Blank Concentration	\boxtimes										
Matrix Duplicate RPD			\boxtimes								
Matrix Spike Recovery			\boxtimes								
Lab Control Sample Recovery	\boxtimes										
Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?											
	Yes	No	NA	Comments							
Field Blank Concentration			\boxtimes								
Trip Blank Concentration			\boxtimes								
Field Duplicate RPD	\boxtimes										
· · · · · ·			•								
Has CoA been signed off?											
Has lab warranted all tests were i	n statisti	cal contro		?X Yes 🗆 No							
Has lab warranted all tests were a	analyzed) 50P S II								
All volatiles samples methanol ex	tracted (i	t require	d) within								
Is Chain of Custody completed ar		11640116	u) within i								
Were sample temperatures accer	otable wh	en thev	reached l	ab? X Yes I No							
Is data considered to be reliable?		· · · · · · · · · · · ·	_⊠ Yes	L NO							
If answer is into, describe and pr	ovide rat	ionale:									
				· ·							
Reviewed by (Print): Janio Date: 2019	ce Shea			Reviewed by (Signature):							



Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD. NO2, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 620379-07-01

Attention:Tim Bachiu

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2017/08/02 Report #: R4627783 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7G0392 Received: 2017/07/27, 16:13

Sample Matrix: Water # Samples Received: 5

Analyses	Quantity	Laboratory Method	Primary Reference
TEH in Water (PIRI)	5	ATL SOP 00113	Atl. RBCA v3.1 m
VPH in Water (PIRI)	5	ATL SOP 00118	Atl. RBCA v3.1 m
Silica Gel Clean-up (Water)	5	ATL SOP 00113	EPA 3630C R3 m
ModTPH (T1) Calc. for Water	5	N/A	Atl. RBCA v3 m

Remarks:

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

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

Results relate to samples tested.

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

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

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



Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD. NO2, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 620379-07-01

Attention:Tim Bachiu

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2017/08/02 Report #: R4627783 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7G0392 Received: 2017/07/27, 16:13

Encryption Key

heri Machay Keri MacKay Project Manager - Bedford 02 Aug 2017 15:46:09

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Keri Mackay, Project Manager - Bedford Email: kmackay@maxxam.ca Phone# (902)420-0203 Ext:294



RBCA HYDROCARBONS IN WATER (WATER)

Maxxam ID		EVG245		EVG246		EVG247	EVG248		
Sampling Data		2017/07/27		2017/07/27		2017/07/27	2017/07/27		
		14:35		14:15		14:45	14:20		
COC Number		620379-07-01		620379-07-01		620379-07-01	620379-07-01		
	UNITS	MW17-01	RDL	MW17-02	RDL	MW17-03	MW16-02	RDL	QC Batch
Petroleum Hydrocarbons									
Benzene	mg/L	<0.0010	0.0010	0.0098	0.0010	<0.0010	<0.0010	0.0010	5095558
Toluene	mg/L	0.0060	0.0010	0.016	0.0010	<0.0010	<0.0010	0.0010	5095558
Ethylbenzene	mg/L	0.0033	0.0010	<0.0010	0.0010	<0.0010	<0.0010	0.0010	5095558
Total Xylenes	mg/L	0.0041	0.0020	<0.0020	0.0020	<0.0020	<0.0020	0.0020	5095558
C6 - C10 (less BTEX)	mg/L	0.29	0.010	0.019	0.010	0.092	<0.010	0.010	5095558
>C10-C16 Hydrocarbons	mg/L	1.7	0.050	0.073	0.053	4.4	<0.050	0.050	5097856
>C16-C21 Hydrocarbons	mg/L	0.64	0.050	<0.053	0.053	0.80	<0.050	0.050	5097856
>C21- <c32 hydrocarbons<="" p=""></c32>	mg/L	0.20	0.10	<0.11	0.11	0.16	<0.10	0.10	5097856
Modified TPH (Tier1)	mg/L	2.9	0.10	<0.11	0.11	5.4	<0.10	0.10	5092989
Reached Baseline at C32	mg/L	Yes	N/A	Yes	N/A	Yes	NA	N/A	5097856
Hydrocarbon Resemblance	mg/L	COMMENT (1)	N/A	COMMENT (1)	N/A	COMMENT (1)	NA	N/A	5097856
Extraction									
Surrogate Recovery (%)									
Isobutylbenzene - Extractable	%	84		72		85	77		5097856
n-Dotriacontane - Extractable	%	101		95 (2)		103 (3)	100		5097856
Instrument									
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	107		103		105	103		5095558
4-Bromofluorobenzene	%	99		100		98	99		5095558
D4-1,2-Dichloroethane	%	110		106		108	105		5095558
Isobutylbenzene - Volatile	%	78 (4)		99 (4)		90 (4)	97 (4)		5095558

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Weathered fuel oil fraction.

(2) Elevated TEH RDL(s) due to limited sample. TEH sample decanted due to sediment.

(3) TEH sample contained sediment.

(4) VPH sample contained sediment.



Maxxam ID		EVG249							
Sampling Date		2017/07/27							
		14:45							
COC Number		620379-07-01							
	UNITS	DUP 1	RDL	QC Batch					
Petroleum Hydrocarbons									
Benzene	mg/L	<0.0010	0.0010	5095558					
Toluene	mg/L	<0.0010	0.0010	5095558					
Ethylbenzene	mg/L	<0.0010	0.0010	5095558					
Total Xylenes	mg/L	<0.0020	0.0020	5095558					
C6 - C10 (less BTEX)	mg/L	0.086	0.010	5095558					
>C10-C16 Hydrocarbons	mg/L	9.0	0.050	5097856					
>C16-C21 Hydrocarbons	mg/L	1.5	0.050	5097856					
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td>0.20</td><td>0.10</td><td>5097856</td></c32>	mg/L	0.20	0.10	5097856					
Modified TPH (Tier1)	mg/L	11	0.10	5092989					
Reached Baseline at C32	mg/L	Yes	N/A	5097856					
Hydrocarbon Resemblance	mg/L	COMMENT (1)	N/A	5097856					
Extraction									
Surrogate Recovery (%)									
Isobutylbenzene - Extractable	%	89		5097856					
n-Dotriacontane - Extractable	%	102		5097856					
Instrument									
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	105		5095558					
4-Bromofluorobenzene	%	98		5095558					
D4-1,2-Dichloroethane	%	109		5095558					
Isobutylbenzene - Volatile	%	84 (2)		5095558					
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									
N/A = Not Applicable									
(1) Weathered fuel oil fraction.									
(2) VPH sample contained sediment.									

RBCA HYDROCARBONS IN WATER (WATER)



Maxxam ID: EVG249 Sample ID: DUP 1 Matrix: Water

AECOM Canada Ltd. Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD. NO2, HUBBARDS, NS Project #: 60438249

Received: 2017/07/27

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	EVG245 MW17-01 Water				R	Collected: elinquished: Received:	2017/07/27 2017/07/27 2017/07/27
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	5097856	2017/07/31	2017/08/01	Brittany M	atthews
VPH in Water (PIRI)		PTGC/MS	5095558	N/A	2017/07/29	Thea Holla	nd
ModTPH (T1) Calc. for W	ater	CALC	5092989	N/A	2017/08/02	Automated	d Statchk
Maxxam ID: Sample ID: Matrix:	EVG246 MW17-02 Water				R	Collected: elinquished: Received:	2017/07/27 2017/07/27 2017/07/27
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	5097856	2017/07/31	2017/08/01	Brittany M	atthews
VPH in Water (PIRI)		PTGC/MS	5095558	N/A	2017/07/29	Thea Holla	nd
ModTPH (T1) Calc. for W	ater	CALC	5092989	N/A	2017/08/02	Automated	d Statchk
Maxxam ID: Sample ID: Matrix:	EVG247 MW17-03 Water				R	Collected: elinquished: Received:	2017/07/27 2017/07/27 2017/07/27
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	5097856	2017/07/31	2017/08/01	Brittany M	atthews
VPH in Water (PIRI)		PTGC/MS	5095558	N/A	2017/07/29	Thea Holla	nd
ModTPH (T1) Calc. for W	ater	CALC	5092989	N/A	2017/08/02	Automated	d Statchk
Maxxam ID: Sample ID: Matrix:	EVG248 MW16-02 Water				R	Collected: elinquished: Received:	2017/07/27 2017/07/27 2017/07/27
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	5097856	2017/07/31	2017/08/01	Brittany M	atthews
VPH in Water (PIRI)		PTGC/MS	5095558	N/A	2017/07/29	Thea Holla	nd
ModTPH (T1) Calc. for W	ater	CALC	5092989	N/A	2017/08/02	Automated	d Statchk
Maxxam ID: Sample ID:	EVG249 DUP 1				R	Collected: elinquished:	2017/07/27 2017/07/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	5097856	2017/07/31	2017/08/01	Brittany Matthews
VPH in Water (PIRI)	PTGC/MS	5095558	N/A	2017/07/29	Thea Holland
ModTPH (T1) Calc. for Water	CALC	5092989	N/A	2017/08/02	Automated Statchk



GENERAL COMMENTS

Each te	emperature is the	average of up to	three cooler temperatures taken at receipt							
	Package 1	8.0°C								
Silica g	Silica gel clean-up performed on water extracts.									
Results relate only to the items tested.										



Г

AECOM Canada Ltd. Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD. NO2, HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
5095558	THL	Method Blank	1,4-Difluorobenzene	2017/07/29		103	%	70 - 130
			4-Bromofluorobenzene	2017/07/29		100	%	70 - 130
			D4-1,2-Dichloroethane	2017/07/29		104	%	70 - 130
			Isobutylbenzene - Volatile	2017/07/29		103	%	70 - 130
			Benzene	2017/07/29	<0.0010		mg/L	
			Toluene	2017/07/29	<0.0010		mg/L	
			Ethylbenzene	2017/07/29	<0.0010		mg/L	
			Total Xylenes	2017/07/29	<0.0020		mg/L	
			C6 - C10 (less BTEX)	2017/07/29	<0.010		mg/L	
5097856	BCD	Method Blank	n-Dotriacontane - Extractable	2017/08/01		90	%	30 - 130
			Isobutylbenzene - Extractable	2017/08/01		71	%	30 - 130
			>C10-C16 Hydrocarbons	2017/08/01	<0.050		mg/L	
			>C16-C21 Hydrocarbons	2017/08/01	<0.050		mg/L	
			>C21- <c32 hydrocarbons<="" p=""></c32>	2017/08/01	<0.10		mg/L	
5095558	THL	LCS	1,4-Difluorobenzene	2017/07/29		102	%	70 - 130
			4-Bromofluorobenzene	2017/07/29		99	%	70 - 130
			D4-1,2-Dichloroethane	2017/07/29		104	%	70 - 130
			Isobutylbenzene - Volatile	2017/07/29		108	%	70 - 130
			Benzene	2017/07/29		106	%	70 - 130
			Toluene	2017/07/29		113	%	70 - 130
			Ethylbenzene	2017/07/29		118	%	70 - 130
			Total Xylenes	2017/07/29		117	%	70 - 130
5097856	BCD	LCS	n-Dotriacontane - Extractable	2017/08/01		102	%	30 - 130
			Isobutylbenzene - Extractable	2017/08/01		84	%	30 - 130
			>C10-C16 Hydrocarbons	2017/08/01		92	%	70 - 130
			>C16-C21 Hydrocarbons	2017/08/01		84	%	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2017/08/01</td><td></td><td>102</td><td>%</td><td>70 - 130</td></c32>	2017/08/01		102	%	70 - 130
LCS: A bla	ink mat	rix sample to which a k	nown amount of the analyte, usually from a sec	cond source, has been adde	d. Used to evalu	ate method acc	uracy.	

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.



VALIDATION SIGNATURE PAGE

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

Philips Deven

Phil Deveau, Scientific Specialist (Organics)

Maxiam 2	Image: Notice Information 200 Bluewater Road Phone: (902) 420-0203 Bedford, Nova Scotia B4B 1G9 Fax: (902) 420-8612 www.maxxam.ca Toll Free: 800-563-6266										EXXON CH	VMC HAII A	OBIL/IMPERIAL OIL IN-OF-CUSTODY RI ANALYSIS REQUEST	L - MA) ECORL TED	CXAM D	-	Pag C of C # 620	a a a a a a a a a a a a a a a a a a a	Elof]	62037	1 9				
Company Name:AECOM Canada Ltd		c	ompar	ny Narr	1e:AEC	DM Canada Ltd.			-	-													\square		
Contact Name: Contact Name: Tim Bachiu Tim Bachiu Address: Address: 1701 Hollis Street Halifax NS B3J 3M8 Email: Timothy.bachiu@aecom.com Phone: (902) 428-2048 x Phone: (902) 428-2048 x Consultant Project #: 600						othy.bachiu@aecom. 2) 428-2048 x 60438249	ecom.com, Laura.MacIsaac@				n Soil (field pres.) In Water		water Present		in hisis	(1-Amail									
L'raig Ho	211	MA	TRIX			SAMPLIN	IG	-05	7	uu suo	ui suo	3	7	-											
FIELD SAMPLE ID	GROUND WATER	SURFACE WATER	SOIL	OTHER	CONTAINERS	DATE	TIME (24 HR)	FIELD FILTERED PRESERVED	LAB FILTRATIO REQUIRED	RBCA Hydrocarb	RBCA Hydrocart	Sed	N	400											
1 MIN17-01	X	-			6	20170727	1435				X	X		Ť			1		1 1 1			1			
2 MW17-02	X				6	20170727	1415				X	X													
3 MW17-03	X				6	20170727	1445				X	X													
* MW16-02	X				6	2017 07 27	1420				X	X											<u> </u>		
5 Dug 1	X				6	2017 07 27	1445				X	X													
6 MW1	X				6	20170727	1455				1	MA C	X												
MW3	X				6	20170727	1355				2	3 Me	XH												
* WW4	X				6	20170727	1400				de la		Xh												
° MUS	X				6	20170727	1410				-	UML .	Cil X												
10 MW/6-01	X				6	20170727	143C				1	112	G X	5											
IOL SITE LOCATION: 64 Mill Lake Rd. NO2, Hubbards, NS	/				-		REGULA	ATORY	CRITE	RIA / DE	TECTIC	ON LÍMITS	S	SF	PECIAL INSTRUCTIONS:				AND NOT	Standa	rd TURNAR	(5 days)	100		
IOL PROJECT # (if applicable);				_			AHL	inti	C	PI	RI			4	On Hold:	mi	11, M	JWS,	SUBMITTED Enter N/A for	Rush		(3 days)			
CTC MAXXAM TASK ORDER # OR SERVICE ORD N/A - CTC-	DER # + LINE	ITEM:					1110	A.			1				mw4, n	nw5	5, mi	N16-0	I NA		((2 days) (1 day) same day)			
																					Date	Required			
SEAL PRESENT	(ID:	1	0	0	2	SEAL PRESENT	YES	NO C	JOOLE	KID:	1			SE	EAL PRESENT	S NO C	COLER ID				LAB U	SE ONLY			
SEAL INTACT IEMP VC V O SEAL INTACT IEMI COOLING MEDIA PRESENT °C 1 2 3 COOLING MEDIA PRESENT °C						°C	1		2	3	SE	EAL INTACT COOLING MEDIA PRESENT		°C	1	2 3		MAXX	AM JOB #						
* RELINQUISHED BY:				,	DA	TE:	TIME (24 HR)	F	RECEN	VED BY	4					DATE:		TIME (24 HR)	BAC	0392	/B7G0	0883		
1. hay Hatto	Cro	rigt	Tat	ſ	2	0170727	15:	15	1.	V	nui	She	a J)	MARYANN CO	MEAU	2017	107127	16:13	100	SAN	IPLES	ED BY-		
2. J	_	0			-			-	2.	-		-								01)	VERIFI	EU BT		
 UNLESS OTHERWISE AGREED TO IN WRITING, AT WWW.MAXXAM.CA/TERMS. 	WORK SUBM	ITTED C	ON THIS	CHAIN	OF CUS	TODY IS SUBJECT TO	MAXXAM'S	STANDA	RD TEF	RMS AND	CONDI	TIONS. SIG	GNING OF THIS	5 CHA	AIN OF CUSTODY DOCUMENT	IS ACKNON	VLEDGMEN	T AND ACCEPT	ANCE OF OUR TERMS	WHICH /	RE AVAILA	BLE FOR VIE	WING		

COC - 1009 (2016) IOL - NS

White: Maxxam

Yellow: Client

ΑΞϹΟΜ

Data Quality Review Checklist

Consultant: <u>A</u> Location: 64 HI	ECOM	AKE ROA	AD NO 2,	Sampling Date: 2017/07/27 Laboratory: Maxxam							
Consultant Project Number: 60)438249	0,110		Sample Submission Number: B7G0392							
Are All Laboratory QC Samples V	Vithin Ac	ceptance	e Criteria	(Yes, No, Not Applicable)?							
	Yes	No	NA	Comments							
Instrument Surrogate Recovery	\boxtimes										
Extraction Surrogate Recovery	\boxtimes										
Method Blank Concentration	\boxtimes										
Matrix Duplicate RPD			\boxtimes								
Matrix Spike Recovery			\boxtimes								
Lab Control Sample Recovery	\boxtimes										
Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?											
	Yes	No	NA	Comments							
Field Blank Concentration			\boxtimes								
Trip Blank Concentration			\boxtimes								
Field Duplicate RPD	\boxtimes										
Has Call been signed off?											
Has COA been signed on?	n statisti	cal contro	ol in CoA'	2 ⊠ Yes □ No							
Has lab warranted all tests were a	analvzed	following	a SOP's ii	n CoA?							
Were all samples analyzed within	hold tim	es?		⊠ Yes □ No							
All volatiles samples methanol ex	tracted (i	f require	d) within	48 hours? 🛛 Yes 🛛 No							
Is Chain of Custody completed ar	nd signed	1?									
Were sample temperatures accept	otable wh	en they	reached I	lab? 🛛 Yes 🛛 No							
Is data considered to be reliable?			🛛 Yes	□ No							
If answer is "No", describe and pr	ovide rat	ionale:									
Reviewed by (Print): Jania Date: 2019	ce Shea 9/02/27			Reviewed by (Signature):							



Attention:Tim Bachiu

B3J 3M8

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax. NS CANADA

Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD. NO2, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 620379-06-01

Report Date: 2017/08/04 Report #: R4632318 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7G0881 Received: 2017/07/27, 16:13

Sample Matrix: Water # Samples Received: 4

Analyses	Quantity	Laboratory Method	Primary Reference
TEH in Water (PIRI)	4	ATL SOP 00113	Atl. RBCA v3.1 m
VPH in Water (PIRI)	4	ATL SOP 00118	Atl. RBCA v3.1 m
Silica Gel Clean-up (Water)	4	ATL SOP 00113	EPA 3630C R3 m
ModTPH (T1) Calc. for Water	4	N/A	Atl. RBCA v3 m

Remarks:

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

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

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

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

Results relate to samples tested.

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

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

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

Page 1 of 8



Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD. NO2, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 620379-06-01

Attention:Tim Bachiu

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2017/08/04 Report #: R4632318 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7G0881 Received: 2017/07/27, 16:13

Encryption Key

Michelle Hill Manager, Client Services 04 Aug 2017 13:21:06

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Keri Mackay, Project Manager - Bedford Email: kmackay@maxxam.ca Phone# (902)420-0203 Ext:294



RBCA HYDROCARBONS IN WATER (WATER)

Maxxam ID		EVI936	EVI936		EVI937		EVI938	EVI939		
Sampling Date		2017/07/27 13·40	2017/07/27 13·40		2017/07/27 13·45		2017/07/27 13·50	2017/07/27 13·30		
COC Number		620379-06-01	620379-06-01		620379-06-01		620379-06-01	620379-06-01		
	UNITS	MW17-04	MW17-04 Lab-Dup	RDL	MW17-05	RDL	MW16-03	MW2	RDL	QC Batch
Petroleum Hydrocarbons										
Benzene	mg/L	<0.0010	<0.0010	0.0010	<0.0010	0.0010	<0.0010	<0.0010	0.0010	5098151
Toluene	mg/L	<0.0010	<0.0010	0.0010	<0.0010	0.0010	<0.0010	<0.0010	0.0010	5098151
Ethylbenzene	mg/L	<0.0010	<0.0010	0.0010	<0.0010	0.0010	<0.0010	<0.0010	0.0010	5098151
Total Xylenes	mg/L	<0.0020	<0.0020	0.0020	<0.0020	0.0020	<0.0020	<0.0020	0.0020	5098151
C6 - C10 (less BTEX)	mg/L	<0.010	<0.010	0.010	<0.010	0.010	<0.010	<0.010	0.010	5098151
>C10-C16 Hydrocarbons	mg/L	<0.050		0.050	<0.057	0.057	<0.050	<0.050	0.050	5097856
>C16-C21 Hydrocarbons	mg/L	<0.050		0.050	<0.057	0.057	<0.050	<0.050	0.050	5097856
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.10</td><td></td><td>0.10</td><td><0.11</td><td>0.11</td><td><0.10</td><td><0.10</td><td>0.10</td><td>5097856</td></c32>	mg/L	<0.10		0.10	<0.11	0.11	<0.10	<0.10	0.10	5097856
Modified TPH (Tier1)	mg/L	<0.10		0.10	<0.11	0.11	<0.10	<0.10	0.10	5095068
Reached Baseline at C32	mg/L	NA		N/A	NA	N/A	NA	NA	N/A	5097856
Hydrocarbon Resemblance	mg/L	NA		N/A	NA	N/A	NA	NA	N/A	5097856
Extraction Surrogate Recovery (%)										
Isobutylbenzene - Extractable	%	77			75		71	76		5097856
n-Dotriacontane - Extractable	%	94 (1)			101 (2)		91	102		5097856
Instrument Surrogate Recovery (%)										
1,4-Difluorobenzene	%	99	100		101		100	100		5098151
4-Bromofluorobenzene	%	94	93		93		92	93		5098151
D4-1,2-Dichloroethane	%	93	93		93		91	91		5098151
Isobutylbenzene - Volatile	%	87 (3)	86 (3)		83 (3)		83	82		5098151

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) TEH sample contained sediment.

(2) Elevated TEH RDL(s) due to limited sample. TEH sample decanted due to sediment.

(3) VPH sample contained sediment.



TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	EVI936 MW17-04 Water				Re	Collected: elinquished: Received:	2017/07/27 2017/07/27 2017/07/27
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	5097856	2017/07/31	2017/08/01	Brittany N	latthews
VPH in Water (PIRI)		PTGC/MS	5098151	N/A	2017/08/01	Michelle S	hearer
ModTPH (T1) Calc. for Wa	ater	CALC	5095068	N/A	2017/08/02	Automate	d Statchk
Maxxam ID: Sample ID: Matrix:	EVI936 Dup MW17-04 Water				Re	Collected: elinquished: Received:	2017/07/27 2017/07/27 2017/07/27
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
VPH in Water (PIRI)		PTGC/MS	5098151	N/A	2017/08/01	Michelle S	hearer
Maxxam ID: Sample ID: Matrix:	EVI937 MW17-05 Water				Re	Collected: elinquished: Received:	2017/07/27 2017/07/27 2017/07/27
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	5097856	2017/07/31	2017/08/01	Brittany N	latthews
VPH in Water (PIRI)		PTGC/MS	5098151	N/A	2017/08/01	Michelle S	hearer
ModTPH (T1) Calc. for Wa	ater	CALC	5095068	N/A	2017/08/02	Automate	d Statchk
Maxxam ID: Sample ID: Matrix:	EVI938 MW16-03 Water				Re	Collected: elinquished: Received:	2017/07/27 2017/07/27 2017/07/27
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	5097856	2017/07/31	2017/08/01	Brittany N	latthews
VPH in Water (PIRI)		PTGC/MS	5098151	N/A	2017/08/01	Michelle S	hearer
ModTPH (T1) Calc. for Wa	ater	CALC	5095068	N/A	2017/08/02	Automate	d Statchk
Maxxam ID: Sample ID: Matrix:	EVI939 MW2 Water				Re	Collected: elinquished: Received:	2017/07/27 2017/07/27 2017/07/27
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	5097856	2017/07/31	2017/08/01	Brittany N	latthews
VPH in Water (PIRI)		PTGC/MS	5098151	N/A	2017/08/01	Michelle S	hearer
ModTPH (T1) Calc. for Wa	ater	CALC	5095068	N/A	2017/08/02	Automate	d Statchk



GENERAL COMMENTS

Each te	emperature is the	average of up to	three cooler temperatures taken at receipt									
	Package 1	8.0°C										
Silica g	Package 1 8.0°C lica gel clean-up performed on water extracts.											
Result	s relate only to th	e items tested.										



QUALITY ASSURANCE REPORT

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
5097856	BCD	Method Blank	n-Dotriacontane - Extractable	2017/08/01		90	%	30 - 130
			Isobutylbenzene - Extractable	2017/08/01		71	%	30 - 130
			>C10-C16 Hydrocarbons	2017/08/01	<0.050		mg/L	
			>C16-C21 Hydrocarbons	2017/08/01	<0.050		mg/L	
			>C21- <c32 hydrocarbons<="" p=""></c32>	2017/08/01	<0.10		mg/L	
5098151	MS3	Method Blank	1,4-Difluorobenzene	2017/08/01		101	%	70 - 130
			4-Bromofluorobenzene	2017/08/01		93	%	70 - 130
			D4-1,2-Dichloroethane	2017/08/01		93	%	70 - 130
			Isobutylbenzene - Volatile	2017/08/01		85	%	70 - 130
			Benzene	2017/08/01	<0.0010		mg/L	
			Toluene	2017/08/01	<0.0010		mg/L	
			Ethylbenzene	2017/08/01	<0.0010		mg/L	
			Total Xylenes	2017/08/01	<0.0020		mg/L	
			C6 - C10 (less BTEX)	2017/08/01	<0.010		mg/L	
5098151	MS3	RPD [EVI936-02]	Benzene	2017/08/01	NC		%	40
			Toluene	2017/08/01	NC		%	40
			Ethylbenzene	2017/08/01	NC		%	40
			Total Xylenes	2017/08/01	NC		%	40
			C6 - C10 (less BTEX)	2017/08/01	NC		%	40
5098151	MS3	Matrix Spike [EVI937-02]	1,4-Difluorobenzene	2017/08/01		99	%	70 - 130
			4-Bromofluorobenzene	2017/08/01		95	%	70 - 130
			D4-1,2-Dichloroethane	2017/08/01		92	%	70 - 130
			Isobutylbenzene - Volatile	2017/08/01		86 (1)	%	70 - 130
			Benzene	2017/08/01		109	%	70 - 130
			Toluene	2017/08/01		111	%	70 - 130
			Ethylbenzene	2017/08/01		111	%	70 - 130
			Total Xylenes	2017/08/01		110	%	70 - 130
5097856	BCD	LCS	n-Dotriacontane - Extractable	2017/08/01		102	%	30 - 130
			Isobutylbenzene - Extractable	2017/08/01		84	%	30 - 130
			>C10-C16 Hydrocarbons	2017/08/01		92	%	70 - 130
			>C16-C21 Hydrocarbons	2017/08/01		84	%	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2017/08/01</td><td></td><td>102</td><td>%</td><td>70 - 130</td></c32>	2017/08/01		102	%	70 - 130
5098151	MS3	LCS	1,4-Difluorobenzene	2017/08/01		100	%	70 - 130
			4-Bromofluorobenzene	2017/08/01		94	%	70 - 130
			D4-1,2-Dichloroethane	2017/08/01		91	%	70 - 130
			Isobutylbenzene - Volatile	2017/08/01		86	%	70 - 130
			Benzene	2017/08/01		116	%	70 - 130
			Toluene	2017/08/01		112	%	70 - 130
			Ethylbenzene	2017/08/01		111	%	70 - 130
			Total Xylenes	2017/08/01		110	%	70 - 130

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.

LCS: 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 (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) VPH sample contained sediment.



VALIDATION SIGNATURE PAGE

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

Kosmarie MacDonald

Rosemarie MacDonald, Scientific Specialist (Organics)

Maxiam 200 Bluewater Road Bedford, Nova Scotia B4B 1G9 www.maxam.ca							ne: (902) ax: (902)	120-02	03 12				EXXONMOBIL/IMPERIAL OIL - MAXXAM CHAIN-OF-CUSTODY RECORD ANALYSIS REQUESTED						C	Pa of C # 620	ge of	of 9-06-01		620379			
INVOICE INFORMATION	W.IIIdXXd	ann.ca		0.00	R	EPORT INFORMAT	10N	003-02	100					ANAL	1313 KL	EQUE	SIED			÷							620379
Company Name: AECOM Canada Ltd		C	ompar	ny Nam	e:AECC	M Canada Ltd.		_			1							-				1		-	1	1	
Contact Name: Tim Bachiu Address: 1701 Hollis Street		C T A 1	ontact im Bac ddress 701 Ho	t Name chiu s: ollis Stri	: eet							trass															
Halifax NS B3J 3M8	_	H	alifax I	NS B3J	3M8					es.)		05			1												
Email: I imothy.bachlu@aecom.com		E	maii:		Lime	iny.bachiu@aecom	i.com, Laura	i.Macisa	aac@	eld pr		7											1 1				
Phone: (902) 428-2048 x	1	P	hone:	tant Pr	(902)) 428-2048 x				eil (fa	Vater	t															
Craig Flo	2++		onsui	unit i n	1	00400245	60438249					e.															
0 -		MA	TRIX			SAMPLIN	NG	S G G	NOLO	arbon	arbor	2				- 1											
FIELD SAMPLE ID	GROUND	SURFACE WATER	SOIL	OTHER	CONTAINERS	DATE	TIME (24 HR)	FIELD FILTER PRESERVE	LABFILTRAT	RBCA Hydroc	RBCA Hydroc	Sed															
1 100017-04	X	-	1		6	2017 07 17	MANAN				X	X			i i	- i			İ	İ	Í –	1	<u>i i</u>	- i	İ	1	
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10																						# 10.50			71100	1150	
64 Mill Lake Rd. NO2, Hubbards, NS							REGUL	ATORY	CRITE	RIA / D	ETECTIC	ON LIMIT	S	SPECIAL	INSTRUC	CTIONS	ŝ					AND N	IOT	Stand	lund lard	VAROUN (5 di	3ys) 🔀
IOL PROJECT # (if applicable):							Atlan	tic	PI	KI					Non	C						SUBMI Enter N	N/A for	Rush		(3 d	iys)
стс							- I state	9 a-2	e ar s	1						-						Water				(2 d	iys)
MAXXAM TASK ORDER # OR SERVICE ORDEF N/A - CTC-	R # + LINE	ITEM:																				\cap	JA			(same d	ay) 🔲 lay) 🗍
								Luel	2001 5	D 10.							lune l	- 60								Date Requ	ired
SEAL PRESENT	1.15				2	SEAL PRESENT	YES	NO	COOLE				1	SEAL PRE	ESENT		YES	10 00	OLER IL		1				LA	B USE O	NLY
SEAL INTACT TEMP COULING MEDIA PRESENT °C	10		0	X		SEAL INTACT	DENT		*C			2		SEAL INT	ACT	COENIT		TE	MP C	я		2	3	0	MA	AXXAM J)B#
*RELINQUISHED BY:			۷.		DA	FE:	TIME	24 HR		RECEI	VED BY	2	3	COOLING	5 WEDIA PR	ESENI		JD	ATE:	3	1	TIME (24 HR)	-R	T1(7(388	51
1. hris Auto	CI	aìa	Hat	1	20	117 07 27	15	15	K	N	100	1.80)	M	ARVA	WN	Draf	a	201	7107	127	16	13		190	SAMPLE	S
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* UNLESS OTHERWISE AGREED TO IN WRITING, WO AT WWW.MAXXAM.CA/TERMS.	RK SUBMI	TTED O	N THIS	CHAIN	OF CUST	ODY IS SUBJECT TO	MAXXAM'S	STAND	ARD TE	RMS AN	D CONDIT	TIONS. SI	GNING OF THIS C	HAIN OF C	CUSTODY D	OCUME	NT IS AC	KNOW	EDGME	NT AND A	CCEPTA	ANCE OF C	UR TERM	S WHICH	ARE AV	AILABLE F	OR VIEWING

COC - 1009 (2016) IOL - NS

White: Maxxam

Yellow Client

ΑΞϹΟΜ

Data Quality Review Checklist

Consultant: AECOM Sampling Date: 2017/07/27													
Location: 64	MILL LA	AKE ROA	AD NO 2,	Laboratory: Maxxam									
H	JBBARD	S, NS											
Consultant Project Number: 60	438249			Sample Submission Number: B7G0881									
Are All Laboratory QC Samples V	Vithin Ac	ceptance	Criteria	(Yes, No, Not Applicable)?									
	Yes	No	NA	Comments									
Instrument Surrogate Recovery	\boxtimes												
Extraction Surrogate Recovery	\boxtimes												
Method Blank Concentration	\boxtimes												
Matrix Duplicate RPD		\boxtimes		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).									
Matrix Spike Recovery Image: Control Sample Recovery Image: Control Sample Recovery													
Lab Control Sample Recovery Image: Control Sample Recovery Image: Control Sample Recovery													
Are All Field QC Samples Within	Alert Lim	its (Yes,	No, Not	Applicable)?									
Yes No NA Comments													
Field Blank Concentration			\boxtimes										
Trip Blank Concentration													
Field Duplicate RPD			\boxtimes										
Has CoA been signed off?				⊠ Yes □ No									
Has lab warranted all tests were i	n statisti	cal contro	ol in CoA	? Xes 🗆 No									
Has lab warranted all tests were a	analyzed	following	g SOP's i	n CoA?X Yes 🗆 No									
Were all samples analyzed within	tractod (i	es?	d) within										
Is Chain of Custody completed a	nd signer	17 17		¥0 Hours: ⊠ 165 □ No									
Were sample temperatures accept	otable wh	nen they	reached	ab? ⊠ Yes □ No									
Is data considered to be reliable?			⊠ Yes	□ No									
If answer is "No", describe and pi	ovide rat	ionale:											
				Ι . Δι									
Reviewed by (Print): Janie	ce Shea			Reviewed by (Signature): January Marchan									
Date: 2019	0/02/27			V									



Attention:Tim Bachiu

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8 Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD., NO 2. HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 629742-01-01

> Report Date: 2017/09/22 Report #: R4726729 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7K5372 Received: 2017/09/20, 12:18

Sample Matrix: Water # Samples Received: 4

Analyses	Quantity	Laboratory Method	Primary Reference
TEH in Water (PIRI)	4	ATL SOP 00113	Atl. RBCA v3.1 m
VPH in Water (PIRI)	4	ATL SOP 00118	Atl. RBCA v3.1 m
Silica Gel Clean-up (Water)	4	ATL SOP 00113	EPA 3630C R3 m
ModTPH (T1) Calc. for Water	4	N/A	Atl. RBCA v3 m

Remarks:

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

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

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

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

Results relate to samples tested.

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

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

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



Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD., NO 2. HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 629742-01-01

Attention:Tim Bachiu

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2017/09/22 Report #: R4726729 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7K5372 Received: 2017/09/20, 12:18

Encryption Key

heri Machay Keri MacKay Project Manager - Bedford 22 Sep 2017 15:06:12

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Keri Mackay, Project Manager - Bedford Email: kmackay@maxxam.ca Phone# (902)420-0203 Ext:294



RBCA HYDROCARBONS IN WATER (WATER)

Maxxam ID		FDV402	FDV403	FDV404	FDV405		
Sampling Data		2017/09/20	2017/09/20	2017/09/20	2017/09/20		
		10:10	10:50	10:30	10:10		
COC Number		629742-01-01	629742-01-01	629742-01-01	629742-01-01		
	UNITS	MW17-01	MW17-02	MW17-03	DUPLICATE	RDL	QC Batch
Petroleum Hydrocarbons							
Benzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	5173497
Toluene	mg/L	<0.0010	0.012	<0.0010	<0.0010	0.0010	5173497
Ethylbenzene	mg/L	0.0013	<0.0010	<0.0010	0.0011	0.0010	5173497
Total Xylenes	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	5173497
C6 - C10 (less BTEX)	mg/L	0.14	0.010	0.061	0.12	0.010	5173497
>C10-C16 Hydrocarbons	mg/L	14	0.087	5.5	19	0.050	5174989
>C16-C21 Hydrocarbons	mg/L	4.8	0.066	1.1	6.8	0.050	5174989
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td>1.0</td><td><0.10</td><td>0.20</td><td>1.6</td><td>0.10</td><td>5174989</td></c32>	mg/L	1.0	<0.10	0.20	1.6	0.10	5174989
Modified TPH (Tier1)	mg/L	21	0.16	6.9	27	0.10	5172711
Reached Baseline at C32	mg/L	Yes	Yes	Yes	Yes	N/A	5174989
Hydrocarbon Resemblance	mg/L	COMMENT (1)	COMMENT (2)	COMMENT (1)	COMMENT (1)	N/A	5174989
Extraction Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	97	97	92	112		5174989
n-Dotriacontane - Extractable	%	110 (3)	128 (3)	121 (3)	122 (3)		5174989
Instrument							
1 4 Diffuersherrers		101	404	101	405		5472407
1,4-Dinuorobenzene	%	104	104	104	105		5173497
4-Bromofluorobenzene	%	102	101	98	101		5173497
D4-1,2-Dichloroethane	%	101	101	102	102		5173497
Isobutylbenzene - Volatile	%	89	101	77	87		5173497
RDL = Reportable Detection Lim	nit						
QC Batch = Quality Control Bate	ch						

N/A = Not Applicable

(1) Weathered fuel oil fraction.

(2) One product in fuel oil range.

(3) TEH sample contained sediment.



Report Date: 2017/09/22

VPH in Water (PIRI)

ModTPH (T1) Calc. for Water

AECOM Canada Ltd. Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD., NO 2. HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	FDV402 MW17-01 Water					Collected: Relinquished: Received:	2017/09/20 2017/09/20 2017/09/20
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	l Analyst	
TEH in Water (PIRI)		GC/FID	5174989	2017/09/21	2017/09/21	Brittany N	latthews
VPH in Water (PIRI)		PTGC/MS	5173497	N/A	2017/09/22	Jackie Pia	
ModTPH (T1) Calc. for W	ater	CALC	5172711	N/A	2017/09/22	Automate	d Statchk
Maxxam ID: Sample ID: Matrix:	FDV403 MW17-02 Water					Collected: Relinquished: Received:	2017/09/20 2017/09/20 2017/09/20
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	l Analyst	
TEH in Water (PIRI)		GC/FID	5174989	2017/09/21	2017/09/21	Brittany N	latthews
VPH in Water (PIRI)		PTGC/MS	5173497	N/A	2017/09/21	Jackie Pia	
ModTPH (T1) Calc. for W	ater	CALC	5172711	N/A	2017/09/22	Automate	d Statchk
Maxxam ID: Sample ID: Matrix:	FDV404 MW17-03 Water					Collected: Relinquished: Received:	2017/09/20 2017/09/20 2017/09/20
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	l Analyst	
TEH in Water (PIRI)		GC/FID	5174989	2017/09/21	2017/09/21	Brittany N	latthews
VPH in Water (PIRI)		PTGC/MS	5173497	N/A	2017/09/22	Jackie Pia	
ModTPH (T1) Calc. for W	ater	CALC	5172711	N/A	2017/09/22	Automate	d Statchk
Maxxam ID: Sample ID: Matrix:	FDV405 DUPLICATE Water					Collected: Relinquished: Received:	2017/09/20 2017/09/20 2017/09/20
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	l Analyst	
TEH in Water (PIRI)		GC/FID	5174989	2017/09/21	2017/09/21	Brittany N	latthews

5173497

5172711

N/A

N/A

2017/09/22

2017/09/22

Jackie Pia

Automated Statchk

PTGC/MS

CALC



GENERAL COMMENTS

Each temperature is th	ne average of up to t	three cooler temperatures taken at receip	ot
Package 1	11.0°C		
Silica gel clean-up per	formed on water ext	tracts.	
Results relate only to	the items tested.		



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AECOM Canada Ltd. Task Order#: N/A - CTC Site#: CTC Site Location: 64 MILL LAKE RD., NO 2. HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
5173497	JPA	Method Blank	1,4-Difluorobenzene	2017/09/21		102	%	70 - 130
			4-Bromofluorobenzene	2017/09/21		101	%	70 - 130
			D4-1,2-Dichloroethane	2017/09/21		98	%	70 - 130
			Isobutylbenzene - Volatile	2017/09/21		99	%	70 - 130
			Benzene	2017/09/21	<0.0010		mg/L	
			Toluene	2017/09/21	<0.0010		mg/L	
			Ethylbenzene	2017/09/21	<0.0010		mg/L	
			Total Xylenes	2017/09/21	<0.0020		mg/L	
			C6 - C10 (less BTEX)	2017/09/21	<0.010		mg/L	
5174989	BCD	Method Blank	n-Dotriacontane - Extractable	2017/09/21		128	%	30 - 130
			Isobutylbenzene - Extractable	2017/09/21		93	%	30 - 130
			>C10-C16 Hydrocarbons	2017/09/21	<0.050		mg/L	
			>C16-C21 Hydrocarbons	2017/09/21	<0.050		mg/L	
			>C21- <c32 hydrocarbons<="" p=""></c32>	2017/09/21	<0.10		mg/L	
5173497	JPA	LCS	1,4-Difluorobenzene	2017/09/21		102	%	70 - 130
			4-Bromofluorobenzene	2017/09/21		99	%	70 - 130
			D4-1,2-Dichloroethane	2017/09/21		99	%	70 - 130
			Isobutylbenzene - Volatile	2017/09/21		104	%	70 - 130
			Benzene	2017/09/21		112	%	70 - 130
			Toluene	2017/09/21		109	%	70 - 130
			Ethylbenzene	2017/09/21		109	%	70 - 130
			Total Xylenes	2017/09/21		108	%	70 - 130
5174989	BCD	LCS	n-Dotriacontane - Extractable	2017/09/21		128	%	30 - 130
			Isobutylbenzene - Extractable	2017/09/21		89	%	30 - 130
			>C10-C16 Hydrocarbons	2017/09/21		76	%	70 - 130
			>C16-C21 Hydrocarbons	2017/09/21		71	%	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2017/09/21</td><td></td><td>83</td><td>%</td><td>70 - 130</td></c32>	2017/09/21		83	%	70 - 130
LCS: A bla	nk mat	rix sample to which a k	nown amount of the analyte, usually from a sec	cond source, has been adde	d. Used to evalu	ate method acc	uracy.	

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.



VALIDATION SIGNATURE PAGE

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

Philips Deven

Phil Deveau, Scientific Specialist (Organics)

Maxlam	200 Bluewa Bedford, No www.maxxa	ter Roa ova Sco am.ca	ad Phone: (902) 420-0203 otia B4B 1G9 Fax: (902) 420-8612 Toll Free: 800-563-6266								EXXONMOBIL/IMPERIAL OIL - MAXXAM CHAIN-OF-CUSTODY RECORD ANALYSIS REQUESTED							Page 1 of 1 C of C # 629742-01-01						
INVOICE INFORMATIO	N				RI	EPORT INFORMA	TION								10/01/120	020120							0	29/42
Company Name: AECOM Canada Ltd		C	ompan	iy Nam	e:AECC	DM Canada Ltd.																	1	
Contact Name:		C	ontact	Name:							t													1
Address:		A	ddress	hiu I:						-	2					1 1					- 1			
1701 Hollis Street		17	701 Ho	llis Stre	eet						S						- b							
Email: CANSSC.E-billing@aeco	m.com, timothy.t	bach Er	alifax N mail:	12 831	3M8 Time	thy bachiu@aecon	.com. Laura	Macls	രംഗ	-	L													
Phone: (902) 428-2048 x		P	hone:		(902	428-2048 ×					1ª		1	: 1										
Sampler Name (Print): Taoico Sho	2	Co	onsulta	ant Pro	oject #:	60438249				Wate	2													
Unice one	MATRIX SAMPLING										4													
FIELD SAMPLE ID	GROUND	SURFACE WATER	SOIL	OTHER	ONTAINERS	DATE YYY/MM(DD)	TIME (24 HR)	IELD FILTERED PRESERVED	AB FILTRATION REQUIRED	3CA Hydrocarb	EDIN													
1 MW17-01	X				5	ana log ho	10:10	() LL , (_	ž X	1 Q		-	+			_							
2 MW17-02	Ŷ				5	2017/04/20	10:50			x	N					-		_		_	-			
3 MW17-03	$-\hat{\bigcirc}$		_	-	5	2017/04/20	10.00		1	×	X					_		_		_				
4 DUPLICATE	$\overline{\mathbf{x}}$			-	5	2017/04/20	10.50			×	X			+ +				_		_				
5					2	2011/01/20	10,10	-		-	X					_	_							_
6				-				-								-				_				
7		-									-		-							_				
8			_		-			_					-							_				
9		-					-			_								_		_				
10											-													
						L	DECUL	TODY	ODITE										_					
64 Mill Lake Rd, NO2	. Hubbard	ts, N	IS				REGULA	TURY	CRITE	RIA / D	ETECTIC	N LIMITS:		SPECIAL I	INSTRUCTIO	ONS:			# JA AND	RS USED NOT	Stand	TURN	AROUND T	IME
IOL PROJECT # (if applicable):							A 11		. D	TD	T			N	000				SUB	MITTED	Rush		(3 days)	
CTC MAXXAM TASK OPDER # OR SERVICE O		TTTAA.	-		_		ATIC	IIITIC	P	TK	-			100	200				Wate	er			(2 days)	
N/A - CTC	RDER # + LINE																		r	J/A			(same day)	
	50.00																				-	D	ate Require	d
YES NO COOLER ID: YES NO SEAL PRESENT									COOLE	R ID:				0511 0050	-	YES NO	COOLER	R ID:						
SEAL INTACT TEM	SEAL INTACT TEMP SEAL INTACT SEAL INTACT SEAL INTACT SEAL INTACT COULING MEDIA PRESENT COULING MEDIA PRESENT								TEMP					SEAL PRES	CT	1	TEMP	10	9	14		LAE	USE ONLY	r
* RELINQUISHED BY:	RELINQUISHED BY: DATE: TIME (24 HR)					F	RECEN	VED BY	z	3	COOLING	MEDIA PRESE	NT M		1	2	31	R	TK	525	12			
Janus Ahea Janke Spea 2017/09/20 12:17					L.	De	into	Allas	8-	TDAI	VINIS 12	BEDT	201	109/20		(24 HR)	10	11)	AMPLES	1/				
2.0					2.			ayused	9		UNE M	UCK	aur	in indu	- 10	K-LA	LAE	ELED B	Y: VEF	RIFIED BY:				
3.					_				3.			110.0						1.1	-	100		11	1 2	A
* UNLESS OTHERWISE AGREED TO IN WRITIN AT WWW.MAXXAM.CA/TERMS.	IG, WORK SUBMIT	TED ON	THIS C	HAIN O	FCUST	DDY IS SUBJECT TO	MAXXAM'S	STANDA	RD TEF	RMS AND	CONDIT	ONS. SIGNING O	F THIS C	HAIN OF CU	STODY DOCU	JMENT IS ACK	NOWLEDG	MENT AND ACCE	TANCE OF	OUR TERMS	WHICH	ARE AVA	LABLE FOR	VIEWING

COC - 1009 (2016) IOL - NS

White: Maxxam

Yellow: Client

ΑΞϹΟΜ

Data Quality Review Checklist

Consultant: AECOM Location: 64 MILL LAKE ROAD NO 2,			AD NO 2,	Laboratory: Maxxam	
Consultant Project Number: 60)438249	5, N5		Sample Submission Number: B7K5372	
Are All Laboratory QC Samples V	Vithin Ac	ceptance	e Criteria	(Yes, No, Not Applicable)?	
	Yes	No	NA	Comments	
Instrument Surrogate Recovery	\boxtimes				
Extraction Surrogate Recovery	\boxtimes				
Method Blank Concentration	\boxtimes				
Matrix Duplicate RPD			\boxtimes		
Matrix Spike Recovery			\boxtimes		
Lab Control Sample Recovery	\boxtimes				
Are All Field QC Samples Within	Alert Lim	its (Yes,	No, Not /	Applicable)?	
	Yes	No	NA	Comments	
Field Blank Concentration			\boxtimes		
Trip Blank Concentration			\boxtimes		
Field Duplicate RPD	\boxtimes				
Has Call been signed off?					
Has LoA been signed on?	n statisti	cal contro	ol in CoA'	2 ⊠ Yes □ No	
Has lab warranted all tests were a	analyzed	following	g SOP's ii	n CoA?	
Were all samples analyzed within	hold tim	es?		🛛 Yes 🗆 No	
All volatiles samples methanol ex	tracted (i	f require	d) within	48 hours? 🛛 Yes 🛛 No	
Is Chain of Custody completed ar	nd signed	1?		🔤 Yes 🗆 No	
Were sample temperatures accept	otable wh	en they	reached I	ab? 🛛 Yes 🛛 No	
Is data considered to be reliable?			🛛 Yes	□ No	
If answer is "No", describe and pr	ovide rat	ionale:			
Reviewed by (Print): Janice Shea Reviewed by (Signature): January Shea					



Attention: Tim Bachiu

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8 Task Order#: N/A-CTC-Site#: CTC Site Location: 64 MILL LAKE RD. NO. 2, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 577838-18-01

> Report Date: 2018/03/20 Report #: R5047746 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B857359 Received: 2018/03/14, 16:03

Sample Matrix: Water # Samples Received: 6

Analyses	Quanti	ty Laboratory Method	Primary Reference
TEH in Water (PIRI)	6	ATL SOP 00113	Atl. RBCA v3.1 m
VPH in Water (PIRI)	6	ATL SOP 00118	Atl. RBCA v3.1 m
Silica Gel Clean-up (Water)	6	ATL SOP 00113	EPA 3630C R3 m
ModTPH (T1) Calc. for Water	6	N/A	Atl. RBCA v3 m

Remarks:

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

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

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

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

Results relate to samples tested.

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

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

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



Task Order#: N/A-CTC-Site#: CTC Site Location: 64 MILL LAKE RD. NO. 2, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 577838-18-01

Attention: Tim Bachiu

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2018/03/20 Report #: R5047746 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B857359 Received: 2018/03/14, 16:03

Encryption Key

Marie Muise Key Account Specialist 20 Mar 2018 16:23:08

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Keri Mackay, Senior Project Manager Email: kmackay@maxxam.ca Phone# (902)420-0203 Ext:294



RBCA HYDROCARBONS IN WATER (WATER)

Maxxam ID		GGI774	GGI775	GGI776		
Sampling Date		2018/03/14 14:20	2018/03/14 14:25	2018/03/14 14:35		
COC Number		577838-18-01	577838-18-01	577838-18-01		
	UNITS	MW17-03-04-20180314	MW17-01-04-20180314	MW16-01-04-20180314	RDL	QC Batch
Petroleum Hydrocarbons						
Benzene	mg/L	<0.0010	<0.0010	<0.0010	0.0010	5446206
Toluene	mg/L	<0.0010	<0.0010	<0.0010	0.0010	5446206
Ethylbenzene	mg/L	<0.0010	<0.0010	<0.0010	0.0010	5446206
Total Xylenes	mg/L	<0.0020	<0.0020	<0.0020	0.0020	5446206
C6 - C10 (less BTEX)	mg/L	0.021	0.050	<0.010	0.010	5446206
>C10-C16 Hydrocarbons	mg/L	0.82	3.6	0.15	0.050	5441957
>C16-C21 Hydrocarbons	mg/L	0.18	1.4	0.13	0.050	5441957
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.10</td><td>0.34</td><td><0.10</td><td>0.10</td><td>5441957</td></c32>	mg/L	<0.10	0.34	<0.10	0.10	5441957
Modified TPH (Tier1)	mg/L	1.0	5.3	0.29	0.10	5440477
Reached Baseline at C32	mg/L	Yes	Yes	Yes	N/A	5441957
Hydrocarbon Resemblance	mg/L	COMMENT (1)	COMMENT (1)	COMMENT (1)	N/A	5441957
Extraction Surrogate Recovery (%)						
Isobutylbenzene - Extractable	%	94	93	86		5441957
n-Dotriacontane - Extractable	%	106 (2)	104 (2)	104 (2)		5441957
Instrument Surrogate Recovery (%)						
1,4-Difluorobenzene	%	101	104	102		5446206
4-Bromofluorobenzene	%	98	98	98		5446206
D4-1,2-Dichloroethane	%	97	97	96		5446206
Isobutylbenzene - Volatile	%	92 (3)	89	96 (3)		5446206
RDL = Reportable Detection Lim	nit					

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Weathered fuel oil fraction.

(2) TEH sample contained sediment.

(3) VPH sample contained sediment.



RBCA HYDROCARBONS IN WATER (WATER)

Maxxam ID		GGI777	GGI778	GGI779		
Sampling Data		2018/03/14	2018/03/14	2018/03/14		
		14:45	14:30	14:50		
COC Number		577838-18-01	577838-18-01	577838-18-01		
	UNITS	MW17-02-04-20180314	DUP1-04-20180314	TRIP BLANK	RDL	QC Batch
Petroleum Hydrocarbons						
Benzene	mg/L	<0.0010	<0.0010	<0.0010	0.0010	5446206
Toluene	mg/L	<0.0010	<0.0010	<0.0010	0.0010	5446206
Ethylbenzene	mg/L	<0.0010	<0.0010	<0.0010	0.0010	5446206
Total Xylenes	mg/L	<0.0020	<0.0020	<0.0020	0.0020	5446206
C6 - C10 (less BTEX)	mg/L	<0.010	0.066	<0.010	0.010	5446206
>C10-C16 Hydrocarbons	mg/L	<0.050	4.1	<0.050	0.050	5441957
>C16-C21 Hydrocarbons	mg/L	<0.050	1.5	<0.050	0.050	5441957
>C21- <c32 hydrocarbons<="" p=""></c32>	mg/L	<0.10	0.38	<0.10	0.10	5441957
Modified TPH (Tier1)	mg/L	<0.10	6.1	<0.10	0.10	5440477
Reached Baseline at C32	mg/L	NA	Yes	NA	N/A	5441957
Hydrocarbon Resemblance	mg/L	NA	COMMENT (1)	NA	N/A	5441957
Extraction						
Surrogate Recovery (%)						
Isobutylbenzene - Extractable	%	85	95	82		5441957
n-Dotriacontane - Extractable	%	105 (2)	107 (2)	107		5441957
Instrument						
Surrogate Recovery (%)						
1,4-Difluorobenzene	%	102	104	102		5446206
4-Bromofluorobenzene	%	98	98	99		5446206
D4-1,2-Dichloroethane	%	96	98	96		5446206
Isobutylbenzene - Volatile	%	95 (3)	87 (3)	100		5446206
RDL = Reportable Detection Lim	nit					

QC Batch = Quality Control Batch

N/A = Not Applicable

N/A = NOt Applicable

(1) Weathered fuel oil fraction.

(2) TEH sample contained sediment.

(3) VPH sample contained sediment.



Report Date: 2018/03/20

AECOM Canada Ltd. Task Order#: N/A-CTC-Site#: CTC Site Location: 64 MILL LAKE RD. NO. 2, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID:	GGI774	Collected:	2018/03/14
Sample ID:	MW17-03-04-20180314	Relinquished:	2018/03/14
Matrix:	Water	Received:	2018/03/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	5441957	2018/03/15	2018/03/16	Marley Gidney
VPH in Water (PIRI)	PTGC/MS	5446206	N/A	2018/03/19	Michelle Shearer
ModTPH (T1) Calc. for Water	CALC	5440477	N/A	2018/03/20	Automated Statchk

 Maxxam ID:
 GGI775

 Sample ID:
 MW17-01-04-20180314

 Matrix:
 Water

04-20180314

Collected: 2018/03/14 Relinquished: 2018/03/14 Received: 2018/03/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	5441957	2018/03/15	2018/03/16	Marley Gidney
VPH in Water (PIRI)	PTGC/MS	5446206	N/A	2018/03/19	Michelle Shearer
ModTPH (T1) Calc. for Water	CALC	5440477	N/A	2018/03/20	Automated Statchk

Maxxam ID:	GGI776
Sample ID:	MW16-01-04-20180314
Matrix:	Water

Collected:	2018/03/14
Relinguished:	2018/03/14
Received:	2018/03/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	5441957	2018/03/15	2018/03/16	Marley Gidney
VPH in Water (PIRI)	PTGC/MS	5446206	N/A	2018/03/19	Michelle Shearer
ModTPH (T1) Calc. for Water	CALC	5440477	N/A	2018/03/20	Automated Statchk

 Maxxam ID:
 GGI777

 Sample ID:
 MW17-02-04-20180314

 Matrix:
 Water

Collected: 2018/03/14 Relinquished: 2018/03/14 Received: 2018/03/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	5441957	2018/03/15	2018/03/16	Marley Gidney
VPH in Water (PIRI)	PTGC/MS	5446206	N/A	2018/03/19	Michelle Shearer
ModTPH (T1) Calc. for Water	CALC	5440477	N/A	2018/03/20	Automated Statchk

 Maxxam ID:
 GGI778

 Sample ID:
 DUP1-04-20180314

 Matrix:
 Water

Collected: 2018/03/14 Relinquished: 2018/03/14 Received: 2018/03/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	5441957	2018/03/15	2018/03/16	Marley Gidney
VPH in Water (PIRI)	PTGC/MS	5446206	N/A	2018/03/19	Michelle Shearer
ModTPH (T1) Calc. for Water	CALC	5440477	N/A	2018/03/20	Automated Statchk



Report Date: 2018/03/20

AECOM Canada Ltd. Task Order#: N/A-CTC-Site#: CTC Site Location: 64 MILL LAKE RD. NO. 2, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID:	GGI779		
Sample ID:	TRIP BLANK		
Matrix:	Water		

Collected:	2018/03/14
Relinquished:	2018/03/14
Received:	2018/03/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	5441957	2018/03/15	2018/03/16	Marley Gidney
VPH in Water (PIRI)	PTGC/MS	5446206	N/A	2018/03/19	Michelle Shearer
ModTPH (T1) Calc. for Water	CALC	5440477	N/A	2018/03/20	Automated Statchk


AECOM Canada Ltd. Task Order#: N/A-CTC-Site#: CTC Site Location: 64 MILL LAKE RD. NO. 2, HUBBARDS, NS Project #: 60438249

GENERAL COMMENTS

Each te	emperature is the	average of up to	three cooler temperatures taken at receipt				
	Package 1	5.0°C					
Silica g	Silica gel clean-up performed on water extracts.						
Result	s relate only to th	e items tested.					



AECOM Canada Ltd. Task Order#: N/A-CTC-Site#: CTC Site Location: 64 MILL LAKE RD. NO. 2, HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT

Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
5441957	MGN	Method Blank	n-Dotriacontane - Extractable	2018/03/15		97	%	30 - 130
			Isobutylbenzene - Extractable	2018/03/15		80	%	30 - 130
			>C10-C16 Hydrocarbons	2018/03/15	<0.050		mg/L	
			>C16-C21 Hydrocarbons	2018/03/15	<0.050		mg/L	
			>C21- <c32 hydrocarbons<="" td=""><td>2018/03/15</td><td><0.10</td><td></td><td>mg/L</td><td></td></c32>	2018/03/15	<0.10		mg/L	
5446206	MS3	Method Blank	1,4-Difluorobenzene	2018/03/19		102	%	70 - 130
			4-Bromofluorobenzene	2018/03/19		97	%	70 - 130
			D4-1,2-Dichloroethane	2018/03/19		95	%	70 - 130
			Isobutylbenzene - Volatile	2018/03/19		94	%	70 - 130
			Benzene	2018/03/19	<0.0010		mg/L	
			Toluene	2018/03/19	<0.0010		mg/L	
			Ethylbenzene	2018/03/19	<0.0010		mg/L	
			Total Xylenes	2018/03/19	<0.0020		mg/L	
			C6 - C10 (less BTEX)	2018/03/19	<0.010		mg/L	
5441957	MGN	LCS	n-Dotriacontane - Extractable	2018/03/15		104	%	30 - 130
			Isobutylbenzene - Extractable	2018/03/15		80	%	30 - 130
			>C10-C16 Hydrocarbons	2018/03/15		91	%	70 - 130
			>C16-C21 Hydrocarbons	2018/03/15		90	%	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2018/03/15</td><td></td><td>109</td><td>%</td><td>70 - 130</td></c32>	2018/03/15		109	%	70 - 130
5446206	MS3	LCS	1,4-Difluorobenzene	2018/03/19		102	%	70 - 130
			4-Bromofluorobenzene	2018/03/19		96	%	70 - 130
			D4-1,2-Dichloroethane	2018/03/19		95	%	70 - 130
			Isobutylbenzene - Volatile	2018/03/19		93	%	70 - 130
			Benzene	2018/03/19		86	%	70 - 130
			Toluene	2018/03/19		90	%	70 - 130
			Ethylbenzene	2018/03/19		91	%	70 - 130
			Total Xylenes	2018/03/19		90	%	70 - 130

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.



AECOM Canada Ltd. Task Order#: N/A-CTC-Site#: CTC Site Location: 64 MILL LAKE RD. NO. 2, HUBBARDS, NS Project #: 60438249

VALIDATION SIGNATURE PAGE

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

Kosmarie Moe Donald

Rosemarie MacDonald, Scientific Specialist (Organics)

www.maxxam.ca Toll Free: 800-563-6266 ANALYSIS REQUESTED	C of C # 57783	38-18-01		77838
INVOICE INFORMATION REPORT INFORMATION				1000
Company Name:AECOM Canada Ltd Company Name:AECOM Canada Ltd.				
Contact Name: Contact Name: Accounts Payable Tim Bachiu				
Address: Address: C				
1701 Hollis Street 1701 Hollis Street				
Email: CANSSC.E-billing@aecom.com.timoth_Email: Timothy hachiu@aecom.com_Laura Macls				
Phone: (902) 428-2048 x Phone: (902) 428-2048 x Phone: (902) 428-2048 x				
Sampler Name (Print): N_/ / Consultant Project #: N/20-C049 X				
$Craig Hatt 604382tq \frac{1}{2} \frac{1}{2} \frac{1}{2} \frac{1}{2} \frac{1}{2} \frac{1}{2} \frac{1}{2} \frac{1}{2}$				
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• TRIP BLANK X 6 20180314 114:50 X				
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9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9				
10 YYYA3855 HABA				
IOL SITE LOCATION: REGULATORY CRITERIA / DETECTION LIMITS: ISPECIAL INSTRUCTIONS: # JAR	RS USED	TUR	NAROUND	TIME
64 mill Lake Rd No. 2, Hubbards, NIS	NOT -	Standard	(5 days)	5
IOL PROJECT # (if applicable):	r N/A for	Rush	(3 days)	
GTG TICIUTIC TIT	er		(2 days)	
MAXXAM TASK ORDER # OR SERVICE ORDER # + LINE ITEM:	AIA		(1 day) (same dav)	
N/A - CTC - V	Vn		Contraction of the	
			Date Required	11
SEAL PRESENT COLER ID. SEAL PRESENT SEAL PRE		LA	AB USE ONL	Y
SEAL INTACT I I I I I I I I I I I I I I I I I I I	3	M	AXXAM JOE	#
RELINQUISHED BY: DATE: TIME (24 HR) RECEIVED BY: DATE: TIME (24 HR)	(24 HR)	KXF	5735	-1
1. brighter Craig Hatt 20180314 16:03 1 Horane Albert DAVINE ALBERT 2018/03/14 11	6:03	100	SAMPLES	
2. Separation of an and an and an and a separation of a separa	999 R.R.	LABELED	DBY: VER	FIED BY:
3. Bunneticity Provide Control Provide Control No COC = 1009 (2013) IOL - NS COC = 1009 (2013) IOL - NS Control = 1009 (2013) IOL - NS Contr	NECHL	ŰU	$\cup \square$	'SM

ΑΞϹΟΜ

Data Quality Review Checklist

Consultant: AECOM Location: 64 MILL LAKE ROAD NO 2,				Sampling Date: 2018/03/14 Laboratory: Maxxam		
Consultant Project Number: 60)438249	0, NO		Sample Submission Number: B857359		
Are All Laboratory QC Samples V	Vithin Ac	ceptance	e Criteria	(Yes, No, Not Applicable)?		
	Yes	No	NA	Comments		
Instrument Surrogate Recovery	\boxtimes					
Extraction Surrogate Recovery	\boxtimes					
Method Blank Concentration	\boxtimes					
Matrix Duplicate RPD			\boxtimes			
Matrix Spike Recovery			\boxtimes			
Lab Control Sample Recovery	\boxtimes					
Are All Field QC Samples Within	Alert Lim	its (Yes,	No, Not /	Applicable)?		
	Yes	No	NA	Comments		
Field Blank Concentration			\boxtimes			
Trip Blank Concentration	\boxtimes					
Field Duplicate RPD	\boxtimes					
Has CoA been signed off?						
Has lab warranted all tests were i	n statisti	cal contro	ol in CoA'	? X Yes 🗆 No		
Has lab warranted all tests were a	analyzed	following	g SOP's ii	n CoA?		
Were all samples analyzed within	hold tim	es?		⊠ Yes □ No		
All volatiles samples methanol ex	tracted (i	f require	d) within	48 hours? Xes 🛛 No		
Is Chain of Custody completed ar	nd signed	1?		⊠ Yes □ No		
Were sample temperatures accept	otable wh	en they	reached I	ab?⊠ Yes 🛛 No		
Is data considered to be reliable?			🛛 Yes	□ No		
If answer is "No", describe and pr	ovide rat	ionale:				
Reviewed by (Print): Janice Shea Reviewed by (Signature): Januar Shea Date: 2019/02/27						



Attention: Jason Taylor

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8 Task Order#: N/A - CTC Site#: N/A Site Location: 64 MILL LAKE ROAD, NO.2, HUBBARDS, NS Project #: 60549588 Your C.O.C. #: 666563-02-01

> Report Date: 2018/06/13 Report #: R5236274 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8D4780

Received: 2018/06/05, 15:30

Sample Matrix: Water # Samples Received: 2

Analyses	Quanti	ty Laboratory Method	Primary Reference
TEH in Water (PIRI)	2	ATL SOP 00113	Atl. RBCA v3.1 m
VPH in Water (PIRI)	2	ATL SOP 00118	Atl. RBCA v3.1 m
Silica Gel Clean-up (Water)	2	ATL SOP 00113	EPA 3630C R3 m
ModTPH (T1) Calc. for Water	2	N/A	Atl. RBCA v3 m

Remarks:

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

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

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

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

Results relate to samples tested.

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

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

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



Task Order#: N/A - CTC Site#: N/A Site Location: 64 MILL LAKE ROAD, NO.2, HUBBARDS, NS Project #: 60549588 Your C.O.C. #: 666563-02-01

Attention: Jason Taylor

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2018/06/13 Report #: R5236274 Version: 1 - Final

CERTIFICATE OF ANALYSIS

Sara Mason

MAXXAM JOB #: B8D4780 Received: 2018/06/05, 15:30

Encryption Key

Project Manager 13 Jun 2018 17:03:31

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Keri Mackay, Senior Project Manager Email: kmackay@maxxam.ca Phone# (902)420-0203 Ext:294



AECOM Canada Ltd. Task Order#: N/A - CTC Site#: N/A Site Location: 64 MILL LAKE ROAD, NO.2, HUBBARDS, NS Project #: 60549588

RBCA HYDROCARBONS IN WATER (WATER)

Maxxam ID		GWJ216		GWJ217		
Sampling Data		2018/06/05		2018/06/05		
		11:35		11:45		
COC Number		666563-02-01		666563-02-01		
	UNITS	MW17-01-04-20180605	RDL	MW17-03-04-20180605	RDL	QC Batch
Petroleum Hydrocarbons						
Benzene	mg/L	<0.0010	0.0010	<0.0010	0.0010	5566622
Toluene	mg/L	<0.0010	0.0010	<0.0010	0.0010	5566622
Ethylbenzene	mg/L	<0.0010	0.0010	<0.0010	0.0010	5566622
Total Xylenes	mg/L	<0.0020	0.0020	<0.0020	0.0020	5566622
C6 - C10 (less BTEX)	mg/L	0.054	0.010	0.042	0.010	5566622
>C10-C16 Hydrocarbons	mg/L	5.4	0.050	3.4	0.053	5577835
>C16-C21 Hydrocarbons	mg/L	2.2	0.050	0.70	0.053	5577835
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td>0.50</td><td>0.10</td><td><0.11</td><td>0.11</td><td>5577835</td></c32>	mg/L	0.50	0.10	<0.11	0.11	5577835
Modified TPH (Tier1)	mg/L	8.2	0.10	4.2	0.11	5563903
Reached Baseline at C32	mg/L	Yes	N/A	Yes	N/A	5577835
Hydrocarbon Resemblance	mg/L	COMMENT (1)	N/A	COMMENT (1)	N/A	5577835
Extraction						
Surrogate Recovery (%)						
Isobutylbenzene - Extractable	%	100		102		5577835
n-Dotriacontane - Extractable	%	110 (2)		112 (3)		5577835
Instrument						
Surrogate Recovery (%)						
1,4-Difluorobenzene	%	99		99		5566622
4-Bromofluorobenzene	%	100		100		5566622
D4-1,2-Dichloroethane	%	94		94		5566622
Isobutylbenzene - Volatile	%	79 (4)		84 (4)		5566622

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Weathered fuel oil fraction.

(2) TEH sample contained sediment.

(3) Elevated TEH RDL(s) due to limited sample. TEH sample decanted due to sediment.

(4) VPH sample contained sediment.



ModTPH (T1) Calc. for Water

Report Date: 2018/06/13

AECOM Canada Ltd. Task Order#: N/A - CTC Site#: N/A Site Location: 64 MILL LAKE ROAD, NO.2, HUBBARDS, NS Project #: 60549588

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	GWJ216 MW17-01-04-20180 Water	605			Rel	Collected: inquished: Received:	2018/06/05 2018/06/05 2018/06/05
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	5577835	2018/06/13	2018/06/13	Marley Gio	Iney
VPH in Water (PIRI)		PTGC/MS	5566622	N/A	2018/06/08	Michelle S	hearer

5563903

N/A

2018/06/13

Maxxam ID:	GWJ217
Sample ID:	MW17-03-04-20180605
Matrix:	Water

CALC

Collected:	2018/06/05
Relinquished:	2018/06/05
Received:	2018/06/05

Automated Statchk

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	5577835	2018/06/13	2018/06/13	Marley Gidney
VPH in Water (PIRI)	PTGC/MS	5566622	N/A	2018/06/08	Michelle Shearer
ModTPH (T1) Calc. for Water	CALC	5563903	N/A	2018/06/13	Automated Statchk



AECOM Canada Ltd. Task Order#: N/A - CTC Site#: N/A Site Location: 64 MILL LAKE ROAD, NO.2, HUBBARDS, NS Project #: 60549588

GENERAL COMMENTS

Each t	Each temperature is the average of up to three cooler temperatures taken at receipt								
	Package 1	11.0°C]						
Note:	Note: Temperature > 10 C - Sameday submission with average temperature upon receipt >10°C with no attempt to cool. Analysis proceeded.								
Silica 🖁	Silica gel clean-up performed on water extracts.								
Resul	Results relate only to the items tested.								



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AECOM Canada Ltd. Task Order#: N/A - CTC Site#: N/A Site Location: 64 MILL LAKE ROAD, NO.2, HUBBARDS, NS Project #: 60549588

QUALITY ASSURANCE REPORT

Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
5566622	MS3	Method Blank	1,4-Difluorobenzene	2018/06/07		96	%	70 - 130
			4-Bromofluorobenzene	2018/06/07		102	%	70 - 130
			D4-1,2-Dichloroethane	2018/06/07		90	%	70 - 130
			Isobutylbenzene - Volatile	2018/06/07		97	%	70 - 130
			Benzene	2018/06/07	<0.0010		mg/L	
			Toluene	2018/06/07	<0.0010		mg/L	
			Ethylbenzene	2018/06/07	<0.0010		mg/L	
			Total Xylenes	2018/06/07	<0.0020		mg/L	
			C6 - C10 (less BTEX)	2018/06/07	<0.010		mg/L	
5577835	MGN	Method Blank	n-Dotriacontane - Extractable	2018/06/13		107	%	70 - 130
			Isobutylbenzene - Extractable	2018/06/13		95	%	70 - 130
			>C10-C16 Hydrocarbons	2018/06/13	<0.050		mg/L	
			>C16-C21 Hydrocarbons	2018/06/13	<0.050		mg/L	
			>C21- <c32 hydrocarbons<="" td=""><td>2018/06/13</td><td><0.10</td><td></td><td>mg/L</td><td></td></c32>	2018/06/13	<0.10		mg/L	
5566622	MS3	LCS	1,4-Difluorobenzene	2018/06/07		95	%	70 - 130
			4-Bromofluorobenzene	2018/06/07		101	%	70 - 130
			D4-1,2-Dichloroethane	2018/06/07		91	%	70 - 130
			Isobutylbenzene - Volatile	2018/06/07		102	%	70 - 130
			Benzene	2018/06/07		113	%	70 - 130
			Toluene	2018/06/07		114	%	70 - 130
			Ethylbenzene	2018/06/07		114	%	70 - 130
			Total Xylenes	2018/06/07		113	%	70 - 130
5577835	MGN	LCS	n-Dotriacontane - Extractable	2018/06/13		118	%	70 - 130
			Isobutylbenzene - Extractable	2018/06/13		95	%	70 - 130
			>C10-C16 Hydrocarbons	2018/06/13		90	%	70 - 130
			>C16-C21 Hydrocarbons	2018/06/13		87	%	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2018/06/13</td><td></td><td>104</td><td>%</td><td>70 - 130</td></c32>	2018/06/13		104	%	70 - 130

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.



AECOM Canada Ltd. Task Order#: N/A - CTC Site#: N/A Site Location: 64 MILL LAKE ROAD, NO.2, HUBBARDS, NS Project #: 60549588

VALIDATION SIGNATURE PAGE

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

Kosmarie Moe Donald

Rosemarie MacDonald, Scientific Specialist (Organics)

Maxiam 200 Bluewat Bedford, No www.maxxa	er Roa va Sco m.ca	ad otia B4	4B 1G9	9 RE	Phor Fi Toll F PORT INFORMAT	ne: (902) 4 ax: (902) 4 free: 800-5	20-020 20-861 63-626	03 12 36				EXXON CH	IMOBIL IAIN-OI ANAL	/IMPEF -CUST YSIS R	RIAL C TODY EQUE:	DIL - M/ RECOI STED	AXXAN RD	1		С	Pag of C # 666	6563-02-0	01	66	6563
Company Name:AECOM Canada Ltd	C	ompan	y Name	e:AECO	M Canada Ltd.			-					1		-				1						
Contact Name: Accounts Payable Address: 1701 Hollis Street Halifax NS B3J 3M8	Co Ja Ao 17 H	ontact ason Ta ddress 701 Hol alifax N	Name: avlor : Ilis Stre IS B3J	et 3M8																					
Email: CANSSC.E-billing@aecom.com, Laura.Ma	acis Er	mail:		Jasor	I. Taylor2@aecom.c	om	-																		1 1
Phone: (902) 428-2048 Sampler Name (Print):	P	hone: onsulta	e: (902) 428-2048 ultant Project #: 60549588			Nater	t																		
Craig Hatt	MAT	TRIX				ui suo	2																		
FIELD SAMPLE ID	SURFACE WATER	SOIL	OTHER	# CONTAINERS	DATE (YYYYMM/DD)	TIME (24 HR)	FIELD FILTERED	LAB FILTRATION REQUIRED	RBCA Hydrocarbo	Sedin															
1 MW12-01-04-20180605 X				6	2018/1605	1135			×	X								T	İ	Ì	İ				<u>i</u> i
2 MW17-03-04-20180605 X				6	20120605	11 45			X	X															
3																									
4																									
5																			1						
6																						-			
7																									-
8 .					1	1.1																			_
9					1											-		1.1	-	-					
10					1.00			-												-	-		_		-
IOL SITE LOCATION:	1	2	N/ W			REGULA	TORY	CRITE	RIA / DE	TECTIO	N LIMITS		SPECIAL	INSTRUC	CTIONS:					# JAR	S USED		TURN	AROUND TI	ME
IN A CTC-	id N item:	U.X	Hub	bards	NS /	Han	fic	p	IR					Non	ف					AND N SUBM Enter Water	NOT ITTED N/A for	Stand Rush	ard	(5 days) (3 days) (2 days) (1 day) (same day)	XOOOO
																						-	C	ate Required	
YES NO COOLER ID:	1				CAL ODEPENT	YES	NO C	OOLE	R ID:			ŕ	0511	0.000		YES NO	COOLER	ID:							
SEAL INTACT	1	0	1-	2	EAL PRESENT			EMP					SEAL PRI	ACT			TEMP					-	LA	USE ONLY	
* PELINOLIISHED BY	12		13		OOLING MEDIA PRE	SENT			1		2	3	COOLING	MEDIA PR	ESENT			1	1	2	3	-	380	47813	,
1 have but	air	Het	4	J.C	18 OF OF	i K	29	-	L2		1	llan	FF	Aller	s Di	2 < 77	DATE	neur	1.105	IME	24 HR)	+'	000	AMPLES	
2.	ang	IIA I		- CXC	10002	1.0	0.1	5	7P	717	Le H	Water		rvnu	CAL	DIN	AC	1810	6105	1.7	-30	LA	ELED E	Y: VER	FJED BY:
3.								3.							-							1	M	1 1	IH
UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMI AT WWW.MAXXAM.CA/TERMS.	TTED OI	N THIS	CHAIN C	OF CUST	ODY IS SUBJECT TO	MAXXAM'S	STANDA	RD TER	MS AND	CONDITI	ons. Sigi	NING OF THIS	CHAIN OF C	USTODY D	OCUMEN	IT IS ACKN	OWLEDG	IENT AND A	ACCEPTA	NCE OF	OUR TERMS	S WHICH	ARE AVA	LABLE FOR	IEWING

COC - 1009 (2016) IOL - NS

White: Maxxam

Yellow: Client

ΑΞϹΟΜ

Data Quality Review Checklist

Consultant: <u>AECOM</u> Location: 64 MILL LAKE ROAD NO 2,				Sampling Date: 2018/06/05 Laboratory: Maxxam			
Consultant Project Number: 60	JBBARD)438249	S, NS		Sample Submission Number: B8D4780			
Are All Laboratory OC Samples V	Vithin Ac	contance	Critoria	(Ver No Not Applicable)?			
	Vac	No					
Instrument Surregate Recovery	res			Comments			
Extraction Surrogate Recovery							
Method Blank Concentration							
Matrix Duplicate RPD							
Matrix Spike Recovery							
Lab Control Sample Recovery							
Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?							
	Yes	No	NA	Comments			
Field Blank Concentration			\boxtimes				
Trip Blank Concentration			\boxtimes				
Field Duplicate RPD			\boxtimes				
Has CoA boon signed off?							
Has lab warranted all tests were i	n statisti	cal contro	ol in CoA'	? ⊠ Yes □ No			
Has lab warranted all tests were a	analyzed	following	g SOP's ii	n CoA? Yes D No			
Were all samples analyzed within	hold tim	es?		🔤 Yes 🛛 No			
All volatiles samples methanol ex	tracted (i	f require	d) within	48 hours? Xes 🛛 No			
Is Chain of Custody completed an	nd signed	1?		🔤 Yes 🗆 No			
Were sample temperatures accept	otable wh	ien they i	reached I	ab? 🛛 Yes 🛛 No			
Is data considered to be reliable?			🛛 Yes	□ No			
If answer is "No", describe and pr	ovide rat	ionale:					
Reviewed by (Print): Janice Shea Reviewed by (Signature):							



Attention: Jason Taylor

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8 Task Order#: IOL-CTC-NA Site#: IOL-CTC-NA Site Location: 64 MILL LAKE RD NO2, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 09868

> Report Date: 2018/08/16 Report #: R5358489 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8K1764

Received: 2018/08/08, 16:39

Sample Matrix: Soil # Samples Received: 5

Analyses	Quan	tity Laboratory Method	Primary Reference	
TEH in Soil (PIRI) (1)	5	ATL SOP 00111	Atl. RBCA v3.1 m	
Moisture	5	ATL SOP 00001	OMOE Handbook 1983 m	
Double water wash (soil)	5	ATL SOP 00111	N/A	
Silica Gel Clean-up (Soil)	5	ATL SOP 00111	EPA 3630C R3 m	
ModTPH (T1) Calc. for Soil	5	N/A	Atl. RBCA v3.1 m	
VPH in Soil (PIRI) - Field Preserved (2)	5	ATL SOP 00119	Atl. RBCA v3.1 m	

Sample Matrix: Water # Samples Received: 2

Analyses	Quanti	ty Laboratory Method	Primary Reference
TEH in Water (PIRI)	2	ATL SOP 00113	Atl. RBCA v3.1 m
VPH in Water (PIRI)	2	ATL SOP 00118	Atl. RBCA v3.1 m
Silica Gel Clean-up (Water)	2	ATL SOP 00113	EPA 3630C R3 m
ModTPH (T1) Calc. for Water	2	N/A	Atl. RBCA v3 m

Remarks:

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

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

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



Task Order#: IOL-CTC-NA Site#: IOL-CTC-NA Site Location: 64 MILL LAKE RD NO2, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 09868

Attention: Jason Taylor

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2018/08/16 Report #: R5358489 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8K1764

Received: 2018/08/08, 16:39

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

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

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) Soils are reported on a dry weight basis unless otherwise specified.

(2) No lab extraction date is given for C6-C10/BTEX and VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.

Encryption Key

Sara Mason Project Manager 16 Aug 2018 10:32:25

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Sara Mason, Project Manager Email: smason@maxxam.ca Phone# (902)420-0203



AECOM Canada Ltd. Task Order#: IOL-CTC-NA Site#: IOL-CTC-NA Site Location: 64 MILL LAKE RD NO2, HUBBARDS, NS Project #: 60438249

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		HKT286			HKT286		
Sampling Date		2018/08/07			2018/08/07		
		10:30			10:30		
COC Number		09868			09868		
	UNITS	EX01-N01-0.25-0.75	RDL	QC Batch	EX01-N01-0.25-0.75 Lab-Dup	RDL	QC Batch
Inorganics							
Moisture	%	9.0	1.0	5670750	8.9	1.0	5670750
Petroleum Hydrocarbons							
Benzene	mg/kg	<0.025	0.025	5677941	<0.025	0.025	5677941
Toluene	mg/kg	<0.025	0.025	5677941	<0.025	0.025	5677941
Ethylbenzene	mg/kg	<0.025	0.025	5677941	<0.025	0.025	5677941
Total Xylenes	mg/kg	<0.050	0.050	5677941	<0.050	0.050	5677941
C6 - C10 (less BTEX)	mg/kg	<2.5	2.5	5677941	<2.5	2.5	5677941
>C10-C16 Hydrocarbons	mg/kg	<10	10	5675208			
>C16-C21 Hydrocarbons	mg/kg	<10	10	5675208			
>C21- <c32 hydrocarbons<="" p=""></c32>	mg/kg	<15	15	5675208			
Modified TPH (Tier1)	mg/kg	<15	15	5670492			
Reached Baseline at C32	mg/kg	NA	N/A	5675208			
Hydrocarbon Resemblance	mg/kg	NA	N/A	5675208			
Extraction							
Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	82		5675208			
n-Dotriacontane - Extractable	%	87		5675208			
Isobutylbenzene - Volatile	%	124		5677941	119		5677941
Instrument Surrogate Recovery (%)							
1,4-Difluorobenzene	%	98		5677941	94		5677941
4-Bromofluorobenzene	%	103		5677941	101		5677941
D4-1,2-Dichloroethane	%	95		5677941	91		5677941
RDL = Renortable Detection Limit							
QC Batch = Quality Control Batc	:h						

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable



AECOM Canada Ltd. Task Order#: IOL-CTC-NA Site#: IOL-CTC-NA Site Location: 64 MILL LAKE RD NO2, HUBBARDS, NS Project #: 60438249

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)

Maxxam ID		HKT287	HKT288	HKT289	HKT290		
Sampling Date		2018/08/07 11:00	2018/08/07 11:30	2018/08/07 12:00	2018/08/07 12:30		
COC Number		09868	09868	09868	09868		
	UNITS	EX01-E01-0.25-0.75	EX01-W01-0.25-0.75	EX01-S01-0.25-0.75	EX01-BS01-1.0	RDL	QC Batch
Inorganics							
Moisture	%	8.6	8.4	10	15	1.0	5670750
Petroleum Hydrocarbons							
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	5677941
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	5677941
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	5677941
Total Xylenes	mg/kg	<0.050	<0.050	<0.050	0.11	0.050	5677941
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	<2.5	39	2.5	5677941
>C10-C16 Hydrocarbons	mg/kg	<10	<10	<10	480	10	5675208
>C16-C21 Hydrocarbons	mg/kg	<10	<10	<10	220	10	5675208
>C21- <c32 hydrocarbons<="" td=""><td>mg/kg</td><td><15</td><td><15</td><td>21</td><td>520</td><td>15</td><td>5675208</td></c32>	mg/kg	<15	<15	21	520	15	5675208
Modified TPH (Tier1)	mg/kg	<15	<15	21	1300	15	5670492
Reached Baseline at C32	mg/kg	NA	NA	Yes	Yes	N/A	5675208
Hydrocarbon Resemblance	mg/kg	NA	NA	COMMENT (1)	COMMENT (2)	N/A	5675208
Extraction Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	84	82	86	90		5675208
n-Dotriacontane - Extractable	%	87	85	99	84		5675208
Isobutylbenzene - Volatile	%	109	112	107 (3)	88		5677941
Instrument Surrogate Recovery (%)							
1,4-Difluorobenzene	%	100	99	89	94		5677941
4-Bromofluorobenzene	%	108	105	93	100		5677941
D4-1,2-Dichloroethane	%	97	98	86	92		5677941

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Possible lube oil fraction.

(2) One product in fuel oil range. Lube oil fraction.

(3) VPH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.



AECOM Canada Ltd. Task Order#: IOL-CTC-NA Site#: IOL-CTC-NA Site Location: 64 MILL LAKE RD NO2, HUBBARDS, NS Project #: 60438249

Maxxam ID		HKT290				
Sampling Date		2018/08/07				
		12:30				
COC Number		09868				
	UNITS	EX01-BS01-1.0 Lab-Dup	RDL	QC Batch		
Petroleum Hydrocarbons						
>C10-C16 Hydrocarbons	mg/kg	410	10	5675208		
>C16-C21 Hydrocarbons	mg/kg	190	10	5675208		
>C21- <c32 hydrocarbons<="" p=""></c32>	mg/kg	450	15	5675208		
Extraction						
Surrogate Recovery (%)						
Isobutylbenzene - Extractable	%	88		5675208		
n-Dotriacontane - Extractable	%	79		5675208		
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						
Lab-Dup = Laboratory Initiated Duplicate						

RBCA HYDROCARBONS IN SOIL (FIELD PRES.)



AECOM Canada Ltd. Task Order#: IOL-CTC-NA Site#: IOL-CTC-NA Site Location: 64 MILL LAKE RD NO2, HUBBARDS, NS Project #: 60438249

RBCA HYDROCARBONS IN WATER (WATER)

				r				
Maxxam ID		HKT291	HKT292					
Sampling Date		2018/08/07	2018/08/07					
		13:00	14:00					
COC Number		09868	09868					
	UNITS	MW17-01	MW17-03	RDL	QC Batch			
Petroleum Hydrocarbons								
Benzene	mg/L	<0.0010	<0.0010	0.0010	5672991			
Toluene	mg/L	<0.0010	<0.0010	0.0010	5672991			
Ethylbenzene	mg/L	<0.0010	<0.0010	0.0010	5672991			
Total Xylenes	mg/L	<0.0020	<0.0020	0.0020	5672991			
C6 - C10 (less BTEX)	mg/L	<0.010	<0.010	0.010	5672991			
>C10-C16 Hydrocarbons	mg/L	4.0	0.93	0.050	5678141			
>C16-C21 Hydrocarbons	mg/L	1.6	0.20	0.050	5678141			
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td>0.39</td><td><0.10</td><td>0.10</td><td>5678141</td></c32>	mg/L	0.39	<0.10	0.10	5678141			
Modified TPH (Tier1)	mg/L	6.0	1.1	0.10	5670573			
Reached Baseline at C32	mg/L	Yes	Yes	N/A	5678141			
Hydrocarbon Resemblance	mg/L	COMMENT (1)	COMMENT (1)	N/A	5678141			
Extraction								
Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	108	106		5678141			
n-Dotriacontane - Extractable	%	115 (2)	111 (2)		5678141			
Instrument								
Surrogate Recovery (%)								
1,4-Difluorobenzene	%	101	100		5672991			
4-Bromofluorobenzene	%	97	97		5672991			
D4-1,2-Dichloroethane	%	98	98		5672991			
Isobutylbenzene - Volatile	%	99	100		5672991			
RDL = Reportable Detection Lim	it							
QC Batch = Quality Control Batc	h							
N/A = Not Applicable								
(1) Weathered fuel oil fraction.								
(2) TEH sample contained sedim	ient.							



AECOM Canada Ltd. Task Order#: IOL-CTC-NA Site#: IOL-CTC-NA Site Location: 64 MILL LAKE RD NO2, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	HKT286 EX01-N01-0.25-0.75 Soil				R	Collected: 2018/08/07 elinquished: 2018/08/08 Received: 2018/08/08	
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	5675208	2018/08/11	2018/08/14	Marsha (Skinner) Harnum	
Moisture		BAL	5670750	N/A	2018/08/10	Selina Dunbar	
ModTPH (T1) Calc. for So	il	CALC	5670492	N/A	2018/08/15	Automated Statchk	
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	5677941	N/A	2018/08/14	Shawn Helmkay	
Maxxam ID: Sample ID: Matrix:	HKT286 Dup EX01-N01-0.25-0.75 Soil				R	Collected: 2018/08/07 elinquished: 2018/08/08 Received: 2018/08/08	
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
Moisture		BAL	5670750	N/A	2018/08/10	Selina Dunbar	
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	5677941	N/A	2018/08/14	Shawn Helmkay	
Maxxam ID: Sample ID: Matrix:	HKT287 EX01-E01-0.25-0.75 Soil				R	Collected: 2018/08/07 elinquished: 2018/08/08 Received: 2018/08/08	

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5675208	2018/08/11	2018/08/14	Marsha (Skinner) Harnum
Moisture	BAL	5670750	N/A	2018/08/10	Selina Dunbar
ModTPH (T1) Calc. for Soil	CALC	5670492	N/A	2018/08/15	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5677941	N/A	2018/08/14	Shawn Helmkay

Maxxam ID: HKT288 Sample ID: EX01-W01-0.25-0.75 Matrix: Soil

Collected: 2018/08/07 Relinquished: 2018/08/08 2018/08/08 Received:

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5675208	2018/08/11	2018/08/14	Marsha (Skinner) Harnum
Moisture	BAL	5670750	N/A	2018/08/10	Selina Dunbar
ModTPH (T1) Calc. for Soil	CALC	5670492	N/A	2018/08/15	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5677941	N/A	2018/08/14	Shawn Helmkay

Maxxam ID:	HKT289
Sample ID:	EX01-S01-0.25-0.75
Matrix:	Soil

Collected:	2018/08/07
Relinguished:	2018/08/08
Received:	2018/08/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Soil (PIRI)	GC/FID	5675208	2018/08/11	2018/08/14	Marsha (Skinner) Harnum
Moisture	BAL	5670750	N/A	2018/08/10	Selina Dunbar
ModTPH (T1) Calc. for Soil	CALC	5670492	N/A	2018/08/15	Automated Statchk
VPH in Soil (PIRI) - Field Preserved	PTGC/MS	5677941	N/A	2018/08/14	Shawn Helmkay



AECOM Canada Ltd. Task Order#: IOL-CTC-NA Site#: IOL-CTC-NA Site Location: 64 MILL LAKE RD NO2, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	HKT290 EX01-BS01-1.0 Soil				Re	Collected: elinquished: Received:	2018/08/07 2018/08/08 2018/08/08
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	5675208	2018/08/11	2018/08/14	Marsha (S	kinner) Harnum
Moisture		BAL	5670750	N/A	2018/08/10	Selina Dur	nbar
ModTPH (T1) Calc. for So	il	CALC	5670492	N/A	2018/08/15	Automate	d Statchk
VPH in Soil (PIRI) - Field P	reserved	PTGC/MS	5677941	N/A	2018/08/14	Shawn He	Imkay
Maxxam ID: Sample ID: Matrix:	HKT290 Dup EX01-BS01-1.0 Soil				R	Collected: elinquished: Received:	2018/08/07 2018/08/08 2018/08/08
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Soil (PIRI)		GC/FID	5675208	2018/08/11	2018/08/14	Marsha (S	kinner) Harnum
Maxxam ID: Sample ID: Matrix:	HKT291 MW17-01 Water				Re	Collected: elinquished: Received:	2018/08/07 2018/08/08 2018/08/08
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	5678141	2018/08/14	2018/08/14	Michelle S	hearer
VPH in Water (PIRI)		PTGC/MS	5672991	N/A	2018/08/11	Thea Holla	and
ModTPH (T1) Calc. for Wa	ater	CALC	5670573	N/A	2018/08/15	Automate	d Statchk
Maxxam ID: Sample ID: Matrix:	HKT292 MW17-03 Water				Re	Collected: elinquished: Received:	2018/08/07 2018/08/08 2018/08/08
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	5678141	2018/08/14	2018/08/14	Michelle S	hearer
VPH in Water (PIRI)		PTGC/MS	5672991	N/A	2018/08/11	Thea Holla	and
ModTPH (T1) Calc. for Wa	ater	CALC	5670573	N/A	2018/08/15	Automate	d Statchk



AECOM Canada Ltd. Task Order#: IOL-CTC-NA Site#: IOL-CTC-NA Site Location: 64 MILL LAKE RD NO2, HUBBARDS, NS Project #: 60438249

GENERAL COMMENTS

Each te	Each temperature is the average of up to three cooler temperatures taken at receipt										
	Package 1	8.0°C									
Note: In Double Silica ge	nsufficient numbe water wash and s el clean-up perfor	r of bottles- MW silica gel clean-up med on water ex	17-01 and MW17-03 - only 3x40ml vials received for RBCA. Proceeded with analysis. performed on soil extracts. racts.								
Result	s relate only to th	e items tested.									



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AECOM Canada Ltd. Task Order#: IOL-CTC-NA Site#: IOL-CTC-NA Site Location: 64 MILL LAKE RD NO2, HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT

QA/QC Batch	Init		Parameter	Date Analyzed	Value	Becovery		OC Limits
5672991	THI	Method Blank	1.4-Difluorobenzene	2018/08/11	value	102	%	70 - 130
0072001			4-Bromofluorobenzene	2018/08/11		98	%	70 - 130
			D4-1.2-Dichloroethane	2018/08/11		97	%	70 - 130
			Isobutylbenzene - Volatile	2018/08/11		113	%	70 - 130
			Benzene	2018/08/11	<0.0010		mg/L	
			Toluene	2018/08/11	< 0.0010		mg/L	
			Ethylbenzene	2018/08/11	< 0.0010		mg/L	
			Total Xvlenes	2018/08/11	< 0.0020		mg/L	
			C6 - C10 (less BTEX)	2018/08/11	<0.010		mg/L	
5675208	MSK	Method Blank	n-Dotriacontane - Extractable	2018/08/14		88	%	60 - 130
			Isobutvlbenzene - Extractable	2018/08/14		79	%	60 - 130
			>C10-C16 Hydrocarbons	2018/08/14	<10		mg/kg	
			>C16-C21 Hydrocarbons	2018/08/14	<10		mg/kg	
			>C21- <c32 hydrocarbons<="" td=""><td>2018/08/14</td><td><15</td><td></td><td>mg/kg</td><td></td></c32>	2018/08/14	<15		mg/kg	
5677941	SHL	Method Blank	, 1,4-Difluorobenzene	2018/08/14		85	%	60 - 140
			4-Bromofluorobenzene	2018/08/14		88	%	60 - 140
			D4-1,2-Dichloroethane	2018/08/14		82	%	60 - 140
			Isobutylbenzene - Volatile	2018/08/14		83	%	60 - 130
			Benzene	2018/08/14	<0.025		mg/kg	
			Toluene	2018/08/14	<0.025		mg/kg	
			Ethylbenzene	2018/08/14	<0.025		mg/kg	
			Total Xylenes	2018/08/14	<0.050		mg/kg	
			C6 - C10 (less BTEX)	2018/08/14	<2.5		mg/kg	
5678141	MS3	Method Blank	n-Dotriacontane - Extractable	2018/08/14		107	%	70 - 130
			Isobutylbenzene - Extractable	2018/08/14		102	%	70 - 130
			>C10-C16 Hydrocarbons	2018/08/14	<0.050		mg/L	
			>C16-C21 Hydrocarbons	2018/08/14	<0.050		mg/L	
			>C21- <c32 hydrocarbons<="" td=""><td>2018/08/14</td><td><0.10</td><td></td><td>mg/L</td><td></td></c32>	2018/08/14	<0.10		mg/L	
5670750	SDN	RPD [HKT286-01]	Moisture	2018/08/10	1.1		%	25
5677941	SHL	RPD [HKT286-02]	Benzene	2018/08/14	NC		%	50
			Toluene	2018/08/14	NC		%	50
			Ethylbenzene	2018/08/14	NC		%	50
			Total Xylenes	2018/08/14	NC		%	50
			C6 - C10 (less BTEX)	2018/08/14	NC		%	50
5675208	MSK	RPD [HKT290-01]	>C10-C16 Hydrocarbons	2018/08/14	16		%	50
			>C16-C21 Hydrocarbons	2018/08/14	17		%	50
			>C21- <c32 hydrocarbons<="" td=""><td>2018/08/14</td><td>15</td><td></td><td>%</td><td>50</td></c32>	2018/08/14	15		%	50
5675208	MSK	Matrix Spike [HKT290-01]	n-Dotriacontane - Extractable	2018/08/14		80	%	60 - 130
			Isobutylbenzene - Extractable	2018/08/14		86	%	60 - 130
			>C10-C16 Hydrocarbons	2018/08/14		NC	%	30 - 130
			>C16-C21 Hydrocarbons	2018/08/14		70	%	30 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2018/08/14</td><td></td><td>NC</td><td>%</td><td>30 - 130</td></c32>	2018/08/14		NC	%	30 - 130
5677941	SHL	Matrix Spike [HKT286-02]	1,4-Difluorobenzene	2018/08/14		92	%	60 - 140
			4-Bromofluorobenzene	2018/08/14		98	%	60 - 140
			D4-1,2-Dichloroethane	2018/08/14		87	%	60 - 140
			Isobutylbenzene - Volatile	2018/08/14		125	%	60 - 130
			Benzene	2018/08/14		93	%	60 - 130
			Toluene	2018/08/14		93	%	60 - 130
			Ethylbenzene	2018/08/14		96	%	60 - 130
			Total Xylenes	2018/08/14		94	%	60 - 130
5672991	THL	LCS	1,4-Difluorobenzene	2018/08/11		103	%	70 - 130

Maxxam Analytics International Corporation o/a Maxxam Analytics 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.maxxamanalytics.com



AECOM Canada Ltd. Task Order#: IOL-CTC-NA Site#: IOL-CTC-NA Site Location: 64 MILL LAKE RD NO2, HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			4-Bromofluorobenzene	2018/08/11		96	%	70 - 130
			D4-1,2-Dichloroethane	2018/08/11		107	%	70 - 130
			Isobutylbenzene - Volatile	2018/08/11		101	%	70 - 130
			Benzene	2018/08/11		113	%	70 - 130
			Toluene	2018/08/11		110	%	70 - 130
			Ethylbenzene	2018/08/11		105	%	70 - 130
			Total Xylenes	2018/08/11		106	%	70 - 130
5675208	MSK	LCS	n-Dotriacontane - Extractable	2018/08/14		86	%	60 - 130
			Isobutylbenzene - Extractable	2018/08/14		84	%	60 - 130
			>C10-C16 Hydrocarbons	2018/08/14		94	%	60 - 130
			>C16-C21 Hydrocarbons	2018/08/14		89	%	60 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2018/08/14</td><td></td><td>95</td><td>%</td><td>60 - 130</td></c32>	2018/08/14		95	%	60 - 130
5677941	SHL	LCS	1,4-Difluorobenzene	2018/08/14		76	%	60 - 140
			4-Bromofluorobenzene	2018/08/14		79	%	60 - 140
			D4-1,2-Dichloroethane	2018/08/14		73	%	60 - 140
			Isobutylbenzene - Volatile	2018/08/14		77	%	60 - 130
			Benzene	2018/08/14		78	%	60 - 140
			Toluene	2018/08/14		84	%	60 - 140
			Ethylbenzene	2018/08/14		80	%	60 - 140
			Total Xylenes	2018/08/14		80	%	60 - 140
5678141	MS3	LCS	n-Dotriacontane - Extractable	2018/08/14		117	%	70 - 130
			Isobutylbenzene - Extractable	2018/08/14		98	%	70 - 130
			>C10-C16 Hydrocarbons	2018/08/14		101	%	70 - 130
			>C16-C21 Hydrocarbons	2018/08/14		93	%	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2018/08/14</td><td></td><td>100</td><td>%</td><td>70 - 130</td></c32>	2018/08/14		100	%	70 - 130

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.

LCS: 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).



AECOM Canada Ltd. Task Order#: IOL-CTC-NA Site#: IOL-CTC-NA Site Location: 64 MILL LAKE RD NO2, HUBBARDS, NS Project #: 60438249

VALIDATION SIGNATURE PAGE

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

Kosmarie MacDonald

Rosemarie MacDonald, Scientific Specialist (Organics)

Maxiam ABureau Veritas Group Company 200 Blue Bedford, www.ma	water NS I xxam	r Roa B4B 1 analy	d, Suit IG9 tics.cc	e 105 P m Toll	hone: (9 Fax: (9 Free: 1-	02) 42 02) 42 800-5	0-020 0-861 65-72	3 2 27			EXX	CN I CH	MOB IAIN	BIL/I -OF	MP •CU	ERI. ST(AL I	OIL ' RE	- N CO	IAXX RD	(AM	C	of C	F	Page_	1	968
INVOICE INFORMATION			RE	ORT INFORM	MATION										A	NAL	YSI	S RE	QU	ESTE	D	0	010	#		00	000
Company Name: Imperial Oil ExxonMo	bil C	ompan	y Name	AECON	L													T	T		T				T	1	
Contact Name: Jason Taylor	С	ontact	Name:	Jason	Kijlo.	-															1.						
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FIELD SAMPLE ID	ND	~	rr.	IAINE IE	信 (月	SERVEL	30 Cho	MS Ch	otal Dig	issolve	y fetals 8	lercury	ot Wat Require	BCAH	B Pota TEX, VI	PH Frak	AHS	CBS	OCS EF								
	INTEL URFU	OIL	E	DA	TIN (241	PRE	CAP-	CAp-	Meta	ls	ercur	Motale	의표면	CC.	Zm	F	<u>n</u>	ñ.	>				1				
1 Fral-1/01-035-075	050	X	0	1 700/205	10-7-	ш. «б _		ă.	Wate	er	Z	-		V	- í	orgai	ics		+		-				_		
2 Exal-Eal 0.25-275		1		1 100,000	11:00		+-	-		+	-	-		1	-	+	+		+				-		+	-	
3 Exal-1401 0.35-0.75		11			1:30		-	-		+	+				-	-	+	+	+		-			\vdash			
4 Exal-Sol 025 - 075					12:03		-				_	-		\rightarrow	-	-	+			-	+				-	_	_
5 Eval - BAOL 1.0		1			12:30		-			+	-			1	-	-	+	_	-	-	+		_		_	_	
6 MW17-01	X	Ť	\$	5 298/07/07	13:07	ΪX					T			X		-			-	-	-				+		
7 MW17-03	X		13	5723025	214.01	X								X		-	1			1	-				-		
8				1.46										-			1						-		-		
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IOL SITE LOCATION	1		0	REGU	LATORY	CRITER	RIA / D	ETEC	TION	LIM	ITS	SPEC	DIAL I	NSTR	RUCT	TION	3	_				# IADE I	1950 9	TU	DNIAE		TIME
101 PROJECT # (If applicable)	Way	N)			/	2					CL	50	ales	1.13	lun	Va.	IF	00	roit-	4-	NOT SU	BMITTED	Stand	ard	(5 days	a) X
Lot C+C-NA				Λ	M. I.	, 1	le.									J	1	10				WATER	VA FOH	Rush		(3 days	
MAXXAM TASK ORDER # OR SER VICE ORDE	R#+	LINE I	TEM	17	Plan/1	CI	C.A.: (A.)									1						X	-			(2 days	
FOL- CHC- NA																									(s	(1 day ame day	
YES NO COOLEF	ID #					YES	NO C	OOLE	R ID #								YE	S N	10	COOLE	ER ID #				Date	Require	id
SEAL PRESENT TEMP	11	6	Ch's	EAL PRESENT			TE	MP				SE	AL PRE	SENT				_		TEMP		-		1	LAB	JSE ON	ILY
COOLING MEDIA PRESENT	1	2	3 C	OOLING MEDIA	PRESENT			°C	π.	2	3	CO	OLING	MEDI	A PRI	ESENT	-		-	°C	1	2	3	MAX	KAM	JOB #	
RELINQUISHED BY:			DAT	E:	TIME (2	4 HR)	RECEIV	ED BY	1:	1.				_				DAT	TE:			TIME (2	24 HR)	K	SK	.176	4
1. Doctor Alex.	dep	an	20	18/03/03	16:3	0	De	277	re	H	bur	ot	DA	AVIN	121	ALB	ERT	20	18/	0810	8	16:3	39		SA	MPLES	3
2.	V	V				4	2.											Γ		7				LABE BY	LED	VER BY	FIED
3.						1	3.																	N	n	1	na
COC - 1009 (04/2016) IOL-NS						White: M	axxam			Ye	ellow: C	lient	-		-								_	9			<u> </u>

ΑΞϹΟΜ

Data Quality Review Checklist

Consultant: Al	ЕСОМ			Sampling Date: 2018/08/08
Location: 64	1 MILL LA	KE ROA	AD NO 2,	, Laboratory: Maxxam
H	UBBARD	S, NS		
Consultant Project Number: 60)438249			Sample Submission Number: B8K1764
Are All Laboratory QC Samples V	Vithin Ac	ceptance	Criteria	(Yes, No, Not Applicable)?
	Yes	No	NA	Comments
Instrument Surrogate Recovery	\boxtimes			
Extraction Surrogate Recovery	\boxtimes			
Method Blank Concentration	\boxtimes			
Matrix Duplicate RPD		\boxtimes		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).
Matrix Spike Recovery		\boxtimes		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)
Lab Control Sample Recovery	\boxtimes			
Are All Field QC Samples Within	Alert Lim	its (Yes,	No, Not	Applicable)?
	Yes	No	NA	Comments
Field Blank Concentration			\boxtimes	
Trip Blank Concentration			\boxtimes	
Field Duplicate RPD			\boxtimes	
Has CoA been signed off?				🛛 Yes 🗆 No
Has lab warranted all tests were i	n statisti	cal contro	ol in CoA	? 🛛 Yes 🗆 No
Has lab warranted all tests were a	analyzed	following	g SOP's i	in CoA? Yes
Were all samples analyzed within	nold tim	es?	ط) بینندانم	
All volatiles samples methanol ex		r require	a) within	
Were sample temperatures accer	otable wh	en thev	reached	lab? ⊠ Yes □ No
Is data considered to be reliable?			⊠ Yes	□ No
If answer is "No", describe and pr	ovide rat	ionale:		
Reviewed by (Print): Jania	ce Shea			Reviewed by (Signature):
Date: 2019	9/02/27			V



Task Order#: IOL CTC NA Site#: IOL CTC NA Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 09869

Attention: Jason Taylor

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2018/10/25 Report #: R5456245 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8S1903 Received: 2018/10/24, 12:30

Sample Matrix: Water # Samples Received: 3

Analyses	Quanti	ty Laboratory Method	Primary Reference
TEH in Water (PIRI)	3	ATL SOP 00113	Atl. RBCA v3.1 m
VPH in Water (PIRI)	3	ATL SOP 00118	Atl. RBCA v3.1 m
Silica Gel Clean-up (Water)	3	ATL SOP 00113	EPA 3630C R3 m
ModTPH (T1) Calc. for Water	3	N/A	Atl. RBCA v3 m

Remarks:

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

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

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

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

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

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.



Task Order#: IOL CTC NA Site#: IOL CTC NA Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 09869

Attention: Jason Taylor

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2018/10/25 Report #: R5456245 Version: 1 - Final

CERTIFICATE OF ANALYSIS

Sara Mason

MAXXAM JOB #: B8S1903 Received: 2018/10/24, 12:30

Encryption Key

Naper Project Manager 25 Oct 2018 15:30:54

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Sara Mason, Project Manager Email: smason@maxxam.ca Phone# (902)420-0203



AECOM Canada Ltd. Task Order#: IOL CTC NA Site#: IOL CTC NA Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

RBCA HYDROCARBONS IN WATER (WATER)

Maxxam ID		ICL477	ICL478	ICL479			ICL479		
Sampling Date		2018/10/24 10:00	2018/10/24 10:30	2018/10/24 11:00			2018/10/24 11:00		
COC Number		09869	09869	09869			09869		
	UNITS	MW17-01	MW17-03	MW4	RDL	QC Batch	MW4 Lab-Dup	RDL	QC Batch
Petroleum Hydrocarbons									
Benzene	mg/L	<0.0010	<0.0010	<0.0010	0.0010	5800457			
Toluene	mg/L	<0.0010	<0.0010	<0.0010	0.0010	5800457			
Ethylbenzene	mg/L	<0.0010	<0.0010	<0.0010	0.0010	5800457			
Total Xylenes	mg/L	<0.0020	<0.0020	<0.0020	0.0020	5800457			
C6 - C10 (less BTEX)	mg/L	0.092	0.057	<0.010	0.010	5800457			
>C10-C16 Hydrocarbons	mg/L	10	2.9	<0.050	0.050	5800413	<0.050	0.050	5800413
>C16-C21 Hydrocarbons	mg/L	4.0	0.62	<0.050	0.050	5800413	<0.050	0.050	5800413
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td>1.0</td><td>0.12</td><td><0.10</td><td>0.10</td><td>5800413</td><td><0.10</td><td>0.10</td><td>5800413</td></c32>	mg/L	1.0	0.12	<0.10	0.10	5800413	<0.10	0.10	5800413
Modified TPH (Tier1)	mg/L	15	3.7	<0.10	0.10	5799837			
Reached Baseline at C32	mg/L	Yes	Yes	NA	N/A	5800413			
Hydrocarbon Resemblance	mg/L	COMMENT (1)	COMMENT (1)	NA	N/A	5800413			
Extraction Surrogate Recovery (%)									
Isobutylbenzene - Extractable	%	104	103	96		5800413	99		5800413
n-Dotriacontane - Extractable	%	123 (2)	115 (2)	108 (2)		5800413	109 (2)		5800413
Instrument Surrogate Recovery (%)									
1,4-Difluorobenzene	%	103	101	100		5800457			
4-Bromofluorobenzene	%	97	97	99		5800457			
D4-1,2-Dichloroethane	%	103	101	101		5800457			
Isobutylbenzene - Volatile	%	76 (3)	91 (3)	105 (3)		5800457			

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) Weathered fuel oil fraction.

(2) TEH sample contained sediment.

(3) VPH sample contained sediment.



Report Date: 2018/10/25

AECOM Canada Ltd. Task Order#: IOL CTC NA Site#: IOL CTC NA Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	ICL477 MW17-01 Water				Re	Collected: 2018/10/24 elinquished: 2018/10/24 Received: 2018/10/24
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)		GC/FID	5800413	2018/10/24	2018/10/25	Marley Gidney
VPH in Water (PIRI)		PTGC/MS	5800457	N/A	2018/10/25	Thea Rideout
ModTPH (T1) Calc. for Wa	ater	CALC	5799837	N/A	2018/10/25	Automated Statchk
Maxxam ID: Sample ID: Matrix:	ICL478 MW17-03 Water				Re	Collected: 2018/10/24 elinquished: 2018/10/24 Received: 2018/10/24
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)		GC/FID	5800413	2018/10/24	2018/10/25	Marley Gidney
VPH in Water (PIRI)		PTGC/MS	5800457	N/A	2018/10/25	Thea Rideout
ModTPH (T1) Calc. for Wa	ater	CALC	5799837	N/A	2018/10/25	Automated Statchk
Maxxam ID: Sample ID: Matrix:	ICL479 MW4 Water				Re	Collected: 2018/10/24 elinquished: 2018/10/24 Received: 2018/10/24
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)		GC/FID	5800413	2018/10/24	2018/10/25	Marley Gidney
		PTGC/MS	5800457	Ν/Δ	2018/10/25	Thea Rideout
VPH in Water (PIRI)		FIGC/WIS	3800437	N/A	, -, -	meanaeout

Maxxam ID: Sample ID: Matrix:	ICL479 Dup MW4 Water				Re	Collected: linquished: Received:	2018/10/24 2018/10/24 2018/10/24
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	5800413	2018/10/24	2018/10/25	Marley Gio	dney



AECOM Canada Ltd. Task Order#: IOL CTC NA Site#: IOL CTC NA Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

GENERAL COMMENTS

Each temperature is th	e average of up to
Package 1	8.7°C
ilica gel clean-up perf	ormed on water ex
Results relate only to	the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.maxxamanalytics.com



AECOM Canada Ltd. Task Order#: IOL CTC NA Site#: IOL CTC NA Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
5800413	MGN	Method Blank	n-Dotriacontane - Extractable	2018/10/25		113	%	70 - 130
			Isobutylbenzene - Extractable	2018/10/25		99	%	70 - 130
			>C10-C16 Hydrocarbons	2018/10/25	<0.050		mg/L	
			>C16-C21 Hydrocarbons	2018/10/25	<0.050		mg/L	
			>C21- <c32 hydrocarbons<="" p=""></c32>	2018/10/25	<0.10		mg/L	
5800457	THL	Method Blank	1,4-Difluorobenzene	2018/10/25		101	%	70 - 130
			4-Bromofluorobenzene	2018/10/25		99	%	70 - 130
			D4-1,2-Dichloroethane	2018/10/25		100	%	70 - 130
			Isobutylbenzene - Volatile	2018/10/25		113	%	70 - 130
			Benzene	2018/10/25	<0.0010		mg/L	
			Toluene	2018/10/25	<0.0010		mg/L	
			Ethylbenzene	2018/10/25	<0.0010		mg/L	
			Total Xylenes	2018/10/25	<0.0020		mg/L	
			C6 - C10 (less BTEX)	2018/10/25	<0.010		mg/L	
5800413	MGN	RPD [ICL479-01]	>C10-C16 Hydrocarbons	2018/10/25	NC		%	40
			>C16-C21 Hydrocarbons	2018/10/25	NC		%	40
			>C21- <c32 hydrocarbons<="" td=""><td>2018/10/25</td><td>NC</td><td></td><td>%</td><td>40</td></c32>	2018/10/25	NC		%	40
5800413	MGN	Matrix Spike [ICL478-01]	n-Dotriacontane - Extractable	2018/10/25		119 (1)	%	70 - 130
			Isobutylbenzene - Extractable	2018/10/25		100	%	70 - 130
			>C10-C16 Hydrocarbons	2018/10/25		NC	%	70 - 130
			>C16-C21 Hydrocarbons	2018/10/25		100	%	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2018/10/25</td><td></td><td>121</td><td>%</td><td>70 - 130</td></c32>	2018/10/25		121	%	70 - 130
5800413	MGN	LCS	n-Dotriacontane - Extractable	2018/10/25		116	%	70 - 130
			Isobutylbenzene - Extractable	2018/10/25		94	%	70 - 130
			>C10-C16 Hydrocarbons	2018/10/25		106	%	70 - 130
			>C16-C21 Hydrocarbons	2018/10/25		98	%	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2018/10/25</td><td></td><td>114</td><td>%</td><td>70 - 130</td></c32>	2018/10/25		114	%	70 - 130
5800457	THL	LCS	1,4-Difluorobenzene	2018/10/25		101	%	70 - 130
			4-Bromofluorobenzene	2018/10/25		97	%	70 - 130
			D4-1,2-Dichloroethane	2018/10/25		99	%	70 - 130
			Isobutylbenzene - Volatile	2018/10/25		109	%	70 - 130
			Benzene	2018/10/25		113	%	70 - 130
			Toluene	2018/10/25		109	%	70 - 130
			Ethylbenzene	2018/10/25		111	%	70 - 130
			Total Xylenes	2018/10/25		111	%	70 - 130

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.

LCS: 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) TEH sample contained sediment.



AECOM Canada Ltd. Task Order#: IOL CTC NA Site#: IOL CTC NA Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

VALIDATION SIGNATURE PAGE

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

Philippe Deven

Phil Deveau, Scientific Specialist (Organics)



 200 Bluewater Road, Suite 105
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 Bedford, NS B4B 1G9
 Fax: (902) 420-8612

 www.maxxamanalytics.com
 Toll Free: 1-800-565-7227

EXXON MOBIL/IMPERIAL OIL - MAXXAM CHAIN-OF-CUSTODY RECORD



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ΑΞϹΟΜ

Data Quality Review Checklist

Consultant: Al	ECOM			Sampling Date: 2018/10/24			
Location: 64	MILL LA	AKE ROA	AD NO 2	, Laboratory: Maxxam			
H	JBBARD	S, NS					
Consultant Project Number: 60	438249			Sample Submission Number: B8S1903			
Are All Laboratory QC Samples V	Vithin Ac	ceptance	Criteria	(Yes, No, Not Applicable)?			
	Yes	No	NA	Comments			
Instrument Surrogate Recovery	\boxtimes						
Extraction Surrogate Recovery	\boxtimes						
Method Blank Concentration	\boxtimes						
Matrix Duplicate RPD	Matrix Duplicate RPD Image: Concentration in the sample and/or duplicate was too low to a reliable RPD calculation (absolute difference <= 2x RDL).						
Matrix Spike Recovery		\boxtimes		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)			
Lab Control Sample Recovery	\boxtimes						
Are All Field QC Samples Within	Alert Lim	its (Yes,	No, Not	Applicable)?			
	Yes	No	NA	Comments			
Field Blank Concentration							
Trip Blank Concentration							
Field Duplicate RPD			\boxtimes				
Has CoA been signed off?				⊠ Yes □ No			
Has lab warranted all tests were i	n statisti	cal contro	ol in CoA	? ¥es 🗆 No			
Has lab warranted all tests were a	analyzed	following	g SOP's i	in CoA? ⊠ Yes □ No			
vvere all samples analyzed within	noia tim	es / f. roquiro	d) within				
Is Chain of Custody completed ar	nd signer	1 iequiie 17	u) within	$\boxtimes \text{ Yes } \square \text{ No}$			
Were sample temperatures accer	otable wh	ien they	reached	lab? ⊠ Yes □ No			
Is data considered to be reliable? If answer is "No", describe and pr	ovide rat	ionale:	⊠ Yes	□ No			
Reviewed by (Print): Janio Date: 2019	ce Shea)/02/27			Reviewed by (Signature):			



Attention: Jason Taylor

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8 Task Order#: N/A - CTC Site#: N/A Site Location: 64 MILL LAKE ROAD, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 701800-02-01

> Report Date: 2019/02/12 Report #: R5591683 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B933199

Received: 2019/02/06, 14:02

Sample Matrix: Water # Samples Received: 2

Analyses	Quanti	ty Laboratory Method	Primary Reference
TEH in Water (PIRI)	2	ATL SOP 00113	Atl. RBCA v3.1 m
VPH in Water (PIRI)	2	ATL SOP 00118	Atl. RBCA v3.1 m
Silica Gel Clean-up (Water)	2	ATL SOP 00113	EPA 3630C R3 m
ModTPH (T1) Calc. for Water	2	N/A	Atl. RBCA v3 m

Remarks:

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

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

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

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

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

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.



Task Order#: N/A - CTC Site#: N/A Site Location: 64 MILL LAKE ROAD, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 701800-02-01

Attention: Jason Taylor

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2019/02/12 Report #: R5591683 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B933199

Received: 2019/02/06, 14:02

Encryption Key

Keri Macka Senior Proj 12 Feb 2019

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Sara Mason, Project Manager Email: smason@maxxam.ca Phone# (902)420-0203

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



RBCA HYDROCARBONS IN WATER (WATER)

Maxxam ID		IXX173			IXX173			IXX213		
Compling Date		2019/02/06			2019/02/06			2019/02/06		
		10:30			10:30			11:15		
COC Number		701800-02-01			701800-02-01			701800-02-01		
	UNITS	MW17-01	RDL	QC Batch	MW17-01 Lab-Dup	RDL	QC Batch	MW17-03	RDL	QC Batch
Petroleum Hydrocarbons										
Benzene	mg/L	<0.0010	0.0010	5966152	<0.0010	0.0010	5966152	<0.0010	0.0010	5966152
Toluene	mg/L	<0.0010	0.0010	5966152	<0.0010	0.0010	5966152	<0.0010	0.0010	5966152
Ethylbenzene	mg/L	<0.0010	0.0010	5966152	<0.0010	0.0010	5966152	<0.0010	0.0010	5966152
Total Xylenes	mg/L	<0.0020	0.0020	5966152	<0.0020	0.0020	5966152	<0.0020	0.0020	5966152
C6 - C10 (less BTEX)	mg/L	<0.010	0.010	5966152	<0.010	0.010	5966152	<0.010	0.010	5966152
>C10-C16 Hydrocarbons	mg/L	<0.050	0.050	5966228	<0.050	0.050	5966228	<0.050	0.050	5966228
>C16-C21 Hydrocarbons	mg/L	<0.050	0.050	5966228	<0.050	0.050	5966228	< 0.050	0.050	5966228
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.10</td><td>0.10</td><td>5966228</td><td><0.10</td><td>0.10</td><td>5966228</td><td><0.10</td><td>0.10</td><td>5966228</td></c32>	mg/L	<0.10	0.10	5966228	<0.10	0.10	5966228	<0.10	0.10	5966228
Modified TPH (Tier1)	mg/L	<0.10	0.10	5964248				<0.10	0.10	5964248
Reached Baseline at C32	mg/L	NA	N/A	5966228				NA	N/A	5966228
Hydrocarbon Resemblance	mg/L	NA	N/A	5966228				NA	N/A	5966228
Extraction Surrogate Recovery (%)										
Isobutylbenzene - Extractable	%	117		5966228	104		5966228	108		5966228
n-Dotriacontane - Extractable	%	102		5966228	85		5966228	85		5966228
Instrument										
Surrogate Recovery (%)										
1,4-Difluorobenzene	%	103		5966152	103		5966152	102		5966152
4-Bromofluorobenzene	%	102		5966152	101		5966152	100		5966152
D4-1,2-Dichloroethane	%	104		5966152	104		5966152	103		5966152
Isobutylbenzene - Volatile	%	102		5966152	102		5966152	102		5966152
RDL = Reportable Detection Lim QC Batch = Quality Control Batc	nit ch									

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable



AECOM Canada Ltd. Task Order#: N/A - CTC Site#: N/A Site Location: 64 MILL LAKE ROAD, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	IXX173 MW17-01 Water				Reli	Collected: 2019/02/06 nquished: 2019/02/06 Received: 2019/02/06
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)		GC/FID	5966228	2019/02/08	2019/02/08	David Balfour
VPH in Water (PIRI)		PTGC/MS	5966152	N/A	2019/02/08	Thea Rideout
ModTPH (T1) Calc. for Wa	ater	CALC	5964248	N/A	2019/02/11	Automated Statchk
Maxxam ID: Sample ID: Matrix:	IXX173 Dup MW17-01 Water				Reli	Collected: 2019/02/06 nquished: 2019/02/06 Received: 2019/02/06
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)		GC/FID	5966228	2019/02/08	2019/02/08	David Balfour
TEH in Water (PIRI) VPH in Water (PIRI)		GC/FID PTGC/MS	5966228 5966152	2019/02/08 N/A	2019/02/08 2019/02/08	David Balfour Thea Rideout
TEH in Water (PIRI) VPH in Water (PIRI) Maxxam ID: Sample ID: Matrix:	IXX213 MW17-03 Water	GC/FID PTGC/MS	5966228 5966152	2019/02/08 N/A	2019/02/08 2019/02/08 Reli	David Balfour Thea Rideout Collected: 2019/02/06 nquished: 2019/02/06 Received: 2019/02/06
TEH in Water (PIRI) VPH in Water (PIRI) Maxxam ID: Sample ID: Matrix: Test Description	IXX213 MW17-03 Water	GC/FID PTGC/MS Instrumentation	5966228 5966152 Batch	2019/02/08 N/A Extracted	2019/02/08 2019/02/08 Relin	David Balfour Thea Rideout Collected: 2019/02/06 nquished: 2019/02/06 Received: 2019/02/06 Analyst
TEH in Water (PIRI) VPH in Water (PIRI) Maxxam ID: Sample ID: Matrix: Test Description TEH in Water (PIRI)	IXX213 MW17-03 Water	GC/FID PTGC/MS Instrumentation GC/FID	5966228 5966152 Batch 5966228	2019/02/08 N/A Extracted 2019/02/08	2019/02/08 2019/02/08 Reli Date Analyzed 2019/02/08	David Balfour Thea Rideout Collected: 2019/02/06 nquished: 2019/02/06 Received: 2019/02/06 Analyst David Balfour
TEH in Water (PIRI) VPH in Water (PIRI) Maxxam ID: Sample ID: Matrix: Test Description TEH in Water (PIRI) VPH in Water (PIRI)	IXX213 MW17-03 Water	GC/FID PTGC/MS Instrumentation GC/FID PTGC/MS	5966228 5966152 Batch 5966228 5966152	2019/02/08 N/A Extracted 2019/02/08 N/A	2019/02/08 2019/02/08 Reli Date Analyzed 2019/02/08 2019/02/08	David Balfour Thea Rideout Collected: 2019/02/06 nquished: 2019/02/06 Received: 2019/02/06 Analyst David Balfour Thea Rideout



GENERAL COMMENTS

Each te	emperature is the ave	rage of up to thi	ree cooler temperatures taken at receipt
	Package 1	5.7°C	
Silica g	el clean-up performec	l on water extra	cts.

Results relate only to the items tested.



AECOM Canada Ltd. Task Order#: N/A - CTC Site#: N/A Site Location: 64 MILL LAKE ROAD, HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
5966152	THL	Method Blank	1,4-Difluorobenzene	2019/02/08		103	%	70 - 130
			4-Bromofluorobenzene	2019/02/08		101	%	70 - 130
			D4-1,2-Dichloroethane	2019/02/08		104	%	70 - 130
			Isobutylbenzene - Volatile	2019/02/08		104	%	70 - 130
			Benzene	2019/02/08	<0.0010		mg/L	
			Toluene	2019/02/08	<0.0010		mg/L	
			Ethylbenzene	2019/02/08	< 0.0010		mg/L	
			Total Xylenes	2019/02/08	<0.0020		mg/L	
			C6 - C10 (less BTEX)	2019/02/08	<0.010		mg/L	
5966228	DBF	Method Blank	n-Dotriacontane - Extractable	2019/02/08		92 (1)	%	70 - 130
			Isobutylbenzene - Extractable	2019/02/08		107	%	70 - 130
			>C10-C16 Hydrocarbons	2019/02/08	<0.050		mg/L	
			>C16-C21 Hydrocarbons	2019/02/08	<0.050		mg/L	
			>C21- <c32 hydrocarbons<="" td=""><td>2019/02/08</td><td><0.10</td><td></td><td>mg/L</td><td></td></c32>	2019/02/08	<0.10		mg/L	
5966152	THL	RPD [IXX173-02]	Benzene	2019/02/08	NC		%	40
			Toluene	2019/02/08	NC		%	40
			Ethylbenzene	2019/02/08	NC		%	40
			Total Xylenes	2019/02/08	NC		%	40
			C6 - C10 (less BTEX)	2019/02/08	NC		%	40
5966228	DBF	RPD [IXX173-01]	>C10-C16 Hydrocarbons	2019/02/08	NC		%	40
			>C16-C21 Hydrocarbons	2019/02/08	NC		%	40
			>C21- <c32 hydrocarbons<="" td=""><td>2019/02/08</td><td>NC</td><td></td><td>%</td><td>40</td></c32>	2019/02/08	NC		%	40
5966152	THL	Matrix Spike [IXX213-02]	1,4-Difluorobenzene	2019/02/09		102	%	70 - 130
			4-Bromofluorobenzene	2019/02/09		101	%	70 - 130
			D4-1,2-Dichloroethane	2019/02/09		104	%	70 - 130
			Isobutylbenzene - Volatile	2019/02/09		101	%	70 - 130
			Benzene	2019/02/09		111	%	70 - 130
			Toluene	2019/02/09		113	%	70 - 130
			Ethylbenzene	2019/02/09		115	%	70 - 130
			Total Xylenes	2019/02/09		113	%	70 - 130
5966228	DBF	Matrix Spike [IXX213-01]	n-Dotriacontane - Extractable	2019/02/08		116 (1)	%	70 - 130
			Isobutylbenzene - Extractable	2019/02/08		114	%	70 - 130
			>C10-C16 Hydrocarbons	2019/02/08		94	%	70 - 130
			>C16-C21 Hydrocarbons	2019/02/08		89	%	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2019/02/08</td><td></td><td>103</td><td>%</td><td>70 - 130</td></c32>	2019/02/08		103	%	70 - 130
5966152	THL	LCS	1,4-Difluorobenzene	2019/02/08		103	%	70 - 130
			4-Bromofluorobenzene	2019/02/08		100	%	70 - 130
			D4-1,2-Dichloroethane	2019/02/08		103	%	70 - 130
			Isobutylbenzene - Volatile	2019/02/08		102	%	70 - 130
			Benzene	2019/02/08		94	%	70 - 130
			Toluene	2019/02/08		94	%	70 - 130
			Ethylbenzene	2019/02/08		96	%	70 - 130
			Total Xylenes	2019/02/08		95	%	70 - 130
5966228	DBF	LCS	n-Dotriacontane - Extractable	2019/02/08		95 (1)	%	70 - 130
			Isobutylbenzene - Extractable	2019/02/08		99	%	70 - 130
			>C10-C16 Hydrocarbons	2019/02/08		90	%	70 - 130
			>C16-C21 Hydrocarbons	2019/02/08		82	%	70 - 130
L			,	-, - ,		-		



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC										
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits		
			>C21- <c32 hydrocarbons<="" td=""><td>2019/02/08</td><td></td><td>89</td><td>%</td><td>70 - 130</td></c32>	2019/02/08		89	%	70 - 130		
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.										
Matrix S	pike: A s	sample to which	a known amount of the analyte of interest has been	en added. Used to evaluate sam	ole matrix inte	erference.				
LCS: A b	ank mat	rix sample to wh	nich a known amount of the analyte, usually from a	second source, has been added	. Used to eval	uate method acc	uracy.			
Method	Blank: A	A blank matrix co	ontaining all reagents used in the analytical proced	ure. Used to identify laboratory	contaminatio	۱.				
Surrogat	e: A pur	e or isotopically	labeled compound whose behavior mirrors the an	alytes of interest. Used to evalu	ate extraction	efficiency.				
NC (Dup differen	licate RP ce <= 2x	D): The duplicat RDL).	e RPD was not calculated. The concentration in the	sample and/or duplicate was to	o low to perm	nit a reliable RPD	calculation	(absolute		
(1) Silica	a gel cle	an-up perform	ed on water extracts.							



VALIDATION SIGNATURE PAGE

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

Kotomarie MacDonald

Rosemarie MacDonald, Scientific Specialist (Organics)

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Maxiam	200 Blu Bedford www.m	ewat d, No axxa	er Roa va Sco m.ca	ad otia B	4B 1G	9 R	Pho F Toll EPORT INFORMA	one: (902) Fax: (902) Free: 800- FION	420-02 420-86 563-62	203 312 266				EX	EXXONMOBIL/IMPERIAL OIL - MAXXAM Pag CHAIN-OF-CUSTODY RECORD Cof C # 7018 ANALYSIS REQUESTED							ge / of 800-02-	je¦of 800-02-01 ┃			701800				
Company Name: AECOM Canada Ltd			Co	ompar	ny Nam	e:AEC	OM Canada Ltd.					1	1	-	-	-			1	-										
Contact Name: Accounts Payable Address: 1701 Hollis Street Halfay NS Paj 1948			Co Ja Ac 17	ontact ason Ti ddress 701 Hc	Name: avlor, A s: ollis Stre	et	IUAV																							
Email: CANSSC.E-billing@aecor	n.com, Lau	ra.Ma	icis Er	mail:	10 000	Jaso	on Taylor2@aecom	com Alex D	uquav	maeco	-																			
Phone: (902) 428-2048			PI	hone:		(902	428-2048	ount / nonite	uguuj(gueoo																				
Sampler Name (Print): Alow Dia	River h		Co	onsult	ant Pro	oject #:	60438249				Wate																			
1100 1.00	MATRIX SAMPLING &						ui suo																							
FIELD SAMPLE ID		GROUND	SURFACE WATER	SOIL	OTHER	CONTAINERS	DATE	TIME (24 HR)	FIELD FILTERED PRESERVED	LAB FILTRATION REQUIRED	RBCA Hydrocarb																			
1 MW17-01		X				6	2019102101	10:30			V		1		1	-	<u> </u>		1	1										
2 MW17-03		X				6	2019/02/01.	11:15			Ŕ				1															
3						1	Sidi y cay ou				1	1	-		-		_				-									
4	X				1						1				1	_											1			
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7				1						1		-	-	+	-			-/				$ \rightarrow $								1-
8				/					1	1		-			-	-		1							- /					
9			/	-			+					-		+	-		- /													
10		/	-	-				/	1								/						L	4						
IOL SITE LOCATION:	4		_					REGULA	TORY	CRITE	RIA / D	ETECTI	ON LIMIT	S		SPECIAL	INSTRI	CTION	<u></u>					# 14851	ISED		TUDN			p
64 Mill Lake Road, Hubbards, NS IOL PROJECT # (if applicable): N/A MAXXAM TASK ORDER # OR SERVICE OI N/A - CTC-	RDER # + I	INE I	ITEM:					A	1a.n.=	hC	Pir	i' I					¹	Von	I.					AND NO SUBMIT Enter N// Water	T TED A for	Stand: Rush	ard	(5 day (3 day (2 day (1 day (same day	/s) /s) /s) /s) ay) ay)	ADD DD
YES NO COOL	ER ID:	-				-		VEC			R ID:	-		_	_	-									/		Da	ate Requi	red	
SEAL PRESENT	P (n		<	5	10		SEAL PRESENT	123	NO	TEMP						SEAL PRE	SENT		YES	NO CO	DLER ID:						LAB	USE ON	IY	-
COOLING MEDIA PRESENT C	φ		2	נ	4 S		COOLING MEDIA PRE	SENT		°C	1		2		3	SEAL INT	ACT MEDIA PI	RESENT		IE IE	C	7	2		3		MAX	(XAM JO	B #	
* RELINQUISHED BY:	DATE: TIME (24 H					24 HR)	1	RECE	VED B	(; _A							D,	ATE:		Ī	TIME (24	HR)	B	933	199					
2	ATEX Daguar 2019/02/06 12:30				1) /	` J-			48	ANDI	+ vo	Cidit	UT :	2010	1/02/	DO	140	02		S	AMPLES	6						
3				~	1			-		2		P							-				_			LAB	ELED BY	Y: VE	RIFIEL) BY:
* UNLESS OTHERWISE AGREED TO IN WRITIN	G, WORK SL	вміт	TED ON	THIS C	CHAIN C	F CUST	ODY IS SUBJECT TO	MAXXAM'S	STANDA	RD TE	RMS AND	CONDIT	IONS. SI	GNING OF	THIS	CHAIN OF C	USTODY	росим	ENT IS A	CKNOW	EDGMENT		CEPTAN	CE OF OU	DTEDMO	. 1	M	-	13	
AT WWW.MAXXAM.GA/TERMS.															191000						-DOMEN	AND AC	SEP TAN	UL OF UU	I LERWS	which /	ARE AVAIL	LABLE FO	K VIEWI	NG

COC - 1009 (2016) IOL - NS

White: Maxxam

Yellow: Client

ΑΞϹΟΜ

Consultant: A	ECOM			Sampling Date: 2019/02/06							
Location: 64	1 MILL LA	AKE ROA	AD NO 2,	Laboratory: Maxxam							
<u>H</u>	UBBARD	S, NS									
Consultant Project Number: 60)438249			Sample Submission Number: <u>B933199</u>							
Are All Laboratory QC Samples V	Vithin Ac	ceptance	e Criteria	(Yes, No, Not Applicable)?							
	Yes	No	NA	Comments							
Instrument Surrogate Recovery	\boxtimes										
Extraction Surrogate Recovery	\boxtimes										
Method Blank Concentration	\boxtimes										
Matrix Duplicate RPD		\boxtimes		NC (Duplicate RPD): The duplicate RPD was not calculated. The							
				a reliable RPD calculation (absolute difference <= 2x RDL).							
Matrix Spike Recovery	\boxtimes										
Lab Control Sample Recovery	\boxtimes										
Are All Field QC Samples Within	Alert Lim	its (Yes,	No, Not	Applicable)?							
Yes No NA Comments											
Field Blank Concentration				Comments							
Trip Blank Concentration											
Field Duplicate RPD											
Has CoA been signed off?				⊻Yes □ No							
Has lab warranted all tests were	in statisti	cal contro		?⊠ Yes ⊔ No							
Has lab warranted all tests were	analyzed	tollowing	g SOP's I	n CoA?⊠ Yes □ No							
All veletiles complex methodel ov	rnoid lim	if roquiro	d) within								
All volatiles samples methanol ex		n require	a) within t								
Were sample temperatures accel	nu signet stable wh	u: Den thevu	reached l	\square res \square No							
		ien iney									
Is data considered to be reliable?	, 		_⊠ Yes								
If answer is "No", describe and pi	rovide rat	ionale:									
				Ι							
Reviewed by (Print): Jani	ce Shea			Reviewed by (Signature): Januar Shua.							
Date: 2019	9/02/27			-/							



Attention: Jason Taylor

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8 Task Order#: N/A - CTC Site#: N/A Site Location: 64 MILL LAKE ROAD, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 704342-01-01, 10024

> Report Date: 2019/02/26 Report #: R5607474 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B944678

Received: 2019/02/20, 12:32

Sample Matrix: Water # Samples Received: 13

Analyses	Quanti	ty Laboratory Method	Primary Reference
TEH in Water (PIRI)	13	ATL SOP 00113	Atl. RBCA v3.1 m
VPH in Water (PIRI)	13	ATL SOP 00118	Atl. RBCA v3.1 m
Silica Gel Clean-up (Water)	13	ATL SOP 00113	EPA 3630C R3 m
ModTPH (T1) Calc. for Water	13	N/A	Atl. RBCA v3 m

Remarks:

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

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

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

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

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

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.



Task Order#: N/A - CTC Site#: N/A Site Location: 64 MILL LAKE ROAD, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 704342-01-01, 10024

Attention: Jason Taylor

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2019/02/26 Report #: R5607474 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B944678 Received: 2019/02/20, 12:32

Encryption Key

Sara Mason Project Manager 26 Feb 2019 12:51:01 Vacen

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Sara Mason, Project Manager Email: smason@maxxam.ca Phone# (902)420-0203

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Maxxam ID		JAF693	JAF694	JAF695	JAF709	JAF710	JAF711		
Sampling Date		2019/02/19	2019/02/19	2019/02/19	2019/02/19	2019/02/19	2019/02/19		
		13:00	13:15	14:00	09:00	09:15	09:30		
COC Number		704342-01-01	704342-01-01	704342-01-01	10024	10024	10024		
	UNITS	MW5	MW4	FIELD BLANK	MW16-02	MW16-03	TRIP BLANK	RDL	QC Batch
Petroleum Hydrocarbons									
Benzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	5984027
Toluene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	5984027
Ethylbenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	5984027
Total Xylenes	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	5984027
C6 - C10 (less BTEX)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5984027
>C10-C16 Hydrocarbons	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5984159
>C16-C21 Hydrocarbons	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5984159
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.10</td><td><0.10</td><td><0.10</td><td><0.10</td><td><0.10</td><td><0.10</td><td>0.10</td><td>5984159</td></c32>	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5984159
Modified TPH (Tier1)	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5982399
Reached Baseline at C32	mg/L	NA	NA	NA	NA	NA	NA	N/A	5984159
Hydrocarbon Resemblance	mg/L	NA	NA	NA	NA	NA	NA	N/A	5984159
Extraction									
Surrogate Recovery (%)									
Isobutylbenzene - Extractable	%	102	94	103	101	106	103		5984159
n-Dotriacontane - Extractable	%	116	99	110	107	112	113		5984159
Instrument Surrogate Recovery (%)									
1,4-Difluorobenzene	%	104	104	105	103	104	104		5984027
4-Bromofluorobenzene	%	101	103	102	102	102	102		5984027
D4-1,2-Dichloroethane	%	106	108	107	107	108	107		5984027
Isobutylbenzene - Volatile	%	106	107	108	105	106	107		5984027
RDL = Reportable Detection Lim QC Batch = Quality Control Batch	nit ch								



Maxxam ID		JAF712	JAF713	JAF714	JAF715	JAF716	JAF717		
Sampling Date		2019/02/19	2019/02/19	2019/02/19	2019/02/19	2019/02/19	2019/02/19		
		09:45	10:00	10:15	10:30	11:00	11:30		
COC Number		10024	10024	10024	10024	10024	10024		
	UNITS	MW17-02	MW2	MW17-05	MW3	MW16-01	MW1	RDL	QC Batch
Petroleum Hydrocarbons									
Benzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	5984027
Toluene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	5984027
Ethylbenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	5984027
Total Xylenes	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0020	5984027
C6 - C10 (less BTEX)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5984027
>C10-C16 Hydrocarbons	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5984159
>C16-C21 Hydrocarbons	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	5984159
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.10</td><td><0.10</td><td><0.10</td><td><0.10</td><td><0.10</td><td><0.10</td><td>0.10</td><td>5984159</td></c32>	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5984159
Modified TPH (Tier1)	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	5982399
Reached Baseline at C32	mg/L	NA	NA	NA	NA	NA	NA	N/A	5984159
Hydrocarbon Resemblance	mg/L	NA	NA	NA	NA	NA	NA	N/A	5984159
Extraction									
Isobutylbenzene - Extractable	%	106	101	97	97	104	95		5984159
n-Dotriacontane - Extractable	%	110	110	104	112	114	109		5984159
Instrument Surrogate Recovery (%)									
1,4-Difluorobenzene	%	104	104	104	104	104	105		5984027
4-Bromofluorobenzene	%	102	102	102	102	102	103		5984027
D4-1,2-Dichloroethane	%	108	108	107	109	107	108		5984027
Isobutylbenzene - Volatile	%	104	105	99	107	105	106		5984027
RDL = Reportable Detection Lim QC Batch = Quality Control Batc N/A = Not Applicable	it h								



AECOM Canada Ltd. Task Order#: N/A - CTC Site#: N/A Site Location: 64 MILL LAKE ROAD, HUBBARDS, NS Project #: 60438249

Maxxam ID		JAF718		
Sampling Data		2019/02/19		
		12:00		
COC Number		10024		
	UNITS	DUPA	RDL	QC Batch
Petroleum Hydrocarbons				
Benzene	mg/L	<0.0010	0.0010	5984027
Toluene	mg/L	<0.0010	0.0010	5984027
Ethylbenzene	mg/L	<0.0010	0.0010	5984027
Total Xylenes	mg/L	<0.0020	0.0020	5984027
C6 - C10 (less BTEX)	mg/L	<0.010	0.010	5984027
>C10-C16 Hydrocarbons	mg/L	<0.050	0.050	5984159
>C16-C21 Hydrocarbons	mg/L	<0.050	0.050	5984159
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.10</td><td>0.10</td><td>5984159</td></c32>	mg/L	<0.10	0.10	5984159
Modified TPH (Tier1)	mg/L	<0.10	0.10	5982399
Reached Baseline at C32	mg/L	NA	N/A	5984159
Hydrocarbon Resemblance	mg/L	NA	N/A	5984159
Extraction				
Surrogate Recovery (%)				
Isobutylbenzene - Extractable	%	104		5984159
n-Dotriacontane - Extractable	%	116		5984159
Instrument				
Surrogate Recovery (%)				
1,4-Difluorobenzene	%	105		5984027
4-Bromofluorobenzene	%	103		5984027
D4-1,2-Dichloroethane	%	109		5984027
Isobutylbenzene - Volatile	%	106		5984027
RDL = Reportable Detection Lim	it			
QC Batch = Quality Control Batc	h			
N/A = Not Applicable				



AECOM Canada Ltd. Task Order#: N/A - CTC Site#: N/A Site Location: 64 MILL LAKE ROAD, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	JAF693 MW5 Water				Rel	Collected:2019/02/19inquished:2019/02/20Received:2019/02/20	
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	5984159	2019/02/21	2019/02/22	Marsha (Skinner) Harnum	
		5700/140	5004003		2010/02/21	T 0:1 .	

			====;==;==	====;==	
VPH in Water (PIRI)	PTGC/MS	5984027	N/A	2019/02/21	Thea Rideout
ModTPH (T1) Calc. for Water	CALC	5982399	N/A	2019/02/25	Automated Statchk

Maxxam ID:	JAF694
Sample ID:	MW4
Matrix:	Water

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	5984159	2019/02/21	2019/02/22	Marsha (Skinner) Harnum
VPH in Water (PIRI)	PTGC/MS	5984027	N/A	2019/02/21	Thea Rideout
ModTPH (T1) Calc. for Water	CALC	5982399	N/A	2019/02/25	Automated Statchk

Maxxam ID:	JAF695	Collected:	2019/02/19
Sample ID:	FIELD BLANK	Relinquished:	2019/02/20
Matrix:	Water	Received:	2019/02/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	5984159	2019/02/21	2019/02/22	Marsha (Skinner) Harnum
VPH in Water (PIRI)	PTGC/MS	5984027	N/A	2019/02/21	Thea Rideout
ModTPH (T1) Calc. for Water	CALC	5982399	N/A	2019/02/25	Automated Statchk

Maxxam ID:	JAF709
Sample ID:	MW16-02
Matrix:	Water

Collected:	2019/02/19
Relinquished:	2019/02/20
Received:	2019/02/20

 Collected:
 2019/02/19

 Relinquished:
 2019/02/20

 Received:
 2019/02/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	5984159	2019/02/21	2019/02/22	Marsha (Skinner) Harnum
VPH in Water (PIRI)	PTGC/MS	5984027	N/A	2019/02/21	Thea Rideout
ModTPH (T1) Calc. for Water	CALC	5982399	N/A	2019/02/25	Automated Statchk

Maxxam ID:	JAF710
Sample ID:	MW16-03
Matrix:	Water

Collected:	2019/02/19
Relinguished:	2019/02/20
Received:	2019/02/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	5984159	2019/02/21	2019/02/22	Marsha (Skinner) Harnum
VPH in Water (PIRI)	PTGC/MS	5984027	N/A	2019/02/21	Thea Rideout
ModTPH (T1) Calc. for Water	CALC	5982399	N/A	2019/02/25	Automated Statchk



AECOM Canada Ltd. Task Order#: N/A - CTC Site#: N/A Site Location: 64 MILL LAKE ROAD, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	JAF711 TRIP BLANK Water				Rel	Collected:2019/02/19inquished:2019/02/20Received:2019/02/20	
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	5984159	2019/02/21	2019/02/22	Marsha (Skinner) Harnum	
VPH in Water (PIRI)		PTGC/MS	5984027	N/A	2019/02/21	Thea Rideout	
ModTPH (T1) Calc. for Wa	ater	CALC	5982399	N/A	2019/02/25	Automated Statchk	

Maxxam ID:	JAF712
Sample ID:	MW17-02
Matrix:	Water

Collected:	2019/02/19
Relinquished:	2019/02/20
Received:	2019/02/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	5984159	2019/02/21	2019/02/22	Marsha (Skinner) Harnum
VPH in Water (PIRI)	PTGC/MS	5984027	N/A	2019/02/21	Thea Rideout
ModTPH (T1) Calc. for Water	CALC	5982399	N/A	2019/02/25	Automated Statchk

Maxxam ID:	JAF713	Collected:	2019/02/19
Sample ID:	MW2	Relinquished:	2019/02/20
Matrix:	Water	Received:	2019/02/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	5984159	2019/02/21	2019/02/22	Marsha (Skinner) Harnum
VPH in Water (PIRI)	PTGC/MS	5984027	N/A	2019/02/21	Thea Rideout
ModTPH (T1) Calc. for Water	CALC	5982399	N/A	2019/02/25	Automated Statchk

Maxxam ID:	JAF714	Collected:	2019/02/19
Sample ID:	MW17-05	Relinquished:	2019/02/20
Matrix:	Water	Received:	2019/02/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	5984159	2019/02/21	2019/02/22	Marsha (Skinner) Harnum
VPH in Water (PIRI)	PTGC/MS	5984027	N/A	2019/02/21	Thea Rideout
ModTPH (T1) Calc. for Water	CALC	5982399	N/A	2019/02/25	Automated Statchk

Maxxam ID: Sample ID: Matrix:	JAF715 MW3 Water				(Relin	Collected: 2019/02/19 nquished: 2019/02/20 Received: 2019/02/20
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)		GC/FID	5984159	2019/02/21	2019/02/22	Marsha (Skinner) Harnum
VPH in Water (PIRI)		PTGC/MS	5984027	N/A	2019/02/21	Thea Rideout
ModTPH (T1) Calc. for Wa	ater	CALC	5982399	N/A	2019/02/25	Automated Statchk



AECOM Canada Ltd. Task Order#: N/A - CTC Site#: N/A Site Location: 64 MILL LAKE ROAD, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	JAF716 MW16-01 Water				Re	Collected: 2019/02/19 linquished: 2019/02/20 Received: 2019/02/20	
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	5984159	2019/02/21	2019/02/22	Marsha (Skinner) Harnum	
VPH in Water (PIRI)		PTGC/MS	5984027	N/A	2019/02/21	Thea Rideout	
ModTPH (T1) Calc. for Wa	ater	CALC	5982399	N/A	2019/02/25	Automated Statchk	

Maxxam ID:	JAF717
Sample ID:	MW1
Matrix:	Water

 Collected:
 2019/02/19

 Relinquished:
 2019/02/20

 Received:
 2019/02/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	5984159	2019/02/21	2019/02/22	Marsha (Skinner) Harnum
VPH in Water (PIRI)	PTGC/MS	5984027	N/A	2019/02/21	Thea Rideout
ModTPH (T1) Calc. for Water	CALC	5982399	N/A	2019/02/25	Automated Statchk

Maxxam ID: Sample ID: Matrix:	JAF718 DUPA Water			Re	Collected: elinquished: Received:	2019/02/19 2019/02/20 2019/02/20	
Test Description		Datab	Future et a d	Data Analizad	A a h t		

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	5984159	2019/02/21	2019/02/22	Marsha (Skinner) Harnum
VPH in Water (PIRI)	PTGC/MS	5984027	N/A	2019/02/21	Thea Rideout
ModTPH (T1) Calc. for Water	CALC	5982399	N/A	2019/02/25	Automated Statchk



GENERAL COMMENTS

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

Package 1	3.3°C
Package 2	3.0°C

Silica gel clean-up performed on water extracts.

Note: Sample incorrectly preserved (or presence of headspace)- MW4, Trip Blank - 2x40ml vials with headspace; MW17-05, MW16-01 and DUP A - 1x40ml vial with headspace. Vials placed on hold and analysis proceeded from remaining vials.

Results relate only to the items tested.



AECOM Canada Ltd. Task Order#: N/A - CTC Site#: N/A Site Location: 64 MILL LAKE ROAD, HUBBARDS, NS Project #: 60438249

QUALITY ASSURANCE REPORT

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
5984027	THL	Method Blank	1,4-Difluorobenzene	2019/02/21		105	%	70 - 130
			4-Bromofluorobenzene	2019/02/21		101	%	70 - 130
			D4-1,2-Dichloroethane	2019/02/21		107	%	70 - 130
			Isobutylbenzene - Volatile	2019/02/21		104	%	70 - 130
			Benzene	2019/02/21	<0.0010		mg/L	
			Toluene	2019/02/21	<0.0010		mg/L	
			Ethylbenzene	2019/02/21	<0.0010		mg/L	
			Total Xylenes	2019/02/21	<0.0020		mg/L	
			C6 - C10 (less BTEX)	2019/02/21	<0.010		mg/L	
5984159	MSK	Method Blank	n-Dotriacontane - Extractable	2019/02/22		113	%	70 - 130
			Isobutylbenzene - Extractable	2019/02/22		94	%	70 - 130
			>C10-C16 Hydrocarbons	2019/02/22	<0.050		mg/L	
			>C16-C21 Hydrocarbons	2019/02/22	<0.050		mg/L	
			>C21- <c32 hydrocarbons<="" td=""><td>2019/02/22</td><td><0.10</td><td></td><td>mg/L</td><td></td></c32>	2019/02/22	<0.10		mg/L	
5984027	THL	Matrix Spike [JAF693-02]	1,4-Difluorobenzene	2019/02/21		104	%	70 - 130
			4-Bromofluorobenzene	2019/02/21		102	%	70 - 130
			D4-1,2-Dichloroethane	2019/02/21		108	%	70 - 130
			Isobutylbenzene - Volatile	2019/02/21		106	%	70 - 130
			Benzene	2019/02/21		114	%	70 - 130
			Toluene	2019/02/21		115	%	70 - 130
			Ethylbenzene	2019/02/21		117	%	70 - 130
			Total Xylenes	2019/02/21		116	%	70 - 130
5984027	THL	LCS	1,4-Difluorobenzene	2019/02/21		105	%	70 - 130
			4-Bromofluorobenzene	2019/02/21		101	%	70 - 130
			D4-1,2-Dichloroethane	2019/02/21		108	%	70 - 130
			Isobutylbenzene - Volatile	2019/02/21		101	%	70 - 130
			Benzene	2019/02/21		88	%	70 - 130
			Toluene	2019/02/21		87	%	70 - 130
			Ethylbenzene	2019/02/21		89	%	70 - 130
			Total Xylenes	2019/02/21		89	%	70 - 130
5984159	MSK	LCS	n-Dotriacontane - Extractable	2019/02/22		117	%	70 - 130
			Isobutylbenzene - Extractable	2019/02/22		98	%	70 - 130
			>C10-C16 Hydrocarbons	2019/02/22		102	%	70 - 130
			>C16-C21 Hydrocarbons	2019/02/22		91	%	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2019/02/22</td><td></td><td>115</td><td>%</td><td>70 - 130</td></c32>	2019/02/22		115	%	70 - 130
						_		

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

LCS: 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.



Maxxam Job #: B944678 Report Date: 2019/02/26 AECOM Canada Ltd. Task Order#: N/A - CTC Site#: N/A Site Location: 64 MILL LAKE ROAD, HUBBARDS, NS Project #: 60438249

VALIDATION SIGNATURE PAGE

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

Kotomarie MacDonald

Rosemarie MacDonald, Scientific Specialist (Organics)

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

Maxam	200 Bluewa Bedford, No www.maxxa	ter Ro ova So am.ca	oad cotia B4	Phone: (902) 420-0203 34B 1G9 Fax: (902) 420-8612 Toll Free: 800-563-6266 REPORT INFORMATION						EXXONMOBIL/IMPERIAL OIL - MAXXAM CHAIN-OF-CUSTODY RECORD ANALYSIS REQUESTED							Page 1 of 2 C of C # 704342-01-01 704342					2
Company Name:AECOM Canada Ltd		-	Compar	iy Nam	e:AECO	M Canada Ltd.															1	
Contact Name: Accounts Payable Address: 1701 Hollis Street Halifax NS B3J 3M8	Contact Name: Jason Tavlor Address: 1701 Hollis Street Halifax NS B3J 3M8 billing@aecom.com, Laura.Macls Email: Jason.Taylor2@aecom.com, dan.anthony@aeco																					
Email: CANSSC.E-billing@aecon	n.com, Laura.w	acis	-mail:		Jasor	A28 2048	com, dan.ar	thony@	gaeco													
Sampler Name (Print): Alow	VG110 a	Consultant Project #: 60438249						n Wate														
11102 12	Sup	MA	TRIX			SAMPLI	NG	80	z	bons ir												
FIELD SAMPLE ID	GROUND WATER	SURFACE WATER	SOIL	OTHER	CONTAINERS	DATE (nyyyywwidd)	TIME (24 HR)	FIELD FILTERE	LAB FILTRATIC REQUIRED	RBCA Hydrocar												
1. HW5	X				Ū.	2019/03/19	13:00			X							1				Í	
2. MW4	X				1	1	13:15			X		_										
3 Field Rlank	X				N	Z	14:03			X												
4	1									~												
5 .							distribution of the second															
6 .						1.1.1	1.1															
7		1				1.0				1							1					
8 .						10000																_
9						Contraction and						-			-					_		_
10 .				1						-								+ +				
IOL SITE LOCATION: 64 Mill Lake Road, Hubbards, NS IOL PROJECT # (if applicable):							REGULA	TORY	CRITE	RIA / D	LIMITS:	SPECIAI		NS:			# JAR AND N SUBM Enter	S USED NOT NITTED N/A for	Standard Rush	TURNARO	UND TIME (5 days) (3 days) (2 days)	X
N/A MAXXAM TASK ORDER # OR SERVICE OF N/A - CTC-	RDER # + LINE	ITEM				ľ	Hlar	tic	5	1			10	NR.			Water	2		(s	(1 day) me day) Required	
YES NO COOL	ER ID:						YES	NO	COOLE	R ID:				YES NO	COOLER	ID:						
SEAL PRESENT	P 5	4	ł	1	slot	EAL PRESENT EAL INTACT			TEMP	(>3	2 4	SEAL PR	ESENT ACT	_	TEMP					LAB US MAXXA	E ONLY M JOB #	
* RELINQUISHED BY:	1	-	2	3	DAT	E:	TIME (24 HR		RECE	2 3	COOLING	5 MEDIA PRESEN	41		1	2 TIME	3 (24 HR)	89	4467	2	
1.00000	Ale	Xs	Man	KOX	20	112/20	1200	D	1		1-	H	adda in	122111	20	19/02/20	0 12	122	E P	SAM	PLES	
2.			0	0	0.00	- 17 Use / 300 W			2				1. A B B C , V A		120	i que per		-	LABE	LED BY:	VERIFIE	D BY:
3.									3				-	1.0	_		_		126	W/	18	r
* UNLESS OTHERWISE AGREED TO IN WRITING AT WWW.MAXXAM.CA/TERMS.	G, WORK SUBMI	TTED C	N THIS	CHAIN (OF CUST	ODY IS SUBJECT TO	MAXXAM'S	STANDA	ARD TE	RMS AN	NS. SIGNING OF TH	IS CHAIN OF	CUSTODY DOCU	MENT IS ACK	NOWLEDG	IENT AND ACCEP	PTANCE OF	OUR TERMS	WHICH AF	E AVAILAB	LE FOR VIEW	VING

COC - 1009 (2016) IOL - NS

di Us

White: Maxxam

Yellow: Client

Maxiam Bureau Veritas Group Company Bu	0 Bluewater Road dford, NS B4B 1 ww.maxxamanalyt	l, Suite 105 G9 ics.com	Phone: (902) 4 Fax: (902) 4 Toll Free: 1-800-3	20-020 20-861 565-72	3 2 27		EX	CXON CH	MOB IAIN	UL/II -0F-	MPEI CUS	RIAL TOD	OIL Y RI	- N :CO	NAXX RD	AM	0	of C	Pa #	ge	of	2
INVOICE INFORMATION		REPORT IN	FORMATION								AN	ALYS	IS R	EQL	JESTE	D	0,		<u>r</u>		LUC	
Company Name: Imperial Oil E	xxonMobil Company	Name: AE	ECONU																			
Contact Name: Accounts for	Contact N	Name: Jako	n tanar											-1								
Address: 1701 Hollis street	Address:	a nolla	Street							(2)												
Maifax NS B35 3	SME to	1 Fax N	5	in	5				(j	8					20							
Email: CANSSC . E-BILING 200	Ram Zor Email: 5	ason. Tan	or 2 eactom it	Aetal	Meta	(p)		athoc	litura	, C6	_				10							
Ph: 902 428 2001	Ph: 0	22 428 5	1505	iss A	Diss	letho		eme	on gricu	BTE	申				HIG							
Sampler Name (Print):	Consulta	ant Project #:		or D	or	uff N		ctabl	AE A) suo	BVB			80	8							
Mex Drawin	604	438249		fotal	Tota	Defa		cury extra	huble CCA	arbo	ow I			4, 82	1							
	MATRIX	22	SAMPLING	OSe OS	oose	d d		- Lov	er So	/droc	PH, L			A 62	Cinto							
	· · · ·	NE	Db)	Cho	Che	d Dig		als & ault a	Wate Wate	AH	K, VF	5	0	S EP	V)			1.1				
FIELD SAMPLE ID	ERACE	ATE	IMM/	EILE	SW-0	Tota	ŝ	Meta	Hot	RBC	BTE	PAH	PCB	NOC	101							
	CGRO WATT WATT WATT SOIL	D TH	T T	REOL	RCAF	Metals Water	Merci	Metals	Soll		OI	ganics			-ith							
1 MW16-02	X	6 309	102/19 159:35				1			V										-		-
2 MW16-03		5	1 09.15							1	1				X							
3 TRIP BLANK		6	69.30																	1		-
4 MW17-02		4	09.45						1						X					1		-
5 MWZ		6	10: 57								t	t								-		-
6 MW17-05		1	10:15									1								-		
7 MW3			10:30							1												
8 MW16-01			105							1												-
9 MWI			11-30													1						
10 DUPA	V		12:00							T		1										
IOL SITE LOCATION	1.1.1.5	F	REGULATORY CRITE	RIA / D	ETEC	CTION L	IMITS	SPE	CIAL I	NSTE	UCTIO	ONS	I]				# JARS U	SED &	TUP	NARO	UND 1	TIME
IOL PROJECT # (if applicable)	mas ivo																NOT SUB	MITTED	Standa	rd (t	5 days)	P
			Archie	0.					N (-								WATER	Aron	Rush	(3	3 days)	
MAXXAM TASK ORDER # OR SER VICE	E ORDER # + LINE IT	ΈM	1 THANTIC	KIR	1			1	VO	re							0)	((2	2 days)	
NA																	0			(sarr	ne day)	ă
YES NO	COOLER ID #		YES	NO C	OOLE	ER ID #						1	YES	NO	COOLE	ER ID #				Date R	equired	
SEAL PRESENT	TEMP C 4	SEAL PRES	SENT	— т	MP	3.	2	y SE	AL PRI	ESENT					TEMP				L	AB US	EONL	Y
COOLING MEDIA PRESENT	°C J I 1 2	3 COOLING M	MEDIA PRESENT		°C		2	3 CC	OOLING	AUT MEDI	A PRES	ENT			°C	1	2	3	MAXX	AM JC)B #	
RELINQUISHED BY:	2.	DATE:	TIME (24 HR)	RECEIV	ED B	Y:							D	ATE:			TIME (2	4 HR)	R9.	146	ZR	
1. 9.600 1	Hesting	209/01	20 12:00	1.) (N	~	-	He	JNA	HVA	روساتا	u	20	19/02	100	12:	32		SAM	PLES	
2.	- 0			2.							1.1				(-)				LABEL	ED	VERIFI	IED
3.				3.												-			20	1)	1	M
COC - 1009 (04/2016) IOL-NS			. White:	Maxxam			Yello	w: Client							_				all	10	2	1.4

ΑΞϹΟΜ

Data Quality Review Checklist

Consultant: Al				Sampling Date: 2019/02/20
HI		S. NS	NO 2,	Laboratory. Waxan
Consultant Project Number: 60	438249	-,		Sample Submission Number: B944678
Are All Laboratory QC Samples V	Vithin Ac	ceptance	e Criteria	(Yes, No, Not Applicable)?
	Yes	No	NA	Comments
Instrument Surrogate Recovery	\boxtimes			
Extraction Surrogate Recovery	\boxtimes			
Method Blank Concentration	\boxtimes			
Matrix Duplicate RPD			\boxtimes	
Matrix Spike Recovery	\boxtimes			
Lab Control Sample Recovery	\boxtimes			
Are All Field QC Samples Within	Alert Lim	its (Yes,	No, Not /	Applicable)?
	Yes	No	NA	Comments
Field Blank Concentration	\boxtimes			
Trip Blank Concentration			\boxtimes	
Field Duplicate RPD			\boxtimes	
Has Call been signed off?				
Has lab warranted all tests were i	n statisti	cal contro	ol in CoA'	2 Xes No
Has lab warranted all tests were a	analvzed	following	a SOP's ii	n CoA?
Were all samples analyzed within	hold tim	es?		⊠ Yes □ No
All volatiles samples methanol ex	tracted (i	f require	d) within	48 hours? 🛛 Yes 🛛 No
Is Chain of Custody completed an	nd signed	ł?		🖂 Yes 🗆 No
Were sample temperatures accept	otable wh	ien they i	reached I	ab? 🛛 Yes 🛛 No
Is data considered to be reliable?			🛛 Yes	□ No
If answer is "No", describe and pr	ovide rat	ionale:		
Reviewed by (Print): Jania Date: 2019	ce Shea 9/02/27			Reviewed by (Signature):



Task Order#: N/A- CTC Site#: NA-IOL-CTC Site Location: 64 MILL LAKE RD. HUBBARDS NS Project #: 60438249 Your C.O.C. #: 714871-02-01, 714864-02-01

Attention: Jason Taylor

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2019/05/14 Report #: R5709981 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B9C0859

Received: 2019/05/07, 14:33

Sample Matrix: Water # Samples Received: 14

Analyses	Quanti	ty Laboratory Method	Primary Reference
TEH in Water (PIRI)	14	ATL SOP 00113	Atl. RBCA v3.1 m
VPH in Water (PIRI)	14	ATL SOP 00118	Atl. RBCA v3.1 m
Silica Gel Clean-up (Water)	14	ATL SOP 00113	EPA 3630C R3 m
ModTPH (T1) Calc. for Water	14	N/A	Atl. RBCA v3 m

Remarks:

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

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

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

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

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

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.



Task Order#: N/A- CTC Site#: NA-IOL-CTC Site Location: 64 MILL LAKE RD. HUBBARDS NS Project #: 60438249 Your C.O.C. #: 714871-02-01, 714864-02-01

Attention: Jason Taylor

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2019/05/14 Report #: R5709981 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B9C0859 Received: 2019/05/07, 14:33

Encryption Key

Sara Mason Project Manager 14 May 2019 14:31:09 Vacen

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Sara Mason, Project Manager Email: smason@maxxam.ca Phone# (902)420-0203 Ext:236

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



RBCA HYDROCARBONS IN WATER (WATER)

Maxxam ID		JQ1758			JQ1758			JQ1759		
Compling Data		2019/05/06			2019/05/06			2019/05/06		
		08:30			08:30			09:00		
COC Number	Γ	714871-02-01			714871-02-01			714871-02-01		
	UNITS	MW17-02	RDL	QC Batch	MW17-02 Lab-Dup	RDL	QC Batch	MW16-02	RDL	QC Batch
Petroleum Hydrocarbons	Ī						 			
Benzene	mg/L	<0.0010	0.0010	6109262	<0.0010	0.0010	6109262	<0.0010	0.0010	6109262
Toluene	mg/L	<0.0010	0.0010	6109262	<0.0010	0.0010	6109262	<0.0010	0.0010	6109262
Ethylbenzene	mg/L	<0.0010	0.0010	6109262	<0.0010	0.0010	6109262	<0.0010	0.0010	6109262
Total Xylenes	mg/L	<0.0020	0.0020	6109262	<0.0020	0.0020	6109262	<0.0020	0.0020	6109262
C6 - C10 (less BTEX)	mg/L	<0.010	0.010	6109262	<0.010	0.010	6109262	<0.010	0.010	6109262
>C10-C16 Hydrocarbons	mg/L	<0.050	0.050	6109311				<0.050	0.050	6109311
>C16-C21 Hydrocarbons	mg/L	<0.050	0.050	6109311				<0.050	0.050	6109311
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.10</td><td>0.10</td><td>6109311</td><td></td><td></td><td></td><td><0.10</td><td>0.10</td><td>6109311</td></c32>	mg/L	<0.10	0.10	6109311				<0.10	0.10	6109311
Modified TPH (Tier1)	mg/L	<0.10	0.10	6106948				<0.10	0.10	6106948
Reached Baseline at C32	mg/L	NA	N/A	6109311				NA	N/A	6109311
Hydrocarbon Resemblance	mg/L	NA	N/A	6109311				NA	N/A	6109311
Extraction Surrogate Recovery (%)										
Isobutylbenzene - Extractable	%	98		6109311				102		6109311
n-Dotriacontane - Extractable	%	109		6109311				115		6109311
Instrument Surrogate Recovery (%)										
1,4-Difluorobenzene	%	101		6109262	101		6109262	102		6109262
4-Bromofluorobenzene	%	100		6109262	99		6109262	99		6109262
D4-1,2-Dichloroethane	%	101		6109262	101		6109262	102		6109262
Isobutylbenzene - Volatile	%	99		6109262	98		6109262	97		6109262
RDL = Reportable Detection Lim QC Batch = Quality Control Batc	iit :h					·			<u> </u>	

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable



Maxxam ID		JQ1760	JQ1761	JQ1762		JQ1763		
Sampling Data		2019/05/06	2019/05/06	2019/05/06		2019/05/06		
		09:15	09:45	10:15		10:45		
COC Number		714871-02-01	714871-02-01	714871-02-01		714871-02-01		
	UNITS	DUP	MW16-01	MW5	QC Batch	MW3	RDL	QC Batch
Petroleum Hydrocarbons								
Benzene	mg/L	<0.0010	<0.0010	<0.0010	6109262	<0.0010	0.0010	6109262
Toluene	mg/L	0.0070	<0.0010	<0.0010	6109262	<0.0010	0.0010	6109262
Ethylbenzene	mg/L	0.0047	<0.0010	<0.0010	6109262	<0.0010	0.0010	6109262
Total Xylenes	mg/L	0.021	<0.0020	<0.0020	6109262	<0.0020	0.0020	6109262
C6 - C10 (less BTEX)	mg/L	0.063	<0.010	<0.010	6109262	<0.010	0.010	6109262
>C10-C16 Hydrocarbons	mg/L	<0.050	<0.050	<0.050	6109311	<0.050	0.050	6109300
>C16-C21 Hydrocarbons	mg/L	<0.050	<0.050	<0.050	6109311	<0.050	0.050	6109300
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.10</td><td><0.10</td><td><0.10</td><td>6109311</td><td><0.10</td><td>0.10</td><td>6109300</td></c32>	mg/L	<0.10	<0.10	<0.10	6109311	<0.10	0.10	6109300
Modified TPH (Tier1)	mg/L	<0.10	<0.10	<0.10	6106948	<0.10	0.10	6106948
Reached Baseline at C32	mg/L	NA	NA	NA	6109311	NA	N/A	6109300
Hydrocarbon Resemblance	mg/L	NA	NA	NA	6109311	NA	N/A	6109300
Extraction								
Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	102	98	100	6109311	103		6109300
n-Dotriacontane - Extractable	%	113	109	112	6109311	108		6109300
Instrument Surrogate Recovery (%)								
1,4-Difluorobenzene	%	101	101	102	6109262	101		6109262
4-Bromofluorobenzene	%	99	99	99	6109262	99		6109262
D4-1,2-Dichloroethane	%	100	101	101	6109262	100		6109262
Isobutylbenzene - Volatile	%	97	98	98	6109262	98		6109262
RDL = Reportable Detection Lim	nit							
QC Batch = Quality Control Batc	h							
N/A = Not Applicable								



Maxxam ID		JQ1764	JQ1765	JQ1766	JQ1767	JQ1770	JQ1771		
Sampling Data		2019/05/06	2019/05/06	2019/05/06	2019/05/06	2019/05/03	2019/05/03		
		11:30	11:45	12:30	12:50	09:30	10:00		
COC Number		714871-02-01	714871-02-01	714871-02-01	714871-02-01	714864-02-01	714864-02-01		
	UNITS	MW17-03	MW17-01	MW2	MW17-05	MW1	MW19-01	RDL	QC Batch
Petroleum Hydrocarbons									[
Benzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	6109262
Toluene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0073	0.0010	6109262
Ethylbenzene	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0045	0.0010	6109262
Total Xylenes	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.020	0.0020	6109262
C6 - C10 (less BTEX)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.058	0.010	6109262
>C10-C16 Hydrocarbons	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6109311
>C16-C21 Hydrocarbons	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	6109311
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.10</td><td><0.10</td><td><0.10</td><td><0.10</td><td><0.10</td><td><0.10</td><td>0.10</td><td>6109311</td></c32>	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	6109311
Modified TPH (Tier1)	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	6106948
Reached Baseline at C32	mg/L	NA	NA	NA	NA	NA	NA	N/A	6109311
Hydrocarbon Resemblance	mg/L	NA	NA	NA	NA	NA	NA	N/A	6109311
Extraction									
Surrogate Recovery (%)									
Isobutylbenzene - Extractable	%	101	96	102	99	103	101		6109311
n-Dotriacontane - Extractable	%	112	106	119	110	116	113		6109311
Instrument Surrogate Recovery (%)									
1,4-Difluorobenzene	%	101	101	101	102	100	101		6109262
4-Bromofluorobenzene	%	99	99	100	99	99	100		6109262
D4-1,2-Dichloroethane	%	101	101	101	101	100	101		6109262
Isobutylbenzene - Volatile	%	96	98	97	96	96	98		6109262
RDL = Reportable Detection Lim	nit								
QC Batch = Quality Control Batc	h								
N/A = Not Applicable									



RBCA HYDROCARBONS IN WATER (WATER)

Maxxam ID		JQ1772	JQ1773			JQ1773		
Sampling Date		2019/05/03	2019/05/03			2019/05/03		
		10:30	11:15			11:15		
COC Number		714864-02-01	714864-02-01			714864-02-01		
	UNITS	MW4	MW16-03	RDL	QC Batch	MW16-03 Lab-Dup	RDL	QC Batch
Petroleum Hydrocarbons								
Benzene	mg/L	<0.0010	<0.0010	0.0010	6109262			
Toluene	mg/L	<0.0010	<0.0010	0.0010	6109262			
Ethylbenzene	mg/L	<0.0010	<0.0010	0.0010	6109262			
Total Xylenes	mg/L	<0.0020	<0.0020	0.0020	6109262			
C6 - C10 (less BTEX)	mg/L	<0.010	<0.010	0.010	6109262			
>C10-C16 Hydrocarbons	mg/L	<0.050	<0.050	0.050	6109311	<0.050	0.050	6109311
>C16-C21 Hydrocarbons	mg/L	<0.050	<0.050	0.050	6109311	<0.050	0.050	6109311
>C21- <c32 hydrocarbons<="" p=""></c32>	mg/L	<0.10	<0.10	0.10	6109311	<0.10	0.10	6109311
Modified TPH (Tier1)	mg/L	<0.10	<0.10	0.10	6106948			
Reached Baseline at C32	mg/L	NA	NA	N/A	6109311			
Hydrocarbon Resemblance	mg/L	NA	NA	N/A	6109311			
Extraction Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	101	100		6109311	95		6109311
n-Dotriacontane - Extractable	%	113	109		6109311	104		6109311
Instrument Surrogate Recovery (%)								
1,4-Difluorobenzene	%	101	102		6109262			
4-Bromofluorobenzene	%	99	97		6109262			
D4-1,2-Dichloroethane	%	102	99		6109262			
Isobutylbenzene - Volatile	%	99	95		6109262			
RDL = Reportable Detection Lim QC Batch = Quality Control Batc Lab-Dup = Laboratory Initiated	nit ch Duplicat	e			-			

N/A = Not Applicable



TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	JQI758 MW17-02 Water				Re	Collected: elinquished: Received:	2019/05/06 2019/05/07 2019/05/07	
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst		
TEH in Water (PIRI)		GC/FID	6109311	2019/05/08	2019/05/08	Brittany N	latthews	
VPH in Water (PIRI)		PTGC/MS	6109262	N/A	2019/05/08	Thea Rideout		
ModTPH (T1) Calc. for Wa	ater	CALC	6106948	N/A	2019/05/09	Automate	d Statchk	
Maxxam ID: Sample ID: Matrix:	JQI758 Dup MW17-02 Water				Re	Collected: linquished: Received:	2019/05/06 2019/05/07 2019/05/07	
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst		
VPH in Water (PIRI)		PTGC/MS	6109262	N/A	2019/05/08	Thea Ride	out	
Maxxam ID: Sample ID: Matrix:	JQI759 MW16-02 Water				Re	Collected: linquished: Received:	2019/05/06 2019/05/07 2019/05/07	
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst		
TEH in Water (PIRI)		GC/FID	6109311	2019/05/08	2019/05/08	Brittany N	latthews	
VPH in Water (PIRI)		PTGC/MS	6109262	N/A	2019/05/08	9/05/08 Thea Rideout		
ModTPH (T1) Calc. for Wa	ater	CALC	6106948	N/A	2019/05/09	5/09 Automated Statchk		
Maxxam ID: Sample ID: Matrix: Test Description	JQI760 DUP Water	Instrumentation	Batch	Extracted	Re Date Analyzed	Collected: elinquished: Received: Analyst	2019/05/06 2019/05/07 2019/05/07	
TEH in Water (PIRI)		GC/FID	6109311	2019/05/08	2019/05/08	Brittany N	latthews	
VPH in Water (PIRI)		PTGC/MS	6109262	N/A	2019/05/08	Thea Ride	out	
ModTPH (T1) Calc. for Wa	ater	CALC	6106948	N/A	2019/05/09	Automate	d Statchk	
Maxxam ID: Sample ID: Matrix:	JQI761 MW16-01 Water				Re	Collected: elinquished: Received:	2019/05/06 2019/05/07 2019/05/07	
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst		
TEH in Water (PIRI)		GC/FID	6109311	2019/05/08	2019/05/08	Brittany N	latthews	
VPH in Water (PIRI)		PTGC/MS	6109262	N/A	2019/05/08	Thea Ride	out	
ModTPH (T1) Calc. for Wa	ater	CALC	6106948	N/A	2019/05/09	Automate	d Statchk	
Maxxam ID: Sample ID: Matrix:	JQI762 MW5 Water				Re	Collected: linquished: Received:	2019/05/06 2019/05/07 2019/05/07	
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst		
TEH in Water (PIRI)		GC/FID	6109311	2019/05/08	2019/05/08	Brittany N	latthews	
VPH in Water (PIRI)		PTGC/MS	6109262	N/A	2019/05/09	Thea Ride	out	



TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	JQI762 MW5 Water				R	Collected: elinquished: Received:	2019/05/06 2019/05/07 2019/05/07
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
ModTPH (T1) Calc. for Wa	ater	CALC	6106948	N/A	2019/05/09	Automated	Statchk
Maxxam ID: Sample ID: Matrix:	JQI763 MW3 Water				Re	Collected: elinquished: Received:	2019/05/06 2019/05/07 2019/05/07
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	6109300	2019/05/08	2019/05/08	Brittany Ma	itthews
VPH in Water (PIRI)		PTGC/MS	6109262	N/A	2019/05/09	Thea Rideo	ut
ModTPH (T1) Calc. for Wa	ater	CALC	6106948	N/A	2019/05/09	Automated	Statchk
Maxxam ID: Sample ID: Matrix:	JQI764 MW17-03 Water		Betch	Francis d	R	Collected: elinquished: Received:	2019/05/06 2019/05/07 2019/05/07
		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	***
TEH IN Water (PIRI)		GC/FID	6109311	2019/05/08	2019/05/08	Brittany Ma	ittnews
			6109262	N/A	2019/05/09	Thea Rideo	Ctatable
MODIPH (11) Calc. for Wa	ater	CALC	6106948	N/A	2019/05/09	Automated	Statchk
Maxxam ID: Sample ID: Matrix:	JQI765 MW17-01 Water				R	Collected: elinquished: Received:	2019/05/06 2019/05/07 2019/05/07
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	6109311	2019/05/08	2019/05/08	Brittany Ma	itthews
VPH in Water (PIRI)		PTGC/MS	6109262	N/A	2019/05/09	Thea Rideo	ut
ModTPH (T1) Calc. for Wa	ater	CALC	6106948	N/A	2019/05/09	Automated	Statchk
Maxxam ID: Sample ID: Matrix:	JQI766 MW2 Water				R	Collected: elinquished: Received:	2019/05/06 2019/05/07 2019/05/07
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	6109311	2019/05/08	2019/05/08	Brittany Ma	itthews
VPH in Water (PIRI)		PTGC/MS	6109262	N/A	2019/05/09	Thea Rideo	ut
ModTPH (T1) Calc. for Wa	ater	CALC	6106948	N/A	2019/05/09	Automated	Statchk
Maxxam ID: Sample ID: Matrix:	JQI767 MW17-05 Water				R	Collected: elinquished: Received:	2019/05/06 2019/05/07 2019/05/07
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	6109311	2019/05/08	2019/05/08	Brittany Ma	tthews
VPH in Water (PIRI)		PTGC/MS	6109262	N/A	2019/05/09	Thea Rideo	ut



TEST SUMMARY

Maxxam ID: Sample ID: Matrix:	JQI767 MW17-05 Water				R	Collected: 20 Relinquished: 20 Received: 20	19/05/06 19/05/07 19/05/07
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
ModTPH (T1) Calc. for Wa	ater	CALC	6106948	N/A	2019/05/09	Automated Statchk	
Maxxam ID: Sample ID: Matrix:	JQI770 MW1 Water				R	Collected: 20 elinquished: 20 Received: 20	19/05/03 19/05/07 19/05/07
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	6109311	2019/05/08	2019/05/08	Brittany Matth	ews
VPH in Water (PIRI)		PTGC/MS	6109262	N/A	2019/05/09	Thea Rideout	
ModTPH (T1) Calc. for Wa	ater	CALC	6106948	N/A	2019/05/09	Automated Sta	itchk
Maxxam ID: Sample ID: Matrix: Test Description	JQI771 MW19-01 Water	Instrumentation	Batch	Extracted	R Date Analyzed	Collected: 20 elinquished: 20 Received: 20	19/05/03 19/05/07 19/05/07
TEH in Water (PIRI)		GC/FID	6109311	2019/05/08	2019/05/08	Brittany Matth	ews
VPH in Water (PIRI)		PTGC/MS	6109262	N/A	2019/05/09	Thea Rideout	
ModTPH (T1) Calc. for Water		CALC	6106948	N/A	2019/05/09	Automated Sta	itchk
Maxxam ID: Sample ID: Matrix:	JQ1772 MW4 Water				R	Collected: 20 selinquished: 20 Received: 20	19/05/03 19/05/07 19/05/07
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	6109311	2019/05/08	2019/05/08	Brittany Matth	ews
VPH in Water (PIRI)		PTGC/MS	6109262	N/A	2019/05/09	Thea Rideout	
ModTPH (T1) Calc. for Wa	ater	CALC	6106948	N/A	2019/05/09	Automated Sta	itchk
Maxxam ID: Sample ID: Matrix:	JQI773 MW16-03 Water				R	Collected: 20 elinquished: 20 Received: 20	19/05/03 19/05/07 19/05/07
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	6109311	2019/05/08	2019/05/08	Brittany Matth	ews
VPH in Water (PIRI)		PTGC/MS	6109262	N/A	2019/05/09	Thea Rideout	
ModTPH (T1) Calc. for Wa	ater	CALC	6106948	N/A	2019/05/09	Automated Sta	itchk
Maxxam ID: Sample ID: Matrix:	JQI773 Dup MW16-03 Water				R	Collected: 20 Relinquished: 20 Received: 20	19/05/03 19/05/07 19/05/07
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	6109311	2019/05/08	2019/05/08	Brittany Matth	ews



GENERAL COMMENTS

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

Package 1	5.7°C
Package 2	3.7°C

Silica gel clean-up performed on water extracts.

Note: Labelling issue (label missing and /or incorrect)- Sample ID MW3 and MW16-03 on same 250mL bottle but was packaged with other MW16-03 bottles. Proceeded with ID MW16-03.

Sample ID MW16-03 and MW3 on 4x40mL vials but was packaged with other MW3 bottles. Proceeded with ID MW3.

Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC Batch	Init		Darameter	Data Analyzad	Value	Bacovary		OC Limite
6109262	тні	Method Blank	1 4-Difluorobenzene	2019/05/08	value	100	%	70 - 130
0105202			4-Bromofluorobenzene	2019/05/08		100	%	70 - 130
			D4-1 2-Dichloroethane	2019/05/08		100	%	70 - 130
			Isobutylbenzene - Volatile	2019/05/08		99	%	70 - 130
			Benzene	2019/05/08	<0.0010	55	mg/l	70 150
			Toluene	2019/05/08	< 0.0010		mg/L	
			Ethylbenzene	2019/05/08	< 0.0010		mg/L	
			Total Xylenes	2019/05/08	<0.0020		mg/L	
			C6 - C10 (less BTEX)	2019/05/08	<0.010		mg/L	
6109300	BCD	Method Blank	n-Dotriacontane - Extractable	2019/05/08		106	%	70 - 130
			Isobutylbenzene - Extractable	2019/05/08		95	%	70 - 130
			>C10-C16 Hydrocarbons	2019/05/08	<0.050		mg/L	
			>C16-C21 Hydrocarbons	2019/05/08	<0.050		mg/L	
			>C21- <c32 hydrocarbons<="" td=""><td>2019/05/08</td><td><0.10</td><td></td><td>mg/L</td><td></td></c32>	2019/05/08	<0.10		mg/L	
6109311	BCD	Method Blank	n-Dotriacontane - Extractable	2019/05/08		107	%	70 - 130
			Isobutylbenzene - Extractable	2019/05/08		99	%	70 - 130
			>C10-C16 Hydrocarbons	2019/05/08	<0.050		mg/L	
			>C16-C21 Hydrocarbons	2019/05/08	<0.050		mg/L	
			>C21- <c32 hydrocarbons<="" td=""><td>2019/05/08</td><td><0.10</td><td></td><td>mg/L</td><td></td></c32>	2019/05/08	<0.10		mg/L	
6109262	THL	RPD [JQI758-02]	Benzene	2019/05/08	NC		%	40
			Toluene	2019/05/08	NC		%	40
			Ethylbenzene	2019/05/08	NC		%	40
			Total Xylenes	2019/05/08	NC		%	40
			C6 - C10 (less BTEX)	2019/05/08	NC		%	40
6109311	BCD	RPD [JQI773-01]	>C10-C16 Hydrocarbons	2019/05/08	NC		%	40
			>C16-C21 Hydrocarbons	2019/05/08	NC		%	40
			>C21- <c32 hydrocarbons<="" td=""><td>2019/05/08</td><td>NC</td><td></td><td>%</td><td>40</td></c32>	2019/05/08	NC		%	40
6109262	THL	Matrix Spike [JQI759-02]	1,4-Difluorobenzene	2019/05/08		101	%	70 - 130
			4-Bromofluorobenzene	2019/05/08		98	%	70 - 130
			D4-1,2-Dichloroethane	2019/05/08		101	%	70 - 130
			Isobutylbenzene - Volatile	2019/05/08		97	%	70 - 130
			Benzene	2019/05/08		119	%	70 - 130
			Toluene	2019/05/08		121	%	70 - 130
			Ethylbenzene	2019/05/08		124	%	70 - 130
			Total Xylenes	2019/05/08		120	%	70 - 130
6109300	BCD	Matrix Spike [JQI763-01]	n-Dotriacontane - Extractable	2019/05/08		113	%	70 - 130
			Isobutylbenzene - Extractable	2019/05/08		97	%	70 - 130
			>C10-C16 Hydrocarbons	2019/05/08		96	%	70 - 130
			>C16-C21 Hydrocarbons	2019/05/08		88	%	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2019/05/08</td><td></td><td>101</td><td>%</td><td>70 - 130</td></c32>	2019/05/08		101	%	70 - 130
6109262	THL	LCS	1,4-Difluorobenzene	2019/05/08		100	%	70 - 130
			4-Bromofluorobenzene	2019/05/08		99	%	70 - 130
		D4-1,2-Dichloroethane	2019/05/08		99	%	70 - 130	
		Isobutylbenzene - Volatile	2019/05/08		99	%	70 - 130	
			Benzene	2019/05/08		103	%	70 - 130
			Toluene	2019/05/08		105	%	70 - 130
			Ethylbenzene	2019/05/08		109	%	70 - 130
			Total Xylenes	2019/05/08		106	%	70 - 130
6109300	BCD	LCS	n-Dotriacontane - Extractable	2019/05/08		103	%	70 - 130
			Isobutylbenzene - Extractable	2019/05/08		94	%	70 - 130
			>C10-C16 Hydrocarbons	2019/05/08		101	%	70 - 130
			>C16-C21 Hydrocarbons	2019/05/08		92	%	70 - 130

Page 11 of 15


QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			>C21- <c32 hydrocarbons<="" p=""></c32>	2019/05/08		106	%	70 - 130
6109311	BCD	LCS	n-Dotriacontane - Extractable	2019/05/08		112	%	70 - 130
			Isobutylbenzene - Extractable	2019/05/08		100	%	70 - 130
			>C10-C16 Hydrocarbons	2019/05/08		83	%	70 - 130
			>C16-C21 Hydrocarbons	2019/05/08		77	%	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2019/05/08</td><td></td><td>90</td><td>%</td><td>70 - 130</td></c32>	2019/05/08		90	%	70 - 130

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.

LCS: 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 (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).



VALIDATION SIGNATURE PAGE

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

Olen I Staward

Alan Stewart, Organics Manager, Bedford

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

Maxim 200 Bluewater Road Phone: (902) 420- Bedford, Nova Scotia B4B 1G9 Fax: (902) 420- www.maxxam.ca Toll Free: 800-563- INVOICE INFORMATION REPORT INFORMATION							420-020 420-861 563-626)3 12 56				EXXON Cł	MOBIL AIN-OI ANAL	/IMPERI F-CUSTO YSIS RE	AL OIL DDY RE QUESTE	- MA) CORI D	CXAM D		}	Pa C of C # 714	ge / of 1871-02-	д 01	71	4871	
Company Name: AECOM Canada Ltd		-	Compar	ny Nam	e:AECC	OM Canada Ltd.	ION					<u> </u>					1								_
Contact Name: Accounts Payable Address: 1701 Hollis Street Halifax NS B3J 3M8			Contact Jason Ti Address 1701 Ho Halifax f	Name: avlor s: billis Stre NS B3J	et 3M8					W in Gw															
Email: CANSSOLE-billing@aecom.c	com, Laura.w	acis	Email:		Jaso	n. raylorz@aecom.o	com, dan.ar	ithony@	aeco	ield-pr															
Sampler Name (Print): 010.000	19. 1	-	Consult	ant Pro	(902 bject #:	-00549588	600120	2740	2	Solff															
ritex stright	MM	M	ATRIX			SAMPLIN	1G	-0()	<u> </u>	ans la															
FIELD SAMPLE ID	GROUND	SURFACE	SOIL	OTHER	CONTAINERS	DATE	TIME (24 HR)	FIELD FILTERED PRESERVED	LAB FILTRATION REQUIRED	RBCA Hydrocarb	Leadl in soil														
1 MW17-02	X				6	2019/05/06	6:30			X	1	1 1		1			1	1	1 1		<u>í í</u>				1
2 MW/16-02	1					1 1 1 1 1 1 1	0900			1							1								
3 DUP							0915																		_
4 MINILO-OL						111-01	9:45										1					-			
5 MW5						×.	10:15													_					
· MW3					T	2019/05/06	10:45										+								
7 MW17-03					11	2019/05/66	11:30										1								
8 MINI 7-01						L	11:45							-			-			_			- +		_
9 MWZ						2019/05/07	12:30				-			-			1						-		-
10 MW/7-05					V	L	12:50			V	+						-								
IOL SITE LOCATION: 6-7 Mill Lake for 181 Henry Hensey Road, Liverpool, NS Hubbard, IOL PROJECT # (if applicable): E-NS-1-11 Market MA	NS - Jol	- (+(REGULA	Han	crite Hic	RIA / DI		ON LIMITS	3:	SPECIAI		IONS:				# JA ANE SUB Ente Wat	RS USED NOT MITTED r N/A for er	Stand	TURN	AROUND TI (5 days) (3 days) (2 days) (1 day)	
N/A- CTC-	DER # + LINE	: II EN	1:				<i>*</i> 1		4.4.2	1	12 1				C					1	9	2	Da	ate Required	
SEAL PRESENT	R ID:	C	7	6	2	SEAL PRESENT SEAL INTACT	YES		OOLE	R ID:		2	6	SEAL PRI	ESENT ACT	YES	NO C		2:	724		-	LAB	USE ONLY	#
* RELINQUISHED BY:	1	1	2	3	DA	COOLING MEDIA PRE	TIME (24 HR)	F	RECEN	VED B	2	3	COOLING	MEDIA PRES	SENT		DATE	1	2	3	R	900	859	
1. 042	Al0	V	Duard	an	2	019/05/07	09	00	1.	the Quest	0	PA	1-	- 14	- Gatt	010171-	15	2019	105/07	1	4:23		S	AMPLES	_
2.			J	J		1,100,01			2.		đ			108	and or one of				100101			PA	BELED B	Y: VER	FIED BY:
3.		-	diago					-	3.							1.1			11 - L		L	1	tu	1	AM
* UNLESS OTHERWISE AGREED TO IN WRITING, AT WWW.MAXXAM.CA/TERMS.	WORK SUBM	ITTED	ON THIS	CHAIN (OF CUST	ODY IS SUBJECT TO	MAXXAM'S	STANDA	RD TEP	RMS AND	CONDI	TIONS. SIG	INING OF THIS	CHAIN OF (USTODY DO	CUMENT IS	ACKNOV	VLEDGME	NT AND ACCES	PTANCE O	F OUR TERM	S WHICH	ARE AVAI	ABLE FOR	JIEWING

COC - 1009 (2016) IOL - NS

White: Maxxam

Yellow: Client

Maxiam	200 Bluewa Bedford, N www.maxx	ater Ro ova So am.ca	oad cotia B4 i	4B 1G9) PE	Phoi F Toll F	ne: (902) 4 ax: (902) 4 free: 800-5	120-02 120-86 563-62	03 12 66				E	CH	NOBIL AIN-OI ANAL	/IMPE =-CUS .YSIS I	RIAL TODY REQUE	OIL - Y REC ESTEL	MAX) ORD	ХАМ			Co	Page if C # 7148	e_of _ 64-02-0	2 1	71	4864
Company Name: AECOM Canada Ltd		-	Compar	ny Name	AECO	M Canada Ltd.					1																	
Contact Name: Accounts Payable Address: 1701 Hollis Street Halifax NS B3J 3M8			Contact Jason T Address 1701 Hc Halifax I	Name: avlor 3: ollis Stre NS B3J	et 3M8					-	NT in Gw							-										
Email: CANSSC.E-billing@aeco	om.com, Laura.N	Aacls	Email:		Jasor	n.Taylor2@aecom.c	com, dan.ar	thony@)aeco	luc	100																	
Phone: (902) 428-2048 Sampler Name (Print):	11		Phone: Consult	ant Pro	(902) ject #:	428-2048 60549588 /	5/125	2741	0	Leado	200	2	1															
TILX	guay	M	ATRIX	-		SAMPLIN	90730 NG	102 1	z	rec'd)-	Prop	nL								-					- 1			
FIELD SAMPLE ID	GROUND	SURFACE	Soil	OTHER	CONTAINERS	DATE (YYYYMM/DD)	TIME (24 HR)	FIELD FILTERED PRESERVED	LAB FILTRATIO REQUIRED	Diss. Metals (as	RRC4 1																	
1 MWI	Y	R.			6	2019/05/03	9:30				X			1														
2 MW19-01					6	- 1	107. 42				1																	
3 MUNY							10:30																					
4 UW16-23	V				V	V	11:15				12																	
5		1									/	-										-	-	~				
6																												
7							1.00		/	1				X						/	1							
8							Stellar.	/						1											/			
9				/		1.11.11	/	1											/									1
10															1			/	1							1		-
IOL SITE LOCATION: 184-Henry Hensey Road, Liverpool, NS IOL PROJECT # (if applicable): E NST-11	64 [hill	Lak	e Ri	1, H N S	y bbai	rds	REGUL	atory M	CRITE	ERIA / D		TON LIN	IITS:		SPECIAI	INSTRU		S					# JARS AND N SUBMI Enter N Water	USED DT TTED I/A for	Standa Rush	TURN	ROUND T (5 days) (3 days) (2 days) (1 day	
MAXXAM TASK ORDER # OR SERVICE N/A- CTC-	ORDER # + LIN	IE ITEN	VI:	L			1	171	011)	p	PIC						U						Æ	F		D;	(same day)	
YES NO CO	OLER ID:						YES	NO	COOLE	ER ID:				-				YES	NO CO	OLER ID	D:					Da	to require	
SEAL PRESENT	MP 2		9	(0	SEAL PRESENT SEAL INTACT COOLING MEDIA PRI		-	TEMP °C	CAN	2	22	(03	SEAL PR SEAL INT COOLING	ESENT ACT S MEDIA F	RESENT		TE	EMP °C	1	2	2	3	20	LAB MAX	USE ONLY	(#
* RELINQUISHED BY:	1 1.4				DA	TE:	TIME (24 HR)	RECE	IVEDE	BY:							D	ATE:			TIME (2	24 HR)	RO	100	604	
1. Uluto	<i>H</i> k	X.	Lig	an	K	29/05/47	090	50	1		2	l	N.		- 12	ANNA	H WA	LONT	ILÈ	20	19/05	107)7	:33	LAE	S/	AMPLES Y: VEF	RIFIED BY:
3			~	J			da da	-000	3	3.							1.25.1				0. II				2	IN		An
* UNLESS OTHERWISE AGREED TO IN WRIT AT WWW.MAXXAM.CA/TERMS.	TING, WORK SUB	MITTED	ON THIS	5 CHAIN	OF CUST	TODY IS SUBJECT TO	D MAXXAM'S	STAND	ARD TE	ERMS AN	ID COND	ITIONS.	SIGNING	OF THIS C	HAIN OF	CUSTODY	DOCUM	ENT IS A	скиот	LEDGME	NT AND A	CCEPTA	NCE OF O	UR TERMS	WHICH	ARE AVAI	ABLE FOR	VIEWING

COC - 1009 (2016) IOL - NS

White Maxxam

Yellow: Client

ΑΞϹΟΜ

Data Quality Review Checklist

Consultant: Al	ECOM			Sampling Date: 2019/05/06									
Location: 64	1 MILL LA	AKE RD.		Laboratory: Maxxam									
H	UBBARD	IS NS											
Consultant Project Number: 60)438249			Sample Submission Number: B9C0859									
Are All Laboratory QC Samples V	Vithin Ac	ceptance	Criteria	(Yes, No, Not Applicable)?									
	Yes	No	NA	Comments									
Instrument Surrogate Recovery	\boxtimes												
Extraction Surrogate Recovery	\boxtimes												
Method Blank Concentration	\boxtimes												
Matrix Duplicate RPD		\boxtimes		NC (Duplicate RPD): The duplicate RPD was not calculated. The									
			centration in the sample and/or duplicate was too low to permit a										
				reliable RPD calculation (absolute difference <= 2x RDL).									
Matrix Spike Recovery Image: Constraint of the second se													
Lab Control Sample Recovery	\boxtimes												
Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?													
Yes No NA Comments													
Field Blank Concentration Image: Concentration													
Trip Blank Concentration			\boxtimes										
Field Duplicate RPD	\boxtimes												
Has CoA been signed off?				🛛 Yes 🗆 No									
Has lab warranted all tests were i	n statisti	cal contro	ol in CoA	? Xes 🗆 No									
Has lab warranted all tests were a	analyzed	following	g SOP's i	n CoA? 🛛 Yes 🛛 No									
Were all samples analyzed within	hold tim	es?											
All volatiles samples methanol ex	tracted (i	if require	d) within	48 hours? Xes 🛛 No									
Is Chain of Custody completed an	nd signed	1?		⊠ Yes 🗆 No									
Were sample temperatures accept	otable wh	nen they	reached	ab? 🛛 Yes 🛛 No									
Is data considered to be reliable?			🛛 Yes	□ No									
If answer is "No", describe and pr	ovide rat	ionale:											
$I \sim \Lambda I$													
Reviewed by (Print): Janie	ce Shea			Reviewed by (Signature): Januar Shu									
Date: 2019	9/07/16			V									



Attention: Jason Taylor

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8 Task Order#: N/A- CTC Site#: N/A Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 724218-03-01

> Report Date: 2019/07/04 Report #: R5782268 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9H7880

Received: 2019/06/27, 08:20

Sample Matrix: Water # Samples Received: 1

Analyses	Quanti	ty Laboratory Method	Primary Reference
TEH in Water (PIRI)	1	ATL SOP 00113	Atl. RBCA v3.1 m
Silica Gel Clean-up (Water)	1	ATL SOP 00113	EPA 3630C R3 m
ModTPH (T1) Calc. for Water	1	N/A	Atl. RBCA v3 m
VPH in Water (PIRI)	1	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, MDDELCC, 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. All samples were analyzed within hold time unless otherwise flagged.

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.



Attention: Jason Taylor

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8 Task Order#: N/A- CTC Site#: N/A Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 724218-03-01

> Report Date: 2019/07/04 Report #: R5782268 Version: 1 - Final

CERTIFICATE OF ANALYSIS

Sara Mason

BV LABS JOB #: B9H7880 Received: 2019/06/27, 08:20

Encryption Key

Project Manager 04 Jul 2019 11:40:22

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Sara Mason, Project Manager Email: Sara.MASON@bvlabs.com Phone# (902)420-0203 Ext:236

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



RBCA HYDROCARBONS IN WATER (WATER)

BV Labs ID		KDE813			KDE813							
Sampling Data		2019/06/26			2019/06/26							
		18:50			18:50							
COC Number		724218-03-01			724218-03-01							
	UNITS	MW19-01	RDL	QC Batch	MW19-01 Lab-Dup	RDL	QC Batch					
Petroleum Hydrocarbons												
Benzene	mg/L	<0.0010	0.0010	6202620	<0.0010	0.0010	6202620					
Toluene	mg/L	<0.0010	0.0010	6202620	<0.0010	0.0010	6202620					
Ethylbenzene	mg/L	<0.0010	0.0010	6202620	<0.0010	0.0010	6202620					
Total Xylenes	mg/L	<0.0020	0.0020	6202620	<0.0020	0.0020	6202620					
C6 - C10 (less BTEX)	mg/L	<0.10	0.10	6202620	<0.10	0.10	6202620					
>C10-C16 Hydrocarbons	mg/L	<0.050	0.050	6202529								
>C16-C21 Hydrocarbons	mg/L	<0.050	0.050	6202529								
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.10</td><td>0.10</td><td>6202529</td><td></td><td></td><td></td></c32>	mg/L	<0.10	0.10	6202529								
Modified TPH (Tier1)	mg/L	<0.10	0.10	6202423								
Reached Baseline at C32	mg/L	NA	N/A	6202529								
Hydrocarbon Resemblance	mg/L	NA	N/A	6202529								
Extraction												
Surrogate Recovery (%)												
Isobutylbenzene - Extractable	%	103		6202529								
n-Dotriacontane - Extractable	%	100		6202529								
Instrument												
Surrogate Recovery (%)												
1,4-Difluorobenzene	%	103		6202620	104		6202620					
4-Bromofluorobenzene	%	94		6202620	94		6202620					
D4-1,2-Dichloroethane	%	108		6202620	110		6202620					
Isobutylbenzene - Volatile	%	105		6202620	103		6202620					
RDL = Reportable Detection Limit												
QC Batch = Quality Control Batch												
Lab-Dup = Laboratory Initiated Duplicate												
N/A = Not Applicable												



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AECOM Canada Ltd. Task Order#: N/A- CTC Site#: N/A Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249

TEST SUMMARY

BV Labs ID: Sample ID: Matrix:	KDE813 MW19-01 Water				Rel	Collected: linquished: Received:	2019/06/26 2019/06/26 2019/06/27
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
TEH in Water (PIRI)		GC/FID	6202529	2019/06/28	2019/07/02	Brittany M	atthews
ModTPH (T1) Calc. for Wa	ter	CALC	6202423	N/A	2019/07/03	Automated	d Statchk
VPH in Water (PIRI)		HS/MS	6202620	N/A	2019/06/28	Jackie Pia	
BV Labs ID: Sample ID: Matrix:	KDE813 Dup MW19-01 Water				Rel	Collected: linquished: Received:	2019/06/26 2019/06/26 2019/06/27
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
VPH in Water (PIRI)		HS/MS	6202620	N/A	2019/06/28	Jackie Pia	



GENERAL COMMENTS

Each t	emperature is the	average of up to	o three cooler temperatures taken at receipt									
	Package 1	2.7°C										
Silica g	silica gel clean-up performed on water extracts.											
Results relate only to the items tested.												



QUALITY ASSURANCE REPORT

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6202529	BCD	Method Blank	n-Dotriacontane - Extractable	2019/07/02		82	%	70 - 130
			Isobutylbenzene - Extractable	2019/07/02		88	%	70 - 130
			>C10-C16 Hydrocarbons	2019/07/02	<0.050		mg/L	
			>C16-C21 Hydrocarbons	2019/07/02	<0.050		mg/L	
			>C21- <c32 hydrocarbons<="" td=""><td>2019/07/02</td><td><0.10</td><td></td><td>mg/L</td><td></td></c32>	2019/07/02	<0.10		mg/L	
6202620	JPA	Method Blank	1,4-Difluorobenzene	2019/06/28		105	%	70 - 130
			4-Bromofluorobenzene	2019/06/28		93	%	70 - 130
			D4-1,2-Dichloroethane	2019/06/28		108	%	70 - 130
			Isobutylbenzene - Volatile	2019/06/28		105	%	70 - 130
			Benzene	2019/06/28	<0.0010		mg/L	
			Toluene	2019/06/28	< 0.0010		mg/L	
			Ethylbenzene	2019/06/28	< 0.0010		mg/L	
			Total Xylenes	2019/06/28	<0.0020		mg/L	
			C6 - C10 (less BTEX)	2019/06/28	<0.10		mg/L	
6202620	JPA	RPD [KDE813-02]	Benzene	2019/06/28	NC		%	40
			Toluene	2019/06/28	NC		%	40
			Ethylbenzene	2019/06/28	NC		%	40
			Total Xylenes	2019/06/28	NC		%	40
			C6 - C10 (less BTEX)	2019/06/28	NC		%	40
6202529	BCD	LCS	n-Dotriacontane - Extractable	2019/07/02		85	%	70 - 130
			Isobutylbenzene - Extractable	2019/07/02		90	%	70 - 130
			>C10-C16 Hydrocarbons	2019/07/02		94	%	70 - 130
			>C16-C21 Hydrocarbons	2019/07/02		85	%	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2019/07/02</td><td></td><td>97</td><td>%</td><td>70 - 130</td></c32>	2019/07/02		97	%	70 - 130
6202620	JPA	LCS	1,4-Difluorobenzene	2019/06/28		100	%	70 - 130
			4-Bromofluorobenzene	2019/06/28		99	%	70 - 130
			D4-1,2-Dichloroethane	2019/06/28		108	%	70 - 130
			Isobutylbenzene - Volatile	2019/06/28		101	%	70 - 130
			Benzene	2019/06/28		115	%	70 - 130
			Toluene	2019/06/28		111	%	70 - 130
			Ethylbenzene	2019/06/28		114	%	70 - 130
			Total Xylenes	2019/06/28		115	%	70 - 130

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

LCS: 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 (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).



VALIDATION SIGNATURE PAGE

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

Kostmain MacDonald

Rosemarie MacDonald, 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 section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

200 Bluewater Road Phone: (902) 420-1 Bedford, Nova Scotia B4B 1G9 Fax: (902) 420-1 WENTERED www.bvlabs.com Toll Free: 800-563-1										0-020 0-861 3-626)3 2 66				EXXO	ONM CHA	OBIL/ IN-OF ANAL	IMPEF -CUST YSIS R	RIAL FODY EQUE	OIL - I REC STED	3V LA ORD	IBS			Co	Pag f C # 7242	e of 218-03-0	1		724218	
	INVOICE INFORMATIO	ON					RE	PORT INFORMAT	ION											-		_					-				
Compa	any Name: AECOM Canada Ltd			Com	pany	/ Name	e:AECO	M Canada Ltd.				-																			
Contac Accour Addres 1701 H Halifax	st Name: ts Payable ss: lollis Street NS B3J 3M8			Cont Jaso Addr 1701 Halif	tact M n Tav ress: I Holl ax N	Name: vlor is Stre S B3J	et 3M8																								
Email:	CANSSC E-billing@aec	om.com, Laura.	Macla	s Ema	ill:		Jasor	n Taylor2@aecom.c	om, dan.ant	hony@	gaeco	1																			
Phone	: (902) 428-2048		_	Pho	ne:		(902)	428-2048				ja j																			
Sample	er Name (Print): Tanice S	ihea		Cons	sulta	nt Pro	ject #:	60438249				n Wa																			
				MATR	IX			SAMPLIN	IG	8	z	pons																			
	FIELD SAMPLE ID	GROUND	WATER	SURFACE	SOIL	OTHER	7 CONTAINERS	DATE (YYYYMMUDD)	TIME (24 HR)	FIELD FILTERED PRESERVED	LAB FILTRATIC REQUIRED	RBCA Hydrocar																			
1	MW19-01	X	(5	2019 Intobio	18:50			X	1	i i	i						-	<u> </u>	î —	İ	† –	i i		- i		-	
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9			_	_	_				12																						
10	TELOOATION								100.000																						
IOL SI 64 Mil IOL PF N/A BV LAI N/A- C	I Lake Rd, Hubbards, NS ROJECT # (If applicable): BS TASK ORDER # OR SERVICE TC-	ORDER # + LIN		EM;				A	Han	hic	CRITE			DN LIMITS	3:)Ne	ICTION	S					# JAR AND N SUBM Enter I Water		Stand Rush	TURN lard	(5 d (3 d (2 d (1 (same	D TIME ays) ays) ays) day) day)	XOOO
	VES NO 100	OLER ID:			-		T		VEC	NO		R ID				_				VEC).		10			C	late Req	uired	
SEAL P		MP 2		4		2	S	EAL PRESENT	163		TEMP						SEAL PRE	ACT		123	TE	MP					-	LA	B USE O	NLY OB #	
* RF	LINQUISHED BY	~ 1		2		3	DAT	COOLING MEDIA PRE	TIME /2	4 HP				2	3		COOLING	MEDIA P	RESENT			ATE	1	-		3	1	39H	188	CX	
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2	and the Mars	2011			~		- 20	citari co	20.		2			no rej			F	JUC N	DUK			011/0	1967		01.0	10	LA	BELED E	SY:	VERIFIE	D BY:
* UNLE WWW.	SS OTHERWISE AGREED TO IN WRIT BVLABS.COM/TERMS-AND-CONDITIO	I ING, WORK SUB NS.	MITTE	ED ON T	HIS C	HAIN C	I OF CUST	ODY IS SUBJECT TO	I BV LABS' ST	ANDA	RD TER	MS AND	CONDITI	DNS. SIGM	ING OF TH	IS CH	AIN OF CL	ISTODY C	OCUME	NT IS ACI	NOWLE	DGMEN'	T AND AC	CEPTAN	ICE OF OI	JR TERMS	WHICH A	RE AVAIL	ABLE FO		NG AT

COC - 1009 (2016) IOL - NS

White: BV Labs

Yellow Client

ΑΞϹΟΜ

Consultant: Al	ЕСОМ			Sampling Date: 2019/06/26									
Location: 64	MILL LA	AKE RD.		Laboratory: Maxxam									
H	JBBARD	S NS											
Consultant Project Number: 60	438249			Sample Submission Number: <u>B9H7880</u>									
Are All Laboratory QC Samples V	Vithin Ac	ceptance	Criteria	(Yes, No, Not Applicable)?									
	Yes	No	NA	Comments									
Instrument Surrogate Recovery	\boxtimes												
Extraction Surrogate Recovery	\boxtimes												
Method Blank Concentration	\boxtimes												
Matrix Duplicate RPD		\boxtimes		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).									
Matrix Spike Recovery													
Lab Control Sample Recovery	\boxtimes												
Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?													
	Yes	No	NA	Comments									
Field Blank Concentration													
Trip Blank Concentration Image: Concentration													
Field Duplicate RPD			\boxtimes										
Has CoA been signed off?				🛛 Yes 🗌 No									
Has lab warranted all tests were i	n statisti	cal contro	ol in CoA	?X Yes 🗆 No									
Has lab warranted all tests were a	analyzed	following	g SOP's ir	n CoA? 🛛 Yes 🛛 No									
Were all samples analyzed within	hold tim	es?		⊠ Yes 🛛 No									
All volatiles samples methanol ex	tracted (i	f require	d) within 4	48 hours? 🛛 Yes 🛛 No									
Is Chain of Custody completed an	nd signed	l?											
Were sample temperatures accept	otable wh	en they	reached I	ab? 🛛 Yes 🛛 No									
Is data considered to be reliable?			🛛 Yes	□ No									
If answer is "No", describe and pr	ovide rat	ionale:											
Reviewed by (Print): Janio	ce Shea			Reviewed by (Signature): Januar Shu									
Date: 2019	0/07/16			V									



Attention: Janice Shea

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8 Task Order#: N/A- CTC Site#: N/A Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 787882-03-01

> Report Date: 2020/08/20 Report #: R6300193 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: COK7322

Received: 2020/08/14, 12:58

Sample Matrix: Water # Samples Received: 1

Analyses	Quan	tity Laboratory Method	Analytical Method
Non hazardous disposal/container supply	1		
TEH in Water (PIRI)	1	ATL SOP 00113	Atl. RBCA v3.1 m
Silica Gel Clean-up (Water)	1	ATL SOP 00113	EPA 3630C R3 m
ModTPH (T1) Calc. for Water	1	N/A	Atl. RBCA v3 m
VPH in Water (PIRI)	1	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. All samples were analyzed within hold time unless otherwise flagged.

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.



Task Order#: N/A- CTC Site#: N/A Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 787882-03-01

Attention: Janice Shea

AECOM Canada Ltd. IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2020/08/20 Report #: R6300193 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0K7322 Received: 2020/08/14, 12:58

Encryption Key

Patricia Legette Project Manager 20 Aug 2020 16:06:23

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Patricia Legette, Project Manager Email: Patricia.Legette@bvlabs.com Phone# (905)817-5799

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BV Labs ID		NJH447		
Sampling Date		2020/08/14		
		11:40		
COC Number		787882-03-01		
	UNITS	MW19-01	RDL	QC Batch
Petroleum Hydrocarbons				
Benzene	mg/L	<0.0010	0.0010	6889266
Toluene	mg/L	<0.0010	0.0010	6889266
Ethylbenzene	mg/L	<0.0010	0.0010	6889266
Total Xylenes	mg/L	<0.0020	0.0020	6889266
C6 - C10 (less BTEX)	mg/L	<0.090	0.090	6889266
>C10-C16 Hydrocarbons	mg/L	<0.050	0.050	6892806
>C16-C21 Hydrocarbons	mg/L	<0.050	0.050	6892806
>C21- <c32 hydrocarbons<="" td=""><td>mg/L</td><td><0.090</td><td>0.090</td><td>6892806</td></c32>	mg/L	<0.090	0.090	6892806
Modified TPH (Tier1)	mg/L	<0.090	0.090	6889997
Reached Baseline at C32	mg/L	NA	N/A	6892806
Hydrocarbon Resemblance	mg/L	NA	N/A	6892806
Extraction				
Surrogate Recovery (%)				
Isobutylbenzene - Extractable	%	106		6892806
n-Dotriacontane - Extractable	%	108		6892806
Instrument				
Surrogate Recovery (%)				
Isobutylbenzene - Volatile	%	110		6889266
RDL = Reportable Detection Lim	it			
QC Batch = Quality Control Batc	h			
N/A = Not Applicable				

RBCA HYDROCARBONS IN WATER (WATER)



TEST SUMMARY

BV Labs ID:	NJH447
Sample ID:	MW19-01
Matrix:	Water

Collected:	2020/08/14
Relinquished:	2020/08/14
Received:	2020/08/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
TEH in Water (PIRI)	GC/FID	6892806	2020/08/17	2020/08/17	Marley Gidney
ModTPH (T1) Calc. for Water	CALC	6889997	N/A	2020/08/18	Automated Statchk
VPH in Water (PIRI)	HS/MS	6889266	N/A	2020/08/17	Thea Rideout



GENERAL COMMENTS

Each tempera	ature is the ave	age of up to	three cooler temperatures taken at receipt
Pack	kage 1	25.3°C	
Note: Custody	y seal not intact	Custody sea	I was present but not intact on the cooler.
Note: C of C ir	nformation inco	mplete. Cons	sultant relinquished time was not entered on COC.
Silica gel clear	n-up performed	on water ext	racts.
Results relate	e only to the ite	ms tested.	



QUALITY ASSURANCE REPORT

QA/QC						_		
Batch	Init	QCType	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6889266	THL	Method Blank	Isobutylbenzene - Volatile	2020/08/17		106	%	/0 - 130
			Benzene	2020/08/17	<0.0010		mg/L	
			Toluene	2020/08/17	<0.0010		mg/L	
			Ethylbenzene	2020/08/17	<0.0010		mg/L	
			Total Xylenes	2020/08/17	<0.0020		mg/L	
			C6 - C10 (less BTEX)	2020/08/17	<0.090		mg/L	
6892806	MGN	Method Blank	n-Dotriacontane - Extractable	2020/08/17		106	%	70 - 130
			Isobutylbenzene - Extractable	2020/08/17		102	%	70 - 130
			>C10-C16 Hydrocarbons	2020/08/17	<0.050		mg/L	
			>C16-C21 Hydrocarbons	2020/08/17	<0.050		mg/L	
			>C21- <c32 hydrocarbons<="" td=""><td>2020/08/17</td><td><0.090</td><td></td><td>mg/L</td><td></td></c32>	2020/08/17	<0.090		mg/L	
6889266	THL	LCS	Isobutylbenzene - Volatile	2020/08/17		111	%	70 - 130
			Benzene	2020/08/17		95	%	70 - 130
			Toluene	2020/08/17		102	%	70 - 130
			Ethylbenzene	2020/08/17		104	%	70 - 130
			Total Xylenes	2020/08/17		100	%	70 - 130
6892806	MGN	LCS	n-Dotriacontane - Extractable	2020/08/17		105	%	70 - 130
			Isobutylbenzene - Extractable	2020/08/17		96	%	70 - 130
			>C10-C16 Hydrocarbons	2020/08/17		95	%	70 - 130
			>C16-C21 Hydrocarbons	2020/08/17		89	%	70 - 130
			>C21- <c32 hydrocarbons<="" td=""><td>2020/08/17</td><td></td><td>108</td><td>%</td><td>70 - 130</td></c32>	2020/08/17		108	%	70 - 130

LCS: 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.



VALIDATION SIGNATURE PAGE

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

Philippo Deven

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.

ENGISCIE	
VEBLITAS	

200 Bluewater Road Bedford, Nova Scotia B4B 1G9 www.bvlabs.com Phone: (902) 420-0203 Fax: (902) 420-8612 Toll Free: 800-563-6266

EXXONMOBIL/IMPERIAL OIL - BV LABS CHAIN-OF-CUSTODY RECORD ANALYSIS REQUESTED

Page of C of C # 787882-03-01



INVOICE INFORMATION					RE	PORT INFORMAT	ION			1														
Company Name: AECOM Canada Ltd		c	ompan	y Nam	e:AECO	M Canada Ltd.																		
Contact Name: Accounts Payable Address: 1701 Hollis Street Halifax NS B3J 3M8		C 4 A 1 H	ontact ason Ta ddress 701 Hol alifax N	Name: avtor= :: Ilis Stre IS B3J	eet 3M8	ANICE S	SHEA		_															
Email: CANSSC.E-billing@aecom.com	, Laura.M	acis E	mail:		Jasor	n.Taylor2@aecom.c	om,			1														
Phone: (902) 428-2048 Sampler Name (Print): SJSTIN OG	PEN	P	hone: onsulta	ant Pro	(902) oject #:	428-2048- 90 60438249	27	7	379	n Water														
		MA	TRIX			SAMPLIN	NG	₩ Ĥo	Z	rbons														
FIELD SAMPLE ID	GROUND WATER	SURFACE WATER	SOIL	OTHER	CONTAINERS	DATE (YYYYMWIDD)	TIME (24 HR)	FIELD FILTERE PRESERVEI	LAB FILTRATI REQUIRED	RBCA Hydroca														
1 MW19-01	\sim				5	2020/08/14	114	0		\times			1			-i-	1 -			† †	- t			1
2						P. P. P. 1.														12				-
3							-																	
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5																								
6							-																	
7																								
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9																								
10																			_				-	-
IOL SITE LOCATION: 64 Mill Lake Rd, Hubbards, NS IOL PROJECT # (If applicable): N/A BV LABS TASK ORDER # OR SERVICE ORDER N/A- CTC-	t # + LINE	ITEM:				A	regul MLA	NT	CRIT	ERIA / D			SPECIAI	N 0	NE	1			# JARS AND N SUBMI Enter N Water	SUSED IOT ITTED WA for	Standar	TURNAI d	COUND TIN (5 days) (3 days) (2 days) (1 day) (same day)	
YES NO COOLER IE	D:						YES	NO	COOL	ER ID:					YE	S NO C	OOLER ID):				Dut	noquiruu	
SEAL PRESENT V TEMP SEAL INTACT COOLING MEDIA PRESENT COOLING MEDIA	23	2	5	28	S S S S	EAL PRESENT EAL INTACT COOLING MEDIA PRE	SENT		TEMF °C	1	2	3	SEAL PR	SENT ACT MEDIA PRE	ESENT		°C	1	2	3			BS JOB #	
* RELINQUISHED BY:	-7		ev a	1	DAT	E	TIME (24 HR)	RECEI	VED BY:		(sugar	460	<u>.</u>	0.02	DATE:	1	TIME (24 HR)		jør.	1522	6
2.	315	745	Uall	EN	201	10/08/19			1	. [y	en'im	~	1.	LEK	IKAV	EKS	1010	108/14	12	(158	LAB	SAI	VERIF	IED BY:
3.	RK SURMI		THIS	HAIN	DE CUST	NV IS SUBJECT TO	BULARSIS	TANDAR		S.		C OF TWO		PTODV DOV	CUMENTIC	ACKNOW	EDONE			TEDMO	Lĩ	0	12	SM_
WWW.BVLABS.COM/TERMS-AND-CONDITIONS.	AN OUDWI	CIED O	, mat	STOAIN C	or coald	JULIA SUBJECT TO	BY LADS' S	ANDA	NU TEN	AND AND	SONDITIONS, SIGNIA	G OF THIS	CHAIN OF CU	51001000	COMENT IS	AGKNOW	COGMENT	AND ACCEPTA	NGE OF OUR	RIERMSW	HICH ARE	AVAILABL	E FOR VIEW	ING AT

COC - 1009 (2016) IOL - NS

White BV Labs

Yellow: Client

ΑΞϹΟΜ

Consultant: A	ECOM	ake Roa	d Hubba	Sampling Date: 2020/08/14
N	S S			
Consultant Project Number: 60)438249			Sample Submission Number: C0K7322
Are All Laboratory QC Samples V	Vithin Ac	ceptance	Criteria	(Yes, No, Not Applicable)?
	Yes	No	NA	Comments
Instrument Surrogate Recovery	\boxtimes			
Extraction Surrogate Recovery	\boxtimes			
Method Blank Concentration	\boxtimes			
Matrix Duplicate RPD			\boxtimes	
Matrix Spike Recovery			\boxtimes	
Lab Control Sample Recovery	\boxtimes			
Are All Field QC Samples Within	Alert Lim	its (Yes.	No. Not A	Applicable)?
	Yes	No	NA	Comments
Field Blank Concentration				
Trip Blank Concentration			\boxtimes	
Field Duplicate RPD			\boxtimes	
Has CoA been signed off?				
Has lab warranted all tests were i	n statisti	cal contro	ol in CoA	\sim Yes \Box No
Has lab warranted all tests were	analyzed	following	g SOP's ii	n CoA?
Were all samples analyzed within	hold tim	es?	-	⊠ Yes □ No
All volatiles samples methanol ex	tracted (i	if require	d) within 4	48 hours? 🛛 Yes 🛛 No
Is Chain of Custody completed an	nd signed	1?		⊠ Yes 🛛 No
Were sample temperatures accept	otable wh	nen they	reached I	ab? 🛛 Yes 🛛 No
Is data considered to be reliable? If answer is "No", describe and pr	ovide rat	ionale:	⊠ Yes	□ No
Reviewed by (Print): Jani	ce Shea			Reviewed by (Signature):
Date: 2020	08 24			
				/

1



Attention: Derek Heath

AECOM Canada Ltd IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8 Task Order#: N/A - CTC Site#: N/A - CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 46221

> Report Date: 2020/06/08 Report #: R6201881 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0D5094

Received: 2020/06/02, 11:34

Sample Matrix: Soil # Samples Received: 7

Analyses	Quantit	y Laboratory Method	Analytical Method
B[a]P Total Potency Equivalent	7	N/A	CCME CSQG
Moisture	7	ATL SOP 00001	OMOE Handbook 1983 m
PAH Compounds by GCMS (SIM) (1)	7	ATL SOP 00102	EPA 8270E R6 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. All samples were analyzed within hold time unless otherwise flagged.

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) Soils are reported on a dry weight basis unless otherwise specified.



Task Order#: N/A - CTC Site#: N/A - CTC Site Location: 64 MILL LAKE RD, HUBBARDS, NS Project #: 60438249 Your C.O.C. #: 46221

Attention: Derek Heath

AECOM Canada Ltd IOL Cost to Closure Work 1701 Hollis Street Halifax, NS CANADA B3J 3M8

> Report Date: 2020/06/08 Report #: R6201881 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0D5094 Received: 2020/06/02, 11:34

Encryption Key

Keri Mackay Customer Exp 08 Jun 2020 Team Lead

Please direct all questions regarding this Certificate of Analysis to your Project Manager. Keri Mackay, Customer Experience Team Lead Email: Keri.MACKAY@bvlabs.com Phone# (902)420-0203 Ext:294

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.



RESULTS OF ANALYSES OF SOIL

Inorganics										
	UNITS	EX2-1	EX2-2	EX2-2	EX2-3	EX2-4	EX2-5	EX2-6	RDL	QC Batch
COC Number		46221	46221	46221	46221	46221	46221	46221		
Sampling Date		2020/06/02 10:00	2020/06/02 10:05	2020/06/02 10:05	2020/06/02 10:10	2020/06/02 10:15	2020/06/02 10:20	2020/06/02 10:25		
BV Labs ID		MTU818	MTU819	MTU819	MTU820	MTU821	MTU822	MTU823		

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

BV Labs ID		MTU824		
Sampling Date		2020/06/02		
COC Number		46221		
	UNITS	DUP-2020	RDL	QC Batch
Inorganics				
Inorganics Moisture	%	10	1.0	6767505
Inorganics Moisture RDL = Reportable Detection L	% imit	10	1.0	6767505



SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		MTU818	MTU819	MTU820	MTU821		MTU822		
Sampling Date		2020/06/02	2020/06/02	2020/06/02	2020/06/02		2020/06/02		
		10:00	10:05	10:10	10:15		10:20		
COC Number		46221	46221	46221	46221		46221		
	UNITS	EX2-1	EX2-2	EX2-3	EX2-4	RDL	EX2-5	RDL	QC Batch
Polyaromatic Hydrocarbons									
1-Methylnaphthalene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	1.1	0.010	6767737
2-Methylnaphthalene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	1.2	0.010	6767737
Acenaphthene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.16 (1)	0.16	6767737
Acenaphthylene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.050 (1)	0.050	6767737
Anthracene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.10 (1)	0.10	6767737
Fluoranthene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.040 (1)	0.040	6767737
Fluorene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.54 (1)	0.54	6767737
Naphthalene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.15 (1)	0.15	6767737
Phenanthrene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.84 (1)	0.84	6767737
Pyrene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	0.039	0.010	6767737
Benzo(a)anthracene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.010	6767737
Benzo(a)pyrene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.010	6767737
Benzo(b)fluoranthene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.010	6767737
Benzo(g,h,i)perylene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.010	6767737
Benzo(j)fluoranthene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.010	6767737
Benzo(k)fluoranthene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.010	6767737
Chrysene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	0.012	0.010	6767737
Dibenzo(a,h)anthracene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.010	6767737
Indeno(1,2,3-cd)pyrene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.010	6767737
Benzo(a)pyrene Total Potency Equiv.	mg/kg	<0.03	<0.03	<0.03	<0.03	0.03	<0.03	0.03	6767320
Extraction									
Surrogate Recovery (%)				ļ			ļ		
D10-Anthracene	%	98	103	100	100		87		6767737
D14-Terphenyl (FS)	%	96	99	98	98		87		6767737
D8-Acenaphthylene	%	95	95	94	93		102		6767737
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									
(1) Elevated PAH RDL(s) due to matrix	/ co-extr	ractive interfe	rence.						



SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

BV Labs ID		MTU822			MTU823	MTU824		
Sampling Date		2020/06/02 10:20			2020/06/02 10:25	2020/06/02		
COC Number		46221			46221	46221		
	UNITS	EX2-5 Lab-Dup	RDL	QC Batch	EX2-6	DUP-2020	RDL	QC Batch
Polyaromatic Hydrocarbons								
1-Methylnaphthalene	mg/kg	0.94	0.010	6767737	<0.010	<0.010	0.010	6767737
2-Methylnaphthalene	mg/kg	1.0	0.010	6767737	<0.010	<0.010	0.010	6767737
Acenaphthene	mg/kg	<0.14 (1)	0.14	6767737	<0.010	<0.010	0.010	6767737
Acenaphthylene	mg/kg	<0.040 (1)	0.040	6767737	<0.010	<0.010	0.010	6767737
Anthracene	mg/kg	<0.090 (1)	0.090	6767737	<0.010	<0.010	0.010	6767737
Fluoranthene	mg/kg	<0.040 (1)	0.040	6767737	<0.010	<0.010	0.010	6767737
Fluorene	mg/kg	<0.44 (1)	0.44	6767737	0.033	<0.010	0.010	6767737
Naphthalene	mg/kg	<0.11 (1)	0.11	6767737	<0.010	<0.010	0.010	6767737
Phenanthrene	mg/kg	<0.73 (1)	0.73	6767737	0.044	<0.010	0.010	6767737
Pyrene	mg/kg	0.032	0.010	6767737	<0.010	<0.010	0.010	6767737
Benzo(a)anthracene	mg/kg	<0.010	0.010	6767737	<0.010	<0.010	0.010	6767737
Benzo(a)pyrene	mg/kg	<0.010	0.010	6767737	<0.010	<0.010	0.010	6767737
Benzo(b)fluoranthene	mg/kg	<0.010	0.010	6767737	<0.010	<0.010	0.010	6767737
Benzo(g,h,i)perylene	mg/kg	<0.010	0.010	6767737	<0.010	<0.010	0.010	6767737
Benzo(j)fluoranthene	mg/kg	<0.010	0.010	6767737	<0.010	<0.010	0.010	6767737
Benzo(k)fluoranthene	mg/kg	<0.010	0.010	6767737	<0.010	<0.010	0.010	6767737
Chrysene	mg/kg	<0.010	0.010	6767737	<0.010	<0.010	0.010	6767737
Dibenzo(a,h)anthracene	mg/kg	<0.010	0.010	6767737	<0.010	<0.010	0.010	6767737
Indeno(1,2,3-cd)pyrene	mg/kg	<0.010	0.010	6767737	<0.010	<0.010	0.010	6767737
Benzo(a)pyrene Total Potency Equiv.	mg/kg				<0.03	<0.03	0.03	6767320
Extraction Surrogate Recovery (%)								
D10-Anthracene	%	85		6767737	94	98		6767737
D14-Terphenyl (FS)	%	88		6767737	93	97		6767737
D8-Acenaphthylene	%	100		6767737	96	95		6767737
							-	

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

(1) Elevated PAH RDL(s) due to matrix / co-extractive interference.



TEST SUMMARY

BV Labs ID: Sample ID: Matrix:	MTU818 EX2-1 Soil					Collected: Relinquished: Received:	2020/06/02 2020/06/02 2020/06/02
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
B[a]P Total Potency Equiv	valent	CALC	6767320	N/A	2020/06/08	Automated	l Statchk
Moisture		BAL	6767505	N/A	2020/06/04	Kelly Gale	
PAH Compounds by GCM	S (SIM)	GC/MS	6767737	2020/06/03	2020/06/06	Lisa Gates	
BV Labs ID: Sample ID: Matrix:	MTU819 EX2-2 Soil					Collected: Relinquished: Received:	2020/06/02 2020/06/02 2020/06/02
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
B[a]P Total Potency Equiv	valent	CALC	6767320	N/A	2020/06/08	Automated	l Statchk
Moisture		BAL	6767505	N/A	2020/06/04	Kelly Gale	
PAH Compounds by GCM	S (SIM)	GC/MS	6767737	2020/06/03	2020/06/06	Lisa Gates	
BV Labs ID: Sample ID: Matrix: Test Description	MTU819 Dup EX2-2 Soil	Instrumentation	Batch	Extracted	Date Analyzed	Collected: Relinquished: Received: Analyst	2020/06/02 2020/06/02 2020/06/02
Moisture		BAL	6767505	N/A	2020/06/04	Kelly Gale	
BV Labs ID: Sample ID: Matrix:	MTU820 EX2-3 Soil					Collected: Relinquished: Received:	2020/06/02 2020/06/02 2020/06/02
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
B[a]P Total Potency Equiv	valent	CALC	6767320	N/A	2020/06/08	Automated	l Statchk
Moisture	- ()	BAL	6767505	N/A	2020/06/04	Kelly Gale	
PAH Compounds by GCM	S (SIM)	GC/MS	6767737	2020/06/03	2020/06/06	Lisa Gates	
BV Labs ID: Sample ID: Matrix:	MTU821 EX2-4 Soil					Collected: Relinquished: Received:	2020/06/02 2020/06/02 2020/06/02
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
B[a]P Total Potency Equiv	valent	CALC	6767320	N/A	2020/06/08	Automated	l Statchk
Moisture		BAL	6767505	N/A	2020/06/04	Kelly Gale	
PAH Compounds by GCM	S (SIM)	GC/MS	6767737	2020/06/03	2020/06/06	Lisa Gates	
BV Labs ID: Sample ID: Matrix:	MTU822 EX2-5 Soil					Collected: Relinquished: Received:	2020/06/02 2020/06/02 2020/06/02
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
B[a]P Total Potency Equiv	valent	CALC	6767320	N/A	2020/06/08	Automated	l Statchk
Moisture		BAL	6767505	N/A	2020/06/04	Kelly Gale	

Bureau Veritas Laboratories 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvlabs.com



TEST SUMMARY

BV Labs ID: Sample ID: Matrix:	MTU822 EX2-5 Soil				R	Collected: elinquished: Received:	2020/06/02 2020/06/02 2020/06/02
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
PAH Compounds by GCM	S (SIM)	GC/MS	6767737	2020/06/03	2020/06/05	Lisa Gates	
BV Labs ID: Sample ID: Matrix:	MTU822 Dup EX2-5 Soil				R	Collected: elinquished: Received:	2020/06/02 2020/06/02 2020/06/02
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
PAH Compounds by GCM	S (SIM)	GC/MS	6767737	2020/06/03	2020/06/05	Lisa Gates	
BV Labs ID: Sample ID: Matrix:	MTU823 EX2-6 Soil				R	Collected: elinquished: Received:	2020/06/02 2020/06/02 2020/06/02
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
B[a]P Total Potency Equiv	alent	CALC	6767320	N/A	2020/06/08	Automated	l Statchk
Moisture		BAL	6767505	N/A	2020/06/04	Kelly Gale	
PAH Compounds by GCM	S (SIM)	GC/MS	6767737	2020/06/03	2020/06/06	Lisa Gates	
BV Labs ID: Sample ID: Matrix:	MTU824 DUP-2020 Soil				R	Collected: elinquished: Received:	2020/06/02 2020/06/02 2020/06/02
Test Description		Instrumentation	Batch	Extracted	Date Analyzed	Analyst	
B[a]P Total Potency Equiv	valent	CALC	6767320	N/A	2020/06/08	Automated	l Statchk
Moisture		BAL	6767505	N/A	2020/06/04	Kelly Gale	
PAH Compounds by GCM	S (SIM)	GC/MS	6767737	2020/06/03	2020/06/06	Lisa Gates	



GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt											
	Package 1	12.0°C									
Note: (submit	lote: C of C information incomplete - A non-IOL COC was submitted for samples. # of containers, IOL site #,task order# and # of jars used and not ubmitted were not provided on the COC. Analysis proceeded.										
Result	Results relate only to the items tested.										



QUALITY ASSURANCE REPORT

Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6767737	LGE	Method Blank	D10-Anthracene	2020/06/05		103	%	50 - 130
			D14-Terphenyl (FS)	2020/06/05		100	%	50 - 130
			D8-Acenaphthylene	2020/06/05		96	%	50 - 130
			1-Methylnaphthalene	2020/06/05	<0.010		mg/kg	
			2-Methylnaphthalene	2020/06/05	<0.010		mg/kg	
			Acenaphthene	2020/06/05	<0.010		mg/kg	
			Acenaphthylene	2020/06/05	<0.010		mg/kg	
			Anthracene	2020/06/05	<0.010		mg/kg	
			Fluoranthene	2020/06/05	<0.010		mg/kg	
			Fluorene	2020/06/05	<0.010		mg/kg	
			Naphthalene	2020/06/05	<0.010		mg/kg	
			Phenanthrene	2020/06/05	<0.010		mg/kg	
			Pyrene	2020/06/05	<0.010		mg/kg	
			Benzo(a)anthracene	2020/06/05	<0.010		mg/kg	
			Benzo(a)pyrene	2020/06/05	<0.010		mg/kg	
			Benzo(b)fluoranthene	2020/06/05	<0.010		mg/kg	
			Benzo(g,h,i)perylene	2020/06/05	<0.010		mg/kg	
			Benzo(j)fluoranthene	2020/06/05	<0.010		mg/kg	
			Benzo(k)fluoranthene	2020/06/05	<0.010		mg/kg	
			Chrysene	2020/06/05	<0.010		mg/kg	
			Dibenzo(a,h)anthracene	2020/06/05	<0.010		mg/kg	
			Indeno(1,2,3-cd)pyrene	2020/06/05	<0.010		mg/kg	
6767505	KKE	RPD [MTU819-01]	Moisture	2020/06/04	0		%	25
6767737	LGE	RPD [MTU822-01]	1-Methylnaphthalene	2020/06/05	19		%	50
			2-Methylnaphthalene	2020/06/05	18		%	50
			Acenaphthene	2020/06/05	NC (1)		%	50
			Acenaphthylene	2020/06/05	NC (1)		%	50
			Anthracene	2020/06/05	NC (1)		%	50
			Fluoranthene	2020/06/05	NC (1)		%	50
			Fluorene	2020/06/05	NC (1)		%	50
			Naphthalene	2020/06/05	NC (1)		%	50
			Phenanthrene	2020/06/05	NC (1)		%	50
			Pyrene	2020/06/05	21		%	50
			Benzo(a)anthracene	2020/06/05	NC		%	50
			Benzo(a)pyrene	2020/06/05	NC		%	50
			Benzo(b)fluoranthene	2020/06/05	NC		%	50
			Benzo(g,h,i)perylene	2020/06/05	NC		%	50
			Benzo(j)fluoranthene	2020/06/05	NC		%	50
			Benzo(k)fluoranthene	2020/06/05	NC		%	50
			Chrysene	2020/06/05	20		%	50
			Dibenzo(a,h)anthracene	2020/06/05	NC		%	50
			Indeno(1,2,3-cd)pyrene	2020/06/05	NC		%	50
6767737	LGE	Matrix Spike [MTU822-01]	D10-Anthracene	2020/06/05		82	%	50 - 130
			D14-Terphenyl (FS)	2020/06/05		85	%	50 - 130
			D8-Acenaphthylene	2020/06/05		104	%	50 - 130
			1-Methylnaphthalene	2020/06/05		97	%	50 - 130
			2-Methylnaphthalene	2020/06/05		109	%	50 - 130
			Acenaphthene	2020/06/05		101	%	50 - 130
			Acenaphthylene	2020/06/05		107	%	50 - 130
			Anthracene	2020/06/05		109	%	50 - 130
			Fluoranthene	2020/06/05		105	%	50 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Fluorene	2020/06/05		109	%	50 - 130
			Naphthalene	2020/06/05		100	%	50 - 130
			Phenanthrene	2020/06/05		98	%	50 - 130
			Pyrene	2020/06/05		101	%	50 - 130
			Benzo(a)anthracene	2020/06/05		102	%	50 - 130
			Benzo(a)pyrene	2020/06/05		98	%	50 - 130
			Benzo(b)fluoranthene	2020/06/05		107	%	50 - 130
			Benzo(g,h,i)perylene	2020/06/05		58	%	50 - 130
			Benzo(j)fluoranthene	2020/06/05		100	%	50 - 130
			Benzo(k)fluoranthene	2020/06/05		111	%	50 - 130
			Chrysene	2020/06/05		96	%	50 - 130
			Dibenzo(a,h)anthracene	2020/06/05		65	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2020/06/05		63	%	50 - 130
6767737	LGE	LCS	D10-Anthracene	2020/06/05		94	%	50 - 130
			D14-Terphenyl (FS)	2020/06/05		93	%	50 - 130
			D8-Acenaphthylene	2020/06/05		100	%	50 - 130
			1-Methylnaphthalene	2020/06/05		92	%	50 - 130
			2-Methylnaphthalene	2020/06/05		100	%	50 - 130
			Acenaphthene	2020/06/05		102	%	50 - 130
			Acenaphthylene	2020/06/05		109	%	50 - 130
			Anthracene	2020/06/05		112	%	50 - 130
			Fluoranthene	2020/06/05		107	%	50 - 130
			Fluorene	2020/06/05		108	%	50 - 130
			Naphthalene	2020/06/05		98	%	50 - 130
			Phenanthrene	2020/06/05		115	%	50 - 130
			Pyrene	2020/06/05		107	%	50 - 130
			Benzo(a)anthracene	2020/06/05		104	%	50 - 130
			Benzo(a)pyrene	2020/06/05		94	%	50 - 130
			Benzo(b)fluoranthene	2020/06/05		104	%	50 - 130
			Benzo(g,h,i)perylene	2020/06/05		55	%	50 - 130
			Benzo(j)fluoranthene	2020/06/05		98	%	50 - 130
			Benzo(k)fluoranthene	2020/06/05		103	%	50 - 130
			Chrysene	2020/06/05		99	%	50 - 130
			Dibenzo(a,h)anthracene	2020/06/05		63	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2020/06/05		60	%	50 - 130

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.

LCS: 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 (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) Elevated PAH RDL(s) due to matrix / co-extractive interference.



VALIDATION SIGNATURE PAGE

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

Olen I Staward

Alan Stewart, Organics Manager, Bedford

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



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ATL FCD 00149 / 25

www.bvlabs.com E-mail: customerservicebedfor						ord@bvlabs.com CHAII					AIN OF CUSTODY RECORD COC #: 46221 Page 1								221 Page 1 of 1						
Invoice Information			Repo	ort Information (if differs from invoice)						р	roject	Inform	ation	(whe	re app	licab	le)		Turnaround Time (TAT) Required						
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COOLING MEDIA PRESENT (Y)/ N SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LAK			V LABS	ERS SUBMITTED	D RPRESERVED	IN REQUIRED	tal Metals) Well	ssolved Metals)	efault Method) & surface water	ground water	CLE) TOTAL / DIS	ury tractable (Available	ible Baron CME Agricultural/ L	arbons (BTEX, C6-C	rbans (CWS-PHC F1	or water/soil)	CME Sediment)	ne: Default or CCM		E.coli (Presence/A	E.Call (Count)			ANALYZE	PIRI
SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAIN	FIELD FRUTERE	LAB FILTRATIC	RCAP-MS_[TG	RCAP-MS (D)	Total Digest (D for well water	Dissolved for	Mercury (CIR	Metals & Mero Default Acid Ex	Hot Water Solt (required for C	RBCA Hydroc	CCME Hydroca	PAHs (Default /	PAHs (FWAL /C	PCBs - Select O	VDCs	Total Coliform/	Fotal Coliform/			HOLD-DO NOT	COMMENTS
1 EX2-1	2020/06/02	10:00	551													X									
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ΑΞϹΟΜ

Consultant: Al	ЕСОМ			Sampling Date: 2020/06/02						
Location: 64	Mill La	ake Roa	d Hubba	ards Laboratory: Maxxam						
N	S									
Consultant Project Number: 60)438249			Sample Submission Number: C0D5094						
Are All Laboratory QC Samples V	Vithin Ac	ceptance	Criteria	(Yes, No, Not Applicable)?						
	Yes	No	NA	Comments						
Instrument Surrogate Recovery			\boxtimes							
Extraction Surrogate Recovery	\boxtimes									
Method Blank Concentration	\boxtimes									
Matrix Duplicate RPD		\boxtimes		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).						
Matrix Spike Recovery	\boxtimes									
Lab Control Sample Recovery	\boxtimes									
Are All Field QC Samples Within Alert Limits (Yes, No, Not Applicable)?										
	Yes	No	NA	Comments						
Field Blank Concentration			\boxtimes							
Trip Blank Concentration			\boxtimes							
Field Duplicate RPD	\boxtimes									
Has CoA been signed off?				X Yes ⊔ No						
Has lab warranted all tests were	n statisti	fallowing								
Has lab warranted all tests were a	analyzed	TOIIOWIN	J 50P S I							
All volatilos samples methapol or	tractod (i	f roquiro	d) within							
Is Chain of Custody completed a	nd signer	12 12	a) within t							
Were sample temperatures accer	otable wh	nen they	reached I	lab? ⊠ Yes □ No						
le data considered to be reliable?		,								
If answer is "No", describe and p	ovido rat	ionalo:								
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Quality Assurance and Quality Control Program

A quality assurance and quality control (QA/QC) program was implemented during the sampling events to minimize and quantify potential impacts introduced during sample collection, handling, shipping and analysis. As part of the QA/QC program, sampling protocols included minimizing sample handing, submitting field QA/QC samples, using dedicated sampling equipment, using sample-specific identification and labelling procedures and using chain of custody records.

Field QA/QC samples include:

- A **field duplicate sample**, which is collected at the same time as the parent sample but placed in a different container and is labelled as a randomized sample ID. The field duplicate sample is then submitted to the laboratory along with the original sample for analysis of the same parameters.
- A **field blank** sample, which is a sample of analyte-free media used to assess contamination from the combination of field sampling techniques, preservatives, sample shipping and laboratory analytical processes.
- A **trip blank** sample, which is a sample of analyte-free media taken from the laboratory to the sampling site and returned unopened.

Laboratory QA/QC measures included analysis of a laboratory blank, spiked blank, duplicate, matrix spike, and laboratory control samples. Details of the internal QA/QC procedures and methodologies employed by Maxxam are presented in the laboratory reports provided.

The field duplicate samples provide a means to evaluate the precision of the field quality control program. Reproducibility is quantified by calculating the relative percent difference (RPD) defined by the following equation:

Field Duplicate RPD (%) =
$$\frac{(C1 - C2)}{(C1 + C2)/2} * 100$$

where: RPD = relative percent difference

C1 = larger of the two observed values from the field duplicate analysis

C2 = smaller of the two observed values from the field duplicate analysis

In order for a valid Field Duplicate RPD to be calculated, both sets of results must be greater than five times (5x) the Laboratory Reportable Detection Limit (RDL). If one or both sets of analytical results for the field duplicate samples are less than 5x the RDL for an analyte, then it is not possible to calculate a valid Field Duplicate RPD.



Quality Assurance and Quality Control Results

AECOM QA/QC programs are tailored to each investigation. This investigation QA/QC samples are summarized below.

Sample Type	# of Samples	Analysis	Result	Issue Identified
Groundwater Q	A/QC Samples			
			All within acceptable RPD limit of 30%, except for MW16-01:	
Field Duplicate	8 for 65 groundwater samples collected	BTEX and PHC	PHC F1 (C6-C10) minus BTEX (RPD 44%) MW17-01: PHC >C16-C21 (RPD 34%) and PHC >C21- C32 (RPD 46%) MW17-03: C16-C21 (RPD 61%), Modified TPH Tier 1 (RPD 68%) and F2 (RPD 69%);	Note that most analytes with precision (RPD) exceedances do not have NSE criteria. Both the parent and field duplicate values for the TPH Tier 1 exceedances for MW17-03 (2017-07- 27) were above NSE- EQS.
Trip Blank	Collected for the March 2018 samples.	BTEX and PHC	All less than RDL and thus within acceptable limits. See QAQC results in Attachment A.	None
Field Blank	Collected for the Feb 2019 samples.	BTEX and PHC	All less than RDL and thus within acceptable limits. See QAQC results in Attachment A.	None
Trip Blank	Collected for the Feb 2019 samples.	BTEX and PHC	All less than RDL and thus within acceptable limits. See QAQC results in Attachment A.	None
Soil QA/QC San	nples			
Field Duplicate	8 for 119 soil samples collected	BTEX, PHC and PAH	All within acceptable RPD limits of 30% (or 40% for PAH), except FA1 (0.0-1.0): >C21- <c32 hydrocarbons<br="">(RPD 117%), and</c32>	Results flagged estimated. Note that there is only an applicable NSE-EQS criteria for Modified TPH and Total



Sample Type	# of Samples	Analysis	Result	Issue Identified
			Modified TPH Tier 1	Xylenes. In addition,
			(RPD 115%).	the TPH and Total
				Xylene values for the
			TP16-06:	samples with precision
			TPH Tier 1 (RPD 44%),	(RPD) exceedances
			Total Xylene (RPD	were considerably less
			41%), F1 (RPD 74%),	than the NSE criteria,
			F2 (RPD74%),	so the status of these
			PHC >C16-C21 (RPD	samples is not
			93%), and PHC >C21-	affected.
			C32 (RPD 80%).	
			See QAQC results in	
			Attachment A.	

The results of the laboratory QA/QC analyses are provided in the Laboratory Certificates of Analysis (CoA). The analysis included method blanks, matrix spikes, laboratory control samples, laboratory duplicates and matrix duplicates.

Data quality issues were identified for sample receipt, as discussed below and summarized in the data quality waiver in Attachment B.

Sample Receipt Issues for Informational Purposes

The sample receipt temperatures for a number of sampling events may have been above 10 °C; however, the samples were received at the laboratory within 3 to 6 hours of collection, and had insufficient time to reach the required temperature.

One of the two vials received for MW17-04 (0.6-1.2) came without the methanol preservative. The laboratory was able to proceed with analysis using the remaining vial.

The laboratory indicated that an insufficient number of bottles were received for samples MW17-01 and MW17-03 collected 2018/08/07. The laboratory indicated they were able to proceed with analyses using the vials submitted.

A sample labeling issue occurred with sample MW16-03 collected 2019/05/06. The laboratory indicated that both MW3 and MW16-03 were listed on the 250 ml bottle. The laboratory proceeded with the ID of MW16-03.

Some of the vials for sample MW4 and the Trip Blank (collected 2019/02/19) were received with headspace. The laboratory was able to proceed with analysis as additional headspace free vials were available for analysis.

C of C information incomplete (for Job #COD5094 dated 2020/06/02) - A non-IOL COC was submitted for samples. # of containers, IOL site #,task order# and # of jars used and not submitted were not provided on the COC. Analysis proceeded.

All other laboratory data is considered reliable.

			Sample Location	EX1-15	EX1-15 (Duplicate)		EX1-4	EX1-4 (Duplicate)		EX1-4	EX1-4 (Duplicate)	
			Sample Date	2016-Oct-27	2016-Oct-27		2016-Oct-21	2016-Oct-21		2016-Oct-20	2016-Oct-21	
		S	ample Depth (m bgs)	2 - 3	2 - 3		1.5 - 2.5	1.5 - 2.5		4 - 4	4 - 4	
			Sample ID	EX1-15	EX1-15	RPD	EX1-4	EX1-4	RPD	EX1-4	EX1-4	RPD
			Lab Sample ID	DIM617	DIM618		DHE631	DHE632		DHE573	DHE633	
		L	ab Lab Certifications	B6N3457	B6N3457		B6M7459	B6M7459		B6M7459	B6M7459	
Parameter	Units	Detection Level	Alert Limit									1
Moisture	%	1.0	-	10	8.5	16	5.7	6.2	8	12	8.2	38
Modified TPH Tier 1	mg/kg	15	30	< 15	< 15	NC	< 15	< 15	NC	46	170	NC
Benzene	mg/kg	0.025	30	< 0.025	< 0.025	NC	< 0.025	< 0.025	NC	< 0.025	< 0.025	NC
Toluene	mg/kg	0.025	30	< 0.025	< 0.025	NC	< 0.025	< 0.025	NC	< 0.025	< 0.025	NC
Ethylbenzene	mg/kg	0.025	30	< 0.025	< 0.025	NC	< 0.025	< 0.025	NC	< 0.025	< 0.025	NC
Xylenes, Total	mg/kg	0.050	30	< 0.050	< 0.050	NC	< 0.050	< 0.050	NC	< 0.050	0.12	NC
PHC F1 (C6-C10) minus BTEX	mg/kg	2.5	30	< 2.5	< 2.5	NC	< 2.5	< 2.5	NC	11	10	NC
PHC F2 (>C10-C16)	mg/kg	10	30	< 10	< 10	NC	< 10	< 10	NC	22	110	NC
PHC (>C16-C21)	mg/kg	10	30	< 10	< 10	NC	< 10	< 10	NC	13	51	NC
PHC (>C21-C32)	mg/kg	15	30	< 15	< 15	NC	< 15	< 15	NC	< 15	< 15	NC
Reached Baseline at C32	mg/kg	0	-	NA	NA	NC	NA	NA	NC	YES	YES	NC
Hydrocarbon Resemblance	none	0	-	NA	NA	NC	NA	NA	NC	Fuel	Fuel	NC
Acenaphthene	mg/kg	0.01	40	-	-		-	-	-	-	-	-
Acenaphthylene	mg/kg	0.01	40	-	-		-	-	-	-	-	-
Anthracene	mg/kg	0.01	40	-	-	-	-	-	-	-	-	-
Benz(a)anthracene	mg/kg	0.01	40	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.01	40	-	-		-	-	-	-	-	-
Benzo(a)pyrene total potency equivalents	mg/kg	0.03	40	-	-		-	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.01	40	-	-	1	-	-	-	-	-	-
Benzo(g,h,i)perylene	mg/kg	0.01	40	-	-	•	-	-	-	-	-	-
Benzo(j)fluoranthene	mg/kg	0.01	40	-	-		-	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.01	40	-	-	-	-	-	-	-	-	-
Chrysene	mg/kg	0.01	40	-	-	-	-	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.01	40	-	-	•	-	-	-	-	-	-
Fluoranthene	mg/kg	0.01	40	-	-		-	-	-	-	-	-
Fluorene	mg/kg	0.01	40	-	-	-	-	-	-	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg	0.01	40	-	-	-	-	-	-	-	-	-
Methylnaphthalene, 1-	mg/kg	0.01	40	-	-	•	-	-	-	-	-	-
Methylnaphthalene, 2-	mg/kg	0.01	40	-	-	•	-	-	-	-	-	-
Moisture	%	1	40	-	-	-	-	-	-	-	-	-
Naphthalene	mg/kg	0.01	40	-	-	-	-	-	-	-	-	-
Phenanthrene	mg/kg	0.01	40	-	-	-	-	-	-	-	-	-
Pyrene	ma/ka	0.01	40	-	-	-	-	-	-	-	-	-

Notes:

NC: Not Calculated (Results <5x laboratory detection limit) RPD: Relative Percent Difference

- :Not analyzed Yellow Exceeds RPD Alert Limits

			Sample Location	EX2-2	EX2-2 (Duplicate)		EX3-6	EX3-6 (Duplicate)	/	FA1	FA1 (Duplicate)	
			Sample Date	2016-Oct-21	2016-Oct-21		2016-Oct-27	2016-Oct-27		2016-Oct-18	2016-Oct-18	
		5	Sample Depth (m bgs)	1 - 2	1 - 2		2.5 - 3.5	2.5 - 3.5		0 - 1	0 - 1	
			Sample ID	EX2-2	EX2-2	RPD	EX3-6	EX3-6	RPD	FA1	FA1	RPD
			Lab Sample ID	DHE635	DHE652		DIM699	DIM700		DGT098	DGT099	
			Lab Lab Certifications	B6M7459	B6M7459		B6N3491	B6N3491		B6M4914	B6M4914	
Parameter	Units	Detection Level	Alert Limit						1			1
Moisture	%	1.0	-	9.7	9.4	3	8.7	8.0	8	19	12	45
Modified TPH Tier 1	ma/ka	15	30	< 15	< 15	NC	< 15	< 15	NC	340	92	115
Benzene	ma/ka	0.025	30	< 0.025	< 0.025	NC	< 0.025	< 0.025	NC	< 0.025	< 0.025	NC
Toluene	mg/kg	0.025	30	< 0.025	< 0.025	NC	< 0.025	< 0.025	NC	< 0.025	< 0.025	NC
Ethylbenzene	mg/kg	0.025	30	< 0.025	< 0.025	NC	< 0.025	< 0.025	NC	< 0.025	< 0.025	NC
Xylenes, Total	mg/kg	0.050	30	< 0.050	< 0.050	NC	< 0.050	< 0.050	NC	< 0.050	< 0.050	NC
PHC F1 (C6-C10) minus BTEX	mg/kg	2.5	30	< 2.5	< 2.5	NC	< 2.5	< 2.5	NC	< 2.5	< 2.5	NC
PHC F2 (>C10-C16)	mg/kg	10	30	< 10	< 10	NC	< 10	< 10	NC	< 10	< 10	NC
PHC (>C16-C21)	mg/kg	10	30	< 10	< 10	NC	< 10	< 10	NC	36	11	NC
PHC (>C21-C32)	mg/kg	15	30	< 15	< 15	NC	< 15	< 15	NC	310	81	117
Reached Baseline at C32	mg/kg	0	-	NA	NA	NC	NA	NA	NC	YES	YES	NC
Hydrocarbon Resemblance	none	0	-	NA	NA	NC	NA	NA	NC	Lube	Lube	NC
Acenaphthene	mg/kg	0.01	40	-	-	-	-	-	-	-	-	-
Acenaphthylene	mg/kg	0.01	40	-	-	-	-	-	-	-	-	-
Anthracene	mg/kg	0.01	40	-	-	-	-	-	-	-	-	-
Benz(a)anthracene	mg/kg	0.01	40	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.01	40	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene total potency equivalents	mg/kg	0.03	40	-	-	-	-	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.01	40	-	-	-	-	-	-	-	-	-
Benzo(g,h,i)perylene	mg/kg	0.01	40	-	-	-	-	-	-	-	-	-
Benzo(j)fluoranthene	mg/kg	0.01	40	-	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.01	40	-	-	-	-	-	-	-	-	-
Chrysene	mg/kg	0.01	40	-	-	-	-	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.01	40	-	-	-	-	-	-	-	-	-
Fluoranthene	mg/kg	0.01	40	-	-	-	-	-	-	-	-	-
Fluorene	mg/kg	0.01	40	-	-	-	-	-	-	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg	0.01	40	-	-	-	-	-	-	-	-	-
Methylnaphthalene, 1-	mg/kg	0.01	40	-	-	-	-	-	-	-	-	-
Methylnaphthalene, 2-	mg/kg	0.01	40	-	-	- 1	-	-	-	-	-	- T
Moisture	%	1	40	-	-	- 1	-	-	-	-	-	- T
Naphthalene	mg/kg	0.01	40	-	-	-	-	-	-	-	-	-
Phenanthrene	mg/kg	0.01	40	-	-	-	-	-	-	-	-	-
Pyrene	ma/ka	0.01	40	-	-	-	-	-	-	-	-	- 1

Notes:

NC: Not Calculated (Results <5x laboratory detection limit) RPD: Relative Percent Difference

- :Not analyzed Yellow Exceeds RPD Alert Limits

		Sample Location	TP16-06	TP16-06 (Duplicate)		EX2-3	EX2-3 (Duplicate))	
			Sample Date	2016-Jul-	2016-Jul-28		2020-Jun-02	2020-Jun-02	1
		S	ample Depth (m bgs)	2 - 3	2 - 3		0 - 1	0 - 1	1
			Sample ID	TP16-06	DUP A	RPD	EX2-3	DUP-2020	RPD
			Lab Sample ID	CUG986	CUG992		MTU820	MTU824	1
		L	ab Lab Certifications	B6F9144	B6F9144		C0D5094	C0D5094	1
Parameter	Units	Detection Level	Alert Limit						1
Moisture	%	1.0	-	12	10	18	-	-	-
Modified TPH Tier 1	mg/kg	15	30	860	550	44	-	-	-
Benzene	mg/kg	0.025	30	< 0.025	< 0.025	NC	-	-	-
Toluene	mg/kg	0.025	30	< 0.025	< 0.025	NC	-	-	-
Ethylbenzene	mg/kg	0.025	30	0.22	0.17	26	-	-	-
Xylenes, Total	mg/kg	0.050	30	1.5	0.99	41	-	-	-
PHC F1 (C6-C10) minus BTEX	mg/kg	2.5	30	120	260	74	-	-	-
PHC F2 (>C10-C16)	mg/kg	10	30	490	180	93	-	-	-
PHC (>C16-C21)	mg/kg	10	30	200	86	80	-	-	-
PHC (>C21-C32)	mg/kg	15	30	46	19	NC	-	-	-
Reached Baseline at C32	mg/kg	0	-	YES	YES	NC	-	-	-
Hydrocarbon Resemblance	none	0	-	Fuel	Fuel	NC	-	-	-
Acenaphthene	mg/kg	0.01	40	-	-	-	<0.010	<0.01	NC
Acenaphthylene	mg/kg	0.01	40	-	-	-	<0.010	<0.01	NC
Anthracene	mg/kg	0.01	40	-	-	-	< 0.010	<0.01	NC
Benz(a)anthracene	mg/kg	0.01	40	-	-	-	<0.010	<0.01	NC
Benzo(a)pyrene	mg/kg	0.01	40	-	-	-	<0.010	<0.01	NC
Benzo(a)pyrene total potency equivalents	mg/kg	0.03	40	-	-	-	< 0.03	< 0.03	NC
Benzo(b)fluoranthene	mg/kg	0.01	40	-	-	-	< 0.010	<0.01	NC
Benzo(g,h,i)perylene	mg/kg	0.01	40	-	-	-	<0.010	<0.01	NC
Benzo(j)fluoranthene	mg/kg	0.01	40	-	-	-	<0.010	<0.01	NC
Benzo(k)fluoranthene	mg/kg	0.01	40	-	-	-	< 0.010	<0.01	NC
Chrysene	mg/kg	0.01	40	-	-	-	< 0.010	<0.01	NC
Dibenz(a,h)anthracene	mg/kg	0.01	40	-	-	-	<0.010	<0.01	NC
Fluoranthene	mg/kg	0.01	40	-	-	-	<0.010	<0.01	NC
Fluorene	mg/kg	0.01	40	-	-	-	< 0.010	<0.01	NC
Indeno(1,2,3-c,d)pyrene	mg/kg	0.01	40	-	-	-	< 0.010	<0.01	NC
Methylnaphthalene, 1-	mg/kg	0.01	40	-	-	-	<0.010	<0.01	NC
Methylnaphthalene, 2-	mg/kg	0.01	40	-	-	-	<0.010	<0.01	NC
Moisture	%	1	40	-	-	-	11	10	10
Naphthalene	mg/kg	0.01	40	-	-	-	< 0.010	<0.01	NC
Phenanthrene	mg/kg	0.01	40	-	-	-	<0.010	<0.01	NC
Pyrene	mg/kg	0.01	40	-	-	-	< 0.010	< 0.01	NC

Notes:

NC: Not Calculated (Results <5x laboratory detection limit) RPD: Relative Percent Difference

- :Not analyzed Yellow Exceeds RPD Alert Limits



			Sample Location	MW16-01	MW16-01 (Duplicate)		MW16-01	MW16-01 (Duplicate)	
			Sample Date	2016-Dec-15	2016-Dec-15		2017-Jan-11	2017-Jan-11	
		Sc	reen Interval (m bgs)						
			Sample ID	MW16-01	MW16-01	RPD	MW16-01	MW16-01	RPD
			Lab Sample ID	DQD848	DQD851		DSW162	DSW163	
		L	ab Lab Certifications	B6R3168	B6R3168		B705977	B705977	
Parameter	Units	Detection Level	Alert Limit						
Modified TPH Tier 1	mg/L	0.10	30	7.3	7.1	3	5.3	6.5	20
Benzene	mg/L	0.0010	30	< 0.0010	< 0.0010	NC	< 0.0010	< 0.0010	NC
Toluene	mg/L	0.0010	30	< 0.0010	< 0.0010	NC	< 0.0010	< 0.0010	NC
Ethylbenzene	mg/L	0.0010	30	0.0038	0.0037	NC	< 0.0010	< 0.0010	NC
Xylenes, Total	mg/L	0.0020	30	0.017	0.016	6	< 0.0020	< 0.0020	NC
PHC F1 (C6-C10) minus BTEX	mg/L	0.010	30	0.30	0.29	3	0.070	0.11	44
PHC F2 (>C10-C16)	mg/L	0.050	30	4.5	4.5	0	2.9	3.6	22
PHC (>C16-C21)	mg/L	0.050	30	2.2	1.9	15	2.0	2.4	18
PHC (>C21-C32)	mg/L	0.10	30	0.31	0.35	NC	0.33	0.40	NC
Reached Baseline at C32	mg/L	0	-	YES	YES	NC	YES	YES	NC
Hydrocarbon Resemblance	none	0	-	Fuel	Fuel	NC	Fuel	Fuel	NC

Notes:

NC: Not Calculated (Results <5x laboratory detection limit)

RPD: Relative Percent Difference

- :Not analyzed



			Sample Location	MW16-01	MW16-01 (Duplicate)		MW17-01	MW17-01 (Duplicate)	
			Sample Date	2019-Feb-19	2019-Feb-19		2017-Sep-20	2017-Sep-20	
		Sc	reen Interval (m bgs)						
			Sample ID	MW16-01_20190219	DUPA_20190219	RPD	MW17-01	MW17-01	RPD
			Lab Sample ID	JAF716	JAF718		FDV402	FDV405	
		L	ab Lab Certifications	B944678	B944678		B7K5372	B7K5372	
Parameter	Units	Detection Level	Alert Limit						
Modified TPH Tier 1	mg/L	0.10	30	< 0.10	< 0.10	NC	21	27	25
Benzene	mg/L	0.0010	30	< 0.0010	< 0.0010	NC	< 0.0010	< 0.0010	NC
Toluene	mg/L	0.0010	30	< 0.0010	< 0.0010	NC	< 0.0010	< 0.0010	NC
Ethylbenzene	mg/L	0.0010	30	< 0.0010	< 0.0010	NC	0.0013	0.0011	NC
Xylenes, Total	mg/L	0.0020	30	< 0.0020	< 0.0020	NC	< 0.0020	< 0.0020	NC
PHC F1 (C6-C10) minus BTEX	mg/L	0.010	30	< 0.010	< 0.010	NC	0.14	0.12	15
PHC F2 (>C10-C16)	mg/L	0.050	30	< 0.050	< 0.050	NC	14	19	30
PHC (>C16-C21)	mg/L	0.050	30	< 0.050	< 0.050	NC	4.8	6.8	34
PHC (>C21-C32)	mg/L	0.10	30	< 0.10	< 0.10	NC	1.0	1.6	<u>46</u>
Reached Baseline at C32	mg/L	0	-	NA	NA	NC	YES	YES	NC
Hydrocarbon Resemblance	none	0	-	NA	NA	NC	Fuel	Fuel	NC

Notes:

NC: Not Calculated (Results <5x laboratory detection limit)

RPD: Relative Percent Difference

- :Not analyzed



			Sample Location	MW17-01	MW17-01 (Duplicate)		MW17-03	MW17-03 (Duplicate)	
			Sample Date	2018-Mar-14	2018-Mar-14		2017-Jul-27	2017-Jul-27	
		Sc	reen Interval (m bgs)						
			Sample ID	MW17-01-04-20180314	DUP1-04-20180314	RPD	MW17-03	MW17-03	RPD
			Lab Sample ID	GGI775	GGI778		EVG247	EVG249	
		L	ab Lab Certifications	B857359	B857359		B7G0392	B7G0392	
Parameter	Units	Detection Level	Alert Limit						
Modified TPH Tier 1	mg/L	0.10	30	5.3	6.1	14	5.4	11	<u>68</u>
Benzene	mg/L	0.0010	30	< 0.0010	< 0.0010	NC	< 0.0010	< 0.0010	NC
Toluene	mg/L	0.0010	30	< 0.0010	< 0.0010	NC	< 0.0010	< 0.0010	NC
Ethylbenzene	mg/L	0.0010	30	< 0.0010	< 0.0010	NC	< 0.0010	< 0.0010	NC
Xylenes, Total	mg/L	0.0020	30	< 0.0020	< 0.0020	NC	< 0.0020	< 0.0020	NC
PHC F1 (C6-C10) minus BTEX	mg/L	0.010	30	0.050	0.066	28	0.092	0.086	7
PHC F2 (>C10-C16)	mg/L	0.050	30	3.6	4.1	13	4.4	9.0	<u>69</u>
PHC (>C16-C21)	mg/L	0.050	30	1.4	1.5	7	0.80	1.5	<u>61</u>
PHC (>C21-C32)	mg/L	0.10	30	0.34	0.38	NC	0.16	0.20	NC
Reached Baseline at C32	mg/L	0	-	YES	YES	NC	YES	YES	NC
Hydrocarbon Resemblance	none	0	-	FUEL	FUEL	NC	Fuel	Fuel	NC

Notes:

NC: Not Calculated (Results <5x laboratory detection limit)

RPD: Relative Percent Difference

- :Not analyzed



			Sample Location	MW19-01	MW19-01 (Duplicate)		MW6	MW6 (Duplicate)	
			Sample Date	2019-May-03	2019-May-06		2017-Jun-22	2017-Jun-22	
		So	creen Interval (m bgs)	-					
			Sample ID	MW19-01_20190503	DUP_20190506	RPD	MW6	MW6	RPD
			Lab Sample ID	JQ1771	JQ1760		EPN215	EPN216	
		L	ab Lab Certifications	B9C0859	B9C0859		B7D0352	B7D0352	
Parameter	Units	Detection Level	Alert Limit						1
Modified TPH Tier 1	mg/L	0.10	30	< 0.10	< 0.10	NC	3.6	3.0	18
Benzene	mg/L	0.0010	30	< 0.0010	< 0.0010	NC	< 0.0010	< 0.0010	NC
Toluene	mg/L	0.0010	30	0.0073	0.0070	4	< 0.0010	< 0.0010	NC
Ethylbenzene	mg/L	0.0010	30	0.0045	0.0047	NC	< 0.0010	< 0.0010	NC
Xylenes, Total	mg/L	0.0020	30	0.020	0.021	5	< 0.0020	< 0.0020	NC
PHC F1 (C6-C10) minus BTEX	mg/L	0.010	30	0.058	0.063	8	0.027	0.031	NC
PHC F2 (>C10-C16)	mg/L	0.050	30	< 0.050	< 0.050	NC	2.6	2.1	21
PHC (>C16-C21)	mg/L	0.050	30	< 0.050	< 0.050	NC	0.82	0.70	16
PHC (>C21-C32)	mg/L	0.10	30	< 0.10	< 0.10	NC	0.16	0.15	NC
Reached Baseline at C32	mg/L	0	-	NA	NA	NC	YES	YES	NC
Hydrocarbon Resemblance	none	0	-	NA	NA	NC	Fuel	Fuel	NC

Notes:

NC: Not Calculated (Results <5x laboratory detection limit)

RPD: Relative Percent Difference

- :Not analyzed



Maxxam Job Number	Matrix	Maxxam Sample ID	Sample ID	Test Affected	Parameters	Data Quality Issue	Comments					
B6N3457	Soil	DIM617	EX1-15 (2.0-3.0)	TPHC	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	This Parameter (>C21- <c32). high bias into considerati noted that there is</c32). 	may repr However on will no no applica	esent a high b the result is c ot affect the re able NSE-EQ	bias for this urrently no ported resu S criteria fo	n-detect so ilt. As well or this anal	taking the it is to be yte.
B6N3457	Soil	DIM618	DUP E (EX1-15 (2.0-3.0))	TPHC	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	This Parameter (>C21- <c32). high bias into considerati noted that there is</c32). 	may repr However on will no no applica	esent a high b the result is c ot affect the re able NSE-EQ	bias for this urrently no ported resu S criteria fo	n-detect so ilt. As well or this anal	taking the it is to be yte.
B6N3457	Soil	DIM619	EX1-17 (1.0-2.0)	TPHC	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	This Parameter (>C21- <c32). high bias into considerati noted that there is</c32). 	may repr However on will no no applica	esent a high b the result is c ot affect the re able NSE-EQ	bias for this urrently no ported resu S criteria fo	n-detect so ilt. As well or this anal	taking the it is to be yte.
B6N3457	Soil	DIM620	EX1-17 (3.0-4.0)	TPHC	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	g This may represent a high bias for this Parameter (>C21- <c32). currently="" however="" is="" non-dete<br="" result="" the="">high bias into consideration will not affect the reported result. As noted that there is no applicable NSE-EQS criteria for this</c32).>		n-detect so ilt. As well or this anal	taking the it is to be yte.		
B6N3457	Soil	DIM621	EX1-16 (3.5-4.5)	TPHC	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	This Parameter (>C21- <c32). high bias into considerati noted that there is</c32). 	may repr However on will no no applica	esent a high b the result is c ot affect the re able NSE-EQ	bias for this urrently no ported resu S criteria fo	n-detect so ilt. As well or this anal	taking the l it is to be yte.
B6M7459	Soil	DHE564	EX1-7 (0.0-1.0)	ТРНС	Sample	#11 Improper Sample Storage	This may represent a low bias for parameters subject to volatilization or degradation. The PHC results are thus deer estimated. It is to be noted that BTEX and mTPH are the only paramete have applicable NSE-EQS criteria and all are ND or far below criteria (see 7 below). Note also neighboring samples (EX1-6 & EX1-8), which did n an issue with sample storage conditions, are also below criteria.			leemed eters that (see EX1- d not have a.		
			()			Conditions	Parameter	Unit	NSE- EQS ¹	EX1-6	EX1-7	EX1-8
							Benzene	mg/kg	0.042	< 0.025	< 0.025	< 0.025
							Toluene	mg/kg	0.35	< 0.025	< 0.025	< 0.025



Maxxam Job Number	Matrix	Maxxam Sample ID	Sample ID	Test Affected	Parameters	Data Quality Issue	Comments						
							Eth	ylbenzene	mg/kg	0.065	< 0.025	< 0.025	< 0.025
							2	Xylenes	mg/kg	11	< 0.050	0.20	< 0.050
							Modifie	d TPH (Tier 1)	mg/kg	Fuel=180	00 60	320	< 15
							subje estimate have app exceedin	This ma ct to volatilizatio ed. It is to be not licable NSE-EQ g mTPH and eth	ay represe on or degra ed that BT OS criteria. aylbenzend	nt a low bi adation. Tl FEX and n Note that e and is ide excavated)	as for parameters as for parameters of TPH are the of this sample is contified as inter-	ters s are thus d only paramo already ind rim (locatio	eemed eters that dicated as on further
B6M7450	Soil	DHE568	EX1-10	трнс	Sample	#11 Improper		Parame	ter	Unit	NSE-EQS ¹	EX1-10	
DOM 7437	501	DIIL508	(1.5-2.5)	mile	Sample	Conditions		Benzer	ne	mg/kg	0.042	< 0.025	_
								Toluer	ne	mg/kg	0.35	< 0.025	
								Ethylben	zene	mg/kg	0.065	0.16	_
								Xylene	es	mg/kg	11	0.86	
								Modified TPH	I (Tier 1)	mg/kg	Fuel=1800	2600	
B6N3491	Soil	DIM693	EX3-1 (3.0-4.0)	TPHC	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	Parameter high bias no	This r (>C21- <c32). into considerati ted that there is</c32). 	may repr However on will no no applica	esent a hig the result i ot affect the able NSE-I	h bias for this s currently no e reported resu EQS criteria fo	n-detect so ilt. As well or this analy	taking the it is to be yte.
B6N3491	Soil	DIM694	EX3-2 (2.5-3.5)	ТРНС	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	Parameter high bias no	This r (>C21- <c32). into considerati ted that there is</c32). 	may repr However on will no no applica	esent a hig the result i ot affect the able NSE-I	h bias for this s currently no e reported resu EQS criteria fo	n-detect so ilt. As well or this analy	taking the it is to be yte.
B6N3491	Soil	DIM695	EX3-3 (1.0-2.0)	ТРНС	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	Parameter high bias no	This r (>C21- <c32). into considerati ted that there is</c32). 	may repr However on will no no applica	esent a hig the result i ot affect the able NSE-1	h bias for this s currently no e reported resu EQS criteria fo	n-detect so ilt. As well or this analy	taking the it is to be yte.
B6N3491	Soil	DIM696	EX3-4 (3.5-4.0)	TPHC	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	Parameter high bias no	This r (>C21- <c32). into considerati ted that there is</c32). 	may repr However on will no no applica	esent a hig the result i ot affect the able NSE-I	h bias for this s currently no e reported resu EQS criteria fo	n-detect so ilt. As well or this analy	taking the it is to be yte.



Maxxam Job Number	Matrix	Maxxam Sample ID	Sample ID	Test Affected	Parameters	Data Quality Issue	Comments
B6N3491	Soil	DIM697	EX3-5 (1.0-2.0)	TPHC	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	This may represent a high bias for this Parameter (>C21- <c32). currently="" however="" is="" non-detect="" result="" so="" taking="" the="" the<br="">high bias into consideration will not affect the reported result. As well it is to be noted that there is no applicable NSE-EQS criteria for this analyte.</c32).>
B6N3491	Soil	DIM698	EX3-5 (3.0-4.0)	TPHC	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	This may represent a high bias for this Parameter (>C21- <c32). currently="" however="" is="" non-detect="" result="" so="" taking="" the="" the<br="">high bias into consideration will not affect the reported result. As well it is to be noted that there is no applicable NSE-EQS criteria for this analyte.</c32).>
B6N3491	Soil	DIM699	EX3-6 (2.5-3.5)	TPHC	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	This may represent a high bias for this Parameter (>C21- <c32). currently="" however="" is="" non-detect="" result="" so="" taking="" the="" the<br="">high bias into consideration will not affect the reported result. As well it is to be noted that there is no applicable NSE-EQS criteria for this analyte.</c32).>
B6N3491	Soil	DIM700	DUP F	TPHC	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	This may represent a high bias for this Parameter (>C21- <c32). currently="" however="" is="" non-detect="" result="" so="" taking="" the="" the<br="">high bias into consideration will not affect the reported result. As well it is to be noted that there is no applicable NSE-EQS criteria for this analyte.</c32).>
B6N3491	Soil	DIM701	EX3-7 (1.0-2.0)	TPHC	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	This may represent a high bias for this Parameter (>C21- <c32). currently="" however="" is="" non-detect="" result="" so="" taking="" the="" the<br="">high bias into consideration will not affect the reported result. As well it is to be noted that there is no applicable NSE-EQS criteria for this analyte.</c32).>
B6N3491	Soil	DIM702	EX3-8 (3.5-4.0)	TPHC	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	This may represent a high bias for this Parameter (>C21- <c32). currently="" however="" is="" non-detect="" result="" so="" taking="" the="" the<br="">high bias into consideration will not affect the reported result. As well it is to be noted that there is no applicable NSE-EQS criteria for this analyte.</c32).>
B6N3491	Soil	DIM703	EX3-9 (3.0-4.0)	ТРНС	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	This may represent a high bias for this Parameter (>C21- <c32). currently="" however="" is="" non-detect="" result="" so="" taking="" the="" the<br="">high bias into consideration will not affect the reported result. As well it is to be noted that there is no applicable NSE-EQS criteria for this analyte.</c32).>



Maxxam Job Number	Matrix	Maxxam Sample ID	Sample ID	Test Affected	Parameters	Data Quality Issue	Comments
B6N3491	Soil	DIM704	EX3-10 (1.5-2.5)	TPHC	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	This may represent a high bias for this Parameter (>C21- <c32). currently="" however="" is="" non-detect="" result="" so="" taking="" the="" the<br="">high bias into consideration will not affect the reported result. As well it is to be noted that there is no applicable NSE-EQS criteria for this analyte.</c32).>
B6N3491	Soil	DIM705	EX3-11 (2.0-3.0)	TPHC	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	This may represent a high bias for this Parameter (>C21- <c32). currently="" however="" is="" non-detect="" result="" so="" taking="" the="" the<br="">high bias into consideration will not affect the reported result. As well it is to be noted that there is no applicable NSE-EQS criteria for this analyte.</c32).>
B6N3491	Soil	DIM706	EX3-12 (3.5-4.0)	TPHC	>C21- <c32 Hydrocarbons</c32 	#12 Continuing Calibration Verification Failure (CCV)	This may represent a high bias for this Parameter (>C21- <c32). currently="" however="" is="" non-detect="" result="" so="" taking="" the="" the<br="">high bias into consideration will not affect the reported result. As well it is to be noted that there is no applicable NSE-EQS criteria for this analyte.</c32).>



BOREHOLE / TEST PIT / MONITORING WELL LOGS

PRO.	IECT:	Impe	erial Oil Cost to Closur	e - Eastern Canada	CLIENT: Imperial Oil	l Ltd.			TEST	HOLE	NO: TP16-01	
LOCA	NOITA	£ 64	Mill Lake Rd No 2, Hut	obards, NS	1				PRO.	JECTN	NO.: 60438249	
CON	IRAC	TOR:	Bunrich Trucking Ltd.		METHOD: Grab San	nple			ELEV		l (m):	
SAM	1E I	YPE	GRAB		SPLIT SPOON		1	1		RECOV		
DEPTH (m)	nsc	SOIL SYMBOL	\$	SOIL DESCRIPTION	J	SAMPLE TYPE	SAMPLE #	⊗Va 10	cour Readi (ppm)) 11	ng⊗ 00	COMMENTS	DEPTH (m)
	SA		SAND Brown sandy gravel Coarse gravel backfill Moist End of borehole at 5 mbgs	3		DBY: AD	a a uguay				Collected Sample TP16-01 (4-5m)	1 - 2 - 3 - 4 - 5 -
DG OF			A <i>E</i> e	СОМ	REVIEV	VED BY: J	.Shea		,	COMP	LETION DATE: 7/28/16	of 1
Ц								·Luyudy			raye I (

PROJECT:	Imperial Oil Cost to Close	ure - Eastern Canada	CLIENT: Imperial Oil Lto	d.		TESTHOLE	NO: TP16-02	
LOCATION	1: 64 MII Lake Rd No 2, H	lubbards, NS				PROJECT N	IO.: 60438249	
CONTRAC	TOR: Bunrich Trucking Li	td.	METHOD: Grab Sample	e		ELEVATION	l (m):	
SAMPLET	YPE GRAB		SPLIT SPOON	BULK	[
DEPTH (m) USC	SOIL SYMBOL	SOIL DESCRIPTION	N	SAMPLE TYPE SAMPLE #	⊗Vap 10	our Reading ⊗ (ppm) 100	COMMENTS	DEPTH (m)
0 - SA - SA 	COARSE GRAIN SAND Brown coarse grain san Brown sand, some grav Brown sand, some grav Black sity sand FINE AND COARSE G Brown fine and coarse g End of borehole at 5 mb	p rel RAIN SAND grain sand xgs					Collected Sample TP16-02 (2.5-3m)	1
<u> </u>			LOGGEDE	3Y: A.Dugu	ay	COMP	LETION DEPTH: 3.00	m
5	A	ECOM	REVIEWED	DBY: J.She		COMPI	LETION DATE: 7/28/10	3
3			PROJECT	ENGINEER	: A.Duguay		Page	1 of 1

PROJE	CT:	Impe	erial Oil Cost to Closure -	Eastern Canada	CLIENT: Imperial	Oil Ltd.				TESI	HOLE	NO: TP16-03	
LOCAT	ΠON:	64	VIII Lake Rd No 2, Hubba	ırds, NS						PRO	JECT N	IO.: 60438249	
CONTR	RACT	OR:	Bunrich Trucking Ltd.		METHOD: Grab S	ample				ELE	/ATION	l (m):	
SAMPL	ETY	ΈE	GRAB		SPLIT SPOON	BUL	_K			Δno	RECOVE		
DEPTH (m)	nsc	SOIL SYMBOL	SC	DIL DESCRIPTION	1		SAMPLE IYPE	SAMPLE #	⊗Va 10	xour Read (ppm)) 1	ing⊗ 00	COMMENTS	DEPTH (m)
	SM 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		SILTY SAND Grass sod, Silty sand some gr Silty sand Silty brown sand, gravel fill End of borehole at 4 mbgs	avel								Collected Sample TP16-03 (0-1m)	1- 2- 3- 4- 5-
Ĕ 6													
				~~~	LOG	GEDBY: A	Du	guay			COMPL	ETION DEPTH: 4.00 m	<u>.</u> ו
0			AEC	UM	REV		J.S	hea	Dumm		COMPL	LE IIONDATE: 7/28/16	1 0 1
3					PRU			к A	Luguay			Page	

PROJEC	CT: Im	perial Oil Cost to Closure	- Eastern Canada	CLIENT: Imperial Oil Ltd.				TEST	HOLEI	NO: TP16-04	
LOCATI	ION: 64	1 MII Lake Rd No 2, Hubb	oards, NS					PRO.	JECT N	O.: 60438249	
CONTR	ACTOF	R: Bunrich Trucking Ltd.		METHOD: Grab Sample				ELEV	/ATION	(m):	
SAMPLE	E TYPE	GRAB	SHELBY TUBE	SPLIT SPOON	BULK				RECOVE	RY CORE	
DEPTH (m)	SOLL SYMBOL	S	OIL DESCRIPTION	J	SAMPLE TYPE	SAMPLE #	⊗Vap 10	our Readir (ppm) 1(	ng⊗ 00	COMMENTS	DEPTH (m)
										Collected Sample TP16-04 (3-4m)	1 - 2 - 3 - 4 - 5 -
		AEC	<b>COM</b>	REVIEWEDI	BY: J	.Shea			COMPL	ETION DATE: 7/27/16	of 1
				PROJECT E			Luguay			Page 1	UII

PROJ	ECT:	Imp	erial Oil Cost to Closu	ire - Eastern Canada	CLIENT: Impe	rial Oil Ltd.				TEST	HOLE	NO: TP16-05	
LOCA	TION	<b>i:</b> 64	Mill Lake Rd No 2, Hi	ubbards, NS	1					PRO.	JECT N	IO.: 60438249	
CONT	RAC	TOR	: Bunrich Trucking Lto	d.	METHOD: Gra	ab Sample				ELEV	/ATION	l (m):	
SAMP	LET	YPE	GRAB	SHELBY TUBE	SPLIT SPCO	N BL	JLK			<b>∑</b> NO	RECOVE	ERY CORE	
DEPTH (m)	nsc	SOIL SYMBOL		SOIL DESCRIPTION	١		SAMPLE TYPE	SAMPLE #	⊗Va 10	cour Readi (ppm)	ng⊗ 00	COMMENTS	DEPTH (m)
ESTHOLE 60438249 HUBBARDS.GPJ UMA.GDT 11/28/19         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0	SA SM SA		COARSE GRAIN SAND Brown gravelly sand Coarse grain sand SILTY SAND Brown silty sand with gravel Brown sand with gravel End of borehole at 5 mb	 avel, saturated				JUAN				Collected Sample TP16-05 (1-2m)	1 - 2 - 3 - 4 - 5 -
OF TI			Λ=	COM	I I	REVIEWED BY	ΑU (: J	shea			COMPL	ETION DATE: 7/27/1	6
00					· F	PROJECT ENC	GINE	ER: A	Duguay	,		Page	1 of 1

PROJE	ECT:	Impe	erial Oil Cost to Closure -	Eastern Canada	CLIENT: Imperial Oil	Ltd.			TEST	HOLEI	NO: TP16-06	
LOCAT	ΠON:	64	VIII Lake Rd No 2, Hubba	ards, NS					PRO	JECT N	O.: 60438249	
CONT	RACT	OR:	Bunrich Trucking Ltd.		METHOD: Grab Sam	nple			ELEV	/ATION	(m):	
SAMP	ETY	ΈE	GRAB		SPLIT SPOON				<b>⊘</b> №	RECOVE	RY CORE	
DEPTH (m)	nsc	SOIL SYMBOL	SC	DIL DESCRIPTION	١	SAMPLE TYPE	SAMPLE #	⊗Va 10	pour Readi (ppm) ) 1	ing⊗ 00	COMMENTS	DEPTH (m)
TESTHOLE 60438249 HUBBARDS.GPJ UMA.GDT 11/28/19	SA		Grey sand, moist End of borehole at 5 mbgs			DBY: AL	Juguay				Collected Sample TP16-06 (2-3m)	1 2 3 5
0G OF			AEC	OM	REVIEW		.Shea		,	COMPL	ETION DATE: 7/28/16	of 1
2					PRUE			~ Luguay			Page 1	

PRO.	JECT:	: Impe	erial Oil Cost to Closure - I	Eastern Canada	CLIENT: Imperia	l Oil Ltd.	TEST	ю	LEN	O: <b>TP16-07</b>	
LOCA		1: 64	Mill Lake Rd No 2, Hubba	rds, NS	_		PROJ	IEC	TNC	0.: 60438249	
CON	IRAC	TOR:	Bunrich Trucking Ltd.		METHOD: Grab	Sample	ELEV	ATI	ON (	m):	
SAMF	1.ET	YPE	GRAB	SHELBY TUBE	SPLIT SPOON	BULK		REC	XOVER	RY CORE	
DEPTH (m)	nsc	SOIL SYMBOL		SOIL DESC	RIPTION			SAMPLE TYPE	SAMPLE #	COMMENTS	DEPTH (m)
	GRSA		SANDY GRAVEL Brown sandy gravel Moist HC odour Coarse grain sand End of borehole at 5 mbgs			GGEDBY: ADuguay		$\infty$		Collected Sample TP16-07 (2-3m)	1. 2. 3. 4.
5			AEC	OM	RE	MEWED BY: J.Shea		$\infty$	MPLE	ETION DATE: 7/27/16	<del>.</del>
2					PF	WEUT ENGINEER: A.Dugua	у			Page 1	OT 1

PROJECT: Impe	rial Oil Cost to Closure - E	Eastern Canada	CLIENT: Impe	ial Oil Ltd.			TE	STHO	ILE N	10: <b>TP16-08</b>	
LOCATION: 64 M	VIII Lake Rd No 2, Hubbar	ds, NS	1				PF	ROJEC	TNC	D.: 60438249	
CONTRACTOR:	Bunrich Trucking Ltd.		METHOD: Gra	b Sample			EL	EVATI	ON (	[m):	
SAMPLE TYPE	GRAB	SHELBY TUBE	SPLIT SPOON	I 🔲 BU	LK			NOREC	XOVEF	RY CORE	
DEPTH (m) USC SOLL SYMBOL	SO	IL DESCRIPTION	N		SAMPLE TYPE		⊗Vapour P (ppr 10	Reading ⊗ m) 100	,	COMMENTS	DEPTH (m)
	Brown sand and gravel, trace s Brown sandy gravel, moist SILTY SAND Dark brown silty sand with grav COARSE GRAIN SAND Coarse grain sand Corner of concrete foundation v End of borehole at 5 mbgs	ilt rel, moist visible in test pit								Collected Sample TP16-08 (3-4m)	1 - 2 - 3 - 4 - 5 -
	AECO	M	न न	EVIEWED BY: ROJECT ENG	J.St INEE	nea R: A.Du	juay	00	MPLE	ETION DATE: 7/27/16 Page 1	of 1

PROJECT: Imperial Oil Cost to Closure - E	astern Canada	CLIENT: Imperial (	Dil Ltd.			TEST	HOLEN	VO: TP16-09		
LOCATION: 64 MII Lake Rd No 2, Hubbar	ds, NS					PRO.	JECT N	0.: 60438249	)	
CONTRACTOR: Bunrich Trucking Ltd.		METHOD: Grab S	ample			ELEV	ATION	(m):		
		SPLIT SPOON			[		RECOVE	RY 🔲 🗰	DRE	
DEPTH (m) USC SOL SYMBOL	IL DESCRIPTION	N	SAMPLE TYPE	SAMPLE #	⊗Vap 10	xour Readir (ppm) 1(	ng ⊗ 20	COMMEN	лs	DEPTH (m)
0       SILTY GRAVEL         Dark brown silty gravel, boulde         1       SANDY GRAVEL         Brown sandy gravel         CRSA         CRSA         COARSE GRAIN GRAVEL         Coarse grain gravel (Silica sar         Coarse grain gravel (Silica sar         Coarse grain gravel (Silica sar         Brown sandy gravel	rs (smaller), HC odour							Collected Sam TP16-09 (0-1n	ple ĵ	2 -
			EDBY: AD					ETION DEPTH	: 3.00 m	4 -
AECO	M	REVI	EVED BY: J.S ECT ENGINE	iguay Shea ER: A.D.	uguay		COMPL	ETION DATE:	7/27/16 Page 1	of 1

PROJECT: Imp	perial Oil Cost to Closure - I	Eastern Canada	CLIENT: Imperial Oil Lto	d.		TES	THOLEN	NO: TP16-10	
LOCATION: 64	1 Mill Lake Rd No 2, Hubba	rds, NS				PRC	VECT NO	D.: 60438249	
	K: Bunrich Trucking Ltd.		METHOD: Grab Sample	) 				(m):	
DEPTH (m) USC SOIL SYMBOL	SC	AL DESCRIPTION		SAMPLE TYPE	SAMPLE #	⊗Vapour Rea (ppm)	ding ⊗	COMMENTS	DEPTH (m)
	SILTY SAND_ Brown silty sand, gravel, bould Dark brown, moist, large bould	lers		Y. ADA				Collected Sample TP16-10 (3-3.5m)	1- 2- 3- 4- 5-
	AEC	M	REVIEWED PROJECT E	BY: J.S ENGINEE	juay hea IR: A.Duç	uay		ETION DATE: 7/27/16 Page 1	of 1

BOREHO	EHOLE LOGPROJECT:60438249st to ClosureNorthing: Fasting:494314145			]	BOR	EHOLE: BH-16-01 1 of 1			
IOL Cost to	Closure	Northing: Easting:		494 4	4310	03	]	DAT	E: 13 December 2016
Hubbards, N	IS	Methodology	v: Ho	ollow	-Ste	em		LOG	GED BY CH
Client: Imp	erial Oil Ltd	Contractor:			ante	ch		KEFI	ERENCE N/A m Above Datum
(m) DEDLH	STRATIGRAPHIC DESCH	RIPTION	MONITOR DETAILS	WATER LEVEL	NUMBER	INTERVAL <b>VS</b>	TYPE	VAPOUR (ppm)	COMMENTS
1 - 2 - 3 - 4 - 4.2 5.0	FILL -Brown gravel. Moist. Moderately compact stain. CONCRETE ¬ -0.15 m concrete slab on top of 0.05 m gra SAND -Brown silty sand. Saturated. Moderately c ¬ codour. No stain. BEDROCK -Granite bedrock.	No odour. No			1		SS		Augered: 0-4.5 mbgs
									_



BOREHOLE LOG	PROJE	ECT:	6043	3824	9		]	BOR	<b>EHOLE:</b> BH-16-02 1 of 1					
IOL Cost to Closure	Northin Easting	ng: r:		494	4309	98	]	<b>DATE:</b> 13 December 2016						
Hubbards, NS	Method	,. lology	y: Hollow-Stem					LOGGED BY CH						
Client: Imperial Oil Ltd	Contrac	Contractor: Lantech				ch		<b>REFERENCE</b> N/A m Above Datum						
DEPTH DILEVALS	PHIC DESCRIPTION		MONITOR DETAILS	WATER LEVEL	NUMBER	INTERVAL SA	TTYPE	VAPOUR (ppm)	COMMENTS					
C)       GRAVEL         -Brown gravel with sand         -Brown gravel with sand         -Brown state         -Brown silt with some sand         -Brown silt with some sand         -Brown silt with some sand         -Brown sandy silt. Comp         -Brown sandy silt. Comp         -Brown sandy silt. Comp         -Brown sandy silt. Comp         -Brown sandy silt. Comp         -Brown sandy silt. Comp         -Brown sandy silt. Comp         -Brown sandy silt. Comp         -Brown sandy silt. Comp         -Brown sandy silt. Comp         -Brown sandy silt. Comp         -Brown sandy silt. Comp         -Brown sandy silt. Comp         -Brown sandy silt. Comp         -Brown sandy silt. Comp         -Brown sandy silt. Comp         -Brown sandy silt. Comp         -Brown sandy silt. Comp         -Brown sandy silt. Comp         -Brown sandy silt. Comp         -Brown sandy silt. Comp         -Brown sandy silt. Comp         -Brown sandy silt. Comp         -Brown sandy silt. Comp         -Brown sandy silt. Comp         -Brown sandy silt. Comp         -Brown sandy silt. Comp         -Brown sandy silt. Comp      <	and silt. and silt. d. Damp. Compacted hard. N m) acted hard. Damp. No odour.	No			1		SS		Augered: 0-3.9 mbgs Refusal 4.8-5.0 mbgs EOH = 5.0 mbgs					



BOREHO	DLE LOG	<b>PROJECT:</b>	60438249					<b>BOREHOLE:</b> MW-16-01 1 of 1				
IOL Cost to	Closure	Northing: Easting:		4943103 414548					<b>E:</b> 14 December 2016			
Hubbards, N	NS amial Oil I tel	Methodology	y: Hollow-Stem					LOGGED BY CH				
		Contractor:						KEFI	ERENCE N/A III Adove Datum			
(m) STRATIGRAPH	STRATIGRAPHIC DESCI	RIPTION	MONITOR DETAILS	WATER LEVEI	NUMBER	INTERVAL SU	TYPE EVEN	VAPOUR (ppm)	COMMENTS			
1 - 2 - 3 - 5 - 5.6	FILL -Dark brown gravel with sand and silt. Dar compacted.  SILT AND SAND -Light brown silt and sand. Moist. Modera odour. No stain.	np. Moderately		- <u>V</u>					Augered: 0-5.55 mbgs WL = ~1.0 mbgs Bedrock at 5.55 mbgs EOH = 5.55 mbgs			



BOREHO	DLE LOG	PROJECT:	6043	3824	9		]	BOR	<b>EHOLE:</b> MW-16-02 1 of 1			
IOL Cost to	Closure	Northing: Easting:	Northing: 4943117 Easting: 414557					<b>DATE:</b> 14 December 2016				
Hubbards, N Client: Imp	IS erial Oil I td	Methodology: Hollow-Stem Contractor: Lantech						LOGGED BY CH <b>PEEPENCE</b> N/A m Above Datum				
		Contractor.	<u> </u>				/DT 1	F				
DEPTH (m)	STRATIGRAPHIC DESCI	RIPTION	MONITOR DETAILS	WATER LEVE	NUMBER	INTERVAL	<b>IPL</b> Э.а.	VAPOUR (ppm)	COMMENTS			
	FILL -Dark brown gravel with sand and silt. Dar compacted.  SILT AND SAND -Light brown silt and sand. Moist. Modera odour. No stain.	mp. Moderately			1		SS	0	WL = ~1.0 mbgs Sample: EX2-6 Analysis: PHC EOH = 3.0 mbgs			



BOREHO	PROJECT:	PROJECT: 60438249					<b>BOREHOLE:</b> MW-16-03 1 of 1							
IOL Cost to	Closure	Northing: Easting:		4943123 414530					DATE: 13 December 2016					
Hubbards, N	NS I CILLA	Methodolog	lethodology: Hollow-Stem					LOGGED BY CH						
Client: Imp	erial Oil Ltd	Contractor:	<u> </u>	Lantech				KEFERENCE N/A m Above Datur						
(m) STRATIGRAPHY	STRATIGRAPHIC DESCI	RIPTION	MONITOR DETAILS	WATER LEVEL	NUMBER	INTERVAL S	TYPE	VAPOUR (ppm)	COMMENTS					
	GRAVEL -Brown well-graded gravel, sand, and silt r boulders and cobbles throughout. Damp. M compacted.	nix with some Aoderately							Augered: 0-3.0 mbgs WL = ~1.0 mbgs EOH = 3.0 mbgs					



BOREH	OLE LOG	PROJECT:	604	3824	9			<b>BOREHOLE:</b> BH17-05 1 of 1				
IOL Cost to 64 Mill Lak <b>Client:</b> Imp	Closure e Rd No 2, Hubbards, NS perial Oil Ltd	Northing:N/AEasting:N/AMethodology:S.Spn./AugerContractor:Nova Drilling						DATE: 19 July 2017 LOGGED BY CH REFERENCE 41.41 m Above Datum				
DEPTH (m) (mASL)	STRATIGRAPHIC DESCI	RIPTION	MONITOR DETAILS	WATER LEVEL	NUMBER	INTERVAL SU	TYPE	VAPOUR (ppm)	COMMENTS			
0.9 40.5 ₁	SILT AND SAND -Silt and sand. Loose. Moist. Brown. BOULDER			_	1 2		SS	5 25	_			
1.2 40.2 1.4 40.0	SILT AND SAND -Silt with trace sand. Dense. Moist. Brown SAND -Sand. Dense. Moist. Brown.	and grey			3		SS	25	Slight hydrocarbon odour ~1.2-1.4 mbgs Sample: BH17-05 (1.2-1.8)			
39.6 2 2.4 39.0	-Silt and sand. Dense. Wet. Dark Brown.			-	5		SS	20				
3.8				-	6		SS	65 20	Sample: BH17-05 (3.0-3.6)			
37.6 4.2 37.2	BEDROCK			-					EOH = 4.2 mbgs			

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BORE	HOLE LOG	<b>PROJECT:</b>	604	3824	.9			<b>BOREHOLE:</b> BH17-06 1 of 1				
IOL Cost 64 Mill I Client: 1	to Closure Lake Rd No 2, Hubbards, NS Imperial Oil Ltd	Northing:N/AEasting:N/AMethodology:S.Spn./AugerContractor:Nova Drilling						DATE: 19 July 2017 LOGGED BY CH REFERENCE 41.46 m Above Datum				
DEPTH (m) (mASL)	AHdWadatigRAPHIC DESC	RIPTION	MONITOR DETAILS	WATER LEVEL	NUMBER	INTERVAL SU	TYPE HT	VAPOUR (ppm)	COMMENTS			
1 -	SILT AND SAND -Silty sand. Loose. Moist. Brown.			-	1		SS	20				
1.2 40.3 1.5 40.0	-Silt and sand. Hard. Moist. Brown.				3		SS	30	Sample: BH17-06 (1.2-1.8)			
1.8 39.7 2 -	SILT AND SAND -Silt and some sand. Dense. Wet. Brown.			-	4		SS	5	_			
					5		SS	20				
3 -					6		SS	5				
37.9	-Silt with trace sand. Very dense. Wet. Bro	own.		_	7		SS	5				
	1 - A - T - A - T - A - T - A - T - A - T - A - T - A - T - A - T - A - T - A - A - T - A - A - T - A - A - T - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A - A				8		SS	5	Sample: BH17-06 (4.2-4.8)			



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BORE	EHC	DLE LOG	<b>PROJECT:</b>	604	3824	.9			BOR	EHOLE: BH17-07 1 of 1			
IOL Cos 64 Mill <b>Client:</b>	st to Lake Imp	Closure e Rd No 2, Hubbards, NS erial Oil Ltd	Northing: Easting: Methodology Contractor:	y: S.S No	Spn./ va D	N, N, Aug rilli	/A /A ger ng		DATE: 20 July 2017 LOGGED BY CH REFERENCE 41.48 m Above Data				
DEPTH (m) (mASL)	STRATIGRAPHY	STRATIGRAPHIC DESC	CRIPTION	MONITOR DETAILS	WATER LEVEL	NUMBER	SAN INTERVAL	TYPE	VAPOUR (ppm)	COMMENTS			
0.2 41.3 0.6		GRAVEL -Gravel. Black. SILT AND SAND -Silt and sand. Medium dense. Dry. Brow -Silt and sand. Medium dense. Dry. Dark	n.			1		SS	30				
1		-Sin and sand. Medium dense. Dry. Dark	Ulowii.		-	3		SS	50	Sample: BH17-07 (1.2-1.8)			
1.8 39.7 2		BOULDER			-					Augered 1.8-2.4 mbgs			
2.4 39.1		SILT AND SAND -Sand and silt. Medium dense. Wet. Dark	brown and grey.			5		SS	60	Sample: BH17-07 (2.4-3.0)			
3.0 ₃ 38.5		SILT -Sandy silt. Stiff. Wet. Brown.			-	6		SS	15				
3.6 37.9 4		-Silt with trace sand. Hard. Wet. Brown.			-	7		SS	10	Sample: BH17-07 (3.6-4.2)			
4.3 37.2		BEDROCK				8		SS					



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PROJECT: Impe	PROJECT: Imperial Oil Cost to Closure - Eastern Canada		CLIENT: Imperial	Oil Ltd.	BORE	BOREHOLE NO: MW17-01						
LOCATION: 64 M	Vill Lake Rd No 2, Hubbar	rds, NS			PROJE	PROJECT NO.: 60438249						
CONTRACTOR:	Nova Drilling		METHOD: Split S	ipoon/Auger	ELEVA	ATION	(m):					
SAMPLE TYPE	GRAB	SHELBY TUBE	SPLIT SPOON	BULK		ECOVE	RY CORE					
BACKFILL TYPE	BENTONITE	GRAVEL	∭ SLOUGH	GROUT	⊠c∩⊓	INGS						
DEPTH (m) MELL INSTALLATION USC		SOIL DES	SCRIPTION		SAMADI E TVDE	SAMPLE #	COMMENTS	DEPTH (m)				
				CEDBY: A Duniav			End of borehole at 4.5 mbgs	1 2 3 4 5				
L O D	AECO	MC	REV	1EWED BY: J.Shea		COMPL	ETION DATE: 7/21/16					
Ĭ	•		PRC	WECT ENGINEER: A.Dugua	ay		Page 1	of 1				

PROJECT: Imperial Oil Cost to Clos	PROJECT: Imperial Oil Cost to Closure - Eastern Canada CLIE			BORE	BOREHOLE NO: MW17-02							
LOCATION: 64 MII Lake Rd No 2, H	lubbards, NS			PROJECT NO.: 60438249								
CONTRACTOR: Nova Drilling		METHOD: Split S	poon/Auger	ELEVA	10N (	(m):						
SAMPLE TYPE GRAB		SPLIT SPOON	BULK		COVER	RY CORE						
	E []GRAVEL	SLOUGH	GROUT		VGS	SAND						
DEPTH (m) USC SOIL SYMBOL	SOIL DE	SCRIPTION		SAMPLE TYPE	SAMPLE #	COMMENTS	DEPTH (m)					
0       1       1       1         -       -       -       -         -       -       -       -         -       -       -       -         -       -       -       -         -       -       -       -         -       -       -       -         -       -       -       -         -       -       -       -         -       -       -       -         -       -       -       -         -       -       -       -         -       -       -       -         -       -       -       -         -       -       -       -         -       -       -       -         -       -       -       -         -       -       -       -         -       -       -       -         -       -       -       -         -       -       -       -         -       -       -       -         -       -       -       -         -       <			GEDBY: ADuguay			End of borehole at 3.6 mbgs	1					
	=COM	PRC	IEVVED BY: J.Shea UECT ENGINEER: A.Dugua	y 0	UVPL	= 11UN DATE: 7/21/16 Page 1 (	of 1					
				I								
PRC	NECT:	Impe	erial C	il Cost to Closure -	Eastern Canada	CLIENT: Imperi	al Oil Ltd.	BOF	REI	IOL	E NO: MW17-03	
------------------------------------------------------	----------------------	--------	-------------	----------------------	----------------	----------------	--------------------	--------	-------------	----------	--------------------------------	-----------
LOC	ATION	: 64 I	VIII Lá	ake Rd No 2, Hubba	ards, NS			PRO	UEC	TNC	D.: 60438249	
	NTRAC	TOR:	Nova	a Drilling		METHOD: Split	Spoon/Auger		/AT	ION (	(m):	
SAM	1PLE T	YPE		GRAB		SPLIT SPOON	BULK		RE	COVER		
BAC	KFILL	IYPE		BENTONITE	GRAVEL	∭ SLOUGH	GROUT			IGS	SAND	
DEPTH (m)	NELL INSTALLATION	nsc	SOIL SYMBOL		SOIL DES	SCRIPTION			SAMPLE TYPE	SAMPLE #	COMMENTS	DEPTH (m)
DF TESTHOLE 60438249. HUBBARDS.GPJ. UMA.GDT 11/28/19		SM		SANDYSILT			XGEDBY: ADuguay				End of borehole at 3.9 mbgs	
00				AEC		Pf	ROJECT ENGINEER: A	Duguay			Page 1 (	of 1
									1			

BOREH	OLE LOG	<b>PROJECT:</b>	6043	3824	9		<b>BOREHOLE:</b> MW17-04 1 of 1						
IOL Cost to 64 Mill Lak Client: Imp	Closure e Rd No 2, Hubbards, NS perial Oil Ltd	Northing: Easting: Methodolog Contractor:	y: S.S No	Spn./ va D	N/ N/ Aug rillir	A A er ng	] ]	DATE: 19 July 2017 LOGGED BY CH REFERENCE 41.55 m Above Datu					
DEPTH (m) (mASL)	STRATIGRAPHIC DESC	RIPTION	MONITOR DETAILS	WATER LEVEL	NUMBER	INTERVAL 8	TYPE EVEN	VAPOUR (ppm)	COMMENTS				
	SILT AND SAND -Silt and sand. Medium Dense. Dry. Brow	'n.			1		SS	280	Hydrocarbon odour: 0-4.8 mbgs				
0.6 41.0	-Sandy silt. Medium Dense. Moist. Black-	brown.		ΞΨ	2		SS	115	0 Black stain ~0.6-1.2 mbgs Sample: MW17-04 (0.6-1.2)				
1.2 40.4	-Sandy silt. Hard. Moist. Dark Brown.				3		SS	20					
1.8 39.8 2	SAND -Sand. Dense. Wet. Brown.				4		SS	120	Sample: MW17-04 (1.8-2.4)				
2.4 39.2	SILT AND SAND -Silt with some sand. Medium stiff. Wet. I				5		SS	75	Grey stain ~2.2-2.4 mbgs				
3.0 38.6	SILT -Silt. Stiff. Wet. Brown.				6		SS	35	Sample: MW17-04 (3.0-3.6)				
					7		SS	25					
4 -					8		SS	45	Sample: MW17-04 (4.2-4.8)				



Printed:23 Aug 17



BORE	EHOLE LOG	PROJECT:	604.	3824	9			BOR	<b>EHOLE:</b> MW17-05 1 of 1				
IOL Cos 64 Mill <b>Client:</b>	st to Closure Lake Rd No 2, Hubbards, NS Imperial Oil Ltd	Northing: Easting: Methodolog Contractor:	y: S.S No	Spn./ va D	N/ N/ Aug rillii	A A er ng		DATE: 20 July 2017 LOGGED BY CH REFERENCE 41.53 m Above Datum					
DEPTH (m) (mASL)	AHdevalue       STRATIGRAPHIC DI	ESCRIPTION	MONITOR DETAILS	WATER LEVEL	NUMBER	INTERVAL SUPER	TYPE	VAPOUR (ppm)	COMMENTS				
0.6 40.9 1	SILT AND SAND         -Sand and silt. Medium Dense. Dry.         -Grey 'crusher-dust' gravel mixed in r         -Sand with trace silt. Very dense. Dr	Brown. near surface. y. Brown		- 7	1 2 3		SS SS SS	000000000000000000000000000000000000000					
1.5 40.0 1.8 39.7 2 2.4 39.1	BOULDER         SILT AND SAND         -Sand and silt. Dense. Moist. Brown         -Silt with some sand. Dense. Wet. Brown				4		SS	10	Sample: MW17-05 (2.4-3.0)				
3.0 38.5 3.3 38.2 4 4.2 37.3	BOULDER         SILT         -Silt with trace sand. Medium stiff. V         BEDROCK	Vet. Brown.			6		SS	5	Sample: MW17-05 (3.9-4.5)				

37.0	~~~				EOH = 4.5 mbgs

Printed:23 Aug 17



PROJECT: Imperial (	Dil Cost to Closure -	Eastern Canada	CLIENT: Imperial	Oil Ltd.	TEST	HOLEI	NO: MW19-01	
LOCATION: 64 MII L	ake Rd No 2, Hubba	irds, NS			PRO.	IECT N	0.: 60438249	
CONTRACTOR: Nov	a Drilling		METHOD: Split S	poon/Auger	ELEV	ATION	(m):	
SAMPLE TYPE	GRAB					RECOVE		
BACKFILL TYPE	BENTONITE	GRAVEL	<u>IIII</u> SLOUGH	GROUT		TINGS	[∴]SAND	
<ul> <li>DEPTH (m)</li> <li>DEPTH (m)</li> <li>USC</li> <li>SOIL SYMBOL</li> </ul>	SANDY GRAVEL	SOIL DES	SCRIPTION			SAMPLE TYPE SAMPLE #	COMMENTS	DEPTH (m)
				GEDBY: A.Duguay IEWEDBY: J.Shea			ETION DEPTI-I: 4.60 m ETION DATE: 5/1/19	1
DOG			PRC	JECT ENGINEER: A.D	uguay		Page 1	of 1
			I				<u> </u>	



# **Field Methodologies**

#### Soil Sampling

Grab soil samples were collected directly from the borehole sidewall, at shallow depths where daylighting occurred, or from the drill split spoon. During sampling the soil was initially utilized for screening and select soil samples were sent to the laboratory for analysis. Care was taken to ensure that samples were obtained from representative soil. Clean nitrile gloves were used for each sample to eliminate cross-contamination between sampling points. Field soil sampling equipment used was decontaminated with Alconox and distilled water between each use to minimize potential cross contamination between samples. Each sample was logged in the field for soil type, , colour, texture and visual evidence of impact by petroleum hydrocarbons. Following description and classification of each sample interval, each sample was split into two aliquots, one for field screening purposes and one for potential laboratory analysis. Sample aliquots for laboratory analysis were immediately placed in laboratory supplied containers, labelled and placed in an ice filled cooler. Sample aliquots used for screening purposes were placed in plastic bag and allowed to equilibrate for approximately 30 minutes, after which maximum headspace vapour readings in the sample bags were measured and logged.

#### Soil Sample Preservation

Soil samples were collected using one (1) tare weighted 40mL vial sealed with 10mL of MeOH preservative and one (1) soil sample collection device, consisting of either a variable straight plunger or a 10 gram T-Handled coring device which was stored in a sample shipping bubble bag.

Using the sample collection device provided, approximately 10 g of sample was collected as soon as possible after the surface of the soil or other solid material has been exposed to the atmosphere. Any soil remaining on the vial threads was quickly brushed off the vial and was immediately sealed with a septum and screw-cap. The sample vial was then placed in the laboratory provided bubble bag and stored on ice.

The collection of one additional sample in a 60 mL glass jar was also required for the determination of the percent moisture of the sample.

#### Monitoring Well Construction

Monitoring wells were constructed of 5 cm (2 inch) diameter schedule 40 PVC slotted screen, with a friction fit cap at the base. All screens were fitted with sufficient PVC riser pipe to bring the well installation to the ground surface. The monitoring pipes and screens were sealed in a protective plastic wrap from the manufacturer, and no glues or solvents were used to connect the pipe sections together. The annular space between the PVC screen and the borehole wall was filled with washed silica sand with bentonite seals above the PVC screened interval and the remainder of the annulus filled with sand pack to ground surface. Well installations were completed with metal casings which were secured with surrounding material. All installation and sampling equipment was cleaned between boreholes to prevent cross-contamination.

#### Groundwater monitoring and Development

#### Well Vapour Concentrations

Upon removal of the well cap, well vapours were immediately measured using a calibrated RKI Eagle device operated in the methane elimination mode. Measurements were recorded over 90 second intervals and the highest reading is observed by the technician and recorded on the appropriate measurement scale (parts per million by volume (ppm) or percentage of lower explosive limit (%LEL))

Calibration was tested daily using a Hexane (15% by volume) gas each day to ensure accuracy. The calibration test was considered failed if the results are not within  $\pm 10\%$  of the test gas; and therefore, a field recalibration was performed until the RKI passed the calibration check.

#### Water Level and NAPL Thickness

Groundwater static water levels and NAPL thickness (if present) was measured using a Solinst[™] interface meter.

#### Well Development and Purging

Groundwater monitoring wells were developed by removing groundwater from the monitoring well until the water returns sediment free. Before monitoring wells are sampled, the well is purged by removing a minimum of three (3) well volumes of water from the well. The removal of groundwater was completed using a hydrolift and low density 5/8" polyethylene WaterraTM dedicated tubing.

#### Groundwater Sampling

Monitoring well development was completed at newly installed monitoring well locations prior to sampling to remove any sediment and fluids that may have been introduced in the well and sand pack as a result of the drilling activities. Wells were developed by removing a minimum of three (3) well volumes of water using Waterra[™] tubing.

Prior to groundwater sampling at monitoring well locations, static groundwater level measurements were collected. An oil-water interface probe was used to measure the depth to groundwater and assess for the presence of non-aqueous phase liquid (NAPL) inside the well.

Samples were collected upon purging three (3) well volumes of groundwater to remove standing water and to draw a representative sample from the formation. If monitoring wells went dry during purging, they were allowed to recharge sufficiently before immediately collecting a groundwater sample. Groundwater removed from the wells during development and purging activities was stored on site using 55-gallon drums and/or 1,000L storage totes.

All groundwater samples were collected in pre-cleaned laboratory supplied containers and kept at or below a temperature of 10°C once sampled until submission to the laboratory. BTEX and VOC parameter samples were collected in 40mL vials with no headspace and TPH and PAH samples were collected in 250mL glass jars. Both sample jar types contained lab preservatives upon their receipt and preservative expiry dates were checked prior to use. Metals samples were collected in laboratory preserved vials and filtered in the field using a 0.45 micron filter media.

AECOM personnel followed strict sample handling practices, including the changing of disposable nitrile gloves and decontamination of sampling equipment between samples, to ensure the integrity of all the samples collected.

#### Decontamination

All equipment shared between sampling locations including (but not limited to) interface/water level tape was decontaminated with an Alconox soap and water mixture, followed by a rinse of distilled water and sprayed with methanol.

During the entire sampling program, new nitrile gloves were worn when handling all sampling equipment to prevent organic contamination during handling.

#### Laboratory Analysis

Soil and groundwater samples submitted to the laboratory were collected in the field using protocols that were designed to minimize the loss of volatile constituents and using sample containers provided by Maxxam Analytics Inc. (Maxxam). Soil and groundwater samples were placed in coolers with ice and delivered to Maxxam in Bedford, Nova Scotia.



# Appendix I

# REMEDIAL ACTION PLAN AECOM (2016)



# Remedial Action Plan 64 Mill Lake Road No. 2, Hubbards, Nova Scotia (PID: 60082138)

Imperial Oil Limited

#### Prepared by:

#### AECOM

1701 Hollis Street SH400 (PO BOX 576 CRO) Halifax, NS, Canada B3J 3M8 www.aecom.com 902 428 2021 tel 902 428 2031 fax

**Project Number:** 60438249-4.02

Date: January 2016

# THIS REPORT CONTAINS PROVISIONS LIMITING LIABILITY, THE SCOPE OF THE REPORT AND THIRD PARTY RELIANCE

These documents and the information contained therein are confidential, property of Imperial Oil and any disclosure of same is governed by the provisions of each of the applicable provincial and territorial Freedom of Information legislation, the Privacy Act (Canada) 1980-81-82-83, c. 111, Sch II"1", and the Access to Information Act (Canada) 1980-81-82-83, c.111, Sch II"1", as such legislation may be amended from time to time.



AECOM 1701 Hollis Street Halifax, NS B3J 3M8 www.aecom.com

902 428 2021 tel 902 428 2031 fax

January 6, 2016

Mr. McLean Inspector Specialist Nova Scotia Environment 13 First Street Yarmouth, NS, B5A 1S9

Dear Mr. McLean:

**Project No:** 60438249

Regarding: Remedial Action Plan – Revised – 64 Mill Lake Road No. 2, Hubbards, Nova Scotia (PID: 60082138)

AECOM Canada Ltd. is pleased to submit the revised Remedial Action Plan for the above noted site. Should you have any questions, or require additional information, please contact me at 902.428.2048.

Sincerely,

#### AECOM Canada Ltd.

1. 7 •

Timothy Bachiu, M.Sc., P.Geo. Project Manager, Environment Timothy.Bachiu@aecom.com

TB;lm Encl.

# **Distribution List**

# of Hard Copies	PDF Required	Association / Company Name

# **Revision Log**

Revision #	Revised By	Date	Issue / Revision Description
1	AECOM	January 6, 2016	Text updated as requested by IOL.

# **AECOM Signatures**

Report Prepared By:

Alex Duguay, BSc, EPt Project Scientist

Report Reviewed By:

Derek Heath, P.Geo. Senior Project Manager/ Hydrogeologist, Environment

# **Executive Summary**

The former Service Station at 64 Mill Lake Road will be remediated to Nova Scotia Environment (NSE) Environmental Quality Standards (EQS) Tier 1 for a commercial property with potable water and coarse grained soils as per request of the client. The selected remediation pathway for the Site is full property remediation and conditional closure is not being pursued as part of the Site remediation planning. The remediation will be achieved by the excavation of impacted soils that will be disposed of at an approved treatment facility. The excavation will be filled with clean material following excavation activities. Confirmatory soil samples will be collected from the excavation boundaries and base and analyzed for petroleum hydrocarbons.

Page

# **Table of Contents**

Statement of Qualifications and Limitations Letter of Transmittal Executive Summary

1.	Intro	duction	.1
2.	Site	nformation	. 1
	2.1 2.2 2.3 2.4	Site History Zoning Site Geology Site Status – Nova Scotia Environment	.1 .1 .2 .2
3.	Appl	icable Remediation Criteria	. 2
4.	Cond	eptual Site Model	. 2
	4.1	Contaminants of Concern 4.1.1 Soils 4.1.2 Groundwater	.2 .3 .3
	4.2 4.3	Contaminant Distribution         Exposure Pathways         4.3.1 Soil contact/ingestion         4.3.2 Leaching to potable water	.3 .4 .5 .5
5.	Rem	ediation Program	. 5
	5.1 5.2 5.3 5.4 5.5	Pre-Excavation Delineation Remedial Excavation Groundwater Management Excavation Confirmatory Soil Sampling. Site Reinstatement/Backfilling	. 6 . 6 . 7 . 7 . 7
6.	Thirc	I-Party Property Considerations	. 8
7.	Refe	rences	. 8

#### List of Tables

Table 1: Petroleum Hydrocarbon Impacted Soil Volume Estimates
---------------------------------------------------------------

#### Appendices

Appendix A. – Figures

Figure 4.01: Soil Analytical Results Figure 4.02: Soil Remediation Area

# 1. Introduction

AECOM Canada Limited (AECOM) was retained by Imperial Oil Limited (IOL) to complete a Remedial Action Plan (RAP) for the property located at 64 Mill Lake Road, Nova Scotia with a Property Identification Number (PID) 60082138, hereafter referred to as the Site.

The RAP identifies the remedial objectives for the Site and describes the remediation program to be implemented in order to obtain a full property remediation in accordance to PRO-600 of the Nova Scotia Contaminated Sites Regulations.

This RAP was prepared in accordance with the Nova Scotia Remedial Action Plan Protocol (PRO-600).

# 2. Site Information

The Site is generally rectangular in shape and is currently vacant, with the exception of six (6) monitoring wells, which were installed on the property on November 2003 (Dillon, 2003). The Site encompasses an area of approximately 1.19 acres. The topography of the Site is relatively flat and the region slopes gently to the east – towards Hubbards cove. The surrounding sites are serviced with private wells and septic. Land use in this region is residential, including one vacant lot. The Site and adjacent properties are currently covered by grass and gravel Site future land use is anticipated to be residential.

#### 2.1 Site History

The Imperial oil bulk plant operated on the Site from 1971 to 2002. The office/warehouse building, loading rack, pumps, eight (8) underground storage tanks (USTs), eleven (11) aboveground storage tanks (ASTs) removed between 1986 and 2002. The Site is currently vacant.

A Phase I Environmental Site Assessment (ESA) was completed on November 2003 by Dillon Consulting Limited (Dillon), a Phase II ESA on November 2003 by Dillon and in April 2013 by Conestoga-Rovers and Associates Limited (CRA). The 2003 Phase II ESA included the advancement of twenty (20) test pits and six (6) boreholes completed as monitoring wells and a small excavation in the former septic tank and pumping chamber area. Soil samples were collected and analyzed for petroleum hydrocarbon, polycyclic aromatic hydrocarbon (PAH) and metals concentrations. The 2013 Phase II ESA conducted by CRA consisted of advancing 4 test pits. Soil samples were analyzed for petroleum hydrocarbons.

#### 2.2 Zoning

The Site is identified by Service Nova Scotia and Municipal Relations (SNSMR) with Property identification (PID) 60082138 and covers approximately 1.19 acres. The Site is zoned as commercial.

The source property is located outside the municipal water and sewer service area. The Site contains a private potable drinking water well and septic tank and field which are no longer in use. Adjacent properties are supplied potable water via private potable water wells. The nearest potable well is located 15 meters north of the Site, followed by a second potable well 50 metres west of the Site. The Site is therefore considered potable for evaluation purposes.

There are no buildings currently located on the Site. The Site is not located within a protected wellfield or watershed area (CRA 2013).

#### 2.3 Site Geology

The Site is underlain by stony till and drumlins (Surficial Geology of The Province of Nova Scotia Map 92-3). Bedrock geology is defined as middle to late Devonian aged rock belonging to the Liscomb complex consisting of undivided material and biotite monzogranite (Geological Map of Nova Scotia, 2000). The Site ground cover consists of grass and asphalt.

The nearest surface water body is Hubbards Cove, located approximately 1,000 m from the Site. Groundwater flow is also anticipated to follow regional topography which is east towards Hubbards Cove. The depth to groundwater ranges from 1.4 to 3 mbgs.

#### 2.4 Site Status – Nova Scotia Environment

Previous reports have been submitted to NSE along with the Notification of Free Product Contamination FRM-100, Environmental Site Assessment Checklists CHK-200, CHK-300 and CHK-400.

On February 7, 2014 Nova Scotia Environment issued an Inspection Report and directives to Imperial Oil relating to site closure at the Site. Directives were listed, pursuant to the Environment Act 122A(1). On October 25, 2015, a second Inspection Report was issued in response to a FRM-400 request for extension, issued by AECOM. An overview of the compliance items listed was as follows:

- By October 4 2017, Complete a Record of site condition or a Declaration of Property Condition, as applicable in accordance with Ministerial Protocol(s);
- By October 4 2017, Complete a Record of site condition or a Declaration of Property Condition, as applicable in accordance with Ministerial Protocol(s);
- By October 4 2017, Complete a remedial action plan report in accordance with Ministerial Protocol(s).

# 3. Applicable Remediation Criteria

The 2013 Nova Scotia Environment (NSE) Contaminated Site Regulations are the applicable remediation criteria for Site, as per client project objectives. NSE Tier 1 Environmental Quality Standards (EQS) criteria specified in Table 1 A and 1B (NSE 2013) provide the applicable guidelines for the Site. Site characteristics that are used to determine the NSE Tier 1 EQS (NSE-EQS) are as follows: commercial land use, potable water supply and coarse grained soils.

**Figure 4.01** identifies two sets of criteria for comparison. The NSE-EQS are the applicable criteria based on the 2013 Notification of Contamination Protocol (PRO-100). The NSE-EQS are derived from the Atlantic PIRI criteria. The Atlantic PIRI criteria were updated in January 2015 (Atlantic PIRI 2015) and provide revised versions of Tier I and Tier II screening tables, including criteria for sites with potable water. The revised 2015 Atlantic PIRI criteria will likely be adopted by NSE within the timeframe of the cost to closure program; therefore, the Atlantic PIRI criteria will be included for reference use, but the NSE EQS criteria is the applicable remediation criteria for the Site.

# 4. Conceptual Site Model

#### 4.1 Contaminants of Concern

Petroleum hydrocarbons (PHC) in soils exceeding applicable criteria have been delineated on the Site. Figure 4.01 identifies the historic soil exceedances. Figure 4.02 provides an approximation of the horizontal extent of the petroleum hydrocarbon impacts.

PAH concentrations in soils above the applicable criteria were also detected at sample location TP2. This contamination will be addressed as soils are excavated to remediate the PHC impacts in this area.

4.1.1 Soils

Soil petroleum hydrocarbon results exceeding the 2013 NSE Tier I EQS guidelines for commercial sites with potable water and coarse grained soils are summarized on **Figure 4.01** and include:

- TPH, Toluene, Ethylbenzene and Xylenes exceedances, as reported in historical soil sample analytical data, exist at the Site:
  - o TP-2 (0.0 to 1.5 mbgs)
    - Ethyl-benzene, toluene, TPH
  - o TP-5 (0.5 to 3.0 mbgs)
    - Ethyl-benzene, Xylenes and TPH
  - o TP-9 (0.0 to 0.5 mbgs)
    - Ethyl-benzene
  - o TP-11 (0.4 to 2.5 mbgs)
    - Ethyl-benzene
  - TP-24 (0.5 to 3.5 mbgs)
    - Ethyl-benzene, TPH
  - o ST E-WALL (1.0 to 3.0 mbgs)
    - TPH

Soil polycyclic aromatic hydrocarbon (PAH) results exceeding the 2013 NSE Tier I EQSs for commercial sites with potable water and coarse grained soils include:

- TP-2 (0.0 to 1.5 mbgs)
  - Naphthalene, 1-Methylnapthelene, 2-methylnapthelene

Soil metals concentrations were below the 2013 NSE Tier I EQSs for commercial sites with potable water and coarse grained soils.

#### 4.1.2 Groundwater

Groundwater conditions have been assessed for petroleum hydrocarbons, PAHs and metals. Historical petroleum hydrocarbon analytical results are summarized in the 2013 Groundwater Monitoring and Sampling Report (CRA 2014).

Additional groundwater sampling (BTEX/TPH) was conducted by AECOM in October and November of 2015. Groundwater petroleum hydrocarbon concentrations have not exceeded the applicable NSE Tier 1 EQS since March 31, 2010 with the exception of samples collected at MW6 on October 14, 2015.

Groundwater samples were collected and analyzed for PAH and metals in 2015 (CRA 2015). All of the submitted groundwater samples yielded analytical results below the applicable 2013 NSE Tier I EQSs.

#### 4.2 Contaminant Distribution

Actual vertical and horizontal limits of excavation will be determined in the field by AECOM staff based on soil vapour screening (PID) readings, soil observations (olfactory and soil staining) and/or use of field testing such as

quantabs. Actions to minimize the potential impacts to human health, the environment, and to the project include the rapid disposal of impacted soil offsite at an approved location.

Table 1 summarizes the estimated impacted soil depth intervals (m), areas (m²) and volumes (m³) as well as estimated clean soil soils depth intervals (m), areas (m²) and volumes (m³). These estimates are used to calculate the volume of impacted soil at the Site to be approximately 1,825 m³. See **Figure 4.01** for the hydrocarbon impacts areas and estimated contamination plume.

#### Table 1: Petroleum Hydrocarbon Impacted Soil Volume Estimates

Point sample ID	Estimate d area of impacted soils (m ² )	Analytical parameter exceeding criteria	Estimated clean soil depth interval (m)	Estimated clean soil volume (m ³ )	Estimated PHC impacted soil depth interval (m)	Estimated PHC impacted volume (m ³ )
			AREA A			
TP9 ¹	50	Ethyl- benzene, >C10-C21	-	-	0.0-1.0	50
TP11 ¹	80	Ethyl- benzene, >C10-C16	0.0-0.5	40	0.5-3.0	200
TP5	210	Ethyl- benzene, xylenes, >C10-C16, TPH	0.0-0.5	455	0.5.5	1 205
TP24	310	Ethyl- benzene, C6-C10, >C10-C16, TPH	0.0-0.5	155	0.5-5	1,395
			AREA B			
TP2 ¹	32.5	Ethyl- benzene, toluene, C6-C21	-	-	0.0 – 3	97.5
ST E- WALL ¹	33.5	>C10-C16	0.0-1.0	33.5	1.0-3.0	67
Totals (Area A + Area B)	495	-	-	210	-	1,762.5

Notes:

(1) A test pit will be conducted at the location of historical exceedances. Soil will be screened for VOCs and soil samples will be submitted for BTEX/TPH analysis. Soil will be excavated if laboratory testing determines PHC concentrations are above the NSE Tier I EQSs for commercial, potable, coarse grained sites.

#### 4.3 Exposure Pathways

The potential human health exposure pathways considered at the Site include the following:

- Soil contact/ingestion
- Leaching to potable groundwater/potable groundwater drinking pathway
- Inhalation of indoor air/vapour migration from groundwater to indoor air

#### 4.3.1 Soil contact/ingestion

The Site and adjacent properties are currently covered by grass and gravel; therefore, soil contact/ingestion is considered to be an active exposure pathway.

#### 4.3.2 Leaching to potable water

The Site and adjacent properties are provided water and sewer services through private infrastructure; therefore, leaching to potable water is considered to be an active exposure pathway.

#### 4.3.3 Inhalation of Indoor Air

Currently, there are no building structures on Site and therefore the indoor air inhalation exposure pathway is considered to be not active on Site.

# 5. Remediation Program

The remediation program will include the ex-situ excavation and off-site disposal of impacted soil to an approved disposal facility in order to achieve the requirements of full property remediation under 2013 Nova Scotia Environment (NSE) Contaminated Site Regulations.

Conditional closure is not being pursued as part of the Site remediation planning. As a result, risk management planning is not required for the Site. The following items were not used as part of the remediation plan structure: site specific target levels calculated within a risk assessment; soil vapour assessment data; and air monitoring assessment data. Also, there will not be any subsurface injections, including microbial solutions, oxygen release chemicals, chemical oxidizing solutions, etc. intended to be used as part of this remediation plan.

Any impacted soil; sediment; and groundwater or surface water not treated on-Site under the remedial action plan (RAP), will be sent to an approved treatment or disposal site. Any backfill material that is used must be of acceptable quality and must meet remediation criteria for the Site.

Initial preparatory remediation work at the Site will include:

- Site-specific health and safety planning
- Site mobilization;
- Complete applicable permitting;
- Site security setup;
- Equipment mobilization;
- Utility mark outs;
- Marking & staking excavation areas; and
- Decommissioning all wells within excavation areas.

Prior to initiating the ex-situ excavation remedial program, a pre-excavation delineation is planned to be completed to further delineate petroleum hydrocarbon impacts in soil on Site.

#### 5.1 **Pre-Excavation Delineation**

A test pitting program is planned to be conducted prior to the excavation program for a number of purposes. This will be done to investigate areas of historical environmental soil quality exceedances and to determine if current soil conditions meet the applicable NSE Tier I EQSs. The test pits will be advanced to depth of 3.0 - 5.0 mbgs as indicated. All test pits will be used to provide data for waste characterization.

Test pit locations will take place at the following historical exceedance locations:

- TP-2 (0.0 to 1.5 mbgs)
  - Ethyl-benzene, toluene, TPH
- TP-9 (0.0 to 0.5 mbgs)
  - Ethyl-benzene
- o TP-11 (2.0 to 2.5 mbgs)
  - Ethyl-benzene
- ST E-WALL (1.0 to 3.0 mbgs)
  - TPH

The planned parameters to be submitted for laboratory analysis for these test pits are:

- For Depth confirmation BTEX/TPH and PAH at TP-2
- For Waste Characterization Metals, PAHs, VOCs, as required.

#### 5.2 Remedial Excavation

The excavation process will include the following general steps:

- 1. Excavation of soils below applicable criteria and stockpiling/sampling of these soils on-Site;
- 2. Excavation of soils above applicable criteria and disposal of the soils at an approved facility;
- 3. De-watering of the excavations and managing the water on-Site with treatment and discharge or disposal of water at an approved facility; as required;
- 4. Excavation confirmatory soil sampling; and
- 5. Site Reinstatement/Backfilling excavations with clean fill and soils stockpiled on Site.

Actual vertical and horizontal limits of excavation will be determined in the field by the AECOM field staff based on indications of environmental impacts, the presence of groundwater, and other factors. Actions to minimize the potential impacts to human health, the environment, and to the project include the rapid disposal of impacted soil offsite at an approved location.

Soil excavation at the site is anticipated to be executed within the approximate limits indicated on **Figure 4.02**. Contaminated soil is to be transported and disposed of at facility approved to handle and dispose of contaminated soils. AECOM field staff will maintain manifests or manifest summaries from the receiving facility for all materials transported off-site. The manifest summaries will describe the type of materials received, origin (location), volume or tonnage, date received, and transporter identification. AECOM field staff will also document the volume, source and environmental quality of any backfill material (on-Site or off-site) used on Site.

The on-site contractor shall provide, install and maintain all necessary erosion and sediment control measures. Provide dust control and ensure the work does not impact the adjacent environment. The contractor will also be responsible for installation of erosion and sedimentation controls at the perimeter of all work areas, etc., sufficient to ensure there are no deleterious materials leaving the work areas. Control measures will be put in place to ensure there are no impacts from their work on the immediate environment, watercourses or habitats. In addition, the contractor is required to take the necessary actions to prevent loss of contaminated soil during transportation, as applicable, including the possibility of contaminated soil from tires. In order to reduce water content within soils being transported off site, soils excavated beneath the groundwater horizon will be stockpiled on an elevated area (above the groundwater horizon) within the excavation area to allow water to drain from soils. Also, dump truck bed liners will be used for soils excavated beneath the groundwater horizon to ensure potentially impacted water from the trucks does not impact off-site property during soil transport.

Excavated soil to be disposed off-site will be placed directly on a dump truck for transport. If the excavated soil is to be disposed elsewhere on the site, it first will be stock piled in secondary containment to prevent leaching to the underlying soils, wind transport or washout of the excavated soil. Soil to be stock piled will be segregated based on physical observations (i.e. the visual/olfactory condition of the soil), as well as field screening measurements (i.e. PID or Quantabs). It is recommended that as material is excavated it be placed into three stock pile areas designated as potentially non-impacted, potentially impacted, and definitely impacted. Sampling a soil pile can pose problems with respect to obtaining samples that are representative of the entire pile and not simply the surface of the pile. Necessary precautions and preventative measures will be taken to prevent water (ground and surface) contamination. If the excavated soil is to be disposed elsewhere on the site, it first will be stock piled on plastic tarps or in containers. The soil is then covered with tarps to prevent wind and rain from blowing or washing it away and to keep workers from coming into contact with the impacted soil material. Necessary precautions and preventative measures will be taken to prevent blowing or washing it away and to keep workers from coming into contact with the impacted soil material. Necessary precautions and preventative measures will be taken to prevent water (ground and surface) contamination.

#### 5.3 Groundwater Management

Historical groundwater analytical results indicate that exceedances of the applicable 2013 NSE Tier I EQSs for groundwater at a commercial, potable, coarse grained site exist at MW6. The groundwater elevations at the Site typically range between 0.5 and 1.5 m below ground surface. The impacted soils at the Site are present in depths from the surface to 3.5 m below ground surface. The soils at the Site are composed primarily of sand with trace silt and some cobbles and boulders throughout. The relatively coarse grained texture of the soils and the depths of the planned excavations in relation to the groundwater elevations indicate the excavations will have infiltration of groundwater. The infiltration of groundwater will require de-watering of the excavations during Site remediation activities.

Recent groundwater monitoring suggests the groundwater quality at the Site is within applicable criteria. However, detectable concentrations of petroleum hydrocarbons in groundwater are present at the Site. To prevent possible impact to groundwater or the municipal storm water system, a waste water management plan for surface, groundwater and dewatering will be implemented. The physical management of water will include containment structures to ensure surface runoff that comes in contact with excavated soils will be retained on Site. The removal of groundwater infiltrating the excavations will be removed using dedicated pumps stored on-site prior to treatment or disposal. The water removed from the excavations is planned to be treated on-site and discharged to the municipal storm-water system. Discharges will be sampled at regular intervals to ensure the discharge is compliant with applicable laws and regulations. Alternative to on-site treatment of water will be considered as an option. The final determination of methods used to manage water from the Site will be selected based on logistical, technical and regulatory considerations.

#### 5.4 Excavation Confirmatory Soil Sampling

Confirmatory soil sampling of the sidewalls and floors of the excavations to ensure the impacted area has been successfully remediated following the NSE Confirmation of Remediation Protocol (PRO-700).

#### 5.5 Site Reinstatement/Backfilling

The following requirements will be applied to potentially non-impacted soil piles that were created during on-site soil remedial activities that are intended for re-use as on-site backfill material.

A. For potentially non-impacted soil piles containing <500 m³ of soil:

- Perform field screening (physical observations and field vapour measurement) on one discrete sample from every 10 m3 of soil.
- Submit one discrete sample for confirmatory lab analysis for every 50 m3 of soil (i.e. one lab sample for every five field screening samples). The worst case field screening sample should be selected for submission to the laboratory.
- If laboratory analysis confirms that the soil contained in the pile meets the remedial targets, this material can be used to backfill remedial excavations at the site.

B. For potentially non-impacted soil piles containing >500 m3 of soil, split the pile into a number of piles that all contain 200-500 m3. Use the sampling methodology described above for soil piles containing this amount of material.

All imported backfill material will need to be sampled by AECOM prior to being used on Site. A minimum of two samples from each proposed source and fill type will be collected and submitted for laboratory analysis, with a minimum sampling frequency of one sample being analyzed for every additional 160 m³ of backfill material imported to the site. The samples will be submitted for analysis of PHC, PAHs, VOCs, metals.

Compaction will be "nominal" with both bucket and track packing employed. Lifts of 1 foot will be placed in the excavation and leveled with the bucket of the excavator. The material will then be packed into place with the force of the bucket and rolled over with weight of the excavator. This compaction method should be sufficient to avoid significant subsistence or erosion and to allow for vehicular traffic on the Site in the future.

# 6. Third-Party Property Considerations

Not applicable.

# 7. References

Atlantic Partners in RBCA Implementation (PIRI) 2015. Atlantic RBCA Version 3. Atlantic Canada Tier I Risk-Based Screening Level Table. January, 2015.

NS Environment. Notification of Contamination Protocol PRO-100, Revised July 6, 2013.

- NS Environment. Environmental Site Assessment for Limited Remediation Protocol PRO-200, Revised July 6, 2013.
- NS Environment. Phase 1 Environmental Site Assessment Protocol PRO-300, Revised July 6, 2013.
- NS Environment. Phase 2 Environmental Site Assessment Protocol PRO-400, Revised July 6, 2013.
- NS Environment. Remediation Levels Protocol PRO-500, Revised July 6, 2013.
- NS Environment. Remedial Action Plan Protocol PRO-600, Revised July 6, 2013. NS Environment. Confirmation of Remediation Protocol PRO-700, Revised July 6, 2013.
- Phase I Environmental Site Assessment, 64 Mill Lake Road, Hubbards, Nova Scotia. Final Report. Dillon Consulting Limited. November 2003

- Phase II Environmental Site Assessment, 64 Mill Lake Road, Hubbards, Nova Scotia. Final Report. Dillon Consulting Limited. November 2003
- Phase II Environmental Site Assessment, Former Imperial Oil Bulk Plant (SAP Location No. 88000331) 64 Mill Lake Road, Hubbards, Nova Scotia. Conestoga-Rovers and Associates Limited. April 2013

# **Statement of Qualifications and Limitations**

The attached Report (the "Report") has been prepared by AECOM Canada Ltd. ("Consultant") for the benefit of the client ("Client") in accordance with the agreement between Consultant and Client, including the scope of work detailed therein (the "Agreement").

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- represents Consultant's professional judgement in light of the Limitations and industry standards for the preparation of similar reports;
- may be based on information provided to Consultant which has not been independently verified;
- has not been updated since the date of issuance of the Report and its accuracy is limited to the time period and circumstances in which it was collected, processed, made or issued;
- must be read as a whole and sections thereof should not be read out of such context;
- was prepared for the specific purposes described in the Report and the Agreement; and
- in the case of subsurface, environmental or geotechnical conditions, may be based on limited testing and on the assumption that such conditions are uniform and not variable either geographically or over time.

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#### AND THIRD PARTY RELIANCE

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The investigation undertaken by AECOM with respect to this report and any conclusions or recommendations made in this report reflect AECOM's judgment based on the site conditions observed at the time of the site inspection on the date(s) set out in this report and on information available at the time of preparation of this report. This report has been prepared for specific application to this site and it is based, in part, upon visual observation of the site, subsurface investigation at discrete locations and depths, and specific analysis of specific chemical parameters and materials during a specific time interval, all as described in this report. Unless otherwise stated, the findings cannot be extended to previous or future site conditions, portions of the site which were unavailable for direct investigation, subsurface locations which were not investigated directly, or chemical parameters, materials or analysis which were not addressed. Substances other than those addressed by the investigation described in this report may exist within the site, substances addressed by the investigation may exist in areas of the site not investigated and concentrations of substances addressed which are different than those reported may exist in areas other than the locations from which samples were taken.

If site conditions or applicable standards change or if any additional information becomes available at a future date, modifications to the findings, conclusions and recommendations in this report may be necessary.

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NSE File #:

#### **Remedial Action Plan Checklist**

For all sites undergoing L1, L2 or L3 Limited Remediation or Full property

#### Instructions

- · All relevant sections of this Checklist must be completed and accompany the Remedial Action Plan.
- The signature required on this form is from the managing Site Professional.
- All regulatory protocols must be followed and all forms/checklists must be completed separately for each property. This means
  that a source property and an impacted third party property must have all documents filed separately. Once the source property or
  impacted third party property is identified by the check box below, all subsequent reference on this form/checklist are to that site owner.
- · Forms/checklists must be complete prior to filing with the Minister.

#### 1 - Site Location and Contact Information

Site Location	Site Address _64 Mill Lake Road	City Hubbards		
Mandatory must	Parcel Identification Number (PID)60082138	Postal Code B0J1T0		
be completed.	Additional information, Lot No., GPS, <i>GPS: 44.636304, -64.077580</i> location relative to landmark, etc.			
Property Owner	Name Tiffany Wong	Phone		
Mandatory must	Email Tiffany.Wong@esso.ca	Fax		
be completed.	Company Name (if applicable) Imperial Oil	City		
	Mailing Address 1 Duncan Mill Road	Postal Code <u>M3B 1Z2</u>		
Recognized Agent	Name	Phone		
This section is	Email	Fax		
Optional.	Company Name	City Postal Code		
	Mailing Address			
Contact for	Name	Phone		
correspondence if different than above.	Email	Fax		
This section is	Company Name (if applicable)	City		
Optional.	Mailing Address	Postal Code		

Details provided on this form are applicable to 🖸 Source Property OR 🗅 Impacted Third Party Property

Site Professional				
Contact Information	Name Derek Heath	Phone <u>(902)428-2028</u>		
	Emailderek.heath@aecom.com	Fax (902)428-2031		
	Company Name AECOM Canada Ltd.	City Halifax		
	Mailing Address 1701 Hollis Street, P.O. Box 576 CRO	Postal Code B3J 3M8		

#### 2 - Remedial Action Plan Requirements

Rem	edial Action Plan Requirements	Supporting Information provided	Refe Docu	rence Iment
Con Pag has	firm the following information has been submitted to the Department. Indicate Report and e Number where information is documented. The Site Professional must ensure all work been completed in accordance with PRO-600, <i>Remedial Action Plan Prolocol</i> .	Yes	Section	Page Number
1	A summary of all data collected on contaminants identified during the environmental site assessments	র্ত্র		
2	Description of contaminants of concern and the affected media (e.g., soil, groundwater, sediment, or surface water)	A		
3	The selected remediation pathway, either limited remediation or full property remediation; in the case of limited remediation, the appropriate category (L1, L2, or L3)	A		
4	Identification of the remediation criteria in accordance with PRO-500, Remediation Levels Protocol, which will form the basis for confirming completion of remediation	A		



### **Remedial Action Plan Checklist**

Rem	edial Action Plan Requirements	Suj Info pr	pporting ormation ovided	Reference Document		
Conf Page has	irm the following information has been submitted to the Department. Indicate Report a e Number where information is documented. The Site Professional must ensure all wor been completed in accordance with PRO-600, <i>Remedial Action Plan Protocol.</i>	nd K	Yes	Section	Pa Nur	ige nber
5	Detailed description of the remediation to be conducted, including consideration of physical/chemical limitations, construction requirements, and environmental implications		ي ک			
6	Is Conditional Closure being pursued as part of the remediation? 🗆 Yes 🖬 No					
	If yes, any required exposure management controls are in place in accordance with the PRO-500,Remediation Levels Protocol				8	
7	A Risk Management Plan, in accordance with PRO-600, <i>Remedial Action Plan Protocol</i> , describing long term exposure management measures, when conditional closure is plann	ied.				
8	Documentation and derivation of any site specific target levels calculated in a risk assessment in accordance with the PRO-500, <i>Remediation Levels Protocol</i> , including use of Atlantic RBCA methodology for petroleum hydrocarbons.	N/A				
9	Where soil vapour and indoor air sampling are conducted, confirmation that the latest version of the Atlantic RBCA Guidance for Soil Vapour and Indoor Air Assessments, as referenced in PRO-500, <i>Remediation Levels Protocol</i> , has been followed.	N/A				
10	Any intended subsurface injections, including microbial solutions, oxygen release chemicals, chemical oxidizing solutions, etc.	N/A	D			
Impa	acted Third-Party Pronerty Considerations				1315	wii pu
lf "lr	npacted Third Party Property" is selected in Section 1 this section must not be completed			Ye	es	No
1	Are there impacted third party properties?		_	C	ב	۶.
	If yes, a Remedial Action Plan for the impacted third party property(ies) has been include property Remedial Action Plan, as required by PRO-600, <i>Remedial Action Plan Protocol.</i>	d within th	ne source	C	נ	
2	Have or will impacted third parties be remediated to unconditional criteria?			C	נ	
	If no, written consent for the application of a Tier 2 conditional SSRS, or long term risk m	anageme	nt on the	C	2	

#### 3 - Declaration

#### Site Professional Declaration

I acknowledge it is an offence under Section 158 of the *Environment Act* to provide false or misleading information, and confirm to the best of my knowledge and belief the information provided in this form and supporting documentation is true and accurate and complies with the relevant provisions of the *Environment Act* and *Contaminated Sites Regulations*. By signing below, I confirm my qualifications and liability insurance as a site professional as prescribed within the regulations.

A Reports and checklist/s have been provided to the affected property owner.

impacted third party property(ies) has been obtained and is provided.

Name (Print)	Derek Heath	Professional Registration Number/Stamp 0029 (APGNS)
Signature	patter	Date <u>12/18/2015</u>
	Site Professional	MM/DD/YYYY

Return completed form and associated documents to the Department of Environment Regional Office. To find your Regional Office go online at *novascotia.ca/nse/dept/division.emc.asp#central* or call 1-877-936-8476





# PHOTOGRAPH LOG

Site Location: 64 Mill Lake Road, Hubbards, NS **Project No.** 60438249

Photo No.	Date:				
1	21-Oct-16				
Direction Photo Taken:					
South					
Description					
Remedial Ex	cavation #1:				
View of stock material that and later use material.	piled was covered d as backfill				









# PHOTOGRAPH LOG

Site Location: 64 Mill Lake Road, Hubbards, NS **Project No.** 60438249

# Photo No. Date: 26-Oct-16 Direction Photo Taken: East East Description: Remedial Excavation #1: View of Surge backfill material being imported to the site and used as backfill. Image: Construction of the site and used as backfill.



# Photo No.Date:426-Oct-16Direction Photo Taken:EastDescription:

Remedial Excavation #1:

View of Surge backfill material being placed inside the excavation until fill is above the water table.





# PHOTOGRAPH LOG

Site Location: 64 Mill Lake Road, Hubbards, NS **Project No.** 60438249

# Photo No. Date: 01-Nov-16 Direction Photo Taken: West West Description: Remedial Excavation #1: View facing west of the excavation backfill activities after their completion and compaction.





View facing south-west of the excavation backfill activities after their completion and compaction.





# PHOTOGRAPH LOG

Site Location: 64 Mill Lake Road, Hubbards, NS **Project No.** 60438249



Description:

Remedial Excavation #2:

South-west view of remedial excavation wall.





Photo No.

9

South-west

**Description:** 

compaction.

**Facility Name:** Former Imperial Oil Bulk Plant

# **PHOTOGRAPH LOG**

Project No. 60438249



Site Location:

64 Mill Lake Road, Hubbards, NS

### Photo No. Date: 10 07-Aug-18 **Direction Photo Taken:** South **Description:** Remedial Excavation #2: View facing south of the excavation backfill activities after their completion and compaction.




				·		·						) _				
Ticket #	Date Time In	Company	Vehicle	Material	Location	Source	Gross	Tare	Net Units	Unit Unit Name Price	Net Price	Fees	Tota	Chg -	Oper	
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489178	10/19/2016 0:43:23	GROUNDFIX	600	SOILFIX	GROUNDF C	SF 16 37	48260	18160	30100 30.10	TONNE10.0000	\$ 301.00	\$ 0.00	\$ 301.	· > 2 00	AEA	
489181	10/19/2016 0:55:06	GROUNDFIX	600	SOILFIX	GROUNDF C	SF 16 37	48410	16880	31530 31.53	TONNE10.0000	\$ 315.30	\$ 0.00	\$ 315	30	AEA	
489188	10/19/2016 1:28:15	GROUNDFIX	600	SOILFIX	GROUNDF C	SF 16 37	45400	16950 2	28450 28.45	TONNE10.0000	\$ 284.50	\$ 0.00	\$ 284	20 20	AEA	
489195	10/19/2016 1:44:43	GROUNDFIX	. 009	SOILFIX	GROUNDF C	SF 16 37	48100	19210 2	28890 28.89	TONNE10.0000	\$ 288.90	\$ 000	\$ 288		AEA	
489240	10/19/2016 4:16:40	GROUNDFIX	600	SOILFIX	GROUNDF C	SF 16 37	39760	16150 2	23610 23.61	TONNE10,0000	\$ 236.10	000 \$	\$ 236	, <del>,</del> , ,	AFA	
489252	10/19/2016 4:57:50	GROUNDFIX	600	SOILFIX	GROUNDF C	SF 16 37	47450	18100 2	29350 29.35	TONNE10.0000	\$ 293.50		\$ 233	۲ ، 20	AFA	
489257	10/19/2016 5:19:38	GROUNDFIX	600	SOILFIX	GROUNDF C	SF 16 37	45250	16410 2	28840 28.84	TONNE10,0000	\$ 288.40		\$ 288.	~ ~	AFA AFA	
489259	10/19/2016 5:20:27	GROUNDFIX	600	SOILFIX	GROUNDF CS	SF 16 37	45630	16820 2	28810 28.81	TONNE10.0000	\$ 288 10		280	• ≻	AFA	
489272	10/19/2016 5:54:25	GROUNDFIX	600	SOILFIX	GROUNDF CE	SF 16 37	47130	19080	28050 28.05	TONNE10 0000	\$ 280.50		\$ 280 8	· >	ARA AFA	
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											•	-				

Grand Total Net Wt:

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Page

Transactions sorted by Material COLCHESTER BALEFILL FAC 10/19/2016 to 10/19/2016 Company ="GROUNDFIX",

From

Report Date: 10/19/2016

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oad Number:						PCOC
roject Number : H CS	F-16-037				Metals	6.2
xpiry date: Decembe	r 31 , 2016	· · · · · · · · · · · · · · · · · · ·	· · · · ·		ТРН	X
Section I		GENERATOR				
				,		
enerator Name:	Imperial Oil Limited	· · · · · · · · · · · · · · · · · · ·	Site Location:	Mill Lake R	load	
enerator Address:	505 Quarry Park Blvd S.E	11. 11. 1 <u>. 11.</u>	Site Address:	64 Mill Lak	e Road	····
algary Alberta		· · · ·	Hubbards	, NS		
				an	71211	14/
enerator Phone No:	587-476-4630		Site Phone No:	-jod	117-10	<u>-0f</u>
escription of Waster	Hydrocarbon Impacted Soil	from former Bu	k Facility	¹		
NOV DIALIA	invariocarbon impacted Soll			chat -	15 19	2011
enerator's Representatj	ve Name	Signature	Durts	S S	hipment Date (m	m/dd/yyyy)
Section II			ER			
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PIGON						
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olchester Soil Recycli	ng Facility		Phone No: 1-90	2-293-8080		_
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COLCHESTER SOLID WASTE 1 CHURCH ST. TRURO, N.S. B2N 3Z5 PHONE 897-3150

Waste In - Charge Scale Ticket

Ticlet # : 489272 Dat: : 10/19/2016 Operator : AEA Tim: In : 15;54:25 Tim: Out : 16:04:24

Veh:cle : 600 GROUNDFIX TRUCK

Customer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45 mill lake road Material : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37

Location : GROUNDFIX

Gross Wt : 47130 kg MAN WT. Tar: Wt : 19080 kg

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Net Wt : 28050 kg

Units : 28.05 TONNES Unit price: \$ 10.00 Net Amount: \$ 280.50 Haul Chg : \$ 0.00 TOT/L DUE : \$ 280.50

Total Today: 10 Loads 281.67

HST # 128957719 (COMPOST) HOURS: MONIAY thru FRIDAY 8:00 - 4:00 SATURDAY 8:00 - 12:00



Load Number: 9			· · · ·	landa an taon 1990. Iomraidh an Airtean	PCOC
Project Number : H CSF-16-037				Metals	
xpiry date: December 31 , 2016				ТРН	x
Section I	GENERATOR			e i pada	
				· · ·	· · · · · · · · · · · · · · · · · · ·
Generator Name: Imperial Oil Limited	· · ·	Site Location:	Mill Lake	Road	
Concretor Address: 505 Quarry Park Rhyd S E		Site Address	64 Mill I -	ake Boad	
	· · · · · · · · · · · · · · · · · · ·	Site Address.			
Calgary Alberta	·	Hubbards,	NS		
Senerator Phone No: 587-476-4630		Site Phone No:	90	2 717-4	BUL
		· · · · ·			
Description of Waste: <u>Hydrocarbon Impacted So</u>	il from former Bul	k Facility		· · · · · · · · · · · · · · · · · · ·	
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Generator's Representative Name	Signature	-FJOE	Sector Streems	Shipment Date (	mm/dd/yyyy)
Section II	TRANSPORT	ER Telleste Secure	l (Dianad	Chained)	
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Truck & Transfer		Drivers	Initials		
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/ehicle License No./Prov/: <u>\</u>		Gross V	Veight		
Acknowledgment of Receipt of Materials.		Net We	eignt iaht		
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Receiver Comments:		• •		9	) ( 31
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COLCHESTER SOLID WASHE 12 1 CHURCH ST. TRURO,N.S. B2N 325 PHONE 897-3150

Waste In - Charge (cale Ticket

Ticlet #: 489259 Date : 10/19/2016 Operator : AEA Time In : 15:20:27 Time Out : 15:23:22

Veh:cle : 600 GROUNDFIX TRUCK

Customer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45 mill lake road Material : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37

Location : GROUNDFIX

Grois Wt : 45630 kg MAN WT. Tar: Wt : 16820 kg

Net Wt : 28810 kg

Units : 28.81 TONNES Unit price: \$ 10.00 Net Amount: \$ 288.10 Haul Chg : \$ 0.00 TOT/L DUE : \$ 288.10

Total Today: 9 Loads 253.62

HST # 128957719 (COMPOST) HOURS: MONIAY thru FRIDAY 8:00 - 4:00 SATURDAY 8:00 - 12:00

Signature: *** Reprinted Ticket ***



oad Number:	6	· · · · ·		· · · · · · ·	· · · · · · · · · · · · · · · · · · ·	РСОС
roject Number : H CS	F-16-037		· · · · ·		Metals	
kpiry date: Decembe	31 , 2016		• • • • • • • • • •		ТРН	x
Section I		GENERATO	R. ::		n in star	en de la companya de la companya de la companya de la companya de la companya de la companya de la companya de La companya de la companya de la companya de la companya de la companya de la companya de la companya de la comp
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enerator Name:	Imperial Oil Limited		Site Location	: <u>Mill Lake</u>	e Road	
enerator Address:	505 Quarry Park Blvd S.E.		Site Address	64 Mill I	ake Road	
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algary Alberta	<u> </u>		HUDD	ards, NS		<u>n an an an an an an an an an an an an an</u>
enerator Phone No:	587-476-4630	· · ·	Site Phone N	o: <u>987</u>	JI7 40	06
escription of Waste:	Hydrocarbon Impacted Soil	from former Bu	Ik Facility	1111		<b>.</b>
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iver Name/Title:	DRIVER	· · · · · ·	Dri	vers Initials		
ione No .: 771-129	5 Truck No: 02	······································				
hicle License No./Prov.	436720	<u>.</u>	Gro	oss Weight		
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COLCHESTER SOLID WASTE 1 CIURCH ST. TRURG, N.S. B2N 325 PHONE 897-3150

Waste In - Charge {cale Ticket

Ticlet #: 489257 Date : 10/19/2016 Operator : AEA Time In : 15:19:38 Time Out : 15:20:05

Vehicle : 600 GROUNDFIX TRUCK

Customer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45 mill lake road Material : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37

Location : GROUNDFIX

Gross Wt : 45250 kg MAN WT. Tare Wt : 16410 kg MAN WT.

Net Wt : 28840 kg

Unit s : 28.84 TONNES Unit price: \$ 10.00 Net Amount: \$ 288.40 Hau! Chg : \$ 0.00 TOT/L DUE : \$ 288.40

Total Today: 8 Loads 224.81

HST # 128957719 (COMPOST) HOURS: MONIAY thru FRIDAY 8:00 - 4:00 SATURDAY 8:00 - 12:00



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Load Number:	7					PCOC
Project Number : H C	SF-16-037	· · · · · · · · · · · · · · · · · · ·			Metals	
Expiry date: Decemb	er 31 , 2016		E Sec.		ТРН	x
Section I		GENERATOR	······································			
Generator Name:	Imperial Oil Limited		Site Location:	1ill Lake	Road	
Generator Address:	505 Quarry Park Blvd S.E		Site Address: <u>6</u>	i4 Mill La	ke Road	
Calgary Alberta			Hubbards, NS	5		
Generator Phone No:	<u>587-476-4630</u>		Site Phone No:	900	7170	(19)
Description of Waste: Alton Day Marcan Generator's Representat	Hydrocarbon Impacted So	bil from former Bull	Facility	H I	Shipment Date	<u> ギー                                   </u>
Section II		TRANSPORTE	R			<u> </u>
Name: 1146 Address: 1176	ER Tandem SIZE: Truck&Pony Truck & Transfer	r	Tailgate Secured ( Drivers Ini Access to facility 8	Pinned o tials landfill	or Chained) via Exit 18 o	ff HWY 104
Driver Name/Title: Phone No.: Vehiele License No./Prov	LORNE MAS Truck No:	<u>5221</u> 94	Drivers Ini Gross Weig	tials 1ht		
Acknowledgment of Re	ceipt of Materials.	1	Tare Weigl Net Weigh	it _		
Driver Signature	Shipment Date (mm/d	id/yyyy)			en de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composicinde la composición de la composición de la composición de la compo	
Section III		DESTINATION				
Colchester Soil Recycl Mingo Road, Kemptown, Receiver Comments:	ing Facility Nova Scotia B2N 5B1		Phone No: 1-902-2	93-8080	47	7450
	Cell	1	wr#. Г			
I hereby certify that the foregoing is true and acc	above named material has purate	been accepted and	to the best of my knowledge $\mathcal{A}$	owledge	the	9 11
Name of Authorized Ac	jent fl.	Signature	<u>//</u>		Receipt Date	(mm/dd/yyyy)
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COLCHESTER SOLID WASTE 1 CLURCH ST. TRURO, N.S. B2N 325 PHONE 897-3150 Waste In - Charge cale Ticket Ticlet # : 489252 Dat: : 10/19/2016 Operator : AEA Time In : 14:57:50 Time Out : 14:58:02 Vehicle : 600 GROUNDFIX TRUCK Customer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45 mill lake road Mat(rial : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37 Location : GROUNDFIX Gross Wt : 47450 kg MAN WT. Tar: Wt : 18100 kg MAN WT. Net Wt : 29350 kg Units : 29.35 TONNES Unit price: \$ 10.00 Net Amount: \$ 293.50 Haul Chg : \$ 0.00 TOTIL DUE : \$ 293.50 Total Today: 7 Loads 195.97 HST # 128957719 (COMPOST) HOURS: 10NIAY thru FRIDAY 8:00 - 4:00 ATI RDAY 8:00 - 12:00 mature: Reprinted Ticket ***

1. 8. --



Project Number : H CSF-16-037       Metals         xpiry date: December 31, 2016       TPH         Section I       GENERATOR         ienerator Name:       Imperial Oil Limited       Site Location:       Mill Lake Road         ienerator Name:       Imperial Oil Limited       Site Location:       Mill Lake Road         enerator Address:       505 Quarry Park Blvd S.E       Site Address:       64 Mill Lake Road         algary Alberta       Hubbards, NS         enerator Phone No:       587-476-4630       Site Phone No:       902 HP 4000         escription of Waste:       Hydrocarbon Impacted Soil from former Bulk Facility       Metals         Metals       Metals       Metals	
Image: Section I     GENERATOR       ienerator Name:     Imperial Oil Limited     Site Location:     Mill Lake Road       ienerator Address:     505 Quarry Park Blvd S.E     Site Address:     64 Mill Lake Road       algary Alberta     Hubbards, NS       enerator Phone No:     587-476-4630     Site Phone No:     902 717 4000       escription of Waste:     Hydrocarbon Impacted Soil from former Bulk Facility       Mex. D.M.W.M.     Mex. D.M.Mon	
Section I       GENERATOR         ienerator Name:       Imperial Oil Limited       Site Location:       Mill Lake Road         ienerator Name:       505 Quarry Park Blvd S.E       Site Address:       64 Mill Lake Road         ienerator Address:       505 Quarry Park Blvd S.E       Site Address:       64 Mill Lake Road         algary Alberta       Hubbards, NS         enerator Phone No:       587-476-4630       Site Phone No:       902 717 4000         escription of Waste:       Hydrocarbon Impacted Soil from former Bulk Facility         Mex Jumu       Mey Jum On Refer	
enerator Name: Imperial Oil Limited Site Location: Mill Lake Road enerator Address: 505 Quarry Park Blvd S.E Site Address: 64 Mill Lake Road algary Alberta Hubbards, NS enerator Phone No: 587-476-4630 Site Phone No: 902 717 4000 escription of Waste: Hydrocarbon Impacted Soil from former Bulk Facility Hex Jung	
Imperial Oil Limited       Site Location:       Mill Lake Road         ienerator Address:       505 Quarry Park Blvd S.E       Site Address:       64 Mill Lake Road         algary Alberta       Hubbards, NS         enerator Phone No:       587-476-4630       Site Phone No:       902 717 4000         escription of Waste:       Hydrocarbon Impacted Soil from former Bulk Facility         Mex Jumu       Mey Jum On Refer	
Imperial Oil Limited       Site Location:       Mill Lake Road         ienerator Address:       505 Quarry Park Blvd S.E       Site Address:       64 Mill Lake Road         algary Alberta       Hubbards, NS         enerator Phone No:       587-476-4630       Site Phone No:       902 717 4000         escription of Waste:       Hydrocarbon Impacted Soil from former Bulk Facility         Mex Jumu       Mey Jum On Below	
enerator Address: <u>505 Quarry Park Blvd S.E</u> Site Address: <u>64 Mill Lake Road</u> <u>algary Alberta</u> Hubbards, NS enerator Phone No: <u>587-476-4630</u> Site Phone No: <u>902 717 4000</u> escription of Waste: <u>Hydrocarbon Impacted Soil from former Bulk Facility</u> <u>Hex Junium</u> <u>Aleyins on Behal</u>	
algary Alberta Hubbards, NS enerator Phone No: 587-476-4630 Site Phone No: 902 717 4000 escription of Waste: Hydrocarbon Impacted Soil from former Bulk Facility Hex July on Below	
enerator Phone No: <u>587-476-4630</u> escription of Waste: <u>Hydrocarbon Impacted Soil from former Bulk Facility</u> <u>Hex JMMM</u>	<u>* 10.00</u> . 20. <b>2</b>
enerator Phone No: <u>587-476-4630</u> Site Phone No: <u>902 717 400</u> escription of Waste: <u>Hydrocarbon Impacted Soil from former Bulk Facility</u> <u>Hex July</u> <u>Aley on Below</u>	7
escription of Waste: <u>Hydrocarbon Impacted Soil from former Bulk Facility</u>	0
escription of Waste: <u>Hydrocarbon Impacted Soil from former Bulk Facility</u>	
TIEX Malian allerton on beauting	
enerator's Representative Name Signature	
Signature at Job Shipment Date (mr	1/uu/yyyy)
Section 11 TRANSPORTER TRANSPORTER Tandem Tailgate Secured (Pinned or Chained)	
LOAD SIZE: Truck&Pony	
Truck & Transfer	
ame: <u>/34n/,*4</u>	
adress: Access to facility & landfill via Exit 18 off HV	/Y 104
river Name/Title: Detrick diaman	
none No.: Truck No: (	
ehicle License No./Prov.: Gross Weight	
Acknowledgment of Receipt of Materials. Tare Weight	
Net Weight	
$\mathcal{L}$	
Driver Signature Snipment Date (mm/dd/yyyy)	
Section III DESTINATION	
olchester Soil Recycling Facility	
ingo Road, Kemptown, Nova Scotia B2N 5B1	ITAR
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regoing is true and accurate	
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COLCHESTER SOLID WASTE 1 CHURCH ST. TRURO,N.S. B2N 325 PHONE 897-3150

Waste In - Charge {cale Ticket

Ticlet # : 489240 Date : 10/19/2016 Operator : AEA Time In : 14:16:40 Time Out : 14:17:28

Vehicle : 600 GROUNDFIX TRUCK

Customer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45 mill lake road Material : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37

Location : GROUNDFIX

Gro:s Wt : 39760 kg MAN WT. Tar: Wt : 16150 kg

Net Wt : 23610 kg

Units : 23.61 TONNES Unit price: \$ 10.00 Net Amount: \$ 236.10 Haul Chg : \$ 0.00 TOT/L DUE : \$ 236.10

Total Today: 6 Loads 166.62

HST # 128957719 (COMPOST) HOURS: MONLAY thru FRIDAY 8:00 - 4:00 SATURDAY 8:00 - 12:00

Signature:_______ *** Reprinted Ticket ***



oad Number: 5			· · · · · · · · · · · · · · · · · · ·		PCOC
Project Number : H CSF-16-037				Metals	
xpiry date: December 31 , 2016				ТРН	x
Section I	GENERAT	OR			
					<del>ان</del>
					· · · · ·
ienerator Name: <u>Imperial Oil Limited</u>	<u>/                                     </u>	Site Location:	Mill Lake Road	··.:	
enerator Address: 505 Quarry Park Bl	/d S F	Site Addrocci		 	
		Site Address.	64 MIII Lake Ro	80	
algary Alberta		Hubbards,	NS		
enerator Phone No: 587-476-4630	· · · · · · · · · · · · · · · · · · ·	Site Phone No	002 =	17 11	Int.
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escription of Waste: <u>Hydrocarbon Impact</u>	ted Soil from former	Bulk Facility		f Galaine destantes.	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
HPY DIAGUANA	al	120		119	aut_
enerator s Representagive Name	Signature		Shipn	nent Date (m	m/dd/yyyy)
Section II	TRANSPO	RTER	an an an an an an an an an an an an an a		
LOAD SIZE: Truck&Pon	y	* Tailgate Secured	l (Pinned or Ch	ained)	
Truck & Truck	ansfer	Km K Drivers	Initials	· · · ·	المراجع رجاري
ame: <u>And Anne</u>	<u>A</u>				
Humisted Hickey		Access to facility	/ & landfill via E	xit 18 off H	WY 104
iver Name/Title:	WERMU	Drivers	Initials		
ione No.: 902-1759-1485 Truck No:	205 5		······································		
chicle License No./Prov. 412-56-165	6	Gross W	/eight		
Acknowledgment of Receipt of Materials.		Tare We	eight		
en 10 19 2	alla	Net we	gnt		· · · · · · · · · · · · · · · · · · ·
Driver Signature Shipment Date (r	nm/dd/yyyy)				
Continue Tra					
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Chester Soil Recycling Facility		Phone No: 1-902	-293-8080		
ceiver Comments:				UI	1(0)
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			- <u> </u>		V 1
Name of Authorized Agent	Signature		Recei	pt Date (mm	/dd/yyyy)
Name of Authorized Agent	Signature		Recei	pt Date (mm	/dd/yyyy)

COLCHESTER SOLID WASTE 1 CHURCH ST. TRURO, N.S. B2N 325 PHONE 897-3150

Waste In - Charge {cale Ticket

Ticlet # : 489195 Date : 10/19/2016 Operator : AEA Time In : 11:44:43 Time Out : 11:44:55

Vehicle : 600 GROUNDFIX TRUCK

Customer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45 mill lake road Material : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37

Location : GROUNDFIX

Gro:s Wt : 48100 kg MAN WT. Tar: Wt : 19210 kg

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Net Wt : 28890 kg

Total Today: 5 Loads 143.01

HST # 128957719 (COMPOST) HOURS: MONIAY thru FRIDAY 8:00 - 4:00 SATURDAY 8:00 - 12:00

Signature:



Load Number:	I <u>7</u>				· · · · ·	PCOC
Project Number : H CSI	-16-037	· · · · · ·			Metals	
xpiry date: December	31,2016				ТРН	x
Section I		GENERATO	R			
enerator Name:	Imperial Oil Limited		Site Location:	Mill Lake	Road	
enerator Address:	505 Quarry Park Blvd S.E	<u> </u>	Site Address:	64 Mill La	ke Road	
algary Alberta			Hubbards	, NS		
	· · · · · · · · · · · · · · · · · · ·			(da)	230	ant
Generator Phone No:	587-476-4630	· · ·	Site Phone No:	705	<i>FI</i> / 10	106
Description of Montos	I forder and the set Taxaba at a d	ren i frins i B				
Alar Autoria		in from former Bo		Beholk	······································	
Generator's Representativ	ve Name	Signature	at Ta		70 1/9 Shipment Date (i	mm/dd/yyyy)
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Driver Name/Title:	4 M. Moster	<b>^</b>	The Drivers	Initials		
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ehicle License No./Prov.:	<u> </u>		Gross	Neight		
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Driver Signature	Shipment Date (mm/do	ј/уууу)			· · · · · · · · · · · · · · · · · · ·	
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leceiver Comments:	NUVA SCULIA DZIN SDI				47	1(1)
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COLCHESTER SOLID WASTE 1 CHURCH ST. TRURO,N.S. B2N 3Z5 PHONE 897-3150

Waste In - Charge {cale Ticket

Ticlet #: 489188 pate: 10/19/2016 Operator: AEA Time In: 11:28:15 Time Out: 11:28:39

Veh:cle : 600 GROUNDFIX TRUCK

Customer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45 mill lake road Material : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37

Location : GROUNDFIX

Gro:s Wt : 45400 kg MAN WT. Tar: Wt : 16950 kg

Net Wt : 28450 kg

Units : 28.45 TONNES Unit price: \$ 10.00 Net Amount: \$ 284.50 Haul Chg : \$ 0.00 TOT/L DUE : \$ 284.50

Total Today: 4 Loads 114.12

HST # 128957719 (COMPOST) HOURS: MONIAY thru FRIDAY 8:00 - 4:00 SATURDAY 8:00 - 12:00

Signature:______ *** Reprinted Ticket ***



oad Number:		4			r	PCOC
roject Number : H C	SF-16-037	· · · ·			Metals	
xpiry date: Decemb	er 31 , 2016				ТРН	×
Section I		GENERAT	DR			· · · · · · · · · · · · · · · · · · ·
·	· · · · ·					
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enerator Name:	Imperial Oil Limited	· · · · · ·	Site Location:	Mill Lake	Road	
anaratan Address						-
enerator Address:	SUS QUARTY PARK BIVO S.E	······································	Site Address:	64 MIII Li	ake Road	
algary Alberta			Hubbards,	NS		
enerator Phone No	587-476-4630		Sita Phone No.	902	217 (100	<i>i.</i>
cherdeor mone No.	<u> </u>		Site Phone No:		11/ 1000	<u></u>
escription of Waste:	Hydrocarbon Impacted So	il from former E	Sulk Facility			
lev Duancas	on Behalf it	al	1,777		1/3 1/9	1 Anto
enerator's Representation	tive Name Tal	Signature		<u> </u>	Shipment Date (	mm/dd/yyy
Section II		TRANSPO	RTER	•	· · · · ·	<u> </u>
TRANSPORT	ER Tandem		Tailgate Secure	d (Pinned	or Chained)	
LOAD	SIZE: IFUCK&Pony Truck & Transfer		An Drivers	Initiale	· · · ·	
ame: SWR	OSS TRUCKIN	6	Dirvers	Indais		
dress: PLV r	nDUTH	<b>~</b>	Access to facilit	y & landfil	l via Exit 18 off	HWY 104
		/				
river Name/Title:	KEUIN WOOD	el	Drivers	Initials		• • • •
none No.: 771-129	Truck No: $\frac{\partial L}{\partial A}$					
NICLE LICENSE NO./Prov	<u>436747</u>		Gross V	Veight		
ACKIIOWIOUGIIIEIIL OI KE	ceipt of Materials.	1	iare W	eignt iaht	···	<u> </u>
KINN	10 19 2016			igire (		
Driver Signature	Shipment Date (mm/do	d/yyyy)				•
Section III		DESTINATI	ON			···· ·
olchester Soil Recycl	ing Facility		Phone No: 1-902	2-293-8080		
ngo Road, Kemptown,	Nova Scotia B2N 5B1				48	(11)
ceiver Comments:		· · · · · · · · · · · · · · · · · · ·				
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Name of Authorized Ad	ient/	Signature		- : '	Receipt Date (~	m/dd/www
Name of Authorized A	jent	Signature		-	Receipt Date (m	ım/dd/yyyy

COLCHESTER SOLID WASTE * 1 CHURCH ST. TRURO,N.S. B2N 3Z5 PHONE 897-3150

Waste In - Charge :cale Ticket

Ticlet # : 489181 Date : 10/19/2016 Operator : AEA Time In : 10:55:06 Time Out : 10:55:20

Veh:cle : 600 GROUNDFIX TRUCK

Customer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45 mill lake road Material : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37

Location : GROUNDFIX

Gross Wt : 48410 kg MAN WT. Tare Wt : 16880 kg MAN WT.

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Net Wt : 31530 kg

Units : 31.53 TONNES Unit price: \$ 10.00 Net Amount: \$ 315.30 Haul Chg : \$ 0.00 TOT/L DUE : \$ 315.30

Tot:l Today: 3 Loads 85.67

HST # 128957719 (COMPOST) HOURS: MONIAY thru FRIDAY 8:00 - 4:00 SATURDAY 8:00 - 12:00

Signature:



Project Number : H CSF-16-037         Expiry date: December 31 , 2016         Section I         Generator Name:       Imperial Oil Limited         Generator Address:       505 Quarry Park Blvd S.E         Calgary Alberta       Generator Phone No:	GENERATOR	Site Location: Site Address:	<u>Mill Lake</u>	Metals TPH Road	×
Expiry date: December 31, 2016         Section I         Generator Name:       Imperial Oil Limited         Generator Address:       505 Quarry Park Blvd S.E         Calgary Alberta       Generator Phone No:         587-476-4630       587-476-4630	GENERATOR	Site Location: Site Address:	<u>Mill Lake</u>	Road	×
Section 1         Generator Name:       Imperial Oil Limited         Generator Address:       505 Quarry Park Blvd S.E         Calgary Alberta       Generator Phone No:         587-476-4630	GENERATOR	Site Location: Site Address:	<u>Mill Lake</u>	Road	
Generator Name:       Imperial Oil Limited         Generator Address:       505 Quarry Park Blvd S.E         Calgary Alberta         Generator Phone No:       587-476-4630		Site Location: Site Address:	<u>Mill Lake</u>	Road	
Generator Name:       Imperial Oil Limited         Generator Address:       505 Quarry Park Blvd S.E         Calgary Alberta		Site Location: Site Address:	<u>Mill Lake</u> 64 Mill Li	Road	
Generator Address:       505 Quarry Park Blvd S.E         Calgary Alberta         Generator Phone No:       587-476-4630		Site Address:	64 Mill La		
Calgary Alberta Generator Phone No: <u>587-476-4630</u>	. <u></u>			ake Road	· · · · ·
Generator Phone No: 587-476-4630		Hubbards,	NS		
	· ·	Site Phone No:			
Description of Waste: Hydrocarbon Impacted Soil fro	om former Bull	<b>- Earrilit</b> y			
Alex Duquan on Reparts			<u> </u>		1 201
Génerator's Representative Name JoL	Signature		- 	Shipment Date (n	nm/dd/yyyy
Section II	TRANSPORT	R			
Name: KING Address: DICTOU NS		Access to facility	& landfil	l via Exit 18 off I	<del>I</del> WY 104
Driver Name/Title: Phone No. Vehicle License No./Prov.: PR369/ Acknowledgment of Receipt of Materials		Drivers I Gross W	nitials eight		
Driver Signature Shipment Date (mm/dd/yw		Net Wei	jht		
Soction III					·
	DESTINATION				
Colchester Soil Recycling Facility Mingo Road, Kemptown, Nova Scotia B2N 5B1 Receiver Comments:		Phone No: 1-902	293-8080	482	260
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Poregoing is true and accurate	natufe	left		Receipt Date (mi	m/dd/yyyy)
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COLCHESTER SOLID WASTE 1 CHURCH ST. "TRURO,N.S. B2N 3Z5 PHONE 897-3150

Waste In - Charge (cale Ticket

Ticlet # : 489178 Date : 10/19/2016 Operator : AEA Time In : 10:43:23 Time Out : 10:44:51

Vehicle : 600 GROUNDFIX TRUCK

Customer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45 mill lake road Material : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37 Location : GROUNDFIX Gross Wt : 48260 kg MAN WT. Tare Wt : 18160 kg Net Wt : 30100 kg

Units : 30.10 TONNES Unit price: \$ 10.00 Net Amount: \$ 301.00 Haul Chg : \$ 0.00 TOTIL DUE : \$ 301.00

Total Today: 2 Loads 54.14

HST # 128957719 (COMPOST) HOURS: MONLAY thru FRIDAY 8:00 - 4:00 SATURDAY 8:00 - 12:00

Sigrature:______ *** Reprinted Ticket ***



Load Number:						PCOC
Project Number : H C	SF-16-037				Metals	T
Expiry date: Decemb	er 31 <i>.</i> 2016				ТРН	X
Section I		GENERATOR				ini internationalise
Generator Name:	Imperial Oil Limited		Site Location:	Mill Lake R	oad	
Generator Address:	505 Quarry Park Blvd S.E		Site Address:	64 Mill Lak	e Road	:
Calgary Alberta		Čen in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet in internet internet in internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet internet inter	Hubbards	, NS		· · · · · · · · · · · · · · · · · · ·
Generator Phone No:	587-476-4630		Site Phone No:	902	717 4	006
Description of Waste:	Hydrocarbon Impacted So	il from former Bu	<u>k</u> Facility	•••		
Alex Dugue Generator's Representation	<u>tive Name of ID</u>	Signature	$\sum \rightarrow$	C	10 1 (9 hipment Date (r	<b>1 20%</b> mm/dd/yyyy)
Section II TRANSPORT	TER Tandem SIZE: Truck&Pony		ER Tailgate Secure	d (Pinned or	· Chained)	
Address: Driver Name/Title: Phone No.: Vehicle License No./Prov Acknowledgment of Re	$\frac{p_{ATV}}{r_{uck}} = \frac{k}{2}$ $\frac{r_{uck}}{r_{uc}} = \frac{1}{2}$ $\frac{r_{uc}}{r_{uc}} = \frac{1}{2}$ $\frac{r_{uc}}{r_{uc}} = \frac{1}{2}$ $\frac{r_{uc}}{r_{uc}} = \frac{1}{2}$	-02112 - V	Access to facilit	t <b>y &amp; landfill v</b> s Initials Weight /eight	/ia Exit 18 off	HWY 104
Driver Signature	19 10 2016 Shipment Date (mm/de	d/yyyy)	Net We	eight		
Section III		DESTINATIO	N		· · · · · · · · · · · · · · · · · · ·	·
<b>Colchester Soil Recycl</b> Mingo Road, Kemptown, Receiver Comments:	l <b>ing Facility</b> Nova Scotia B2N 5B1		Phone No: 1-90	2-293-8080	403	300
I hereby certify that the	Cell	peen accepted and	WR#	knowledge th		
Name of Authorized Ag		Signature	lyflid		Receipt Date (m	im/dd/yyyy)
			~		: · · · · · · · · · · · · · · · · · · ·	

1 CHURCH ST. TPURO, N.S. B2N 3Z5 PHON 897-3150 Waste In - Charge {cale Ticket Ticlet # : 489167 Date : 10/19/2016 Operator : AEA Tim: In ; 10:18:29 Time Out : 10:18:40 Veh:cle : 600 GROUNDFIX TRUCK Customer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45 mill lake road Material : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37 Location : GROUNDFIX Gross Wt : 40300 kg MAN WT. Tar: Wt : 16260 kg MAN WT. Net Wt : 24040 kg Units : 24.04 TONNES Unit price: \$ 10.00 Net Amount: \$ 240.40 Haul Chg : \$ 0.00 בול היה את את היו לא עוד היה הוא היה היה היה היה את היה את היה היה היה את היה את היה את היה את היה את היה את TOTIL DUE : \$ 240.40 Total Today: 1 Loads 24.04 HST # 128957719 (COMPOST) HOURS: MONDAY thru FRIDAY 8:00 - 4:00 SATI RDAY 8:00 - 12:00

COLCHESTER SOLID WASTE

Signature:

			Oper	AEA AEA AEAA AEAA	AEEA AEEA AEEA AEEA							
	•		Chg	· · · ·	->>>>>>					,	•	. ·
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		Page	Fees	0000000 0000000 0000000000000000000000	• • • • • • • • • • • • • • • • • • •	\$ 0.00 \$ 0.00					7. 1. 1. <b>6</b>	
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	/2016		Company	Soll 1 Groundfry Groundfry Groundfry Groundfry Groundfry Groundfry Groundfry	GROUNDFIX GROUNDFIX GROUNDFIX GROUNDFIX GROUNDFIX GROUNDFIX GROUNDFIX		354.05	•	·		· · ·	•
	ort Date: 10/20		Date Time In	SOILFIX 10/20/2016 9:35:44 10/20/2016 9:35:44 10/20/2016 9:53:10 10/20/2016 0:16:56 10/20/2016 0:36:52 10/20/2016 0:52:11 0/20/2016 0:52:11 0/20/2016 0:52:11 0/20/2016 0:52:11	0/20/2016 3:27:20 0/20/2016 4:23:63 0/20/2016 4:23:65 0/20/2016 4:37:41 0/20/2016 5:19:17	t: 354.05 Tickets:	Net Wt :		3. 1911 -	· · · · ·		. :
	Repc	•	Ticket #	Material: 489290 489292 489301 489300 489303 489313 489313 489313	489351 1 489367 1 489369 1 489369 1 489369 1 489369 1 489396 1 489396 1 489396 1 70fal Tickets	Total Net WI Grand Total	Grand Total		yuzsaki (⊅	•		



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#### SOIL MANIFEST FOR BIOREMEDIATION

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Drojoct Number 11	SE 16 027		• • • • •		
Project Number : H C	<u>5F-16-U37</u>			Metals	
Expiry date: Decemb	er 31 , 2016			ТРН	X
Section I		GENERATOR	n. ≠ 1 - 1	· · · · · · · · · · · · · · · · · · ·	
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Generator Name:	Imperial Oil Limited		Site Location:	Mill Lake Road	
		•			
Generator Address:	505 Quarry Park Blvd S.E	· · · · · ·	Site Address:	64 Mill Lake Road	
Calgary Alberta		· · · · · · · · · · · · · · · · · · ·	Hubbards	<u>, NS</u>	
		÷.,	· · ·	CARD D.D. IL	
Generator Phone No:	587-476-4630		Site Phone No:	902-111-90	006
Desirinting - Citie	10.1.1		i	· · ·	
Description of Waste:	Hydrocarbon Impacted Sol	I from former Bul	k Facility	<u> </u>	· · · ·
<u><u><u>UANICE</u> Dheo</u></u>	ive Name	(Janua)	LINOA.		TZOIC
		on behalf	07 IO/		mm/aa <u>/yy</u> y
Section II	'ED Tandom	TRANSPORT	ER		
LOAD	SIZE: Truck&Pony			d (Pinned or Chained)	
	Truck & Transfer		Drivers	Initials	
Name: <u>SUKC</u>	SSTRUCKIN	(-			
Address:	npath	··· · · · ·	Access to facilit	y & landfill via Exit 18 off	HWY 104
REIN War	al parta			- 14. 13 - 14. 13	•
Phone No : 77/-12	Truck Nation	····	Univers	Initials	
Vehicle License No /Prov			Gross	Neight	· . ·
Acknowledgment of Re	ceipt of Materials.		Tare W	eight	
Sim	4. <u> </u>		Net We	ight	
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Driver Signature	Shipment Date (mm/dd	Ι/γγγγ)			
Continue TTT	·		No. No. of States		
Section 111		DESTINATION	Contractor and Contractor and Contractor and Contractor and Contractor and Contractor and Contractor and Contra Contractor and Contractor	an an an an an an an an an an an an an a	
<b>Colchester Soil Recycl</b>	ing Facility		Phone No: 1-90	2-293-8080	<b>N N</b>
Mingo Road, Kemptown,	Nova Scotia B2N 5B1		and the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second sec	YU	/// r `
Receiver comments.				[ ] [ ]	110
	Cell		WR#		
I hereby certify that the	above named material has b	een accepted and	to the best of my	knowledge the	
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Name of Authorized A	<u>ient</u> -	Signature /	(~)	Receipt Date (m	/  //
				Receipt Date (II	in y uu yyyy
	-				

COLCHESTER SOLID WASTE 1 CHURCH ST. TRURO, N.S. B2N 3Z5 PHONE 897-3150

Waste In - Charge {cale Ticket

Ticlet #: 489410 Date : 10/20/2016 Operator : AEA Time In : 15:19:17 Time Out : 15:40:51

Veh:cle : 600 GROUNDFIX TRUCK

Customer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45

Material : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37

Location : GROUNDFIX

Gro:s Wt : 44110 kg MAN WT. Tar∈ Wt : 16460 kg

Net Wt : 27650 kg

Units : 27.65 TONNES Unit price: \$ 10.00 Net Amount: \$ 276.50 Haul Chg : \$ 0.00 TOT/L DUE : \$ 276.50

Total Today: 14 Loads 354.05

HST # 128957719 (COMPOST) HOURS: MONIAY thru FRIDAY 8:00 - 4:00 SATURDAY 8:00 - 12:00



1						
Load Number:	123					PCOC
Project Number :	H CSF-16-037				Metals	
Expiry date: Dece	mber 31 . 2016				ТРН	X
Section I		GENERAT	OR			
						· · · ·
	•					
Concenter Name	Imporial Oil Limited			A 411 1 1		•
Generator Name:		<u> </u>	Site Location:	Mill Lake	Road	
Generator Address:	505 Ouarry Park Blvd S.	.E	Site Address:	64 Mill I	ake Road	1
		. <u></u>	ore nauress.	<u>0+1 m L</u>		
Calgary Alberta			Hubbards,	NS		
				C		1000
Generator Phone No	: 587-476-4630	· · · · · · · · · · · · · · · · · · ·	Site Phone No:		02-11-1-	4006
Designation of March				:		
Description or waste	Hydrocarbon Impacted :	Soll from former L	Bulk Facility			
<u>Cenerator's Represe</u>	District Name	Signaturo	MILLAMOR	-	10 20	2016
Generator 3 Represe		<u> </u>	alf of ICL		Shipment Date (	mm/aa/yyy
Section II		TRANSPO	RTER			
IRANSPO	AD SIZE: Truck&Pony		Tailgate Secured	(Pinned	or Chained)	
	Truck &/Transf	er	Drivers	Initials		
Name: MIMG-	Thieght Litde				· .	:
Address: Alada	5 = MAL HICTOU		Access to facility	& landfi	l via Exit 18 off	HWY 104
Driver Name/Title:	Ken		Drivers	Initials		1973 - A. A. A. A. A. A. A. A. A. A. A. A. A.
Phone No.:	Truck No:	03				:. ':
Vehicle License No./I	Prov.: 1- K-36-196-Nu	Di	Gross W	eight	······································	
Acknowledgment of	Receipt of Materials.		Tare We	ight		
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MATH WITH SC	10 120 120	<u>v</u>				
Driver Signature	Snipment Date (mm)	/aa/yyyy)	and an an an an an an an an an an an an an			
Section III	and the second second second second second second second second second second second second second second secon	DESTINATI	ON	• • • • •	•••••••••••••••••••••••••••••••••••••••	· · · · · · · · · · · · · · · · · · ·
Colchester Soil Rec	cycling Facility		Phone No: 1-902	-293-8080		1100
Receiver Comments:	WIT, NOVA SCOLIA BZN 561				10	44
	Cell		WR#			
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I hereby certify that	the above named material has	s been accepted a	and to the best of my l	Giowieuge	the	1
I hereby certify that foregoing is true and	the above named material has accurate $\sim_{1}$	s been accepted a	and to the best of my i	Cilowieuge	une 1	· · · · · · · · · · · · · · · · · · ·
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I hereby certify that foregoing is true and	the above named material has accurate	s been accepted a		-	CA 30	16
I hereby certify that foregoing is true and Rame of Authorized	the above named material has accurate d Agent	s been accepted a	and to the best of my f	-	Receipt Date (m	<u>16</u> im/dd/yyyy
I hereby certify that foregoing is true and Rame of Authorized	the above named material has accurate d Agent	s been accepted a	and to the best of my f	-	Receipt Date (m	 im/dd/yyyy

COLCHESTER SOLID WASTE 1 CHURCH ST. TRURÖ,N≽S. B2N 3Z5 PHONE 897-3150

Waste In - Charge {cale Ticket

Ticlet # : 489396 Date : 10/20/2016 Operator : AEA Time In : 15:18:26 Time Out : 15:18:55

Veh:cle : 600 GROUNDFIX TRUCK

Customer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45 mill lake road Material : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37

Location : GROUNDFIX

Gross Wt : 46430 kg MAN WT. Tare Wt : 19060 kg MAN WT.

#### 

Net Wt : 27370 kg

Units : 27.37 TONNES Unit price: \$ 10.00 Net Amount: \$ 273.70 Haul Chg : \$ 0.00 TOTIL DUE : \$ 273.70

Total Today: 13 Loads 326.40

HST # 128957719 (COMPOST) HOURS: MONIAY thru FRIDAY 8:00 - 4:00 SATURDAY 8:00 - 12:00

Signature:______ *** Reprinted Ticket ***



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20				· · · · · · ·	
				· · · ·	<u> </u>
Project Number : H CSF-16-03/	· · · ·		:	Metals	
Expiry date: December 31 , 2016		<u> </u>		TPH	X
Section 1	GENERATO	<u>'R</u>		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·
Generator Name: <u>Imperial Oil Limited</u>		Site Location:	<u>Mill Lake</u>	Road	
Generator Address: 505 Quarry Park Blvd S.E		Site Address:	<u>64 Mill L</u>	ake Road	
Calgary Alberta		Hubbards,	NS /		
Generator Phone No: 587-476-4630	· · · · · · · · · · · · · · · ·	Site Phone No:	90	2-717-40	206
Description of Waste: <u>Hydrocarbon Impacted Soil</u>	from former B	ulk Facility		· · · · · · · · · · · · · · · · · · ·	
Janice Shea Generator's Representative Name	Signature	<u>ushea</u>		Lo 200 Shipment Date (m	1 <u>20(6</u> im/dd/yyÿy)
Section II	TRANSPOR	TER			· · · ·
Name: $K I W G$ Address: $Pic Tou W S$ Address: $Pic Tou W S$ Driver Name/Title: $Lo A W E Mas S$ Phone No.; $Truck No:$ Phone No.; $Truck No:$ Vehicle License No./Prov.: $P K 3 6 9 I T$ Acknowledgment of Receipt of Materials.         ID $20 I 20 I G$ Priver Signature       Shipment Date (mm/dd)	1 7 /yyyy)	Access to facility Drivers Gross W Tare We Net Wei	<b>7 &amp; landfil</b> Initials Yeight eight ght	l via Exit 18 off H	IWY 104
Section III	DESTINATIO	DN			
Colchester Soil Recycling Facility Mingo Road, Kemptown, Nova Scotia B2N 5B1 Receiver Comments:		Phone No: 1-902	-293-8080	46	160
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oregoing is true and accurate	een accepted al	iu to the best of my	KHOWIEdge	uie	
Name of Authorized Acont	Signature	· · · · · · · · · · · · · · · · · · ·		Descript Dist (	
name of Auguritua Agent	Junalune			seren ilara (mi	

COLCHESTER SOLID WASTE 1 CHURCH ST. TRURG, N.S. B2N 3Z5 PHONE 897-3150

Waste In - Charge :cale Ticket

Ticlet # : 489373 Date : 10/20/2016 Operator : AEA Time In : 14:37:41 Time Out : 14:38:00

Vehicle : 600 GROUNDFIX TRUCK

Customer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45 mill lake road Material : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37

Location : GROUNDFIX

Gro:s Wt : 46860 kg MAN WT. Tar: Wt : 18030 kg

#### 

Net Wt : 28830 kg

Units : 28.83 TONNES Unit price: \$ 10.00 Net Amount: \$ 288.30 Haul Chg : \$ 0.00 TOT/L DUE : \$ 288.30

Total Today: 12 Loads 299.03

HST # 128957719 (COMPOST) HOURS: MONIAY thru FRIDAY 8:00 - 4:00 SATURDAY 8:00 - 12:00

Signature:______ *** Reprinted Ticket ***



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Load Number: 22					PCOC
Project Number : H CSF-16-037				Metals	
Expiry date: December 31 , 2016				ТРН	x
Section I	GENERATO	R		· · · · · · · · · · · · · · · · · · ·	
				• • • •	
Generator Name: Imperial Oil Limited		Site Location:	Mill Lake	Road	
Generator Address: <u>505 Quarry Park Blvd S.E</u>		Site Address:	64 Mill La	ke Road	
Calgary Alberta		Hubbards,	NS	· · · ·	
		· · ·			
Generator Phone No: 587-476-4630		Site Phone No:	<u> </u>	-717-4	206
			÷		
Description of Waste: <u>Hydrocarbon Impacted Sc</u>	bil from former B	ulk Facility	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·
JANICE DNEO Generator's Representative Name		Mu Sma		D 20	2016
	On the he	half of IOL	s E-manager (177	Suprient Date (	ιιιπι/αα/γγγγ)
Section II	TRANSPOR	TER			
Truck & Transfer Name: Address: Driver Name/Title: Phone No.: Truck No: /ehicle License No./Prov.: Acknowledgment of Receipt of Materials.	r	Access to facility Drivers Drivers Gross W Tare We Net Wei	Initials <b>/ &amp; landfill</b> Initials /eight _ eight _ ght _	via Exit 18 off	HWY 104
Driver Signature Shipment Date (mm/d	ld/yyyy)				
Section III	DESTINATIO	DN			· · · · · · · · · · · · · · · · · · ·
Colchester Soil Recycling Facility Mingo Road, Kemptown, Nova Scotia B2N 5B1 Receiver Comments:		Phone No: 1-902	-293-8080	38	\$ 730
	]	WR#			· · · · ·
neredy certify that the above named material has	peen accepted a	nd to the best of my	knowledge i	the	
Name of Authorized Agent	Signature			Receipt Date (n	Im/dd/yyyy)
		-			

COLCHESTER SOLID WAST 1 CHURCH ST. TRURO, N.S. B2N 325 PHONE 897-3150

Waste In - Charge Scale Ticket

Ticlet # : 489369 Date : 10/20/2016 Opelator : AEA Time In : 14:29:05 Time Out : 14:29:20

Veh:cle : 600 GROUNDFIX TRUCK

Customer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45 mill lake road Material : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37

Location : GROUNDFIX

Gross Wt : 38730 kg MAN WT. Tare Wt : 17510 kg

Net Wt : 21220 kg

Total Today: 11 Loads 270.20

HST # 128957719 (COMPOST) HOURS: MONIAY thru FRIDAY 8:00 - 4:00 SATIRDAY 8:00 - 12:00

Signature:



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#### SOIL MANIFEST FOR BIOREMEDIATION

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Load Number:	1 X		the second second	· · · · · ·		PCOC
Project Number : H CS	SF-16-037			an méla	Metals	
Expiry date: Decembe	er 31 , 2016				ТРН	X
Section I		GENERAT	OR	· · · · ·	· · · · · · · · · · · · · · · · · · ·	
					: 	
		:				
Generator Name:	Imperial Oil Limited		Site Location:	Mill Lake	Road	
Generator Address:	505 Quarry Park Blvd S.E		Site Address:	64 Mill La	ke Road	
			t to de la constant	NC		
	- <u></u>		Hubbards	, NS	<u> </u>	
Generator Phone No:	587-476-4630		Site Phone No:	902-	-717-41	206
Description of Waste:	Hydrocarbon Impacted So	il from former	Bulk Facility	• • • • • • • • • • • • • • • • • • • •		· · · · · · · · · · · · · · · · · · ·
<u>JANICE DNEO</u> Generator's Representat	ive Name	Signature	aniel HMOR	C	10 20 Shinment Date	$\frac{20(6)}{(mm/dd/yyyy)}$
Castion II			n behalf of ICL	Sen an madatan (27) Val of glass constants		
Section 11 TRANSPORT	FD Tandem	TRANSPO	DRTER Tailgate Secure	d (Pinnod d	r Chainad)	
I OAD S	SIZE: Truck&Pony			u (Fiimeu u	n chameu)	
	Truck & Transfer		Drivers	Initials		
Name:	1			:		
Address: Log	Ane		Access to facilit	v & landfill	via Exit 18 of	HWY 104
		·				
Driver Name/Title:	TIM MOST		M/~ Drivers	Initials		
Phone No.:	Truck No:	1				
Vehicle License No./Prov	: <u> </u>		Gross \	Weight _		· · · · ·
Acknowledgment of Rec	ceipt of Materials.		Tare W	eight		
i iii	· · · · · · · · · · · · · · · · · · ·		Net We	eight _		
· · · · · · · · · · · · · · · · · · ·	10 20 2016		· · ·			
Driver Signature	Shipment Date (mm/do	d/yyyy)				
Section ITI		DESTINAT				<u> </u>
		OLSTINAT				
Colchester Soil Recycli	ing Facility		Phone No: 1-90	2-293-8080	11	) naa
Receiver Comments:	NOVA SCOLLA BZIN SBI				-10	× v (U
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Name of Authorized Ad	ient/	Signature		<u></u>	Receipt Date (	 mm/dd/vvvv)
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COLCHESTER SOLID WASTE 1 CHURCH ST. TRUNO, N.S. B2N 3Z5 PHONE 897-3150

Waste In - Charge :cale Ticket

Ticlet # : 489367 Date : 10/20/2016 Operator : AEA Time In : 14:23:53 Time Out : 14:24:00

Veh:cle : 600 GROUNDFIX TRUCK

Customer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45 mill lake road Material : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37

Location : GROUNDFIX

Gro:s Wt : 42090 kg MAN WT. Tar: Wt : 16760 kg

#### ____

Net Wt : 25330 kg

Units : 25.33 TONNES Unit price: \$ 10.00 Net Amount: \$ 253.30 Haul Chg : \$ 0.00 TOT/L DUE : \$ 253.30

Total Today: 10 Loads 248.98

HST # 128957719 (COMPOST) HOURS: MONIAY thru FRIDAY 8:00 - 4:00 SATIRDAY 8:00 - 12:00



.oad Number:	11					PCOC
Project Number : H CS	F-16-037				Metals	
Expiry date: Decembe	er 31 , 2016				ТРН	x
Section I		GENERAT	OR	· · · · ·		
	•					···· ····
Generator Name:	Imperial Oil Limited		Site Location:	Mill Lake	Road	* ***
Senerator Address:	505 Quarry Park Blvd S.E	· .	Site Address:	64 Mill L	ake Road	
algary Alberta			Hubbards,	NS		· · ·
	· · · · · · · · · · · · · · · · · · ·			az	1 217 (	INV
Senerator Phone No:	587-476-4630		Site Phone No:	100	× 117	1006
Description of Waste	Hydrocarbon Impacted So	il from former	Bulk Facility			
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Senerator's Representat	ive Name	Signature			Shipment Date (m	nm/dd/yyy
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priver Name/Title:	HATTU, OU DI	and and	Drivers	Initials		
hone No.:	Truck No:					
ehicle License No./Prov		<u>-</u>	Gross W	/eight		
Acknowledgment of Rec	eipt of Materials.		Tare We	eight		-:
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Driver Signature	Shipment Date (mm/do	d/yyyy)				
Section III		DESTINAT	ION		· · · · · · · · · · · · · · · · · · ·	
olchester Soil Pecuali	na Facility		Dhono Marti 000	202 0000		:
lingo Road, Kemptown,	Nova Scotia B2N 5B1		Phone No: 1-902	-293-8080	31	CA
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Name of Authorized Ag		Signatule		<u> </u>	Receipt Date (mr	n/dd/yyyy

COLCHESTER SOLID WASTE 1 CHURCH ST. TRURO,N.S. B2N 325 PHONE 897-3150

Waste In - Charge {cale Ticket

Ticlet # : 489351 Date : 10/20/2016 Operator : AEA Time In : 13:27:20 Time Out : 13:27:29

Vehicle : 600 GROUNDFIX TRUCK

Customer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45 mill lake road Material : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37

Location : GROUNDFIX

Gross Wt : 37090 kg MAN WT. Tar: Wt : 16070 kg

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Net Wt : 21020 kg

Total Today: 9 Loads 223.65

HST # 128957719 (COMPOST) HOURS: MONLAY thru FRIDAY 8:00 - 4:00 SATURDAY 8:00 - 12:00

Signature: *** Reprinted Ticket ***



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roject Number : H CS	<b>10-U</b> 5/		· · · · · · · · · · · · · · · · · · ·		Metals	
xpiry date: Decembei	<u>; 31, 2016</u>	an an Alan An <u>An A</u> nna An Alan		and a start of the second second second second second second second second second second second second second s	TPH	<b>X</b>
Section I		GENERATOR				
						· · · · · · · · · · · · · · · · · · ·
enerator Name:	Imperial Oil Limited		Site Location:	Mill Lake	Road	
enerator Address:	505 Quarry Park Blvd S.F		Site Address:	64 Mill I	ake Road	
				<u></u>		
algary Alberta	· · · · · · · · · · · · · · · · · · ·		Hubbards	s, NS	1	
enerator Phone No.	587-476-4630		Site Dhene Me			
enerator FROME NO.	507-470-4030		Site Phone NO:			
escription of Master	Hydrocarbon Impacted Soi	from former B	k Facility			
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ienerator's Representativ	ve Name	(Signature		<u>ne</u> ruit	Shipment Date	(mm/dd/vvvv)
Section IT		TRANCDODT	<u>or 401</u>		•	
TRANSPORTE	R Tandem	TRANSPORT	Tailgate Secur	ed (Pinned	or Chained)	
LOAD SI	IZE: Truck&Pony					
	Truck & Transfer		Driver	's Initials		
ame: <u>bran</u>	mit	· · · · · · · · · · · · · · · · · · ·				
ddress:		· · ·	Access to facili	ity & landfi	ll via Exit 18 of	f HWY 104
LODert						
horo No	Turral, Na.		Driver	s Initials		
ebicle License No. /Prov.			Groce	Woight		
Acknowledgment of Rece	eint of Materials.		Tare V	Weight Veinht		· · · · ·
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Driver Signature	Shipment Date (mm/do	I/yyyy)		• •		• • •
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Section III		DESTINATIO	N	n an an an an an an an an an an an an an		
olchester Soil Recyclir	ng Facility		Phone No: 1-9	12-293-8080		
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hereby certify that the a pregoing is true and accu Name of Authorized Age	Cell Ibove named material has b Irrate Ent	een accepted and	WR# J to the best of m	y knowledge	the Receipt Date (	mm/dd/yyyy)
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COLCHESTER SOLID WASTE 1 CHURCH ST. TRURO,N.S. B2N 325 PHONE 897-3150

Waste In - Charge Scale Ticket

Ticlet # : 489322 Dat: : 10/20/2016 Operator : AEA Tim: In : 11:32:27 Tim: Out : 11:32:33

Veh:cle : 600 GROUNDFIX TRUCK

Customer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45 mill lake road Material : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37

Location : GROUNDFIX

Gross Wt : 43570 kg MAN WT. Tare Wt : 18550 kg

### 

Net Wt : 25020 kg

Units : 25.02 TONNES Unit price: \$ 10.00 Net Amount: \$ 250.20 Haul Chg : \$ 0.00 ______ TOT/L DUE : \$ 250.20

Total Today: 8 Loads 202.63

HST # 128957719 (COMPOST) HOURS: MONIAY thru FRIDAY 8:00 - 4:00 SATURDAY 8:00 - 12:00 Signature:_______ *** Reprinted Ticket ***

0 kg



.oad Number:	17		· · ·			PCOC
Project Number : H C	SF-16-037				Metals	
Expiry date: Decembe	er 31 , 2016		TPH set			
Section I		GENERATO	<b>R</b> inger, et al.	· · · · · · · · · · · · · · · · · · ·	·····	
Generator Name:	Imperial Oil Limited		Site Location:	Mill Lake	Road	
Senerator Address:	505 Quarry Park Blvd S.E		Site Address:	64 Mill La	ake Road	
Calgary Alberta			Hubbards,	NS		
· · · · · · · · · · · · · · · · · · ·		· · · ·		90	2717	71001
Generator Phone No:	587-476-4630	· · · · · · · · ·	Site Phone No:	100	× /17	<u>4006</u>
			A 1 1     A 1     A 1     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A     A			
Description of Waste:	Hydrocarbon Impacted So	il from former Bu	Ik Facility	l al uls		2011
Enerator's Representat	ive Name	Signature	DON E	epor-	Shinment Date (r	1000
			I-TOL/		Shipment Date (I	mm/uu/yyyy
Section II TRANSPORT	FP Tandem	TRANSPOR	Tailgate Secured	Dinned	or Chained)	· · · ·
LOAD S	SIZE: Truck&Pony			(Piiiied	or chained)	•
Call	Truck & Transfer		Drivers	Initials		
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	KIVER NORD	Sont In S	Access to facility	/ & landfil	l via Exit 18 off l	HWY 104
river Name/Title	New GLANC	<u>no</u>	MAT	Thiticle		
hone No 902-76	Truck No:	<u>v./////</u>	Drivers	Initials		
ehicle License No./Prov	20035	<u> </u>	Gross W	eiaht		
Acknowledgment of Re	ceipt of Materials.	1372	06-U Tare We	eight		
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Driver Signature	Shipment Date (mm/d	d/yyyy)			in an an an an an an an an an an an an an	. e
Section III		DESTINATIO	Ň.	· · · · · · ·		
Jection III		DESIINATIO			· · · · · · · · · · · · · · · · · · ·	
olchester Soil Recycl	ing Facility		Phone No: 1-902	-293-8080	70	572
lingo Road, Kemptown,	Nova Scotia B2N 5B1				5	ノイフ
center comments.	· · · · · · · · · · · · · · · · · · ·		· · ·			
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	Cell		WR#			
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V	$\vee$				Tecope Date (III	,, yyyy)
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COLCHESTER SOLID WASTE 1 CHURCH ST. TRUBONS. B2N 325 PHONE -3150

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Waste In - Charge
(cale Ticket
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Ticlet # : 489319 Date : 10/20/2016 Opelator : AEA Time In : 10:52:11 Time Out : 11:16:58

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Veh:cle : 600
GROUNDFIX TRUCK
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Cusiomer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45 mill lake road Material : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37

Location : GROUNDFIX

Gross Wt : 35730 kg MAN WT. Tar: Wt : 15600 kg MAN WT.

#### 

Net Wt : 20130 kg

Units : 20.13 TONNES Unit price: \$ 10.00 Net Amount: \$ 201.30 Haul Chg : \$ 0.00 TOT/L DUE : \$ 201.30

Total Today: 7 Loads 177.61

HST # 128957719 (COMPOST) HOURS: MONIAY thru FRIDAY 8:00 - 4:00 SATURDAY 8:00 - 12:00

Signature:

*** Reprinted Ticket ***



A ;					
Load Number:			· · · ·	· · ·	PCOC
Project Number : H CSF-16-037				Metals	
Expiry date: December 31 , 2016				трн	x
Section I	GENERATOR			•	
	•			· · · · ·	
			:		
Generator Name: Imperial Oil Limited		Site Location:	Mill Lake	Road	an an an an an an an an an an an an an a
Generator Address: 505 Quarry Park Blvd S.E	<u> </u>	Site Address:	64 Mill La	ike Road	· · · · · · · · · · · · · · · · · · ·
Calgary Alberta		Hubbards	NS	· · · · · · ·	
			, 110		
Generator Phone No: 587-476-4630		Site Phone No:	- 90	02 717	4036
		· · ·	1		
Description of Waste: <u>Hydrocarbon Impacted So</u>	oil from former Bu	k Facility	······································	· · · · · · · · · · · · · · · · · · ·	
Hox Digga Cl	a.l		00		
Generator's Representative Name	Signature	holf of	- Da	Shipment Date (r	nm/dd/yyyy)
Section II	TRANSPORT	ER		and an an an an an an an an an an an an an	
TRANSPORTER Tandem		Tailgate Secure	d (Pinned	or Chained)	
		Drivers	Initials		
Name: SW ROSS TRUCKING					52 2014
Address: PLIIMOUTH		Access to facili	ty & landfil	l via Exit 18 off	HWY 104 🦄
KEVIN Wood					
Driver Name/Title:		Drivers	Initials		
Phone No.: Truck No:	: : :				
Vehicle License No./Prov.: <u>43672D</u>		Gross	Weight		<u></u>
Acknowledgment of Becelpt of Materials.		lare w	eignt		
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Driver Signature Shipment Date (mm/d	l J		••••		
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Section III	DESTINATIO	N			
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Mingo Road, Kemptown, Nova Scotia B2N 5B1		FIIONE NO. 1-90	2-293-0000	41.0	11A
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	·At			N/ la	
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COLCHESTER SOLID WASTE 1 CHURCH ST. TRURO,N.S. B2N 325 PHONE 897-3150

Waste In - Charge {cale Ticket

Ticlet # : 489313 Date : 10/20/2016 Operator : AEA Time In : 10:43:30 Time Out : 10:51:20

Vehicle : 600 GROUNDFIX TRUCK

Customer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45

Material : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37

Location : GROUNDFIX

Gro:s Wt : 46410 kg MAN WT. Tar: Wt : 16880 kg

### 

Net Wt : 29530 kg

Units : 29.53 TONNES Unit price: \$ 10.00 Net Amount: \$ 295.30 Hau: Chg : \$ 0.00 TOTAL DUE : \$ 295.30

Total Today: 6 Loads 157.48

HST # 128957719 (COMPOST) HOURS: MONIAY thru FRIDAY 8:00 - 4:00 SATURDAY 8:00 - 12:00

Signature:_____ *** Reprinted Ticket ***



Drainet Number - U.CC	E 1 C 007			<b>Г</b>		
Project Number : H CS	ir-16-037			-	Metals	
Expiry date: Decembe	er 31 , 2016	<u> </u>			ТРН	X
Section I		GENERATOR	- 			
			•			
· · · · ·						
Generator Name:	Imperial Oil Limited	· · · · ·	Site Location:	Mill Lake R	oad	
			·			
Jenerator Address:	505 Quarry Park Blvd S.E	· · · · · · ·	Site Address:	64 Mill Lak	e Road	
Calgary Alberta		· · · · · · · · · · · · · · · · · · ·	Hubbards,	NS		
· · · · · · · · · · · · · · · · · · ·		 :		-		11031
Generator Phone No:	587-476-4630	· · · · · · · · · · · · · · · · · · ·	Site Phone No:	<u>902</u>	714	7000
					×.	
Description of Waste:	Hydrocarbon Impacted Soi	il from former Bul	<u>k Facility</u>			
Mer JMANC	<u>Un</u>	UCC - 3	0	<u>n</u> 5	<u>ti 2</u>	5 200
senerator s Representati	ve warne	Signature	behalt of	Toi s	hipment Date	(mm/dd/yyyy)
Section II		TRANSPORT	ER			
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Driver Signature	Shipment Date (mm/do	d/yyyy)				
		<u> </u>				
Section III		DESTINATION	<u>V</u>		·····	·····
Colchester Soil Recycli	ng Facility		Phone No: 1-902	2-293-8080	1.1	10.0)
lingo Road, Kemptown,	Nova Scotia B2N 5B1		·		$\mathcal{U}$	$+ \lambda $
leceiver Comments:		· · · · · · · · · · · · · · · · · · ·			<u> </u>	100
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manie of Authorized Ag	CNU /	Signature			kecelpt Date (	mm/aa/yyyy)
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COLCHESTER SOLID WASTE 1 CHURCH ST. TRURO, N.S. B2N 325 PHONE 897-3150

Waste In - Charge (cale Ticket

Ticlet # : 489309 Dat: : 10/20/2016 Operator : AEA Tim: In : 10:36:52 Tim: Out : 10:42:06

Veh:cle : 600 GROUNDFIX TRUCK

Customer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45

Material : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37

Location : GROUNDFIX

Gross Wt : 47280 kg MAN WT. Tare Wt : 19200 kg

Net Wt : 28080 kg

Units : 28.08 TONNES Unit price: \$ 10.00 Net Amount: \$ 280.80 Haul Chg : \$ 0.00 TOTAL DUE : \$ 280.80

Tot: 1 Today: 5 Loads 127.95

HST # 128957719 (COMPOST) HOURS: MONIAY thru FRIDAY 8:00 - 4:00 SATURDAY 8:00 - 12:00



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vau number:			С. П.	Motolo	
			l i i	Metals	
Sostion T	CENEDATO			IPH	
	GENERATO	ĸ			
Senerator Name Imperial Oil Limited		Site Location:	Mill Lake R	head	
	······		Thir Earce P		
Senerator Address: <u>505 Quarry Park Blvd S.E</u>		Site Address:	64 Mill Lak	e Road	
Calgary Alberta		Hubbards,	NS		· · · · ·
Senerator Phone No: 587-476-4630	· · · · · · · · · · · · · · · · · · ·	Site Phone No:	90.	1717	2428
Description of Waste: <u>Hydrocarbon Impacted Sc</u>	oil from former-B	Ik Facility			
Hexal XIQUAN C	Alle	las or	_takak E	10120	286
senerator's Representative Mame	Signature	- & Je	ù.	hipment Date	(mm/dd/yyyy)
Section II	TRANSPOR	TER	d (Diad -	- Chain	
LOAD SIZE: Truck&Pony			a (Pinnea o	r Chained)	
Truck & Transfe	r []	Drivers	Initials		
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Driver Name/Title:		Drivers	Initials	· · · ·	
Driver Name/Title: Phone No.: Truck No: /ehicle License No./Prov.:		Drivers Gross V	Initials Veight _		
Driver Name/Title: Phone No.: Truck No: Phicle License No./Prov.: Acknowledgment of Receipt of Materials.		Drivers Gross V Tare W	Initials Veight _ eight _		
Driver Name/Title: Phone No.: Truck No: /ehicle License No./Prov.: Acknowledgment of Receipt of Materials.	<b>K</b>	Drivers Gross V Tare W Net We	Initials Veight _ eight _ ight _		
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Driver Name/Title: Phone No.: Truck No: /ehicle License No./Prov.: Acknowledgment of Receipt of Materials. ////////////////////////////////////	للله dd/yyyy)	Drivers Gross V Tare W Net We	Initials Veight _ eight _ ight _		
Driver Name/Title: Phone No.: Truck No: /ehicle License No./Prov.: Acknowledgment of Receipt of Materials. ////////////////////////////////////	لله dd/yyyy) <b>DESTINATI</b> C	Drivers Gross V Tare W Net We	Initials Veight _ eight _ ight _		
Driver Name/Title: Phone No.: Truck No: /ehicle License No./Prov.: Acknowledgment of Receipt of Materials. Driver Signature Shipment Date (mm/c Section III Colchester Soil Recycling Facility	Ji dd/yyyy) DESTINATIC	Drivers Gross V Tare W Net We DN Phone No: 1-90	Initials Veight eight ight 2-293-8080		1700
Driver Name/Title: Phone No.: Truck No: /ehicle License No./Prov.: Acknowledgment of Receipt of Materials. Driver Signature Shipment Date (mm/c Section III Colchester Soil Recycling Facility lingo Road, Kemptown, Nova Scotia B2N 5B1	dd/yyyy) DESTINATIO	Drivers Gross V Tare W Net We <b>DN</b> Phone No: 1-90	Initials Veight ight ight 2-293-8080		1338
Driver Name/Title: Phone No.: Truck No: /ehicle License No./Prov.: Acknowledgment of Receipt of Materials. Driver Signature Shipment Date (mm/c Section III Colchester Soil Recycling Facility lingo Road, Kemptown, Nova Scotia B2N 5B1 Leceiver Comments:	لله id/yyyy) DESTINATIO	Drivers Gross V Tare W Net We DN Phone No: 1-90	Initials Veight _ eight _ ight _ 2-293-8080		1338
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COLCHESTER SOLID WASTE 1 CHURCH ST. TRURO, N.S. B2N 325 PHONE 897-3150

Waste In - Charge {cale Ticket

Ticlet # : 489301 Date : 10/20/2016 Operator : AEA Time In : 10:16:56 Time Out : 10:17:16

Veh:cle : 600 GROUNDFIX TRUCK

Customer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45 mill lake road Material : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37

Location : GROUNDFIX

Gross Wt : 43380 kg MAN WT. Tare Wt : 16890 kg MAN WT.

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Net Wt : 26490 kg

Units : 26.49 TONNES Unit price: \$ 10.00 Net Amount: \$ 264.90 Haul Chg : \$ 0.00 TOT/L DUE : \$ 264.90

Total Today: 4 Loads 99.87

HST # 128957719 (COMPOST) HOURS: MONLAY thru FRIDAY 8:00 - 4:00 SATURDAY 8:00 - 12:00

Signature:_______ *** Reprinted Ticket ***



Project Number : H CS	F-16-037				Metals	-
Expiry date: Decembe	er 31 , 2016	· · · · ·			ŤPH	X
Section I		GENERATO	R			
						· · · ·
				i.	· · · ·	
Generator Name:	Imperial Oil Limited		Site Location:	Mill Lake	Road	
			·			
Generator Address:	505 Quarry Park Blvd S.E	· · · · ·	Site Address:	64 Mill La	ke Road	· · · · · · · · · · · · · · · · · · ·
Calgary Alberta			Hubbards, I	1S		
,		· · ·		122°	17.7	CCAV
Generator Phone No:	587-476-4630		Site Phone No:	<u> 70</u> 0	. TIF	7206
				•		
Description of Waste:	Hydrocarbon Impacted Soil	from former-B	nk Facility	. 10		
TILX LUGU	$a_{i}$ $C$	lle	to onto	erott [	10 20	2010
Senerator's Representati	vewame	Signature	A Fal	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	Shipment Date (r	nm/dd/yyy
Section II		TRANSPOR	TER			
	ER Tandem		Tailgate Secured	(Pinned o	or Chained)	
LOAD 5	Truck & Transfer		Drivers I	nitials		
Name:				, incluid		
Address:			Access to facility	& landfill	via Exit 18 off	HWY 104
		 - :				
Driver Name/Title:			Drivers I	nitials		
Phone No.:	Truck No:					· · · · ·
/ehicle License No./Prov.	: <u></u>		Gross We	eight		an a ^t art
Acknowledgment of Rec	eipt of Materials.		Tare Wei	ght _		
			Net Weig	ht _		
· · · · · · · · · · · · · · · · · · ·	10 20 200					 
Driver Signature	Shipment Date (mm/dd/	/уууу)	· · · · · · ·			+ + + -
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Section III		DESTINATIO	DN		··· · · · · · ·	
Colchester Soil Recycli	ng Facility		Phone No: 1-902-	293-8080		·
lingo Road, Kemptown,	Nova Scotia B2N 5B1				20 (	
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Receiver Comments:		· · · · · · · · · · · · · · · · · · ·			and the second second second second second second second second second second second second second second second	
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Receiver Comments: hereby certify that the a oregoing is true and accu	Cell above named material has be urate	en accepted ar	WR# nd to the best of my k	nowledge I	he AAAAA	
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hereby certify that the a oregoing is true and accu Name of Authorized Ag	Cell above named material has be urate oft	een accepted ar ignature A	WR# nd to the best of my k	nowledge t	the CH 3-0 Receipt Date (m	m/dd/yyyy
hereby certify that the a oregoing is true and accu Name of Authorized Ag	Cell above named material has be urate oft	en accepted ar ignature A	WR# nd to the best of my k	nowledge I	the CH 30 Receipt Date (m	m/dd/yyyy

COLCHESTER SOLID WASTE 1 CLURCH ST. TRURO, N.S. 📎 PHONE 897-3150 B2N 3Z5

Waste In - Charge cale Ticket

Ticlet # : 489294 Dat: : 10/20/2016 Opelator : AEA Time In : 09:53:10 Tim: Out : 09:53:18

Veh:cle : 600 GROUNDFIX TRUCK

Customer ; GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45 mill lake road Material : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37

Location : GROUNDFIX

Gross Wt : 39680 kg MAN WT. Tar: Wt : 17670 kg

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Net Wt : 22010 kg

Units : 22.01 TONNES Unit price: \$ 10.00 Net Amount: \$ 220.10 Haul Chg : \$ 0.00 TOTAL DUE : \$ 220.10

Total Today: 3 Loads 73.38

HST # 128957719 (COMPOST) HOURS: MONIAY thru FRIDAY 8:00 - 4:00 SATURDAY 8:00 - 12:00

Signature: *** Reprinted Ticket ***



			F C		PCOC
Project Number : H CSF-16-037				Metals	
Expiry date: December 31 , 2016			- - -	TPH	×
Section I	GENERA	TOR			• • •
Generator Name: Imperial Oil L	_imited	Site Location:	Mill Lake	Road	
Generator Address: 505 Quarry P	ark Blvd S.E	Site Address:	64 Mill La	ke Road	
Calgary Alberta		Hubbards	NS		
	······································				<u>^</u>
Generator Phone No: 587-476-463	0	Site Phone No:	9.00	-154	al
			<i>U</i>		
Description of Waste: <u>Hydrocarbon</u>	Impacted Soil from forme	r Bulk Facility			
Mex I SUGACHIA	Me.	chor on	bart [	10 19	1201
Générator's Réprésentative Name	Signatur	e foi	-	Shipment Date (n	nm/dd/y
Section II	TRANSP	PORTER			
TRANSPORTER Tan	dem	X Tailgate Secured	l (Pinned o	or Chained)	
LOAD SIZE: True	ck&Pony			· ·	
Truc	ck & Transfer	Drivers	Initials		• • •
Name: 19/100					
Address: VICIOUNS	· · · · ·	Access to facility	& landfill	via Exit 18 off H	HWY 10
	1. 01-0.				÷
briver Name/ Ittle: <u></u>	FOIL	Drivers	Initials		
Phone No.:	2, 374	C	(-t-l-t		
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Acknowledgement of Receipt of Materia	IS.	lare we	eight _		
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Section III	DESTINA	TTON	<u>i te posta</u> na seconda esta esta esta esta esta esta esta est		
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Colchester Soil Recycling Facility		Phone No: 1-902	-293-8080	1	
Mingo Road, Kemptown, Nova Scotia B	2N 5B1			$\left  \left  \mathcal{I} \right  \right $	51
Receiver Comments:	- X.			<u> </u>	
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l nereby certify that the above named r	naterial has been accepte	d and to the best of my	knowledge	the	
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### COLCHESTER SOLID WASTE 1 CIURCH ST. TRURO, N.S. B2N 325 PHONE 897-3150

Waste In - Charge {cale Ticket

Ticlet # : 489292 Dat: : 10/20/2016 Operator : AEA Tim: In : 09:42:25 Tim: Out : 09:42:43

Veh:cle : 600 GROUNDFIX TRUCK

Customer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45 mill lake road Material : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37

Location : GROUNDFIX

Gross Wt : 47150 kg MAN WT. Tare Wt : 18190 kg

Net Wt : 28960 kg Units : 28.96 TONNES Unit price: \$ 10.00 Net Amount: \$ 289.60 Hau: Chg : \$ 0.00 TOT:L DUE : \$ 289.60

Total Today: 2 Loads 51.37

HST # 128957719 (COMPOST) HOURS: MONNAY thru FRIDAY 8:00 - 4:00 SATURDAY 8:00 - 12:00

Signature:



Lond Number		-				
Load Number:	10					PCOC
Project Number : H C	SF-16-037				Metais	
Expiry date: Decemb	er 31 , 2016			ТРН		x
Section I		GENERATOR	<b>R</b>		· · · · · · · · · · · · · · · · · · ·	· · · · ·
				1		
			· · ·			
Generator Name:	Imperial Oil Limited	· · · · · · · · · · · · · · · · · · ·	Site Location: <u>M</u>	lill Lake	Road	
Generator Address:	505 Ouarry Park Blvd S.F	· · · · ·	Site Address' 6	4 Mill I =	ke Poad	· · · ·
		······································	<u> </u>	<u></u> <u></u>		· · · ·
Calgary Alberta		· · · · · · · · · · · · · · · · · · ·	Hubbards, NS			
Generator Phone No:	587-476-4630		Site Phone No:	Pad	717 4006	
			· · · · · · · · · · · · · · · · · · ·			
Description of Waste:	Hydrocarbon Impacted Soi	I from former Bu	lk Facility		· · · · · · ·	
Cenerator's Pennesdatat	ive Name	(lein	on behalf	I	70 20	12076
		Signature	of In		Snipment Date (r	nm/dd/yyyy
Section II	FD Tandom	TRANSPORT	ER			
LOAD	SIZE: Truck&Pony		Taligate Secured (F	rinned	or Chained)	
	Truck & Transfer		Drivers Init	ials		
Name: Bula	nRich				•	
Address:			Access to facility &	landfill	via Exit 18 off	HWY 104
Driver Name/Title:	DATRICH O	cauter	Drivers Init	ials		
/ehicle License No /Prov			Croco Maio	: 64		
Acknowledgment of Red	ceipt of Materials.		Tare Weigh	110 - t		· · · · · · · · · · · · · · · · · · ·
<b>,</b>		•	Net Weight	•		• •
	10 20 206					
Driver Signature	Shipment Date (mm/do	l/yyyy)	1			
Section III		DECTINATE				· · · · · · · · · · · · · · · · · · ·
Section III		DESTINATIO	N			•••••
Section III Colchester Soil Recycli	ing Facility	DESTINATIO	N Phone No: 1-902-29	3-8080	001	
Section III Colchester Soil Recycli Mingo Road, Kemptown, Receiver Comments	<b>ing Facility</b> Nova Scotia B2N 5B1	DESTINATIO	N Phone No: 1-902-29	3-8080	381	o2e)
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COLCHESTER SOLID WASTE 1 CLURCH ST. TRURO, N.S. B2N 3Z5 PHONE 897-3150 Waste In - Charge cale Ticket Ticlet # : 489290 Dat: : 10/20/2016 Operator : AEA Tim∉ In : 09:35:44 Time Out : 09:36:31 Veh:cle : 600 GROUNDFIX TRUCK Customer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45 mill lake road Material : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37 Location : GROUNDFIX Gross Wt : 38620 kg MAN WT. Tare Wt : 16210 kg Net Wt : 22410 kg Units : 22.41 TONNES Unit price: \$ 10.00 Net Amount: \$ 224.10 Haul Chg : \$ 0.00 TOTIL DUE : \$ 224.10 Total Today: 1 Loads 22.41 HST # 128957719 (COMPOST) HOURS: MONLAY thru FRIDAY 8:00 - 4:00 SATURDAY 8:00 - 12:00 Signature:

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Receiver Comments:

Cell

Mingo Road, Kemptown, Nova Scotia B2N 5B1

## SOIL MANIFEST FOR BIOREMEDIATION

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I hereby certify that the above named material has been accepted and to the best of my knowledge the

eceipt Date (mm/dd/yyyy)

*** Reprinted Ticket *** Signature:

HST # 128957719 (COMPOST) HOURS: MONIAY thru FRIDAY 8:00 - 4:00 ANNAY 8:00 - 12:00 SATURDAY 8:00 - 12:00

Total Totay: 1 Loads 26.43

 units
 : \$ 26.43 TONNES

 Net Amount:
 \$ 264.30

 Hau:
 Chg
 : \$ 264.30

Net Mr : 26430 kg

Gross Wt : 45040 kg MAN WT. Tare Wt : 18610 kg

Poct fion : GROUNDEIX

Customer : GROUNDFIX REMEDIATION
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Material : SOIL DIRECT TO GROUNDFIX
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> Ticliet # : 489680 Date : 10/25/2016 Openator : AEA Time In : 09:47:04 Time Out : 09:50:43

> > Kaste In - Charge

BSN 326PHOME 897-31601 CLURCH ST.<a href="https://www.state">לדאטאס"</a>, N.S.SOUCHESTER SOLID WASTE



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	Gross Weight		Joggst	Vehicle License No. Prov
	Drivers Initials	<b>_</b>	Truck No: 4 MTK	Priver Name/Title: Phone No.:
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	ADE YWE BO OF 15-2 civ liBback & villoct of 2382	<u> </u>	ICIA BUCKEN	Segurpa
	Drivers Initials		THER & TRACK & TRANSFER	TOND A
I	ilgate Secured (Pinned or Chained)		ER Tandem	TRANSPORT
	Shipment Date (mm/dd/yyyy)		ambu avi	
[	give go (1) AR Frange ve	arond		MER DURING
	scilitty	ا (تەكەر former Bulk F	<u>Hydrocarbon Impacted Soi</u>	Description of Waste:
-	ATTS THE COB :ON DUOYA DE	‼S	282-426-4630	Generator Phone No:
-	Hubbards, NS			shedla yrsglsD
-	te Address: 64 Mill Lake Road	!!S	505 Quarry Park Blvd S.E	Generator Address:
-	te Location: Mill Lake Road	4S	Imperial Oil Limited	Generator Name:
		•		

(T209M07) 91773957719 (COMPOST) HOURS: MONIAY thru FRIDAY 8:00 - 4:00 SATURDAY 8:00 - 12:00 SATURDAY 8:00 - 12:00

Totel Today: 2 Loads 48.83

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TOT.L DUE : \$ 224.00

-sande ibis

Units : 22.40 TONNES Unit Price: \$ 224.00 Net Amount: \$ 224.00 Hau: Chg : \$ 0,00

Net Mt : 22400 kg

'Gross Wt : 40120 kg MAN WT. Tar€ Wt : 17720 kg

Tock FLON : GROUNDFIX

Customer : GROUNDFIX Gentract : GROUND45 Mattrial : SOIL DIRECT TO GROUNDFIX mill lake road SOIL DIRECT TO GROUNDFIX SOIL DIRECT TO GROUNDFIX

GBONNDEIX TRUCK

Ticlet # : 489681 Date : 10/25/2016 Operator : AEA Time In : 10:01:22 Time Out : 10:01:33

> Waste In - Charge Stoket

د COLCHESTER SOLID WASTE t CHURCH ST. TRURO, N.S. B2N 325 PHONE 897-3150



			. 11				· · · ·
Section I				GENERATO	R		
Expiry date: De	Oecember 31,	9102 '	:			HdT	X
Project Number	er : H CSF-16-	220-				 SletaM	
noad Number:		15				·	PCOC
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Keceipt Date (mm/dd/yyyy)	Name of Althorized Agent
	YY TON Y
	foregoing is true and accurate
and to the best of my knowledge the	I hereby certify that the above named material has been accepted
Δ##M	Cell
01(1)	Receiver Comments:
VIEITE DODD-CGZ-ZOG-T CON DUCIL	Mingo Road, Kemptown, Nova Scotia B2N 5B1
	Colchester Soil Recycling Facility
LION	DESTINA DESTINA
an an taon ang barang ang ang ang ang ang ang ang ang ang	ριγνει Signature Shipment Date (mm/dd/yyyy)
	200 Ge of man gash
Jdei Weight	
Tare Weight	Ackpowledgment of Receipt of Materials.
Gross Weight	Vehicle License No./Prov.: 916 38446 05
Access to facility & landfill via Exit 18 off HWY 104	SN non in several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several several seve
	Name: LU AN Swith Mark Mark
Sleiting Privace Internation	LOAD SIZE: Truck&Pony
کدا کر روز Tailgate Secured (Pinned or Chained)	mehneT RANSPORTER Tandem
(vvvv/bb/mm) ated trampide	Generator's Kepresentative Name
Site Phone No:	Generator Phone No: 587-476-4630
SN sbradduH	Calgary Alberta
Site Address: 64 Mill Lake Road	Generator Address: 505 Quarry Park Blvd S.E
סוגר דטרפנוטון: עווון דפוגר אטפט	
beed over 1 lite traditeon   eti2	Generator Name: Imperial Oil I imited

HST # 128957719 (СОМРОЗТ) HOURS: MONIAY thru FRIDAY 8:00 - 4:00 MONIAY thru FRIDAY 8:00 - 4:00 SATIRDAY 8:00 - 12:00

Total Today: 3 Loads 75.11

TOT.L DUE : \$ 262.80

- arute ibis

Units : 26.28 TONNES Wet Amount: \$ 262.80 Hau Chg : \$ 10.00

Met Mt : 56280 kg

Gross Wt : 44710 kg MAN WT. Tare Wt : 18430 kg

POCKETON : GROUNDFIX

Customer : GROUNDFIX Contract : GROUND45 Material : SOIL DIRECT TO GROUNDFIX SOIL DIRECT TO GROUNDFIX SOIL DIRECT TO GROUNDFIX SOIL DIRECT TO GROUNDFIX SOIL DIRECT TO GROUNDFIX SOIL DIRECT TO GROUNDFIX SOIL DIRECT TO GROUNDFIX SOIL DIRECT TO GROUNDFIX SOIL DIRECT TO GROUNDFIX SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SCORES SOIL SIZE SC

GBONNDEIX IBNCK

Ttc) et # : 489714 Date : 13:53:02 Openator : AEA Time In : 13:53:02 Time Out : 13:53:02

> Waste In - Charge Scale Ticket

COLCHESTER SOLID WASTER 5.



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Construction     Section I     Construction       Section I     Section I     Construction       Section I     Construction     Construction       Section I     Construction     Construction       Section I     Construction     Construction       Section I     Construction     Construction       Section I     Construction     Construction       Section I     Construction     Construction       Section II     Construction     Construction       Section II     Construction     Construction       Section III     Construction     Construction       Section III     Construction     Construction       Section III     Construction     Construction       Section III     Construction     Construction       Section III     Construction     Construction       Section III     Construction     Construction       Section III     Construction     Construction       Section III     Construction     Construction       Section III     Construction     Construction       Section III     Construction     Construction       Section III     Construction     Construction       Section III     Construction     Construction       Section III     C	Shipment Date (mm/dd/yyyy)         Scotia B2N 5B1         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR#         MR# </th <th>Colchester Soil Recycling Mingo Road, Kemptown, Nov Receiver Comments: Ce I hereby certify that the abo foregoing is true and accurat</th>	Colchester Soil Recycling Mingo Road, Kemptown, Nov Receiver Comments: Ce I hereby certify that the abo foregoing is true and accurat
Collige     Section I     Cell       Section I     Section I     Cell       Section I     Section I     Cell       Section I     Section I     Cell       Section I     Section I     Section I       Section I     Section I     Section I       Section I     Section I     Section I       Section I     Section I     Section I       Section I     Section I     Section I       Section I     Section I     Section I       Section I     Section I     Section I       Section II     Section II     Section II       Section II     Section II     Section II       Section II     Section II     Section II       Section II     Section II     Section II       Section II     Section II     Section II       Section II     Section II     Section II       Section II     Section II     Section II       Section II     Section II     Section II       Section II     Section II     Section II       Section II     Section II     Section II       Section II     Section II     Section II       Section II     Section II     Section II       Section II     Section II     Section II	Shipment Date (mm/dd/yyyy) Shipment Date (mm/dd/yyyy) Facility Prone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phone Phon	Colchester Soil Recycling Mingo Road, Kemptown, Nov Receiver Comments: I hereby certify that the abo foregoing is true and accurat
I. hereby certify that the above named material has been accepted and to the best of my knowledge the above name in that the thore for any found for the former in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in the structure in	Shipment Date (mm/dd/yyyy)       WR#         Scotia B2N 5B1       WR#         II       WR#	Colchester Soil Recycling Mingo Road, Kemptown, Nov Receiver Comments: Ce
Cell     WR#       Cell     WR#       Section I     Cell       Section I     Section I       Section I     Section I       Generator Manes:     505 Quarty Park Bivd 5.E       Section I     Site Adress:       Generator Manes:     505 Quarty Park Bivd 5.E       Section II     Site Adress:       Section II     Mingo Road, Kemptown, Nova Scotla B2N 5Bir       Dinver Signary Alberta     Site Adress:       Section III     Site Adress:       Section III     Mingo Road, Kemptown, Nova Scotla B2N 5Bir       Section III     Site Adress:       Section III     Mer Mannes       Section III     Site Adress:       Section III     Mer Mannes       Section III     Site Adress:       Section III     Mer Mannes       Section III     Site Adress:       Section III     Mer Mannes       Section III     Site Adress       Section III     Site Adress       Section III     Site Adress       Section III     Site Adress       Section III     Mer Mannes       Section III     Site Meight       Section III     Site Meight       Section III     Site Meight       Section III     Site Meight       Section III	A المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ ا محافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحاف المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ محافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المحافظ المح	Colchester Soil Recycling Mingo Road, Kemptown, Nov Receiver Comments:
Right Control     Control     Control       Section I     Section I     Generator Mane:     Imperial     X       Section I     Section I     Generator Mane:     Imperial J, 2016     X       Generator Mane:     Imperial OII Limited     Site Address:     Section I     X       Generator Mane:     Imperial OII Limited     Site Address:     Section:     Mill Lake Road       Generator Mares:     Soc Quarry Park Blvd S.E     Site Address:     Section:     Mill Lake Road       Generator Mares:     Soc Quarry Park Blvd S.E     Site Phone No:     Section:     Mill Lake Road       Generator Mares:     Soc Quarry Park Blvd S.E     Site Address:     Section I     Mill Lake Road       Generator Mares:     Mares     Site Phone No:     Section I     Mill Lake Road       Generator Phone No:     Sac Quarry Park Blvd S.E     Site Phone No:     Section I       Caldary Alberda     Mill Lake Road     Site Phone No:     Mill Lake Road       Caldary Alberda     Mill Lake Road     Site Phone No:     Mill Lake Road       Caldary Marce No:     Sac Quarry Park Blvd S.E     Site Phone No:     Mill Lake Road       Caldary Alberda     Mill Lake Road     Site Phone No:     Mill Lake Road       Caldary Alberda     Mill Mill Recellipy     Site Phone No:     Mill Jake	Abipment Date (mm/dd/yyyy) Shipment Date (mm/dd/yyyy) DESTINETION Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 B2N 5B1	<b>Colchester Soil Recycling</b> Mingo Road, Kemptown, Nov Receiver Comments:
Expiry date:     December 31, 2016     The None Note:       Section I     Expiry date:     Section I       Generator Name:     Impetial OII Limited     Site Location:       Generator Name:     Impetial OII Limited     Site Location:       Generator Name:     Impetial OII Limited     Site Address:       Generator Name:     Impetial OII Limited     Site Address:       Generator Name:     Impetial OII Limited     Site Address:       Generator Name:     Impetial OII Limited     Site Address:       Generator Name:     Impetial OII Limited     Site Address:       Generator Name:     Impetial OII Limited     Site Address:       Generator Name:     Impetial OII Limited     Site Address:       Generator Name:     Impetial OII Limited     Site Address:       Generator Name:     Impetial OII Limited     Site Address:       Generator Name:     Impetial OII Limited     Site Address:       Generator Name:     Impetial OII Limited     Site Address:       Generator Name:     Impetial OII Limited     Site Address:       Generator Name:     Impetial OII Content Name:     Implant       Millipe Road     Site Address:     Site Address:       Generator Name:     Implant     Implant       Millipe Road     Site Address:     Site Address: <t< td=""><td>Alipment Date (mm/dd/yyyy) Shipment Date (mm/dd/yyyy) Eacility Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080</td><td>Colchester Soil Recycling Mingo Road, Kemptown, Nov Receiver Comments:</td></t<>	Alipment Date (mm/dd/yyyy) Shipment Date (mm/dd/yyyy) Eacility Phone No: 1-902-293-8080 Phone No: 1-902-293-8080 Phone No: 1-902-293-8080	Colchester Soil Recycling Mingo Road, Kemptown, Nov Receiver Comments:
Explired Generator Name:     Imperial OIL Limited     Site Location:     Mill Lake Road       Section I     Generator Name:     Imperial OIL Limited     Site Location:     Mill Lake Road       Generator Name:     Imperial OIL Limited     Site Phone No:     Site Phone No:     Site Phone No:       Generator Name:     Imperial OIL Limited     Site Phone No:     Site Phone No:     Site Phone No:       Generator Name:     Imperial OIL Limited     Site Phone No:     Site Phone No:     Site Phone No:       Generator Name:     Imperial OIL Limited     Site Phone No:     Site Phone No:     Site Phone No:       Generator Name:     Imperial OIL Limited     Site Phone No:     Site Phone No:     Site Phone No:       Generator Name:     Imperial OIL Limited     Site Phone No:     Site Phone No:     Site Phone No:       Generator Phone No:     Site Phone No:     Site Phone No:     Site Phone No:       Generator Phone No:     Site Phone No:     Site Phone No:     Site Phone No:       Met Neight     Tuck No:     Tuck No:     Site Phone No:       Met Neight     Tuck No:     Site Phone No:     Site Phone No:       Met Neight     Tuck No:     Tuck No:     Site Phone No:       Met Neight     Tuck No:     Tuck No:     Site Neight       Met Neight     Tuck No:	A المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحم محمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحم محمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد محمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد محمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المحمد المح	Colchester Soil Recycling Mingo Road, Kemptown, Nov Beceiver Comments:
Explicit date:     December 31, 2016     Phone No:       Section I     Generator Viame:     Imperial Oil Limited       Section I     Generator Viame:     Imperial Oil Limited       Section I     Description of Waste:     Hubbards, NS       Generator Viame:     Imperial Oil Limited     Site Location:       Mange:     Jack     Site Address:       Generator Viame:     Imperial Oil Limited     Site Address:       Generator Viame:     Imperial Oil Limited     Site Address:       Generator Viame:     Imperial Oil Limited     Site Address:       Generator Viame:     Imperial Oil Limited     Site Address:       Generator Viame:     Imperial Oil Limited     Site Address:       Generator Viame:     Imperial Oil Limited     Site Address:       Generator Viame:     Imperial Oil Limited     Site Address:       Generator None Month Di Victu     Process Victions     Site Moldress:       Generator Phone No:     Site Address:     Site Moldress:       Generator Market     Index None     Site Address:       Generator Market     Index None     Site Moldress:       Generator Market     Index None     Site Moldress:       Colgany District     Site Moldress:     Site Weight       Market     Index None     Site Moldress:       Market	Abipment Date (mm/dd/yyyy) Shipment Date (mm/dd/yyyy) DESTINATION Facility Phone No: 1-902-293-8080	Colchester Soil Recycling
Expiry date: December 31, 2016     Generator     Malais     Malais       Section I     Generator Name:     Imperial Oil Limited     Site Address:     64/04/05/01       Generator Name:     Imperial Oil Limited     Site Address:     64/04/05/01     8/04/05/01       Generator Name:     Imperial Oil Limited     Site Address:     64/04/05/01     8/04/05/01       Generator Name:     Imperial Oil Limited     Site Address:     64/04/05/01     8/04/05/01       Generator Name:     Imperial Oil Limited     Site Address:     64/04/07/01     8/04/05/01       Generator Name:     Imperial Oil Limited     Site Address:     64/04/07/01     8/04/05/01       Generator Name:     Imperial Oil Limited     Site Address:     64/04/07/01     8/04/05/01       Generator Name:     Imperial Oil Limited     Site Address:     64/04/07/01     8/04/05/01       Generator Phone No:     Imperial Oil Limited     Site Address:     64/04/07/01     8/04/05/01       Generator Phone No:     Imperial Oil Limited     Site Address:     64/04/07/01     8/04/05/01       Generator Name:     Imperial Oil Limited     Site Address:     64/04/07/01     8/04/05/01       Generator Name:     Imperial Oil Limited     Import Name:     10/04/07/01     8/04/05/01       Mame:     Import Name:     Import N	DESTINATION Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Destination Desti	
Expiry date: December 31, 2016     December 31, 2016     December 31, 2016       Section I     Generator Mane:     Imperial Oil Limited     Site Location:       Generator Mane:     Imperial Oil Limited     Site Location:     Mill Lake Road       Generator Phone No:     562 Quarty Park Bivd S.E     Site Address:     64 Mill Lake Road       Generator Phone No:     567 475-4630     Site Address:     64 Mill Lake Road       Diver Singer Address:     505 Quarty Park Bivd S.E     Site Address:     64 Mill Lake Road       Calgary Alberta     Hubbards, NS     Site Address:     64 Mill Lake Road       Diver Singer Report Name:     Imperial Oil Limited     Site Address:     64 Mill Lake Road       Calgary Alberta     Finder Lipracutor     Site Address:     64 Mill Lake Road       Diver Singer Report Name:     Imperial Direction:     Mill Lake Road       Diver Singer Report Name:     Finder Direction:     Mill Lake Road       Diver Singer Report Name:     Site Address:     64 Mill Lake Road       Diver Singer Report Name:     Finder Direction:     Mill Lake Road       Diver Singer Report Name:     Finder Direction:     Mill Lake Road       Diver Singer Report Name:     Finder Direction:     Mill Viewer Singer       Diver Singer Report Name:     Finder Direction:     Mill Kake Road       Diver Singer Report	CRUY (XXXX) Date Insmither	
Expiry date:     Section I     Generator Vame:     Imperial Oil Limited     Site Address:     Socion X       Section I     Generator Vame:     Imperial Oil Limited     Site Address:     Generator Vame:     Mill Lake Road       Generator Name:     Imperial Oil Limited     Site Address:     Site Address:     Site Address:     Site Road       Generator Name:     Imperial Oil Limited     Site Address:     Site Road     Site Road       Generator Name:     Imperial Oil Limited     Site Address:     Site Road       Calgary Alberta     Hubbards, NS     Site Road       Generator Phone No:     SS2-476-4630     Site Address:     Goldess:       Calgary Alberta     Hubbards, NS     Site Address:     Site Address:     Site Road       Calgary Alberta     Hubbards, NS     Site Address:     Site Address:     Site Address:       Calgary Alberta     Hubbards, NS     Site Address:     Site Address:     Site Address:       Calgary Alberta     Hubbards, NS     Site Address:     Site Address:     Site Address:       Calgary Alberta     Hubbards, NS     Site Address:     Site Address:     Site Address:       Calgary Alberta     Hubbards, NS     Site Address:     Site Address:     Site Address:       Calgary Alberta     Hubbards, NS     Site Address:     Site Ad	Shipment Date (mm/dv/vyvy)	111 4014003
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Expiry date:       Imperial Oil Limited       Site Location:       Mill Lake Road         Generator Vame:       Imperial Oil Limited       Site Location:       Mill Lake Road         Generator Vame:       Imperial Oil Limited       Site Location:       Mill Lake Road         Generator Vame:       Imperial Oil Limited       Site Location:       Mill Lake Road         Generator Vame:       Imperial Oil Limited       Site Location:       Mill Lake Road         Generator Vame:       Imperial Oil Limited       Site Pone No:       Shipment Date (mm/dd/WW)         Generator States       Mult Lake Road       Site Road       Site Road         Calgary Alberta       Hubbards, NS       Shipment Date (mm/dd/WW)         Description of Waste:       Mydrocarbor Impacted Soil from former Pulk Facility       Shipment Date (mm/dd/WW)         Description of Waste:       Mult Lake Road       Site Road       Shipment Date (mm/dd/WW)         Description of Waste:       Mult Lake Road       Site Road       Shipment Date (mm/dd/WW)         Description of Waste:       Mult Lake Road       Site Road       Shipment Date (mm/dd/WW)         Divert Name:       Truck R Transfer       Shipment Date (mm/dd/WW)       Shipment Date (mm/dd/WW)         Divert Name:       Truck R Transfer       Shipment Date (mm/dd/WW)       Shipment		Man Name
Project rumment in Carlo     Metalls     X       Expiry date:     December 31, 2016     Eventor 1     TpH     X       Section I     Generator Vame:     Imperial Oil Limited     Site Location:     Mill Lake Road       Generator Vame:     Imperial Oil Limited     Site Location:     Mill Lake Road       Generator Vame:     Imperial Oil Limited     Site Location:     Mill Lake Road       Generator Vame:     Imperial Oil Limited     Site Location:     Mill Lake Road       Generator Phone No:     587-476-4630     Site Pone No:     Good Phone No:       Calgaty Alberta     Hubbards, NS     Stee Location:     Mill Lake Road       Generator Phone No:     587-476-4630     Site Phone No:     Good Phone No:       Calgaty Alberta     Hubbards, NS     Stee Road     Site Road       Generator Phone No:     587-476-4630     Site Road     Site Road       Calgaty Alberta     Hubbards, NS     Scelin Hytros Site Road     Site Road       Maney     Index     Tuck No:     Scelin Hytros Site Road       Canes No (Prover Interaction Steel Road     Site Road     Site Road       Steel Road     Site Road     Site Road     Site Road       Steel Road     Steel Road     Steel Road     Steel Road       Steel Road     Steel Road     Steel Road	Net Weight	
Project rubment in Carto USI     Relation I     Relation I       Section I     Generator Vame:     Imperial OII Limited     Site Location:     Mill Lake Road       Generator Vame:     Imperial OII Limited     Site Location:     Mill Lake Road       Generator Vame:     Imperial OII Limited     Site Location:     Mill Lake Road       Generator Vame:     Imperial OII Limited     Site Location:     Mill Lake Road       Generator Vame:     Imperial OII Limited     Site Location:     Mill Lake Road       Generator Vame:     Imperial OII Limited     Site Location:     Mill Lake Road       Generator Vame:     Imperial OII Limited     Site Prone No:     902 7/17 1/17% L       Generator Phone No:     587-476-4630     Site Prone No:     902 7/17 1/17% L       Generator Stone None No:     587-476-4630     Site Prone No:     902 7/17 1/17% L       Generator Phone No:     587-476-4630     Site Prone No:     902 7/17 1/17% L       Generator Stone None No:     587-476-4630     Site Prone No:     902 7/17 1/17% L       Generator Parte     Imore No:     7902 7/17 1/17% L     101/11% L       Generator Stone None No:     586 None No:     700 7/17 1/17% L       Filoadrie     Tuck Roor     101/11% L     101/11% L       Filoadrie     Tuck Roor     502 7/17 1/17% L	cof Materials. Tare Weight	Acknowledgment of Receip
Project Name:     Imperial Oil Limited     Site Location:     Mill Lake Road       Section I     Generator Name:     Imperial Oil Limited     Site Location:     Mill Lake Road       Generator Name:     Imperial Oil Limited     Site Location:     Mill Lake Road       Generator Name:     Imperial Oil Limited     Site Potone No:     Site Road       Generator Phone No:     557-476-4630     Site Phone No:     Site Road       Generator Phone No:     587-476-4630     Site Phone No:     Site Road       Generator Phone No:     587-476-4630     Site Phone No:     Site Road       Generator Phone No:     587-476-4630     Site Phone No:     Site Road       Generator Phone No:     587-476-4630     Site Phone No:     Site Road       Generator Phone No:     587-476-4630     Site Phone No:     Site Road       Generator Phone No:     587-476-4630     Site Phone No:     Site Road       Generator Phone No:     587-476-4630     Site Road     Site Phone No:       Generator Road     Site Road     Site Road     Site Road       Generator Road     Site Road     Site Road     Site Road       Generator Road     Site Road     Site Road     Site Road       Generator Road     Site Road     Site Road     Site Road       Generator Road	Gross Weight	Vehicle License No./Prov.
Expiry date:     Description in the field     Driver     Mill Lake Road       Section I     Generator Name:     Imperial Oil Limited     Site Location:     Mill Lake Road       Generator Name:     Imperial Oil Limited     Site Location:     Mill Lake Road       Generator Name:     Imperial Oil Limited     Site Location:     Mill Lake Road       Generator Name:     Imperial Oil Limited     Site Phone No:     Site Road       Generator Phone No:     587-476-4630     Site Phone No:     9022       Description of Waste:     Hydrocarbon Impacted Soil from formet Duik Facility     Shipment Date (mm/dd/yyyy)       Generator Phone No:     587-476-4630     Site Phone No:     9022       Description of Waste:     Hydrocarbon Impacted Soil from formet Paulk Facility     Shipment Date (mm/dd/yyyy)       Description of Waste:     Inuck & Tanten     Site Phone No:     9022       Description of Waste:     Inuck & Tanten     Signature       Inuck Right     Tandem     Signature       Mame     Inuck Right     Tandem       Description of Waste:     Inuck Right     Singlate Secured (Pinned or Chained)       Inuck Right     Tandem     Singlate Secured (Pinned or Chained)       Inuck Right     Tandem     Singlate Secured (Pinned or Chained)       Diver Manue     Inuck Ri Tanten     Singlate Sec		
Expiry date:       December 31, 2016       Address:       December 31, 2016       TPH       X         Expiry date:       December 31, 2016       TPH       X         Generator Name:       Imperial Oil Limited       Site Location:       Mill Lake Road         Generator Name:       Imperial Oil Limited       Site Location:       Mill Lake Road         Generator Name:       Imperial Oil Limited       Site Location:       Mill Lake Road         Generator Name:       Imperial Oil Limited       Site Phone No:       90.2       71.7       40.05         Generator Phone No:       557-476-4630       Site Phone No:       90.2       71.7       40.05         Description of Waste:       Hydrocarbon Impacted Soil from former Bulk Facility       Imperial Distribution of Waste:       Multicut, Take Road         Generator Phone No:       557-476-4630       Site Phone No:       Site Phone No:       550.2       21.7       40.05         Generator Phone No:       557-476-4630       Site Phone No:       550.2       210.1       71.7       40.05         Description of Waste:       Hydrocarbon Impacted Soil from former Bulk Facility       Site Phone No:       550.2       71.7       40.05         Description of Waste:       Hydrocarbon Impacted Soil from former No:       50.2       71.7<	Jistinī zavirū	Driver Vamer Vamer
Expiry date:     Description I     Mill Lake Road       Section I     Stee Location:     Mill Lake Road       Generator Name:     Imperial Oil Limited     Site Location:     Mill Lake Road       Generator Name:     Imperial Oil Limited     Site Location:     Mill Lake Road       Generator Phone No:     587-476-4630     Site Phone No:     587-476-4630       Generator Phone No:     587-476-4630     Site Phone No:     902       Description of Waste:     Hydrocarbon Impacted Soil from formet foulk Facility     100       Description of Waste:     Hydrocarbon Impacted Soil from formet foulk Facility     100       Description of Waste:     Hydrocarbon Impacted Soil from formet foulk Facility     100       Description of Waste:     Hydrocarbon Impacted Soil from formet foulk Facility     100       Description of Waste:     Hydrocarbon Impacted Soil from formet foulk Facility     100       Description of Waste:     Hydrocarbon Impacted Soil from formet formet No:     100       Description of Waste:     Hydrocarbon Impacted Soil from formet No:     100       Description of Waste:     Hydrocarbon Impacted Soil from formet No:     100       Description of Waste:     Hydrocarbon Impacted Soil from formet No:     100       Description of Waste:     Hydrocarbon Impacted Soil from formet No:     100		:ssarbpy
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Project Number 31, 2016       Project Number 31, 2016       Project Number 31, 2016         Expiry date: December 31, 2016       TPH X         Generator Name:       Imperial Oil Limited       Site Location:       Mill Lake Road         Generator Name:       Imperial Oil Limited       Site Location:       Mill Lake Road         Generator Name:       Imperial Oil Limited       Site Location:       Mill Lake Road         Generator Name:       Imperial Oil Limited       Site Phone No:       Site Road         Calgary Alberta       Hubbards, NS       Mill Lake Road         Generator Stepretas       Imperial Oil Limited       Site Phone No:       Site Road         Generator Stepretas       Imperial Oil Limited       Site Phone No:       Site Road         Generator Stepretas       Hubbards, NS       Site Road       Site Road         Generator Stepretas       Hubbards, NS       Site Road       Site Road         Generator Stepretas       Site Road       Site Road       Site Road         Generator Stepretas       Mill Lake Road       Site Road       Site Road         Generator Stepretas       Hubbards, NS       Site Road       Site Road         Generator Stepretas       Hubbards, NS       Site Road       Site Road         Generator Stepretas	Truck & Transfer	
Project Namber 31, 2016     Rection I     Metals       Expiry date: December 31, 2016     TpH     X       Expiry date: December 31, 2016     TpH     X       Generator Name:     Imperial OII Limited     Site Location:     Mill Lake Road       Generator Name:     Imperial OII Limited     Site Phone No:     Site Road       Generator Phone No:     587-476-4630     Site Phone No:     Site Road       Description of Waste:     Hydrocarbon Impacted Soil from former Bulk Facility     Site Phone No:     Site Road       Description of Waste:     Hydrocarbon Impacted Soil from former Bulk Facility     Site Phone No:     Site Road       Description of Waste:     Hydrocarbon Impacted Soil from former Bulk Facility     Site Phone No:     Site Road       Description of Waste:     Hydrocarbon Impacted Soil from former Bulk Facility     Site Phone No:     Schone IDE       State Road     Site Road     Site Phone No:     Schone IDE     State Road       Description of Waste:     Hydrocarbon Impacted Soil from former Bulk Facility     Schone No:     Schone IDE       State Road     State Road     State Road     Schone No:     Schone No:       State Road     State Road     State Road     Schone No:     Schone No:       State Road     State Road     State Road     Schone No:     Schone No:		
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Expiry date:     December 31, 2016     GeneRATOR       Expiry date:     December 31, 2016     TPH     X       Generator Name:     Imperial Oil Limited     Site Location:     Mill Lake Road       Generator Name:     Imperial Oil Limited     Site Phone No:     587-476-4630       Generator Phone No:     587-476-4630     Site Phone No:     902, 717, 7(10%)       Description of Waste:     Hubbards, NS     No     Discription		
Expiry date:       Description of Waste:       Metal       Metal       Metal       Metal       Metal       Metal       X         Expiry date:       Description of Waste:       Description of Waste:       Mill Lake Road       Mill Lake Road       Mill Lake Road         Generator Name:       Imperial Oil Limited       Site Location:       Mill Lake Road       Mill Lake Road         Generator Name:       Imperial Oil Limited       Site Address:       64 Mill Lake Road       Metal         Generator Phone No:       557-476-4630       Site Phone No:       587-476-4630       Metal         Description of Waste:       Hydrocarbon Impacted Soil from former Bulk Facility       Description of Waste:       Description of Waste:       Description of Waste:	<u>Alt Color</u>	Martineserges 2:10terende
Expiry date:     December 31, 2016     X       Expiry date:     December 31, 2016     X       Section I     TPH       Generator Vame:     Imperial Oil Limited     Site Location:       Generator Vame:     Imperial Oil Limited     Site Address:       Generator Vame:     Imperial Oil Limited     Site Location:       Mill Lake Road       Generator Parts     Site Address:     64 Mill Lake Road       Generator Parts     Site Prone.     Mubbards, NS       Generator Phone No:     505 Quarry Partk Blvd S.E     Site Phone No:       Mubbards, NS     Mubbards, NS       Generator Phone No:     567-476-4630       Generator Phone No:     587-476-4630       Site Phone No:     502 7477 J/J% J/U% L	varocarbon Impacted Soil from former Bulk Facility	
Expiry date:     December 31, 2016     X       Expiry date:     December 31, 2016     TpH       Generator Name:     Imperial Oil Limited     Site Location:     Mill Lake Road       Generator Name:     Imperial Oil Limited     Site Location:     Mill Lake Road       Generator Name:     Imperial Oil Limited     Site Location:     Mill Lake Road       Generator Name:     Imperial Oil Limited     Site Location:     Mill Lake Road       Generator Name:     Imperial Oil Limited     Site Location:     Mill Lake Road       Generator Phone No:     505 Quarry Park Blvd S.E     Site Phone No:     587-476-4630       Generator Phone No:     587-476-4630     Site Phone No:     502 7.1 7 UVS L		
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Expiry date: December 31 , 2016     X       Expiry date: December 31 , 2016     TPH       Section I     Generator Name:     Imperial Oil Limited       Site Location:     Mill Lake Road	2 QUBITY PARK BIVD S.E Sold Adress: 64 Mill Lake Road	
Expiry date:     December 31, 2016     X       Expiry date:     December 31, 2016     X       Section I     Generator Name:     Imperial Oil Limited		
Expiry date: December 31, 2016 Expiry date: December 31, 2016 Section I	Therial Oil Limited Site Location: Mill Lake Road	Generator Name: In
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Expiry date: December 31, 2016	GENERATOR	Section I
	т, 2016 Тр. Хрн Трн Харан Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Каран Кара	Expiry date: December 3
		којест Number : Н СSF-1

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(T204M07) @1778@827719 (COMP027) ROUHS: MONIAY Chru FRIDAY 8:00 - 4:00 MONIAY Chru FRIDAY 8:00 - 4:00 T2:00

Tot:l Today: 4 Loads 98.06

Unit price: \$ 22,95 TONNES Unit price: \$ 229,50 Hau Chg : \$ 229,50 TOT.L DUE : \$ 229,50

Net Wt : 22950 kg

Gro:s Wt : 40500 kg MAN WT. Tar: Wt : 17550 kg

Locetion : GROUNDFIX

Source : CSF 16 37 SOIL DIRECT TO GROUNDFIX

Customer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45

> GBONNDEIX IBNCK Aey:cje: 000

Ticliet # : 489737 Date : 10/25/2016 Openator : AEA Time In : 14:27:37 Time Out : 15:13:56 Time Out : 15:13:56

Waste In - Charge :

COLCHESCER SOLID WASTE 1 CURCH ST. TRURO, N.S. B2N 325 PHONE 897-3150 Transactions sorted by Job COLCHESTER BALEFILL FAC. 10/27/2016 to 10/27/2016 Contract ="GROUND45".

From

Page

Report Date: 10/27/2016

Cha	1 0( 1)	<b>```</b>	
Total Price		262.90 238.00 246.00 228.70 975.60	975.60
Тах	             	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00
Net Price	                 	262.90 \$ 238.00 \$ 246.00 \$ 228.70 \$ 975.60 \$	975.60 \$
Unit Price	1 1 1 1 1 1	* * * * * 0000 0000 0000	÷
Unit	1 1 1 1 1 1 1 1	ONNES 10. ONNES 10. ONNES 10. ONNES 10.	
Units	l 1 1 1 1 1 1 1 1 1	26.29 TC 23.80 TC 24.60 TC 22.87 TC	
Net	1         	26290 23800 24600 22870 97560	97560
Tare		17620 18600 18920 17570 72710	72710
Gross		43910 42400 43520 40440 170270 =	170270
Oper		== NNN WNR WNR	
Location	-	GROUNDFIX GROUNDFIX GROUNDFIX GROUNDFIX	2
Material		SOILFIX SOILFIX SOILFIX	
Vehicle		600 600 600	
Time In Company	mili lake road	10:12:55 GROUNDFIX 10:20:46 GROUNDFIX 15:17:15 GROUNDFIX 15:46:08 GROUNDFIX 4 97.56	
_Ticket # Date	Job: GROUND45	489860 10/27/2016 489861 10/27/2016 489918 10/27/2016 489927 10/27/2016 70tal Tickets: 2 Total Net WUTons:	Grand Total Tickets: Grand Total Net Wr/Tons:



Project Number : H CSF-16-037		Metals	
Expiry date: December 31 , 2016		TPH	x
Section I GENE	RATOR		
Generator Name: <u>Imperial Oil Limited</u>	Site Location:	Lake Road	· · · · · · · · · · · · · · · · · · ·
Generator Address: 505 Quarry Park Blvd S.E	Site Address:64	Mill Lake Road	· · · · · · · · · · · · · · · · · · ·
Calgary Alberta	Hubbards, NS		
		······································	
Generator Phone No: 587-476-4630	Site Phone No:		
		ж.	
Description of Waste: <u>Hydrocarbon Impacted Soil from for</u>	mer Bulk Facility	10 2 -	
Cherator's Representative Name	le or total	Shinmont Data	2016
Contine II	a Pol-	Shipment Date	
TRANSPORTER Tandem	SPORTER	nod or Chained)	
LOAD SIZE: Truck&Pony		ineu or chameu)	
Bunging In Truck & Transfer	Drivers Initia	s	
lame: <u>DUWIRICH IEI/CICIW</u>			
adressGEW GLASGOW	Access to facility & la	ndfill via Exit 18 of	HWY 104
Driver Name/Title:	- Drivers Initial	с.	
hone No.: Truck No:			
Prov.: 258000	Gross Weight		
Acknowledgment of Receipt of Materials.	Tare Weight		
	Net Weight		
Mr. 10 27 16			
Driver Signature Shipment Date (mm/dd/yyyy)		45 91	1 ~rid
Section III DESTI	NATION		<u> </u>
olchester Soil Recycling Facility	Phone Net 1 002 202	9090	
lingo Road, Kemptown, Nova Scotia B2N 5B1	Filone No. 1-902-293-	0000	
eceiver Comments:	<u></u>		
			· · · · · · · · · · · · · · · · · · ·
hereby certify that the above named material has been according	WR#		
pregoing is true and accurate	need and to the pest of my knowl	eage the	
Name of Authorized Agent Signature		Receipt Date (r	nm/dd/yyyy)

COLCHESTER SOLID WASTE 1 CLURCH ST. TRURO, N.S. B2N 3Z5 PHONE 897-3150

Waste In -- Charge cale Ticket:

Ticlet # : 489860 Date : 10/27/2016 Operator : MNL Time In : 10:12:55 Time Out : 10:13:05

Veh:cle : 600 GROUNDFIX TRUCK

Customer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45 mill lake road Mat(rial : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37

Location : GROUNDFIX

Gross Wt : 43910 kg MAN WT. Tar: Wt : 17620 kg

Net Wt : 26290 kg

Units : 26.29 TONNES Unit price: \$ 10.00 Net Amount: \$ 262.90 Haul Chg : \$ 0.00 TOTIL DUE : \$ 262.90

Total Today: 1 Loads 26.29

HST # 128957719 (COMPOST) HOURS: MONIAY thru FRIDAY 8:00 - 4:00 SATURDAY 8:00 - 12:00

Signature: *** Reprinted Ticket ***



534

oad Number: <u>33</u>				<u> </u>	PCOC
roject Number : H CSF-16-037				Metals	: .:
xpiry date: December 31 , 2016				ТРН	x
Section I	GENERATO	R	· · · · · · · · · · · ·		
			1		
enerator Name: Imperial Oil Limited	· · · · · · · · · · · · · · · · · · ·	Site Location:	Mill Lake	Road	
	· · · · ·	•			
enerator Address: 505 Quarry Park Blvd S.E	· · · · · · · · · · · · · · · · · · ·	Site Address:	64 Mill L	ake Road	
algary Alberta		Hubbards	, NS		
			0-	0 1	-
enerator Phone No: 587-476-4630		Site Phone No:	402	47 400	
			•		
Description of Waste: <u>Hydrocarbon Impacted So</u>	il from former B	ulk Facility	<u></u>		
Alexalizarian /	Ole	)	<u> </u>	18 27	1206
senerator's Representative Name	Signature	and the second second second second second second second second second second second second second second second		Shipment Date	(11111/00/9999
Section II	TRANSPOR	TER	1/8		
TRANSPORTER Tandem		Tailgate Secure	d (Pinned	or Chained)	
Truck & Transfer		KM Driver	s Initials		
lame: IUAN Spicthe Tru	cking				
ddress: Dictor NS		Access to facili	ty & landfi	ll via Exit 18 of	f HWY 104
		Aur			
Driver Name/Title: 10b Machee		7 Driver	s Initials	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
hone No.: 901 159 69 40 Truck No:	5				· · · ·
ehicle License No./Prov.: <u>7/638446 N3</u>	5	Gross	Weight		
Acknowledgment of Receipt of Materials.		lare V	veignt		
10 27 16	1	Net W	eignt		
Driver Signature Shinment Date (mm/d	d/www)			1 10	<b>A</b>
		: :		424	00 - 0
Section III	DESTINATI	ON			
Colchester Soil Recycling Facility		Phone No: 1-90	)2-293-808	0	
1ingo Road, Kemptown, Nova Scotia B2N 5B1					
leceiver Comments:		· · · · · · · · · · · · · · · · · · ·		<u> </u>	
	1		· ( <mark>· · · · · · · · · · · · · · · · · · </mark>	<b>1</b> ¹	
	]	WR#			
nereby certify that the above named material has	been accepted a	na to the best of m	y knowledge	eine	
oregoing is true and accurate					i.
					-
Name of Authorized Agent	Signature	······································	· ·	Receipt Date (	mm/dd/yyyy)

COLCHÉSTER SOLID WASTE 1 CHURCH ST. TRURO,N.S. B2N 325 PHONE 897-3150

Waste In - Charge Scale Ticket

Ticlet # : 489861 Dat: : 10/27/2016 Operator : MNL Tim: In : 10:20:46 Tim: Out : 10:21:36

Veh:cle : 600 GROUNDFIX TRUCK

Customer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45 mill lake road Material : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37

Location : GROUNDFIX

Gro:s Wt : 42400 kg MAN WT. Tar: Wt : 18600 kg

Net Wt : 23800 kg

Units : 23.80 TONNES Unit price: \$ 10.00 Net Amount: \$ 238.00 Haul Chg : \$ 0.00 TOT/L DUE : \$ 238.00

Total Today: 2 Loads 50.09

HST # 128957719 (COMPOST) HOURS: MONIAY thru FRIDAY 8:00 - 4:00 SATURDAY 8:00 - 12:00

Signature: *** Reprinted Ticket ***



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Load Number:						PCOC
Project Number : H C	SF-16-037				Metals	
Expiry date: Decemb	er 31 , 2016				ТРН	×
Section I		GENERATO	R	I		
						<u> </u>
Generator Namo	Imporial Oil Limited		O'the Lease I'			
Generator Name.			Site Location:	Mill Lake	Road	·
Generator Address:	505 Quarry Park Blvd S.E		Site Address:	<u>64 Mill La</u>	ke Road	
Calgary Alberta			Hubbards	s, NS		
Generator Phone No:	587-476-4630		Site Phone No:			
Description of Waste:	Hydrocarbon Impacted Soil	from former B	ulk Facility			
Generator's Penresental	tive Namo	Cionoturo	<del>,</del>	[		<u> </u>
Senerator S Representar		Signature	•		Shipment Date (n	nm/dd/yyyy
		TRANSPOR	TER			
Section II TRANSPORT	ER Tandem		Tailgate Secure	ed (Pinned d	or Chained)	
Section II TRANSPORT LOAD	TER Tandem SIZE: Truck&Pony Truck & Transfer		Tailgate Secure	ed (Pinned o s Initials	or Chained)	
Section II TRANSPORT LOAD	TER Tandem SIZE: Truck&Pony Truck & Transfer		Tailgate Secure	ed (Pinned o s Initials	or Chained)	
Section II TRANSPORT LOAD : Name: Address:	FER Tandem SIZE: Truck&Pony Truck & Transfer		Tailgate Secure Driver	<b>ed (Pinned c</b> s Initials <b>ty &amp; landfill</b>	or Chained) via Exit 18 off I	HWY 104
Section II TRANSPORT LOAD : Name: Address:	TER Tandem SIZE: Truck&Pony Truck & Transfer		Tailgate Secure Driver	ed (Pinned o s Initials ty & landfill	or Chained) via Exit 18 off I	HWY 104
Section II TRANSPORT LOAD : Name: Address: Driver Name/Title: Phone No.:	Ter Tandem SIZE: Truck&Pony Truck & Transfer		Tailgate Secure Driver Access to facili Driver	<b>ed (Pinned c</b> s Initials <b>ty &amp; landfill</b> s Initials	or Chained) via Exit 18 off I	HWY 104
Section II TRANSPORT LOAD : Name: Address: Driver Name/Title: Phone No.: /ehicle License No./Prov	TER Tandem SIZE: Truck&Pony Truck & Transfer Truck No:		Tailgate Secure Driver Access to facili Driver Gross	<b>ed (Pinned c</b> s Initials <b>ty &amp; landfill</b> s Initials Weight	or Chained) via Exit 18 off I	HWY 104
Section II TRANSPORT LOAD : Name: Address: Driver Name/Title: Phone No.: /ehicle License No./Prov Acknowledgment of Re	TER Tandem SIZE: Truck&Pony Truck & Transfer Truck No: .: ceipt of Materials.		Tailgate Secure Driver Access to facili Driver Gross Tare V	<b>ed (Pinned c</b> s Initials <b>ty &amp; landfill</b> s Initials Weight Veight	or Chained) via Exit 18 off I	HWY 104
Section II TRANSPORT LOAD : Name: Address: Driver Name/Title: Phone No.: Vehicle License No./Prov Acknowledgment of Re	TER     Tandem       SIZE:     Truck&Pony       Truck & Transfer		Tailgate Secure Driver Access to facili Driver Gross Tare W Net W	<b>ed (Pinned c</b> s Initials <b>ty &amp; landfill</b> s Initials Weight Veight	or Chained) via Exit 18 off I	HWY 104
Section II TRANSPORT LOAD : Name: Address: Driver Name/Title: Phone No.: /ehicle License No./Prov Acknowledgment of Re Driver Signature	TER       Tandem         SIZE:       Truck&Pony         Truck & Transfer	/vvvv)	Tailgate Secure Driver Access to facili Driver Gross Tare W Net W	<b>ed (Pinned c</b> s Initials <b>ty &amp; landfill</b> s Initials Weight Veight eight	or Chained) via Exit 18 off i	HWY 104
Section II TRANSPORT LOAD Name: Address: Driver Name/Title: Phone No.: /ehicle License No./Prov Acknowledgment of Re Driver Signature	ER       Tandem         SIZE:       Truck&Pony         Truck & Transfer	/yyyy)	Tailgate Secure Driver Access to facili Driver Gross Tare W Net W	<b>ed (Pinned c</b> s Initials <b>ty &amp; landfill</b> s Initials Weight _ Veight _ eight _	via Exit 18 off I	HWY 104
Section II TRANSPORT LOAD : Name: Address: Driver Name/Title: Phone No.: Vehicle License No./Prov Acknowledgment of Re Driver Signature Section III	TER       Tandem         SIZE:       Truck&Pony         Truck & Transfer	/уууу) DESTINATIO	Tailgate Secure Driver Access to facili Driver Gross Tare W Net W	<b>ed (Pinned c</b> s Initials <b>ty &amp; landfill</b> s Initials Weight Veight eight	or Chained) via Exit 18 off I	HWY 104
Section II TRANSPORT LOAD : Name: Address: Driver Name/Title: Phone No.: Vehicle License No./Prov Acknowledgment of Re Driver Signature Section III Colchester Soil Recycl Mingo Road, Kemptown, Receiver Comments:	ER       Tandem         SIZE:       Truck&Pony         Truck & Transfer	/уууу) DESTINATIO	Tailgate Secure         Driver         Access to facili         Driver         Gross         Tare W         Net W         DN         Phone No: 1-90	ed (Pinned of s Initials <b>ty &amp; landfill</b> s Initials Weight eight eight 02-293-8080	pr Chained) via Exit 18 off I	HWY 104
Section II TRANSPORT LOAD : Name: Address: Driver Name/Title: Phone No.: Vehicle License No./Prov Acknowledgment of Re Driver Signature Section III Colchester Soil Recycl Mingo Road, Kemptown, Receiver Comments:	ER       Tandem         SIZE:       Truck&Pony         Truck & Transfer	/уууу) DESTINATIC	Tailgate Secure         Driver         Access to facili         Driver         Gross         Tare W         Net W         DN         Phone No:       1-90	ed (Pinned of s Initials ty & landfill s Initials Weight eight eight 02-293-8080	pr Chained) via Exit 18 off i	HWY 104
Section II TRANSPORT LOAD Name: Address: Driver Name/Title: Phone No.: Vehicle License No./Prov Acknowledgment of Re Driver Signature Section III Colchester Soil Recycl Mingo Road, Kemptown, Receiver Comments:	ER       Tandem         SIZE:       Truck&Pony         Truck & Transfer         /.:	/yyyy) DESTINATIC	Tailgate Secure Driver Access to facili Driver Gross Tare W Net W Net W Phone No: 1-90	ed (Pinned of s Initials ty & landfill s Initials Weight eight 02-293-8080	via Exit 18 off I	HWY 104
Section II TRANSPORT LOAD Name: Address: Driver Name/Title: Phone No.: /ehicle License No./Prov Acknowledgment of Re Driver Signature Section III Colchester Soil Recycl Aingo Road, Kemptown, Receiver Comments: hereby certify that the	ER       Tandem         SIZE:       Truck&Pony         Truck & Transfer	/yyyy) DESTINATIO	Tailgate Secure         Driver         Access to facili         Driver         Gross         Tare V         Net Wo         DN         Phone No:       1-90         WR#         Md to the best of my	ed (Pinned of s Initials ty & landfill s Initials Weight eight )2-293-8080	pr Chained) via Exit 18 off I <u>43520</u>	HWY 104
Section II TRANSPORT LOAD Name: Address: Driver Name/Title: Phone No.: /ehicle License No./Prov Acknowledgment of Re Driver Signature Section III Colchester Soil Recycl Aingo Road, Kemptown, Receiver Comments: hereby certify that the oregoing is true and acc	TER       Tandem         SIZE:       Truck&Pony         Truck & Transfer	/yyyy) DESTINATIC	Tailgate Secure         Driver         Access to facili         Driver         Gross         Tare W         Net W         DN         Phone No: 1-90         WR#         Md to the best of my	ed (Pinned of s Initials ty & landfill s Initials Weight Veight eight 02-293-8080	the	HWY 104
Section II TRANSPORT LOAD Name: Address: Driver Name/Title: Phone No.: /ehicle License No./Prov Acknowledgment of Re Driver Signature Section III Colchester Soil Recycl Mingo Road, Kemptown, Receiver Comments: hereby certify that the oregoing is true and acc	ER       Tandem         SIZE:       Truck&Pony         Truck & Transfer	/yyyy) DESTINATIO	Tailgate Secure         Driver         Access to facili         Driver         Gross         Tare W         Net Wo         DN         Phone No:       1-90         WR#         nd to the best of my	ed (Pinned of s Initials ty & landfill s Initials Weight veight 02-293-8080	via Exit 18 off I	HWY 104
Section II TRANSPORT LOAD : Name: Address: Driver Name/Title: Phone No.: Vehicle License No./Prov Acknowledgment of Re Driver Signature Section III Colchester Soil Recycl Mingo Road, Kemptown, Receiver Comments: hereby certify that the oregoing is true and acc Name of Authorized Ac	ER       Tandem         SIZE:       Truck&Pony         Truck & Transfer	/yyyy) DESTINATIO	Tailgate Secure         Driver         Access to facili         Driver         Gross         Tare W         Net WO         DN         Phone No:       1-90         WR#         Md to the best of my	ed (Pinned of s Initials ty & landfill s Initials Weight eight 02-293-8080	the	

COLĆHESTEŘ SOLID WASTE 1 CHURCH ŠT. TRURO,N.S. B2N 325 PHONE 897-3150

Veh:cle : 600 GROUNDFIX TRUCK

Customer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45 mill lake road Material : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37

Location : GROUNDFIX

Gro:s Wt : 43520 kg MAN WT. Tar: Wt : 18920 kg

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Net Wt : 24600 kg

Units : 24.60 TONNES Unit price: \$ 10.00 Net Amount: \$ 246.00 Haul Chg : \$ 0.00 TOT/L DUE : \$ 246.00

Total Today: 3 Loads 74.69

HST # 128957719 (COMPOST) HOURS: MONIAY thru FRIDAY 8:00 - 4:00 SATURDAY 8:00 - 12:00

Signature: *** Reprinted Ticket ***



## SOIL MANIFEST FOR BIOREMEDIATION

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Load Number:						PCOC
Project Number : H C	SF-16-037				Metals	
Expiry date: Decemb	er 31 , 2016				ТРН	×
Section I		GENERATO	R			
Generator Name:	Imperial Oil Limited		Site Location:	Mill Lake	Road	-
Generator Address:	505 Quarry Park Blvd S.E		Site Address:	<u>64 Mill La</u>	ke Road	
Calgary Alberta			Hubbards,	NS		
Generator Phone No:	587-476-4630		Site Phone No:			
		,				
Jescription of Waste:	Hydrocarbon Impacted Soi	l from former Bu	Ilk Facility			• ••••••••••••••••••••••••••••••••••••
Generator's Representa	tive Name	Signature		_ [	Shipment Date (n	L nm/dd/vvvv)
Section II		TRANSPORT	TER			· · · · · · · · · · · · · · · · · · ·
TRANSPORT	ER Tandem		Tailgate Secure	l (Pinned	or Chained)	
LOAD	SIZE: Truck&Pony					
Name: Reinst	Truck & Transfer		Drivers	Initials		
Address:			Access to facility	. O. Jawalfill	nde Freit 10 off I	
	/				VIA EXIT 18 OFF I	HWY 104
Driver Name/Title:	Vernon P.	······································	Drivers	Initials		
Phone No.:	Truck No:					
/ehicle License No./Prov	/.:		Gross	/eight		
Acknowledgment of Re	ceipt of Materials.		Tare We	eight		
			Net Wei	ght _		· · · · · · · · · · · · · · · · · · ·
Deixee Cierchard						-
Driver Signature	Shipment Date (mm/do	ί/γγγγ)			LAUUA	1
Section III		DESTINATIO	N		10 770	-rea
· · · · · · · · · · · · · · · · · · ·						
Colchester Soil Recycl	ing Facility		Phone No: 1-902	-293-8080		
Colchester Soil Recycl Aingo Road, Kemptown,	<b>ing Facility</b> Nova Scotia B2N 5B1		Phone No: 1-902	-293-8080		
Colchester Soil Recycl Aingo Road, Kemptown, Receiver Comments:	ing Facility Nova Scotia B2N 5B1		Phone No: 1-902	-293-8080		
Colchester Soil Recycl Mingo Road, Kemptown, Receiver Comments:	ing Facility Nova Scotia B2N 5B1		Phone No: 1-902	-293-8080		
Colchester Soil Recycl Mingo Road, Kemptown, Receiver Comments:	Ing Facility Nova Scotia B2N 5B1		Phone No: 1-902	-293-8080		
Colchester Soil Recycl Mingo Road, Kemptown, Receiver Comments:	Ing Facility Nova Scotia B2N 5B1 Cell Cell above named material back	een accented as	Phone No: 1-902 WR#	-293-8080		
Colchester Soil Recycl Mingo Road, Kemptown, Receiver Comments: hereby certify that the oregoing is true and acc	Ing Facility Nova Scotia B2N 5B1 Cell Cell above named material has b	een accepted an	Phone No: 1-902 WR# d to the best of my	-293-8080	the	
Colchester Soil Recycl Mingo Road, Kemptown, Receiver Comments: hereby certify that the oregoing is true and acc	ing Facility Nova Scotia B2N 5B1 Cell Cell above named material has b curate	een accepted an	Phone No: 1-902 WR# d to the best of my	-293-8080	the	
Colchester Soil Recycl Mingo Road, Kemptown, Receiver Comments: hereby certify that the oregoing is true and acc	Ing Facility Nova Scotia B2N 5B1 Cell above named material has b curate	een accepted an	Phone No: 1-902 WR# d to the best of my	-293-8080	the	
Colchester Soil Recycl Mingo Road, Kemptown, Receiver Comments: hereby certify that the oregoing is true and acc Name of Authorized Ac	ing Facility Nova Scotia B2N 5B1 Cell Cell above named material has b curate gent	een accepted an Signature	Phone No: 1-902 WR# d to the best of my	-293-8080	the Receipt Date (mi	n/dd/yyyy)
Colchester Soil Recycl Mingo Road, Kemptown, Receiver Comments: hereby certify that the oregoing is true and acc Name of Authorized Ac	ing Facility Nova Scotia B2N 5B1 Cell Cell above named material has b curate gent	een accepted an Signature	Phone No: 1-902 WR# d to the best of my	-293-8080	the Receipt Date (mr	 m/dd/yyyy)

COLCHESTER SOLID WASTE 1 CHURCH ST. TRURO, N.S. B2N 325 PHONE 897-3150

Waste In - Charge {cale Ticket Ticlet # : 489927 Date : 10/27/2016 Operator : MNL Time In : 15:46:08 Time Out : 15:46:18

Veh:cle : 600 GROUNDFIX TRUCK

Customer : GROUNDFIX GROUNDFIX REMEDIATION Contract : GROUND45 mill lake road Material : SOILFIX SOIL DIRECT TO GROUNDFIX Source : CSF 16 37

Location : GROUNDFIX

Gro:s Wt : 40440 kg MAN WT. Tar: Wt : 17570 kg

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Net Wt : 22870 kg

Units : 22.87 TONNES Unit price: \$ .10.00 Net Amount: \$ 228.70 Haul Chg : \$ 0.00 TOT/L DUE : \$ 228.70

Total Today: 4 Loads 97.56

HST # 128957719 (COMPOST) HOURS: MONIAY thru FRIDAY 8:00 - 4:00 SATURDAY 8:00 - 12:00

Signature: *** Reprinted Ticket ***

A REAL PROPERTY AND ADDRESS OF TAXABLE PARTY.	12 11			the Pag	· .		F	AGE:		Sa	les Orde	r#
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www.enviros	ystemsglobal.	com				ARGAN .	C	ATE:			10/24/2016	5
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CUST ID	AECO1000	CUST	PO#	1.0			DEP	RTMENT	WA	STEN	ANAGEMEN	т
NAME	AECOM Cana	da Ltd				211.0	DIVIS	BION/SITE	DEI	BERT	- NS	
(BILL TO)	1701 HOLLIS	STREET, SH	400				SER	/ICE LINE	WA	STE V	VATER TREA	TMEN
	HALIFAX, NS	B3J 3M8 CAI	NADA				SER	ICE TYPE	Red	curring	Maintenance	
CONTACT				PHONE #	902-595-	2013	PR	OJECT #		-		
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62	<b>BOL #</b> 5406	ADING	STEMS BILL OF L	Arown Ave.	ENV 11 B Dart	A + + A
	102957	REF WO #	OCTOBER 24 2016	ATE	D	
-	TIME ARRIVED		ARCOM	NAME	R	
	TIME STARTED		64 Mill Lake Road Hubbards NS	ADDRESS	RATC	
	TIME FINISHED	PHONE #		CONTACT	INE	
	TOTAL HOURS		X	SIGNATURE	IJ	
MAIL	DRIVER PHIL FORM,		Envirosystems (Atlantic Industrial Services)	NAME		
	UNIT # 17-11	1	11 Brown Avenue Dartmouth NSB3B 1Z7	ADDRESS	RIER	
N.S.	PLATE # PR32909 n	PHONE # 902 899 6082	PHIL FORMAN	CONTACT	CAR	
1.	TRAILER # 132-14		×	SIGNATURE		-
	TIME ARRIVED		Envirosystems	NAME	~	
	TIME STARTED		660 MacElmon Road Debert NS BOM 1G0	ADDRESS	IVER	
	TIME FINISHED	PHONE # 902 899 2739	Russell Campbell	CONTACT	RECE	
	TOTAL HOURS		X	SIGNATURE	Ľ	
	TIME FINISHED TOTAL HOURS	PHONE # 902 899 2739	Russell Campbell X IATION:			

PIN	SHIPPING NAME	CLASS	PKG GROUP	QTY	UM	TOTAL VOLUMI (L/KG)
Ŕ	Waste Water	NE	NR	¢1	bulk	30000
						.4
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		92 				

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, are properly classified and packaged, have dangerous goods safety marks properly affixed or displayed on them, and are in all respects in proper condition for transport according to the Transportation of Dangerous Goods Regulations.

SIGNATURE X

0

CONSIGNER NAME

Alex Duguay

south

an



# Envirosystems Inc.

Phone: 1-800-565-4383 Fax: 1-902-662-3337

invoices@envirosystems.ca

To ensure proper application of your payment, please indicate the invoice number(e) on your remittance. Thank you. Invoice SD79788 Invoice Date: 11/28/2016 AECO1000 Customer Account: PO Number: HST #: 127856987 Original Invoice #:

Billing Address:	Ship To:
AECOM Canada Ltd	AECOM Canada Ltd
1701 HOLLIS STREET	1701 HOLLIS STREET
SH 400	SH 400
HALIFAX, NS B3J 3M8	HALIFAX, NS B3J 3M8
CANADA	CANADA

WO Date	Part #	Description	Quantity	BOL #	Price	Amount
11/01/2016	BWW	WASTE WATER, PER LITRE	30,000.00	<b>B52453</b>	0.140/LT	4,200.00
11/01/2016	т	TRANSPORT CHARGE	6.00		120.000/EA	720.00
Manifest #:		WO #: X28011	SO No:	104	089	Total:\$ 4,920.00
			PO No:			
			Job No:			
					SubTotal:	\$ 4,920.00

	4 -1020.00
Discount:	\$0.00
SubTotal:	\$ 4,920.00
Texc	\$ 738.00
Total:	\$ 5,658.00

TERMS: NET 30 DAYS 2% per Month (24% per annum) charged on overdue accounts.



Mail cheques to: Envirosystems Inc. 11 Brown Avenue Dartmouth, NS, B3B 1Z7, Cenada Please note the remittance email has changed to ARRemittances@envirosystems.ca
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www.env	irosystemsgiobal.co	CUSTOMER	2 000 909 4909		DATE:	NOV	0/ 16
CUST ID	AFCDINE	CUST PO #			DEPARTMENT	WENTINFO	STE SERVICES
NAME	HECOIDSE	- Unacid Au					STE SERVICES
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ADDRESS (BILL TO)	HUBBAK	VS NJ		-	SERVICE LINE	/	
(DILL TO)				SERVICE TYPE			
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	NAME Envirosystems (Atlantic Industrial Services)				DRIVER	Phi	l Forman
RIER	ADDRESS				UNIT #		IT-11
CAR	CONTACT Phil Formin	PHONE #	902 899-6	5082	PLATE #	P	32909 NS
	SIGNATURE X				TRAILER	# Be	1-14
	NAME ENVIROSYSTEMS				TIME	ARRIVED	
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RECE	CONTACT MARRIN BLACK	PHONE #	102 66	2-33<	TIME F	INISHED	
	SIGNATURE X				TOTAL	HOURS	
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PIN	SHIPPING NAME	CLASS	PKG GROUP	QTY		UM	TOTAL VOLUME (L/KG)
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## Envirosystems Inc.

Phone: 1-800-565-4383 Fax: 1-902-662-3337

invoices@envirosystems.ca

To ensure proper application of your payment, please indicate the invoice number(s) on your remittance. Thank you. 
 Invoice
 SD79789

 Invoice Date:
 11/28/2016

 AECO1000
 AECO1000

 Customer Account:
 PO Number:

 HST #:
 127856987

 Original Invoice #:

Billing Address:		Ship To:
AECOM Canada Ltd		AECOM Canada Ltd
1701 HOLLIS STREET		1701 HOLLIS STREET
SH 400		SH 400
HALIFAX, NS B3J 3M8	<u> </u>	HALIFAX, NS B3J 3M8
CANADA		CANADA

WO Date	Part #	Description	Quantity	BOL #	Price	Amount
11/01/2016	BWW	WASTE WATER, PER LITRE	22,300.00	B54106	0.140/LT	3,122.00
11/01/2016	т	TRANSPORT CHARGE	6.00		120.000/EA	720.00
Manifest #:		WO #: 103564	SO No:	105	078	Total:\$ 3,842.00
			PO No:			
			Job No:			
					SubTotal:	\$ 3,842.00
					Discount:	80.00

Discount	
Discoult.	\$0.00
SubTotal:	\$ 3,842.00
Texc	\$ 576.30
Total:	\$ 4,418.30

TERMS: NET 30 DAYS 2% per Month (24% per annum) charged on overdue accounts.



Mail cheques to: Envirosystems Inc. 11 Brown Avenue Dartmouth, NS, B3B 1Z7, Canada Please note the remittance email has changed to ARRemittances@envirosystems.ca

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www.envirosys	stemsglobal.	.com					DAT	E:		1 1/1/2	016
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NAME	AECON ATLA	NTIC INDUSTRIAL INC				DIV	ISION	SITE	DEBE	RT - NS	
(BILL TO)	61 ESTATES	RD., DARTMOUTH NS	B2Y 4K3			SE	SERVICE LINE			WASTE WATER TREATMENT	
	CANADA					SER	SERVICE TYPE Rec			Recurring Maintenance	
CONTACT			PHONE #	(416) 297-	2600 x3993	PI	ROJEC	F#			
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bb Description:					Onsite Con	tact:					
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æ	NAME AECOM	-	<del>)</del>		TIME ARRIVED	
ATC	ADDRESS 64 Mill Lake Road Hubbards NS				TIME STARTED	
NER	CONTACT	PHONE #		10	TIME FINISHED	
19	SIGNATURE X	_			TOTAL HOURS	
	NAME Envirosystems (Atlantic Industrial Services)				DRIVER	11-1-2
RIER	ADDRESS 11 Brown Avenue Dartmouth NS B3B 1Z7				UNIT#	
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24-HOUR NUMBER FOR EMERGENCIES CONTACT CANUTEC @ 1-613-996-6666 WHITE CENEDATOD CODY VELICIAL CARDIER COM

ATLANTIC INDU			Date: Nov 3/2016
ATLANTIC INDUSTRIAL CLEANERS		Wo	rk Log#: _/03795
SAINT JOHN, NB Tel: (506) 652-9178	MONCTON, NB Tel: (506) 854-8014	DARTMOUTH, NS Tel: (902) 468-9011	C 7920
MIRAMICHI, NB Tel: (506) 624-9862	CHARLOTTETOWN, PEI Tel: (902) 892-8014	SYDNEY, NS Tel: (902) 564-0578	BILL OF LADING
NAME ADDRESS 64 mill Gradin SIGNATURE	lonoda Icke #2		TELEPHONE (902)717-3918
ADDRESS ADDRESS ILBIOUR AU CONTACT Welson	s e Dortmouth	,	PLATE # IS-681-D TELEPHONE (902)468-901
ADDRESS ADDRESS 11 Brain And CONTACT	Contract th		TELEPHONE
Nelson			(902) 468-9011
NAME: <u>Oily Cofe</u>			
CLASS:			
UN#:		176 J	
PG:			
VOL 1000 LT 24-HOU	R NUMBER FOR EME	RGENCIES CONTACT	Г САЛИТЕС @ 1-613-996-6666

 WHITE - GENERATOR COPY
 YELLOW - CARRIER COPY
 PINK - RECEIVER COPY

							F	AGE:		Sales Qro	ler#	
ENVÍR	OSYST	EMS						of		10379	5	
www.enviros	systemsglobal.co	om						ATE:		11/3/201		
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CUST ID	AECO1000	CUSTI	PO#				DEPA	ARTMENT	INDUS	TRIAL SERVI	CE	
NAME	AECOM Canada	a Ltd					DIVIS	ION/SITE	DARTI	MOUTH - NS		
(BILL TO)	1701 HOLLIS S	TREET, SH 4	00				SERV	ICE LINE	VAC S	ERVICES		
	HALIFAX, NS B	3J 3M8 CAN	ADA			SERVICE TYPE DROF			ROP-IN			
CONTACT         PHONE #         902-595-28**         PROJECT #												
JOB DESCRIPTION / LOCATION / DETAILS												
JOB VAC SLUDGE & WATER FROM FRAC TANK ONSITE CONTACT: DESCRIPTION: ONSITE NUMBER: LOCATION: HUBBARDS RESPONSIBLE MCLELLAN NELSON SUPERVISOR: PHONE NUMBER: 902-497-4255												
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CleanEarth Technologies Inc. 203 Aerotech Drive

Office: 902.835.9095 Fax: 902.835.9010 Enfield, NS, Canada B2T 1K3 / www.cleanearthtechnologies.ca

	CANADIAN	BII	L OF LA	DING #	65784
DANGEROUS G	OODS	X	_ Truck	C.E.T. Job	812438
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Consignee/Receiver	Provincial ID No.	Shipped	d From (Site Address)		
CleanEarth Technologies	Inc 2005-080581	64	Mill Lake	Rd No	ζ, Ζ
Address		Addres	S		
203 Aerotech Drive	Postal Code	City		Province	Postal Code
		Hin	bhards .	NS	I Ustar Couc
Enfield Nova Sco	otia B2T IK3			•	
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I hereby declare that the proper shipping name (T or agent for acceptance a	contents of this consigned ype of Impacts). Bill of the CleanEarth Technol	gnment of Ladin logies.	are fully and ac ag must be comp	curately desc leted and sig	ribed above by the ned by the shipper
Consignor/Shipper	Print		on bengigha	tured aL	Date
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Carrier/Transporter X E L L	GYOUNG	is Solars	14	1	
Consigned Received By	Reberta Fo	inly	Kenecca	Janey	Aug 8/18
Date and Time Received	Gross Weight On (k	g) /	Tare Weigh	t Oút (kg)	Net Weight (kg)
Hugo/10 147.14	24240			170	12770

YELLOW - CARRIER'S COPY

CleanEarth TECHNOLOGIES

CleanEarth Technologies Inc. 203 Aerotech Drive Enfield, NS, Canada B2T 1K3

Office: 902.835.9095 Fax: 902.835.9010 www.cleanearthtechnologies.ca

	CA	NAI	DIAN	BII	L OF I	ADING	# 65785	
				X		4 	8/1428	
DANGEROUS GOODS				/	_ Truck	C.E.T. Job	7770	
X NON-REGULAT	ED GOO	DDS			_ Rail	Weight Ticl	ket No	
Carrier Transporter				Unit No. or Plate No.				
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CleanEarth Technologies Inc 2005-080581								
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City Province	Р	ostal Code		City		Province	Postal Code	
Enfield Nova Scotia B2T 1K3				Mubbads NS				
Type of Impacts		Water	CET Code					****
Petroleum			1	Site Ov	vner			
РАН				Address 55 Querry Park Lane City Province Postal Code				
Metals								
Pyritic Slate				Cali	nor j	AB		
I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name (Type of Impacts). Bill of Lading must be completed and signed by the shipper or agent for acceptance at CleanEarth Technologies.								
Consignor/Shipper		Pri	int		on here	ignature 7.10L	Date	
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Carrier/Transporter	DA	ho,	syste	*	Jun	segal	-0E-08-18	
Consignee/Received By	1.	~ //	Actth	te	M	1111	08-08-18	
Date and Time Received	Received Gross Weight On (kg)				Tare W	Eight Out (kg)	Net Weight (kg)	
14.57	0	248	20	5	11,0	190	12.930	

WHITE - CLEANEARTH COPY

YELLOW - CARRIER'S COPY

PINK - OWNER/SITE PROFESSIONAL