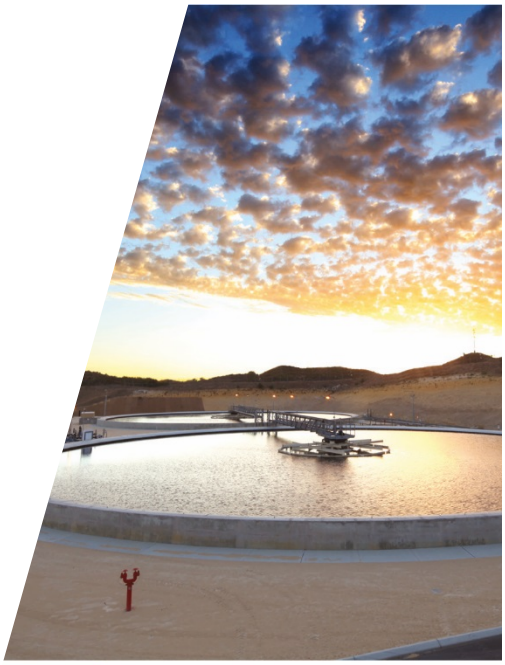


Phase Two ESA

Union Waterfront Property – Port Dalhousie
12 and 16 Lock Street
St. Catharines, Ontario



Rankin Construction Inc.

Executive Summary

GHD Limited (GHD) was retained by Rankin Construction Inc. (Rankin) to conduct a Phase Two Environmental Site Assessment (ESA) of the lands located at 12 and 16 Lock Street in St. Catharines, Ontario (Site or Property). GHD understands that the Site was managed by MSI Spergel Inc. as insolvency trustee and was in the process of being acquired by Rankin through receivership for the purpose of redeveloping the Property as mixed commercial and residential use. A Site location map is shown on Figure 1 and a Site Plan is shown on Figure 2.

A Phase One ESA of the Property was completed by GHD in March 2019 on behalf of Rankin. The following Areas of Potential Environmental Concern (APECs) were identified in the Phase One ESA:

APEC #	*Area of Potential Environmental Concern*
A	Current Dry Cleaning Facility
B	Former UST – Associated with Taxi Stand
C	Former Dry Cleaning Operations
D	Fill of an Unknown Quantity
E	PAH and Metals Impacted Soil
F	Peat Fill
G	Former Fuel Oil Use

A Phase One ESA of the Property was completed in March 2019 by GHD on behalf of Rankin. Based on the Phase One ESA, a Phase Two ESA was deemed to be required to facilitate the filing of an RSC for the proposed redevelopment of the Property for mixed residential/commercial use. The objective of this Phase Two ESA is to document the presence or absence of contaminants in soil and groundwater on, in or under the Property from all identified APECs in accordance with the requirements of O. Reg. 153/04.

The Phase Two ESA activities included a review of environmental Site sensitivity and the collection of soil and groundwater samples to assess the Site conditions. The Phase Two ESA investigations included the following:

- Advancement of six boreholes (BH6-19, BH7-19, BH8-19, MW5-19, MW6-19 and SVP1-19)
- Instrumentation of two boreholes as groundwater monitoring wells (MW5-19 and MW6-19)
- Collection of soil and groundwater samples for screening and laboratory analysis
- Methane gas monitoring in one soil gas probe (SVP1-19)

The Phase Two ESA was conducted supplementary to an Environmental Screening conducted by GHD between December 2018 and January 2019. The purpose of the Environmental Screening investigation is to screen for the presence of gross environmental impairment at the Site preparatory to Rankin waiving its environmental conditions associated with its offer to purchase the Property. The Environmental Screening investigations included the following:

- Advancement of one on-Site borehole (MW3-18) and two off-Site boreholes (MW2-18 and MW3-18)
- Instrumentation of one on-Site borehole (MW3-18) and two off-Site boreholes (MW2-18 and MW3-18) as groundwater monitoring wells

- Collection of soil and groundwater samples for screening and laboratory analysis

The applicable criteria were determined by GHD to be representative of the current Site conditions. Evaluation of the Site requires the use of generic soil quality guidelines for residential/parkland/institutional use developed by the MECP and presented in the MECP Standard under Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition for Residential/Parkland/Institutional Property Use for medium to fine textured soils (MECP Table 3 Standards) as provided in the *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*, Ministry of the Environment, April 15, 2011.

Based on the Phase Two ESA completed at the Site, including all field and laboratory analytical data generated therefrom, the following conclusions have been developed regarding environmental Site conditions.

Geology

The stratigraphy encountered during the field activities consisted of the following:

- *Topsoil* – surface cover in landscaped grassy areas across the property
- *Gravel Fill* – gravel surface cover with some sand in gravel parking areas across the Site
- *Sand and Gravel Fill* – sand and gravel, medium to coarse grained, grey to brown, dry to moist
- *Sandy Silt/Silty Sand Fill* – Sand and silt, medium to fine grained with varying amounts of gravel, organic material and debris (asphalt, brick, concrete, glass), brown to grey to black, moist to wet
- Sand Fill – Sand with some silt and organic material, medium to fine grained, reddish brown, wet
- *Clayey Silt Fill* – Silt fill with clay, fine grained with varying amounts of gravel and organic material, brown to grey, moist to wet
- *Sandy Silt Fill* – Silt with sand, medium to fine grained with varying amounts of gravel, brown, moist to wet
- *Silty Sand Fill* – Sand with silt, medium to fine grained, brown to grey, wet
- Clayey Silt/ Silty Clay Fill – Silt and clay, fine grained with some sand and gravel, grey, moist

Soil Quality

Soils across the Site were analyzed for VOCs, PHCs, PAHs, metals, conductivity and SAR. This included examination of soils at the areas of suspected potential environmental concern. Assessment of soil quality with respect to Table 3 Standards identified contaminants of concern as follows:

Metals

- Cadmium
- Lead
- Zinc

Inorganics

- Electrical Conductivity

Polycyclic Aromatic Hydrocarbons

- Acenaphthylene
- Anthracene
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene/Benzo(j)fluoranthene
- Benzo(k)fluoranthene
- Dibenz(a,h)anthracene
- Fluoranthene
- Indeno(1,2,3-cd)pyrene

A summary of the horizontal extent of soil impacts at the Site is presented on Figure 8. The vertical extent of soil impacts for cross-section A-A' are presented on Figure 9.1 (Metals), Figure 9.2 (PAHs) and Figure 9.3 (Inorganics).

The vertical extent of the soil impacts for cross-section B-B' are presented on Figures 9.1 (Metals) and Figure 9.2 (PAHs). Inorganics were not detected at concentrations exceeding their respective MECP Table 3 Standards in soil along cross-section B-B', figures delineating the vertical extent of these impacts along cross-section B-B' are not required to complete delineation.As the above mentioned COCs were identified in soil at the Site, soil remediation, a Risk Assessment and risk management measures are required to facilitate filing a Record of Site Condition for the proposed residential/commercial development at the Site.

Groundwater Quality

Groundwater samples from across the Site were analyzed for VOCs, PHCs, PAHs and dissolved metals. This included examination of groundwater at the areas of suspected potential environmental concern. Assessment of groundwater quality with respect to the MECP Table 3 Standards identified no contaminants of concern. As no contaminants of concern were identified in groundwater at the Site, groundwater remediation, a groundwater Risk Assessment and groundwater risk management measures are not required to facilitate filing a Record of Site Condition for the proposed residential/commercial development at the Site.

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Appendix B Previous Environmental Reports
Appendix C Sampling and Analysis Plan
Appendix D Borehole Stratigraphic and Monitoring Well Instrumentation Logs
Appendix E Laboratory Analytical Report

1. Introduction

GHD Limited (GHD) was retained by Rankin Construction Inc. (Rankin) to conduct a Phase Two Environmental Site Assessment (ESA) of the lands located at 12 and 16 Lock Street in St. Catharines, Ontario (Site or Property). GHD understands that the Property was managed by MSI Spergel Inc. as insolvency trustee and was in the process of being acquired by Rankin through receivership. It is GHD's understanding that Rankin intends to redevelop the Property for mixed commercial and residential use and that this Phase Two ESA is being completed to support filing a Record of Site Condition (RSC) in accordance with Ontario Regulation 153/04, as amended (O. Reg. 153/04). A Site location map is shown on Figure 1 and a Site Plan is shown on Figure 2

The Property consists of seven contiguous parcels of land that, combined, are approximately 0.40 hectares (0.98 acres) in size. Four buildings currently occupy the Site. The buildings are approximately 380 square metres (4,100 square feet), 200 square metres (2,150 square feet),25 square metres (270 square feet) and 215 square metres (2,290 square feet) in size and occupy the south, north northwest and southeast portions of the Property, respectively. A Phase One ESA of the Property was completed in March 2019 by GHD on behalf of Rankin. Based on the Phase One ESA, a Phase Two ESA was deemed to be required to facilitate the filing of an RSC for the proposed redevelopment of the Property for mixed residential/commercial use. The objective of this Phase Two ESA is to document the presence or absence of contaminants in soil and groundwater on, in or under the Property from all identified APECs in accordance with the requirements of O. Reg. 153/04.

The Phase Two ESA activities included a review of the environmental Site sensitivity and the collection of soil and groundwater samples to assess Site conditions.

1.1 Site Description

The Property is located in the north end of St. Catharines, Ontario, in the Port Dalhousie Heritage District in an area that has been utilized for commercial land uses for the purposes of Port activities, including operation and maintenance of wharves, locks and docks since at least the 1890s. The Site is currently occupied by four buildings, a vacant Sales Office, a vacant former hotel, and a vacant jail house located at 16 Lock Street and a commercial/retail building located at 12 Lock Street. These buildings were originally constructed somewhere between 2003 and 2017, sometime prior to 1896, in the 1840s, sometime around 1897 respectively. The exterior portion of the Site consists of grass and vegetation cover with paved asphalt occupying the northeastern portion of the Property and gravel covering the eastern central portion of the Property. The Property boundaries are shown on Figure 2.

The Property is described as Part of Lot 21, Concession I, Township of Grantham, now Port Dalhousie Lots 3, 4, 5, 6, 7, 8 and 16 with municipal addresses of 12 and 16 Lock Street located in St. Catharines, Ontario. The Property Identification Number (PIN) for the Site was 46195-0690 LT. The Property was managed by MSI Spergel Inc. as insolvency trustee and was in the process of being acquired by Rankin through receivership.

A survey of the Phase Two Property is included in Appendix A.

1.2 Property Ownership

The Property was managed by MSI Spergel Inc. as insolvency trustee and was in the process of being acquired by Rankin through receivership. Contact information for the Property receiver's representative is provided below:

MSI Spergel Inc.
Attention: Evan MCCullagh – Estate Administrator
21 Kings Street West, Suite 1602, Box 54
Hamilton, Ontario L8P4W7

Contact information for Rankin's representative is provided below:

Rankin Construction Inc.
Attention: Mr. Jim Frank, P. Eng., MBA
222 Martindale Road, Box 1116
St. Catharines, Ontario L2R 7A3

It is GHD's understanding that the Phase Two ESA is being completed in contemplation of filing a RSC in accordance with O. Reg. 153/04 to support redevelopment of the Property for mixed commercial and residential land use.

1.3 Current and Proposed Future Uses

The Site is occupied by one two-storey building with a basement (former hotel), one one-storey building with a lower level crawl-space (sales office), one one-storey building with no basement (jail house) and one two storey building (restaurants/retail building). The former hotel, sales office and jail house were formerly commercial buildings which are currently vacant. The commercial/retail building located at 12 Lock Street is a commercial building which is currently occupied by a retail shop. GHD understands Rankin intends to redevelop the Property for mixed residential and commercial land use.

1.4 Applicable Site Condition Standards

Soil and groundwater quality analytical data generated from this Phase Two ESA are assessed with respect to the generic standards provided in the Ontario Ministry of the Environment, Conservation and Parks (MECP) document entitled *"Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act"*, dated April 15, 2011 (hereafter referred to as the MECP Standard).

The MECP Standard provides generic soil and groundwater quality standards for certain chemicals, based on combinations of the following Site-specific conditions:

- *Environmental sensitivity* – The Site is not in an identified area of natural significance. The Site does not include nor is it adjacent to an area of natural significance. The Property does not include land that is within 30 metres (m) of an area of natural significance or part of such an area. Based on the fact that there are no Environmental Conservation Areas, Areas of Natural or Scientific Interest (ANSI), Provincially Significant Wetlands (PSW) or significant species at risk

habitat features identified on the Site, the Property has not been evaluated as "environmentally sensitive" as defined under Ontario Regulation 153/04 .

- *Shallow soil property or water body* – Greater than 2 m of overburden soil exists across the Site. Depth to groundwater across the Site is generally less than 2 m below ground surface (bgs). The Site is not considered to be a shallow soil condition. The Property does not include land that is within 30 m of a water body.
- *Property use* – The current land use of the Property is commercial with anticipated future land use of the Property being mixed commercial and residential.
- *Restoration of groundwater quality* – The shallow groundwater beneath the Site is not used for any purposes. The surrounding area is serviced by the Regional Municipality of Niagara's municipal water supply, which obtains its water supply from the Lake Erie by way of the Welland Canal. Therefore, a non-potable groundwater condition would apply at the Site.
- *Soil texture* – Medium to fine grained soils are found at the Site. Based on results of the soil sample grain size analyses completed by an accredited laboratory, less than 25 percent of the soils at the Site were greater than 75 micrometres in size. Therefore, the predominant soil texture at the Site is medium to fine grained. As such, the standard for medium to fine textured soil is applied, as defined in Section 42 of O. Reg. 153/04.

The applicable criteria were determined by GHD to be representative of the current Site conditions. Evaluation of the Site requires the use of generic soil quality guidelines for residential/parkland/institutional use developed by the MECP and presented in the MECP Standard under Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition for Residential/Parkland/Institutional Property Use for medium to fine textured soils (MECP Table 3 Standards) as provided in the *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*, Ministry of the Environment, April 15, 2011.

2. Background Information

2.1 Physical Setting

The Site is located in the north end of St. Catharines in the Port Dalhousie Heritage District, and was developed for commercial use. The surrounding land uses adjacent to the Site are:

North: The Site is bounded to the north by Lakeport Road and further north by an asphalt paved parking lot, Lakeside Park, Lakeside Park Beach, a municipal pumping station, a carousel ride, walking trails, and small public structures including covered picnic areas and washrooms. Further north of Lakeside Beach is Lake Ontario. The first Welland Canal was historically located along the present-day alignment of Lakeport Road to the north of the Site. The canal was abandoned in the early 1900s and the area reclaimed. A large storm water holding tank associated with the municipal pumping station has since been installed beneath Lakeport Road, adjacent to the north Property boundary.

West: The Site is bounded to the west by Main Street and further west by residential properties and Gary Road.

South: The Site is bounded to the south by Lock Street and further south by commercial properties including restaurants, and residential properties. Other properties located further south and southeast include Rennie Park and commercial/retail properties. A dry cleaner is located approximately 100 m south of the Site.

East: The Site is bounded to the east by Hogans Alley and further east by a vacant property, commercial and retail buildings, Lakeport Road, landscaped areas, a marina and yacht club and Port Dalhousie Harbour (former Welland Canal).

No water bodies are located on the Site. Water bodies located within 250 metres of the Site include the inlet to Lake Ontario (Lower Twelve Mile Creek) located approximately 60 metres east of the Site, Lake Ontario approximately 190 metres north of the Site, the former marina and historical weir outfall area approximately 350 metres southeast of the Site and Martindale Pond located approximately 220 metres to the southeast of the Site.

Storm water generated at the Site consists of rainfall that is collected on the building roofs and exterior asphalt/gravel covered, and grassed areas. Storm water from the building roofs is directed to rainwater leaders which discharge to ground surface. Storm water collected on the ground surface is routed by overland flow to the north where it is collected by catch basins and discharged to the municipal storm sewer system Storm water runoff from some of the adjacent properties to the east is directed towards the Site.

Based on the Phase One ESA, no parks wetlands, conservation areas, or other areas of natural significance were identified within the Phase One study area.

The Site location and regional topography are shown on Figure 1. The elevation of the Site ranges from approximately 77 to 83 m above mean sea level (amsl), sloping from the south portion of the Site to the north and east towards Lakeport Road and Port Dalhousie Harbour. The general topography in the local and surrounding area generally slopes from Lock Street to the south towards Lake Ontario to the north. Regional topography slopes gradually north towards Lake Ontario. The Site is located in a broad physiographic region identified as the St. Lawrence Lowlands[1].

A review of quaternary geological maps indicate that overburden at the Site consists primarily glaciolacustrine nearshore and deltaic sand. Silt and modern beach sand and gravel fill is identified to the north of the Site, at Lakeside Park[2]. Bedrock in the area of the Site is identified as the Queenston Formation, consisting of shale, limestone, dolostone and siltstone[3]. While quaternary mapping indicates that bedrock is approximately 15 to 20 m bgs[4], borehole investigations completed at and in the vicinity of the Site indicate that depth to bedrock at the Site ranges from 6 to 12 m bgs[5].

2.2 Past Investigations

As part of this Phase Two ESA, GHD reviewed the following environmental reports:

- Phase One Environmental Site Assessment, 12 and 16 Lock Street, St. Catharines, Ontario dated March 2019 and prepared by GHD Limited

[1] Physiographic Regions, https://open.canada.ca/data/en/dataset/028dd58d-320c-53fb-b5bc-8188fd5d5edf
[2] Map 2496, Quaternary Geology of Southern Ontario, Niagara-Welland Sheet, Scale 1:50 000, 1997
[3] Map 2544, Bedrock Geology of Ontario, Southern Sheet; scale 1:1 000 000, 1991
[4] Map P2400, Bedrock Topography of the Niagara and Niagara-on-the-Lake Area, Southern Ontario, Scale 1:50 000, 1981
[5] Geotechnical Investigation, Proposed Commercial Redevelopment, Port Dalhousie, Ontario, Soil-Mat Engineers & Consultants Ltd., July, 2004

- Environmental Screening, Union Waterfront Property – Port Dalhousie, 16 Lock Street and 12 Lakeport Road, Port Dalhousie, Ontario dated January 2019 and prepared by GHD Limited
- Geotechnical Investigation, Proposed Commercial/Residential Development, Port Dalhousie, Ontario dated July 2004 and prepared by Soil-Mat Engineers & Consultants Ltd.

A copy of each of these reports is provided in Appendix B. A summary the Phase One ESA is provided below along with a commentary on the adequacy of the data for use to support the filing of a RSC.

The Phase One ESA was completed to meet the requirements of O. Reg. 153/04 in support of filing a RSC. GHD completed a records review of available current and historical information sources pertaining to the Site including title history, aerial photos, fire insurance plans and city directories. Interviews were conducted with persons knowledgeable of the historical and current Site operations to determine if any current or historical operations have been a cause of concern with respect to the environmental condition of the Site and surrounding properties within the study area. The Phase One ESA identified the following APECs:

APEC A (Current Dry Cleaning Facility): An active dry cleaning facility is located approximately 100 m south of the Site. The Operation of Dry Cleaning Equipment is a PCA as defined in O. Reg. 153/04, which, given its proximity, represents an APEC associated with the Site. On this basis, the dry cleaning facility to the south of the Site is identified in this report as APEC A as it represents a potential impact to groundwater quality at the Site with respect to volatile organic compounds (VOCs).

APEC B (Former Underground Storage Tank Associated with Taxi Stand): A taxi stand and gasoline underground storage tank (UST) were identified on the adjacent property approximately 30 metres south of the Site on the south side of Lock Street on the 1962 FIP. Gasoline and Associated Products Storage in Fixed Tanks is a PCA as defined in O. Reg. 153/04, which, given its proximity, represents an APEC associated with the Site. On this basis, the former operation of a gasoline UST to the south of the Site is identified in this report as APEC B as it represents a potential impact to groundwater quality at the Site with respect to petroleum hydrocarbons (PHCs) and VOCs.

APEC C (Former Dry Cleaning Facility): A “Chinese Laundry” was identified on the 1962 fire insurance plan as having been operated on the corner of Gertrude Street and Lock Street, approximately 70 m south of the Site. The Operation of Dry Cleaning Equipment is a PCA, which given its proximity to the Site, represents an APEC associated with the Site. On this basis, the former Chinese Laundry operation to the south of the Site is identified in this report as APEC C as it represents a potential impact to groundwater quality at the Site with respect to VOCs.

APEC D (PAH and Metals Impacted Soil): A 2019 Environmental Screening Program report identified the presence of select PAHs and metals in soils within the northwestern portion of the Property at concentrations exceeding current generic soil quality standards. The presence of elevated concentrations of polycyclic aromatic hydrocarbons (PAHs) and metals in soils within the northwestern portion of the Property has been identified as APEC D.

APEC E (Peat Fill Material): A 2004 Geotechnical Investigation report identified the presence of peat fill across the west central portion of the Site. Investigations into methane gas generation

associated with the peat fill identified methane gas concentrations above 500 parts per million (ppm) at soil gas probes installed within the peat material. The presence of peat fill producing methane gas in the central portion of the Site has been identified as APEC E.

APEC F (Fill of Unknown Quality): Fill materials of unknown origin are present across the western portion of the Site. The source and quality of the fill material is not known. Importation of Fill Material of Unknown Quality is a PCA as defined in O. Reg. 153/04 and represents an APEC for the Site. This has been identified as APEC F as it represents a potential impact to soil quality at the Site with respect to VOCs, PAHs, PHCs, and metals.

APEC G (Former Fuel Oil Use): The hotel building that occupies the southern corner of the Property was constructed in 1871. It is likely that this building was heated with either fuel oil or coal at one time. Gasoline and Associated Products Storage in Fixed Tanks is a PCA as defined in O. Reg. 153/04. The former storage of heating oil is a PCA that represents a potential APEC for the Site and has been identified as APEC G as it represents a potential impact to soil and groundwater quality with respect to PHCs and PAHs.

The Phase One ESA presented a Phase One Conceptual Site Model from which the Phase Two Sampling and Analyses Program was developed by GHD for the Site. The Phase Two Conceptual Site Model developed based on the results of the Phase One ESA is presented on Figure 3.

3. Scope of the Investigation

3.1 Overview of Site Investigation

Beginning in March 2019, GHD conducted a Phase Two ESA to evaluate the APECs identified in the Phase One ESA (GHD, March 2019). The following activities were completed as part of the Phase Two ESA:

i) Review of environmental Site sensitivity to establish appropriate soil and groundwater quality standards

ii) Advancement of soil borings to facilitate the collection of surface and subsurface soil samples for field screening and laboratory analyses

iii) Instrumentation of soil borings as groundwater monitoring wells to facilitate the collection of groundwater samples for laboratory analyses and to determine the direction and gradient of groundwater flow across the Site

iv) Instrumentation of soil borings as soil gas probes to facilitate methane gas monitoring

v) Assessment of soil and groundwater analytical data with respect to the applicable MECP Standards

vi) Reporting

3.2 Media Investigated

The Phase Two activities conducted by GHD included the following:

i) Six boreholes were advanced to facilitate the collection and field screening of soil samples to document geologic and environmental conditions at the Site.

ii) Qualitative and quantitative field screening of soils encountered during the advancement of six boreholes.

iii) Ten soil samples (including one field duplicate) were collected from six borehole locations and submitted to a laboratory for chemical analyses.

iv) Two soil samples were collected from two borehole locations and submitted to a laboratory for grain size analysis.

v) Two boreholes were instrumented as monitoring wells to facilitate the collection of groundwater samples and to document hydrogeological conditions at the Site.

vi) One borehole was instrumented as a soil-gas probe to facilitate the monitoring of methane gas production within the soil on-Site.

vii) Three groundwater samples (including one field duplicate) were collected from two on-Site monitoring wells and submitted to a laboratory for chemical analyses.

viii) Implementation of quality assurance and control measures in the form of one soil trip blank and one groundwater trip blank for laboratory analyses of volatile organic compounds (VOCs) and petroleum hydrocarbons (PHC) fractions F_1.

ix) Completion of vertical and horizontal control surveys to determine the locations and elevations of the newly installed boreholes, monitoring wells and soil-gas probes with respect to mean sea level.

x) Completion of one round of water level measurements at the two newly installed on-Site monitoring wells, three existing on-Site monitoring wells, one newly installed soil-gas probe and three off-Site monitoring wells to document groundwater elevations and flow direction.

xi) Methane gas monitoring at one on-Site soil-gas probe.

The above activities were completed between March 4, 2019 and March 14, 2019.

The Environmental Screening activities conducted by GHD included the following:

i) Site reconnaissance to determine the presence and locations of existing on-Site monitoring wells.

ii) One on-Site and two off-Site boreholes were advanced to facilitate the collection and field screening of soil samples to document geologic and environmental conditions at the Site.

iii) Qualitative and quantitative field screening of soils encountered during the advancement of three boreholes.

iv) Two soil samples (including one field duplicate) were collected from the one on-Site borehole location and submitted to a laboratory for chemical analyses.

v) One on-Site and two off-Site boreholes were instrumented as monitoring wells to facilitate the collection of groundwater samples and to document hydrogeological conditions at the Site.

vi) Five groundwater samples (including one field duplicate) were collected from four on-Site monitoring wells and submitted to a laboratory for chemical analyses

vii) Implementation of quality assurance and control measures in the form of one groundwater trip blank for laboratory analyses of volatile organic compounds (VOCs) and petroleum hydrocarbons (PHC) fractions F_1

viii) Completion of a vertical control survey to determine the elevations of the newly installed monitoring wells with respect to mean sea level

ix) Completion of three rounds of water level measurements at the four existing on-Site, one newly-installed on-Site and two newly-installed off-Site monitoring wells to document groundwater elevations and flow direction.

The above activities were completed between December 5, 2018 and January 2, 2019.

There are no surface water bodies at the Site and as such no surface water or sediment samples were collected as part of the Phase Two ESA.

Environmental investigative locations are shown on Figure 4.

3.3 Phase One Conceptual Site Model

The Site is located in an urban area of the City of St. Catharines with history related to the Welland Canal Lock support operations and Lakeside Beach dating back to the mid 1800s. The Phase One Study Area largely consists of lands that were used for commercial, retail, and residential purposes.

It is GHD's understanding that the Phase One ESA is being completed to support potential redevelopment of the Site for mixed commercial and residential land use. As such, the fling of an RSC in accordance with O. Reg. 153/04 is required.

Site topographic relief is approximately six metres, sloping from Lock Street to the south towards Lakeport Road to the north. The elevation of the Site ranges from approximately 83 metres AMSL to 77 metres AMSL.

Quaternary geological maps indicate that overburden at the Site consists primarily glaciolacustrine nearshore and deltaic sand. Silt and modern beach sand and gravel fill is identified to the north of the Site, at Lakeside Park[6]. Bedrock in the area of the Site is identified as the Queenston Formation, consisting of shale, limestone, dolostone and siltstone[7], and is approximately 15 to 20 metres below ground surface[8].

No water bodies are located on the Site. Water bodies located within 250 m of the Site include Port Dalhousie harbour located approximately 50 metres east of the Site, Lake Ontario approximately 150 metres west of the Site, and Martindale Pond located approximately 220 metres to the southeast of the Site. Lands to the south, east and west are predominantly commercial, retail and

[6] Map 2496, Quaternary Geology of Southern Ontario, Niagara-Welland Sheet, Scale 1:50 000, 1997
[7] Map 2544, Bedrock Geology of Ontario, Southern Sheet; scale 1:1 000 000, 1991
[8] Map P2400, Bedrock Topography of the Niagara and Niagara-on-the-Lake Area, Southern Ontario, Scale 1:50 000, 1981

residential. Lands to north are recreational (beach and marina). GHD reviewed the Ontario Ministry of Natural Resources and Forestry's – "Natural Heritage Information Centre" database to identify areas registered as ANSIs. No ANSIs were identified for properties located within the Phase One Study Area.

GHD reviewed the Niagara Escarpment Planning and Development Act (revised 2012), Provincial Parks and Conservation Reserves Act (2006), Oak Ridges Moraine Conservation Act (2001), and Wilderness Areas Act (1990) to determine if the Property was located in an area of natural significance. Based on a review of the Acts, the Phase Two Property is not in an area of natural significance as defined by each of the Acts.

A summary of the current and past uses of the Site is provided below.

Lot 3 – Northwestern Portion of 16 Lock Street

Registered Owner(s)	Ownership Period
Nathan H. Pawling	August 22, 1894 to November 2, 1959
The Corporation of The Village of Port Dalhousie	November 2, 1959 to January 31, 1966
The Public Utilities Commission of Port Dalhousie	January 31, 1966 to January 2, 1976
Thomas and Lucy LaFlamme	January 2, 1976 to November 21, 1983
Bernard J. Rowan, Ian T.P. Rowan and Bernard J. Rowan	November 21, 1983 to June 26, 1987
The Rowan Sprinkler Company Ltd.	June 26, 1987 to February 18, 1988
Valarie Ann and Rastislav Kruty	February 18, 1988 to May 30, 1991
Rusty Kruty Realty Inc.	May 30, 1991 to June 19, 1992
Rastislav Kruty	June 19, 1992 to October 31, 1996
Rastislav Kruty in Trust	October 31, 1996 to September 23, 2003
1184557 Ontario Inc.	September 23, 2003 to Unknown
Port Dalhousie Vitalization Corporation	Unknown to June 13, 2017
Union Waterfront Inc.	June 13, 2017 to Present

Lots 4 and 5 Part 1 – Southwestern Portion of 16 Lock Street

Registered Owner(s)	Ownership Period
Nathan H. Pawling	September 26, 1896 to July 12, 1913
Annie Holmes	July 12, 1913 to December 23, 1938
Frank Scott, Estate of Frank Scott	December 23, 1938 to November 2, 1959
Murray H. Scott	November 2, 1959 to January 31, 1966
Port Dalhousie Public Utilities Commission	January 31, 1966 to January 2, 1976
Thomas and Lucy LaFlamme	January 2, 1976 to November 21, 1983
Bernard J. Rowan, Ian T.P. Rowan and Bernard J. Rowan	November 21, 1983 to June 26, 1987
The Rowan Sprinkler Company Ltd.	June 26, 1987 to February 18, 1988
Valarie Ann and Rastislav Kruty	February 18, 1988 to May 30, 1991

Registered Owner(s)	Ownership Period
Rusty Kruty Realty Inc.	May 30, 1991 to September 2, 1999
Rastislav Kruty	September 2, 1999 to September 23, 2003
1149853 Ontario Inc.	September 23, 2003 to Unknown
Port Dalhousie Vitalization Corporation	Unknown to June 13, 2017
Union Waterfront Inc.	June 13, 2017 to Present

Lots 4 and 5 Part 2 – Southwestern Portion of 16 Lock Street

Registered Owner(s)	Ownership Period
County of Lincoln	July 30, 1912 to April 5, 1913
John Johnson	April 5, 1913 to December 23, 1938
Frank Scott, Estate of Frank Scott	December 23, 1938 to November 27, 1959
Murray Scott	November 27, 1959 to January 31, 1966
Port Dalhousie Public Utilities Commission	January 31, 1966 to January 2, 1976
Thomas and Lucy LaFlamme	January 2, 1976 to November 21, 1983
Bernard J. Rowan, Ian T.P. Rowan and Bernard J. Rowan	November 21, 1983 to June 26, 1987
The Rowan Sprinkler Company Ltd.	June 26, 1987 to February 18, 1988
Valarie Ann and Rastislav Kruty	February 18, 1988 to May 30, 1991
Rusty Kruty Realty Inc.	May 30, 1991 to October 31, 1996
Rastislav Kruty in Trust	October 31, 1996 to September 23, 2003
1184557 Ontario Inc.	September 23, 2003 to Unknown
Port Dalhousie Vitalization Corporation	Unknown to June 13, 2017
Union Waterfront Inc.	June 13, 2017 to Present

Lot 6 – Southern Central Portion of the 16 Lock Street

Registered Owner(s)	Ownership Period
Nathan H. Pawling and Robert Laurie	February 23, 1878 to May 27, 1881
Ellen Howse	May 27, 1881 to October 20, 1896
Henry Rolk, Estate of Henry Rolk	October 20, 1896 to June 6, 1901
Catharine Pearson	June 6, 1901 to July 5, 1932
Michael, John and Mary Harrigan and Margaret Howse	July 5, 1932 to January 17, 1947
John Harrigan, Mary Harrigan and the Estate of John Harrigan	January 17, 1947 to April 15, 1948
Peter and Annie Ruddy	April 15, 1948 to December 15, 1972
Margaret Erskine	December 15, 1972 to March 16, 1973
Rita Lake	March 16, 1973 to April 29, 1981
Wilfred Cheredaryk	April 29, 1981 to January 3, 1986
Kurt and Veronica Rathfelder	January 3, 1986 to July 30, 1987
Harold Arthur Coles	July 30, 1987 to April 14, 2000
Valarie Ann Kruty	April 14, 2000 to September 3, 2009

Registered Owner(s)	Ownership Period
1405230 Ontario Limited	September 3, 2009 to Unknown
Port Dalhousie Vitalization Corporation	Unknown to June 13, 2017
Union Waterfront Inc.	June 13, 2017 to Present

Lot 7 – Southeastern Portion of 16 Lock Street

Registered Owner(s)	Ownership Period
Edward McArdle	March 21, 1871 to March 25, 1871
Nathan Pawling	March 25, 1871 to January 30, 1903
Patrick Harrigan and John McNulty	January 30, 1903 to April 3, 1937
Michael J. Harrigan, John Harrigan and Mary Harrigan	April 3, 1937 to November 7, 1951
Austin Hotel Ltd.	November 7, 1951 to May 31, 1954
Harry Winiewski, Garry Winiewski and Stanley Winiewski	May 31, 1954 to Unknown
Mortgage Foreclosure (default)	Unknown to January 16, 1961
Estate of Frank T. Wyman	January 16, 1961 to July 20, 1965
Peter J. Ruby and Robez Donnelly Limited	July 20, 1965 to Unknown
George and Grace Hicul	Unknown
Foreclosure (default)	Unknown to June 27, 1966
Robert Donnelly Limited and Peter J. Ruby	June 27, 1966 to July 23, 1969
Joe Rogola Sr., Jow Rogola Jr., and Frank Rogola	July 23, 1969 to October 26, 1970
Michael Panchyshyn	October 26, 1970 to May 8, 1972
Michael and Helen Panchyshyn	May 8, 1972 to August 11, 1976
Albert and Irene Moore	August 11, 1976 to December 21, 1977
Steven Werchohlad and Arthur J. Smith	December 21, 1977 to July 8, 1982
Arthur Smith	July 8, 1982 to July 24, 1987
Norma and Arthur J. Smith	July 24, 1987 to May 3, 1988
Arthur J. Smith	May 3, 1988 to August 29, 2003
Port Dalhousie Projects Inc.	August 29, 2003 to Unknown
Port Dalhousie Vitalization Project	Unknown to June 13, 2017
Union Waterfront Inc.	June 13, 2017 to Present
1184540 Ontario Inc.	December 9, 2003 to Unknown

Lot 16 Part 1 – Northeastern Portion of 16 Lock Street

Registered Owner(s)	Ownership Period
Nathan and Mathilda Pawling	July 21, 1888 to December 7, 1916
Bella Dufferin and John Ferguson (died)	December 7, 1916 to August 7, 1925
Minnie Mary Ferguson	August 7, 1925 to August 7, 1951

Registered Owner(s)	Ownership Period
The Niagara, St. Catharines and Toronto Railway Company	August 7, 1951 to January 22, 1971
Sidney H. Brookson	January 22, 1971 to April 29, 1985
The Corporation of the City of St. Catharines	April 29, 1985 to July 6, 1989
Donatelli Productions Ltd.	July 6, 1989 to October 10, 1996
Lakeport Foods Inc.	October 10, 1996 to December 9, 2003
1184540 Ontario Inc.	December 9, 2003 to Unknown
Port Dalhousie Vitalization Corporation	Unknown to June 13, 2017
Union Waterfront Inc.	June 13, 2017 to Present

Lot 16 Part 2 – Eastern Central Portion of 16 Lock Street

Registered Owner(s)	Ownership Period
Edward McArdle	March 24, 1871 to March 25, 1871
Nathan Pawling	March 25, 1871 to May 31, 1878
Barney (Bernardd) McGrath	May 31, 1878 to Unknown
John and Michael Rogers	Unknown to Unknown
Mortgage Default	Unknown to August 11, 1881
The Security Loan and Savings Co. St. Catharines	August 11, 1881 to September 17, 1894
Harvey Neelon, Estate of Harvey Neelon	September 17, 1894 to September 23, 1894
Mary A. Neelon	September 23, 1894 to June 29, 1900
John Stanton	June 29, 1900 to February 18, 1905
George F. Peterson	February 18, 1905 to March 30, 1932
Samuel Houston, Estate of Samuel Houston	March 30, 1932 to December 1, 1936
Samuel A. Houston	December 1, 1936 to March 3, 1942
Louis J. Marck	March 3, 1942 to December 4, 1944
Darwin R. Challinger	December 4, 1944 to April 7, 1945
Wilfred H. Maxwell	April 7, 1945 to May 22, 1946
Yoroslaw Knit	May 22, 1946 to July 31, 1951
Dnytro and Anna Chaikowski	July 31, 1951 to November 6, 1953
Albert Plata, Albert Yanik and Stanley Plata	November 6, 1953 to December 12, 1962
Port Hotel Limited	December 12, 1962 to May 31, 1979
Scott A. Pegg	May 31, 1979 to July 6, 1989
Donatelli Productions Limited	July 6, 1989 to October 10, 1996
Lakeport Foods Inc.	October 10, 1996 to December 9, 2003
1184540 Ontario Inc.	December 9, 2003 to Unknown

Registered Owner(s)	Ownership Period
Port Dalhousie Vitalization Corporation	Unknown to June 13, 2017
Union Waterfront Inc.	June 13, 2017 to Present

Lot 8 – 12 Lock Street

Registered Owner(s)	Ownership Period
Elizabeth and Oscar Sharp	Prior to April 22, 1896
James Stanton	April 22, 1896 to June 9, 1943
Sarah Ann Stanton/Elsie Elizabeth Stanton	June 9, 1943 to May 12, 1943
Elsie Elizabeth Stanton and Daisy Y. Bowman	May 12, 1943 to December 7, 1973
Giovani and Nino Donatelli	December 7, 1973 to April 17, 1985
Giovani Donatelli	April 17, 1985 to February 10, 2010
Giovani, Frank, John and Nino Donatelli	February 10, 2010 to May 11, 2012
2283020 Ontario Inc.	May 11, 2012 to Present

Lot 8 – Part of Laneway, east side of 12 Lock Street

Registered Owner(s)	Ownership Period
The Corporation of the City of St. Catharines	Prior to February 12, 1993
Giovani Donatelli	February 12, 1993 to February 10, 2010
Giovani, Frank, John and Nino Donatelli	February 10, 2010 to May 11, 2012
2283020 Onario Inc.	May 11, 2012 to Present

The following Environmental Issues Matrix summarizes the areas of potential environmental concern (APECs), based on PCAs, that have been identified to be on, in, or under the Property, or located within the vicinity of the Property and having the potential to contribute to an APEC along with APECs that have been identified by the Phase One ESA records review, interviews, and Site reconnaissance.

AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

Area of Potential Environmental Concern	Location of Potential Environmental Concern on Phase One Property	Potential Contaminating Activity (PCA)	Location of PCA	Source of Information	Contaminants of Potential Concern	Media Potentially Impacted
APEC A: Current Dry Cleaning Operations	Southwest Portion of the Phase One Property	Operation of Dry Cleaning Equipment	Off-Site	Records Review, Site Reconnaissance	VOCs	Groundwater
APEC B: Former UST – Associated with Taxi Stand	Southwest Portion of the Phase One Property	Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	Interviews, Historical Records Review	PHCs and VOCs	Groundwater
APEC C: Former Dry Cleaning Operations	Southwest Portion of the Phase One Property	Operation of Dry Cleaning Equipment	Off-Site	Historical Records Review	VOCs	Groundwater
APEC D: PAH and Metals Impacted Soil	Northwest Portion of the Phase One Property	Not Applicable – Known Condition	On-Site	Previous Environmental Reports	PAHs and metals	Soil
APEC E: Peat Fill Material	West Central Portion of the Phase One Property	Not Applicable – Potential Condition	On-Site	Previous Environmental Reports	Methane Gas	Soil Vapour
APEC F: Fill of Unknown Quality	Western Portion of the Phase One Property	Importation of Fill Material of Unknown Quality	On-Site	Interviews, Historical Records Review	PAHs, PHCs, VOCs, and metals	Soil
APEC G: Former Fuel Oil Use	Southeast Portion of the Phase One Property in Hotel	Former Gasoline and Associated Products Storage in Fixed Tanks	On-Site	Interviews, Site Reconnaissance	PAHs and PHCs	Soil and Groundwater

Notes: VOCs – volatile organic compounds, PAHs – polycyclic aromatic hydrocarbons, PCBs – polychlorinated biphenyls, UFFI – urea formaldehyde foam insulation

The Phase Two Conceptual Site Model developed based on the Phase One Conceptual Site Model is shown on Figure 3.The Phase One Conceptual Site Model is based on the information obtained and evaluated as part of the Phase One ESA. While all reasonable inquiry has been made in accordance with O. Reg. 153/04, the accuracy and completeness of all information obtained as part of the Phase One ESA cannot be confirmed. The Phase One Conceptual Site Model evaluated PCAs for the Phase One Study Area based upon diligent professional effort and assessment of the information from the various resources available. Given the inherent limitations of some of the information obtained as part of the Phase One ESA, the Phase One Conceptual Site Model may not represent actual conditions and should only be used by Qualified Persons.

3.4 Deviations from Sampling and Analysis Plan

A copy of the Sampling and Analysis Plan (SAP) is provided in Appendix C. Minor deviations from the soil and groundwater investigation SAP were required to address field conditions encountered as described below. Environmental investigation locations are shown on Figure 4.

- The locations of several proposed boreholes/monitoring wells were adjusted from their original locations during field activities due to the presence of underground utilities and/or the presence of buried infrastructure.
- The sampling methodology for determining the presence of methane gas sampling was changed from soil vapour sampling to soilgas sampling due to the lack of peat present in the boreholes during the soil boring activities.

Additions to the original SAP as part of this Phase Two ESA are described below.

- The advancement of boreholes deeper than proposed in the SAP to accurately classify the geology beneath the Site

3.5 Impediments

GHD did not encounter any impediments as part of this Phase Two ESA.

4. Investigation Methods

4.1 General

GHD completed the Phase Two soil and groundwater quality investigation activities in March 2019 using a variety of investigation methods and sampling techniques. Investigations completed included the following.

- Advancement of boreholes
- Instrumentation of groundwater monitoring wells
- Instrumentation of a soil-gas probe
- Collection of field screening measurements
- Collection of soil samples

- Groundwater level gauging
- Gauging of free product on the surface of groundwater
- Groundwater field measurements of water quality parameters
- Monitoring well development
- Collection of groundwater samples
- Soil gas monitoring
- Analytical testing
- Quality assurance and quality control measures
- Elevation surveying

GHD completed the Environmental Screening soil and groundwater quality investigation activities between December 2018 and January 2019 using a variety of investigation methods and sampling techniques. Investigations completed included the following.

- Advancement of boreholes
- Instrumentation of groundwater monitoring wells
- Collection of field screening measurements
- Collection of soil samples
- Groundwater level gauging
- Gauging of free product on the surface of groundwater
- Groundwater field measurements of water quality parameters
- Monitoring well development
- Collection of groundwater samples
- Analytical testing
- Quality assurance and quality control measures
- Elevation surveying

The field investigation activities were completed in accordance with methods prescribed by O. Reg. 153/04, GHD standard operating procedures (SOPs), the SAP, and standard industry practice.

Prior to completing any of the investigation activities, GHD prepared a Site-specific Health and Safety Plan (HASP). The purpose of the HASP was to provide specific guidelines and established procedures for the protection of personnel performing the Site investigation activities. In addition, GHD also completed the appropriate public utility notifications and retained private utility contractors to clear on-Site underground utilities in the areas of investigation.

4.2 Drilling and Excavating

Between March 4 and March 5, 2019, a total of six boreholes were advanced by Landshark Drilling (Landshark) of Brantford, Ontario, using a geoprobe 7822DT drill rig as part of the soil and groundwater quality investigation. Each borehole was advanced using a 108-millimetre (mm) outside diameter (OD) solid stem augers. Overburden soils were sampled using a 1.52-m long acetate liner sampler using the direct push methodology. Soil samples from each 0.76-m interval for the full-depth of each borehole were described using the Unified Soil Classification System (USCS) for native soils with additional descriptions of visually identified features within the overburden soils.

On December 19, 2018, one on-Site and two off-Site boreholes were advanced by Aardvark Drilling Inc. (Aardvark) of Guelph, Ontario using a conventional drill rig as a part of the environmental screening conducted by GHD. Each borehole was advanced using a 108-millimetre (mm) inside diameter (ID) hollow stem auger. Overburden soils were sampled using a 0.61-m long stainless steel split-spoon sampler using the standard penetration test (SPT) methodology, using a 63.6 kilogram (kg) drop hammer that was raised and lowered with a hydraulic pump. Soil samples from each split spoon interval for the full-depth of each borehole were described using the USCS for native soils with additional descriptions of visually identified features within the overburden soils.

The six boreholes advanced at the Site in March 2019 are identified as MW5-19, MW6-19, BH6-19, BH7-19, BH8-19 and SVP1-19. The boreholes were advanced to depths ranging from 3.05 to 6.86 m bgs. Two of the boreholes (MW5-19 and MW6-19) were instrumented as a monitoring wells to a depth of 6.86 m bgs. One of the boreholes (SVP1-19) was instrumented as a soil-gas probe to a depth of 2.29 m bgs.

One on-Site borehole advanced at the Site in December 2018 identified as MW3-18 was installed as a monitoring well to a depth of 4.11 metres. Two off-Site boreholes advanced at the Site in December 2018 identified as MW1-18 and MW2-18 were installed as a monitoring wells to a depth of 4.42 metres.

Borehole locations are shown on Figure 4.

A total of ten soil samples including one field duplicate were collected for laboratory analyses of select parameters including VOCs, PHCs, PAHs, Metals, SAR, and conductivity during the Phase Two soil quality investigation. A trip blank sample for QA/QC purposes was also for laboratory analyses of VOCs and PHC fractions F_1.

A total of two soil samples including one field duplicate were collected from one on-Site borehole for laboratory analyses of select parameters including VOCs, PHCs, PAHs, Metals, SAR, pH and conductivity during the Environmental Screening soil quality investigation. A sample key summarizing the sampling information (location, identification, date, matrix, depth) as well as the analytical parameters is provided in Table 1.

4.3 Soil Sampling

Continuous soil sample collection from each borehole installed in March 2019 was facilitated through the use of 1.52-m long acetate liners advanced using direct push technology. Continuous soil sample collection from each borehole installed in December 2018 was facilitated through the use of

0.6-m long, 50-mm (2-inch) outside diameter stainless steel split spoons advanced using SPT methodology.

Based on field screening, selected soil samples were placed in laboratory supplied containers with requisite preservative and placed in a cooler containing ice for sample preservation. Soil samples were selected from the zones exhibiting the strongest field evidence of impact to determine the vertical extent of impact. Soil samples were submitted to the laboratory for VOCs, PHCs, PAHs, metals, SAR, and conductivity analyses as summarized in the field sample key presented in Table 1.

Soils encountered during drilling activities were classified according to the USCS, as presented in the stratigraphic and instrumentation logs included in Appendix C. The stratigraphy encountered during the field activities consisted of the following:

- *Topsoil* – surface cover in landscaped grassy areas across the property
- *Gravel Fill* – gravel surface cover with some sand in gravel parking areas across the Site
- *Sand and Gravel Fill* – sand and gravel, medium to coarse grained, grey to brown, dry to moist
- *Sandy Silt/Silty Sand Fill* – Sand and silt, medium to fine grained with varying amounts of gravel, organic material and debris (asphalt, brick, concrete, glass), brown to grey to black, moist to wet
- Sand Fill – Sand with some silt and organic material, medium to fine grained, reddish brown, wet
- *Clayey Silt Fill* – Silt fill with clay, fine grained with varying amounts of gravel and organic material, brown to grey, moist to wet
- *Sandy Silt Fill* – Silt with sand, medium to fine grained with varying amounts of gravel, brown, moist to wet
- *Silty Sand Fill* – Sand with silt, medium to fine grained, brown to grey, wet
- Clayey Silt/ Silty Clay Fill – Silt and clay, fine grained with some sand and gravel, grey, moist

Topsoil

Landscaped areas at the Site are backfilled with topsoil fill material brought to grade, with a grass surface. Topsoil was encountered to a depth of up to 0.06 m bgs (at BH6-19, BH7-19, BH8-19, MW6-19 and SVP1-19).

Gravel Fill

The Site is backfilled with gravel fill material brought to grade, with an asphalt surface. Gravel fill was encountered to a depth of up to 0.3 m bgs (at MW5-19).

Sand and Gravel Fill

In the northwestern and central portions of the Property, the topsoil material was underlain with medium to coarse grained, grey to brown sand and gravel to a depth of up to approximately 0.3 m bgs at BH6-19, 0.6 m bgs at BH7-19 and 0.3 at SVP1-19. The sand and gravel fill was typically moist at all depths.

Sandy Silt/Silty Sand Fill

Across the property, the topsoil and/or sand and gravel fill and/or gravel fill material was underlain with medium to fine grained, brown to grey with some black sandy silt/silty sand with varying amounts of gravel, organic material and debris (asphalt, brick, concrete, glass) intermittently layered to a depth of up to approximately 4.6 m bgs (at BH8-19 and SVP1-19). The sandy silt/silty sand was typically moist to wet at all depths.

Sand Fill

In the northcentral portion of the property, the sandy silt/silty sand was underlain with medium to fine grained, reddish brown, sand fill with trace organics to a depth of up to approximately 4.3 m bgs (at BH8-19). The sand fill was wet at all depths.

Sandy Silt Fill

In the northern portion of the property, the sandy silt/silty sand is underlain with medium to fine grained, brown sandy silt fill up to a depth of approximately 5.5 m bgs (at MW5-19). The sandy silt fill was moist at all depths.

Silty Sand Fill

In the southern portion of the property, the sandy silt/silty sand is underlain with medium to fine grained, grey/brown silty sand fill up to a depth of approximately 4.3 m bgs (at MW3-18).

In the southeastern portion of the property, the clayey silt is underlain with medium to fine grained, brown silty sand up to a depth of approximately 6.9 m bgs (at MW5-19). The silty sand fill was wet at all depths.

Clayey Silt Fill

In the southern portion of the Property, the sandy silt/silty sand is underlain with fine grained, brown silty clay with varying amounts of fine gravel and organic material to a depth of up to approximately 3.0 m bgs (at MW6-19). The clayey silt fill is moist to wet at all depths.

Across the Property, the sandy silt and/or silty sand is underlain with fine grained, brown to grey clayey silt with varying amounts of gravel and organic material to a depth of up to approximately 6.9 m bgs. The clayey silt is moist to wet at all depths in these areas.

Geologic cross sections are presented on Figure 5. The stratigraphy encountered from ground surface to the deepest investigated depth is presented on cross sections shown on Figure 6 and Figure 7.

4.4 Field Screening Measurements

Continuous soil sample collection from each borehole installed in March 2019 was facilitated through the use of 1.52-m long acetate liners advanced using direct push technology. Continuous soil sample collection from each borehole installed in December 2018 was facilitated through the use of 0.6-m long, 50-mm (2-inch) outside diameter stainless steel split spoons advanced using SPT methodology.

Soils encountered during the soil quality investigation and environmental screening were visually screened for the presence of impact (e.g. staining, sheen, presence of free product). In the absence of indications of impact, GHD placed a composite sample of soil from the length of the split spoon or half of the length of the acetate liner into a sealable plastic bag for headspace screening. Where applicable, the length of the soil intervals deviated from 0.6 m to a more specific interval to better assess potential impacts at specific targeted intervals. The headspace for each soil sample was screened for the presence of undifferentiated VOC vapours using a MiniRAE (2000 Model) photoionization detector (PID). The results of the VOC vapour screening were considered in selecting soil samples for submission to the laboratory for analysis.

Prior to sample collection, the PID was inspected and calibrated according to the manufacturer's recommendations. Calibrating the MiniRAE 2000 is a two-point process using “fresh air” and the standard reference gas (also known as span gas). First, a “fresh air” calibration, which contained no detectable VOC (0.0 ppm), was used to set the zero point for the sensor. Then a standard reference gas (isobutylene) that contains a known concentration (100 ppm) was used to set the second point of reference.

The PID model specifications are listed below.

MiniRAE 2000 with 11.7 eV UV lamp

Measurement Accuracy (isobutylene):

0-2000 ppm: +/- 2 ppm or 10% of reading

>2000 ppm: +/- 20% of reading

Calibration:

Two-point field calibration of zero and standard reference gas (100 ppm

isobutylene, Lot No.: 7H350035MES, Expires: September 2018)

The field screening data is presented in the stratigraphic and instrumentation logs provided in Appendix D.

4.5 Groundwater Monitoring Well Installation

Under the direction of GHD, Landshark installed a total of two permanent groundwater monitoring wells in March 2019 as part of this Phase Two ESA. Previously, one permanent monitoring well was installed at the Site by Aardvark under the direction of GHD during the environmental screening in December 2018. The monitoring wells were installed at depths ranging from 6.71 to 6.86 m bgs.

The groundwater monitoring wells (MW5-19 and MW6-19) were installed by Landshark using 108-mm (4.25-inch) outside diameter solid-stem augers (SSA). The monitoring wells were constructed with a 50-mm (2-inch) diameter, Schedule 40 polyvinyl chloride (PVC) riser and a 3.05-metre (10-foot), No. 10 slot size well screen. The monitoring well screens were installed in the clayey silt and silty sand/clayey silt/sandy silt hydrogeological units at depths where the presence of groundwater was indicated based on soil saturation.

During the December 2018 environmental screening investigation, one groundwater monitoring well (MW3-18) was installed by Aardvark using 108-mm (4.25-inch) inside diameter hollow-stem augers (HSA). The monitoring wells were constructed with a 50-mm (2-inch) diameter, Schedule 40 polyvinyl chloride (PVC) riser and a 3.05-metre (10-foot), No. 10 slot size well screen. The monitoring well screen was installed in the silty sand/sandy silt and silty sand hydrogeological units at a depth of 4.11 m bgs, where the presence of groundwater was indicated based on soil saturation.

During a November 2009 investigation conducted by Soil-Mat, three groundwater monitoring wells (BH-103, BH-105 and BH-106) were installed using continuous flight augers (CFA). The monitoring wells were constructed with a 50-mm (2-inch) diameter, polyvinyl chloride (PVC) riser and a 3.05-metre (10-foot) well screen. The monitoring well screens were installed in the silt/sandy silt/silty clay/clayey silt/silty sand/sandy silt/queenston shale hydrogeological units at depths ranging from 6.35 and 10.7 m bgs.

The groundwater monitoring wells were constructed with a silica sand pack in the annular space between the PVC screen/riser pipe and the borehole to a height of approximately 0.3 to 0.7 metres above the top of the well screen. A bentonite seal was placed directly above the sand pack and extended upwards to approximately 0.3 m bgs and aluminum flush-mounted casings were cemented in place at ground surface to approximately 0.0-0.3 m bgs. An expandable j-plug or PVC cap was installed on the top of the riser pipe.

Landshark and Aardvark registered the monitoring well records from the 2018 and 2019 activities with the MECP. The groundwater monitoring well construction details are summarized in Table 2. The location of the boreholes and monitoring wells completed at the Site are shown on Figure 4.

4.6 Elevation Surveying

GHD used available satellite imagery of the area obtained using Microsoft© Bing mapping software as a base when GHD surveyed horizontal control for monitoring well and borehole locations with respect to on-Site buildings. This was the most accurate imagery available to GHD, as horizontal control monuments at the Site (i.e., short iron bars) were not readily accessible.

The ground surface and top of riser pipe elevation of each well were surveyed with respect to manhole covers located along Lakeport Road with known elevations indicated on a topographic survey conducted by Verhaegen, Stubberfield, Hartley, Brewer, Bezaire Inc. in November 2016. The ground surface and top of riser reference elevations for monitoring well construction and elevations measurements for each well are summarized in Table 2.

4.7 Groundwater Field Measurement of Water Quality Parameters

Groundwater monitoring conducted subsequent to the installation of the five wells found that all monitoring wells yielded water within 48 hours after installation. Prior to groundwater sample collection from BH-103, BH-105, BH-206, MW3-18, MW5-19 and MW6-19, the monitoring wells were developed. Well development of monitoring wells was completed using dedicated Waterra© tubing and foot valve.

Groundwater monitoring wells were developed by removing groundwater until field measurements of temperature, pH, turbidity and electrical conductivity stabilized. A summary of monitoring well development field stabilization parameters is provided in Table 3.

4.8 Groundwater Sampling

Groundwater level measurements were collected as part of the Phase Two ESA using both a calibrated oil-water interface probe and water level meter. The depth to water was measured relative to a specific reference point in the monitoring well (i.e., the top of the monitoring well riser pipe). Based on the monitoring well survey information, the groundwater elevation was calculated by subtracting the water level measurement from the reference point elevation. Groundwater level measurements and groundwater elevations with respect to a common assumed Site datum are provided in Table 4.

Non-aqueous phase liquid (NAPL) was not observed during monitoring well development or groundwater sampling activities.

Four groundwater samples including one field duplicate were collected from monitoring wells BH-103, BH-105 and BH-106 on December 13, 2018 and submitted to the laboratory for VOCs, PHC fractions F_1 through F_4, PAHs and dissolved metals analyses. One groundwater sample, including one trip blank, were collected from monitoring well MW3-18 on December 21, 2018, and submitted to the laboratory for VOCs, PHC fractions F_1 through F_4, PAHs and dissolved metals analyses. Three groundwater samples, including one field duplicate and one trip blank were collected from monitoring wells MW5-19 and MW6-19 on March 7, 2019, and submitted to the laboratory for VOCs, PHC fractions F_1 through F_4, PAHs and dissolved metals analyses. The following protocol was employed during groundwater sample collection once well development had been achieved:

- Groundwater samples were collected using dedicated tubing
- Groundwater samples for dissolved metals analyses were filtered at the time of sampling using a 0.45 micron (µm) in-line field filter prior to being placed into laboratory supplied bottles with requisite preservative to prevent suspended solids present in the sample volume.
- Collected samples were placed directly into pre-cleaned laboratory-supplied sample bottles with requisite preservative specific to the analytical parameters, placed on ice in coolers, and submitted under chain-of-custody protocol to the laboratory for analyses

4.9 Methane Gas Sampling

Soil gas sampling was conducted at the one soil gas probe (SVP1-19) to determine the presence of methane gas. A previous geotechnical investigation conducted by Soil-Mat Engineers & Consultants Ltd. identified the presence of methane gas in boreholes where peat material was identified at depths ranging from approximately 4.4 to 5.5 m bgs, located in the northwestern portion of the Property.

Two boreholes identified as BH8-19 and SVP1-19 were advanced to a depth of approximately 4.6 m bgs to investigate the presence of peat material within the northwestern portion of the Site. Peat material was not identified in any of the boreholes advanced during the Phase Two activities.

Organic silty sand/sandy silt was identified in borehole location SVP1-19 at a depth of approximately 3.7 m bgs.

On March 8, 2019, GHD purged the soil gas probe using a Gilair© pump calibrated to a flow rate of 200 millilitres per minute (ml/min). Purging was conducted for 25 minutes to remove the residual air from the soil gas probe and ensure that the sampled soil gas was representative of the conditions within the overburden soils.

Following the purging of SVP1-19, GHD used a calibrated RKI GX-2012 four-gas meter to measure the concentration of methane gas within the probe. Methane gas concentration within the probe was 0% LEL; indicating that methane gas is not present.

4.10 Sediment Sampling

There are no surface water bodies or water courses on Site. As such, no sediment samples were collected as part of the Phase Two ESA.

4.11 Analytical Testing

All soil and groundwater samples collected in March 2019 as part of the Phase Two ESA activities were submitted under chain-of-custody protocol to ALS Laboratories (ALS) for chemical analyses. All soil and groundwater samples collected in December 2018 as part of the Environmental Screening activities were submitted under chain-of-custody protocol to Maxxam Analytics (Maxxam) for chemical analyses. ALS and Maxxam are accredited laboratories under the Canadian Association for Laboratory Accreditation Inc. (CALA) and have appropriate accreditation under O. Reg. 153 to conduct soil and groundwater analyses required as part of the soil and groundwater investigation.

Copies of the laboratory analytical reports are provided in Appendix E.

4.12 Residue Management Procedures

Soil cuttings were not containerized. The Site is soon to be developed. As part of the development, the soils on-Site, including the soil cuttings will be removed and disposed of at a licensed disposal facility following proper laboratory analysis.

4.13 Quality Assurance and Quality Control Measures

Quality assurance/quality control (QA/QC) measures employed by GHD during field activities included following GHD's developed Standard Operating Procedures (SOPs), which called for donning a new pair of nitrile gloves prior to collecting new soil samples and groundwater samples and providing dedicated tubing and foot valves at each well location to limit the potential for cross contamination between monitoring well locations.

Samples were placed into laboratory supplied sample containers with the requisite preservative and submitted under chain-of-custody protocol to ALS or Maxxam for chemical analysis. Soil samples that were submitted for analysis of volatile parameters were collected using a sealable, disposable volumetric sampling device. From the time of collection to the time of submission to the laboratory, samples were stored in a cooler and packed on ice to maintain sample integrity.

To validate the field analysis, one field duplicate QA/QC sample was submitted for every sampling event of each media and each parameter submitted for laboratory analysis. QA/QC samples also included trip blank samples for PHC fraction F_1 and VOCs.

All field monitoring equipment used as part of this soil and groundwater investigation were calibrated in accordance with the manufacturer's instructions and in accordance with GHD's ISO 9000 registered Quality System requirements.

5. Review and Evaluation

5.1 Geology

A review of the bedrock geology for the Site indicates the presence of Queenston Formation beneath the Site, which consists of shale, limestone, dolostone, and siltstone[9]. Bedrock in the area of the Site is identified as the Queenston Formation, consisting of shale, limestone, dolostone and siltstone[10], and is approximately 15 to 20 metres below ground surface[11]. Bedrock was not encountered in the six boreholes installed as part of the Phase Two ESA or the three boreholes installed during environmental screening activities. Based on borehole logs from previous geotechnical investigations, bedrock is expected to be encountered at a depth between approximately 6 and 10 m below ground surface (bgs) beneath a silty sand/sandy silt stratigraphic layer[12].

Soils encountered during drilling activities were classified according to the USCS as presented in the stratigraphic and instrumentation logs included in Appendix D. The stratigraphy encountered during the field activities consisted of topsoil, gravel fill, sand and gravel fill, silty sand/sandy silt fill, sand fill, sandy silt fill, silty sand fill and clayey silt fill.

Topsoil

Landscaped areas at the Site are backfilled with topsoil fill material brought to grade, with a grass surface. Topsoil was encountered to a depth of up to 0.06 m bgs (at BH6-19, BH7-19, BH8-19, MW6-19 and SVP1-19).

Gravel Fill

The Site is backfilled with gravel fill material brought to grade, with an asphalt surface. Gravel fill was encountered to a depth of up to 0.3 m bgs (at MW5-19).

Sand and Gravel Fill

In the northwestern and central portions of the Property, the topsoil material was underlain with medium to coarse grained, grey to brown sand and gravel to a depth of up to approximately 0.3 m bgs at BH6-19, 0.6 m bgs at BH7-19 and 0.3 at SVP1-19. The sand and gravel fill was typically moist at all depths.

[9] Map 2544, Bedrock Geology of Ontario, Southern Sheet; scale 1:1 000 000, 1991
[10] Map 2544, Bedrock Geology of Ontario, Southern Sheet; scale 1:1 000 000, 1991
[11] Map P2400, Bedrock Topography of the Niagara and Niagara-on-the-Lake Area, Southern Ontario, Scale 1:50 000, 1981
[12] Soils Report-2, Soil-mat Engineers & Consultants Ltd., 2009

Sandy Silt/Silty Sand Fill

Across the property, the topsoil and/or sand and gravel fill and/or gravel fill material was underlain with medium to fine grained, brown to grey with some black sandy silt/silty sand with varying amounts of gravel, organic material and debris (asphalt, brick, concrete, glass) intermittently layered to a depth of up to approximately 4.6 m bgs (at BH8-19 and SVP1-19). The sandy silt/silty sand was typically moist to wet at all depths.

Sand Fill

In the northcentral portion of the property, the sandy silt/silty sand was underlain with medium to fine grained, reddish brown, sand fill with trace organics to a depth of up to approximately 4.3 m bgs (at BH8-19). The sand fill was wet at all depths.

Sandy Silt Fill

In the northern portion of the property, the sandy silt/silty sand is underlain with medium to fine grained, brown sandy silt fill up to a depth of approximately 5.5 m bgs (at MW5-19). The sandy silt fill was moist at all depths.

Silty Sand Fill

In the southern portion of the property, the sandy silt/silty sand is underlain with medium to fine grained, grey/brown silty sand fill up to a depth of approximately 4.3 m bgs (at MW3-18).

In the southeastern portion of the property, the clayey silt is underlain with medium to fine grained, brown silty sand up to a depth of approximately 6.9 m bgs (at MW5-19). The silty sand fill was wet at all depths.

Clayey Silt Fill

In the southern portion of the Property, the sandy silt/silty sand is underlain with fine grained, brown silty clay with varying amounts of fine gravel and organic material to a depth of up to approximately 3.0 m bgs (at MW6-19). The clayey silt fill is moist to wet at all depths.

Across the Property, the sandy silt and/or silty sand is underlain with fine grained, brown to grey clayey silt with varying amounts of gravel and organic material to a depth of up to approximately 6.9 m bgs. The clayey silt is moist to wet at all depths.

5.2 Groundwater Elevations and Flow Direction

Groundwater monitoring wells BH-103, BH-105, BH-106, MW3-18, MW5-19 and MW6-19 were screened such that the screen captured the sandy silt/silty sand, sandy silt, clayey silt, silty sand, silt/sandy silt, silty clay fill and Queenston shale stratigraphic layers. Soil gas probe SVP1-19 was screened such that the screen captured the sandy silt/silty sand fill stratigraphic layer.

Groundwater levels were measured on December 6 and December 20, 2018 and January 1 and March 14, 2019 using a calibrated electronic water level indicator and/or an oil-water interface probe. The depth to groundwater was measured at each accessible well location relative to the top of riser. Together with the top of riser elevation, the depth to groundwater was used to determine the relative elevation/potentiometric surface of groundwater at each monitoring well location.

On March 14, 2019, approximately 24 hours after monitoring well development the water table was found to be between 75.42 m amsl at PW-1 and 78.68 m amsl at MW5-19. During this groundwater monitoring event, it was noted that monitoring wells BH-105 and BH-106 were not accessible due to an accumulation of ice in the well casing.

Based on groundwater elevation measurements the predominant groundwater flow direction across the Site is to the northwest towards the Lake Ontario. The groundwater elevations for shallow groundwater measured on March 14, 2019 are shown on Figure 8.

On December 6 and December 20, 2018 and January 2 and March 14, 2019, each of the on-Site monitoring wells was inspected for the presence of light non-aqueous phase liquids (LNAPL) using an oil/water interface probe. No LNAPL was identified at any of the monitoring well locations. No visual evidence of oil sheen was observed on extracted groundwater during monitoring well development or during sampling activities. Based on observations made during borehole advancement, well development, and groundwater sampling, including visual and olfactory observations as well as organic vapour screening (PID readings), LNAPL is not present on groundwater at the Site.

5.3 Groundwater Hydraulic Gradients

Based on the groundwater level measurements collected on March 14, 2019, horizontal and vertical hydraulic gradients were calculated between three sets of shallow monitoring wells (MW3-18 and MW6-19, MW3-18 and MW5-19, and MW5-19 and MW6-19). Vertical hydraulic gradients were calculated using the depths to the middle of the screened intervals in the monitoring wells.

The maximum, minimum and average horizontal hydraulic gradients in shallow overburden groundwater across the Site are approximately 5.2×10^{-2}, 1.0×10^{-3} and 3.2×10^{-2} m/m. The maximum, minimum and average vertical hydraulic gradient in the shallow overburden groundwater across the Site is approximately 9.3×10^{-1}, 5.8×10^{-2} and 5.7×10^{-1} m/m in the downward direction.

5.4 Soil Field Screening

During borehole advancement, GHD screened encountered soil for undifferentiated volatile organic vapours using a PID and documented visual and/or olfactory evidence of impairment, where observed. The results of the field screening and corresponding sample depth intervals are provided on the borehole stratigraphic and monitoring well instrumentation logs provided in Appendix D.

No visual or olfactory evidence of impairment was observed during field screening at BH6-19, BH7-19, BH8-19, MW6-19 and SVP1-19. Minor amounts of black staining was observed in MW3-18 and MW5-19. No PID readings greater than 1.2 ppm were measured in the headspace of soil samples collected. No evidence of free petroleum or chemical product was encountered in exposed soils during borehole advancement.

5.5 Soil Quality

A total of twelve (12) soil samples, including two (2) field duplicates were collected from soil boring locations BH6-19, BH7-19, BH8-19, MW3-18, MW5-19, MW6-19 and SVP1-19 and submitted for analysis of VOCs, PHC fractions F_1 through F_4, PAHs, metals, pH, conductivity, and/or SAR

analyses. A sample key summarizing the sampling information (location, identification, date, matrix, type and depth) as well as the analytical parameters is provided in Table 1. The soil quality analytical data are presented in Table 5 along with the Table 3 soil quality standards for comparative reference. Copies of the laboratory analytical reports are included in Appendix E. Soil sampling locations are presented on Figure 4.

The following provides a description of the soil sample analytical results in comparison to the applicable MECP soil quality standards.

Metals

The analytical data generated from the samples representative of the overburden fill material from 0.0 to 2.1 m bgs identified lead at concentrations of 130,499, 151, and 203 micrograms per gram (µg/g) at MW3-18, MW6-19, BH8-19, and BH7-19 respectively, which exceed the MECP Table 3 Standard of 120 µg/g.

The analytical data generated from the samples representative of the overburden fill material deeper than 2.1 m bgs identified concentrations of cadmium at 1.35 µg/g, lead at 214 µg/g, mercury at 0.292 µg/g and zinc at 603 µg/g at SVP1-19, which exceed the MECP Table 3 Standards of 1.2 µg/g, 120 µg/g, 0.27 µg/g and 340 µg/g, respectively.

Polycyclic Aromatic Hydrocarbons

The analytical data generated from the samples representative of the overburden fill material from 0.8 to 2.1 m bgs identified specific PAH parameters including acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene/ benzo(j)fluoranthene, benzo(k)fluoranthene, dibenzo(ah)anthracene, fluoranthene and indeno(1,2,3-cd)pyrene at concentrations of 0.34, 1.1, 3.5, 2.9, 3.0, 1.1, 0.34, 6.4 and 1.7 µg/g respectively at MW3-18, which exceed the MECP Table 3 Standards of 0.15, 0.67, 0.5, 0.3, 0.78, 0.78, 0.1, 0.69 and 0.48 µg/g respectively.

The analytical data generated from the samples representative of the overburden fill material from 0.8 to 1.5 m bgs identified specific PAH parameters including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene/benzo(j)fluoranthene, dibenzo(ah)anthracene, fluoranthene and indeno(1,2,3-cd)pyrene at concentrations of 1.58, 1.55, 1.69, 0.288, 3.53 and 1.05 µg/g respectively at BH6-19, which exceed the MECP Table 3 Standards of 0.63, 0.3, 0.78, 0.78, 0.1, 0.69 and 0.48 µg/g respectively.

The analytical data generated from the samples representative of the overburden fill material from 0.0 to 1.5 m bgs identified specific PAH parameters including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(ah)anthracene, fluoranthene and indeno(1,2,3-cd)pyrene at concentrations of 1.71, 1.41, 1.65, 0.889, 0.353, 3.16 and 1.25 µg/g respectively at BH8-19, which exceed the MECP Table 3 Standard of 0.5, 0.3, 0.78, 0.78, 0.1, 0.69 and 0.48 µg/g, respectively.

Electrical Conductivity

The analytical data generated from the samples representative of the overburden fill material from 2.3 to 3.0 m bgs identified electrical conductivity at a concentration of 2.26 millisiemens per centimetre (mS/cm) at MW5-19, which exceeds the MECP Table 3 Standard of 0.7 mS/cm.

Based on a review of the soil quality analytical data, the following parameters are identified as a contaminant of concern (COC) in soil since they were detected at concentrations greater than their respective MECP Table 3 Standards. These COCs in soil medium are as follows:

Metals

- Cadmium
- Lead
- Zinc

Inorganics

- Electrical Conductivity

Polycyclic Aromatic Hydrocarbons

- Acenaphthylene
- Anthracene
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene/Benzo(j)fluoranthene
- Benzo(k)fluoranthene
- Dibenz(a,h)anthracene
- Fluoranthene
- Indeno(1,2,3-cd)pyrene

The remaining analyzed parameters were either not detected above the laboratory reporting limits, or were detected at concentrations below the MECP Table 3 Standards. No other exceedances of the MECP Table 3 Standards were noted from the soil quality investigation.

A summary of the horizontal extent of soil impacts at the Site is presented on Figure 8. The vertical extent of soil impacts for cross-section A-A' are presented on Figure 9.1 (Metals), Figure 9.2 (PAHs) and Figure 9.3 (Inorganics).

The vertical extent of the soil impacts for cross-section B-B' are presented on Figures 10.1 (Metals) and Figure 10.2 (PAHs). As inorganics were not detected at elevated concentrations in soil along cross-section B-B', figures delineating the vertical extent of these impacts along cross-section B-B' are not required to complete delineation.

The maximum detected concentrations in soil are provided in Table 6.

5.6 Groundwater Quality

Between December 13 and 21, 2018, a total of five groundwater samples were collected, including one field duplicate and one trip blank, from monitoring wells BH-103, BH-105, BH-106 and MW3-18 and submitted to the laboratory for VOCs, PHCs, PAHs and/or dissolved metals analyses.

On March 7, 2019, a total of three groundwater samples were collected, including one field duplicate and one trip blank, from monitoring wells MW5-19 and MW6-19 and submitted to the laboratory for VOCs, PHCs, PAHs and/or dissolved metals analyses.

The locations of the groundwater monitoring wells are shown on Figure 4. A field sample key summarizing the sampling information (location, date, identification, type) as well as the parameters for analysis is provided in Table 1. The groundwater analytical data generated from monitoring wells BH-103, BH-105, BH-106, MW3-18, MW5-19 and MW6-19 are summarized in Table 7 along with the MECP Table 3 Standards for comparative reference. A copy of laboratory analytical reports is included in Appendix E.

All of the analyzed parameters were either not detected above the laboratory reporting limits, or were detected at concentrations below their respective MECP Table 3 Standards. No exceedances of the MECP Standards were detected in on Site groundwater. The maximum detected concentrations in groundwater are provided in Table 8.

Based on a review of the groundwater quality analytical data generated from the groundwater investigation, no COCs were identified in groundwater since parameters, where detected, were at concentrations less than the applicable MECP Standards. Groundwater remediation, a Risk Assessment, and/or risk management measures are not required to facilitate the filing a Record of Site Condition for the Site with respect to groundwater

5.7 Sediment Quality

No sediment samples were collected as part of the Phase Two ESA.

5.8 Quality Assurance and Quality Control Results

All field instruments used as part of this soil and groundwater investigation were calibrated in accordance with the manufacturer's instructions and in accordance with GHD's ISO 9000 registered Quality System requirements.

To validate the field analysis, one field duplicate QA/QC sample was submitted for every sampling event of each media and each parameter submitted for laboratory analysis. QA/QC samples also included trip blank samples for PHC fractions F_1 and VOCs.

QA/QC samples were also analyzed by Maxxam and ALS as required by their analytical methods.

Upon receipt of analytical data from the laboratory, the data was reviewed by GHD for quality assurance/quality control. The data validation program consisted of reviewing the following parameters:

- Sample holding time and preservation
- Surrogate spike recoveries
- Laboratory control sample analyses
- Laboratory control sample duplicate analyses
- Laboratory duplicate analyses

- Matrix spike analyses
- Method Blank analyses
- Trip blank sample analysis
- Field duplicate analysis

The laboratory analytical reports received from the laboratory for soil and groundwater samples submitted as part of this Phase Two ESA complied with subsection 47(3) of O. Reg. 153/04. Further, a certificate of analysis has been received for each sample submitted for analysis and copies of those laboratory analytical reports have been included in full in Appendix E.

The soil and groundwater field duplicate results showed adequate reproducibility, indicating satisfactory sampling and laboratory precision for analytical data generated as part of this Phase Two ESA.

The results of the QA/QC evaluations conducted by GHD indicated that the analytical data were found to exhibit acceptable levels of accuracy and precision based on the provided information and may be used with the qualification noted above.

5.9 Phase Two Conceptual Site Model

The MECP provides a list of PCAs in Schedule D of O. Reg. 153/04, under the Environmental Protection Act. A Phase One ESA of the Property was completed by GHD on behalf of Rankin in March 2019. PCAs identified to be on, in, or under the Phase Two Property, or located within 250 metres of the Site are presented in the table below along with their associated APEC.

AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

Area of Potential Environmental Concern	Location of Potential Environmental Concern on Phase One Property	Potential Contaminating Activity (PCA)	Location of PCA	Source of Information	Contaminants of Potential Concern	Media Potentially Impacted
APEC A: Current Dry Cleaning Operations	Southwest Portion of the Phase One Property	Operation of Dry Cleaning Equipment	Off-Site	Records Review, Site Reconnaissance	VOCs	Groundwater
APEC B: Former UST – Associated with Taxi Stand	Southwest Portion of the Phase One Property	Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	Interviews, Historical Records Review	PHCs and VOCs	Groundwater
APEC C: Former Dry Cleaning Operations	Southwest Portion of the Phase One Property	Operation of Dry Cleaning Equipment	Off-Site	Historical Records Review	VOCs	Groundwater
APEC D: PAH and Metals Impacted Soil	Northwest Portion of the Phase One Property	Not Applicable – Known Condition	On-Site	Previous Environmental Reports	PAHs and metals	Soil
APEC E: Peat Fill Material	West Central Portion of the Phase One Property	Not Applicable – Potential Condition	On-Site	Previous Environmental Reports	Methane Gas	Soil Vapour
APEC F: Fill of Unknown Quality	Western Portion of the Phase One Property	Importation of Fill Material of Unknown Quality	On-Site	Interviews, Historical Records Review	PAHs, PHCs, VOCs, and metals	Soil
APEC G: Former Fuel Oil Use	Southeast Portion of the Phase One Property in Hotel	Former Gasoline and Associated Products Storage in Fixed Tanks	On-Site	Interviews, Site Reconnaissance	PAHs and PHCs	Soil and Groundwater

Notes: VOCs – volatile organic compounds, PAHs – polycyclic aromatic hydrocarbons, PCBs – polychlorinated biphenyls, UFFI – urea formaldehyde foam insulation

5.9.1 Phase Two Property Description and Physical Setting

The Property consists of seven contiguous parcels of land that, combined, are approximately 0.40 hectares (0.98 acres) in size located on the north side of Lock Street in the City of St. Catharines. The Property is located in the north end of St. Catharines, Ontario, in the Port Dalhousie Heritage District in an area that has been utilized for commercial land uses for the purposes of Port activities, including operation and maintenance of wharves, locks and docks since at least the 1890s. Four buildings are currently located at the Site. The buildings are approximately 380 square metres (4,100 square feet), 200 square metres (2,150 square feet), 25 square metres (270 square feet), and 215 square metres (2,290 square feet) in size occupying the south, north,northwest and southeast portions of the Property, respectively. The Site was managed by MSI Spergel Inc.as insolvency trustee and was in the process of being acquired by Rankin through receivership. A Site location map is provided on Figure 1 and a Site plan is provided on Figure 2. Based on the results of the Phase One ESA, contaminants of concern at the Site were limited to VOCs, PAHs, PHCs and Metals in soil and/or groundwater. The Phase Two Conceptual Site Model is presented on Figure 3.

Underground utilities at the Phase Two Property provide electrical service to the Site through St. Catharines Hydro and natural gas service through Enbridge. The Site (hotel and sales center buildings) is serviced with municipal potable water and sanitary sewer services. It is GHDs understanding that electricity, natural gas, and potable water have been turned off at the Site for several years. Storm water is directed overland to catch basins located along Lakeport Road. It is GHD's understanding that there has never been a water supply well or septic system located at the Site.

Storm water generated at the Site consists of rainfall that is collected on the building roofs and exterior asphalt/gravel covered, and grassed areas. Storm water from the building roofs is directed to rainwater leaders which discharge to ground surface. Storm water collected on the ground surface is routed by overland flow to the north where it is collected by catch basins and discharged to the municipal storm sewer system. Storm water runoff from some of the adjacent properties to the east is directed towards the Site.

The depth to shallow groundwater at the Phase Two Property ranges from approximately 78.68 m amsl at the southern Property boundary to 75.42 m asd at the northern Property boundary, nearest to Lake Ontario and the Old Welland Canal.

No water bodies are located on the Site. Water bodies near the Site include the inlet to Lake Ontario (Lower Twelve Mile Creek) located approximately 60 metres east of the Site, Lake Ontario approximately 190 metres north of the Site, the former marina and historical weir outfall area approximately 350 metres southeast of the Site and Martindale Pond located approximately 220 metres to the southeast of the Site. No areas of natural significance were identified within the Phase One Study Area. No drinking water wells were located on the Phase Two Property. The Phase Two Property is sloped with a topographic relief of approximately six metres, sloping from Lock Street to the south towards Lakeport Road and Port Dalhousie Harbour/Lakeside Beach to the north. The elevation of the Site ranges from 83 metres AMSL to approximately 77 metres AMSL.

5.9.2 Stratigraphy

The Site is steeply sloping towards the north. The Site is backfilled with fill materials.

A review of quaternary geological maps indicate that overburden at the Site consists primarily glaciolacustrine nearshore and deltaic sand. Silt and modern beach sand and gravel fill is identified to the north of the Site, at Lakeside Park[13]. Bedrock in the area of the Site is identified as the Queenston Formation, consisting of shale, limestone, dolostone and siltstone[14]. While quaternary mapping indicates that bedrock is approximately 15 to 20 m bgs[15], borehole investigations completed at and in the vicinity of the Site indicate that depth to bedrock at the Site ranges from 6 to 12 m bgs[16].

The soil boring locations are shown on Figure 4.

The stratigraphy encountered during the field activities consisted of the following:

- *Topsoil* – surface cover in landscaped grassy areas across the property
- *Gravel Fill* – gravel surface cover with some sand in gravel parking areas across the Site
- *Sand and Gravel Fill* – sand and gravel, medium to coarse grained, grey to brown, dry to moist
- *Sandy Silt/Silty Sand Fill* – Sand and silt, medium to fine grained with varying amounts of gravel, organic material and debris (asphalt, brick, concrete, glass), brown to grey to black, moist to wet
- Sand Fill – Sand with some silt and organic material, medium to fine grained, reddish brown, wet
- *Clayey Silt Fill* – Silt fill with clay, fine grained with varying amounts of gravel and organic material, brown to grey, moist to wet
- *Sandy Silt Fill* – Silt with sand, medium to fine grained with varying amounts of gravel, brown, moist to wet
- *Silty Sand Fill* – Sand with silt, medium to fine grained, brown to grey, wet
- Clayey Silt/ Silty Clay Fill – Silt and clay, fine grained with some sand and gravel, grey, moist

Topsoil

Landscaped areas at the Site are backfilled with topsoil fill material brought to grade, with a grass surface. Topsoil was encountered to a depth of up to 0.06 m bgs (at BH6-19, BH7-19, BH8-19, MW6-19 and SVP1-19).

Gravel Fill

The Site is backfilled with gravel fill material brought to grade, with an asphalt surface. Gravel fill was encountered to a depth of up to 0.3 m bgs (at MW5-19).

Sand and Gravel Fill

In the northwestern and central portions of the Property, the topsoil material was underlain with medium to coarse grained, grey to brown sand and gravel to a depth of up to approximately 0.3 m

[13] Map 2496, Quaternary Geology of Southern Ontario, Niagara-Welland Sheet, Scale 1:50 000, 1997
[14] Map 2544, Bedrock Geology of Ontario, Southern Sheet; scale 1:1 000 000, 1991
[15] Map P2400, Bedrock Topography of the Niagara and Niagara-on-the-Lake Area, Southern Ontario, Scale 1:50 000, 1981
[16] Geotechnical Investigation, Proposed Commercial Redevelopment, Port Dalhousie, Ontario, Soil-Mat Engineers & Consultants Ltd., July, 2004

bgs at BH6-19, 0.6 m bgs at BH7-19 and 0.3 at SVP1-19. The sand and gravel fill was typically moist at all depths.

Sandy Silt/Silty Sand Fill

Across the property, the topsoil and/or sand and gravel fill and/or gravel fill material was underlain with medium to fine grained, brown to grey with some black sandy silt/silty sand with varying amounts of gravel, organic material and debris (asphalt, brick, concrete, glass) intermittently layered to a depth of up to approximately 4.6 m bgs (at BH8-19 and SVP1-19). The sandy silt/silty sand was typically moist to wet at all depths.

Sand Fill

In the northcentral portion of the property, the sandy silt/silty sand was underlain with medium to fine grained, reddish brown, sand fill with trace organics to a depth of up to approximately 4.3 m bgs (at BH8-19). The sand fill was wet at all depths.

Sandy Silt Fill

In the northern portion of the property, the sandy silt/silty sand is underlain with medium to fine grained, brown sandy silt fill up to a depth of approximately 5.5 m bgs (at MW5-19). The sandy silt fill was moist at all depths.

Silty Sand Fill

In the southern portion of the property, the sandy silt/silty sand is underlain with medium to fine grained, grey/brown silty sand fill up to a depth of approximately 4.3 m bgs (at MW3-18).

In the southeastern portion of the property, the clayey silt is underlain with medium to fine grained, brown silty sand up to a depth of approximately 6.9 m bgs (at MW5-19). The silty sand fill was wet at all depths.

Clayey Silt Fill

In the southern portion of the Property, the sandy silt/silty sand is underlain with fine grained, brown silty clay with varying amounts of fine gravel and organic material to a depth of up to approximately 3.0 m bgs (at MW6-19). The clayey silt fill is moist to wet at all depths.

Across the Property, the sandy silt and/or silty sand is underlain with fine grained, brown to grey clayey silt with varying amounts of gravel and organic material to a depth of up to approximately 6.9 m bgs. The clayey silt is moist to wet at all depths.

Geologic cross sections are presented on Figure 5. The stratigraphy encountered from ground surface to the deepest investigated depth is presented on cross sections shown on Figure 6 and Figure 7.

Groundwater flow across the Site was determined to be to the northwest. LNAPL was not observed in on-Site soils. No PID readings greater than 1.2 ppm were measured in the headspace of soil samples collected. No, evidence of staining, free petroleum or chemical product was encountered in exposed soils during borehole advancement.

The findings of the Phase One ESA and a review of the stratigraphy of the six boreholes advanced for the Phase Two ESA indicate that overburden soils at the Site consist primarily of anthropogenic fill material and debris that is likely associated with the construction of the former Welland Canal and the demolition of former on-Site buildings.

5.9.3 Site Conditions

GHD reviewed the Ontario Ministry of Natural Resources and Forestry's – "Natural Heritage Information Centre" database to identify areas registered as ANSIs. GHD also consulted the ERIS ANSI database. No ANSIs or SEAs were identified for properties located within the Phase One Study Area.

GHD reviewed the Niagara Escarpment Planning and Development Act (revised 2012), Provincial Parks and Conservation Reserves Act (2006), Oak Ridges Moraine Conservation Act (2001), and Wilderness Areas Act (1990) to determine if the Property was located in an area of natural significance. Based on a review of the Acts, the Phase Two Property is not in an area of natural significance as defined by each of the Acts.

GHD also completed a review of available mapping from the Niagara Region Conservation Authority (NPCA) – Watershed Explorer to identify any environmentally significant areas in the area of the Site. The NPCA indicated that the Site overlies a highly vulnerable aquifer and the northern approximately 30 metres of the Property are susceptible to shoreline flooding and erosion.

The Property is not defined as environmentally sensitive under Ontario Regulation 153/04.

The Phase Two activities conducted by GHD included the following:

i) Six boreholes were advanced to facilitate the collection and field screening of soil samples to document geologic and environmental conditions at the Site.

ii) Qualitative and quantitative field screening of soils encountered during the advancement of six boreholes.

iii) Ten soil samples (including one field duplicate) were collected from six borehole locations and submitted to a laboratory for chemical analyses.

iv) Two soil samples were collected from two borehole locations and submitted to a laboratory for grain size analysis.

v) Two boreholes were instrumented as monitoring wells to facilitate the collection of groundwater samples and to document hydrogeological conditions at the Site.

vi) One borehole was instrumented as a soil-gas probe to facilitate the monitoring of methane gas production within the soil on-Site.

vii) Three groundwater samples (including one field duplicate) were collected from one (1) on-Site monitoring wells and submitted to a laboratory for chemical analyses.

viii) Implementation of quality assurance and control measures in the form of one soil trip blank and one groundwater trip blank for laboratory analyses of volatile organic compounds (VOCs) and petroleum hydrocarbons (PHC) fractions F_1.

ix) Completion of vertical and horizontal control surveys to determine the locations and elevations of the newly installed monitoring wells and soil-gas probes with respect to mean sea level.

x) Completion of one round of water level measurements at the two newly installed on-Site monitoring wells, three existing on-Site monitoring wells, one newly installed soil-gas probe and three off-Site monitoring wells to document groundwater elevations and flow direction.

xi) Methane gas monitoring at one on-Site soil gas probe.

The above activities were completed between March 4, 2019 and March 14, 2019.

The Environmental Screening activities conducted by GHD included the following:

i) Site reconnaissance to determine the presence and locations of existing on-Site monitoring wells.

ii) One on-Site and two off-Site boreholes were advanced to facilitate the collection and field screening of soil samples to document geologic and environmental conditions at the Site.

iii) Qualitative and quantitative field screening of soils encountered during the advancement of three boreholes.

iv) Two soil samples (including one field duplicate) were collected from the one on-Site borehole location and submitted to a laboratory for chemical analyses.

v) One on-Site and two off-Site boreholes were instrumented as monitoring wells to facilitate the collection of groundwater samples and to document hydrogeological conditions at the Site.

vi) Five groundwater samples (including one field duplicate) were collected from four on-Site monitoring wells and submitted to a laboratory for chemical analyses

vii) Implementation of quality assurance and control measures in the form of one groundwater trip blank for laboratory analyses of volatile organic compounds (VOCs) and petroleum hydrocarbons (PHC) fractions F_1

viii) Completion of a vertical control survey to determine the elevations of the newly installed monitoring wells with respect to mean sea level

ix) Completion of three rounds of water level measurements at the four existing on-Site, one newly-installed on-Site and two newly-installed off-Site monitoring wells to document groundwater elevations and flow direction.

The above activities were completed between December 5, 2018 and January 2, 2019.

There are no surface water bodies at the Site and as such no surface water or sediment samples were collected as part of the Phase Two ESA.

Based on all of the investigation work completed, GHD believes that the Site has been sufficiently investigated and characterized. The investigative locations are shown on Figure 4. The following presents a summary of the soil and groundwater quality at the Site.

5.9.4 On-Site Soil (Surface and Subsurface)

Between March 4 and March 5, 2019, a total of six boreholes were advanced by Landshark Drilling (Landshark) of Brantford, Ontario, using a geoprobe 7822DT drill rig as part of the soil and

groundwater quality investigation. Each borehole was advanced using a 108-millimetre (mm) outside diameter (OD) solid stem auger. Overburden soils were sampled using a 1.52-m long acetate liner sampler using the direct push methodology. Soil samples from each 0.76-m interval for the full-depth of each borehole were described using the USCS for native soils with additional descriptions of visually identified features within the overburden soils.

On December 19, 2018, one on-Site and twooff-Site boreholes were advanced by Aardvark Drilling Inc. (Aardvark) of Guelph, Ontario using a conventional drill rig as a part of the environmental screening conducted by GHD. Each borehole was advanced using a 108-millimetre (mm) inside diameter (ID) hollow stem auger. Overburden soils were sampled using a 0.61-m long stainless steel split-spoon sampler using the standard penetration test (SPT) methodology, using a 63.6 kilogram (kg) drop hammer that was raised and lowered with a hydraulic pump. Soil samples from each split spoon interval for the full-depth of each borehole were described using the Unified Soil Classification System (USCS) for native soils with additional descriptions of visually identified features within the overburden soils.

The six boreholes advanced at the Site in March 2019 are identified as MW5-19, MW6-19, BH6-19, BH7-19, BH8-19 and SVP1-19. The boreholes were advanced to depths ranging from 3.05 to 6.86 m bgs. Two of the boreholes (MW5-19 and MW6-19) were instrumented as a monitoring wells to a depth of 6.86 m bgs. One of the boreholes (SVP1-19) was instrumented as a soil-gas probe to a depth of 2.29 m bgs.

One on-Site borehole advanced at the Site in December 2018 identified as MW3-18 was installed as a monitoring well to a depth of 4.11 metres. Two off-Site boreholes advanced at the Site in December 2018 identified as MW1-18 and MW2-18 were installed as a monitoring wells to a depth of 4.42 metres.

Borehole locations are shown on Figure 4.

A total of ten soil samples including one field duplicate were collected for laboratory analyses of select parameters including VOCs, PHCs, PAHs, Metals, SAR, and conductivity during the Phase Two soil quality investigation. A trip blank sample for QA/QC purposes was also for laboratory analyses of VOCs and PHC fractions F_1.

A total of two soil samples including one field duplicate were collected from one on-Site borehole for laboratory analyses of select parameters including VOCs, PHCs, PAHs, Metals, SAR, pH and conductivity during the Environmental Screening soil quality investigation. A sample key summarizing the sampling information (location, identification, date, matrix, depth) as well as the analytical parameters is provided in Table 1.

Based on the analytical results, the following parameters are identified as contaminants of concern (COC) in soil since they were detected at concentrations greater than the MECP Table 3 soil quality standards.

Metals

- Cadmium
- Lead
- Zinc

Elevated metals concentrations were detected in soil samples collected within the northern portion of the Property only. The source of the metals impacts is likely to be associated with the fill material in this area.

Inorganics

- Electrical Conductivity

Elevated electrical conductivity concentrations were detected in a soil sample collected within the central eastern portion of the Property only. The source of the electrical conductivity impact is likely to be associated with the fill material in this area.

Polycyclic Aromatic Hydrocarbons

- Acenaphthylene
- Anthracene
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene/Benzo(j)fluoranthene
- Benzo(k)fluoranthene
- Dibenz(a,h)anthracene
- Fluoranthene
- Indeno(1,2,3-cd)pyrene

Elevated PAH concentrations were detected in soil samples collected within the northwestern portion of the Property only. The source of the metals impacts is likely to be associated with the fill material in this area.

The remaining analyzed parameters (metals, PHCs, VOCs, and PAHs) were either not detected above the laboratory reporting limits, or were detected at concentrations below the MECP Table 3 Standards. Based on all of the investigation work completed, GHD believes that the Site has been sufficiently investigated and characterized with respect to COCs in groundwater.

As the above mentioned COCs were identified in soil at the Site, soil remediation, a Risk Assessment and risk management measures are required to facilitate filing a Record of Site Condition for the proposed residential/commercial development at the Site.

A summary of the horizontal extent of soil impacts at the Site is presented on Figure 8. The vertical extent of soil impacts for cross-section A-A' are presented on Figure 9.1 (Metals), Figure 9.2 (PAHs) and Figure 9.3 (Inorganics).

The vertical extent of the soil impacts for cross-section B-B' are presented on Figures 9.1 (Metals) and Figure 9.2 (PAHs). Inorganics were not detected at concentrations exceeding their respective MECP Table 3 Standards in soil along cross-section B-B', figures delineating the vertical extent of these impacts along cross-section B-B' are not required to complete delineation.

5.9.5 On-Site Groundwater

Between December 13 and 21, 2018, a total of five groundwater samples were collected, including one field duplicate and one trip blank, from monitoring wells BH-103, BH-105, BH-106 and MW3-18 and submitted to the laboratory for VOCs, PHCs, PAHs and/or dissolved metals analyses.

On March 7, 2019, a total of three groundwater samples were collected, including one field duplicate and one trip blank, from monitoring wells MW5-19 and MW6-19 and submitted to the laboratory for VOCs, PHCs, PAHs and/or dissolved metals analyses.

The locations of the groundwater monitoring wells are shown on Figure 4. A field sample key summarizing the sampling information (location, date, identification, type) as well as the parameters for analysis is provided in Table 1. The groundwater analytical data generated from monitoring wells BH-103, BH-105, BH-106, MW3-18, MW5-19 and MW6-19 are summarized in Table 7 along with the MECP Table 3 Standards for comparative reference.

Each of the on-Site monitoring wells was inspected for the presence of LNAPL using an oil/water interface probe. No LNAPL was identified at any of the monitoring well locations. Based on a review of the analytical data and observations made during borehole advancement, well development and groundwater sampling, including visual and olfactory observations as well as organic vapour content (PID readings), LNAPL does not appear to be present on groundwater at the Site.

Based on a review of the groundwater analytical data, no COCs were identified in groundwater since there were no detected concentrations greater than the MECP Table 3 Standards. Since no groundwater impacts were identified at the Site, further investigations for delineation were not required.

5.9.6 Groundwater Hydraulic Gradient

Based on the groundwater level measurements collected on March 14, 2019, horizontal and vertical hydraulic gradients were calculated between three sets of shallow monitoring wells (MW3-18 and MW6-19, MW3-18 and MW5-19, and MW5-19 and MW6-19). Vertical hydraulic gradients were calculated using the depths to the middle of the screened intervals in the monitoring wells.

The maximum, minimum and average horizontal hydraulic gradients in shallow overburden groundwater across the Site are approximately 5.2×10^{-2}, 1.0×10^{-3} and 3.2×10^{-2} m/m. The maximum, minimum and average vertical hydraulic gradient in the shallow overburden groundwater across the Site is approximately 9.3×10^{-1}, 5.8×10^{-2} and 5.7×10^{-1} m/m in the downward direction.

5.9.7 Intended Land Use

Intended land use is mixed commercial and residential. Potential human receptors given the Site conditions include construction/utilities workers during Site redevelopment and, when the Site is operational, workers in the proposed commercial units and residents in the proposed residential

units. Since the on-Site soil will be capped by the building floor and sub-grade parking garage, any potential soil vapour exposure to residents or workers in the upper floors of the proposed development is considered to be significantly mitigated. In addition, since drinking water is supplied via a municipal supply, human exposure pathways to groundwater are not considered significant.

Potential terrestrial ecological receptors consist of terrestrial vegetation, such as trees and grasses, terrestrial invertebrates, such as earthworms, and terrestrial wildlife, such as mammals and birds. It is expected that there will be limited exposure, if any, for terrestrial ecological receptors through direct contact, indirect food web interactions, and inhalation of particulates/volatiles given that the entire Property will be covered with a concrete floor comprising the parking garage floor and exterior asphalt-paved surfaces. Given the Site is within a developed area of St. Catharines, it is not considered to be a sensitive Site for terrestrial ecological receptors. Potential aquatic ecological receptors consist of aquatic vegetation such as algae and grasses, aquatic invertebrates such as zebra mussels, and aquatic wildlife such as amphibians, fish and waterfowl. Given there are no groundwater COCs at the Site, aquatic receptor pathways are not considered to be significant.

6. Conclusions

Based on the Phase Two ESA completed at the Site, including all field and laboratory analytical data generated therefrom, the following conclusions have been developed regarding environmental Site conditions.

Geology

The stratigraphy encountered during the field activities consisted of the following:

- *Topsoil* – surface cover in landscaped grassy areas across the property
- *Gravel Fill* – gravel surface cover with some sand in gravel parking areas across the Site
- *Sand and Gravel Fill* – sand and gravel, medium to coarse grained, grey to brown, dry to moist
- *Sandy Silt/Silty Sand Fill* – Sand and silt, medium to fine grained with varying amounts of gravel, organic material and debris (asphalt, brick, concrete, glass), brown to grey to black, moist to wet
- Sand Fill – Sand with some silt and organic material, medium to fine grained, reddish brown, wet
- *Clayey Silt Fill* – Silt fill with clay, fine grained with varying amounts of gravel and organic material, brown to grey, moist to wet
- *Sandy Silt Fill* – Silt with sand, medium to fine grained with varying amounts of gravel, brown, moist to wet
- *Silty Sand Fill* – Sand with silt, medium to fine grained, brown to grey, wet
- Clayey Silt/ Silty Clay Fill – Silt and clay, fine grained with some sand and gravel, grey, moist

Soil Quality

Soils across the Site were analyzed for VOCs, PHCs, PAHs, metals, conductivity and SAR. This included examination of soils at the areas of suspected potential environmental concern.

Assessment of soil quality with respect to Table 3 Standards identified contaminants of concern as follows:

Metals

- Cadmium
- Lead
- Zinc

Inorganics

- Electrical Conductivity

Polycyclic Aromatic Hydrocarbons

- Acenaphthylene
- Anthracene
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene/Benzo(j)fluoranthene
- Benzo(k)fluoranthene
- Dibenz(a,h)anthracene
- Fluoranthene
- Indeno(1,2,3-cd)pyrene

A summary of the horizontal extent of soil impacts at the Site is presented on Figure 8. The vertical extent of soil impacts for cross-section A-A' are presented on Figure 9.1 (Metals), Figure 9.2 (PAHs) and Figure 9.3 (Inorganics).

The vertical extent of the soil impacts for cross-section B-B' are presented on Figures 9.1 (Metals) and Figure 9.2 (PAHs). Inorganics were not detected at concentrations exceeding their respective MECP Table 3 Standards in soil along cross-section B-B', figures delineating the vertical extent of these impacts along cross-section B-B' are not required to complete delineation.As the above mentioned COCs were identified in soil at the Site, soil remediation, a Risk Assessment and risk management measures are required to facilitate filing a Record of Site Condition for the proposed residential/commercial development at the Site.

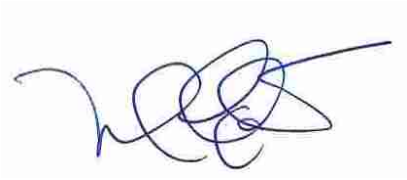
Groundwater Quality

Groundwater samples from across the Site were analyzed for VOCs, PHCs, PAHs and dissolved metals. This included examination of groundwater at the areas of suspected potential environmental concern. Assessment of groundwater quality with respect to the MECP Table 3 Standards identified no contaminants of concern. As no contaminants of concern were identified in groundwater at the Site, groundwater remediation, a groundwater Risk Assessment and groundwater risk management measures are not required to facilitate filing a Record of Site Condition for the proposed residential/commercial development at the Site.

6.1 Signatures



Melissa Pley, B.A.Sc



Marc Gaudet, P. Eng.

As a Qualified Person, I confirm that the Phase Two activities were carried out in accordance with O.Reg. 153/04, the results of which are accurately presented in the findings and conclusions of this report. A Record of Site Condition cannot be file on the Brownfields Environmental Site Registry because it does not meet certain Environmental Protection Act Standards, as identified herein.

7. References

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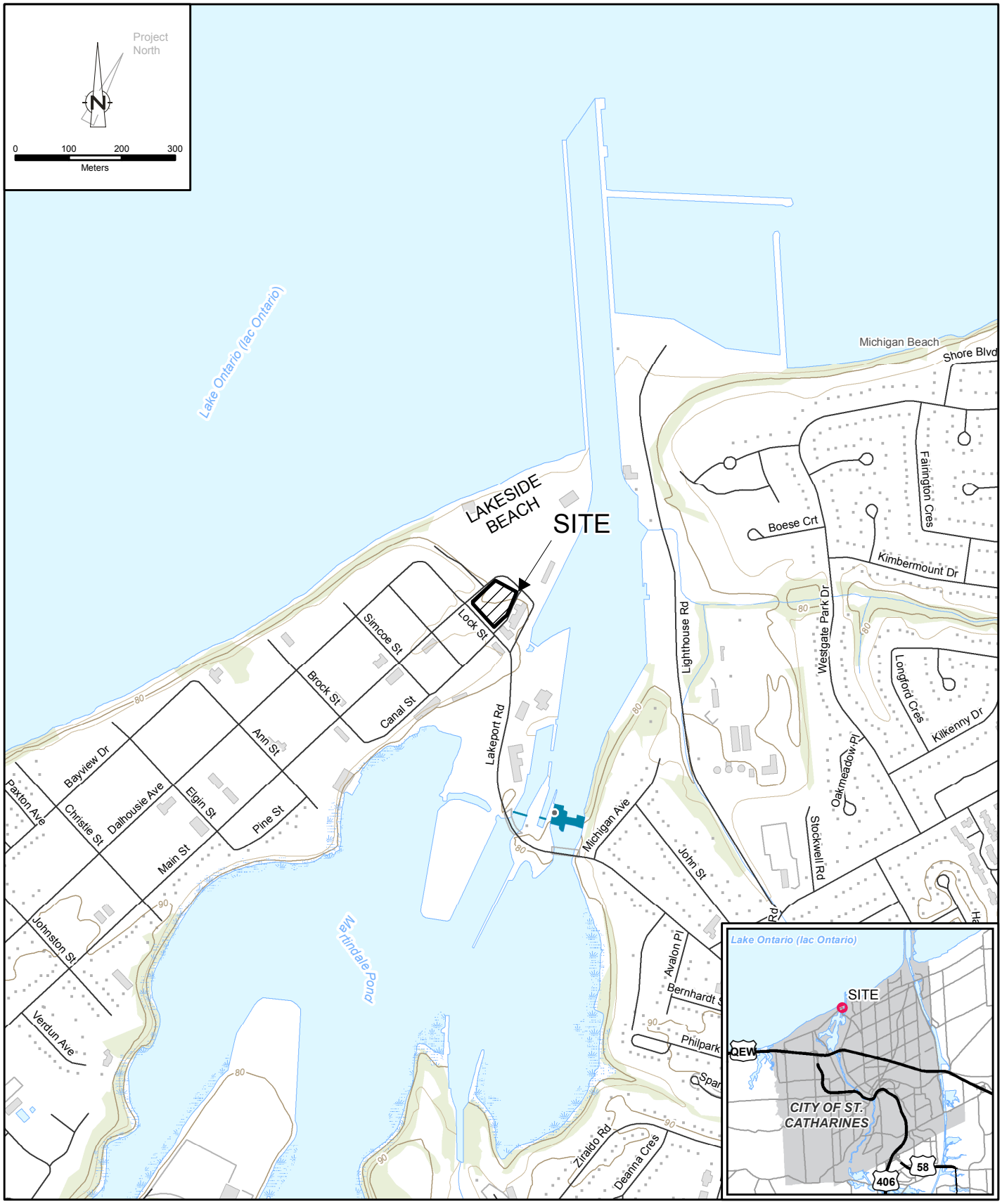
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Figures



Source: MNRF NRVIS, 2019. Produced by GHD under licence from Ontario Ministry of Natural Resources and Forestry, © Queen's Printer 2019.
Coordinate System: NAD 1983 UTM Zone 17N

RANKIN CONSTRUCTION INC.
12 AND 16 LOCK STREET, ST. CATHARINES, ONTARIO
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

11189766-00
May 8, 2019

SITE LOCATION MAP

FIGURE 1

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LEGEND

PROPERTY BOUNDARY

SHORELINE

LAKESIDE BEACH

MUNICIPAL PUMP STATION

ASPHALT - PAVED PARKING LOT

LANDSCAPED

GARY ROAD

RESIDENTIAL

MAIN STREET

JAIL HOUSE

LAKEPORT ROAD

SALES OFFICE

GRASS/VEGETATIVE COVERED

ASPHALT -PAVED PARKING LOT

RESIDENTIAL

HOGAN'S ALLEY

VACANT LOT

GRAVEL COVERED

MAIN STREET

COMMERCIAL/RETAIL

LOCK STREET

COMMERCIAL/RETAIL

HOTEL

RESTAURANTS/RETAIL

COMMERCIAL/ RETAIL

LANDSCAPED

OLD WELLAND CANAL

COMMERCIAL/ RETAIL

RESIDENTIAL

CANAL STREET

COMMERCIAL/RETAIL

COMMERCIAL/RETAIL

0 8 16 24m

PROJECT NORTH

RANKIN CONSTRUCTION INC.
12 AND 16 LOCK STREET, ST. CATHARINES, ONTARIO
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

11189766-10

May 8, 2019

SITE PLAN

FIGURE 2

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LEGEND

PROPERTY BOUNDARY

SHORELINE

LAKESIDE BEACH

AREAS OF POTENTIAL ENVIRONMENTAL CONCERN
(APECs)

APEC A	CURRENT DRY CLEANING FACILITY
APEC B	FORMER UST - ASSOCIATED WITH FORMER TAXI STAND
APEC C	FORMER DRY CLEANING FACILITY
APEC D	FILL OF UNKNOWN QUANTITY
APEC E	PAH AND METALS IMPACTED SOIL
APEC F	PEAT FILL
APEC G	FORMER FUEL OIL USE

GARY ROAD
RESIDENTIAL
MUNICIPAL PUMP STATION
ASPHALT - PAVED PARKING LOT
LANDSCAPED
APEC D
JAIL HOUSE
LAKEPORT ROAD
MAIN STREET
APEC E
SALES OFFICE
GRASS/VEGETATIVE COVERED
APEC F
ASPHALT -PAVED PARKING LOT
APEC A
APEC B
APEC C
HOGAN'S ALLEY
VACANT LOT
RESIDENTIAL
GRAVEL COVERED
HOTEL
APEC G
MAIN STREET
COMMERCIAL/RETAIL
LOCK STREET
COMMERCIAL/RETAIL
RESTAURANTS/RETAIL
COMMERCIAL/ RETAIL
LANDSCAPED
OLD WELLAND CANAL
COMMERCIAL/ RETAIL
COMMERCIAL/RETAIL
CANAL STREET
RESIDENTIAL
COMMERCIAL/RETAIL

0 8 16 24m

PROJECT NORTH

RANKIN CONSTRUCTION INC.
12 AND 16 LOCK STREET, ST. CATHARINES, ONTARIO
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

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PHASE ONE CONCEPTUAL SITE MODEL

FIGURE 3

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LEGEND

- PROPERTY BOUNDARY
- SHORELINE
- MONITORING WELL LOCATION (SOIL-MAT, 2009)
- MONITORING WELL LOCATION (GHD, 2018)
- MONITORING WELL LOCATION (GHD, 2019)
- BOREHOLE LOCATION
- SOIL GAS PROBE LOCATION
- OFF-SITE MONITORING LOCATION

GARY ROAD
LANDSCAPED
RESIDENTIAL
MAIN STREET
LAKEPORT ROAD
JAIL HOUSE
BH7-19
MW3-18
BH6-19
PW-1
BH-105
BH-106
BH8-19
SALES OFFICE
SGP1-19
GRASS/VEGETATIVE COVERED
ASPHALT -PAVED PARKING LOT
MW6-19
BH-103
MW2-18
MW4-19
VACANT LOT
HOGAN'S ALLEY
GRAVEL COVERED
MW5-19
MW1-18
HOTEL
RESTAURANTS/RETAIL
COMMERCIAL/ RETAIL
LOCK STREET
MAIN STREET
RESIDENTIAL
COMMERCIAL/RETAIL
COMMERCIAL/RETAIL
LANDSCAPED
OLD WELLAND CANAL

0 5 10 15m

PROJECT NORTH

RANKIN CONSTRUCTION INC.
12 AND 16 LOCK STREET, ST. CATHARINES, ONTARIO
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

ENVIRONMENTAL INVESTIGATIVE LOCATIONS

11189766-10
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FIGURE 4

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LEGEND

- PROPERTY BOUNDARY
- SHORELINE
- MONITORING WELL LOCATION (SOIL-MAT, 2009)
- MONITORING WELL LOCATION (GHD, 2018)
- MONITORING WELL LOCATION (GHD, 2019)
- BOREHOLE LOCATION
- SOIL GAS PROBE LOCATION
- OFF-SITE MONITORING LOCATION
- A A' CROSS-SECTION LOCATION

GARY ROAD
LANDSCAPED
LAKEPORT ROAD
RESIDENTIAL
MAIN STREET
JAIL HOUSE
SALES OFFICE
GRASS/VEGETATIVE COVERED
ASPHALT -PAVED PARKING LOT
GRAVEL COVERED
HOTEL
RESTAURANTS/RETAIL
COMMERCIAL/ RETAIL
HOGAN'S ALLEY
VACANT LOT
LOCK STREET
COMMERCIAL/RETAIL
OLD WELLAND CANAL

BH7-19
MW3-18
BH6-19
PW-1
BH-105
BH-106
BH8-19
SGP1-19
BH-103
MW6-19
MW5-19
MW2-18
MW4-19
MW1-18

A A' B B'

0 5 10 15m

PROJECT NORTH

GHD

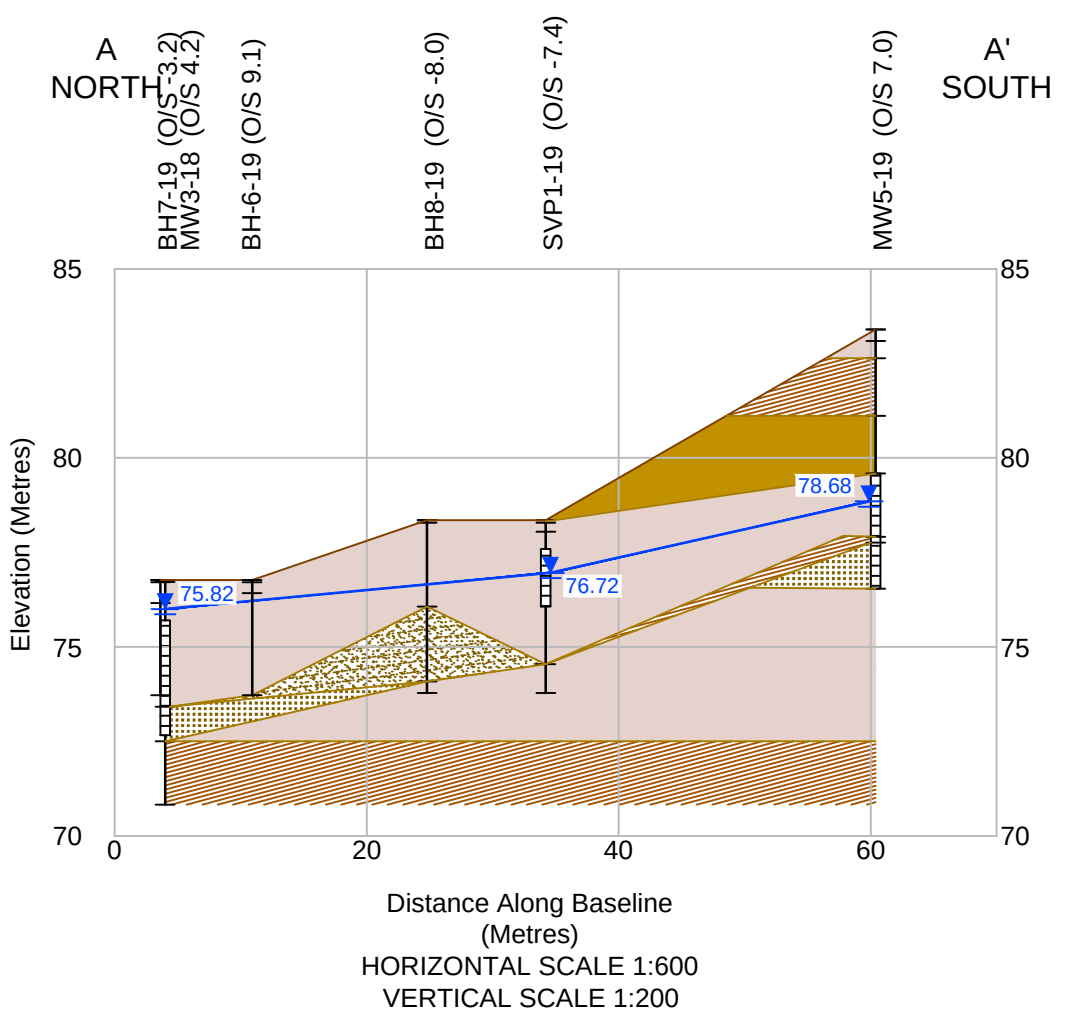
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12 AND 16 LOCK STREET, ST. CATHARINES, ONTARIO
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

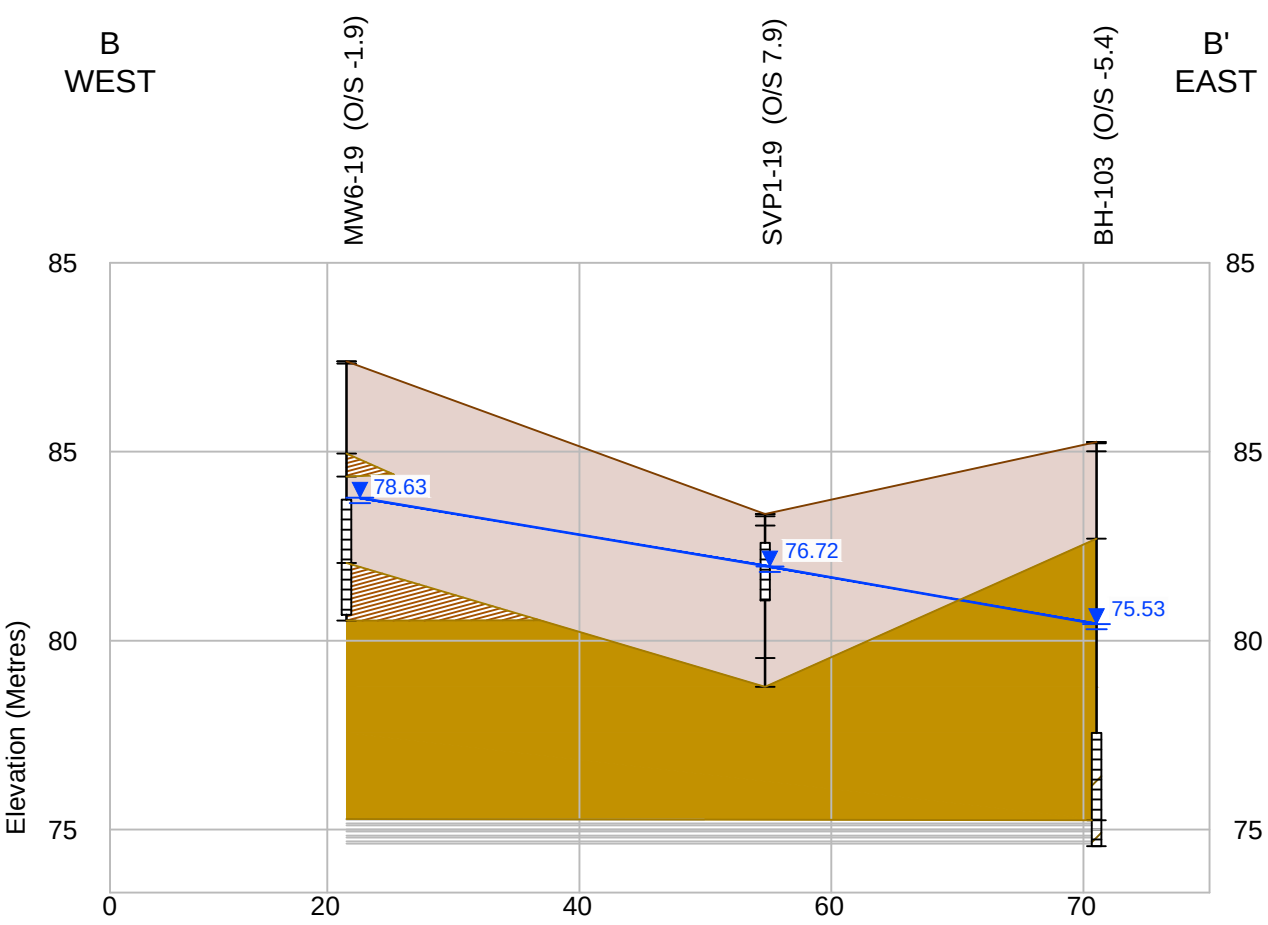
GEOLOGIC CROSS SECTION LOCATIONS

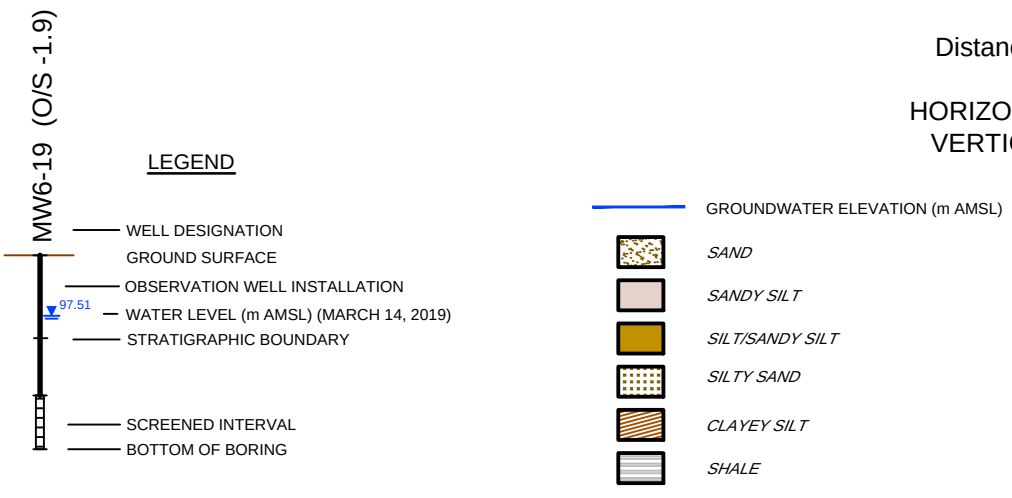
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May 9, 2019

FIGURE 5

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12 AND 16 LOCK STREET, ST. CATHARINES, ONTARIO
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

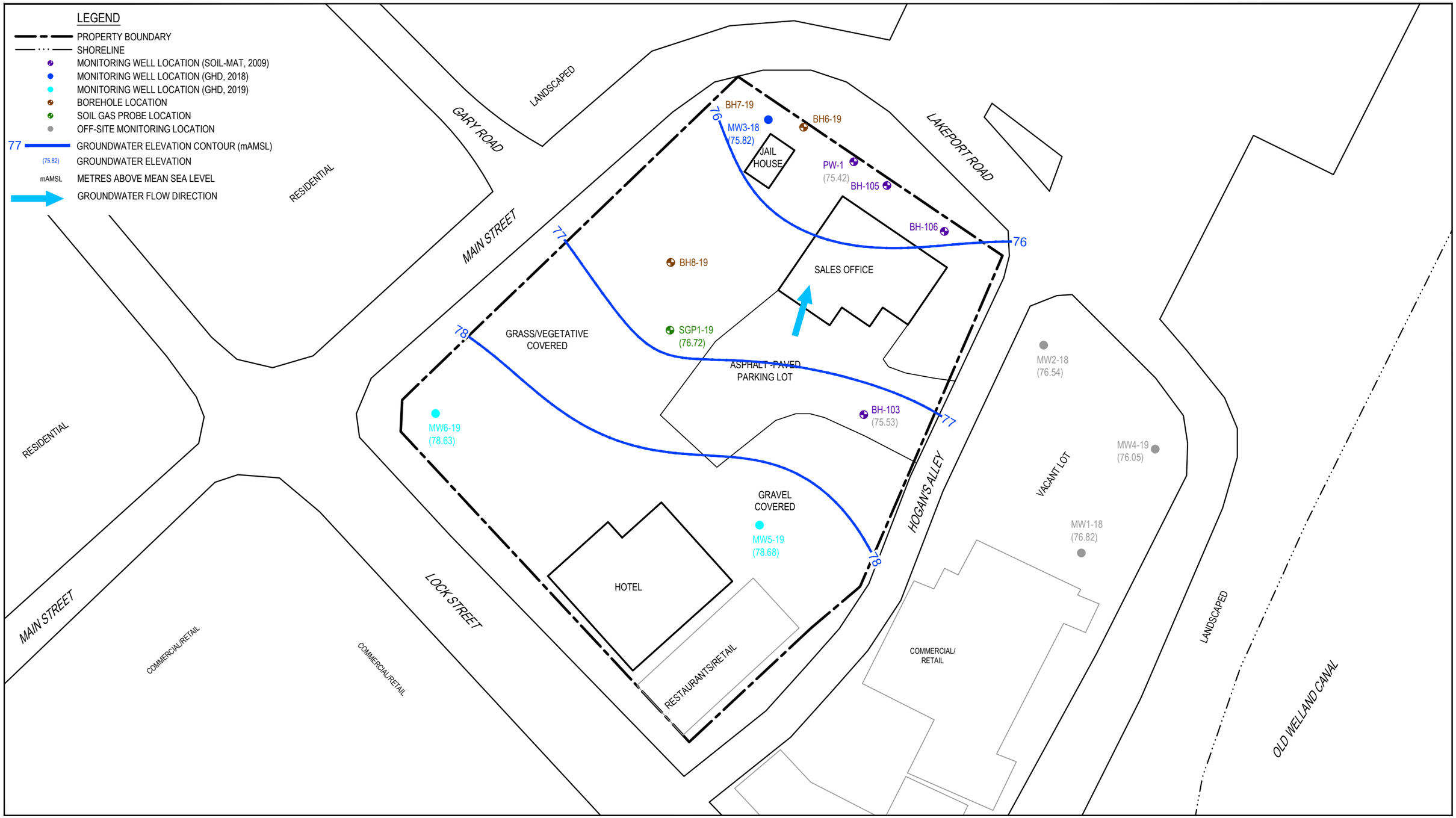
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GEOLOGIC CROSS SECTION A-A' AND B-B'

FIGURE 6

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0 5 10 15m

PROJECT NORTH

RANKIN CONSTRUCTION INC.
12 AND 16 LOCK STREET, ST. CATHARINES, ONTARIO
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

11189766-10
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GROUNDWATER ELEVATION CONTOURS - MARCH 14, 2019

FIGURE 7

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LEGEND

- PROPERTY BOUNDARY
- SHORELINE
- MONITORING WELL LOCATION (SOIL-MAT, 2009)
- MONITORING WELL LOCATION (GHD, 2018)
- MONITORING WELL LOCATION (GHD, 2019)
- BOREHOLE LOCATION
- SOIL GAS PROBE LOCATION

BH7-19	3/5/2019 (LOCATION / SAMPLE DATE)
	0.80-1.50 (SAMPLE DEPTH (m BGS))
Acenaphthylene	ND(0.050)
Anthracene	ND(0.050)
Benzo(a)anthracene	0.205
Benzo(a)pyrene	0.172 (RESULT (ug/g))
Benzo(b/j)fluoranthene	0.161
Benzo(k)fluoranthene	0.139
Cadmium	ND(0.50)
Conductivity	0.247
Dibenz(a,h)anthracene	ND(0.050)
Fluoranthene	0.295
Indeno(1,2,3-cd)pyrene	0.145
Lead	203
Zinc	102

PARAMETER

203 EXCEEDS MECP TABLE 3 CRITERIA

MECP TABLE 3 SOIL STANDARD[1] (ug/g)

PARAMETER	STANDARD
Acenaphthylene	0.17
Anthracene	0.74
Benzo(a)anthracene	0.63
Benzo(a)pyrene	0.3
Benzo(b/j)fluoranthene	0.78
Benzo(k)fluoranthene	0.78
Cadmium	1.2
Conductivity	0.7
Dibenz(a,h)anthracene	0.1
Fluoranthene	0.69
Indeno(1,2,3-cd)pyrene	0.48
Lead	120
Zinc	340

BH8-19	3/5/2019
	0.80-1.50
Acenaphthylene	0.145
Anthracene	0.458
Benzo(a)anthracene	1.71
Benzo(a)pyrene	1.41
Benzo(b/j)fluoranthene	1.65
Benzo(k)fluoranthene	0.889
Cadmium	ND(0.50)
Conductivity	0.177
Dibenz(a,h)anthracene	0.353
Fluoranthene	3.16
Indeno(1,2,3-cd)pyrene	1.25
Lead	151
Zinc	105

BH7-19	3/5/2019
	0.80-1.50
Acenaphthylene	ND(0.050)
Anthracene	ND(0.050)
Benzo(a)anthracene	0.205
Benzo(a)pyrene	0.172
Benzo(b/j)fluoranthene	0.161
Benzo(k)fluoranthene	0.139
Cadmium	ND(0.50)
Conductivity	0.247
Dibenz(a,h)anthracene	ND(0.050)
Fluoranthene	0.295
Indeno(1,2,3-cd)pyrene	0.145
Lead	203
Zinc	102

BH6-19	3/5/2019	3/5/2019
	0.00-1.50	0.80-1.50
Acenaphthylene	0.089	ND(0.050)
Anthracene	0.673	ND(0.050)
Benzo(a)anthracene	1.58	ND(0.050)
Benzo(a)pyrene	1.55	ND(0.050)
Benzo(b/j)fluoranthene	1.69	ND(0.050)
Benzo(k)fluoranthene	0.637	ND(0.050)
Cadmium	ND(0.50)	ND(0.50)
Conductivity	-	0.299
Dibenz(a,h)anthracene	0.288	ND(0.050)
Fluoranthene	3.53	ND(0.050)
Indeno(1,2,3-cd)pyrene	1.05	ND(0.050)
Lead	57.5	7.9
Zinc	94.0	45.4

MW3-18	12/19/2018
	0.80-2.10
Acenaphthylene	0.15/0.34
Anthracene	0.18/1.1
Benzo(a)anthracene	0.93/3.5
Benzo(a)pyrene	1.0/2.9
Benzo(b/j)fluoranthene	0.98/3.0
Benzo(k)fluoranthene	0.35/1.1
Cadmium	0.26/0.21
Conductivity	0.23/0.23
Dibenz(a,h)anthracene	0.088/0.34
Fluoranthene	1.7/6.4
Indeno(1,2,3-cd)pyrene	0.48/1.7
Lead	110/130
Zinc	110/150

SGP1-19	3/5/2019	3/5/2019
	1.50-2.30	2.30-3.00
Acenaphthylene	ND(0.050)	ND(0.050)/ND(0.050)
Anthracene	ND(0.050)	ND(0.050)/ND(0.050)
Benzo(a)anthracene	0.186	ND(0.050)/ND(0.050)
Benzo(a)pyrene	0.155	ND(0.050)/ND(0.050)
Benzo(b/j)fluoranthene	0.153	ND(0.050)/ND(0.050)
Benzo(k)fluoranthene	0.119	ND(0.050)/ND(0.050)
Cadmium	1.35	ND(0.50)/ND(0.50)
Conductivity	0.325	-
Dibenz(a,h)anthracene	ND(0.050)	ND(0.050)/ND(0.050)
Fluoranthene	0.308	ND(0.050)/ND(0.050)
Indeno(1,2,3-cd)pyrene	0.131	ND(0.050)/ND(0.050)
Lead	214	43.6/49.5
Zinc	603	92.1/102

MW6-19	3/5/2019
	0.80-1.50
Acenaphthylene	ND(0.050)
Anthracene	0.051
Benzo(a)anthracene	0.100
Benzo(a)pyrene	0.088
Benzo(b/j)fluoranthene	ND(0.16)
Benzo(k)fluoranthene	0.150
Cadmium	ND(0.50)
Conductivity	0.122
Dibenz(a,h)anthracene	ND(0.050)
Fluoranthene	0.189
Indeno(1,2,3-cd)pyrene	0.054
Lead	499
Zinc	179

MW5-19	3/4/2019	3/4/2019
	0.80-1.50	2.30-3.00
Acenaphthylene	ND(0.050)	ND(0.050)
Anthracene	ND(0.050)	ND(0.050)
Benzo(a)anthracene	ND(0.050)	ND(0.050)
Benzo(a)pyrene	ND(0.050)	ND(0.050)
Benzo(b/j)fluoranthene	ND(0.050)	ND(0.050)
Benzo(k)fluoranthene	ND(0.050)	ND(0.050)
Cadmium	ND(0.50)	ND(0.50)
Conductivity	-	2.26
Dibenz(a,h)anthracene	ND(0.050)	ND(0.050)
Fluoranthene	ND(0.050)	ND(0.050)
Indeno(1,2,3-cd)pyrene	ND(0.050)	ND(0.050)
Lead	60.2	40.5
Zinc	60.9	67.2

0 5 10 15m

PROJECT NORTH

NOTE:
(1) Ministry of the Environment, Conservation and Parks (MECP) 'Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011 Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition, Residential/Parkland/Institutional Property Use and medium/fine textured soils

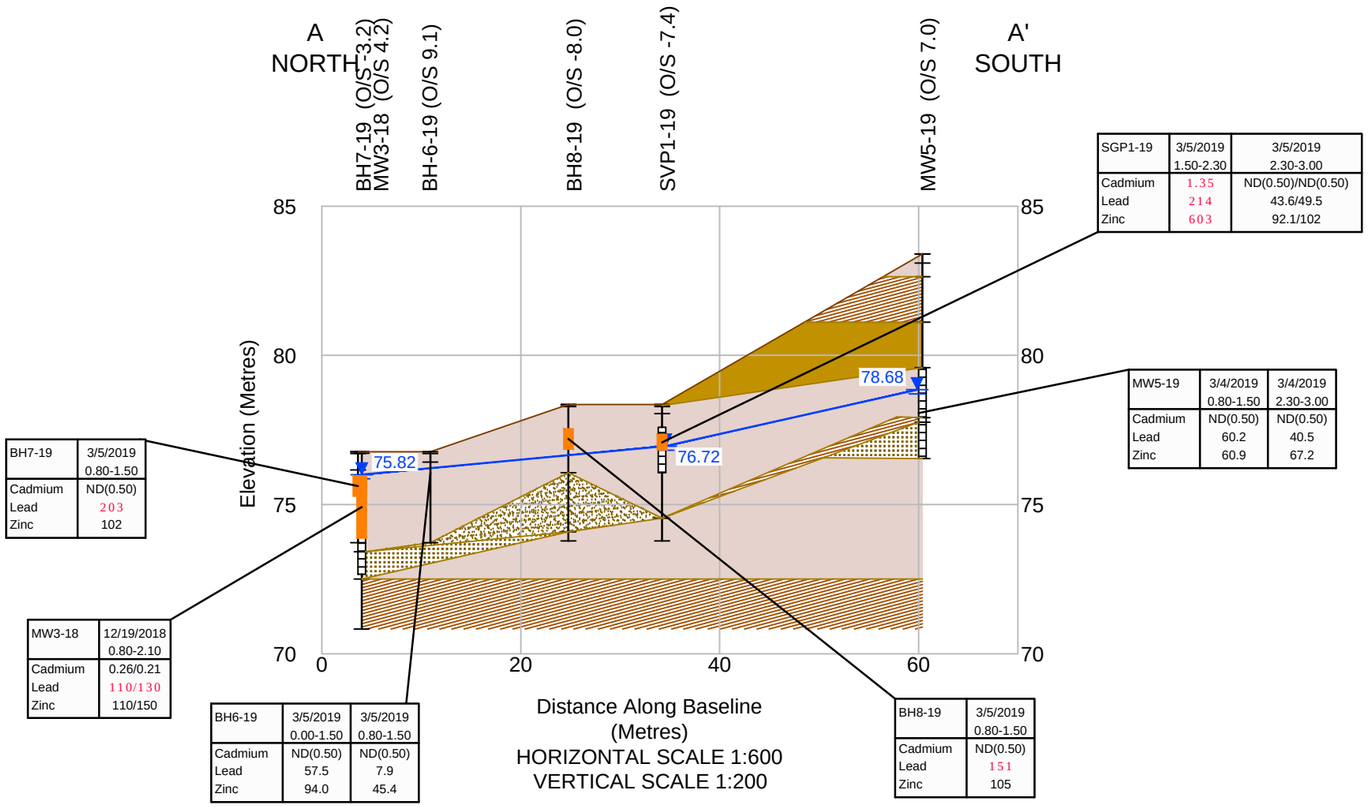
RANKIN CONSTRUCTION INC.
12 AND 16 LOCK STREET, ST. CATHARINES, ONTARIO
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

SOIL ANALYTICAL DATA

11189766-10
May 8, 2019

FIGURE 8

CAD File: I:\DRAWINGS\11180000s\11189000s\11189766\11189766-report\11189766-10(003)\11189766-10(003)GN\11189766-10(003)GN-SC002.dwg



SGP1-19	3/5/2019 1.50-2.30	3/5/2019 2.30-3.00
Cadmium	1.35	ND(0.50)/ND(0.50)
Lead	214	43.6/49.5
Zinc	603	92.1/102

MW5-19	3/4/2019 0.80-1.50	3/4/2019 2.30-3.00
Cadmium	ND(0.50)	ND(0.50)
Lead	60.2	40.5
Zinc	60.9	67.2

BH7-19	3/5/2019 0.80-1.50
Cadmium	ND(0.50)
Lead	203
Zinc	102

MW3-18	12/19/2018 0.80-2.10
Cadmium	0.26/0.21
Lead	110/130
Zinc	110/150

BH6-19	3/5/2019 0.00-1.50	3/5/2019 0.80-1.50
Cadmium	ND(0.50)	ND(0.50)
Lead	57.5	7.9
Zinc	94.0	45.4

BH8-19	3/5/2019 0.80-1.50
Cadmium	ND(0.50)
Lead	151
Zinc	105

LEGEND

MW6-19 (O/S -1.9)
97.51

- WELL DESIGNATION
- GROUND SURFACE
- OBSERVATION WELL INSTALLATION
- WATER LEVEL (m AMSL) (MARCH 14, 2019)
- STRATIGRAPHIC BOUNDARY
- SCREENED INTERVAL
- BOTTOM OF BORING

- GROUNDWATER ELEVATION (m AMSL)
- *SAND*
- *SANDY SILT*
- *SILT/SANDY SILT*
- *SILTY SAND*
- *CLAYEY SILT*
- *SHALE*

MW3-18	12/19/2018 0.80-2.10
Cadmium	0.26/0.21
Lead	110/130
Zinc	110/150

- LOCATION
- SAMPLE DATE
- SAMPLE DEPTH
- RESULT (µg/g)
- PARAMETER

110	EXCEEDS MECP CRITERIA
mBGS	METRES BELOW GROUND SURFACE
ND()	NON-DETECT AT DETECTION LIMIT SHOWN IN PARENTHESES
µg/g	MICROGRAMS PER GRAM

MECP TABLE 3 STANDARD(1)

PARAMETER	CRITERIA
Cadmium	1.2
Lead	120
Zinc	340

NOTE:
(1) Ministry of the Environment, Conservation and Parks (MECP) 'Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011 Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition, Residential/Parkland/Institutional Property Use and medium/fine textured soils

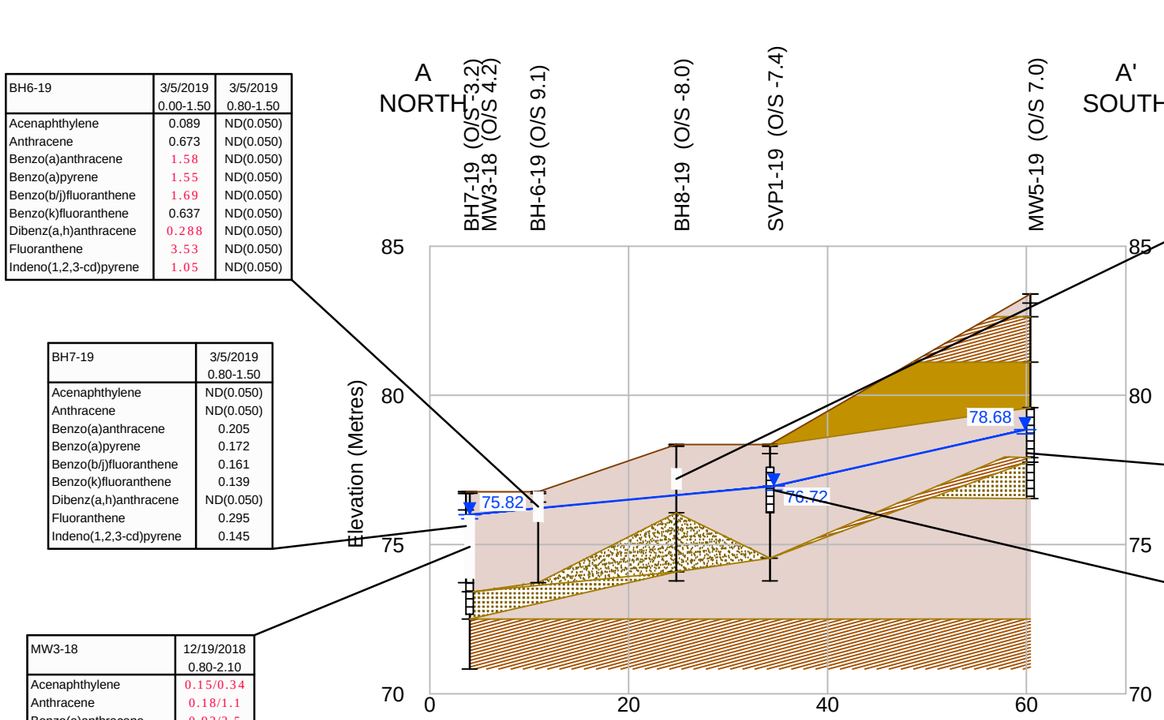
RANKIN CONSTRUCTION INC.
12 AND 16 LOCK STREET, ST. CATHARINES, ONTARIO
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

GEOLOGICAL CROSS-SECTION A-A' AND VERTICAL EXTENT OF SOIL IMPACTS - METALS

11189766-10
May 9, 2019

FIGURE 9.1

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Distance Along Baseline
(Metres)
HORIZONTAL SCALE 1:600
VERTICAL SCALE 1:200

BH6-19	3/5/2019 0.00-1.50	3/5/2019 0.80-1.50
Acenaphthylene	0.089	ND(0.050)
Anthracene	0.673	ND(0.050)
Benzo(a)anthracene	1.58	ND(0.050)
Benzo(a)pyrene	1.55	ND(0.050)
Benzo(b/j)fluoranthene	1.69	ND(0.050)
Benzo(k)fluoranthene	0.637	ND(0.050)
Dibenz(a,h)anthracene	0.288	ND(0.050)
Fluoranthene	3.53	ND(0.050)
Indeno(1,2,3-cd)pyrene	1.05	ND(0.050)

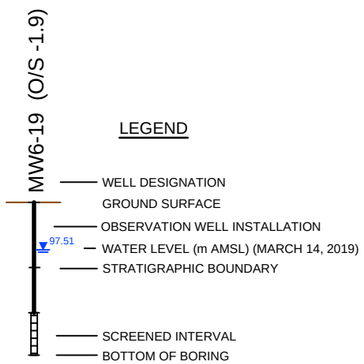
BH7-19	3/5/2019 0.80-1.50
Acenaphthylene	ND(0.050)
Anthracene	ND(0.050)
Benzo(a)anthracene	0.205
Benzo(a)pyrene	0.172
Benzo(b/j)fluoranthene	0.161
Benzo(k)fluoranthene	0.139
Dibenz(a,h)anthracene	ND(0.050)
Fluoranthene	0.295
Indeno(1,2,3-cd)pyrene	0.145

MW3-18	12/19/2018 0.80-2.10
Acenaphthylene	0.15/0.34
Anthracene	0.18/1.1
Benzo(a)anthracene	0.93/3.5
Benzo(a)pyrene	1.0/2.9
Benzo(b/j)fluoranthene	0.98/3.0
Benzo(k)fluoranthene	0.35/1.1
Dibenz(a,h)anthracene	0.088/0.34
Fluoranthene	1.7/6.4
Indeno(1,2,3-cd)pyrene	0.48/1.7

BH8-19	3/5/2019 0.80-1.50
Acenaphthylene	0.145
Anthracene	0.458
Benzo(a)anthracene	1.71
Benzo(a)pyrene	1.41
Benzo(b/j)fluoranthene	1.65
Benzo(k)fluoranthene	0.889
Dibenz(a,h)anthracene	0.353
Fluoranthene	3.16
Indeno(1,2,3-cd)pyrene	1.25

MW5-19	3/4/2019 0.80-1.50	3/4/2019 2.30-3.00
Acenaphthylene	ND(0.050)	ND(0.050)
Anthracene	ND(0.050)	ND(0.050)
Benzo(a)anthracene	ND(0.050)	ND(0.050)
Benzo(a)pyrene	ND(0.050)	ND(0.050)
Benzo(b/j)fluoranthene	ND(0.050)	ND(0.050)
Benzo(k)fluoranthene	ND(0.050)	ND(0.050)
Dibenz(a,h)anthracene	ND(0.050)	ND(0.050)
Fluoranthene	ND(0.050)	ND(0.050)
Indeno(1,2,3-cd)pyrene	ND(0.050)	ND(0.050)

SGP1-19	3/5/2019 1.50-2.30	3/5/2019 2.30-3.00
Acenaphthylene	ND(0.050)	ND(0.050)/ND(0.050)
Anthracene	ND(0.050)	ND(0.050)/ND(0.050)
Benzo(a)anthracene	0.186	ND(0.050)/ND(0.050)
Benzo(a)pyrene	0.155	ND(0.050)/ND(0.050)
Benzo(b/j)fluoranthene	0.153	ND(0.050)/ND(0.050)
Benzo(k)fluoranthene	0.119	ND(0.050)/ND(0.050)
Dibenz(a,h)anthracene	ND(0.050)	ND(0.050)/ND(0.050)
Fluoranthene	0.308	ND(0.050)/ND(0.050)
Indeno(1,2,3-cd)pyrene	0.131	ND(0.050)/ND(0.050)



LEGEND

- WELL DESIGNATION
- GROUND SURFACE
- OBSERVATION WELL INSTALLATION
- WATER LEVEL (m AMSL) (MARCH 14, 2019)
- STRATIGRAPHIC BOUNDARY
- SCREENED INTERVAL
- BOTTOM OF BORING

- GROUNDWATER ELEVATION (m AMSL)
- *SAND*
- *SANDY SILT*
- *SILT/SANDY SILT*
- *SILTY SAND*
- *CLAYEY SILT*
- *SHALE*

MW3-18	12/19/2018 0.80-2.10
Acenaphthylene	0.15/0.34
Anthracene	0.18/1.1
Benzo(a)anthracene	0.93/3.5
Benzo(a)pyrene	1.0/2.9
Benzo(b/j)fluoranthene	0.98/3.0
Benzo(k)fluoranthene	0.35/1.1
Dibenz(a,h)anthracene	0.088/0.34
Fluoranthene	1.7/6.4
Indeno(1,2,3-cd)pyrene	0.48/1.7

LOCATION
SAMPLE DATE
SAMPLE DEPTH
RESULT (µg/g)
PARAMETER

2.9	EXCEEDS MECP CRITERIA
mBGS	METRES BELOW GROUND SURFACE
ND()	NON-DETECT AT DETECTION LIMIT SHOWN IN PARENTHESES
µg/g	MICROGRAMS PER GRAM

MECP TABLE 3 SOIL STANDARD[1] (ug/g)

PARAMETER	STANDARD
Acenaphthylene	0.17
Anthracene	0.74
Benzo(a)anthracene	0.63
Benzo(a)pyrene	0.3
Benzo(b/j)fluoranthene	0.78
Benzo(k)fluoranthene	0.78
Dibenz(a,h)anthracene	0.1
Fluoranthene	0.69
Indeno(1,2,3-cd)pyrene	0.48

NOTE:
(1) Ministry of the Environment, Conservation and Parks (MECP) 'Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011 Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition, Residential/Parkland/Institutional Property Use and medium/fine textured soils

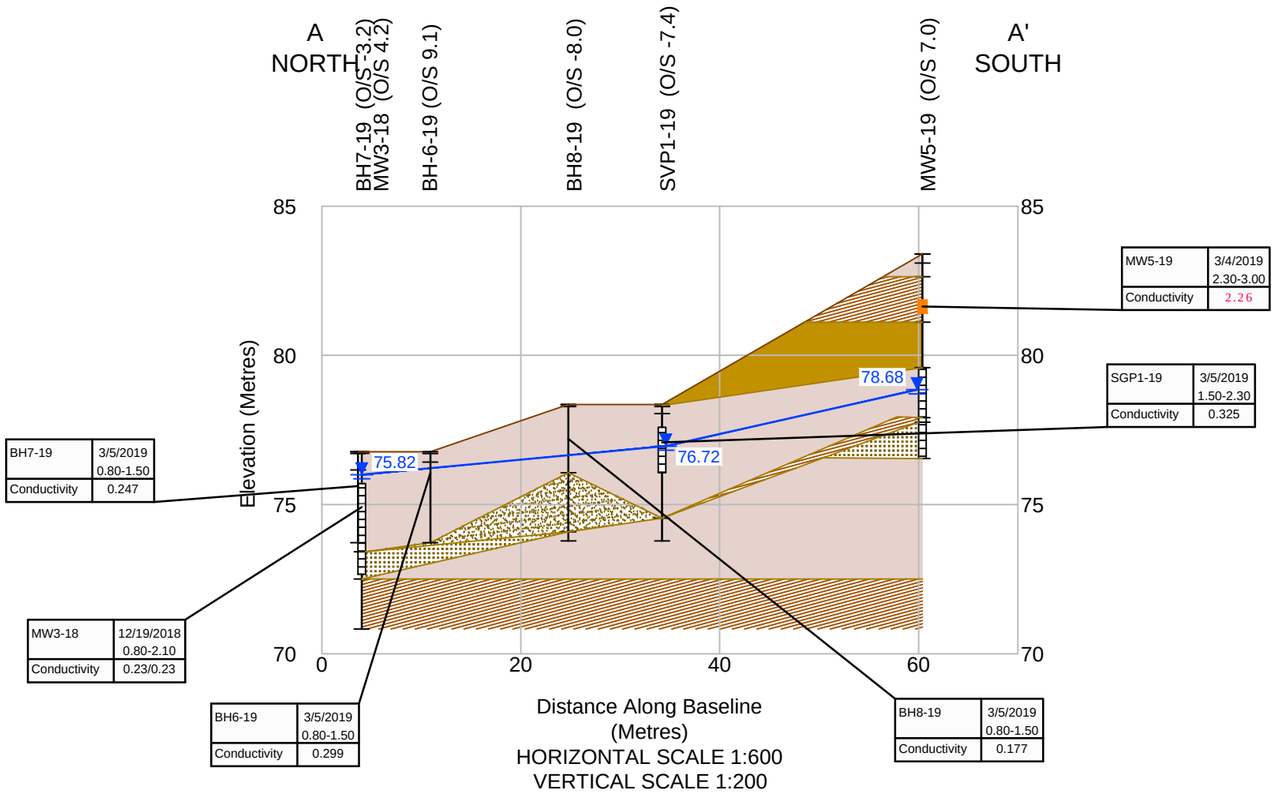
RANKIN CONSTRUCTION INC.
12 AND 16 LOCK STREET, ST. CATHARINES, ONTARIO
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

GEOLOGICAL CROSS-SECTION A-A' AND VERTICAL EXTENT OF SOIL IMPACTS - PAHs

11189766-10
May 9, 2019

FIGURE 9.2

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MW6-19 (O/S -1.9)

LEGEND

- WELL DESIGNATION
- GROUND SURFACE
- OBSERVATION WELL INSTALLATION
- 97.51 WATER LEVEL (m AMSL) (MARCH 14, 2019)
- STRATIGRAPHIC BOUNDARY
- SCREENED INTERVAL
- BOTTOM OF BORING

- GROUNDWATER ELEVATION (m AMSL)
- *SAND*
- *SANDY SILT*
- *SILT/SANDY SILT*
- *SILTY SAND*
- *CLAYEY SILT*
- *SHALE*

MW5-19 | 3/4/2019 | 2.30-3.00
Conductivity | 2.26

- LOCATION
- SAMPLE DATE
- SAMPLE DEPTH
- RESULT (µg/g)
- PARAMETER

110 EXCEEDS MECP CRITERIA

mBGS METRES BELOW GROUND SURFACE

ND() NON-DETECT AT DETECTION LIMIT SHOWN IN PARENTHESES

µg/g MICROGRAMS PER GRAM

MECP TABLE 3 STANDARD(1)

PARAMETER	CRITERIA
Conductivity	0.7

NOTE:

(1) Ministry of the Environment, Conservation and Parks (MECP) 'Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011 Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition, Residential/Parkland/Institutional Property Use and medium/fine textured soils

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PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

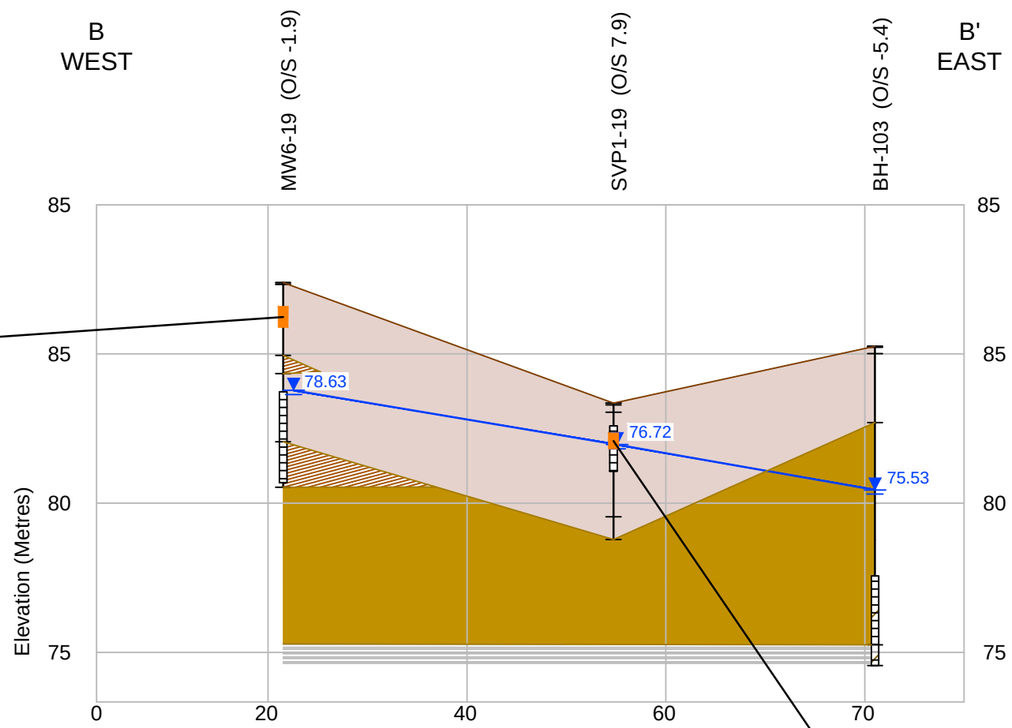
GEOLOGICAL CROSS-SECTION A-A' AND VERTICAL EXTENT OF SOIL IMPACTS - INORGANICS

11189766-10

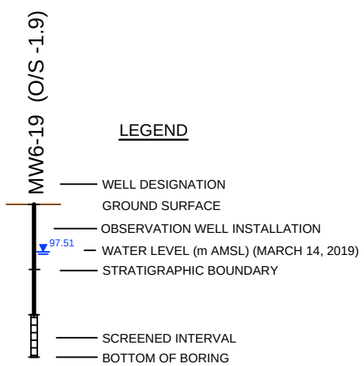
May 9, 2019

FIGURE 9.3

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Distance Along Baseline
(Metres)
HORIZONTAL SCALE 1:600
VERTICAL SCALE 1:200



LEGEND

- WELL DESIGNATION
- GROUND SURFACE
- OBSERVATION WELL INSTALLATION
- WATER LEVEL (m AMSL) (MARCH 14, 2019)
- STRATIGRAPHIC BOUNDARY
- SCREENED INTERVAL
- BOTTOM OF BORING

- GROUNDWATER ELEVATION (m AMSL)
- *SAND*
- *SANDY SILT*
- *SILT/SANDY SILT*
- *SILTY SAND*
- *CLAYEY SILT*
- *SHALE*

MW6-19	3/5/2019	← LOCATION
	0.80-1.50	← SAMPLE DATE / SAMPLE DEPTH
Cadmium	ND(0.50)	
Lead	499	
Zinc	179	← RESULT (µg/g) / PARAMETER

110	EXCEEDS MECP CRITERIA
mBGS	METRES BELOW GROUND SURFACE
ND()	NON-DETECT AT DETECTION LIMIT SHOWN IN PARENTHESES
µg/g	MICROGRAMS PER GRAM

MECP TABLE 3 STANDARD(1)

PARAMETER	CRITERIA
Cadmium	1.2
Lead	120
Zinc	340

NOTE:
(1) Ministry of the Environment, Conservation and Parks (MECP) 'Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011 Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition, Residential/Parkland/Institutional Property Use and medium/fine textured soils

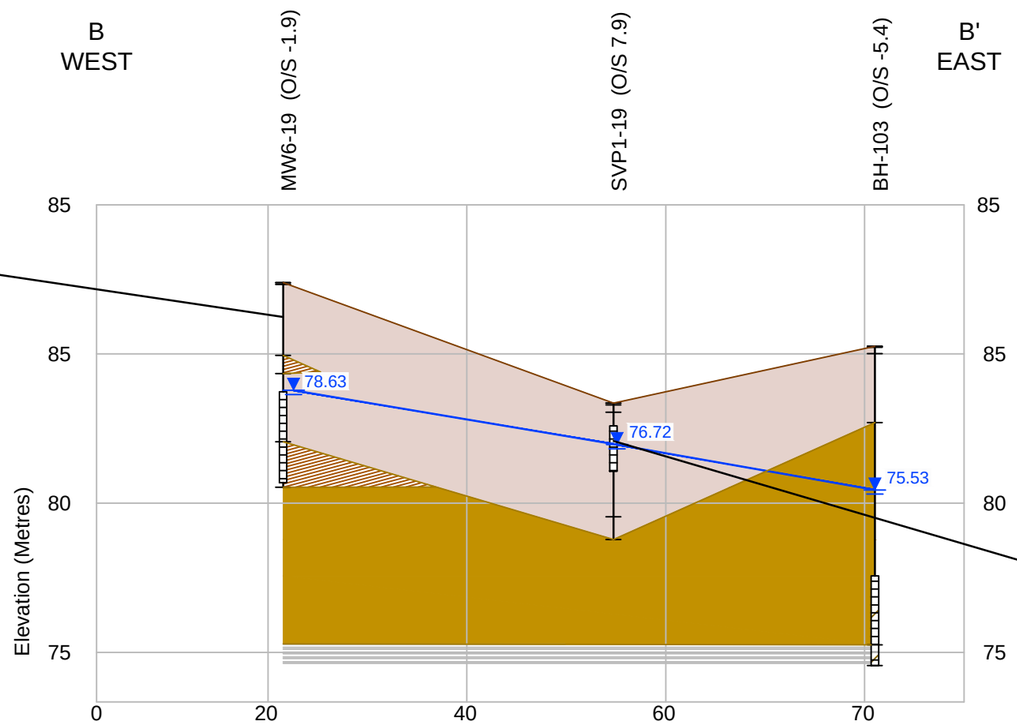
RANKIN CONSTRUCTION INC.
12 AND 16 LOCK STREET, ST. CATHARINES, ONTARIO
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

GEOLOGICAL CROSS-SECTION B-B' AND VERTICAL EXTENT OF SOIL IMPACTS - METALS

11189766-10
May 9, 2019

FIGURE 10.1

CAD File: I:\DRAWINGS\11180000s\11189000s\11189766\11189766-report\11189766-10(003)\11189766-10(003)GN\11189766-10(003)GN-SC008.dwg



MW6-19	3/5/2019 0.80-1.50
Acenaphthylene	ND(0.050)
Anthracene	0.051
Benzo(a)anthracene	0.100
Benzo(a)pyrene	0.088
Benzo(b/j)fluoranthene	ND(0.16)
Benzo(k)fluoranthene	0.150
Dibenz(a,h)anthracene	ND(0.050)
Fluoranthene	0.189
Indeno(1,2,3-cd)pyrene	0.054

SGP1-19	3/5/2019 1.50-2.30	3/5/2019 2.30-3.00
Acenaphthylene	ND(0.050)	ND(0.050)/ND(0.050)
Anthracene	ND(0.050)	ND(0.050)/ND(0.050)
Benzo(a)anthracene	0.186	ND(0.050)/ND(0.050)
Benzo(a)pyrene	0.155	ND(0.050)/ND(0.050)
Benzo(b/j)fluoranthene	0.153	ND(0.050)/ND(0.050)
Benzo(k)fluoranthene	0.119	ND(0.050)/ND(0.050)
Dibenz(a,h)anthracene	ND(0.050)	ND(0.050)/ND(0.050)
Fluoranthene	0.308	ND(0.050)/ND(0.050)
Indeno(1,2,3-cd)pyrene	0.131	ND(0.050)/ND(0.050)

MW6-19 (O/S -1.9)
97.51

LEGEND

- WELL DESIGNATION
- GROUND SURFACE
- OBSERVATION WELL INSTALLATION
- WATER LEVEL (m AMSL) (MARCH 14, 2019)
- STRATIGRAPHIC BOUNDARY
- SCREENED INTERVAL
- BOTTOM OF BORING
- GROUNDWATER ELEVATION (m AMSL)
- *SAND*
- *SANDY SILT*
- *SILT/SANDY SILT*
- *SILTY SAND*
- *CLAYEY SILT*
- *SHALE*

MW6-19	3/5/2019 0.80-1.50
Acenaphthylene	ND(0.050)
Anthracene	0.051
Benzo(a)anthracene	0.100
Benzo(a)pyrene	0.088
Benzo(b/j)fluoranthene	ND(0.16)
Benzo(k)fluoranthene	0.150
Dibenz(a,h)anthracene	ND(0.050)
Fluoranthene	0.189
Indeno(1,2,3-cd)pyrene	0.054

LOCATION
SAMPLE DATE
SAMPLE DEPTH
RESULT (µg/g)
PARAMETER

110	EXCEEDS MECP CRITERIA
mBGS	METRES BELOW GROUND SURFACE
ND()	NON-DETECT AT DETECTION LIMIT SHOWN IN PARENTHESES
µg/g	MICROGRAMS PER GRAM

MECP TABLE 3 SOIL STANDARD[1] (ug/g)

PARAMETER	STANDARD
Acenaphthylene	0.17
Anthracene	0.74
Benzo(a)anthracene	0.63
Benzo(a)pyrene	0.3
Benzo(b/j)fluoranthene	0.78
Benzo(k)fluoranthene	0.78
Dibenz(a,h)anthracene	0.1
Fluoranthene	0.69
Indeno(1,2,3-cd)pyrene	0.48

NOTE:
(1) Ministry of the Environment, Conservation and Parks (MECP) 'Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011 Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition, Residential/Parkland/Institutional Property Use and medium/fine textured soils

RANKIN CONSTRUCTION INC.
12 AND 16 LOCK STREET, ST. CATHARINES, ONTARIO
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

GEOLOGICAL CROSS-SECTION B-B' AND VERTICAL EXTENT OF SOIL IMPACTS - PAHs

11189766-10
May 9, 2019

FIGURE 10.2

CAD File: I:\DRAWINGS\11180000s\11189000s\11189766\11189766-report\11189766-10(003)\11189766-10(003)GN\11189766-10(003)GN-SC009.dwg

Tables

Field Sample Key
Phase Two Environmental Site Assessment
12 and 16 Lock Street, St. Catharines, Ontario
Rankin Construction Inc.

Location	Sample Identification	Sample Date	Matrix	Sample Interval (m BGS)	Sample Type	Chemical Analysis						
						Metals	VOCs	PHCs (F_1 to F_4)	VOCs/F_1	PAHs	PCBs	Grain Size
MW3-18	SS-11131634-121918-MP-003	19-Dec-18	Soil	0.8-2.1	Grab	√	√	√		√	√	
MW3-18	SS-11131634-121918-MP-004	19-Dec-18	Soil	0.8-2.1	FD	√	√	√		√	√	
MW5-19	SS-11189766-030419-MP-009	4-Mar-19	Soil	2.3-3.0	Grab	√		√		√	√	
MW5-19	SS-11189766-030419-MP-022	4-Mar-19	Soil	0.8-1.5	Grab	√		√		√	√	
MW6-19	SS-11189766-030519-MP-010	5-Mar-19	Soil	0.8-1.5	Grab	√	√	√		√	√	
MW6-19	SS-11189766-030519-MP-011	5-Mar-19	Soil	3.0-3.8	Grab							√
BH8-19	SS-11189766-030519-MP-012	5-Mar-19	Soil	0.8-1.5	Grab	√	√	√		√	√	
SVP1-19	SS-11189766-030519-MP-013	5-Mar-19	Soil	1.5-2.3	Grab	√	√	√		√	√	
SVP1-19	SS-11189766-030519-MP-023	5-Mar-19	Soil	2.3-3.0	Grab	√	√	√		√	√	
SVP1-19	SS-11189766-030519-MP-024	5-Mar-19	Soil	2.3-3.0	FD	√	√	√		√	√	
BH7-19	SS-11189766-030519-MP-014	5-Mar-19	Soil	0.8-1.5	Grab	√		√		√	√	
BH6-19	SS-11189766-030519-MP-015	5-Mar-19	Soil	0.8-1.5	Grab	√		√		√	√	
BH6-19	SS-11189766-030519-MP-016	5-Mar-19	Soil	1.5-2.3	Grab							√
BH6-19	SS-11189766-030519-MP-025	5-Mar-19	Soil	0.0-1.5	Grab	√		√		√	√	
MW3-18	GW-11131634-122118-MP-007	21-Dec-18	Groundwater	N/A	N/A	√	√	√		√		
BH-103	GW-11131634-121318-MP-001	13-Dec-18	Groundwater	N/A	N/A	√	√	√		√		
BH-105	GW-11131634-121318-MP-004	13-Dec-18	Groundwater	N/A	N/A	√	√	√		√		
BH-106	GW-11131634-121318-MP-002	13-Dec-18	Groundwater	N/A	N/A	√	√	√		√		
BH-106	GW-11131634-121318-MP-003	13-Dec-18	Groundwater	N/A	FD	√	√	√		√		
MW5-19	GW-11189766-030719-TM-02	7-Mar-19	Groundwater	N/A	N/A	√	√	√		√		
MW5-19	GW-11189766-030719-TM-03	7-Mar-19	Groundwater	N/A	FD	√	√	√		√		
MW6-19	GW-11189766-030719-TM-04	7-Mar-19	Groundwater	N/A	N/A	√	√	√		√		
-	Trip Blank	4-Mar-19	Soil	N/A	TB				√			
-	Trip Blank	21-Dec-18	Water	N/A	TB				√			
-	Trip Blank	7-Mar-19	Water	N/A	TB				√			

Notes:

m BGS	metres Below Ground Surface
VOCs	Volatile Organic Compounds
PHCs (F_1 to F_4)	Petroleum Hydrocarbon Fractions 1 to 4
PAHs	Polyaromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
N/A	Not Applicable
FD	Field Duplicate
TB	Trip Blank

Monitoring Well Construction Details
Phase Two Environmental Site Assessment
12 and 16 Lock Street, St. Catharines, Ontario
Rankin Construction Inc.

Location	Ground Surface Elevation (m AMSL)	Measuring Point Elevation (m AMSL)	Screened Interval (m BGS)	Screened Interval (m AMSL)	Sand Pack Interval (m BGS)	Sand Pack Interval (m AMSL)	Screened Geologic Unit
MW1-18[1]	78.45	78.27	1.37 - 4.42	77.08 - 74.03	1.07 - 4.57	77.38 - 73.88	Silty Sand/Sandy Silt
MW2-18[1]	78.08	78.00	1.37 - 4.42	76.71 - 73.66	1.07 - 4.57	77.01 - 73.51	Clayey Silt/ Silt/Sandy Silt
MW3-18	76.77	76.59	1.07 - 4.11	75.7 - 72.66	0.91 - 5.33	75.86 - 71.44	Sandy Silt/Silt
MW4-19[1]	77.78	77.90	1.52 - 4.57	76.26 - 73.21	1.07 - 6.10	76.71 - 71.68	Silty Sand/Sandy Silt/Clayey Silt
MW5-19	83.40	83.23	3.81 - 6.86	79.59 - 76.54	3.81 - 6.86	79.59 - 76.54	Sandy Silt/ Clayey Silt/Silty Sand
MW6-19	82.39	82.24	3.66 - 6.71	78.73 - 75.68	3.35 - 6.71	79.04 - 75.68	Sandy Silt/Clayey Silt/Silty Clay
BH-103[2]	80.40	80.35	7.65 - 10.70	72.75 - 69.70	7.00 - 10.70	73.40 - 69.70	Silt/Sandy Silt/Queenston Shale
BH-105[2]	76.98	76.88	3.30 - 6.35	73.58 - 70.63	2.70 - 6.35	74.28 - 70.63	Silty Clay/Clayey Silt/Silty Sand/Sandy Silt
BH-106[2]	77.15	77.10	3.30 - 6.35	73.85 - 70.80	2.70 - 6.35	74.45 - 70.80	Silty Clay/Clayey Silt/Silty Sand/Sandy Silt
PW-1[2]	76.91	76.69	4.60 - 9.10	72.31 - 67.81	N/A - N/A	N/A - N/A	N/A
SVP1-19	78.35	78.11	0.76 - 2.29	77.59 - 76.06	0.61 - 2.29	77.74 - 76.06	Sandy Silt/Silty Sand

Notes:

(1) Off-Site monitoring well located on adjascent property 12 Lakeport Road
(2) Installed by Soil-Mat Engineers and Consultants Ltd. In November, 2009
m AMSL metres above mean sea level
m BGS metres below ground surface
N/A data unavailable

Monitoring Well Stabilization Parameters
Phase Two Environmental Site Assessment
12 and 16 Lock Street, St. Catharines, Ontario
Rankin Construction Inc.

Monitoring Well Location	Date	Depth to Water (mbtor)	Volume Purged (litres)	pH (s.u.)	Conductivity (mS/cm)	Temperature (°C)	Turbidity (NTU)	Colour	Odour
BH103	13-Dec-18	4.94	10.0	6.62	1.46	12.34	800	Reddish Brown	None
			20.0	7.20	1.58	12.53	0.00	Reddish Brown	None
			30.0	7.11	1.56	12.23	800	Reddish Brown	None
			39.0	7.11	1.59	12.02	800	Reddish Brown	None
			49.0	7.20	1.60	12.02	800	Reddish Brown	None
			59.0	7.23	1.57	12.09	800	Reddish Brown	None
			68.0	7.23	1.61	11.92	0.00	Reddish Brown	None
BH105	13-Dec-18	1.30	7.0	71.00	0.901	11.41	800	Grey	None
			14.0	7.05	0.901	12.04	800	Grey	None
			21.0	7.07	1.07	12.06	0.00	Grey	Slight Sulfur
			28.0	7.02	1.19	12.32	800	Grey	Slight Sulfur
			35.0	7.03	1.24	12.31	800	Grey	Slight Sulfur
			42.0	7.00	1.30	12.46	800	Grey	Slight Sulfur
			49.0	7.03	1.32	12.43	800	Grey	Slight Sulfur
BH106	13-Dec-18	1.60	8.0	6.84	1.41	11.66	0.00	Grey/Black	None
			16.0	6.91	1.41	11.82	800	Grey/Black	None
			24.0	6.95	1.41	12.47	800	Grey/Black	None
			32.0	6.98	1.40	12.44	800	Grey/Black	None
			40.0	6.95	1.38	12.63	800	Grey/Black	None
			48.0	7.02	1.40	12.85	0.00	Grey/Black	None
			56.0	7.00	1.40	12.73	0.00	Grey/Black	None
MW3-18	21-Dec-18	0.92	6.5	6.69	1.30	10.54	0.00	Brown	None
			13.0	6.76	1.35	11.10	0.00	Brown	Slight Unknown
			19.5	6.77	1.43	11.37	0.00	Brown	Slight Unknown
			26.0	6.74	1.45	11.62	0.00	Brown	Slight Unknown
MW5-19	7-Mar-19	4.71	4.0	3.97	0.033	-1.58	>1000	Brown	None
			8.0	3.89	0.033	-1.50	>1000	Brown	None
			12.0	3.88	0.034	-1.37	>1000	Brown	None
			16.0	3.67	0.032	-1.24	>1000	Brown	None
MW6-19	7-Mar-19	3.84	6.0	5.65	6.98	0.76	>1000	Brown	None
			12.0	6.06	5.43	0.80	>1000	Brown	None
			18.0	6.65	7.80	2.54	>1000	Brown	None
			24.0	6.97	8.42	2.48	>1000	Brown	None

Groundwater Elevation Data
Field Sample Key
Phase Two Environmental Site Assessment
12 and 16 Lock Street, St. Catharines, Ontario
Rankin Construction Inc.

Monitoring Well Location	Ground Surface Elevation (m AMSL)	Measuring Point Elevation (m AMSL)	12/06/18		12/20/18		01/02/19		03/14/19	
			Depth to Groundwater (m BTOR)	Groundwater Elevation (m ASD)	Depth to Groundwater (m BTOR)	Groundwater Elevation (m AMSL)	Depth to Groundwater (m BTOR)	Groundwater Elevation (m AMSL)	Depth to Groundwater (m BTOR)	Groundwater Elevation (m AMSL)
MW1-18[1]	78.45	78.27	-	-	1.60	76.67	1.19	77.08	1.45	76.82
MW2-18[1]	78.08	78.00	-	-	1.68	76.32	1.04	76.96	1.46	76.54
MW3-18	76.77	76.59	-	-	0.92	75.67	0.84	75.75	0.77	75.82
MW4-19[1]	77.78	77.90	-	-	-	-	-	-	1.85	76.05
MW5-19	83.40	83.23	-	-	-	-	-	-	4.55	78.68
MW6-19	82.39	82.24	-	-	-	-	-	-	3.61	78.63
BH-103[2]	80.4	80.35	4.85	75.50	-	-	5.30	75.05	4.82	75.53
BH-105[2]	76.98	76.88	1.21	75.67	-	-	1.31	75.57	-	-
BH-106[2]	77.15	77.10	1.51	75.59	-	-	1.48	75.62	-	-
PW-1[2]	76.91	76.69	1.37	75.32	-	-	1.31	75.38	1.27	75.42
SVP1-19	78.35	78.11	-	-	-	-	-	-	1.39	76.72

Notes:

(1) Off-Site monitoring well located on adjascent property 12 Lakeport Road
(2) Installed by Soil-Mat Engineers and Consultants Ltd. In November, 2009
m AMSL metres above mean sea level
m BTOR metres below top of riser
- data unavailable

Table 5

Soil Quality Analytical Data
Phase Two Environmental Site Assessment
12 and 16 Lock Street, St. Catharines, Ontario
Rankin Construction Inc.

Sample Location:			**BH6-19**	**BH6-19**	**BH7-19**
Sample ID:			**SS-11189766-030519-MP-025**	**SS-11189766-030519-MP-015**	**SS-11189766-030519-MP-014**
Sample Date:			**3/5/2019**	**3/5/2019**	**3/5/2019**
Sample Depth:			**0.00-1.50**	**0.80-1.50**	**0.80-1.50**
Laboratory Report Number:			**L2242379**	**L2240805**	**L2240805**
Parameters	**Units**	**MECP Table 3 Criteria [1]**			
Metals					
Antimony	ug/g	7.5	ND(1.0)	ND(1.0)	1.1
Arsenic	ug/g	18	5.6	3.3	12.1
Barium	ug/g	390	104	54.5	114
Beryllium	ug/g	5	ND(0.50)	ND(0.50)	0.63
Boron	ug/g	120	6.0	ND(5.0)	8.5
Boron (hot water soluble)	ug/g	1.5	-	-	-
Cadmium	ug/g	1.2	ND(0.50)	ND(0.50)	ND(0.50)
Chromium	ug/g	160	16.6	13.1	16.8
Chromium VI (hexavalent)	ug/g	10	ND(0.20)	ND(0.20)	0.24
Cobalt	ug/g	22	9.1	7.0	8.2
Copper	ug/g	180	47.8	32.1	43.1
Lead	ug/g	120	57.5	7.9	**203**
Mercury	ug/g	1.8	0.0636	0.0211	0.240
Molybdenum	ug/g	6.9	ND(1.0)	ND(1.0)	1.0
Nickel	ug/g	130	19.2	14.7	18.2
Selenium	ug/g	2.4	ND(1.0)	ND(1.0)	ND(1.0)
Silver	ug/g	25	ND(0.20)	ND(0.20)	ND(0.20)
Thallium	ug/g	1	ND(0.50)	ND(0.50)	ND(0.50)
Uranium	ug/g	23	ND(1.0)	ND(1.0)	ND(1.0)
Vanadium	ug/g	86	23.7	21.1	26.3
Zinc	ug/g	340	94.0	45.4	102
Polychlorinated Biphenyls					
Total PCBs	ug/g	0.35	-	-	-
Petroleum Hydrocarbons					
Petroleum hydrocarbons F1 (C6-C10)	ug/g	65	ND(5.0)	ND(5.0)	ND(5.0)
Petroleum hydrocarbons F1 (C6-C10) - less BTEX	ug/g	65	-	-	-
Petroleum hydrocarbons F2 (C10-C16)	ug/g	150	ND(10)	ND(10)	ND(10)

Table 5

Soil Quality Analytical Data
Phase Two Environmental Site Assessment
12 and 16 Lock Street, St. Catharines, Ontario
Rankin Construction Inc.

Sample Location:			**BH6-19**	**BH6-19**	**BH7-19**
Sample ID:			**SS-11189766-030519-MP-025**	**SS-11189766-030519-MP-015**	**SS-11189766-030519-MP-014**
Sample Date:			**3/5/2019**	**3/5/2019**	**3/5/2019**
Sample Depth:			**0.00-1.50**	**0.80-1.50**	**0.80-1.50**
Laboratory Report Number:			**L2242379**	**L2240805**	**L2240805**
Parameters	**Units**	**MECP Table 3**			
Petroleum hydrocarbons F2 minus Naphthalene	ug/g	150	ND(10)	ND(10)	ND(10)
Petroleum hydrocarbons F3 (C16-C34)	ug/g	1300	ND(50)	ND(50)	120
Petroleum hydrocarbons F3 minus PAH	ug/g	1300	ND(50)	ND(50)	119
Petroleum hydrocarbons F4 (C34-C50)	ug/g	5600	ND(50)	ND(50)	72
Polycyclic Aromatic Hydrocarbons					
1+2-Methylnaphthalene	ug/g	3.4	0.116	ND(0.042)	ND(0.042)
1-Methylnaphthalene	ug/g	3.4	0.070	ND(0.030)	ND(0.030)
2-Methylnaphthalene	ug/g	3.4	0.046	ND(0.030)	ND(0.030)
Acenaphthene	ug/g	58	0.198	ND(0.050)	ND(0.050)
Acenaphthylene	ug/g	0.17	0.089	ND(0.050)	ND(0.050)
Anthracene	ug/g	0.74	0.673	ND(0.050)	ND(0.050)
Benzo(a)anthracene	ug/g	0.63	**1.58**	ND(0.050)	0.205
Benzo(a)pyrene	ug/g	0.3	**1.55**	ND(0.050)	0.172
Benzo(b)fluoranthene/Benzo(j)fluoranthene	ug/g	0.78	**1.69**	ND(0.050)	0.161
Benzo(g,h,i)perylene	ug/g	7.8	1.16	ND(0.050)	0.137
Benzo(k)fluoranthene	ug/g	0.78	0.637	ND(0.050)	0.139
Chrysene	ug/g	7.8	1.48	ND(0.050)	0.222
Dibenz(a,h)anthracene	ug/g	0.1	**0.288**	ND(0.050)	ND(0.050)
Fluoranthene	ug/g	0.69	**3.53**	ND(0.050)	0.295
Fluorene	ug/g	69	0.247	ND(0.050)	ND(0.050)
Indeno(1,2,3-cd)pyrene	ug/g	0.48	**1.05**	ND(0.050)	0.145
Naphthalene	ug/g	0.75	0.037	ND(0.013)	ND(0.013)
Phenanthrene	ug/g	7.8	2.69	ND(0.046)	0.111
Pyrene	ug/g	78	2.92	ND(0.050)	0.266
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	ug/g	0.05	-	-	-
1,1,1-Trichloroethane	ug/g	3.4	-	-	-
1,1,2,2-Tetrachloroethane	ug/g	0.05	-	-	-
1,1,2-Trichloroethane	ug/g	0.05	-	-	-
1,1-Dichloroethane	ug/g	11	-	-	-
1,1-Dichloroethene	ug/g	0.05	-	-	-
1,2-Dibromoethane (Ethylene dibromide)	ug/g	0.05	-	-	-
1,2-Dichlorobenzene	ug/g	4.3	-	-	-
1,2-Dichloroethane	ug/g	0.05	-	-	-
1,2-Dichloropropane	ug/g	0.085	-	-	-
1,3-Dichlorobenzene	ug/g	6	-	-	-
1,4-Dichlorobenzene	ug/g	0.097	-	-	-

Soil Quality Analytical Data
Phase Two Environmental Site Assessment
12 and 16 Lock Street, St. Catharines, Ontario
Rankin Construction Inc.

Sample Location:			**BH6-19**	**BH6-19**	**BH7-19**
Sample ID:			**SS-11189766-030519-MP-025**	**SS-11189766-030519-MP-015**	**SS-11189766-030519-MP-014**
Sample Date:			**3/5/2019**	**3/5/2019**	**3/5/2019**
Sample Depth:			**0.00-1.50**	**0.80-1.50**	**0.80-1.50**
Laboratory Report Number:			**L2242379**	**L2240805**	**L2240805**
Parameters	**Units**	**MECP Table 3**			
2-Butanone (Methyl ethyl ketone) (MEK)	ug/g	44	-	-	-
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/g	4.3	-	-	-
Acetone	ug/g	28	-	-	-
Benzene	ug/g	0.17	-	-	-
Bromodichloromethane	ug/g	13	-	-	-
Bromoform	ug/g	0.26	-	-	-
Bromomethane (Methyl bromide)	ug/g	0.05	-	-	-
Carbon tetrachloride	ug/g	0.12	-	-	-
Chlorobenzene	ug/g	2.7	-	-	-
Chloroform (Trichloromethane)	ug/g	0.18	-	-	-
cis-1,2-Dichloroethene	ug/g	30	-	-	-
cis-1,3-Dichloropropene/trans-1,3-Dichloropropene total	ug/g	0.083	-	-	-
Dibromochloromethane	ug/g	9.4	-	-	-
Dichlorodifluoromethane (CFC-12)	ug/g	25	-	-	-
Ethylbenzene	ug/g	15	-	-	-
Hexane	ug/g	34	-	-	-
Methyl tert butyl ether (MTBE)	ug/g	1.4	-	-	-
Methylene chloride	ug/g	0.96	-	-	-
Styrene	ug/g	2.2	-	-	-
Tetrachloroethene	ug/g	2.3	-	-	-
Toluene	ug/g	6	-	-	-
trans-1,2-Dichloroethene	ug/g	0.75	-	-	-
Trichloroethene	ug/g	0.52	-	-	-
Trichlorofluoromethane (CFC-11)	ug/g	5.8	-	-	-
Vinyl chloride	ug/g	0.022	-	-	-
Xylenes (total)	ug/g	25	-	-	-
General Chemistry					
Conductivity	mS/cm	0.7	0.421	0.299	0.247
Cyanide, weak acid dissociable	ug/g	0.051	ND(0.050)	ND(0.050)	ND(0.050)
Sodium adsorption ratio (SAR)	none	5	0.99	0.20	1.73
pH	pH	NC	7.45	-	-

Notes:

(1) Ministry of the Environment, Conservation and Parks (MECP) 'Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011 Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition, Residential/Parkland/ Institutional Property Use and medium/fine textured soils

NC No Critero
ND Not detected at the associated reporting limit.
µg/g micrograms per gram
mS/cm millisiemens per centimetre
2.32 Parameter exceeds MECP Table 3 Criteria

Table 5

Soil Quality Analytical Data
Phase Two Environmental Site Assessment
12 and 16 Lock Street, St. Catharines, Ontario
Rankin Construction Inc.

Sample Location:			**BH8-19**	**MW3-18**	**MW3-18**
Sample ID:			**SS-11189766-030519-MP-012**	**SS-11131634-121918-MP-003**	**SS-11131634-121918-MP-004**
Sample Date:			**3/5/2019**	**12/19/2018**	**12/19/2018**
Sample Depth:			**0.80-1.50**	**0.80-2.10**	**0.80-2.10**
Laboratory Report Number:			**L2240805**	**B8Y1691**	**B8Y1691**
					Duplicate
Parameters	**Units**	**MECP Table 3 Criteria [(1)]**			
Metals					
Antimony	ug/g	7.5	1.3	0.47	0.48
Arsenic	ug/g	18	6.3	4.4	4.8
Barium	ug/g	390	89.7	100	110
Beryllium	ug/g	5	ND(0.50)	0.45	0.51
Boron	ug/g	120	5.5	6.4	7.0
Boron (hot water soluble)	ug/g	1.5	-	0.46	0.39
Cadmium	ug/g	1.2	ND(0.50)	0.26	0.21
Chromium	ug/g	160	15.2	17	18
Chromium VI (hexavalent)	ug/g	10	ND(0.20)	ND(0.2)	ND(0.2)
Cobalt	ug/g	22	7.3	8.1	8.8
Copper	ug/g	180	39.1	44	73
Lead	ug/g	120	**151**	110	**130**
Mercury	ug/g	1.8	0.210	0.16	0.19
Molybdenum	ug/g	6.9	ND(1.0)	0.76	0.62
Nickel	ug/g	130	15.5	18	19
Selenium	ug/g	2.4	ND(1.0)	ND(0.50)	ND(0.50)
Silver	ug/g	25	ND(0.20)	ND(0.20)	ND(0.20)
Thallium	ug/g	1	ND(0.50)	0.10	0.13
Uranium	ug/g	23	ND(1.0)	0.62	0.55
Vanadium	ug/g	86	23.4	23	25
Zinc	ug/g	340	105	110	150
Polychlorinated Biphenyls					
Total PCBs	ug/g	0.35	-	ND(0.010)	ND(0.010)
Petroleum Hydrocarbons					
Petroleum hydrocarbons F1 (C6-C10)	ug/g	65	ND(5.0)	ND(10)	ND(10)
Petroleum hydrocarbons F1 (C6-C10) - less BTEX	ug/g	65	ND(5.0)	ND(10)	ND(10)
Petroleum hydrocarbons F2 (C10-C16)	ug/g	150	ND(10)	20	ND(10)

Soil Quality Analytical Data
Phase Two Environmental Site Assessment
12 and 16 Lock Street, St. Catharines, Ontario
Rankin Construction Inc.

Sample Location:			**BH8-19**	**MW3-18**	**MW3-18**
Sample ID:			**SS-11189766-030519-MP-012**	**SS-11131634-121918-MP-003**	**SS-11131634-121918-MP-004**
Sample Date:			**3/5/2019**	**12/19/2018**	**12/19/2018**
Sample Depth:			**0.80-1.50**	**0.80-2.10**	**0.80-2.10**
Laboratory Report Number:			**L2240805**	**B8Y1691**	**B8Y1691**
					Duplicate
Parameters	**Units**	**MECP Table 3**			
Petroleum hydrocarbons F2 minus Naphthalene	ug/g	150	ND(10)	-	-
Petroleum hydrocarbons F3 (C16-C34)	ug/g	1300	195	84	190
Petroleum hydrocarbons F3 minus PAH	ug/g	1300	181	-	-
Petroleum hydrocarbons F4 (C34-C50)	ug/g	5600	106	ND(50)	72
Polycyclic Aromatic Hydrocarbons					
1+2-Methylnaphthalene	ug/g	3.4	ND(0.042)	ND(0.0071)	0.12
1-Methylnaphthalene	ug/g	3.4	ND(0.030)	ND(0.0050)	0.064
2-Methylnaphthalene	ug/g	3.4	ND(0.030)	ND(0.0050)	0.054
Acenaphthene	ug/g	58	0.120	0.013	0.34
Acenaphthylene	ug/g	0.17	0.145	0.15	**0.34**
Anthracene	ug/g	0.74	0.458	0.18	**1.1**
Benzo(a)anthracene	ug/g	0.63	**1.71**	**0.93**	**3.5**
Benzo(a)pyrene	ug/g	0.3	**1.41**	**1.0**	**2.9**
Benzo(b)fluoranthene/Benzo(j)fluoranthene	ug/g	0.78	**1.65**	**0.98**	**3.0**
Benzo(g,h,i)perylene	ug/g	7.8	0.958	0.44	1.3
Benzo(k)fluoranthene	ug/g	0.78	**0.889**	0.35	**1.1**
Chrysene	ug/g	7.8	1.64	0.69	2.8
Dibenz(a,h)anthracene	ug/g	0.1	**0.353**	0.088	**0.34**
Fluoranthene	ug/g	0.69	**3.16**	**1.7**	**6.4**
Fluorene	ug/g	69	0.124	0.027	0.31
Indeno(1,2,3-cd)pyrene	ug/g	0.48	**1.25**	0.48	**1.7**
Naphthalene	ug/g	0.75	0.015	0.0083	0.070
Phenanthrene	ug/g	7.8	1.45	0.55	3.7
Pyrene	ug/g	78	2.56	1.5	5.9
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	ug/g	0.05	ND(0.050)	ND(0.050)	ND(0.050)
1,1,1-Trichloroethane	ug/g	3.4	ND(0.050)	ND(0.050)	ND(0.050)
1,1,2,2-Tetrachloroethane	ug/g	0.05	ND(0.050)	ND(0.050)	ND(0.050)
1,1,2-Trichloroethane	ug/g	0.05	ND(0.050)	ND(0.050)	ND(0.050)
1,1-Dichloroethane	ug/g	11	ND(0.050)	ND(0.050)	ND(0.050)
1,1-Dichloroethene	ug/g	0.05	ND(0.050)	ND(0.050)	ND(0.050)
1,2-Dibromoethane (Ethylene dibromide)	ug/g	0.05	ND(0.050)	ND(0.050)	ND(0.050)
1,2-Dichlorobenzene	ug/g	4.3	ND(0.050)	ND(0.050)	ND(0.050)
1,2-Dichloroethane	ug/g	0.05	ND(0.050)	ND(0.050)	ND(0.050)
1,2-Dichloropropane	ug/g	0.085	ND(0.050)	ND(0.050)	ND(0.050)
1,3-Dichlorobenzene	ug/g	6	ND(0.050)	ND(0.050)	ND(0.050)
1,4-Dichlorobenzene	ug/g	0.097	ND(0.050)	ND(0.050)	ND(0.050)

Soil Quality Analytical Data
Phase Two Environmental Site Assessment
12 and 16 Lock Street, St. Catharines, Ontario
Rankin Construction Inc.

Sample Location:			**BH8-19**	**MW3-18**	**MW3-18**
Sample ID:			**SS-11189766-030519-MP-012**	**SS-11131634-121918-MP-003**	**SS-11131634-121918-MP-004**
Sample Date:			**3/5/2019**	**12/19/2018**	**12/19/2018**
Sample Depth:			**0.80-1.50**	**0.80-2.10**	**0.80-2.10**
Laboratory Report Number:			**L2240805**	**B8Y1691**	**B8Y1691**
					Duplicate
Parameters	**Units**	**MECP Table 3**			
2-Butanone (Methyl ethyl ketone) (MEK)	ug/g	44	ND(0.50)	ND(0.50)	ND(0.50)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/g	4.3	ND(0.50)	ND(0.50)	ND(0.50)
Acetone	ug/g	28	ND(0.50)	ND(0.50)	ND(0.50)
Benzene	ug/g	0.17	ND(0.0068)	ND(0.020)	ND(0.020)
Bromodichloromethane	ug/g	13	ND(0.050)	ND(0.050)	ND(0.050)
Bromoform	ug/g	0.26	ND(0.050)	ND(0.050)	ND(0.050)
Bromomethane (Methyl bromide)	ug/g	0.05	ND(0.050)	ND(0.050)	ND(0.050)
Carbon tetrachloride	ug/g	0.12	ND(0.050)	ND(0.050)	ND(0.050)
Chlorobenzene	ug/g	2.7	ND(0.050)	ND(0.050)	ND(0.050)
Chloroform (Trichloromethane)	ug/g	0.18	ND(0.050)	ND(0.050)	ND(0.050)
cis-1,2-Dichloroethene	ug/g	30	ND(0.050)	ND(0.050)	ND(0.050)
cis-1,3-Dichloropropene/trans-1,3-Dichloropropene total	ug/g	0.083	ND(0.042)	ND(0.050)	ND(0.050)
Dibromochloromethane	ug/g	9.4	ND(0.050)	ND(0.050)	ND(0.050)
Dichlorodifluoromethane (CFC-12)	ug/g	25	ND(0.050)	ND(0.050)	ND(0.050)
Ethylbenzene	ug/g	15	ND(0.018)	ND(0.020)	ND(0.020)
Hexane	ug/g	34	ND(0.050)	ND(0.050)	ND(0.050)
Methyl tert butyl ether (MTBE)	ug/g	1.4	ND(0.050)	ND(0.050)	ND(0.050)
Methylene chloride	ug/g	0.96	ND(0.050)	ND(0.050)	ND(0.050)
Styrene	ug/g	2.2	ND(0.050)	ND(0.050)	ND(0.050)
Tetrachloroethene	ug/g	2.3	ND(0.050)	ND(0.050)	ND(0.050)
Toluene	ug/g	6	ND(0.080)	ND(0.020)	ND(0.020)
trans-1,2-Dichloroethene	ug/g	0.75	ND(0.050)	ND(0.050)	ND(0.050)
Trichloroethene	ug/g	0.52	ND(0.010)	ND(0.050)	ND(0.050)
Trichlorofluoromethane (CFC-11)	ug/g	5.8	ND(0.050)	ND(0.050)	ND(0.050)
Vinyl chloride	ug/g	0.022	ND(0.020)	ND(0.020)	ND(0.020)
Xylenes (total)	ug/g	25	ND(0.050)	ND(0.020)	ND(0.020)
General Chemistry					
Conductivity	mS/cm	0.7	0.177	0.23	0.23
Cyanide, weak acid dissociable	ug/g	0.051	ND(0.050)	ND(0.01)	ND(0.01)
Sodium adsorption ratio (SAR)	none	5	0.32	0.24	0.26
pH	pH	NC	-	-	-

Notes:

(1) Ministry of the Environment, Conservation and Parks (MECP) 'Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011 Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition, Residential/Parkland/ Institutional Property Use and medium/fine textured soils

NC No Critero
ND Not detected at the associated reporting limit.
µg/g micrograms per gram
mS/cm millisiemens per centimetre
2.32 Parameter exceeds MECP Table 3 Criteria

Table 5

Soil Quality Analytical Data
Phase Two Environmental Site Assessment
12 and 16 Lock Street, St. Catharines, Ontario
Rankin Construction Inc.

Sample Location:			**MW5-19**	**MW5-19**	**MW6-19**
Sample ID:			**SS-11189766-030419-MP-022**	**SS-11189766-030419-MP-009**	**SS-11189766-030519-MP-010**
Sample Date:			**3/4/2019**	**3/4/2019**	**3/5/2019**
Sample Depth:			**0.80-1.50**	**2.30-3.00**	**0.80-1.50**
Laboratory Report Number:			**L2242379**	**L2240805**	**L2240805**
Parameters	**Units**	**MECP Table 3 Criteria [(1)]**			
Metals					
Antimony	ug/g	7.5	ND(1.0)	ND(1.0)	2.8
Arsenic	ug/g	18	5.2	5.1	7.0
Barium	ug/g	390	155	69.6	98.0
Beryllium	ug/g	5	0.63	0.61	ND(0.50)
Boron	ug/g	120	9.1	6.1	5.5
Boron (hot water soluble)	ug/g	1.5	-	-	-
Cadmium	ug/g	1.2	ND(0.50)	ND(0.50)	ND(0.50)
Chromium	ug/g	160	22.6	19.5	13.3
Chromium VI (hexavalent)	ug/g	10	0.68	ND(0.20)	1.01
Cobalt	ug/g	22	11.5	8.9	7.2
Copper	ug/g	180	26.7	62.6	37.4
Lead	ug/g	120	60.2	40.5	**499**
Mercury	ug/g	1.8	0.0466	0.215	0.118
Molybdenum	ug/g	6.9	ND(1.0)	ND(1.0)	ND(1.0)
Nickel	ug/g	130	25.0	20.0	15.0
Selenium	ug/g	2.4	ND(1.0)	ND(1.0)	ND(1.0)
Silver	ug/g	25	ND(0.20)	ND(0.20)	ND(0.20)
Thallium	ug/g	1	ND(0.50)	ND(0.50)	ND(0.50)
Uranium	ug/g	23	ND(1.0)	ND(1.0)	ND(1.0)
Vanadium	ug/g	86	31.7	28.5	23.3
Zinc	ug/g	340	60.9	67.2	179
Polychlorinated Biphenyls					
Total PCBs	ug/g	0.35	-	-	-
Petroleum Hydrocarbons					
Petroleum hydrocarbons F1 (C6-C10)	ug/g	65	ND(5.0)	ND(5.0)	ND(5.0)
Petroleum hydrocarbons F1 (C6-C10) - less BTEX	ug/g	65	-	-	ND(5.0)
Petroleum hydrocarbons F2 (C10-C16)	ug/g	150	ND(10)	ND(10)	ND(10)

Soil Quality Analytical Data
Phase Two Environmental Site Assessment
12 and 16 Lock Street, St. Catharines, Ontario
Rankin Construction Inc.

Sample Location:			**MW5-19**	**MW5-19**	**MW6-19**
Sample ID:			**SS-11189766-030419-MP-022**	**SS-11189766-030419-MP-009**	**SS-11189766-030519-MP-010**
Sample Date:			**3/4/2019**	**3/4/2019**	**3/5/2019**
Sample Depth:			**0.80-1.50**	**2.30-3.00**	**0.80-1.50**
Laboratory Report Number:			**L2242379**	**L2240805**	**L2240805**
Parameters	**Units**	**MECP Table 3**			
Petroleum hydrocarbons F2 minus Naphthalene	ug/g	150	ND(10)	ND(10)	ND(10)
Petroleum hydrocarbons F3 (C16-C34)	ug/g	1300	ND(50)	ND(50)	ND(50)
Petroleum hydrocarbons F3 minus PAH	ug/g	1300	ND(50)	ND(50)	ND(50)
Petroleum hydrocarbons F4 (C34-C50)	ug/g	5600	ND(50)	ND(50)	ND(50)
Polycyclic Aromatic Hydrocarbons					
1+2-Methylnaphthalene	ug/g	3.4	ND(0.042)	ND(0.042)	ND(0.042)
1-Methylnaphthalene	ug/g	3.4	ND(0.030)	ND(0.030)	ND(0.030)
2-Methylnaphthalene	ug/g	3.4	ND(0.030)	ND(0.030)	ND(0.030)
Acenaphthene	ug/g	58	ND(0.050)	ND(0.050)	ND(0.050)
Acenaphthylene	ug/g	0.17	ND(0.050)	ND(0.050)	ND(0.050)
Anthracene	ug/g	0.74	ND(0.050)	ND(0.050)	0.051
Benzo(a)anthracene	ug/g	0.63	ND(0.050)	ND(0.050)	0.100
Benzo(a)pyrene	ug/g	0.3	ND(0.050)	ND(0.050)	0.088
Benzo(b)fluoranthene/Benzo(j)fluoranthene	ug/g	0.78	ND(0.050)	ND(0.050)	ND(0.16)
Benzo(g,h,i)perylene	ug/g	7.8	ND(0.050)	ND(0.050)	ND(0.050)
Benzo(k)fluoranthene	ug/g	0.78	ND(0.050)	ND(0.050)	0.150
Chrysene	ug/g	7.8	ND(0.050)	ND(0.050)	0.100
Dibenz(a,h)anthracene	ug/g	0.1	ND(0.050)	ND(0.050)	ND(0.050)
Fluoranthene	ug/g	0.69	ND(0.050)	ND(0.050)	0.189
Fluorene	ug/g	69	ND(0.050)	ND(0.050)	ND(0.050)
Indeno(1,2,3-cd)pyrene	ug/g	0.48	ND(0.050)	ND(0.050)	0.054
Naphthalene	ug/g	0.75	ND(0.013)	ND(0.013)	ND(0.013)
Phenanthrene	ug/g	7.8	ND(0.046)	ND(0.046)	0.157
Pyrene	ug/g	78	ND(0.050)	ND(0.050)	0.147
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	ug/g	0.05	-	-	ND(0.050)
1,1,1-Trichloroethane	ug/g	3.4	-	-	ND(0.050)
1,1,2,2-Tetrachloroethane	ug/g	0.05	-	-	ND(0.050)
1,1,2-Trichloroethane	ug/g	0.05	-	-	ND(0.050)
1,1-Dichloroethane	ug/g	11	-	-	ND(0.050)
1,1-Dichloroethene	ug/g	0.05	-	-	ND(0.050)
1,2-Dibromoethane (Ethylene dibromide)	ug/g	0.05	-	-	ND(0.050)
1,2-Dichlorobenzene	ug/g	4.3	-	-	ND(0.050)
1,2-Dichloroethane	ug/g	0.05	-	-	ND(0.050)
1,2-Dichloropropane	ug/g	0.085	-	-	ND(0.050)
1,3-Dichlorobenzene	ug/g	6	-	-	ND(0.050)
1,4-Dichlorobenzene	ug/g	0.097	-	-	ND(0.050)

Table 5

Soil Quality Analytical Data
Phase Two Environmental Site Assessment
12 and 16 Lock Street, St. Catharines, Ontario
Rankin Construction Inc.

Sample Location:			**MW5-19**	**MW5-19**	**MW6-19**
Sample ID:			**SS-11189766-030419-MP-022**	**SS-11189766-030419-MP-009**	**SS-11189766-030519-MP-010**
Sample Date:			**3/4/2019**	**3/4/2019**	**3/5/2019**
Sample Depth:			**0.80-1.50**	**2.30-3.00**	**0.80-1.50**
Laboratory Report Number:			**L2242379**	**L2240805**	**L2240805**
Parameters	**Units**	**MECP Table 3**			
2-Butanone (Methyl ethyl ketone) (MEK)	ug/g	44	-	-	ND(0.50)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/g	4.3	-	-	ND(0.50)
Acetone	ug/g	28	-	-	ND(0.50)
Benzene	ug/g	0.17	-	-	ND(0.0068)
Bromodichloromethane	ug/g	13	-	-	ND(0.050)
Bromoform	ug/g	0.26	-	-	ND(0.050)
Bromomethane (Methyl bromide)	ug/g	0.05	-	-	ND(0.050)
Carbon tetrachloride	ug/g	0.12	-	-	ND(0.050)
Chlorobenzene	ug/g	2.7	-	-	ND(0.050)
Chloroform (Trichloromethane)	ug/g	0.18	-	-	ND(0.050)
cis-1,2-Dichloroethene	ug/g	30	-	-	ND(0.050)
cis-1,3-Dichloropropene/trans-1,3-Dichloropropene total	ug/g	0.083	-	-	ND(0.042)
Dibromochloromethane	ug/g	9.4	-	-	ND(0.050)
Dichlorodifluoromethane (CFC-12)	ug/g	25	-	-	ND(0.050)
Ethylbenzene	ug/g	15	-	-	ND(0.018)
Hexane	ug/g	34	-	-	ND(0.050)
Methyl tert butyl ether (MTBE)	ug/g	1.4	-	-	ND(0.050)
Methylene chloride	ug/g	0.96	-	-	ND(0.050)
Styrene	ug/g	2.2	-	-	ND(0.050)
Tetrachloroethene	ug/g	2.3	-	-	ND(0.050)
Toluene	ug/g	6	-	-	ND(0.080)
trans-1,2-Dichloroethene	ug/g	0.75	-	-	ND(0.050)
Trichloroethene	ug/g	0.52	-	-	ND(0.010)
Trichlorofluoromethane (CFC-11)	ug/g	5.8	-	-	ND(0.050)
Vinyl chloride	ug/g	0.022	-	-	ND(0.020)
Xylenes (total)	ug/g	25	-	-	ND(0.050)
General Chemistry					
Conductivity	mS/cm	0.7	0.25	**2.26**	0.122
Cyanide, weak acid dissociable	ug/g	0.051	ND(0.01)	ND(0.050)	ND(0.050)
Sodium adsorption ratio (SAR)	none	5	0.98	ND(0.10)	0.19
pH	pH	NC	7.71	-	-

Notes:

(1) Ministry of the Environment, Conservation and Parks (MECP) 'Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011 Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition, Residential/Parkland/ Institutional Property Use and medium/fine textured soils

NC No Critero
ND Not detected at the associated reporting limit.
µg/g micrograms per gram
mS/cm millisiemens per centimetre
2.32 Parameter exceeds MECP Table 3 Criteria

Table 5

Soil Quality Analytical Data
Phase Two Environmental Site Assessment
12 and 16 Lock Street, St. Catharines, Ontario
Rankin Construction Inc.

Sample Location:			**SVP1-19**	**SVP1-19**	**SVP1-19**
Sample ID:			**SS-11189766-030519-MP-013**	**SS-11189766-030519-MP-023**	**SS-11189766-030519-MP-024**
Sample Date:			**3/5/2019**	**3/5/2019**	**3/5/2019**
Sample Depth:			**1.50-2.30**	**2.30-3.00**	**2.30-3.00**
Laboratory Report Number:			**L2240805**	**L2242379**	**L2242379 Duplicate**
Parameters	**Units**	**MECP Table 3 Criteria [(1)]**			
Metals					
Antimony	ug/g	7.5	1.9	ND(1.0)	ND(1.0)
Arsenic	ug/g	18	7.9	4.8	5.8
Barium	ug/g	390	129	82.1	97.2
Beryllium	ug/g	5	0.57	ND(0.50)	ND(0.50)
Boron	ug/g	120	7.9	ND(5.0)	ND(5.0)
Boron (hot water soluble)	ug/g	1.5	-	-	-
Cadmium	ug/g	1.2	**1.35**	ND(0.50)	ND(0.50)
Chromium	ug/g	160	18.0	12.8	14.0
Chromium VI (hexavalent)	ug/g	10	ND(0.20)	0.33	0.25
Cobalt	ug/g	22	9.2	6.7	7.5
Copper	ug/g	180	48.3	20.7	23.5
Lead	ug/g	120	**214**	43.6	49.5
Mercury	ug/g	1.8	0.292	0.122	0.115
Molybdenum	ug/g	6.9	ND(1.0)	ND(1.0)	ND(1.0)
Nickel	ug/g	130	18.5	13.1	14.7
Selenium	ug/g	2.4	ND(1.0)	ND(1.0)	ND(1.0)
Silver	ug/g	25	ND(0.20)	ND(0.20)	ND(0.20)
Thallium	ug/g	1	ND(0.50)	ND(0.50)	ND(0.50)
Uranium	ug/g	23	ND(1.0)	ND(1.0)	ND(1.0)
Vanadium	ug/g	86	27.3	20.0	21.8
Zinc	ug/g	340	**603**	92.1	102
Polychlorinated Biphenyls					
Total PCBs	ug/g	0.35	-	-	-
Petroleum Hydrocarbons					
Petroleum hydrocarbons F1 (C6-C10)	ug/g	65	ND(5.0)	ND(5.0)	ND(5.0)
Petroleum hydrocarbons F1 (C6-C10) - less BTEX	ug/g	65	ND(5.0)	ND(5.0)	ND(5.0)
Petroleum hydrocarbons F2 (C10-C16)	ug/g	150	ND(10)	ND(10)	ND(10)

Soil Quality Analytical Data
Phase Two Environmental Site Assessment
12 and 16 Lock Street, St. Catharines, Ontario
Rankin Construction Inc.

Sample Location:			**SVP1-19**	**SVP1-19**	**SVP1-19**
Sample ID:			**SS-11189766-030519-MP-013**	**SS-11189766-030519-MP-023**	**SS-11189766-030519-MP-024**
Sample Date:			**3/5/2019**	**3/5/2019**	**3/5/2019**
Sample Depth:			**1.50-2.30**	**2.30-3.00**	**2.30-3.00**
Laboratory Report Number:			**L2240805**	**L2242379**	**L2242379 Duplicate**
Parameters	**Units**	**MECP Table 3**			
Petroleum hydrocarbons F2 minus Naphthalene	ug/g	150	ND(10)	ND(10)	ND(10)
Petroleum hydrocarbons F3 (C16-C34)	ug/g	1300	84	ND(50)	ND(50)
Petroleum hydrocarbons F3 minus PAH	ug/g	1300	82	ND(50)	ND(50)
Petroleum hydrocarbons F4 (C34-C50)	ug/g	5600	ND(50)	ND(50)	ND(50)
Polycyclic Aromatic Hydrocarbons					
1+2-Methylnaphthalene	ug/g	3.4	ND(0.042)	ND(0.042)	ND(0.042)
1-Methylnaphthalene	ug/g	3.4	ND(0.030)	ND(0.030)	ND(0.030)
2-Methylnaphthalene	ug/g	3.4	ND(0.030)	ND(0.030)	ND(0.030)
Acenaphthene	ug/g	58	ND(0.050)	ND(0.050)	ND(0.050)
Acenaphthylene	ug/g	0.17	ND(0.050)	ND(0.050)	ND(0.050)
Anthracene	ug/g	0.74	ND(0.050)	ND(0.050)	ND(0.050)
Benzo(a)anthracene	ug/g	0.63	0.186	ND(0.050)	ND(0.050)
Benzo(a)pyrene	ug/g	0.3	0.155	ND(0.050)	ND(0.050)
Benzo(b)fluoranthene/Benzo(j)fluoranthene	ug/g	0.78	0.153	ND(0.050)	ND(0.050)
Benzo(g,h,i)perylene	ug/g	7.8	0.115	ND(0.050)	ND(0.050)
Benzo(k)fluoranthene	ug/g	0.78	0.119	ND(0.050)	ND(0.050)
Chrysene	ug/g	7.8	0.174	ND(0.050)	ND(0.050)
Dibenz(a,h)anthracene	ug/g	0.1	ND(0.050)	ND(0.050)	ND(0.050)
Fluoranthene	ug/g	0.69	0.308	ND(0.050)	ND(0.050)
Fluorene	ug/g	69	ND(0.050)	ND(0.050)	ND(0.050)
Indeno(1,2,3-cd)pyrene	ug/g	0.48	0.131	ND(0.050)	ND(0.050)
Naphthalene	ug/g	0.75	0.045	ND(0.013)	ND(0.013)
Phenanthrene	ug/g	7.8	0.213	ND(0.046)	ND(0.046)
Pyrene	ug/g	78	0.254	ND(0.050)	ND(0.050)
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	ug/g	0.05	ND(0.050)	ND(0.050)	ND(0.050)
1,1,1-Trichloroethane	ug/g	3.4	ND(0.050)	ND(0.050)	ND(0.050)
1,1,2,2-Tetrachloroethane	ug/g	0.05	ND(0.050)	ND(0.050)	ND(0.050)
1,1,2-Trichloroethane	ug/g	0.05	ND(0.050)	ND(0.050)	ND(0.050)
1,1-Dichloroethane	ug/g	11	ND(0.050)	ND(0.050)	ND(0.050)
1,1-Dichloroethene	ug/g	0.05	ND(0.050)	ND(0.050)	ND(0.050)
1,2-Dibromoethane (Ethylene dibromide)	ug/g	0.05	ND(0.050)	ND(0.050)	ND(0.050)
1,2-Dichlorobenzene	ug/g	4.3	ND(0.050)	ND(0.050)	ND(0.050)
1,2-Dichloroethane	ug/g	0.05	ND(0.050)	ND(0.050)	ND(0.050)
1,2-Dichloropropane	ug/g	0.085	ND(0.050)	ND(0.050)	ND(0.050)
1,3-Dichlorobenzene	ug/g	6	ND(0.050)	ND(0.050)	ND(0.050)
1,4-Dichlorobenzene	ug/g	0.097	ND(0.050)	ND(0.050)	ND(0.050)

Soil Quality Analytical Data
Phase Two Environmental Site Assessment
12 and 16 Lock Street, St. Catharines, Ontario
Rankin Construction Inc.

Sample Location:			**SVP1-19**	**SVP1-19**	**SVP1-19**
Sample ID:			**SS-11189766-030519-MP-013**	**SS-11189766-030519-MP-023**	**SS-11189766-030519-MP-024**
Sample Date:			**3/5/2019**	**3/5/2019**	**3/5/2019**
Sample Depth:			**1.50-2.30**	**2.30-3.00**	**2.30-3.00**
Laboratory Report Number:			**L2240805**	**L2242379**	**L2242379 Duplicate**
Parameters	**Units**	**MECP Table 3**			
2-Butanone (Methyl ethyl ketone) (MEK)	ug/g	44	ND(0.50)	ND(0.50)	ND(0.50)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/g	4.3	ND(0.50)	ND(0.50)	ND(0.50)
Acetone	ug/g	28	ND(0.50)	ND(0.50)	ND(0.50)
Benzene	ug/g	0.17	ND(0.0068)	ND(0.0068)	ND(0.0068)
Bromodichloromethane	ug/g	13	ND(0.050)	ND(0.050)	ND(0.050)
Bromoform	ug/g	0.26	ND(0.050)	ND(0.050)	ND(0.050)
Bromomethane (Methyl bromide)	ug/g	0.05	ND(0.050)	ND(0.050)	ND(0.050)
Carbon tetrachloride	ug/g	0.12	ND(0.050)	ND(0.050)	ND(0.050)
Chlorobenzene	ug/g	2.7	ND(0.050)	ND(0.050)	ND(0.050)
Chloroform (Trichloromethane)	ug/g	0.18	ND(0.050)	ND(0.050)	ND(0.050)
cis-1,2-Dichloroethene	ug/g	30	ND(0.050)	ND(0.050)	ND(0.050)
cis-1,3-Dichloropropene/trans-1,3-Dichloropropene total	ug/g	0.083	ND(0.042)	ND(0.042)	ND(0.042)
Dibromochloromethane	ug/g	9.4	ND(0.050)	ND(0.050)	ND(0.050)
Dichlorodifluoromethane (CFC-12)	ug/g	25	ND(0.050)	ND(0.050)	ND(0.050)
Ethylbenzene	ug/g	15	ND(0.018)	ND(0.018)	ND(0.018)
Hexane	ug/g	34	ND(0.050)	ND(0.050)	ND(0.050)
Methyl tert butyl ether (MTBE)	ug/g	1.4	ND(0.050)	ND(0.050)	ND(0.050)
Methylene chloride	ug/g	0.96	ND(0.050)	ND(0.050)	ND(0.050)
Styrene	ug/g	2.2	ND(0.050)	ND(0.050)	ND(0.050)
Tetrachloroethene	ug/g	2.3	ND(0.050)	ND(0.050)	ND(0.050)
Toluene	ug/g	6	ND(0.080)	ND(0.080)	ND(0.080)
trans-1,2-Dichloroethene	ug/g	0.75	ND(0.050)	ND(0.050)	ND(0.050)
Trichloroethene	ug/g	0.52	ND(0.010)	ND(0.010)	ND(0.010)
Trichlorofluoromethane (CFC-11)	ug/g	5.8	ND(0.050)	ND(0.050)	ND(0.050)
Vinyl chloride	ug/g	0.022	ND(0.020)	ND(0.020)	ND(0.020)
Xylenes (total)	ug/g	25	ND(0.050)	ND(0.050)	ND(0.050)
General Chemistry					
Conductivity	mS/cm	0.7	0.325	0.32	0.587
Cyanide, weak acid dissociable	ug/g	0.051	ND(0.050)	ND(0.050)	ND(0.050)
Sodium adsorption ratio (SAR)	none	5	1.55	1.01	2.3
pH	pH	NC	-	7.57	7.27

Notes:

(1) Ministry of the Environment, Conservation and Parks (MECP) 'Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011 Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition, Residential/Parkland/ Institutional Property Use and medium/fine textured soils

NC No Critero
ND Not detected at the associated reporting limit.
µg/g micrograms per gram
mS/cm millisiemens per centimetre
2.32 Parameter exceeds MECP Table 3 Criteria

Soil Maximum Concentration Data
Phase Two Environmental Site Assessment
12 and 16 Lock Street, St. Catharines, Ontario
Rankin Construction Inc.

Parameters	Units	MECP Table 3 Criteria [1]	Maximum Concentration	Sample Location	Sample Identification	Sample Date	Depth (m BGS)
Metals							
Antimony	µg/g	7.5	2.8	MW6-19	SS-11189766-030519-MP-010	3/5/2019	0.80-1.50
Arsenic	µg/g	18	12.1	BH7-19	SS-11189766-030519-MP-014	3/5/2019	0.80-1.50
Barium	µg/g	390	155	MW5-19	SS-11189766-030419-MP-022	3/4/2019	0.80-1.50
Beryllium	µg/g	5	0.63	BH7-19	SS-11189766-030519-MP-014	3/5/2019	0.80-1.50
Boron	µg/g	120	9.1	MW5-19	SS-11189766-030419-MP-022	3/4/2019	0.80-1.50
Boron (hot water soluble)	µg/g	1.5	0.46	MW3-18	SS-11131634-121918-MP-003	12/19/2018	0.80-2.10
Cadmium	µg/g	1.2	**1.35**	SVP1-19	SS-11189766-030519-MP-013	3/5/2019	1.50-2.30
Chromium	µg/g	160	22.6	MW5-19	SS-11189766-030419-MP-022	3/4/2019	0.80-1.50
Chromium VI (hexavalent)	µg/g	10	1.01	MW6-19	SS-11189766-030519-MP-010	3/5/2019	0.80-1.50
Cobalt	µg/g	22	11.5	MW5-19	SS-11189766-030419-MP-022	3/4/2019	0.80-1.50
Copper	µg/g	180	73	MW3-18	SS-11131634-121918-MP-004	12/19/2018	0.80-2.10
Lead	µg/g	120	**499**	MW6-19	SS-11189766-030519-MP-010	3/5/2019	0.80-1.50
Mercury	µg/g	1.8	0.292	SVP1-19	SS-11189766-030519-MP-013	3/5/2019	1.50-2.30
Molybdenum	µg/g	6.9	1	BH7-19	SS-11189766-030519-MP-014	3/5/2019	0.80-1.50
Nickel	µg/g	130	25	MW5-19	SS-11189766-030419-MP-022	3/4/2019	0.80-1.50
Selenium	µg/g	2.4	ND(1)	-	-	-	-
Silver	µg/g	25	ND(0.2)	-	-	-	-
Thallium	µg/g	1	0.13	MW3-18	SS-11131634-121918-MP-004	12/19/2018	0.80-2.10
Uranium	µg/g	23	0.62	MW3-18	SS-11131634-121918-MP-003	12/19/2018	0.80-2.10
Vanadium	µg/g	86	31.7	MW5-19	SS-11189766-030419-MP-022	3/4/2019	0.80-1.50
Zinc	µg/g	340	**603**	SVP1-19	SS-11189766-030519-MP-013	3/5/2019	1.50-2.30
Polychlorinated Biphenyls							
Total PCBs	µg/g	0.35	ND(0.01)	-	-	-	-
Petroleum Hydrocarbons							
Petroleum hydrocarbons F1 (C6-C10)	µg/g	65	ND(10)	-	-	-	-
Petroleum hydrocarbons F1 (C6-C10) - less BTEX	µg/g	65	ND(10)	-	-	-	-
Petroleum hydrocarbons F2 (C10-C16)	µg/g	150	20	MW3-18	SS-11131634-121918-MP-003	12/19/2018	0.80-2.10
Petroleum hydrocarbons F2 minus Naphthalene	µg/g	150	ND(10)	-	-	-	-
Petroleum hydrocarbons F3 (C16-C34)	µg/g	1300	195	BH8-19	SS-11189766-030519-MP-012	3/5/2019	0.80-1.50
Petroleum hydrocarbons F3 minus PAH	µg/g	1300	181	BH8-19	SS-11189766-030519-MP-012	3/5/2019	0.80-1.50
Petroleum hydrocarbons F4 (C34-C50)	µg/g	5600	106	BH8-19	SS-11189766-030519-MP-012	3/5/2019	0.80-1.50
Polycyclic Aromatic Hydrocarbons							
1+2-Methylnaphthalene	µg/g	3.4	0.12	MW3-18	SS-11131634-121918-MP-004	12/19/2018	0.80-2.10
1-Methylnaphthalene	µg/g	3.4	0.07	BH6-19	SS-11189766-030519-MP-025	3/5/2019	0.00-1.50
2-Methylnaphthalene	µg/g	3.4	0.054	MW3-18	SS-11131634-121918-MP-004	12/19/2018	0.80-2.10
Acenaphthene	µg/g	58	0.34	MW3-18	SS-11131634-121918-MP-004	12/19/2018	0.80-2.10
Acenaphthylene	µg/g	0.17	**0.34**	MW3-18	SS-11131634-121918-MP-004	12/19/2018	0.80-2.10
Anthracene	µg/g	0.74	**1.1**	MW3-18	SS-11131634-121918-MP-004	12/19/2018	0.80-2.10
Benzo(a)anthracene	µg/g	0.63	**3.5**	MW3-18	SS-11131634-121918-MP-004	12/19/2018	0.80-2.10
Benzo(a)pyrene	µg/g	0.3	**2.9**	MW3-18	SS-11131634-121918-MP-004	12/19/2018	0.80-2.10
Benzo(b)fluoranthene/Benzo(j)fluoranthene	µg/g	0.78	**3**	MW3-18	SS-11131634-121918-MP-004	12/19/2018	0.80-2.10
Benzo(g,h,i)perylene	µg/g	7.8	1.3	MW3-18	SS-11131634-121918-MP-004	12/19/2018	0.80-2.10
Benzo(k)fluoranthene	µg/g	0.78	**1.1**	MW3-18	SS-11131634-121918-MP-004	12/19/2018	0.80-2.10
Chrysene	µg/g	7.8	2.8	MW3-18	SS-11131634-121918-MP-004	12/19/2018	0.80-2.10
Dibenz(a,h)anthracene	µg/g	0.1	**0.353**	BH8-19	SS-11189766-030519-MP-012	3/5/2019	0.80-1.50
Fluoranthene	µg/g	0.69	**6.4**	MW3-18	SS-11131634-121918-MP-004	12/19/2018	0.80-2.10
Fluorene	µg/g	69	0.31	MW3-18	SS-11131634-121918-MP-004	12/19/2018	0.80-2.10
Indeno(1,2,3-cd)pyrene	µg/g	0.48	**1.7**	MW3-18	SS-11131634-121918-MP-004	12/19/2018	0.80-2.10
Naphthalene	µg/g	0.75	0.07	MW3-18	SS-11131634-121918-MP-004	12/19/2018	0.80-2.10
Phenanthrene	µg/g	7.8	3.7	MW3-18	SS-11131634-121918-MP-004	12/19/2018	0.80-2.10
Pyrene	µg/g	78	5.9	MW3-18	SS-11131634-121918-MP-004	12/19/2018	0.80-2.10
Volatile Organic Compounds							
1,1,1,2-Tetrachloroethane	µg/g	0.05	ND(0.05)	-	-	-	-
1,1,1-Trichloroethane	µg/g	3.4	ND(0.05)	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/g	0.05	ND(0.05)	-	-	-	-
1,1,2-Trichloroethane	µg/g	0.05	ND(0.05)	-	-	-	-
1,1-Dichloroethane	µg/g	11	ND(0.05)	-	-	-	-
1,1-Dichloroethene	µg/g	0.05	ND(0.05)	-	-	-	-
1,2-Dibromoethane (Ethylene dibromide)	µg/g	0.05	ND(0.05)	-	-	-	-
1,2-Dichlorobenzene	µg/g	4.3	ND(0.05)	-	-	-	-
1,2-Dichloroethane	µg/g	0.05	ND(0.05)	-	-	-	-
1,2-Dichloropropane	µg/g	0.085	ND(0.05)	-	-	-	-
1,3-Dichlorobenzene	µg/g	6	ND(0.05)	-	-	-	-
1,4-Dichlorobenzene	µg/g	0.097	ND(0.05)	-	-	-	-
2-Butanone (Methyl ethyl ketone) (MEK)	µg/g	44	ND(0.5)	-	-	-	-

Soil Maximum Concentration Data
Phase Two Environmental Site Assessment
12 and 16 Lock Street, St. Catharines, Ontario
Rankin Construction Inc.

4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/g	4.3	ND(0.5)	-	-	-	-
Acetone	µg/g	28	ND(0.5)	-	-	-	-
Benzene	µg/g	0.17	ND(0.02)	-	-	-	-
Bromodichloromethane	µg/g	13	ND(0.05)	-	-	-	-
Bromoform	µg/g	0.26	ND(0.05)	-	-	-	-
Bromomethane (Methyl bromide)	µg/g	0.05	ND(0.05)	-	-	-	-
Carbon tetrachloride	µg/g	0.12	ND(0.05)	-	-	-	-
Chlorobenzene	µg/g	2.7	ND(0.05)	-	-	-	-
Chloroform (Trichloromethane)	µg/g	0.18	ND(0.05)	-	-	-	-
cis-1,2-Dichloroethene	µg/g	30	ND(0.05)	-	-	-	-
cis-1,3-Dichloropropene/trans-1,3-Dichloropropene total	µg/g	0.083	ND(0.05)	-	-	-	-
Dibromochloromethane	µg/g	9.4	ND(0.05)	-	-	-	-
Dichlorodifluoromethane (CFC-12)	µg/g	25	ND(0.05)	-	-	-	-
Ethylbenzene	µg/g	15	ND(0.02)	-	-	-	-
Hexane	µg/g	34	ND(0.05)	-	-	-	-
Methyl tert butyl ether (MTBE)	µg/g	1.4	ND(0.05)	-	-	-	-
Methylene chloride	µg/g	0.96	ND(0.05)	-	-	-	-
Styrene	µg/g	2.2	ND(0.05)	-	-	-	-
Tetrachloroethene	µg/g	2.3	ND(0.05)	-	-	-	-
Toluene	µg/g	6	ND(0.08)	-	-	-	-
trans-1,2-Dichloroethene	µg/g	0.75	ND(0.05)	-	-	-	-
Trichloroethene	µg/g	0.52	ND(0.05)	-	-	-	-
Trichlorofluoromethane (CFC-11)	µg/g	5.8	ND(0.05)	-	-	-	-
Vinyl chloride	µg/g	0.022	ND(0.02)	-	-	-	-
Xylenes (total)	µg/g	25	ND(0.05)	-	-	-	-
General Chemistry							
Conductivity	mS/cm	0.7	**2.26**	MW5-19	SS-11189766-030419-MP-009	3/4/2019	2.30-3.00
Cyanide, weak acid dissociable	µg/g	0.051	ND(0.05)	-	-	-	-
Sodium adsorption ratio (SAR)	none	5	1.73	BH7-19	SS-11189766-030519-MP-014	3/5/2019	0.80-1.50

(1) Ministry of the Environment, Conservation and Parks (MECP) 'Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011 Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition, Residential/Parkland/ Institutional Property Use and medium/fine textured soils

ND Not detected at the associated reporting limit.
µg/g micrograms per gram
mS/cm millisiemens per centimetre
2.32 Parameter exceeds MECP Table 3 Criteria
- All samples reported concentrations lower than laboratory reporting limit listed in brackets

Table 7

Groundwater Analytical Data
Phase Two Environmental Site Assessment
12 and 16 Lock Street, St. Catharines, Ontario
Rankin Construction Inc.

Sample Location:			**BH-103**	**BH-105**	**BH-106**	**BH-106**	**MW3-18**
Sample ID:			**GW-11131634-121318-MP-001**	**GW-11131634-121318-MP-004**	**GW-11131634-121318-MP-002**	**GW-11131634-121318-MP-003**	**GW-11131634-122118-MP-007**
Sample Date:			**12/13/2018**	**12/13/2018**	**12/13/2018**	**12/13/2018**	**12/21/2018**
Laboratory Report Number:			**B8X6184**	**B8X6184**	**B8X6184**	**B8X6184**	**B8Y3349**
Parameters	**Units**	**MECP Table 3 Criteria [1]**					
Metals							
Antimony (dissolved)	µg/L	20000	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Arsenic (dissolved)	µg/L	1900	1.4	4.4	2.1	2.0	1.3
Barium (dissolved)	µg/L	29000	38	200	210	210	280
Beryllium (dissolved)	µg/L	67	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Boron (dissolved)	µg/L	45000	81	170	120	120	170
Cadmium (dissolved)	µg/L	2.7	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)
Chromium (dissolved)	µg/L	810	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Chromium VI (hexavalent)	µg/L	140	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Cobalt (dissolved)	µg/L	66	0.69	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Copper (dissolved)	µg/L	87	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Lead (dissolved)	µg/L	25	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Mercury	µg/L	2.8	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Mercury (dissolved)	µg/L	2.8	-	-	-	-	-
Molybdenum (dissolved)	µg/L	9200	3.0	ND(0.50)	ND(0.50)	ND(0.50)	2.1
Nickel (dissolved)	µg/L	490	2.7	1.2	ND(1.0)	1.1	1.3
Selenium (dissolved)	µg/L	63	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Silver (dissolved)	µg/L	1.5	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)
Sodium (dissolved)	µg/L	2300000	110000	35000	76000	74000	63000
Thallium (dissolved)	µg/L	510	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Uranium (dissolved)	µg/L	420	3.1	1.1	0.15	0.17	0.61
Vanadium (dissolved)	µg/L	250	0.74	0.75	1.8	1.8	1.1
Zinc (dissolved)	µg/L	1100	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Petroleum Hydrocarbons							
Petroleum hydrocarbons F1 (C6-C10)	µg/L	750	ND(25)	ND(25)	ND(25)	ND(25)	ND(25)
Petroleum hydrocarbons F1 (C6-C10) - less BTEX	µg/L	750	ND(25)	ND(25)	ND(25)	ND(25)	ND(25)
Petroleum hydrocarbons F2 (C10-C16)	µg/L	150	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)
Petroleum hydrocarbons F2 minus Naphthalene	µg/L	150	-	-	-	-	-
Petroleum hydrocarbons F3 (C16-C34)	µg/L	500	ND(200)	ND(200)	ND(200)	ND(200)	ND(200)
Petroleum hydrocarbons F3 minus PAH	µg/L	500	-	-	-	-	-
Petroleum hydrocarbons F4 (C34-C50)	µg/L	500	ND(200)	ND(200)	ND(200)	ND(200)	ND(200)
Polycyclic Aromatic Hydrocarbons							
1+2-Methylnaphthalene	µg/L	1800	ND(0.071)	ND(0.071)	ND(0.071)	ND(0.071)	ND(0.071)
1-Methylnaphthalene	µg/L	1800	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
2-Methylnaphthalene	µg/L	1800	0.055	ND(0.050)	ND(0.050)	0.051	ND(0.050)
Acenaphthene	µg/L	1700	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Acenaphthylene	µg/L	1.8	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Anthracene	µg/L	2.4	0.089	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Benzo(a)anthracene	µg/L	4.7	0.15	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Benzo(a)pyrene	µg/L	0.81	0.13	ND(0.010)	0.015	ND(0.010)	ND(0.010)
Benzo(b)fluoranthene	µg/L	0.75	-	-	-	-	-
Benzo(b)fluoranthene/Benzo(j)fluoranthene	µg/L	0.75	0.18	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Benzo(g,h,i)perylene	µg/L	0.2	0.075	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Benzo(k)fluoranthene	µg/L	0.4	0.073	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Chrysene	µg/L	1	0.12	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Dibenz(a,h)anthracene	µg/L	0.52	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Fluoranthene	µg/L	130	0.42	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Fluorene	µg/L	400	0.077	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Indeno(1,2,3-cd)pyrene	µg/L	0.2	0.082	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Naphthalene	µg/L	6400	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Phenanthrene	µg/L	580	0.43	ND(0.030)	0.083	0.035	0.045
Pyrene	µg/L	68	0.31	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)

Table 7

Groundwater Analytical Data
Phase Two Environmental Site Assessment
12 and 16 Lock Street, St. Catharines, Ontario
Rankin Construction Inc.

Sample Location:			**BH-103**	**BH-105**	**BH-106**	**BH-106**	**MW3-18**
Sample ID:			**GW-11131634-121318-MP-001**	**GW-11131634-121318-MP-004**	**GW-11131634-121318-MP-002**	**GW-11131634-121318-MP-003**	**GW-11131634-122118-MP-007**
Sample Date:			**12/13/2018**	**12/13/2018**	**12/13/2018**	**12/13/2018**	**12/21/2018**
Laboratory Report Number:			**B8X6184**	**B8X6184**	**B8X6184**	**B8X6184**	**B8Y3349**
Parameters	**Units**	**MECP Table 3**					
Volatile Organic Compounds							
1,1,1,2-Tetrachloroethane	µg/L	28	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,1,1-Trichloroethane	µg/L	6700	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
1,1,2,2-Tetrachloroethane	µg/L	15	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,1,2-Trichloroethane	µg/L	30	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,1-Dichloroethane	µg/L	3100	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
1,1-Dichloroethene	µg/L	17	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
1,2-Dibromoethane (Ethylene dibromide)	µg/L	0.83	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
1,2-Dichlorobenzene	µg/L	9600	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,2-Dichloroethane	µg/L	12	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,2-Dichloropropane	µg/L	140	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
1,3-Dichlorobenzene	µg/L	9600	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,4-Dichlorobenzene	µg/L	67	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	1500000	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	580000	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Acetone	µg/L	130000	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Benzene	µg/L	430	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Bromodichloromethane	µg/L	85000	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Bromoform	µg/L	770	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Bromomethane (Methyl bromide)	µg/L	56	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Carbon tetrachloride	µg/L	8.4	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Chlorobenzene	µg/L	630	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Chloroform (Trichloromethane)	µg/L	22	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
cis-1,2-Dichloroethene	µg/L	17	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
cis-1,3-Dichloropropene/trans-1,3-Dichloropropene total	µg/L	45	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Dibromochloromethane	µg/L	82000	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Dichlorodifluoromethane (CFC-12)	µg/L	4400	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Ethylbenzene	µg/L	2300	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Hexane	µg/L	520	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Methyl tert butyl ether (MTBE)	µg/L	1400	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Methylene chloride	µg/L	5500	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Styrene	µg/L	9100	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Tetrachloroethene	µg/L	17	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Toluene	µg/L	18000	ND(0.20)	0.24	ND(0.20)	ND(0.20)	ND(0.20)
trans-1,2-Dichloroethene	µg/L	17	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Trichloroethene	µg/L	17	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Trichlorofluoromethane (CFC-11)	µg/L	2500	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Vinyl chloride	µg/L	1.7	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Xylenes (total)	µg/L	4200	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)

Notes

(1) Ministry of the Environment, Conservation and Parks (MECP) 'Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011 Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition, Residential/Parkland/ Institutional Property Use and medium/fine textured soils

ND Not detected at the associated reporting limit.

µg/L micrograms per litre

2.32 Parameter exceeds MECP Table 3 Criteria

Table 7

Groundwater Analytical Data
Phase Two Environmental Site Assessment
12 and 16 Lock Street, St. Catharines, Ontario
Rankin Construction Inc.

Sample Location:			**MW5-19**	**MW5-19**	**MW6-19**	**Trip Blank**	**Trip Blank**
Sample ID:			**GW-11189766-030719-TM-002**	**GW-11189766-030719-TM-003**	**GW-11189766-030719-TM-004**	**TRIP BLANK**	**TRIP BLANK**
Sample Date:			**3/7/2019**	**3/7/2019**	**3/7/2019**	**12/13/2018**	**12/21/2018**
Laboratory Report Number:			**L2242183**	**L2242183**	**L2242183**	**B8X6184**	**B8Y3349**
				Duplicate			
Parameters	**Units**	**MECP Table 3 Criteria [(1)]**					
Metals							
Antimony (dissolved)	µg/L	20000	0.15	0.15	ND(1.0)	-	-
Arsenic (dissolved)	µg/L	1900	0.76	0.80	ND(1.0)	-	-
Barium (dissolved)	µg/L	29000	69.4	69.3	178	-	-
Beryllium (dissolved)	µg/L	67	ND(0.10)	ND(0.10)	ND(1.0)	-	-
Boron (dissolved)	µg/L	45000	164	158	120	-	-
Cadmium (dissolved)	µg/L	2.7	0.012	0.011	0.165	-	-
Chromium (dissolved)	µg/L	810	ND(0.50)	ND(0.50)	ND(5.0)	-	-
Chromium VI (hexavalent)	µg/L	140	ND(0.50)	ND(0.50)	ND(0.50)	-	-
Cobalt (dissolved)	µg/L	66	1.56	1.58	3.7	-	-
Copper (dissolved)	µg/L	87	1.41	1.38	ND(2.0)	-	-
Lead (dissolved)	µg/L	25	ND(0.050)	ND(0.050)	ND(0.50)	-	-
Mercury	µg/L	2.8	-	-	-	-	-
Mercury (dissolved)	µg/L	2.8	ND(0.010)	ND(0.010)	ND(0.010)	-	-
Molybdenum (dissolved)	µg/L	9200	4.80	4.70	1.54	-	-
Nickel (dissolved)	µg/L	490	4.56	4.57	7.2	-	-
Selenium (dissolved)	µg/L	63	0.865	0.916	1.06	-	-
Silver (dissolved)	µg/L	1.5	ND(0.050)	ND(0.050)	ND(0.50)	-	-
Sodium (dissolved)	µg/L	2300000	101000	103000	1310000	-	-
Thallium (dissolved)	µg/L	510	0.043	0.041	ND(0.10)	-	-
Uranium (dissolved)	µg/L	420	4.76	4.75	3.50	-	-
Vanadium (dissolved)	µg/L	250	ND(0.50)	ND(0.50)	ND(5.0)	-	-
Zinc (dissolved)	µg/L	1100	1.1	ND(1.0)	ND(10)	-	-
Petroleum Hydrocarbons							
Petroleum hydrocarbons F1 (C6-C10)	µg/L	750	ND(25)	ND(25)	ND(25)	ND(25)	ND(25)
Petroleum hydrocarbons F1 (C6-C10) - less BTEX	µg/L	750	ND(25)	ND(25)	ND(25)	ND(25)	ND(25)
Petroleum hydrocarbons F2 (C10-C16)	µg/L	150	ND(100)	ND(100)	ND(100)	-	-
Petroleum hydrocarbons F2 minus Naphthalene	µg/L	150	ND(100)	ND(100)	ND(100)	-	-
Petroleum hydrocarbons F3 (C16-C34)	µg/L	500	ND(250)	ND(250)	ND(250)	-	-
Petroleum hydrocarbons F3 minus PAH	µg/L	500	ND(250)	ND(250)	ND(250)	-	-
Petroleum hydrocarbons F4 (C34-C50)	µg/L	500	ND(250)	ND(250)	ND(250)	-	-
Polycyclic Aromatic Hydrocarbons							
1+2-Methylnaphthalene	µg/L	1800	0.494	0.490	0.459	-	-
1-Methylnaphthalene	µg/L	1800	0.174	0.170	0.142	-	-
2-Methylnaphthalene	µg/L	1800	0.320	0.320	0.317	-	-
Acenaphthene	µg/L	1700	ND(0.020)	ND(0.020)	0.065	-	-
Acenaphthylene	µg/L	1.8	ND(0.020)	ND(0.020)	ND(0.020)	-	-
Anthracene	µg/L	2.4	ND(0.020)	ND(0.020)	0.212	-	-
Benzo(a)anthracene	µg/L	4.7	ND(0.020)	ND(0.020)	0.249	-	-
Benzo(a)pyrene	µg/L	0.81	ND(0.010)	ND(0.010)	0.147	-	-
Benzo(b)fluoranthene	µg/L	0.75	ND(0.020)	ND(0.020)	0.201	-	-
Benzo(b)fluoranthene/Benzo(j)fluoranthene	µg/L	0.75	-	-	-	-	-
Benzo(g,h,i)perylene	µg/L	0.2	ND(0.020)	ND(0.020)	0.071	-	-
Benzo(k)fluoranthene	µg/L	0.4	ND(0.020)	ND(0.020)	0.080	-	-
Chrysene	µg/L	1	ND(0.020)	ND(0.020)	0.208	-	-
Dibenz(a,h)anthracene	µg/L	0.52	ND(0.020)	ND(0.020)	ND(0.020)	-	-
Fluoranthene	µg/L	130	0.031	0.029	0.692	-	-
Fluorene	µg/L	400	0.032	0.031	0.151	-	-
Indeno(1,2,3-cd)pyrene	µg/L	0.2	ND(0.020)	ND(0.020)	0.105	-	-
Naphthalene	µg/L	6400	0.077	0.077	0.138	-	-
Phenanthrene	µg/L	580	0.061	0.058	1.02	-	-
Pyrene	µg/L	68	0.031	0.030	0.507	-	-

Table 7

Groundwater Analytical Data
Phase Two Environmental Site Assessment
12 and 16 Lock Street, St. Catharines, Ontario
Rankin Construction Inc.

Sample Location:			MW5-19	MW5-19	MW6-19	Trip Blank	Trip Blank
Sample ID:			GW-11189766-030719-TM-002	GW-11189766-030719-TM-003	GW-11189766-030719-TM-004	TRIP BLANK	TRIP BLANK
Sample Date:			3/7/2019	3/7/2019	3/7/2019	12/13/2018	12/21/2018
Laboratory Report Number:			L2242183	L2242183	L2242183	B8X6184	B8Y3349
				Duplicate			
Parameters	**Units**	**MECP Table 3**					
Volatile Organic Compounds							
1,1,1,2-Tetrachloroethane	µg/L	28	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,1,1-Trichloroethane	µg/L	6700	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.20)	ND(0.20)
1,1,2,2-Tetrachloroethane	µg/L	15	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,1,2-Trichloroethane	µg/L	30	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,1-Dichloroethane	µg/L	3100	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.20)	ND(0.20)
1,1-Dichloroethene	µg/L	17	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.20)	ND(0.20)
1,2-Dibromoethane (Ethylene dibromide)	µg/L	0.83	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
1,2-Dichlorobenzene	µg/L	9600	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,2-Dichloroethane	µg/L	12	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,2-Dichloropropane	µg/L	140	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.20)	ND(0.20)
1,3-Dichlorobenzene	µg/L	9600	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,4-Dichlorobenzene	µg/L	67	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	1500000	ND(20)	ND(20)	ND(20)	ND(10)	ND(10)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	580000	ND(20)	ND(20)	ND(20)	ND(5.0)	ND(5.0)
Acetone	µg/L	130000	ND(30)	ND(30)	ND(30)	ND(10)	ND(10)
Benzene	µg/L	430	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.20)	ND(0.20)
Bromodichloromethane	µg/L	85000	ND(2.0)	ND(2.0)	ND(2.0)	ND(0.50)	ND(0.50)
Bromoform	µg/L	770	ND(5.0)	ND(5.0)	ND(5.0)	ND(1.0)	ND(1.0)
Bromomethane (Methyl bromide)	µg/L	56	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Carbon tetrachloride	µg/L	8.4	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Chlorobenzene	µg/L	630	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.20)	ND(0.20)
Chloroform (Trichloromethane)	µg/L	22	ND(1.0)	ND(1.0)	ND(1.0)	ND(0.20)	ND(0.20)
cis-1,2-Dichloroethene	µg/L	17	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
cis-1,3-Dichloropropene/trans-1,3-Dichloropropene total	µg/L	45	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Dibromochloromethane	µg/L	82000	ND(2.0)	ND(2.0)	ND(2.0)	ND(0.50)	ND(0.50)
Dichlorodifluoromethane (CFC-12)	µg/L	4400	ND(2.0)	ND(2.0)	ND(2.0)	ND(1.0)	ND(1.0)
Ethylbenzene	µg/L	2300	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.20)	ND(0.20)
Hexane	µg/L	520	ND(0.50)	ND(0.50)	ND(0.50)	ND(1.0)	ND(1.0)
Methyl tert butyl ether (MTBE)	µg/L	1400	ND(2.0)	ND(2.0)	ND(2.0)	ND(0.50)	ND(0.50)
Methylene chloride	µg/L	5500	ND(5.0)	ND(5.0)	ND(5.0)	ND(2.0)	ND(2.0)
Styrene	µg/L	9100	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Tetrachloroethene	µg/L	17	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.20)	ND(0.20)
Toluene	µg/L	18000	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.20)	ND(0.20)
trans-1,2-Dichloroethene	µg/L	17	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Trichloroethene	µg/L	17	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.20)	ND(0.20)
Trichlorofluoromethane (CFC-11)	µg/L	2500	ND(5.0)	ND(5.0)	ND(5.0)	ND(0.50)	ND(0.50)
Vinyl chloride	µg/L	1.7	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.20)	ND(0.20)
Xylenes (total)	µg/L	4200	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.20)	ND(0.20)

Notes

(1) Ministry of the Environment, Conservation and Parks (MECP) 'Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011 Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition, Residential/Parkland/ Institutional Property Use and medium/fine textured soils

ND Not detected at the associated reporting limit.

µg/L micrograms per litre

2.32 Parameter exceeds MECP Table 3 Criteria

Table 8

Groundwater Maximum Concentration Data
Phase Two Environmental Site Assessment
12 and 16 Lock Street, St. Catharines, Ontario
Rankin Construction Inc.

Parameters	Units	MECP Table 3 Criteria [1]	Maximum Concentration	Sample Location	Sample Identification	Sample Date
Metals						
Antimony (dissolved)	µg/L	20000	0.15	MW5-19	GW-11189766-030719-TM-002	3/7/2019
Arsenic (dissolved)	µg/L	1900	4.4	BH-105	GW-11131634-121318-MP-004	12/13/2018
Barium (dissolved)	µg/L	29000	280	MW3-18	GW-11131634-122118-MP-007	12/21/2018
Beryllium (dissolved)	µg/L	67	ND(1)	-	-	-
Boron (dissolved)	µg/L	45000	170	BH-105	GW-11131634-121318-MP-004	12/13/2018
Cadmium (dissolved)	µg/L	2.7	0.165	MW6-19	GW-11189766-030719-TM-004	3/7/2019
Chromium (dissolved)	µg/L	810	ND(5)	-	-	-
Chromium VI (hexavalent)	µg/L	140	ND(0.5)	-	-	-
Cobalt (dissolved)	µg/L	66	3.7	MW6-19	GW-11189766-030719-TM-004	3/7/2019
Copper (dissolved)	µg/L	87	1.41	MW5-19	GW-11189766-030719-TM-002	3/7/2019
Lead (dissolved)	µg/L	25	ND(0.5)	-	-	-
Mercury	µg/L	2.8	ND(0.1)	-	-	-
Mercury (dissolved)	µg/L	2.8	ND(0.01)	-	-	-
Molybdenum (dissolved)	µg/L	9200	4.8	MW5-19	GW-11189766-030719-TM-002	3/7/2019
Nickel (dissolved)	µg/L	490	7.2	MW6-19	GW-11189766-030719-TM-004	3/7/2019
Selenium (dissolved)	µg/L	63	1.06	MW6-19	GW-11189766-030719-TM-004	3/7/2019
Silver (dissolved)	µg/L	1.5	ND(0.5)	-	-	-
Sodium (dissolved)	µg/L	2300000	1310000	MW6-19	GW-11189766-030719-TM-004	3/7/2019
Thallium (dissolved)	µg/L	510	0.043	MW5-19	GW-11189766-030719-TM-002	3/7/2019
Uranium (dissolved)	µg/L	420	4.76	MW5-19	GW-11189766-030719-TM-002	3/7/2019
Vanadium (dissolved)	µg/L	250	1.8	BH-106	GW-11131634-121318-MP-002	12/13/2018
Zinc (dissolved)		1100	1.1	MW5-19	GW-11189766-030719-TM-002	3/7/2019
Petroleum Hydrocarbons						
Petroleum hydrocarbons F1 (C6-C10)	µg/L	750	ND(25)	-	-	-
Petroleum hydrocarbons F1 (C6-C10) - less BTEX	µg/L	750	ND(25)	-	-	-
Petroleum hydrocarbons F2 (C10-C16)	µg/L	150	ND(100)	-	-	-
Petroleum hydrocarbons F2 minus Naphthalene	µg/L	150	ND(100)	-	-	-
Petroleum hydrocarbons F3 (C16-C34)	µg/L	500	ND(250)	-	-	-
Petroleum hydrocarbons F3 minus PAH	µg/L	500	ND(250)	-	-	-
Petroleum hydrocarbons F4 (C34-C50)	µg/L	500	ND(250)	-	-	-
Polycyclic Aromatic Hydrocarbons						
1+2-Methylnaphthalene	µg/L	1800	0.494	MW5-19	GW-11189766-030719-TM-002	3/7/2019
1-Methylnaphthalene	µg/L	1800	0.174	MW5-19	GW-11189766-030719-TM-002	3/7/2019
2-Methylnaphthalene	µg/L	1800	0.32	MW5-19	GW-11189766-030719-TM-002	3/7/2019
Acenaphthene	µg/L	1700	0.065	MW6-19	GW-11189766-030719-TM-004	3/7/2019
Acenaphthylene	µg/L	1.8	ND(0.05)	-	-	-
Anthracene	µg/L	2.4	0.212	MW6-19	GW-11189766-030719-TM-004	3/7/2019
Benzo(a)anthracene	µg/L	4.7	0.249	MW6-19	GW-11189766-030719-TM-004	3/7/2019
Benzo(a)pyrene	µg/L	0.81	0.147	MW6-19	GW-11189766-030719-TM-004	3/7/2019
Benzo(b)fluoranthene	µg/L	0.75	0.201	MW6-19	GW-11189766-030719-TM-004	3/7/2019
Benzo(b)fluoranthene/Benzo(j)fluoranthene	µg/L	0.75	0.18	BH-103	GW-11131634-121318-MP-001	12/13/2018
Benzo(g,h,i)perylene	µg/L	0.2	0.075	BH-103	GW-11131634-121318-MP-001	12/13/2018
Benzo(k)fluoranthene	µg/L	0.4	0.08	MW6-19	GW-11189766-030719-TM-004	3/7/2019
Chrysene	µg/L	1	0.208	MW6-19	GW-11189766-030719-TM-004	3/7/2019
Dibenz(a,h)anthracene	µg/L	0.52	ND(0.05)	-	-	-
Fluoranthene	µg/L	130	0.692	MW6-19	GW-11189766-030719-TM-004	3/7/2019
Fluorene	µg/L	400	0.151	MW6-19	GW-11189766-030719-TM-004	3/7/2019
Indeno(1,2,3-cd)pyrene	µg/L	0.2	0.105	MW6-19	GW-11189766-030719-TM-004	3/7/2019
Naphthalene	µg/L	6400	0.138	MW6-19	GW-11189766-030719-TM-004	3/7/2019
Phenanthrene	µg/L	580	1.02	MW6-19	GW-11189766-030719-TM-004	3/7/2019
Pyrene	µg/L	68	0.507	MW6-19	GW-11189766-030719-TM-004	3/7/2019
Volatile Organic Compounds						
1,1,1,2-Tetrachloroethane	µg/L	28	ND(0.5)	-	-	-
1,1,1-Trichloroethane	µg/L	6700	ND(0.5)	-	-	-
1,1,2,2-Tetrachloroethane	µg/L	15	ND(0.5)	-	-	-
1,1,2-Trichloroethane	µg/L	30	ND(0.5)	-	-	-
1,1-Dichloroethane	µg/L	3100	ND(0.5)	-	-	-
1,1-Dichloroethene	µg/L	17	ND(0.5)	-	-	-
1,2-Dibromoethane (Ethylene dibromide)	µg/L	0.83	ND(0.2)	-	-	-
1,2-Dichlorobenzene	µg/L	9600	ND(0.5)	-	-	-
1,2-Dichloroethane	µg/L	12	ND(0.5)	-	-	-
1,2-Dichloropropane	µg/L	140	ND(0.5)	-	-	-
1,3-Dichlorobenzene	µg/L	9600	ND(0.5)	-	-	-
1,4-Dichlorobenzene	µg/L	67	ND(0.5)	-	-	-
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	1500000	ND(20)	-	-	-
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	580000	ND(20)	-	-	-

Groundwater Maximum Concentration Data
Phase Two Environmental Site Assessment
12 and 16 Lock Street, St. Catharines, Ontario
Rankin Construction Inc.

Parameters	Units	MECP Table 3 Criteria [1]	Maximum Concentration	Sample Location	Sample Identification	Sample Date
Acetone	µg/L	130000	ND(30)	-	-	-
Benzene	µg/L	430	ND(0.5)	-	-	-
Bromodichloromethane	µg/L	85000	ND(2)	-	-	-
Bromoform	µg/L	770	ND(5)	-	-	-
Bromomethane (Methyl bromide)	µg/L	56	ND(0.5)	-	-	-
Carbon tetrachloride	µg/L	8.4	ND(0.2)	-	-	-
Chlorobenzene	µg/L	630	ND(0.5)	-	-	-
Chloroform (Trichloromethane)	µg/L	22	ND(1)	-	-	-
cis-1,2-Dichloroethene	µg/L	17	ND(0.5)	-	-	-
cis-1,3-Dichloropropene/trans-1,3-Dichloropropene total	µg/L	45	ND(0.5)	-	-	-
Dibromochloromethane	µg/L	82000	ND(2)	-	-	-
Dichlorodifluoromethane (CFC-12)	µg/L	4400	ND(2)	-	-	-
Ethylbenzene	µg/L	2300	ND(0.5)	-	-	-
Hexane	µg/L	520	ND(1)	-	-	-
Methyl tert butyl ether (MTBE)	µg/L	1400	ND(2)	-	-	-
Methylene chloride	µg/L	5500	ND(5)	-	-	-
Styrene	µg/L	9100	ND(0.5)	-	-	-
Tetrachloroethene	µg/L	17	ND(0.5)	-	-	-
Toluene	µg/L	18000	0.24	-	-	-
trans-1,2-Dichloroethene	µg/L	17	ND(0.5)	-	-	-
Trichloroethene	µg/L	17	ND(0.5)	-	-	-
Trichlorofluoromethane (CFC-11)	µg/L	2500	ND(5)	-	-	-
Vinyl chloride	µg/L	1.7	ND(0.5)	-	-	-
Xylenes (total)	µg/L	4200	ND(0.5)	-	-	-

Notes

[1] Ministry of the Environment, Conservation and Parks (MECP) 'Soil, Groundwater, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011 Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition, Residential/Parkland/ Institutional Property Use and medium/fine textured soils

ND Not detected at the associated reporting limit.

µg/L micrograms per litre

2.32 Parameter exceeds MECP Table 3 Criteria

- All samples reported concentrations lower than laboratory reporting limit listed in brackets

Appendices

Appendix A
Topographic Survey of the Phase Two Property

TOPOGRAPHIC SURVEY

OF

LOTS 3 to 14, (Incl.) and LOT 16,
PART OF LOT 2,
ALL OF HOGAN'S ALLEY
REGISTRAR'S COMPILED PLAN 696
FORMERLY TOWN OF PORT DALHOUSIE
NOW IN THE
© CITY OF ST. CATHARINES
REGIONAL MUNICIPALITY OF NIAGARA

VERHAEGEN • STUBBERFIELD • HARTLEY • BREWER • BEZAIRE INC.

SCALE = 1:250

0 2.50 5.00 10.00 15.00 METRES 25.00

"METRIC" DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

ELEVATIONS

ELEVATIONS SHOWN ON THIS PLAN ARE IN METRES TO CANADIAN GEODETIC DATUM

BENCH MARK

BENCH MARK: 0011922U2501 ELEVATION = 89.662
PORT DALHOUSIE ST. JOHN'S CHURCH PARISH HALL, AT CORNER OF MAIN AND ANN STREETS, BOLT IN SOUTH OR MAIN STREET WALL, IN CONCRETE FOUNDATION, 74 CM WEST OF THIRD BUTTRESS FROM SOUTHEAST CORNER, 10 CM BELOW BRICKWORK.

AREA

0.6711 Ha., (1.658 Acres).

CAUTION
UNDERGROUND UTILITIES AND SERVICES SHOWN ON THIS PLAN ARE APPROXIMATE AND MUST BE VERIFIED BEFORE CONSTRUCTION

LEGEND

MHH	DENOTES HYDRO MANHOLE	FH	DENOTES FIRE HYDRANT
MHS	DENOTES SEWER MANHOLE	WM	DENOTES WATER METER
MHT	DENOTES TELEPHONE MANHOLE	WVS	DENOTES WATER VALVE (Service)
MHTR	DENOTES TRAFFIC MANHOLE	WVM	DENOTES WATER VALVE (Main)
MHW	DENOTES WATER MANHOLE	GM	DENOTES GAS METER
CB	DENOTES CATCH BASIN	GV	DENOTES GAS VALVE
DCB	DENOTES DOUBLE CATCH BASIN	HM	DENOTES HYDRO METER
LSc	DENOTES LIGHT STANDARD CONCRETE	PedT	DENOTES TELEPHONE PEDESTAL
LSs	DENOTES LIGHT STANDARD STEEL	PedCTV	DENOTES CABLE TV PEDESTAL
LSw	DENOTES LIGHT STANDARD WOOD	TRs	DENOTES TRAFFIC SIGN
UPc	DENOTES UTILITY POLE CONCRETE	TRsg	DENOTES TRAFFIC SIGNAL
UPs	DENOTES UTILITY POLE STEEL	TRsb	DENOTES TRAFFIC SIGNAL BOX
UPw	DENOTES UTILITY POLE WOOD	TH	DENOTES TESTHOLE
GP	DENOTES GUY POLE	BM	DENOTES BENCH MARK
GW	DENOTES GUY WIRE	HCP	DENOTES HORIZONTAL CONTROL POINT
Bol	DENOTES BOLLARD	VCP	DENOTES VERTICAL CONTROL POINT
PM	DENOTES PARKING METER		DENOTES SHRUB
TOC	DENOTES TOP OF CURB	SC	DENOTES SEWER CLEANOUT
BOC	DENOTES BOTTOM OF CURB	INV	DENOTES INVERT

DECIDUOUS AND CONIFEROUS TREES ARE DENOTED DT AND CT RESPECTIVELY.
A PREFIX TO THE DESCRIPTION DESIGNATES THE NUMBER OF TREE TRUNKS WHEN TREES ARE CLUMPED TOGETHER AND A SUFFIX DENOTES THE TREE DIAMETER OR (NTS) NOT TO SCALE.

C	DENOTES OVERHEAD CABLE TV LINE
G (pipe size) G	DENOTES GAS LINE
H H	DENOTES OVERHEAD HYDRO LINE
CS (pipe size) CS	DENOTES COMBINED SEWER
SA (pipe size) SA	DENOTES SANITARY SEWER
ST (pipe size) ST	DENOTES STORM SEWER
T T	DENOTES OVERHEAD TELEPHONE LINE
W (pipe size) W	DENOTES WATER LINE

UNDERGROUND CABLE, HYDRO OR TELEPHONE LINES ARE PREFIXED WITH THE LETTER "u" (CABLE = uC HYDRO = uH TELEPHONE = uT)

LEGEND AND NOTES

BEARINGS ARE UTM GRID DERIVED FROM OBSERVED REFERENCE POINTS "A" AND "B" BY REAL TIME NETWORK OBSERVATIONS.

DISTANCES ON THIS PLAN ARE GROUND AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED SCALE FACTOR OF 0.99983772

ALL MONUMENTS SHOWN THUSLY □ ARE IRON BARS (IB) UNLESS OTHERWISE NOTED.

SIB	DENOTES 25mm X 25mm X 1.22m STANDARD IRON BAR
SSIB	DENOTES 25mm X 25mm X 0.61m SHORT STANDARD IRON BAR
IB	DENOTES 16mm X 16mm X 0.61m IRON BAR
IB ø	DENOTES 19mm diameter X 0.61m ROUND IRON BAR
CC	DENOTES CUT-CROSS
CP	DENOTES 5mm X 50mm STEEL PIN
■	DENOTES SURVEY MONUMENT FOUND
□	DENOTES SURVEY MONUMENT SET AND MARKED 1744
WIT.	DENOTES WITNESS ⊥ DENOTES PERPENDICULAR
(S)	DENOTES SET (M) DENOTES MEASURED (D) DENOTES DEED
ORP	DENOTES OBSERVED REFERENCE POINT

SSIB'S SHOWN ON THIS PLAN HAVE BEEN SET IN LIEU OF SIB'S WHERE THE POSSIBILITY THAT UNDERGROUND UTILITIES EXIST.

(S/P)	DENOTES SET PROPORTIONALLY	(OU)	DENOTES ORIGIN UNKNOWN
(P)	DENOTES PLAN 30R-4156	(P1)	DENOTES PLAN 30R-11783
(P2)	DENOTES PLAN 30R-13413	(P3)	DENOTES PLAN 30R-5364
(P4)	DENOTES PLAN 30R-6464		
(1744)	DENOTES VERHAEGEN STUBBERFIELD HARTLEY BREWER BEZAIRE INC., O.L.S.		
(744)	DENOTES R. J. MATTHEWS, O.L.S.		

INTEGRATION DATA

COORDINATES ARE DERIVED FROM GRID OBSERVATIONS USING THE CAN-NET NETWORK SERVICE AND ARE REFERRED TO UTM ZONE 17 (81° WEST LONGITUDE) NAD83 (CSRS) (2010.0).
COORDINATE VALUES ARE TO AN URBAN ACCURACY IN ACCORDANCE WITH SECTION 14(2) O.REG 216/10

POINT ID	NORTHING	EASTING
ORP-A	N4784700.463	E640888.390
ORP-B	N4784774.431	E640819.729
ORP-C	N4784774.494	E640927.624

COORDINATES CANNOT, IN THEMSELVES, BE USED TO RE-ESTABLISH CORNERS OR BOUNDARIES SHOWN ON THIS PLAN.

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE REGULATIONS MADE UNDER THEM.
2. THIS SURVEY WAS COMPLETED ON THE 18th. DAY OF NOVEMBER, 2016.

DATE NOVEMBER 29, 2016.

ANDREW S. MANTHA
ONTARIO LAND SURVEYOR
for VERHAEGEN · STUBBERFIELD · HARTLEY
BREWER · BEZAIRE INC.

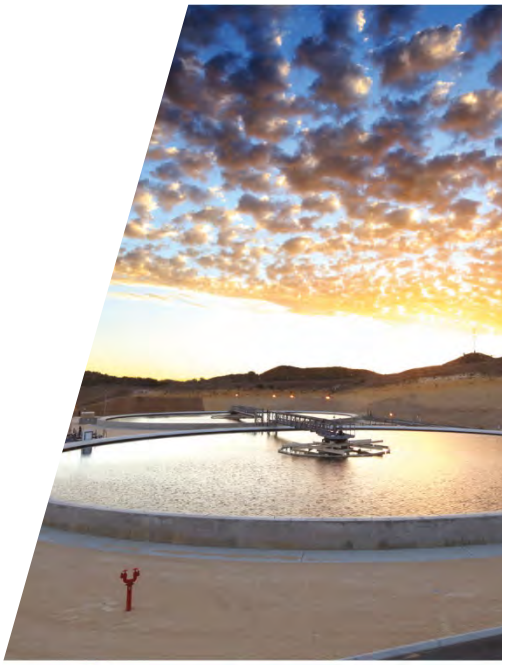
WINDSOR
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VERHAEGEN STUBBERFIELD HARTLEY BREWER BEZAIRE INC.
ONTARIO LAND SURVEYORS
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DRAWN BY: CMM	CAD Date: November 29, 2016 2:03 PM		
CHECKED BY: A.S.M.	CAD File: 51340000.dwg		
WORK ORDER: 5-13400	FILE NO.: St. Catharines-R.C.P. 696-0	PLAN FILE NO.: H-1596	

Appendix B
Previous Environmental Reports



Phase One Environmental Site Assessment

16 Lock Street
St. Catharines, Ontario

Rankin Construction Inc.









Draft for Review

This document is in draft form. A final version of this document may differ from this draft. As such, the contents of this draft document shall not be relied upon. GHD disclaims any responsibility or liability arising from decisions made based on this draft document.

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1. Executive Summary

GHD Limited (GHD) was retained by Rankin Construction Inc. (Rankin) to conduct a Phase One Environmental Site Assessment (ESA) of 16 Lock Street in St. Catharines, Ontario (Property or Site). The location of the Property is shown on Figure 1 and a Site Plan of the Property is shown on Figure 2.

The Property consists of six contiguous parcels of land that, combined, are approximately 0.38 hectares (0.93 acres) in size. Three buildings currently occupy the Site. The buildings are approximately 380 square metres (4,100 square feet), 200 square metres (2,150 square feet), and 25 square metres (270 square feet) in size and occupy the southeast, north and northwest portions of the Property, respectively. The Site was managed by MSI Spergel Inc. as insolvency trustee and was in the process of being acquired by Rankin through receivership. It is GHD's understanding that Rankin intends to redevelop the Propeorty for mixed commercial and residential use and that this Phase One ESA is being completed to support filing a Record of Site Condition (RSC) in accordance with Ontario Regulation 153/04, as amended (O. Reg. 153/04).

The Phase One ESA was conducted in accordance with O. Reg. 153/04 with the exception that the basement, second and third floors of the former hotel building on the southern portion of the Site could not be accessed for detailed inspection due to safety concerns associated with the structure.

Based on the results of the Phase One ESA, including the records review, the Site reconnaissance, and interviews with persons knowledgeable of the historical and current Site operations, and review of information from the Ontario Ministry of Environment, Conservation and Parks (MECP), Potential Contaminating Activities (PCAs) were identified as representing the following Areas of Potential Environmental Concern (APECs) for the Site as defined in Ontario Regulation 153/04, as amended (O. Reg. 153/04):

APEC A (Current Dry Cleaning Facility): An active dry cleaning facility is located approximately 100 m south of the Site. The Operation of Dry Cleaning Equipment is a PCA as defined in O. Reg. 153/04, which, given its proximity, represents an APEC associated with the Site. On this basis, the dry cleaning facility to the south of the Site is identified in this report as APEC A as it represents a potential impact to groundwater quality at the Site with respect to volatile organic compounds (VOCs).

APEC B (Former Underground Storage Tank Associated with Taxi Stand): A taxi stand and gasoline underground storage tank (UST) were identified on the adjacent property approximately 30 metres south of the Site on the south side of Lock Street on the 1962 FIP. Gasoline and Associated Products Storage in Fixed Tanks is a PCA as defined in O. Reg. 153/04, which, given its proximity, represents an APEC associated with the Site. On this basis, the former operation of a gasoline UST to the south of the Site is identified in this report as APEC B as it represents a potential impact to groundwater quality at the Site with respect to petroleum hydrocarbons (PHCs) and VOCs.

APEC C (Former Dry Cleaning Facility): A “Chinese Laundry” was identified on the 1962 fire insurance plan as having been operated on the corner of Gertrude Street and Lock Street, approximately 70 m south of the Site. The Operation of Dry Cleaning Equipment is a PCA, which

given its proximity to the Site, represents an APEC associated with the Site. On this basis, the former Chinese Laundry operation to the south of the Site is identified in this report as APEC C as it represents a potential impact to groundwater quality at the Site with respect to VOCs.

APEC D (PAH and Metals Impacted Soil): A 2019 Environmental Screening Program report identified the presence of select PAHs and metals in soils within the northwestern portion of the Property at concentrations exceeding current generic soil quality standards. The presence of elevated concentrations of polycyclic aromatic hydrocarbons (PAHs) and metals in soils within the northwestern portion of the Property has been identified as APEC D.

APEC E (Peat Fill Material): A 2004 Geotechnical Investigation report identified the presence of peat fill across the west central portion of the Site. Investigations into methane gas generation associated with the peat fill identified methane gas concentrations above 500 parts per million (ppm) at soil gas probes installed within the peat material. The presence of peat fill producing methane gas in the central portion of the Site has been identified as APEC E.

APEC F (Fill of Unknown Quality): Fill materials of unknown origin are present across the western portion of the Site. The source and quality of the fill material is not known. Importation of Fill Material of Unknown Quality is a PCA as defined in O. Reg. 153/04 and represents an APEC for the Site. This has been identified as APEC F as it represents a potential impact to soil quality at the Site with respect to VOCs, PAHs, PHCs, and metals.

APEC G (Former Fuel Oil Use): The hotel building that occupies the southern corner of the Property was constructed in 1871. It is likely that this building was heated with either fuel oil or coal at one time. Gasoline and Associated Products Storage in Fixed Tanks is a PCA as defined in O. Reg. 153/04. The former storage of heating oil is a PCA that represents a potential APEC for the Site and has been identified as APEC G as it represents a potential impact to soil and groundwater quality with respect to PHCs and PAHs.

2. Introduction

2.1 Phase One Property Information

GHD was retained by Rankin to conduct a Phase One Environmental Site Assessment (ESA) of the buildings and associated lands located at 16 Lock Street in St. Catharines, Ontario (hereinafter referred to as Site or Property). The Property is shown on the Site Location Map (Figure 1) and on the Site Plan (Figure 2).

The purpose of the Phase One ESA was to identify the existence of any current or historical potentially contaminating activities (PCAs) within the Phase One Study Area that represent APECs for the Site.

The Property consists of six contiguous parcels of land that, combined, are approximately 0.38 hectares (0.93 acres) in size. Three buildings are currently located at the Site. The buildings are approximately 380 square metres (4,100 square feet), 200 square metres (2,150 square feet), and 25 square metres (270 square feet) in size occupying the southeast, north and northwest portions of the Property, respectively. The Site was managed by MSI Spergel Inc.as insolvency

trustee and was in the process of being acquired by Rankin through receivership. The former Site owner was not available for GHD to interview as part of this Phase One ESA.

Contact information for the Property receiver's representative is provided below:

MSI Spergel Inc.
Attention: Evan MCCullagh – Estate Administrator
21 Kings Street West, Suite 1602, Box 54
Hamilton, Ontario L8P4W7

Contact information for Rankin's representative is provided below:

Rankin Construction Inc.
Attention: Mr. Jim Frank, P. Eng., MBA
222 Martindale Road, Box 1116
St. Catharines, Ontario L2R 7A3

It is GHD's understanding that Rankin is in the process of acquiring the Property for mixed residential and commercial redevelopment, and that this Phase One ESA is being completed for the purpose of filing a Record of Site Condition (RSC) in accordance with O. Reg. 153/04 to support the proposed redevelopment.

3. Scope of Investigation

This Phase One ESA was conducted in accordance with the requirements of O. Reg. 153/04 by Ms. Melissa Pley and Mr. Greig Chapman, and was reviewed by Mr. Marc Gaudet, all from GHD. Copies of project personnel curriculum vitae are provided in Appendix A. The following tasks were conducted as part of the Phase One ESA:

- Review of electronic federal, provincial and regional environmental database searches
- Review of Property title records
- Review of historical land records including fire insurance plans, aerial photographs of the Site and surrounding area, regional geological information, and available previous environmental reports pertaining to the Site and surrounding properties
- Review of city directories for past and current Property usage and surrounding property occupancy
- Inspection of the facilities, equipment, utility services, operations and records associated with the Site
- Observations of PCAs that represented APECs for the Site
- Inquiries with regulatory agencies and interviews with persons knowledgeable of the Site, Site history and Site operations

In completing the Phase One ESA, GHD relied upon information received from all parties as being accurate unless contradicted by written documentation or field observations.

The following report summarizes the information gathered by GHD during the Phase One ESA and identifies the existence of PCAs that represent APECs for the Site, if any. As required by O. Reg. 153/04, this Phase One ESA also identifies potential contamination migration pathways and receptors associated with the Property, to the extent that the data compiled allows.

The Phase One ESA was conducted in accordance with O. Reg. 153/04 with the exception that access to basement, second and third floors, and roof of the former hotel building in the southern portion of the Site could not be attained due to safety concerns.

This Phase One ESA report has been prepared for the use of Rankin and may not be relied upon by others without the written consent of GHD and Rankin.

4. Records Review

4.1 General

Historical land use of the Site was investigated by GHD through a review of available fire insurance plans (FIPs), Property title records, historical city directories, environmental databases, aerial photographs and regional geologic and hydrogeological information.

4.1.1 Phase One Study Area Determination

The Phase One Study Area includes the Site and all properties located wholly or partially within 250 metres (m) of the Site boundary. GHD has determined, based on a review of local local geology and hydrogeology and the proximity of surface water to the north, east and west, that PCAs beyond 250 m from the Site are not likely to impact the Property. Therefore, GHD's records review and reconnaissance were limited to the 250 m Phase One Study Area.

The off-Site properties within the Phase One Study Area were visually inspected, without accessing the properties, for evidence of existing or potential PCAs. The following buildings or features were located on the neighbouring properties to the Site:

North: The Site is bounded to the north by Lakeport Road and further north by an asphalt paved parking lot, Lakeside Park, Lakeside Park Beach, a municipal pumping station, a carousel ride, walking trails, and small public structures including covered picnic areas and washrooms. Further north of Lakeside Beach is Lake Ontario. The first Welland Canal was historically located along the present-day alignment of Lakeport Road to the north of the Site. The canal was abandoned in the early 1900s and the area reclaimed. A large storm water holding tank associated with the municipal pumping station has since been installed beneath Lakeport Road, adjacent to the north Property boundary. Importation of Fill Material of Unknown Quality is a PCA as defined by O. Reg. 153/04, however, it does not represent an APEC for the Site.

West: The Site is bounded to the west by Main Street and further west by residential properties and Gary Road.

South: The Site is bounded to the south by Lock Street and further south by commercial properties including restaurants, and residential properties. Other properties located further south and southeast include Rennie Park and commercial/retail properties. A dry cleaner is located approximately 100 m south of the Site. The Operation of Dry Cleaning Equipment is a PCA as defined in O. Reg. 153/04, which, given its proximity, represents an APEC associated with the Site. On this basis, the dry cleaning facility to the south of the Site is identified in this report as APEC A as it represents a potential impact to groundwater quality at the Site with respect to VOCs.

East: The Site is bounded to the east by Hogans Alley and further east by a vacant property, commercial and retail buildings, Lakeport Road, landscaped areas, a marina and yacht club and Port Dalhousie Harbour (former Welland Canal).

As discussed in Section 5, GHD interviewed City of St. Catharines representatives and a local historian who have been familiar with the Site since 1986 and 1969, respectively. They were not aware of any environmental impacts to the Site attributable to operations conducted on adjacent lands. No visual evidence of environmental impact to the Property from surrounding land uses was observed by GHD at the time of the Site inspection.

4.1.2 First Developed Use Determination

Based on a review of previous reports, city directories and Property title search information, the Site was first developed by John McNulty for commercial use as a hotel and dry goods store in 1871[1].

4.1.3 Fire Insurance Plans

FIPs assist in the identification of historical land use and commonly indicate the existence and location of aboveground and underground storage tanks, structures, improvements, and facility operations. GHD contracted the Opta Information Intelligence (Opta) to search for available historical FIPs, inspection reports, and Site-specific plans. GHD was provided with a copy of Fire Insurance Plans covering the Site and/or portions of the Phase One Study Area for 1905, 1922 and 1962, copies of which are provided in Appendix B.

The 1905 FIP indicates that six buildings including a hotel (Austin House Hotel) were located on the Property at that time. The northwest portion of the Site is not shown on the 1905 FIP. Several retail outlets including a grocery store, butcher, a pharmacy, an ice house and hotels (Wellington Hotel, Walkerly's House Hotel, and Murrary Hotel) were located east of the Site along Front Street (present-day Lakeport Road) and Lock Street. Residential and commercial properties were identified as occupying lands further south and west of the Site, along Main Street, Canal Street and Gertrude Street. A dry dock with a storage building occupied by A. Muir & Bros is identified further southeast of the Site. A dry dock falls under Port Activities including Operation and Maintenance of Wharves and Docks and is a PCA however, it does not represent an APEC for the Site given its distance from the Site and the inferred easterly direction of groundwater flow in this area (cross gradient to the Site).

[1] Heritage Assessment Report – Port Dalhousie Commercial Core, Spencer R.Higgins, Architect Incorporated, May 2005

The 1922 FIP indicates that the Site remained generally unchanged from the 1905 FIP with the exception of the addition of a building identified as a 'Lock Up' located on the northwest corner of the Property, an "Ice House" in the central portion of the Property and a "Waiting Room" in the southwest corner of the Property. One of the small un-named buildings present in the central portion of the Property on the 1905 FIP was not present on the 1922 FIP.

Review of the 1922 FIP indicates the Old Welland Canal was present to the east of Front Street, east of the Site. Lock No.1 (of the second canal) was located southeast of the Site. A ship lock falls under Port Activities including Operation and Maintenance of Wharves and Docks and is a PCA however, it does not represent an APEC for the Site given its distance and the inferred easterly direction of groundwater flow in this area (cross gradient to the Site).

The area south of the Site remained unchanged from the 1905 FIP, with the exception of the development of additional residential and commercial buildings, including a bank on Lock Street. Residential dwellings, a school and fire hall were located further south of the Site. A machine shop with a concrete floor and iron storage area were located south of the Site and south of the dry dock. A machine shop falls under Metal Fabrication and is a PCA however, it does not represent an APEC for the Site given its distance and the inferred easterly direction of groundwater flow in this area (cross gradient to the Site). The area located adjacent to the dry dock southeast of the Site was occupied by Canada Steamship Lines. A carpentry shop was also present in this area.

Lands located further north of the Site, as indicated on the 1922 FIP, included three ice houses and a ferry landing/bridge along the former Welland Canal. A ferry landing falls under Port Activities including Operation and Maintenance of Wharves and Docks and is a PCA however, it does not represent an APEC for the Site given its distance and the inferred north easterly direction of groundwater flow in this area (down gradient to the Site).

Review of the 1962 FIP indicates the removal of six buildings in the central and southwest portion of the Site, the addition of two buildings in the central portion of the Property and the construction of two building additions onto the Austin Hotel in the south portion of the Site since 1922. The adjacent properties to the west of the Site are not shown on the 1962 FIP. A taxi stand/office and underground gasoline service tank were identified on the adjacent property approximately 30 metres south of the Site on the south side of Lock Street. Gasoline and Associated Products Storage in Fixed Tanks is a PCA as defined in O. Reg. 153/04, which, given its proximity, represents APEC for the Site. On this basis, the former operation of a gasoline UST to the south of the Site is identified in this report as APEC B as it represents a potential impact to groundwater quality at the Site with respect to petroleum hydrocarbons (PHCs) and VOCs.

The 1962 fire insurance plan indicates that a "Chinese Laundry" was present on the corner of Gertrude Street and Lock Street, approximately 70 m south of the Site. The Operation of Dry Cleaning Equipment is a PCA as defined by O. Reg. 153/04, which given its proximity, represents an APEC for the Site. On this basis, the former Chinese Laundry operation to the south of the Site is identified in this report as APEC C as it represents a potential impact to groundwater quality at the Site with respect to VOCs.

Review of the 1962 FIP indicates that several building additions have been constructed on the commercial and retail buildings east of the Site, adjacent to Lakeport Road. Several buildings and

building additions have also been constructed in the area of the dry dock to the southeast of the Site, including a mould loft and punch shed.

The 1962 FIP indicates that Lakeside Park occupied lands north of the Site including a carousel ride, pavilions, shelters and a boat storage and repair facility. A gasoline UST associated with the boat storage and repair facility was located along the western edge of the former Welland Canal. Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles is a PCA as defined in O. Reg. 153/04, however, it does not represent an APEC for the Site given its distance and the inferred northerly direction of groundwater flow in this area (down gradient to the Site). The former presence of a gasoline UST is a PCA as Gasoline and Associated Products Storage in Fixed Tanks are defined as such in O. Reg. 153/04. However, the gasoline UST does not represent an APEC given its distance and the inferred northerly direction of groundwater flow in this area (down gradient to the Site).

The 1962 FIP indicates that the properties located southeast of the Site, on the east side of Lakeport Road were occupied by Lake Sand and Building Supplies (two buildings and piled sand), a Legion Hall (equipped with a boiler room), a rowing club (two boat houses and a hall a vacant), a vacant auto service building and associated underground petroleum storage tank, and Lincoln Fabrics (five vacant buildings and a fuel oil tank). The former operation of petroleum storage tanks on the auto garage and Lincoln Fabrics properties falls under Gasoline and Associated Products Storage in Fixed Tanks and are PCAs. In addition, the auto service garage falls under Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles is a PCA. However, they do not represent APECs for the Site given their distance and inferred easterly direction of groundwater flow in this area (cross gradient to the Site). Lincoln Fabrics was operated for Textile Manufacturing and Processing and is a PCA. Lincoln Fabrics does not represent an APEC for the Site due to its distance and the inferred easterly direction of groundwater flow in this area (cross-gradient to the Site).

4.1.4 Chain of Title

GHD contracted Blaylock & Associates to conduct a search of the Property title records. Blaylock & Associates obtained information from the applicable Land Registry Office through access to the electronic Land Titles system.

The Property is described as Part of Lot 21, Concession I, Township of Grantham, now Port Dalhousie Lots 3, 4, 5, 6, 7 and 16. The Property Identification Number (PIN) for the Site is 46195-0690 LT. The following entities were reported to be associated with ownership or occupation of the Property:

Lot 3 – Northwestern Portion of the Site

Registered Owner(s)	Ownership Period
Nathan H. Pawling	August 22, 1894 to November 2, 1959
The Corporation of The Village of Port Dalhousie	November 2, 1959 to January 31, 1966
The Public Utilities Commission of Port Dalhousie	January 31, 1966 to January 2, 1976
Thomas and Lucy LaFlamme	January 2, 1976 to November 21, 1983

Registered Owner(s)	Ownership Period
Bernard J. Rowan, Ian T.P. Rowan and Bernard J. Rowan	November 21, 1983 to June 26, 1987
The Rowan Sprinkler Company Ltd.	June 26, 1987 to February 18, 1988
Valarie Ann and Rastislav Kruty	February 18, 1988 to May 30, 1991
Rusty Kruty Realty Inc.	May 30, 1991 to June 19, 1992
Rastislav Kruty	June 19, 1992 to October 31, 1996
Rastislav Kruty in Trust	October 31, 1996 to September 23, 2003
1184557 Ontario Inc.	September 23, 2003 to Unknown
Port Dalhousie Vitalization Corporation	Unknown to June 13, 2017
Union Waterfront Inc.	June 13, 2017 to Present

Lots 4 and 5 Part 1 – Southwestern Portion of the Site

Registered Owner(s)	Ownership Period
Nathan H. Pawling	September 26, 1896 to July 12, 1913
Annie Holmes	July 12, 1913 to December 23, 1938
Frank Scott, Estate of Frank Scott	December 23, 1938 to November 2, 1959
Murray H. Scott	November 2, 1959 to January 31, 1966
Port Dalhousie Public Utilities Commission	January 31, 1966 to January 2, 1976
Thomas and Lucy LaFlamme	January 2, 1976 to November 21, 1983
Bernard J. Rowan, Ian T.P. Rowan and Bernard J. Rowan	November 21, 1983 to June 26, 1987
The Rowan Sprinkler Company Ltd.	June 26, 1987 to February 18, 1988
Valarie Ann and Rastislav Kruty	February 18, 1988 to May 30, 1991
Rusty Kruty Realty Inc.	May 30, 1991 to September 2, 1999
Rastislav Kruty	September 2, 1999 to September 23, 2003
1149853 Ontario Inc.	September 23, 2003 to Unknown
Port Dalhousie Vitalization Corporation	Unknown to June 13, 2017
Union Waterfront Inc.	June 13, 2017 to Present

Lots 4 and 5 Part 2 – Southwestern Portion of Site

Registered Owner(s)	Ownership Period
County of Lincoln	July 30, 1912 to April 5, 1913
John Johnson	April 5, 1913 to December 23, 1938
Frank Scott, Estate of Frank Scott	December 23, 1938 to November 27, 1959
Murray Scott	November 27, 1959 to January 31, 1966
Port Dalhousie Public Utilities Commission	January 31, 1966 to January 2, 1976
Thomas and Lucy LaFlamme	January 2, 1976 to November 21, 1983
Bernard J. Rowan, Ian T.P. Rowan and Bernard J. Rowan	November 21, 1983 to June 26, 1987
The Rowan Sprinkler Company Ltd.	June 26, 1987 to February 18, 1988

Registered Owner(s)	Ownership Period
Valarie Ann and Rastislav Kruty	February 18, 1988 to May 30, 1991
Rusty Kruty Realty Inc.	May 30, 1991 to October 31, 1996
Rastislav Kruty in Trust	October 31, 1996 to September 23, 2003
1184557 Ontario Inc.	September 23, 2003 to Unknown
Port Dalhousie Vitalization Corporation	Unknown to June 13, 2017
Union Waterfront Inc.	June 13, 2017 to Present

Lot 6 – Southern Central Portion of the Site

Registered Owner(s)	Ownership Period
Nathan H. Pawling and Robert Laurie	February 23, 1878 to May 27, 1881
Ellen Howse	May 27, 1881 to October 20, 1896
Henry Rolk, Estate of Henry Rolk	October 20, 1896 to June 6, 1901
Catharine Pearson	June 6, 1901 to July 5, 1932
Michael, John and Mary Harrigan and Margaret Howse	July 5, 1932 to January 17, 1947
John Harrigan, Mary Harrigan and the Estate of John Harrigan	January 17, 1947 to April 15, 1948
Peter and Annie Ruddy	April 15, 1948 to December 15, 1972
Margaret Erskine	December 15, 1972 to March 16, 1973
Rita Lake	March 16, 1973 to April 29, 1981
Wilfred Cheredaryk	April 29, 1981 to January 3, 1986
Kurt and Veronica Rathfelder	January 3, 1986 to July 30, 1987
Harold Arthur Coles	July 30, 1987 to April 14, 2000
Valarie Ann Kruty	April 14, 2000 to September 3, 2009
1405230 Ontario Limited	September 3, 2009 to Unknown
Port Dalhousie Vitalization Corporation	Unknown to June 13, 2017
Union Waterfront Inc.	June 13, 2017 to Present

Lot 7 – Southeastern Portion of Site

Registered Owner(s)	Ownership Period
Edward McArdle	March 21, 1871 to March 25, 1871
Nathan Pawling	March 25, 1871 to January 30, 1903
Patrick Harrigan and John McNulty	January 30, 1903 to April 3, 1937
Michael J. Harrigan, John Harrigan and Mary Harrigan	April 3, 1937 to November 7, 1951
Austin Hotel Ltd.	November 7, 1951 to May 31, 1954
Harry Winiewski, Garry Winiewski and Stanley Winiewski	May 31, 1954 to Unknown
Mortgage Foreclosure (default)	Unknown to January 16, 1961
Estate of Frank T. Wyman	January 16, 1961 to July 20, 1965
Peter J. Ruby and Robez Donnelly Limited	July 20, 1965 to Unknown
George and Grace Hicul	Unknown

Registered Owner(s)	Ownership Period
Foreclosure (default)	Unknown to June 27, 1966
Robert Donnelly Limited and Peter J. Ruby	June 27, 1966 to July 23, 1969
Joe Rogola Sr., Jow Rogola Jr., and Frank Rogola	July 23, 1969 to October 26, 1970
Michael Panchyshyn	October 26, 1970 to May 8, 1972
Michael and Helen Panchyshyn	May 8, 1972 to August 11, 1976
Albert and Irene Moore	August 11, 1976 to December 21, 1977
Steven Werchohlad and Arthur J. Smith	December 21, 1977 to July 8, 1982
Arthur Smith	July 8, 1982 to July 24, 1987
Norma and Arthur J. Smith	July 24, 1987 to May 3, 1988
Arthur J. Smith	May 3, 1988 to August 29, 2003
Port Dalhousie Projects Inc.	August 29, 2003 to Unknown
Port Dalhousie Vitalization Project	Unknown to June 13, 2017
Union Waterfront Inc.	June 13, 2017 to Present

Lot 16 Part 1 – Northeastern Portion of Site

Registered Owner(s)	Ownership Period
Nathan and Mathilda Pawling	July 21, 1888 to December 7, 1916
Bella Dufferin and John Ferguson (died)	December 7, 1916 to August 7, 1925
Minnie Mary Ferguson	August 7, 1925 to August 7, 1951
The Niagara, St. Catharines and Toronto Railway Company	August 7, 1951 to January 22, 1971
Sidney H. Brookson	January 22, 1971 to April 29, 1985
The Corporation of the City of St. Catharines	April 29, 1985 to July 6, 1989
Donatelli Productions Ltd.	July 6, 1989 to October 10, 1996
Lakeport Foods Inc.	October 10, 1996 to December 9, 2003
1184540 Ontario Inc.	December 9, 2003 to Unknown
Port Dalhousie Vitalization Corporation	Unknown to June 13, 2017
Union Waterfront Inc.	June 13, 2017 to Present

Lot 16 Part 2 – Eastern Central Portion of Site

Registered Owner(s)	Ownership Period
Edward McArdle	March 24, 1871 to March 25, 1871
Nathan Pawling	March 25, 1871 to May 31, 1878
Barney (Bernardd) McGrath	May 31, 1878 to Unknown
John and Michael Rogers	Unknown to Unknown

Registered Owner(s)	Ownership Period
Mortgage Default	Unknown to August 11, 1881
The Security Loan and Savings Co. St. Catharines	August 11, 1881 to September 17, 1894
Harvey Neelon, Estate of Harvey Neelon	September 17, 1894 to September 23, 1894
Mary A. Neelon	September 23, 1894 to June 29, 1900
John Stanton	June 29, 1900 to February 18, 1905
George F. Peterson	February 18, 1905 to March 30, 1932
Samuel Houston, Estate of Samuel Houston	March 30, 1932 to December 1, 1936
Samuel A. Houston	December 1, 1936 to March 3, 1942
Louis J. Marck	March 3, 1942 to December 4, 1944
Darwin R. Challinger	December 4, 1944 to April 7, 1945
Wilfred H. Maxwell	April 7, 1945 to May 22, 1946
Yoroslaw Knit	May 22, 1946 to July 31, 1951
Dnytro and Anna Chaikowski	July 31, 1951 to November 6, 1953
Albert Plata, Albert Yanik and Stanley Plata	November 6, 1953 to December 12, 1962
Port Hotel Limited	December 12, 1962 to May 31, 1979
Scott A. Pegg	May 31, 1979 to July 6, 1989
Donatelli Productions Limited	July 6, 1989 to October 10, 1996
Lakeport Foods Inc.	October 10, 1996 to December 9, 2003
1184540 Ontario Inc.	December 9, 2003 to Unknown
Port Dalhousie Vitalization Corporation	Unknown to June 13, 2017
Union Waterfront Inc.	June 13, 2017 to Present

Easements in favour of Bell Canada and The Consumers Gas Company exist along the central portion of the Property and the northwest Property boundary, respectively.

No leases, environmental liens, identified encumbrances, or other interests of potential environmental concern were reported to be associated with the Site through completion of the Property title search. A copy of the Property title search documents that were obtained by GHD are provided in Appendix C.

A survey plan dated 1988 was also included with the chain-of-title information. The survey identifies the three existing buildings in their present-day configuration. A copy of the survey plan is included in Appendix D.

4.1.5 City Directories

Historical city directories generally document the occupants of municipal addresses on a yearly basis. GHD contracted Environmental Risk Information Services (ERIS) to provide historical city directories for the Site. ERIS summarized city directories for the years 1952, 1957, 1962, 1967, 1972, 1977, 1982, 1987,1992, 1997, 2002, 2007 and 2012.

The city directory search indicated that, for the years searched, the Site and surrounding properties have historically consisted of mixed commercial and residential use including retail and restaurant use.

A copy of the city directory search documents that were obtained by GHD are provided in Appendix E.

4.1.6 Environmental Reports

One previous environmental report and one geotechnical report, which included an environmental component are known to have been completed for the Site. The titles of these reports are:

- Environmental Screening, Union Waterfront Property – Port Dalhousie, 16 Lock Street and 12 Lakeport Road, Port Dalhousie, Ontario (GHD Limited, January 2019)
- Geotechnical Investigation, Proposed Commercial/Residential Development, Port Dalhousie, Ontario (Soil-Mat Engineers and Consultants Ltd., July 8, 2004)

A summary of each of the environmental reports reviewed by GHD is provided below and reflects the conditions at the time that the reports were prepared.

4.1.6.1 2019 Environmental Screening

In December 2018 and January 2019, GHD conducted an Environmental Screening Program at the Site on behalf of Rankin. A total of three boreholes were installed and instrumented as groundwater monitoring wells, and four existing on-Site monitoring wells were located as a part of the screening program. Fill materials consisting of silty sand, sandy silt and clayey silt were identified during the drilling activities. Soil and groundwater samples were collected and analyzed and the data were compared against the Table 3 full depth generic site condition standards in a non-potable groundwater condition, residential/parkland/institutional property use, developed by the MECP and presented in “Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (MECP, April 15, 2011)”.

The report identified the presence of select PAHs and metals in soils on the northwestern corner of the Property at concentrations exceeding current generic soil quality standards. No elevated contaminant concentrations were identified in the groundwater. The presence of elevated concentrations of PAHs and metals in soils within the northwestern portion of the Property has been identified as APEC D. Methylene chloride was detected in soil on the adjacent property to the east at a concentration exceeding the applicable generic soil quality standards. However, due to the inferred south easterly direction of groundwater flow (down gradient of the Site), it does not represent an APEC for the Site.

4.1.6.2 2004 Geotechnical Investigation

Soil-Mat Engineers and Consultants Ltd. (Soil-Mat) conducted a Geotechnical Investigation at the Site on behalf of the Port Dalhousie Vitalization Corporation. The investigation identified the presence of peat fill across the west central portion of the Site. Investigations into methane gas generation associated with the peat fill identified methane gas concentrations above 500 parts per million (ppm) at soil gas probes installed within the peat material. No other environmental concerns

were raised in the report. The presence of peat fill (producing methane gas) in the central portion of the Site has been identified as APEC F.

4.2 Environmental Source Information

4.2.1 Regulatory Review

Facility personnel reported that no concerns, complaints, notices of violation, or directives of an environmental nature have been issued against the Site by federal, provincial, or municipal environmental regulatory agencies. This is consistent with the findings of the environmental databases search presented in Section 4.2.2.

The MECP was contacted by GHD to provide information regarding any past complaints, violations, and/or MECP directives concerning the Site through a Freedom of Information Act request. The response received from the MECP indicates that, after a thorough search of their files, they identified no records associated with the Site. A copy of the MECP response is included in Appendix F.

The Technical Standards and Safety Authority (TSSA) was contacted by GHD and asked to provide information concerning licensed USTs (retail fuel outlets) or registered USTs (private fuel outlets) located at the Site. TSSA personnel provided email correspondence to GHD dated January 17, 2019 indicating that their records did not identify any registered or licensed fuel storage tanks associated with the Site. A copy of the correspondence from the TSSA is provided in Appendix F.

4.2.2 Environmental Database Search

GHD contracted Environmental Risk Information Services (ERIS) to conduct a search of available federal, provincial, and private environmental databases. Based on the address of the Site, the database search was completed to assess environmental conditions within the Phase One Study Area. The number of records identified for the Site and for the Phase One ESA Study Area is identified in the following table. A distance of 0.25 kilometres was selected to ensure that all properties within the Phase One Study Area were included in the database search. A summary of the pertinent findings from the database search related to the Site is provided below.

Database	Number of Records	
	Phase One Property	Phase One Study Area (0 - 250 m)
Federal Databases		
Dry Cleaning Facilities (**DRYCLEANERS**)	None	0
Environmental Effects Monitoring (**EEM**)	None	0
Environmental Issues Inventory System (**EIIS**)	None	0
Federal Convictions (**FCON**)	None	0
Federal Contaminated Sites (**FCS**)	None	2
A search of the FCS database, covering the period from June 2000 to October 2018, indicates there two records for sites within 250 m of the Site. Both records are associated with contamination on Federal land approximately 150 m northwest of the Site, at the Port Dalhousie		

Database	Number of Records	
	Phase One Property	Phase One Study Area (0 - 250 m)
Marina. The first record indicates that Fisheries and Oceans Canada reported the presence of a former coal storage area which caused PAH and PHC contamination within the soil. Annual data from 2006-2018 indicates that no remediation has been completed at the Site. The second record indicates a historical review conducted in 2010 shows no contamination identified at the Port Dalhousie Marina and that no further action is required. Based on the distance of the former coal storage from the Site and the inferred northerly direction of groundwater flow (down gradient from the Site), it is unlikely that the PAH and PHC impacted soils have impacted soil or groundwater quality at the Site. Therefore, the PAH and PHC impacted soils do not represent an APEC at the Site.		
Fisheries & Oceans Fuel Tanks (**FOFT**)	None	6
A search of the FOFT database, covering the period of 1964 to September 2017, indicates there are six records within 250 m of the Site. These records are all associated with underground storage tanks (USTs) located approximately 150 m northwest of the Site. They indicate the presence of a 4,500 litre (L) single wall UST for diesel that was installed in 1987 and one 4,500L UST for gasoline that was installed in 1991. It is unclear if the material of construction for these two tanks was steel of fibreglass reinforced plastic. The location of the two USTs is also unclear as the there is reference to the Port Dalhousie Yacht Club, which is located approximately 250 metres northeast of the Site on the east side of the old Welland canal. The presence of underground gasoline/diesel tanks fall under Gasoline and Associated Products Storage in Fixed Tanks and is a PCA however, it does not represent an APEC given its proximity to the Site and inferred northerly direction of groundwater flow in this area (down gradient to the Site).		
Greenhouse Gas Emissions from Large Facilities (**GHG**)	None	0
Indian & Northern Affairs Fuel Tanks (**IAFT**)	None	0
National Analysis of Trends in Emergencies System (**NATES**)	None	0
National Defence & Canadian Forces Fuel Tanks (**NDFT**)	None	0
National Defence & Canadian Forces Spills (**NDSP**)	None	0
National Defence & Canadian Forces Waste Disposal Sites (**NDWD**)	None	0
National Energy Board Pipeline Incidents (**NEBI**)	None	0
National Energy Board Wells (**NEBW**)	None	0
National Environmental Emergencies System (**NEES**)	None	0
National PCB Inventory (**NPCB**)	None	0
National Pollutant Release Inventory (**NPRI**)	None	0
Parks Canada Fuel Storage Tanks (**PCFT**)	None	0
Transport Canada Fuel Storage Tanks (**TCFT**)	None	0
Provincial Databases		
Abandoned Aggregate Inventory (**AAGR**)	None	0
Aggregate Inventory (**AGR**)	None	0

Database	Number of Records	
	Phase One Property	Phase One Study Area (0 - 250 m)
Abandoned Mines Information System (**AMIS**)	None	0
Boreholes (**BORE**)	None	1
A search of the BORE database, covering the period of 1875 to July 2014, indicates there is one record for a site within 250 m of the Site. This record indicates the stratigraphy in the area generally consists of sand and gravel fill with silt and wood to approximately 3 metres below ground surface which overlies silt till with sand to a depth of 6.9 metres below ground surface. Weathered shale bedrock is present at approximately 6.9 metres below ground surface.		
Certificates of Approval (**CA**)	2	8
A search of the CA database, dated October 2011, indicates there are two records associated with the Site and 8 records for sites within 250 m of the Site. The first on-Site record was associated with 1049569 Ontario Inc. for an industrial air approval in 1995 and the second record was associated with an industrial air approval for Regional Municipality of Niagara for a standby diesel generator in 1994. The 8 records within 250 m of the Site were associated with the following: • Regional Municipality of Niagara related to the construction of water mains and sewers in 1993 (two records), and municipal sewage in 1994 (one record) • City of St. Catharines related to the municipal water approval in 1993 (two records). • Blue Onion Delhi related to an industrial air approval in 1988 (one record). • James Andrew Vanderburgh related to a municipal sewage approval in 1999 (one record). • 768716 Ontario Ltd. for an industrial air approval in 1995 (one record).		
Commercial Fuel Oil Tanks (**CFOT**)	None	0
Coal Gasification Plants (**COAL**)	None	0
Compliance and Convictions (**CONV**)	None	0
Certificates of Property Use (**CPU**)	None	0
Drill Holes (**DRL**)	None	0
Emergency Management Historical Event (**EMHE**)	None	0
Environmental Activity and Sector Registry (**EASR**)	None	0
Environmental Registry (**EBR**)	None	0
Environmental Compliance Approval (**ECA**)	None	2
A search of the ECA database, covering the period from October 2011 to December 2018, indicates there are two records for sites within 250 m of the Site. These records were associated with the approval and revoking and/or replacement of one passive gas venting trench ventilation system in 2001 for the City of St. Catharines.		
Environmental Penalty Annual Report (**MISA PENALTY**)	None	0
List of TSSA Expired Facilities (**EXP**)	None	0
Fuel Storage Tank (**FST**)	None	0
Fuel Storage Tank – Historical (**FSTH**)	None	0
Ontario Regulation 347 Waste Generators Summary (**GEN**)	None	22

Database	Number of Records	
	Phase One Property	Phase One Study Area (0 - 250 m)
A search of the GEN database, covering the period from 1986 to June 2018, indicates there are 22 records for sites within 250 m of the Site. These records are summarized below: • Lincoln Fabrics, located 230 meters southeast of the Site, generator of petroleum distillates, waste oils and lubricants and other specified inorganics • Compressor Systems International Inc. located 150 m south of the Site, generator of waste oils and lubricants • Bell Canada, located 150 m south of the Site, generator of polychlorinated biphenyls (PCB) • Poutsie Dentistry Professional Corp., located approximately 50 m south of the Site, generator of pathological waste No generators of halogenated solvents were identified during the search of the GEN database.		
TSSA Historical Incidents (**HINC**)	None	1
A search of the HINC database, covering the period from 2006 to July 2018, indicates there is one records for a site within 250 m of the Site. This record is associated with a release of natural gas (air) at 12 Main Street, approximately 80 m southwest of the Site which occurred due to a pipeline strike in May 2009.		
TSSA Incidents (**INC**)	None	0
Landfill Inventory Management Ontario (**LIMO**)	None	0
Mineral Occurrences (**MNR**)	None	0
Non-Compliance Reports (**NCPL**)	None	0
Ontario Oil and Gas Wells (**OOGW**)	None	0
Ontario Inventory of PCB Storage Sites (**OPCB**)	None	0
Orders (**ORD**)	None	0
Pesticide Register (**PES**)	None	0
TSSA Pipeline Incidents (**PINC**)	None	0
Private and Retail Fuel Storage Tanks (**PRT**)	None	0
Permit to Take Water (**PTTW**)	None	0
Ontario Regulation 347 Waste Receivers Summary (**REC**)	None	0
Record of Site Condition (**RSC**)	None	0
Ontario Spills (**SPL**)	None	6
A search of the WWIS database, covering the period from 1988 to September 2018, indicates there are six records for sites within 250 m of the Site. These records are summarized below: • Release of 115 litres of hydraulic oil to pavement from truck equipment failure, 26 Lakeport Road, located adjacent to the Site. Environmental impacts were not anticipated. • Release of raw unchlorinated sewage from a forcemain break at the corner of Lakeport Street and Lock Street, adjacent to the Site. Environmental impacts were not anticipated'		

Database	Number of Records	
	Phase One Property	Phase One Study Area (0 - 250 m)
• Release of an unknown quantity of grease from an overflowing grease bin at the corner of Lock and Main Streets, adjacent to the Site. Given the record indicates the spill was to a lot and nearby catch basins, any releases to the environment at this property are not likely to affect Site soil or groundwater. • Release of 1,820 litres of diesel fuel on the west side of Twelve Restaurant located at 61 Lakeport Road, approximately 210 m southeast of the Site in 2005. This record indicates that diesel fuel was released to Lake Ontario and surface water pollution may have resulted • Release of 0.75 cubic metres (m^3) of red shale silt to the beach located at 10 Dalhousie Avenue, approximately 175 m west of the Site. This record does not indicate if there was any environmental impact associated with the spill, however given the limited quantity and distance from the Site, it is unlikely that it would have impacted Site groundwater. • Release of an unknown quantity of petroleum oil at the St. Catharines Game and Fish Lodge located at 61 Lighthouse Road, approximately 250 m east of the Site. This record indicated that petroleum oil was released onto the launch dock and into Lake Ontario and that minor environmental consequences may have resulted. Given the types and quantities of materials released and their relative proximity to from the Site, it is unlikely that any of these releases have impacted soil or groundwater quality at the Site.		
Wastewater Discharger Registration Database (**SRDS**)	None	0
Variances for Abandonment of Underground Storage Tanks (**VAR**)	None	0
Waste Disposal Sites – MOE CA Inventory (**WDS**)	None	0
Waste Disposal Sites – MOE 1991 Historical Approval Inventory (**WDSH**)	None	1
A search of the WDSH database, dated October 1990, indicated there is one record for a site within 250 m of the Site. The closed record was associated with a property on Lakeport Road approximately 245 m southeast of the Site. No other information was given in the record other than there was no potential for impact to humans or the environment. Given the distance from the site and inferred easterly direction of groundwater flow (cross-gradient to the Site), historical disposal of municipal waste at this location is not likely to have impacted soil or groundwater quality at the Site. Therefore, although waste disposal and waste management is a PCA, this PCA does not represent an APEC at the Site.		
Water Well Information System (**WWIS**)	1	9
A search of the WWIS database, dated December 2017 indicates there is one record associated with the Site and 9 records for sites within 250 m of the Site. The record associated with the Site is for a monitoring well installed to a depth of 9.1 m below ground surface (bgs) in February 2010. The 9 records within 250 m of the Site were associated with the following: • One record for a monitoring well abandonment (9.1 m deep) at 6 Dalhousie Avenue, located approximately 85 m northeast of the Site. • Five records for monitoring wells installed to depths of 7.62, 4.27, 4.27, 4.27, 4.57 m bgs located at 57 Lakeport Road, approximately 140 m southeast of the Site in March 2017.		

Database	Number of Records	
	Phase One Property	Phase One Study Area (0 - 250 m)
• One record for a monitoring well installed to a depth of 3.75 m bgs located at 80 Lighthouse Road, approximately 250 m northeast of the Site in November 2005. • One record for a monitoring well installed to a depth of 4.57 m bgs located at 6 Gary Road, approximately 200 m northwest of the Site in March 2014. • One record for a monitoring well installed approximately 215 metres south of the Site in March 2016.		
Private Databases		
Anderson's Waste Disposal Sites (**ANDR**)	None	1
A search of the ANDR database, covering the period of 1860 to present, indicates there is one within 250 m of the Site. This record is associated with the former Lakeport Road dump located at the corner of Lakeport Road and Canal Street, approximately 230 m southwest of the Site. The dump was reportedly used for municipal waste disposal in the 1960s and 1970s. Given its proximity to the Site and the inferred easterly direction of groundwater flow in this area (cross gradient to the Site), historical disposal of municipal waste at this location is not likely to have impacted soil or groundwater quality at the Site. Therefore, although waste disposal and waste management is a PCA, this PCA does not represent an APEC at the Site.		
Automobile Wrecking & Supplies (**AUWR**)	None	0
Chemical Register (**CHEM**)	None	0
Compressed Natural Gas Stations (**CNG**)	None	0
ERIS Historical Searches (**EHS**)	1	4
A search of the EHS database, covering the period from 1999 to October 2018, indicates there is one record associated with the Site and 4 records for sites within 250 m of the Site. The record for the Site is dated December 2016. The 4 records for sites with 250 include: • 38 Lakeport Road, adjacent to the Site in June 2012 • 57 Lakeport Road, located approximately 180 m southeast of the Site in June 2013 and August 2016 • 61 and 63 Lakeport Road, located approximately 250 metres south of the Site in November, 2018		
Canadian Mine Locations (**MINE**)	None	0
Oil and Gas Wells (**OGW**)	None	0
Canadian Pulp and Paper (**PAP**)	None	0
Retail Fuel Storage Tanks (**RST**)	None	2
A search of the RST database, covering the period from 1999 to July 2018, indicates there are two records for sites within 250 m of the Site. These two records are associated with the St. Catharines Fish and Game Association located at 61 Lighthouse Road, approximately 250 m east of the Site. No other information was provided in these records. The operation of underground fuel storage tanks fall under Gasoline and Associated Products Storage in Fixed Tanks and is a PCA however, it does not represent an APEC given its proximity to the Site on the opposite side of the old Welland canal.		
Scott's Manufacturing Directory (**SCT**)	None	3

Database	Number of Records	
	Phase One Property	Phase One Study Area (0 - 250 m)
A search of the RST database, covering the period from 1992 to March 2011, indicates there are three records for sites within 250 m of the Site. These three records are all associated with Lincoln Fabrics Limited located at 63 Lakeport Road (230 m southeast of the Site) and described as a broad-woven fabric and man made fiber and silk mill.		
Anderson's Storage Tanks (**TANK**)	None	0

The complete database search report, which also identifies limitations associated with this information, is included in Appendix G.

4.3 Physical Setting Sources

The Site is located in an urban area of St. Catharines. The Site and surrounding area have been developed since at least the mid 1800s for commercial, retail and residential land use.

4.3.1 Aerial Photographs

Aerial photographs were reviewed to generally document the development of the Site and properties in the vicinity of the Site, and to identify the existence of any PCAs or APECs at the Site. Aerial photographs of the Site and surrounding area were obtained by GHD from the National Air Photo Library for the years 1931, 1954, 1965, 1973 and 1988, and for the years 2000, 2002, 2006, 2010, 2013 and 2015 from aerial imagery available through Niagara Navigator[2]. Aerial photographs were chosen for review based on their scale, resolution and coverage. Copies of the aerial photographs obtained from the National Air Photo Library are included in Appendix H. The air photos chosen for review are summarized below.

1931 Aerial Photograph (Scale 1:15,000): Review of the 1931 aerial photograph indicates that the Site was developed at that time. Nine commercial buildings, including two of the three current day buildings (Hotel and the Jail House), were present across the Site. Lock Street bounded the Site to the south and Lakeport Road bounded the Site to the west. The Site was bounded to the east by several commercial buildings. An open space was located north of the Site and Lakeside Beach was located further northwest. Several structures of varying size and geometry were present on Lakeside beach. A large industrial building was located north of the Site, adjacent to the canal wall (identified as boat storage and repair operations on the 1962 FIP). Several commercial buildings occupied the lands to the south Site. Lock No. 1 of the second Welland Canal and dry docks were present to the southeast of the Site. Several freight carrying boats were present to the south and east of the Site within the old Welland canal and Port Dalhousie Harbour. Residential properties were located further west and south from the Site. The Old Welland Canal falls under Port Activities Including the Operation and Maintenance of Wharves and Docks and is a PCA. However, due to its proximity to the Site and easterly direction of groundwater flow (cross gradient from the Site), this PCA does not represent an APEC at the Site.

[2] https://maps.niagararegion.ca/navigator/, Niagara Region Navigator

1954 Aerial Photograph (Scale 1:15,000): Review of the 1954 aerial photograph indicates that there had been no significant changes in land use on the Site since 1931, with the exception of the removal of a large rectangular building (ice house according to the 1922 FIP) in the central portion of the Site. Several additions have been constructed on the adjacent commercial properties to the south and east of the Site. Lock No. 1 had been filled in to facilitate the expansion of Lakeport Road. A replacement lock had been constructed further to the southeast. Large piles of stockpiled material (identified as sand in the 1962 FIP) were present on the property to the east of the former Lock No.1.

1965 Aerial Photograph (Scale 1:15,000): Review of the 1965 aerial photograph indicates that there had been no significant changes in land use on the Site since 1954. Additional commercial buildings were present to the south and east of the Site including the construction of a small building on the corner of Main Street and Lock Street. The 1962 fire insurance plan suggests that this building was operated as a Taxi business. It appears that the entirety of Martindale Pond had been drained upstream of Lock No.1 and that land reclamation around Henley Island to the south of the Site was underway at that time.

1973 Aerial Photograph (Scale 1:20,000): The 1973 aerial photograph indicates that there had been no significant changes in land use on the Site since 1965. The small building on the corner of Main Street and Lock Street on the 1965 aerial photograph was not present on the 1973 aerial photograph. Many of the structures present on Lakeside Beach on the 1965 aerial photograph are no longer present of the 1973 aerial photograph. The dry docks, located southwest of the Site, had been infilled and the alignment of the Welland Canal had been altered significantly since 1965. The spillway north of the Lincoln Fabrics building appears to have been infilled along with the lock associated with the shipping channel of the Old Welland Canal. The inlet east of the Lincoln Fabrics building had been converted to a marina for leisure and recreational water craft. Weirs associated with the former lock remained in operation to sustain water levels in the upstream portion of Twelve Mile Creek comprising Martindale Pond. The Henley Island land reclamation appears to have been completed.

1988 Aerial Photograph (Scale 1:9,000): The 1988 aerial photograph indicates that that there had been no significant changes in land use on the Site since 1973. A large rectangular building had been constructed on the corner of Main Street and Lock Street. Hogans Alley bounded the Site to the east. The buildings located north of the Site (identified as boat storage and repair operations on the 1962 FIP) were no longer present. A large asphalt parking area had been constructed to the north of the Site. The 1988 aerial photograph also indicates that areas of Martindale Pond southeast of the Site had been infilled and reclaimed for use as parking lots and parkland.

2000-2015 Niagara Navigator Digital Imagery: Review of the aerial imagery from 2000 to 2015 indicate the removal of a large rectangular commercial building in the southwest corner of the Site in 2015 (building foundations remain in place) and the presence of beach volleyball courts in the north central portion of the Site. The current condominium sales office/suites replaced the beach volleyball courts in 2010. A small commercial building located on the west side of the Hotel was demolished in approximately 2015. The 2000 to 2015 aerial photographs also indicate the configuration of the marina, east of Lakeport Road has changed significantly. Further land reclamation activities extending into Martindale Pond had been undertaken to the south form the present day Rennie Park.

4.3.2 Topography, Hydrology, Geology

The slope of the Site and surrounding area is shown on the topographic map provided in Appendix I. Site topographic relief is approximately 6 metres, sloping from Lock Street to the south towards Lakeport Road to the north. The elevation of the Site ranges from approximately 83 metres above mean sea level (AMSL) to 77 metres AMSL.

The Site is a part of the Great Lakes – St. Lawrence Basin Watershed[3]. Local hydrology is influenced by the presence of Lake Ontario to the north, the Martindale Pond to the southeast and Twelve Mile Creek to the east of the Site.

Quaternary geological maps indicate that overburden at the Site consists primarily glaciolacustrine nearshore and deltaic sand. Silt and modern beach sand and gravel fill is identified to the north of the Site, at Lakeside Park[4]. Bedrock in the area of the Site is identified as the Queenston Formation, consisting of shale, limestone, dolostone and siltstone[5]. While quaternary mapping indicates that bedrock is approximately 15 to 20 m bgs[6], borehole investigations completed at and in the vicinity of the Site indicate that depth to bedrock at the Site ranges from 6 to 12 m bgs.

4.3.3 Fill Materials

Fill materials of unknown origin are present across the western portion of the Site. The source and quality of the fill material is not known. Importation of Fill Material of Unknown Quality and is a PCA as defined in O. Reg. 153/04 and represents an APEC for the Site. This has been identified as APEC F as it represents a potential impact to soil quality at the Site with respect to VOCs, PAHs, PHCs, and metals.

4.3.4 Water Bodies and Areas of Natural Significance

No water bodies are located on the Site. Water bodies located in the Phase One Study Area include the inlet to Lake Ontario (Lower Twelve Mile Creek) located approximately 60 metres east of the Site, Lake Ontario approximately 190 metres north of the Site, the former marina and historical weir outfall area approximately 350 metres southeast of the Site and Martindale Pond located approximately 220 metres to the southeast of the Site.

GHD reviewed the Ontario Ministry of Natural Resources and Forestry's – "Natural Heritage Information Centre" database and the Niagara Peninsula Conservation Authority (NPCA) to identify nearby Areas of Natural or Scientific Interest (ANSI). No ANSIs or significant ecological areas (SEAs) were identified for properties located within the Phase One Study Area.

The NPCA indicated that the Site overlies a highly vulnerable aquifer and the northern approximately 30 metres of the Property are susceptible to shoreline flooding and erosion.

4.3.5 Well Records

Based on a review of the MECP Water Well Information System Database included in the ERIS database search outlined in Section 4.2.1, one water well was identified at the Site. Nine water wells

[3] Ontario Flow Assessment Tool, Ontario Ministry of Natural Resources and Forestry, 2019
[4] Map 2496, Quaternary Geology of Southern Ontario, Niagara-Welland Sheet, Scale 1:50 000, 1997
[5] Map 2544, Bedrock Geology of Ontario, Southern Sheet; scale 1:1 000 000, 1991
[6] Map P2400, Bedrock Topography of the Niagara and Niagara-on-the-Lake Area, Southern Ontario, Scale 1:50 000, 1981

were identified in the WWIS database within the Phase One Study Area. The wells ranged in depth from 3.75 m bgs to 9.1 mbgs. The stratigraphy encountered at these monitoring wells generally consisted of brown fill underlain by brown to grey coarse sand and silt. Bedrock consisting of the Queenston Shale is present at approximately 7 m bgs.

There were no potable groundwater wells identified in the database search at the Site or within the Phase One Study Area.

4.4 Site Operating Records

The Site is currently vacant and has been since the early 2000's with the exception of sales office for the condominium units associated with the redevelopment of the Property, which has been vacant for the past three years. The Site has never been operated as a garage, bulk liquid dispensing facility or as a dry cleaner. On this basis, the Site is not considered an enhanced investigation property under O. Reg. 153/04, and review of Site operating records is not required as part of this Phase One ESA.

5. Interviews

Ms. Melissa Pley and Mr. Greig Chapman of GHD interviewed the following personnel as part of the Phase One ESA:

Facility Contact	Position	Date of Interview	Years Familiar with the Property
Mr. Evan McCullagh	Estate Administrator - Spergel	Jan. 25, 2019	0.5
Ms. Judy Pihach	Manager of Planning Services – City of St. Catharines	Jan. 29, 2019	33
Mr. Doug Todd	Local Resident and Historian	January 31, 2019	49

The above-listed facility personnel were identified to GHD as being the most knowledgeable about the historical and current use of the Property. Mr. Evan McCullagh is the estate administrator for Spergel (receiver of the Property). Mr. McCullagh has only been familiar with the Site since August 2018. Ms. Judy Pihach is the City of St. Catharines' current manager of planning services and has been a resident of the area since 1986. Mr. Doug Todd is a local historian/archeologist and has been a resident of the area from approximately 1969 to the early 2000's.

The interviews completed were focused on the information obtained from the records review, the historical and current use of the Property, and the topics listed in Sections 13 and 14 of Schedule D of O. Reg. 153/04. The information provided to GHD during the interview was compared to other information sources reviewed by GHD. Where contradictions were identified, written documentation was relied upon. Relevant information provided to GHD during the interview has been summarized within the following sections of the report.

6. Site Reconnaissance

6.1 General Requirements

On January 25, 2019, Mr. Greig Chapman and Ms. Melissa Pley of GHD completed a Site inspection of the buildings and lands located at 16 Lock Street in St. Catharines, Ontario. Weather conditions during the Site inspection were sunny with an ambient air temperature of approximately -1.5 degrees Celsius. The ground was snow covered. At the time of the Site inspection, the Site was vacant. GHD was accompanied by Mr. McCullagh of Spergel during the inspection of the Property. The length of time of the inspection and interview was approximately three hours and commenced at 9:00 am.

The Site reconnaissance included a walk-through of the Property to confirm the current Site conditions and identify any current PCAs that may represent APECs for the Site. Access to basement, second and third floors, and roof of the building in the southern portion of the Site (present day Hotel) was not provided due to safety concerns. Adjoining and neighbouring properties were observed from the Site and public access ways.

Photographs of the building and Property are included in Appendix J.

6.2 Specific Observations at Phase One Property

6.2.1 Buildings and Property

The Property is approximately 0.38 hectares (0.93 acres) in size and is occupied by three buildings, an asphalt paved parking lot, gravel paved parking areas, and grass/vegetation covered areas. The buildings are approximately 380 square metres (4,100 square feet), 200 square metres (2,150 square feet), and 25 square metres (270 square feet) in size and are located on the southeast, north and northwest portions of the Property, respectively. Properties adjacent to the Site include asphalt paved roadways and laneways, residences, restaurants, a coffee house, brewery, retail outlets, parkland and parking lots.

The Site buildings included the following:

- Hotel – Three-story building with a basement located in the southeast portion of the Site. The hotel has been vacant and boarded up since approximately 2000. The interior of the hotel was in very poor condition at the time of the Site inspection. Several holes were present throughout the main floor and insulation, wiring, drywall, and tiles were hanging off the walls and ceiling of the building. The main floor of the hotel had been used as a bar/restaurant at one time. An electrical room was located along the north wall of the building. The staircases to the second and third floors had been removed and access to the roof and basement could not be gained due to safety concerns. As such, GHD did not have access to the basement, second floor, third floor, or the roof of the building to complete a detailed visual inspection.

  Based on visual observations and discussions with facility personnel, the hotel appears to have been constructed with a concrete foundation, concrete block exterior walls with brick veneer, and a flat tar and gravel ballast roof. The interior walls of the building are constructed of wood framing with drywall or lath and plaster finish. The main floor of the building was finished with

various materials including carpet, ceramic tile, vinyl tile, concrete, and wood. Based on the age of the building (1871) it is possible that hazardous materials including lead based paint, asbestos, polychlorinated biphenyls, and urea formaldehyde insulation may be present.

According to facility personnel, an elevator is not present in the hotel.

- Sales Office/Show Suites – Single story building with a crawlspace located in the northern portion of the Site. This building was constructed in approximately 2010. Based on visual observations and discussions with facility personnel, the building is constructed of a concrete block foundation, structural wood frame, exterior thermal glazing and vinyl siding, and a flat asphalt/gravel roof. GHD did not have access to inspect the roof or the crawl space at the time of the Site inspection. The interior of the building consists of a furnished two bedroom show suite, office area, and sales area.
- Jail House – Single story building with no basement located in the northwest portion of the Site. This is a designated historic building that was constructed in 1845. The building is constructed of a concrete slab on grade floor, brick and mortar exterior walls, lath and plaster walls interior walls, and a sloped wooden framed roof finished with asphalt shingles. Portions of the wall plaster material were in poor condition. A fluorescent lighting fixture is located on the central portion of the ceiling.

  A 3 inch diameter capped plastic pipe is visible protruding from the ground surface adjacent to the southwest corner of the building. The purpose of this plastic pipe could not be confirmed by GHD, however it is not deemed to be associated with a UST due to its plastic construction.

6.2.2 Current Site Operations

There are currently no operations being conducted at the Site. All three on Site buildings are vacant and all utility services have been terminated.

6.2.3 Historical Site Operations

The Site was first developed by John McNulty in 1871 for commercial use as a hotel and dry goods store. In 1896, the Property was re-named the 'Austin House Hotel.' This hotel was reportedly the first hotel in the area to have indoor plumbing and electricity. The hotel remained as the 'Austin House Hotel' until 1977, when it was renovated extensively and renamed the 'Lakeside hotel.' The hotel was designated a historic property in 1980 due to it's historical significance to the area [7]. The former hotel currently resides on the southern boundary of the Property, along Lock Street.

The 'Jail House' located on the northwestern corner of the Site was originally built in the 1845, adjacent to the first Welland Canal. Known as being one of Canada's oldest jails, with wood-burning fireplaces, this building was designated historic in 1979[8].

The southwestern portion of the Property was historically occupied by various commercial buildings. A 'Hydro Building' existed at the corner of Lock Street and Main Street from the 1950's until the late

[7] Heritage Assessment Report – Port Dalhousie Commercial Core, Spencer R.Higgins, Architect Incorporated, May 2005

[8] Heritage Assessment Report – Port Dalhousie Commercial Core, Spencer R.Higgins, Architect Incorporated, May 2005

1980s, when the building was converted to a commercial bar[9]. Based on a review of aerial photographs, it is estimated that this building was demolished between 2010 and 2013.

Based on review of historical documentation and conversations with facility personnel, the Site has been used for commercial, retail, and residential use. These operations date back to the time the original buildings were constructed at the Site in the mid-1800s and continued until approximately 2000, when the Site was sold for redevelopment as residential condominiums and retail outlets.

6.2.4 Utility Services

According to facility personnel and based on a review of available documentation, electrical service to the Site is available through St. Catharines Hydro and natural gas service is available through Enbridge. The Site (hotel and sales center buildings) is serviced with municipal potable water and sanitary sewer services. It is GHDs understanding that electricity, natural gas, and potable water have been turned off at the Site for several years. Storm water is directed overland to catch basins located along Lakeport Road.

According to facility personnel there has never been a water supply well or septic system located at the Site. At the time of the Site inspection, GHD did not observe any evidence suggesting that the Site contains a water supply well or on Site septic system.

The hotel building that occupies the southern corner of the Property was constructed in 1871. It is likely that this building was heated with either fuel oil or coal at one time. Gasoline and Associated Products Storage in Fixed Tanks is a PCA as defined in O. Reg. 153/04. The former storage of heating oil is a PCA that represents a potential APEC for the Site and has been identified as APEC G as it represents a potential impact to soil and groundwater quality with respect to PHCs and PAHs.

6.2.5 Underground Storage Tanks (USTs)

According to facility personnel, no USTs have been or are presently owned or operated at the Site, to their knowledge. No physical evidence suggesting the presence of USTs (e.g., vent pipes, fill pipes, etc.) was observed by GHD at the time of the Site inspection. This is consistent with the findings of the environmental databases review and the information provided by the TSSA.

6.2.6 Above Ground Storage Tanks (ASTs)

According to facility personnel no ASTs are operated at the Site. At the time of the Site inspection, GHD did not observe any active ASTs or evidence suggesting the past presence of ASTs or releases therefrom. However, due to safety concerns, GHD did not have access to inspect the basement of the hotel building. According to facility personnel, the Site may have been heated by fuel oil in the past. The historical use of fuel oil on the Site has been identified as an APEC in Section 6.2.4.

[9] Heritage Assessment Report – Port Dalhousie Commercial Core, Spencer R.Higgins, Architect Incorporated, May 2005

6.2.7 Floor Drains, Pits, and Sumps

Floor drains are located in the washrooms sales office/show suite building. These floor drains are reportedly connected to the municipal sanitary sewer system. Due to the very poor condition of the hotel building and the limited access provided during the Phase One inspection, GHD did not observe any floor drains, pits, or sumps, in this building.

No other floor drains, pits, or sumps were observed by GHD during the Site inspection.

6.2.8 Wastewater/Sewers

No wastewaters are currently generated at the Site.

6.2.9 Storm Water/Surface Water

Storm water generated at the Site consists of rainfall that is collected on the building roofs and exterior asphalt/gravel covered, and grassed areas. Storm water from the building roofs is directed to rainwater leaders which discharge to ground surface. Storm water collected on the ground surface is routed by overland flow to the north where it is collected by catch basins and discharged to the municipal storm sewer system.

Storm water runoff from some of the adjacent properties to the east is directed towards the Site. At the time of the Site inspection, no visual evidence of impact from storm water run-on from the adjacent properties was observed.

6.2.10 Enhanced Investigation Property

In accordance with O. Reg. 153/04 subsections 13(3) and 32(1)(b), a Phase One ESA Property is considered to be an Enhanced Investigation Property if it is currently used or has ever been used in whole or in part for industrial use, or as an automotive repair garage, a bulk liquid dispensing facility (including a gasoline outlet), or for the operation of dry cleaning equipment. The Site is not currently in use and has not historically been used for these purposes. As such, the Site is not considered an Enhanced Investigation Property.

All reasonable inquiries were made to obtain and review the material referred to in Section 4.4 by GHD with respect to the former use at the Site, however no records were available. According to Site personnel, no records associated with the historical Site operations exist.

6.3 Written Description of Investigation

The Phase One ESA included a records review, interviews with k personnel, Site reconnaissance, and a review and evaluation of the information obtained during the assessment. The Site reconnaissance included a walk-through of the Property to confirm the current Site conditions and identify any PCAs that represent APECs for the Site. Adjoining and neighbouring properties were observed from the Site and public access ways and land usage within the Phase One Study Area was reviewed.

The findings from the assessment carried out pursuant to Sections 13 and 14 of Schedule D of O. Reg. 153/04 were previously discussed in Section 4 (records review) and Section 6 (interviews and Site reconnaissance).

7. Review and Evaluation of Information

7.1 Current and Past Uses

A summary of the current and past uses of the Site is provided below.

Lot 3 – Northwestern Portion of the Site

Year(s)	Name of Owner	Description of Property Use	Property Use	Other Observations
1894-1959	Nathan H. Pawling	Jail House	Institutional	Title search, aerial photographs and fire insurance plans indicate that a jail house occupied the northwest corner of the Site.
1959-1966	The Corporation of The Village of Port Dalhousie			
1966-1976	The Public Utilities Commission of Port Dalhousie			
1976-1983	Thomas and Lucy LaFlamme			
1983-1987	Bernard J. Rowan, Ian T.P. Rowan and Bernard J. Rowan			
1987-1988	The Rowan Sprinkler Company Ltd.			
1988-1991	Valarie Ann and Rastislav Kruty			
1991-1992	Rusty Kruty Realty Inc.			
1992-1996	Rastislav Kruty			
1996-2003	Rastislav Kruty in Trust			
2003-Unknown	1184557 Ontario Inc.			
Unlknown-2017	Port Dalhousie Vitalization Corporation			
2017-Present	Union Waterfront Inc.			

Lots 4 and 5 Part 1– Southwestern Portion of the Site

Year(s)	Name of Owner	Description of Property Use	Property Use	Other Observations
1896-1913	Nathan H. Pawling	Unknown	Unknown	Title Search
1913-1938	Annie Holmes	Ice House, Waiting Room	Commercial	Title search, aerial photographs and fire insurance plans indicate that an ice house and a

Year(s)	Name of Owner	Description of Property Use	Property Use	Other Observations
				waiting room occupied this portion of the Site
1938-1959	Frank Scott, Estate of Frank Scott	Unknown	Unknown	Title Search
1959-1966	Murray H. Scott	Vacant building	Unknown	Title search, previous reports, aerial photographs and fire insurance plans indicate that a vacant building occupied this portion of the Site
1966-1976	Port Dalhousie Public Utilities Commission	Hydro Building	Unknown	Title search, previous reports, aerial photographs and fire insurance plans indicate that a hydro building occupied this portion of the Site
1976-1983	Thomas and Lucy LaFlamme			
1983-1987	Bernard J. Rowan, Ian T.P. Rowan and Bernard J. Rowan			
1987-1988	The Rowan Sprinkler Company Ltd.			
1988-1991	Valarie Ann and Rastislav Kruty			
1991-1999	Rusty Kruty Realty Inc.			
1999-2003	Rastislav Kruty	Hydro Building, Rum Jungle, Patio	Commercial	Title search, previous reports, aerial photographs and fire insurance plans indicate that a commercial bar with outdoor patio and former Hydro building occupied this portion of the Site
2003-Unknown	1149853 Ontario Inc.			
Unknown-2017	Port Dalhousie Vitalization Corporation	Unknown	Unknown	Title search
2017-Present	Union Waterfront Inc.			

Lots 4 and 5 Part 2– Southwestern Portion of the Site

Year(s)	Name of Owner	Description of Property Use	Property Use	Other Observations
1912-1913	County of Lincoln	Unknown	Unknown	Title Search
1913-1938	John Johnson	Ice House, Waiting Room	Commercial	Title search, aerial photographs and fire insurance plans indicate that an ice house and a

Year(s)	Name of Owner	Description of Property Use	Property Use	Other Observations
				waiting room occupied this portion of the Site
1938-1959	Frank Scott, Estate of Frank Scott	Unknown	Unknown	Title Search
1959-1966	Murray Scott	Vacant building	Unknown	Title search, previous reports, aerial photographs and fire insurance plans indicate that a vacant building occupied this portion of the Site
1966-1976	Port Dalhousie Public Utilities Commission	Hydro Building	Unknown	Title search, previous reports, aerial photographs and fire insurance plans indicate that a hydro building occupied this portion of the Site
1976-1983	Thomas and Lucy LaFlamme			
1983-1987	Bernard J. Rowan, Ian T.P. Rowan and Bernard J. Rowan			
1987-1988	The Rowan Sprinkler Company Ltd.			
1988-1991	Valarie Ann and Rastislav Kruty			
1991-1996	Rusty Kruty Realty Inc.			
1996-2003	Rastislav Kruty in Trust	Hydro Building, Rum Jungle, Patio	Commercial	Title search, previous reports, aerial photographs and fire insurance plans indicate that a commercial bar with outdoor patio and former Hydro building occupied this portion of the Site
2003-Unknown	1184557 Ontario Inc.			
Unknown-2017	Port Dalhousie Vitalization Corporation	Unknown	Unknown	Title Search
2017-Present	Union Waterfront Inc.			

Lot 6 – Southern Central Portion of the Site

Year(s)	Name of Owner	Description of Property Use	Property Use	Other Observations
1878-1881	Nathan H. Pawling and Robert Laurie	Unknown	Unknown	Title Search
1881-1896	Ellen Howse			

Year(s)	Name of Owner	Description of Property Use	Property Use	Other Observations
1896-1901	Henry Rolk, Estate of Henry Rolk			
1901-1932	Catharine Pearson			
1932-1947	Michael, John and Mary Harrigan and Margaret Howse			
1947-1948	John Harrigan, Mary Harrigan and the Estate of John Harrigan			
1948-1972	Peter and Annie Ruddy	Store	Commercial	Title search, aerial photographs and fire insurance plans indicate that a store occupied this portion of the Site
1972-1973	Margaret Erskine			
1973-1981	Rita Lake			
1981-1986	Wilfred Cheredaryk			
1986-1987	Kurt and Veronica Rathfelder			
1987-2000	Harold Arthur Coles			
2000-2009	Valarie Ann Kruty			
2009-Unknown	1405230 Ontario Limited	Unknown	Unknown	Title search
Unknown-2017	Port Dalhousie Vitalization Corporation			
2017-Present	Union Waterfront Inc.			

Lot 7 – Southeast Portion of Site

Year(s)	Name of Owner	Description of Property Use	Property Use	Other Observations
1871	Edward McArdle	Hotel	Commercial	Title search, previous reports, aerial photographs and fire insurance plans indicate that a hotel occupied this portion of the Site
1871-1903	Nathan Pawling			
1903-1937	Patrick Harrigan and John McNulty			
1937-1951	Michael J. Harrigan, John Harrigan and Mary Harrigan			
1951-1954	Austin Hotel Ltd.			
1954-Unknown	Harry Winiewski, Garry Winiewski and Stanley Winiewski			

Year(s)	Name of Owner	Description of Property Use	Property Use	Other Observations
Unkown-1961	Mortgage Foreclosure (default)			
1961-1965	Estate of Frank T. Wyman			
1965-Unknown	Peter J. Ruby and Robez Donnelly Limited			
Unknown	George and Grace Hicul			
Unknown-1966	Foreclosure (default)			
1966-1969	Robert Donnelly Limited and Peter J. Ruby			
1969-1970	Joe Rogola Sr., Jow Rogola Jr., and Frank Rogola			
1970-1972	Michael Panchyshyn			
1972-1976	Michael and Helen Panchyshyn			
1976-1977	Albert and Irene Moore			
1977-1982	Steven Werchohlad and Arthur J. Smith	Hotel	Unknown	Title search, previous reports, aerial photographs and fire insurance plans indicate that a hotel (now a historic building) occupied this portion of the Site
1982-1987	Arthur Smith			
1987-1988	Norma and Arthur J. Smith			
1988-2003	Arthur J. Smith			
2003-Unknown	Port Dalhousie Projects Inc.			
Unkown-2017	Port Dalhousie Vitalization Project			
2017-Present	Union Waterfront Inc.			

Lot 16 Part 1 – Northeastern Portion of Site

Year(s)	Name of Owner	Description of Property Use	Property Use	Other Observations
1888-1916	Nathan and Mathilda Pawling	Unknown Building	Unknown	Title search, fire insurance plans and aerial photographs indicate that a large building occupied this portion of the Site
1916-1925	Bella Dufferin and John Ferguson (died)			
1925-1951	Minnie Mary Ferguson			
1951-1971	The Niagara, St. Catharines and Toronto Railway Company			
1971-1985	Sidney H. Brookson	Unknown	Unknown	Title search
1985-1989	The Corporation of the City of St. Catharines	Unknown Building	Unknown	Title search and aerial photographs indicate that a small building occupied this portion of the Site
1989-1996	Donatelli Productions Ltd.	Unknown	Unknown	Title search
1996-2003	Lakeport Foods Inc.			
2003-Unknown	1184540 Ontario Inc.	Volleyball Courts	Unknown	Title search and aerial photographs indicate that volleyball courts occupied this portion of the Site
Uknown-2017	Port Dalhousie Vitalization Corporation	Sales Office	Commercial	Title search, Site reconnaissance and aerial photographs indicate that a commercial sales office occupies this portion of the Site
2017-Present	Union Waterfront Inc.			

Lot 16 Part 2 – Eastern Central Portion of Site

Year(s)	Name of Owner	Description of Property Use	Property Use	Other Observations
1871	Edward McArdle			
1871-1878	Nathan Pawling	Unknown	Unknown	Title search
1878-Unknown	Barney (Bernardd) McGrath			
Uknown-1881	Mortgage Default			
1881-1894	The Security Loan and Savings Co. St. Catharines			

Year(s)	Name of Owner	Description of Property Use	Property Use	Other Observations
1894	Harvey Neelon, Estate of Harvey Neelon			
1894-1900	Mary A. Neelon			
1900-1905	John Stanton	Ice House, Unknown Buildings	Unknown	Title search, fire insurance plans and aerial photographs indicate that various buildings including an ice house occupied this portion of the Site
1905-1932	George F. Peterson			
1932-1936	Samuel Houston, Estate of Samuel Houston	Unknown	Unknown	Title Search
1936-1942	Samuel A. Houston			
1942-1944	Louis J. Marck			
1944-1945	Darwin R. Challinger			
1945-1946	Wilfred H. Maxwell			
1946-1951	Yoroslaw Knit			
1951-1953	Dnytro and Anna Chaikowski			
1953-1962	Albert Plata, Albert Yanik and Stanley Plata	Residential Garage	Unknown	Title search, fire insurance plans and aerial photographs indicate that two residential garages occupied this portion of the Site
1962-1979	Port Hotel Limited			
1979-1989	Scott A. Pegg	Unknown Buildings	Unknown	Title search, fire insurance plans and aerial photographs indicate that various buildings occupied this portion of the Site
1989-1996	Donatelli Productions Limited	Unknown	Unknown	Title Search
1996-2003	Lakeport Foods Inc.	Outdoor Patio	Commercial	Title search, fire insurance plans and aerial photographs indicate that various buildings occupied this portion of the Site
2003-Unknown	1184540 Ontario Inc.			
Unknown-2017	Port Dalhousie Vitalization Corporation	Unknown	Unknown	Title search
2017-Present	Union Waterfront Inc.	Storage of Christmas Market Huts	Unknown	Title search, site reconnaissance and aerial photographs indicate that huts owned by an adjacent property owner occupy this portion of the Site

7.2 Potentially Contaminating Activities and Areas of Potential Environmental Concern

The MECP provides a list of PCAs in Schedule D of Ontario Regulation 153/04, as amended under the Environmental Protection Act. The PCAs identified in the Phase One Study Area are presented on Figure 3. The following Environmental Issues Matrix summarizes PCAs that have been identified to be on, in, or under the Phase One Property, or located within the Phase One Study Area and having the potential to contribute to an APEC. The APECs identified for the Phase One Property are presented on Figure 4.

AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

Area of Potential Environmental Concern	Location of Potential Environmental Concern on Phase One Property	Potential Contaminating Activity (PCA)	Location of PCA	Source of Information	Contaminants of Potential Concern	Media Potentially Impacted
APEC A: Current Dry Cleaning Operations	Southwest Portion of the Phase One Property	Operation of Dry Cleaning Equipment	Off-Site	Records Review, Site Reconnaissance	VOCs	Groundwater
APEC B: Former UST – Associated with Taxi Stand	Southwest Portion of the Phase One Property	Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	Interviews, Historical Records Review	PHCs and VOCs	Groundwater
APEC C: Former Dry Cleaning Operations	Southwest Portion of the Phase One Property	Operation of Dry Cleaning Equipment	Off-Site	Historical Records Review	VOCs	Groundwater
APEC D: PAH and Metals Impacted Soil	Northwest Portion of the Phase One Property	Not Applicable – Known Condition	On-Site	Previous Environmental Reports	PAHs and metals	Soil
APEC E: Peat Fill Material	West Central Portion of the Phase One Property	Not Applicable – Potential Condition	On-Site	Previous Environmental Reports	Methane Gas	Soil Vapour
APEC F: Fill of Unknown Quality	Western Portion of the Phase One Property	Importation of Fill Material of Unknown Quality	On-Site	Interviews, Historical Records Review	PAHs, PHCs, VOCs, and metals	Soil
APEC G: Former Fuel Oil Use	Southeast Portion of the Phase One Property in Hotel	Former Gasoline and Associated Products Storage in Fixed Tanks	On-Site	Interviews, Site Reconnaissance	PAHs and PHCs	Soil and Groundwater

Notes: VOCs – volatile organic compounds, PAHs – polycyclic aromatic hydrocarbons, PCBs – polychlorinated biphenyls, UFFI – urea formaldehyde foam insulation

Draft Document – For Discussion Only – Final Version May Differ From Draft

7.3 Phase One Conceptual Site Model

The Site is located in an urban area of the City of St. Catharines with history related to the Welland Canal Lock support operations and Lakeside Beach dating back to the mid 1800s. The Phase One Study Area largely consists of lands that were used for commercial, retail, and residential purposes.

It is GHD's understanding that the Phase One ESA is being completed to support potential redevelopment of the Site for mixed commercial and residential land use. As such, the fling of an RSC in accordance with O. Reg. 153/04 is required.

Site topographic relief is six metres, sloping from Lock Street to the south towards Lakeport Road and Port Dalhousie Harbour/Lakeside Beach to the north. The elevation of the Site ranges from 83 metres AMSL to approximately 77 metres AMSL.

Overburden at the Site consists primarily anthropogenic fill material that is likely associated with the construction of the former Welland Canal. Bedrock in the area of the Site forms part of a group belonging to the Queenston Formations, consisting of shale, limestone, dolostone and siltstone, and is approximately 15 to 20 m bgs. The regional groundwater flow direction is expected to be predominantly northerly and easterly towards Lake Ontario and/or Port Dalhousie Harbour.

No water bodies are located on the Site. Port Dalhousie Harbour is located approximately 50 metres east of the Site. Lands to the south, east and west are predominantly commercial, retail and residential. Lands to north are recreational (beach and marina). GHD reviewed the Ontario Ministry of Natural Resources and Forestry's – "Natural Heritage Information Centre" database to identify areas registered as ANSIs. GHD also consulted the ERIS ANSI database. No ANSIs or SEAs were identified for properties located within the Phase One Study Area.

Historical operations at the Site and at off-Site locations as outlined in Section 4 through Section 6, have potentially impacted the environmental quality of the Site. The current and past uses of the Site are summarized in tabular format in Section 7.1. The APECs and contaminants of concern (COCs) are summarized in tabular format in Section 7.2.

The Phase One Conceptual Site Model is shown on Figure 4. The Phase One Conceptual Site Model is based on the information obtained and evaluated as part of this Phase One ESA. While all reasonable inquiry has been made in accordance with O. Reg. 153/04, the accuracy and completeness of all information obtained as part of the Phase One ESA cannot be confirmed. The Phase One Conceptual Site Model evaluated PCAs for the Phase One Study Area based upon diligent professional effort and assessment of the information from the various resources available. Given the inherent limitations of some of the information obtained as part of the Phase One ESA, the Phase One Conceptual Site Model may not represent actual conditions and should only be used by Qualified Persons.

8. Conclusions

8.1 Summary of APECs

Based on the results of the Phase One ESA, including the records review, the Site reconnaissance, and interviews with persons knowledgeable of the historical and current Site operations, and review of information from the MECP, PCAs were identified as representing the following APECs for the Site as defined in O. Reg. 153/04:

APEC A (Current Dry Cleaning Facility): An active dry cleaning facility is located approximately 100 m south of the Site. The Operation of Dry Cleaning Equipment is a PCA as defined in O. Reg. 153/04, which, given its proximity, represents an APEC associated with the Site. On this basis, the dry cleaning facility to the south of the Site is identified in this report as APEC A as it represents a potential impact to groundwater quality at the Site with respect to VOCs.

APEC B (Former Underground Storage Tank Associated with Taxi Stand): A taxi stand and gasoline underground storage tank (UST) were identified on the adjacent property approximately 30 metres south of the Site on the south side of Lock Street on the 1962 FIP. Gasoline and Associated Products Storage in Fixed Tanks is a PCA as defined in O. Reg. 153/04, which, given its proximity, represents APEC associated with the Site. On this basis, the former operation of a gasoline UST to the south of the Site is identified in this report as APEC B as it represents a potential impact to groundwater quality at the Site with respect to petroleum hydrocarbons (PHCs) and VOCs.

APEC C (Former Dry Cleaning Facility): A “Chinese Laundry” identified on the 1962 fire insurance plan as having been operated on the corner of Gertrude Street and Lock Street, approximately 70 m south of the Site. The Operation of Dry Cleaning Equipment is a PCA, which given its proximity to the Site, represents an APEC associated with the Site. On this basis, the former Chinese Laundry operation to the south of the Site is identified in this report as APEC C as it represents a potential impact to groundwater quality at the Site with respect to VOCs.

APEC D (Fill of Unknown Quality): Fill materials of unknown origin are present across the western portion of the Site. The source and quality of the fill material is not known. Importation of Fill Material of Unknown Quality is a PCA as defined in O. Reg. 153/04 and represents an APEC for the Site. This has been identified as APEC D as it represents a potential impact to soil quality at the Site with respect to VOCs, PAHs, PHCs, and metals.

APEC E (PAH and Metals Impacted Soil): A 2019 Environmental Screening Program report identified the presence of select PAHs and metals in soils within the northwestern portion of the Property at concentrations exceeding current generic soil quality standards. The presence of elevated concentrations of PAHs and metals in soils within the northwestern portion of the Property has been identified as APEC E.

APEC F (Peat Fill Material): A 2004 Geotechnical Investigation report identified the presence of peat fill across the west central portion of the Site. Investigations into methane gas generation associated with the peat fill identified methane gas concentrations above 500 parts per million (ppm) at soil gas probes installed within the peat material. The presence of peat fill producing methane gas in the central portion of the Site has been identified as APEC F.

APEC H (Former Fuel Oil Use): The hotel building was constructed in 1871. It is likely that this building was either heated with fuel oil or coal at one time. Gasoline and Associated Products Storage in Fixed Tanks is a PCA as defined in O. Reg. 153/04. The former storage of heating oil is a PCA that represents a potential APEC for the Site and has been identified as APEC H as it represents a potential impact to soil and groundwater quality with respect to PHCs and PAHs.

8.2 Phase Two Requirement Before an RSC is Submitted

Based on the information obtained in completing this Phase One ESA, a Phase Two ESA is required before an RSC can be filed with the MECP. The Phase Two ESA should evaluate the risk of soil and/or groundwater impact to the Site from all identified APECs in accordance with the requirements of O. Reg. 153/04 as well as the potential for methane gas generation from reported buried peat at the Site.

8.3 Record of Site Condition Based on Phase One ESA Alone

Based on the information obtained in completing this Phase One ESA, a Phase Two ESA is required to support the filing of an RSC for residential redevelopment of the Property. A Phase One ESA alone cannot be used to support an RSC filing for the Property for residential land use given that PCAs representing APECs for the Property have been identified.

8.4 Signatures

The Phase One ESA was completed by the GHD employees named herein. All findings and conclusions of the Phase One ESA are included in the report.

All of Which is Respectfully Submitted,

GHD

Greig Chapman, P. Eng.

Marc Gaudet, P. Eng.

9. References

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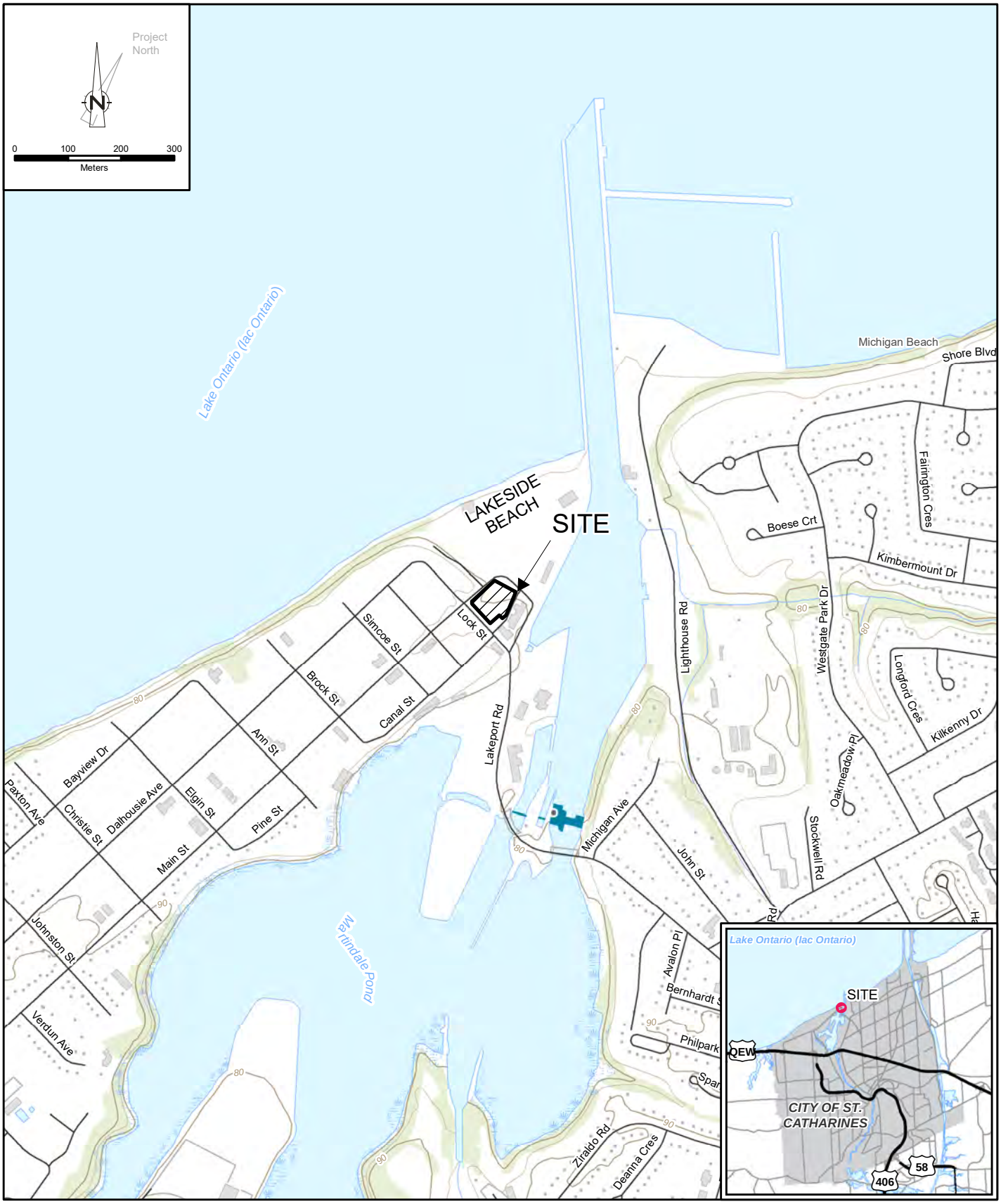
about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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Figures



Source: MNRF NRVIS, 2019. Produced by GHD under licence from Ontario Ministry of Natural Resources and Forestry, © Queen's Printer 2019.
Coordinate System: NAD 1983 UTM Zone 17N

RANKIN CONSTRUCTION INC.
16 LOCK STREET, ST. CATHARINES, ONTARIO
PHASE ONE ENVIRONMENTAL SITE ASSESSMENT

11189766-00
Feb 19, 2019

SITE LOCATION MAP

FIGURE 1

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LEGEND

PROPERTY BOUNDARY

SHORELINE

LAKESIDE BEACH

MUNICIPAL PUMP STATION

ASPHALT - PAVED PARKING LOT

LANDSCAPED

GARY ROAD

RESIDENTIAL

MAIN STREET

JAIL HOUSE

LAKEPORT ROAD

SALES OFFICE

GRASS/VEGETATIVE COVERED

ASPHALT -PAVED PARKING LOT

RESIDENTIAL

HOGAN'S ALLEY

VACANT LOT

GRAVEL COVERED

MAIN STREET

COMMERCIAL/RETAIL

LOCK STREET

HOTEL

RESTAURANTS/RETAIL

COMMERCIAL/RETAIL

LANDSCAPED

OLD WELLAND CANAL

RESIDENTIAL

CANAL STREET

COMMERCIAL/RETAIL

COMMERCIAL/RETAIL

0 8 16 24m

PROJECT NORTH

RANKIN CONSTRUCTION INC.
16 LOCK STREET, ST. CATHARINES, ONTARIO
PHASE ONE ENVIRONMENTAL SITE ASSESSMENT

11189766-00

Feb 20, 2019

SITE PLAN

FIGURE 2

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LEGEND

PROPERTY BOUNDARY

SHORELINE

POTENTIALLY CONTAMINATING ACTIVITIES (PCAs)

PCA#1	UKNOWN FILL
PCA#2	DRY CLEANING FACILITY
PCA#3	FORMER FUEL OIL USE
PCA#4	DRY DOCK
PCA#5	LOCKS AND CANALS
PCA#6	WELD SHOP/METAL FABRICATION
PCA#7	FERRY LANDING
PCA#8	FORMER FUEL UST
PCA#9	FORMER DRY CLEANING FACILITY
PCA#10	BOAT STORAGE AND REPAIR FACILITY
PCA#11	AUTO SERVICE GARAGE
PCA#12	LINCOLN FABRICS
PCA#13	METHYLENE CHLORIDE IMPACT
PCA#14	PEAT FILL
PCA#15	LAKEPORT ROAD DUMP
PCA#16	BULK STORAGE OF SAND

LAKESIDE BEACH
PCA#8

DALHOUSIE AVENUE
GARY ROAD
MUNICIPAL PUMP STATION
PCA#1
ASPHALT - PAVED PARKING LOT
LANDSCAPED
PCA#5
LAKEPORT ROAD
RESIDENTIAL
JAIL HOUSE
PCA#14
SALES OFFICE
PCA#1
MAIN STREET
GRASS/VEGETATIVE COVERED
PCA#1
PCA#9
ASPHALT -PAVED PARKING LOT
HOGAN'S ALLEY
PCA#1
PCA#3
VACANT LOT
PCA#13
GERTRUDE STREET
RESIDENTIAL
GRAVEL COVERED
MAIN STREET
COMMERCIAL/RETAIL
PCA#8
HOTEL
PCA#3
LOCK STREET
RESTAURANTS/ RETAIL
COMMERCIAL/RETAIL
COMMERCIAL/RETAIL
PCA#2
PCA#9
LANDSCAPED
PCA#10
PCA#8
PCA#7
PCA#5
OLD WELLAND CANAL
RESIDENTIAL
CANAL STREET
COMMERCIAL/RETAIL
PCA#1
PCA#16
PCA#5
PCA#11
PCA#8
PCA#5
COMMERCIAL/RETAIL
PCA#8
LAKEPORT ROAD
PCA#5
PCA#6
PCA#4
PCA#1
PCA#15
PCA#8
PCA#12

0 10 20 30m

PROJECT NORTH

RANKIN CONSTRUCTION INC.
16 LOCK STREET, ST. CATHARINES, ONTARIO
PHASE ONE ENVIRONMENTAL SITE ASSESSMENT

SITE PLAN OF
POTENTIALLY CONTAMINATING ACTIVITIES (PCAs)

11189766-00
Feb 21, 2019

FIGURE 3

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LEGEND

PROPERTY BOUNDARY

SHORELINE

LAKESIDE BEACH

AREAS OF POTENTIAL ENVIRONMENTAL CONCERN
(APECs)

APEC A	DRY CLEANING FACILITY
APEC B	FORMER UST - ASSOCIATED WITH FORMER TAXI STAND
APEC C	FORMER DRY CLEANING FACILITY
APEC D	PAH AND METALS IMPACTED SOIL
APEC E	PEAT FILL
APEC F	UNKNOWN FILL
APEC G	HAZARDOUS MATERIALS
APEC H	FORMER FUEL OIL USE

MUNICIPAL PUMP STATION

ASPHALT - PAVED PARKING LOT

GARY ROAD

LANDSCAPED

RESIDENTIAL

MAIN STREET

APEC D

JAIL HOUSE

LAKEPORT ROAD

APEC E

SALES OFFICE

GRASS/VEGETATIVE COVERED

APEC F

ASPHALT -PAVED PARKING LOT

APEC A
APEC B
APEC C

RESIDENTIAL

GRAVEL COVERED

VACANT LOT

HOGAN'S ALLEY

HOTEL

APEC G
APEC H

RESTAURANTS/RETAIL

MAIN STREET

COMMERCIAL/RETAIL

LOCK STREET

COMMERCIAL/RETAIL

COMMERCIAL/RETAIL

LANDSCAPED

OLD WELLAND CANAL

COMMERCIAL/RETAIL

RESIDENTIAL

CANAL STREET

COMMERCIAL/RETAIL

0 8 16 24m

PROJECT NORTH

RANKIN CONSTRUCTION INC.
16 LOCK STREET, ST. CATHARINES, ONTARIO
PHASE ONE ENVIRONMENTAL SITE ASSESSMENT

11189766-00

Feb 20, 2019

CONCEPTUAL SITE MODEL

FIGURE 4

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Appendices

Appendix A
Project Personnel Curriculum Vitae

Marc Gaudet

Qualified: Bachelor of Applied Science (B.A.Sc.) – Civil Engineering/Water Resources Option (The University of Waterloo)

Connected: Registered Professional Engineer (Ontario); Qualified Person (QP) as defined in Ontario Regulation 153/04; Executive Member of Niagara PEO Chapter; Director, BLOOM (not for profit organization whose mission is to bring together public and private sector stakeholders to achieve sustainable outcomes that manage risk and deliver economic, environmental and social benefit)

Professional Summary: Mr. Gaudet has over 24 years of professional experience in environmental engineering and remediation with areas of specialty in brownfield redevelopment and environmental due diligence. Mr. Gaudet has been extensively involved in Site Investigations, Phase One and Phase Two ESAs, Site Remediation, and Brownfield Redevelopment in Canada and the United States. Past experience also includes the planning and implementation of Environmental Compliance Assessments in Canada and the United States.

Decommissioning/Brownfield Redevelopment

- Project Manager responsible for overseeing an MOECC approved Risk Assessment and Risk Management Plan on behalf of LIUNA for implementation at a former commercial/residential block in downtown Hamilton, Ontario to support a Record of Site Condition filing and facilitate its redevelopment as a high rise residential and commercial condominium.
- Project Manager responsible for overseeing environmental due diligence including a Phase I ESA, a Phase II ESA and remediation on behalf of LIUNA at the former Lister Building in downtown Hamilton, Ontario to facilitate its redevelopment as a high rise residential and commercial condominium.
- Project Manager responsible for overseeing the development and implementation of a decommissioning and remediation plan for a 100-year old farm implement manufacturing plant for Deere and Company in Welland, Ontario including the successful filing of a Record of Site Condition to facilitate sale and redevelopment of the property.
- Project Manager responsible for overseeing environmental due diligence including completion of a Phase One ESA, a Phase Two ESA, Risk Assessment, and filing of a Record of Site Condition for a former chemical blending plant on behalf of Arkema Canada Inc. in Oakville, Ontario to successfully facilitate its sale for redevelopment.
- Project Manager responsible for overseeing the completion of a building decommissioning assessment on behalf of Libbey Glass at their former glass plant in City of Industry, California. Included preparation and oversight of a decommissioning plan, completion of a Phase I ESA, Phase II ESA, arsenic contaminated soil remediation, and preparation of a Risk Assessment to address chlorinated solvent impacted groundwater. Project successfully supported the sale of the property for redevelopment as a shipping and receiving terminal.

Remedial Design

- Project Manager overseeing a chlorinated solvent impacted groundwater investigation on behalf of Toronto Transit Commission involving 150 potentially impacted residential dwellings including source area investigation, groundwater monitoring, soil vapour monitoring, residential indoor air quality monitoring and a Risk Assessment to develop soil vapour and groundwater target concentrations for chlorinated solvents. Included extensive client representation to MOECC and Toronto Public Health.
- Project Manager responsible for overseeing a 3,000-tonne soil and associated groundwater remediation project on behalf of Court Holdings Inc. related to historical petroleum hydrocarbon releases beneath a former plating plant building floor in St. Catharines, Ontario.
- Project Manager responsible for a 5,000-tonne soil and associated groundwater remediation project on behalf of Court Holdings Inc. related to historical petroleum hydrocarbon releases beneath a former tool and die shop building floor in Beamsville, Ontario.
- Project Manager responsible for remediation/management of chlorinated solvent contaminated soil and groundwater on behalf of Libbey Glass at their former glass plant in Wallaceburg, Ontario. Remediation included chemical oxidation of chlorinated solvent impacted soil and groundwater, groundwater quality monitoring, indoor air quality monitoring, and implementation of a passive soil vapour venting system including application for and receipt of all necessary MOECC approvals.

Environmental Due Diligence

- Completion of multiple Phase I ESAs and Phase II ESAs on behalf of St. Clair College as pre-purchase/sale environmental due diligence including:
  - A vacant property on Crawford Avenue in Windsor, Ontario preparatory to purchase by St. Clair for redevelopment.
  - A vacant building and associated land in Windsor, Ontario preparatory to purchase by St. Clair for redevelopment.
  - The former Thamesview Lodge long-term care facility in Windsor, Ontario preparatory to purchase by St. Clair for redevelopment.
- Completion of over 500 Phase I Environmental Site Assessments and Phase II Environmental Site Assessments at facilities in Canada and the United States. Selected experience listed below:
  - Steel manufacturing plants
  - Bus maintenance garages
  - Automotive parts manufacturing
  - Large aggregate extraction and processing.
  - Closed and operating landfill sites
  - International equipment manufacturer and retailer
  - 1.5-million-square-foot diesel electric locomotive and light armored vehicle manufacturing facility
  - Funeral homes, cemeteries, and crematories
  - Metal fabrication facilities
  - Chemical blending facilities
  - Paint manufacturing facility
  - Refrigerated warehouse facility
  - Trucking and distribution facilities
  - Drycleaning facilities
  - Railway lines and service facilities
  - Numerous rental car facilities
  - Dairy facilities
  - Lighting fixture manufacturing facilities
  - Glass manufacturing facilities

Work history

May 1991 – present	Principal/Vice President, GHD (formerly Conestoga-Rovers & Associates), St. Catharines, ON
	Named Principal, 2007
	Named Associate, 2002

Greig Chapman

Qualified: Civil Engineering, Water Resources, University of Waterloo, Civil Engineering, University of New Brunswick

Connected: Registered Professional Engineer – Alberta (APEGA), Saskatchewan (APEGS), and Ontario (PEO)

Professional Summary: Greig has over 20 years of professional experience in environmental engineering, remediation, and project management. This experience includes conducting Phase I Environmental Site Assessments; Environmental Compliance Assessments; development and implementation of Phase II environmental site investigations; risk assessment; landfill site design and monitoring; design and implementation of remedial systems; and site decommissioning. Greig has managed numerous multi-disciplinary commercial and industrial projects across Canada and the United States.

Site Investigation, Remediation, and Project Management

Portfolio Manager
Shell Canada Limited and Shell Global Solutions Canada | 2010 - present

Responsibilities include client interface and management; health and safety stewardship, development of E2E strategies, providing technical guidance and support to internal project managers, identification of cost savings and cost avoidance opportunities, and ensuring projects are completed on time and within budget.

Shell's downstream portfolio consists of approximately 100 sites of varying complexity from annual monitoring to active remediation, risk assessment, and decommissioning. These sites are located across Canada.

Shell's upstream portfolio consists of approximately 60 sites located primarily in the foothills of western Alberta. The projects are provided by both Legacy and Decommissioning and Reclamation (DAR) groups and include Phase 1 and 2 Environmental Site Assessments, remediation, and reclamation activities.

Project Manager
Environmental Site Assessments/Remediation | Urban Centers | Alberta | 2007 - present

Project Manager responsible for the completion of over 100 Phase I and II ESAs, risk assessments, remediation's, and site decommissioning's at commercial/industrial facilities located in Edmonton, Calgary, Lethbridge, Lloydminster, Grande Prairie, Red Deer, Peace River, High Level and Medicine Hat. The work included discussions and negotiations with regulatory agencies, municipalities and various other stakeholders.

Project Manager
Environmental Site Assessments | Various Projects | Canada and the USA | 1996 - present

Project Manager for the completion of over 300 Phase I ESAs at commercial/industrial facilities across Canada and the United States. Operations assessed at these facilities included machining, painting, forging, stamping, wastewater treatment, asphalt manufacturing, pipeline yards, wood processing, carbon graphite manufacturing, food production, assembly, maintenance, refuelling, wood product manufacturing, paper production facilities, aerospace manufacturing, and warehousing. These assessments were conducted in accordance with CSA and ASTM standards.

Project Manager for approximately 100 Environmental Compliance Assessments of commercial/industrial facilities across Canada and the United States.

Project Coordinator
Environmental Site Assessments | Major Oil and Gas Producer | AB | 2008 - 2012

Project Coordinator responsible for the design and implementation Phase 2 ESAs at more than 20 sites across Alberta. The information obtained during the Phase 2 ESAs was used to design and implement annual groundwater monitoring programs and remedial systems.

Project Director
Pigment Manufacturer | North and South America | 1998 - 2010

Project Director responsible for the assessment, investigation, compliance, and remediation for several organic and inorganic pigment manufacturing facilities located in North and South America. Duties also included asset liability and negotiations with regulatory bodies associated with acquisitions and divestitures.

Project Manager
Automotive Tire Manufacturer | Canada | 2007 - 2009

Project Manager responsible for the assessment and removal of numerous underground storage tanks at retail facilities across Canada.

Design Coordinator
Automotive Parts Manufacturing Facility | MI | 2002 - 2007

Design Coordinator for the development and preparation of a Remedial Design work plan and Remedial Design report in accordance with a Unilateral Administrative

Order, issued by the US EPA for a site in Michigan. The Remedial Design Work Plan involved the collection and chemical analyses of approximately 600 soil, groundwater, and sediment samples from a former automotive parts manufacturing facility. The Remedial Design included site assessment, building decommissioning and removals, removal of impacted soils and sediments, removal of designated substances, and construction of a bentonite slurry cut off wall equipped with permeable reactive barrier gates.

Project Manager
Adhesives Manufacturing Facility | Toronto, ON | 2002 - 2007

Project Manager responsible for the assessment and remediation of solvent-impacted soil and groundwater. Remedial activities included soil removal and the installation of a groundwater collection and treatment system in fractured bedrock.

Project Manager
Various Facilities | Canada and the USA | 2005 - 2010

Project Manager responsible for the design and implementation and assessment of groundwater pumping tests to evaluate hydraulic conductivities and yield at several sites across Canada and the United States.

Project Manager
Confectionary Manufacturing Facility | Toronto ON | 2000 - 2005

Project Manager responsible for the development and implementation of a groundwater cut-off wall and LNALP pump and treatment system in Toronto, Ontario. The project including negotiating with numerous stakeholders including residential neighbours, current and past landowners, Ontario Ministry of the Environment, and the City of Toronto.

Design Coordinator
General Motors, Ford, Chrysler | MI | 2002 - 2008

Design Coordinator for the implementation of a steel LNAPL product cut-off wall and product recovery collection trench at a surface water recreational facility in Michigan. The LNAPL contained PCBs. The work was conducted in accordance with an Administrative Order by Consent, issued by the US EPA.

Design Coordinator
Form Coal Gasification Facility | Barrie ON | 1997 - 1999

Design Coordinator during the construction of sheet pile cut-off wall and groundwater collection system to prevent the migration of coal tar into a nearby water body in Barrie, Ontario.

Project Manager
UST Removals | Various Clients | Canada 1998 - present

Project Manager for the removal of more than 200 underground storage tanks and associated infrastructure at various facilities located across Canada. These tanks contained various liquids, including petroleum hydrocarbon products, solvents, paints, plating fluids, wastewater, etc.

Project Manager
Site Decommissioning | Various Clients | Canada and USA | 2000 - present

Project Manager for the decommissioning and closure of several industrial manufacturing facilities located across Canada and the United States. Operations conducted at these facilities included textile manufacturing, metal plating, oil blending, automotive parts manufacturing, plastic extrusion, and painting.

Project Director
Wetlands Assessment | Major Construction Company | AB | 2007 - 2009

Project Director responsible for the assessment and negotiations of several wetlands being disturbed as part of infrastructure improvement projects in Edmonton and Calgary.

Landfill Site Design/Monitoring

Project Manager
Landfill Monitoring | Lethbridge, AB | 2009 - 2012

Project Manager responsible for the development and implementation of annual landfill gas and groundwater monitoring programs at closed and active landfill sites in Lethbridge, Alberta. Advocated on the City's behalf to use real-time landfill gas monitoring equipment rather than sample collecting and analyses at a laboratory. Alberta Environment agreed to the use of real-time monitoring, which resulted in a significant annual cost savings.

Project Manager
Landfill Gas Collection System Expansion | Edmonton, AB | 2008 - 2009

Project manager responsible to peer review the design and construction of a landfill gas collection system expansion for a private solid waste site in Edmonton, Alberta.

Project Director
Biogas Flare System Upgrades | Fort Saskatchewan, AB | 2015 - present

Project Director responsible for the evaluation and design of biogas flare system upgrades at the wastewater treatment plant in Fort Saskatchewan, Alberta.

Project Coordinator
Stormwater Upgrades | Active Landfills | ON | 2009
Project coordinator for the design and implementation of improvements to the stormwater collection system at several active landfills in Ontario, Canada.

Project Coordinator
Active Landfill Expansion | Lloydminster, AB | 2012 - 2014
Project coordinator for the preparation of design and operation plan for the expansion of the City of Lloydminster landfill. The plan included the construction of a new recycling centre.

Project Engineer
Landfill Upgrades | Keele Valley Landfill | ON | 1996 - 1999
Project Engineer involved with the detailed design including, civil works, equipment selection, and cost estimating of the gas collection and flaring system expansion at the Keele Valley Landfill site. Also responsible for the preparation of contract specifications for the cleaning and video inspection of the leachate collection system at the landfill.

Site Engineer
Active Landfill Expansion | Peterborough, ON | 2000 - 2001
Site Engineer responsible for the construction oversight of the construction of a new landfill cell and installation of a leachate collection system at the Bensfort Road Landfill Site in Peterborough, Ontario. Work included contract administration, on-site supervision, and preparation of as-recorded drawings.

Other related areas of interest

Recognized (Certifications/Trainings)

- ACSA
- Ground Disturbance, Level II
- H2S Alive
- Petroleum Oriented Safety Training
- First Aid/CPR
- Construction Safety
- TDG Training Canada
- HAZWOPER Bullet

Work history

1994 – present	Principal GHD (formerly Conestoga-Rovers & Associates), Calgary, AB
	Named Principal 2013
	Named Associate 2008

Melissa Pley
Junior Engineer

Qualified: B.A.Sc. Geological Engineering, 2017

Professional Summary: Melissa has experience in conducting Phase One and II Environmental Site Assessments, project coordination, geologic mapping, groundwater flow mapping, underground excavation design, construction and geo-hazard mitigation, materials testing, core logging, slump tests, soil sampling, and groundwater sampling.

Junior Engineer
Ambient Air Quality Monitoring, Effluent Water Quality Monitoring and Record of Site Condition | OxyVinyls Canada | Thorold, ON

Performed Integrated ambient air monitoring and daily effluent water sampling as requested by the Ontario Ministry of Environment and Climate Change (MOECC) for a polyvinyl chloride processing facility which included perimeter, source area and rail car ambient air monitoring.

Prepared Record of Site Condition as requested by the MOECC outlining the opening of Vinyl Chloride Storage Spheres for inspection and maintenance and air quality monitoring in compliance with Site Specific Vinyl Chloride Standards.

- Effluent Water Sampling
- Ambient Air Quality Monitoring

Junior Engineer
Phase One Environmental Site Assessment | Asta Gardens Inc. | St. Catharines, ON

Prepared Phase One Environmental Site Assessment for the purpose of filing a Record of Site Condition with the MOECC on a commercial property being re-developed as residential townhomes.

Junior Field Technician
Phase II Environmental Site Assessment | Rankin Construction Inc. | Port Colborne, ON

Phase II Environmental Site Investigation Activities aimed to investigate identified subsurface contamination related to historical manufacturing activities at the Site.

- Groundwater Sampling
- Site Surveying

Junior Field Technician
Environmental Monitoring | QM Environmental | Niagara-on-the Lake, ON

Provided oversight of excavation activities and performed dust monitoring during the excavation of landfill material and rifle range to ensure compliance with the Ministry of the Environment and Climate Change (MOECC) Standards.

Junior Field Technician
Annual Groundwater Sampling | Boart Longyear Company | Mississauga, ON

Assisted in Annual groundwater sampling as a part of Environmental Due Diligence Activities aimed to investigate potential subsurface contamination at the Site.

- Groundwater Sampling

Junior Field Technician
Semi-Annual Groundwater Sampling | Opta Minerals | Waterdown, ON

Assisted in Semi-annual groundwater sampling aimed to investigate groundwater quality on Site in accordance with the C of A's Groundwater and Surface Monitoring Work Plan.

- Groundwater Sampling

Junior Field Technician
UST Removal | Nortrax | Stoney Creek, ON

Assisted in excavation oversight and confirmatory soil sampling aimed to investigate the quality of the soil surrounding an underground storage tank (UST).

- Soil Sampling
- Excavation Oversight

Other related areas of interest

Recognized (Certifications/Trainings)

- Canadian Transportation of Dangerous Goods Training (TDG)
- Petroleum Oriented Safety Training (POST)
- Electrical Safety and Awareness Training
- Working at Heights – Fundamentals of Fall arrest Training
- eRailSafe – Certified contractor for Canadian Pacific and Canadian National
- First Aid Training
- Trade NAFTA (TN) Permit

Work history

2017 – present	GHD, St. Catharines, ON

Appendix B
Fire Insurance Plans



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An SCM Company

175 Commerce Valley Drive W
Markham, Ontario L3T 7Z3

T: 905-882-6300
W: www.optaintel.ca

Report Completed By:

Sunita

Site Address:

Hogans Alley St. Catharines ON Canada

Project No:

1262018

Opta Order ID:

56245

Requested by:

Melissa Pley
GHD Limited

Date Completed:

12/12/2018 11:51:49 AM

Project Name: Port Dalhousie Environmental Investigation

Project #: 1262018

ENVIROSCAN Report

Search Area: Hogans Alley St. Catharines ON Canada

Requested by:
Melissa Pley
Date Completed: 12/12/2018 11:51:49

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Report

The documents (hereinafter referred to as the "Documents") to be released as part of the report (hereinafter referred to as the "Report") to be delivered to the purchaser as set out above are documents in Opta's records relating to the described property (hereinafter referred to as the "Property"). Opta makes no representations or warranties respecting the Documents whatsoever, including, without limitation, with respect to the completeness, accuracy or usefulness of the Documents, and does not represent or warrant that these are the only plans and reports prepared in association with the Property or in Opta's possession at the time of Report delivery to the purchaser. The Documents are current as of the date(s) indicated on them. Interpretation of the Documents, if any, is by inference based upon the information which is apparent and obvious on the face of the Documents only. Opta does not represent, warrant or guarantee that interpretations other than those referred to do not exist from other sources. The Report will be prepared for use by the purchaser of the services as shown above hereof only.

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Opta disclaims responsibility for any losses or damages of any kind whatsoever, whether consequential or other, however caused, incurred or suffered, arising directly or indirectly as a result of the services (which services include, but are not limited to, the preparation of the Report provided hereunder), including but not limited to, any losses or damages arising directly or indirectly from any breach of contract, fundamental or otherwise, from reliance on Opta Reports or from any tortious acts or omissions of Opta's agents, employees or representatives.

Entire Agreement

The parties hereto acknowledge and agree to be bound by the terms and conditions hereof. The request form constitutes the entire agreement between the parties pertaining to the subject matter hereof and supersedes all prior and contemporaneous agreements, negotiations and discussions, whether oral or written, and there are no representations or warranties, or other agreements between the parties in connection with the subject matter hereof except as specifically set forth herein. No supplement, modification, waiver, or termination of the request shall be binding, unless confirmed in writing by the parties hereto.

Governing Document

In the event of any conflicts or inconsistencies between the provisions hereof and the Reports, the rights and obligations of the parties shall be deemed to be governed by the request form, which shall be the paramount document.

Law

This agreement shall be governed by and construed in accordance with the laws of the Province of Ontario and the laws of Canada applicable therein.

ENVIROSCAN Report

Report Index

Page	Report Title
6	(1905) Volume: Ontario Miscellaneous Firemap: 1
8	(1922) Volume: Port Dalhousie Firemap: 4
10	(1922) Volume: Port Dalhousie Firemap: 5
12	(1962) Volume: St Catharines Volume 1 Firemap: 102
14	(1962) Volume: St Catharines Volume 1 Firemap: 102
16	(1962) Volume: St Catharines Volume 1 Firemap: 103
18	(1962) Volume: St Catharines Volume 1 Firemap: 104

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1905 Volume: Ontario Miscellaneous Firemap: 1
Port Dalhousie Plan: 1568 (1887)
Sheet: 1 (1905)

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1922 Volume: Port Dalhousie Firemap: 4
Port Dalhousie Plan: 1569 (1909)
Sheet: 4 (1922)

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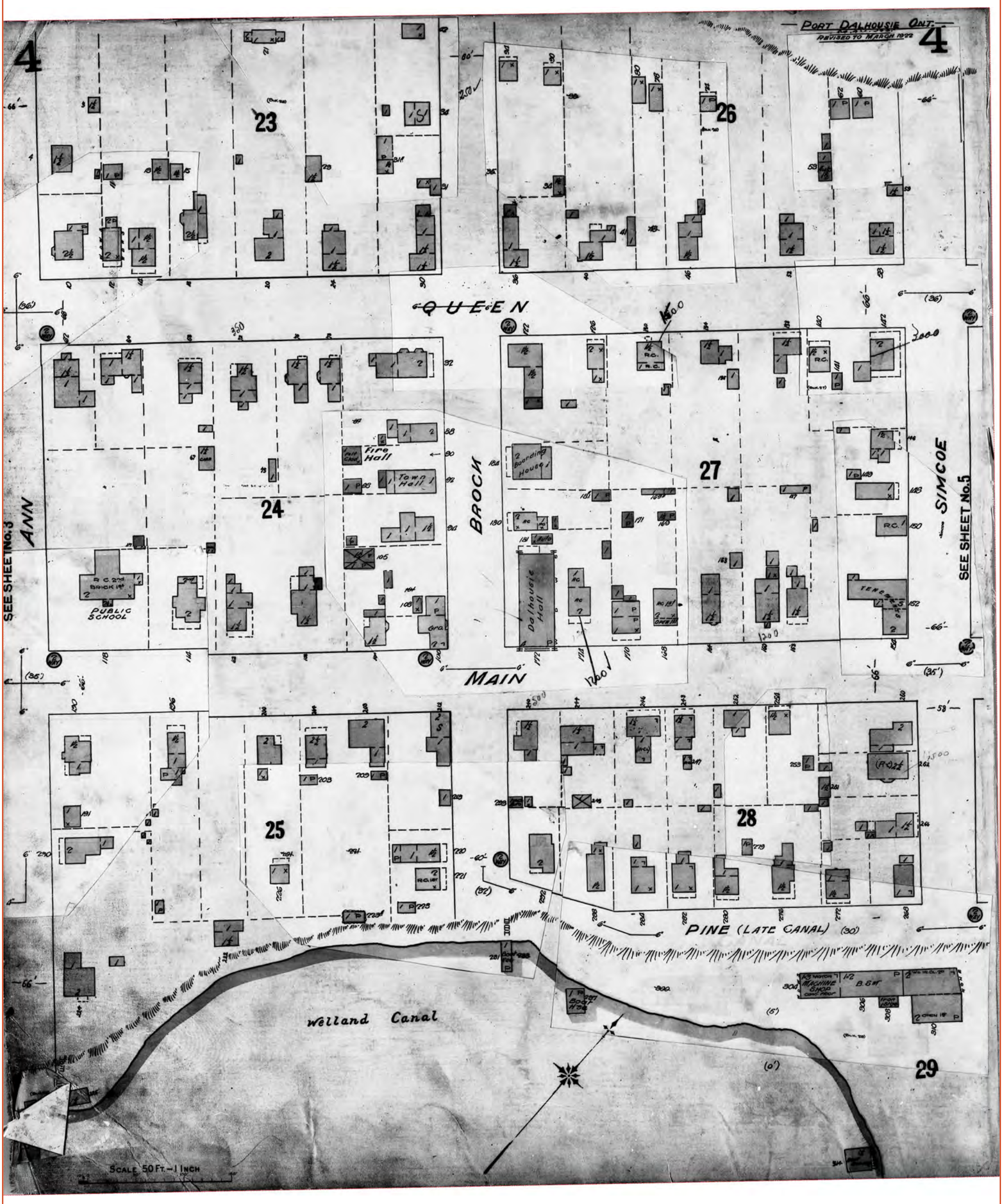


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Project Name: Port Dalhousie Environmental Investigation

Project #: 1262018

ENVIROSCAN Report

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Port Dalhousie Plan: 1569 (1909)
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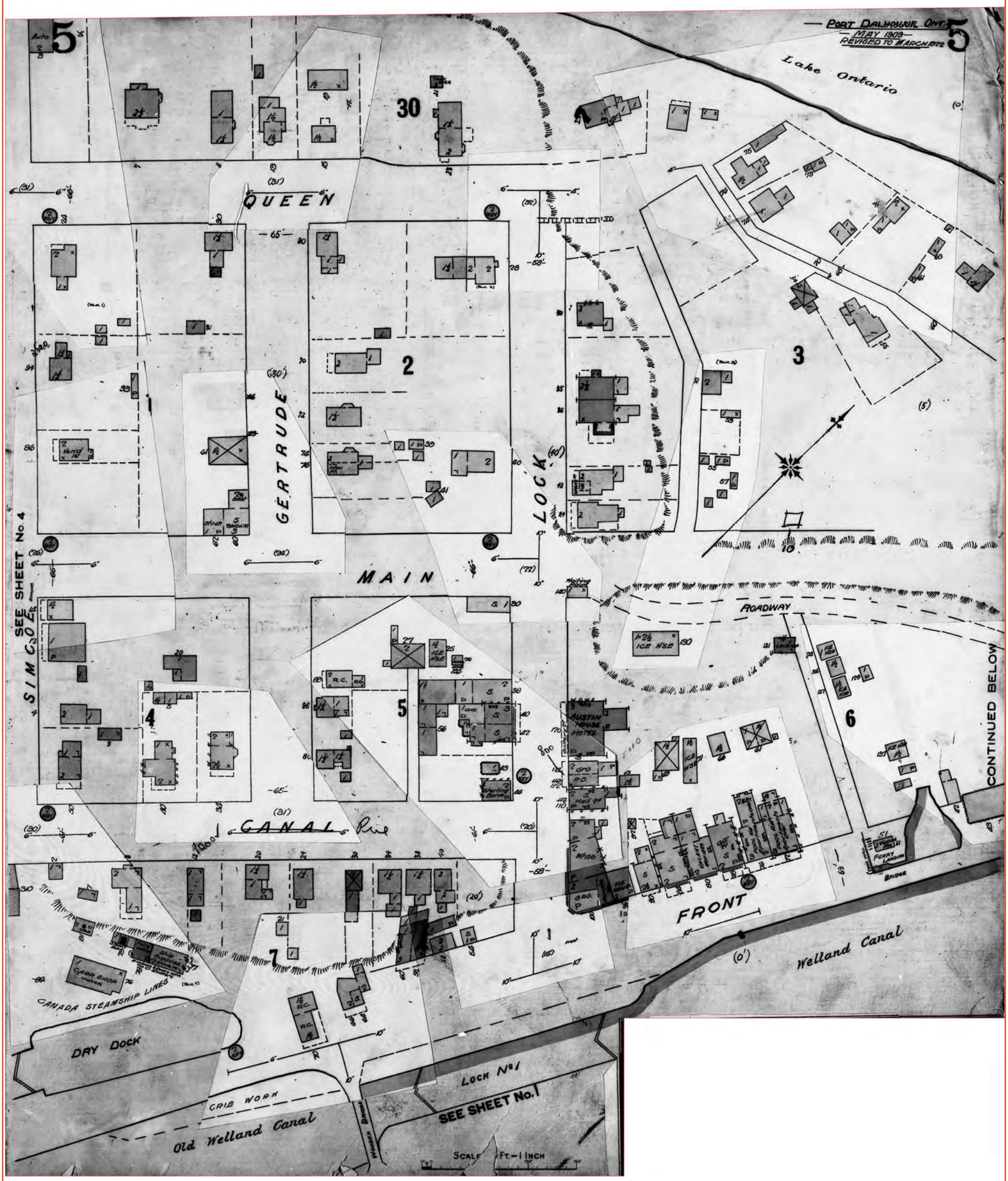
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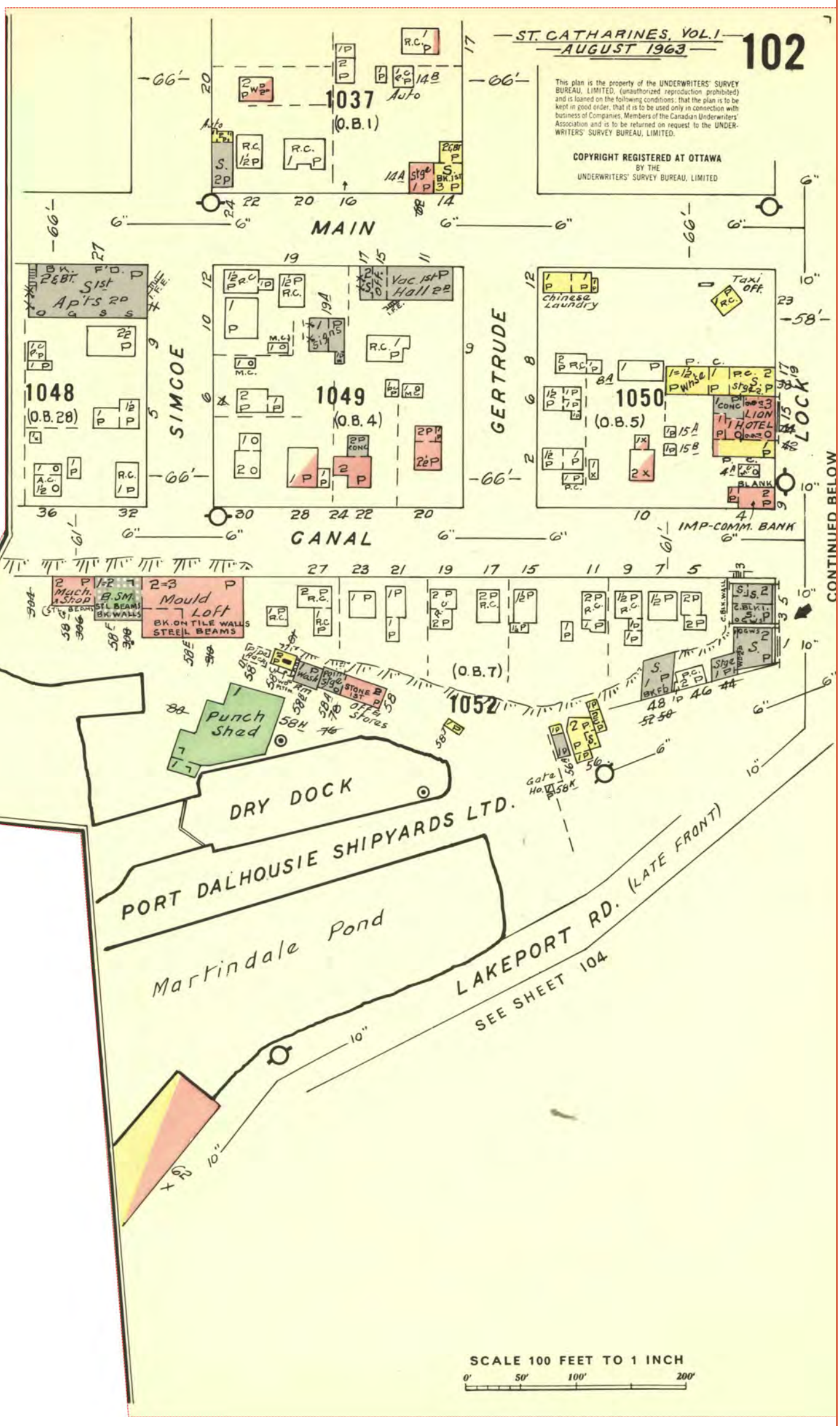


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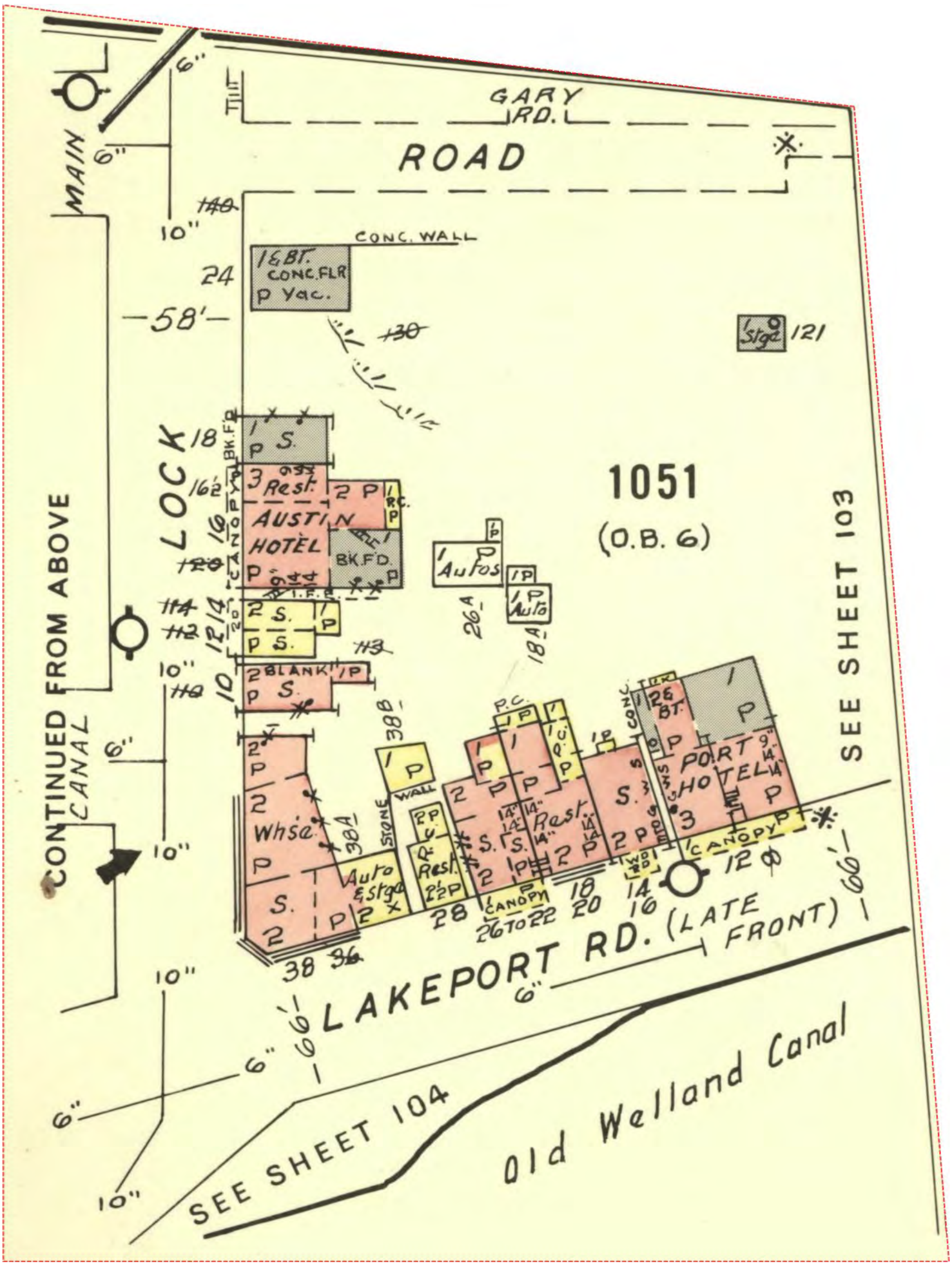


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— ST. CATHARINES, VOL. 1 —
— AUGUST 1963 —

103

Lake Ontario

DALHOUSIE AVE.

GARY ROAD

LAKESIDE PARK

ROAD

Band Stand

Ride

Ride
PENT 4' OVER

Ride

Bathing Pavilion

Fire Hose Reel

Ride

Ride

Dancing Pavilion

LAKESIDE INN

Vac.

Lav's

R.C.

Bleachers

Grand Stand

Shelters

Shelter & Rest.

Administration Bldg.

1040

(O.B. 31)

car parking

M.C. Boat Stge & Repairs

PORT HOTEL

CONC. BRIDGE

LAKEPORT RD.

Old Welland Canal

SEE SHEET 102

SEE SHEET 105

SCALE 100 FEET TO 1 INCH
0' 50' 100' 200'

ENVIROSCAN Report

1962 Volume: St Catharines 1 Firemap: 104
City of St. Catharines Vol.1 Plan: 1685 (1963)
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— ST. CATHARINES, VOL. 1 —
— AUGUST 1962 —

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SEE SHEET 102

LOCK (LATE FRONT)

Auto Service
Vacant
Stge
Piled Sand
Off
Lake & Build'g Supplies

Dry Dock

LAKEPORT RD.

Rowing Club (O.B.8)
Boat H'se 1ST
Boat H'se 2D.
Boat H'se
Hall
Leg Stge 2D.

1053

Pump (NO A.S.)

LINCOLN FABRICS LTD
S.R.D.
Vacant
177 4TH
A.S.
Vacant
Vac
Stge
Vac
Stge
WALLS ONLY
Trans

Gate H'se X

Lock H'se

Old Lock No 1
(O.B. 36)

1054

CONC BRIDGE
CONC SWING BRIDGE
Pier

Martindale Pond

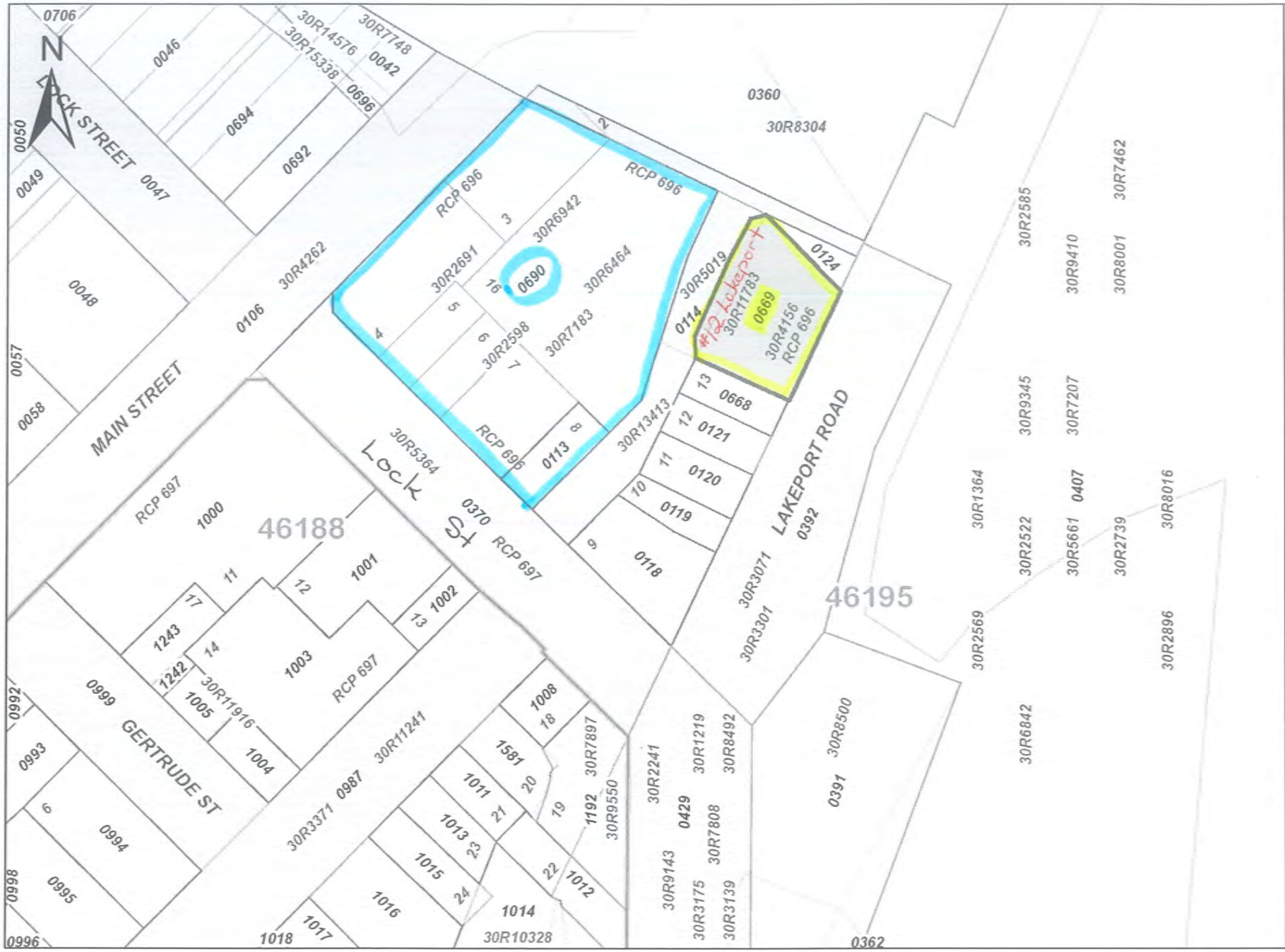
Old Welland Canal

ROADWAY

1055
(O.B. 36)

SCALE 100 FEET TO 1 INCH
0' 50' 100' 200'

Appendix C
Property Chain of Title Documents



ServiceOntario

PRINTED ON 04 FEB, 2019 AT 11:53:39
FOR SB

SCALE

0 30 meters

PROPERTY INDEX MAP

NIAGARA(No. 30)

LEGEND

FREEHOLD PROPERTY	
LEASEHOLD PROPERTY	
LIMITED INTEREST PROPERTY	
CONDOMINIUM PROPERTY	
RETIRED PIN (MAP UPDATE PENDING)	
PROPERTY NUMBER	0449
BLOCK NUMBER	08050
GEOGRAPHIC FABRIC	
EASEMENT	

THIS IS NOT A PLAN OF SURVEY

NOTES

REVIEW THE TITLE RECORDS FOR COMPLETE PROPERTY INFORMATION AS THIS MAP MAY NOT REFLECT RECENT REGISTRATIONS

THIS MAP WAS COMPILED FROM PLANS AND DOCUMENTS RECORDED IN THE LAND REGISTRATION SYSTEM AND HAS BEEN PREPARED FOR PROPERTY INDEXING PURPOSES ONLY

FOR DIMENSIONS OF PROPERTIES BOUNDARIES SEE RECORDED PLANS AND DOCUMENTS

ONLY MAJOR EASEMENTS ARE SHOWN

REFERENCE PLANS UNDERLYING MORE RECENT REFERENCE PLANS ARE NOT ILLUSTRATED

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PRINTED ON 04 FEB, 2019 AT 11:56:22
FOR SB

SCALE

0 30 meters

PROPERTY INDEX MAP

NIAGARA(No. 30)

LEGEND

FREEHOLD PROPERTY	
LEASEHOLD PROPERTY	
LIMITED INTEREST PROPERTY	
CONDOMINIUM PROPERTY	
RETIRED PIN (MAP UPDATE PENDING)	
PROPERTY NUMBER	0449
BLOCK NUMBER	08050
GEOGRAPHIC FABRIC	
EASEMENT	

THIS IS NOT A PLAN OF SURVEY

NOTES

REVIEW THE TITLE RECORDS FOR COMPLETE PROPERTY INFORMATION AS THIS MAP MAY NOT REFLECT RECENT REGISTRATIONS

THIS MAP WAS COMPILED FROM PLANS AND DOCUMENTS RECORDED IN THE LAND REGISTRATION SYSTEM AND HAS BEEN PREPARED FOR PROPERTY INDEXING PURPOSES ONLY

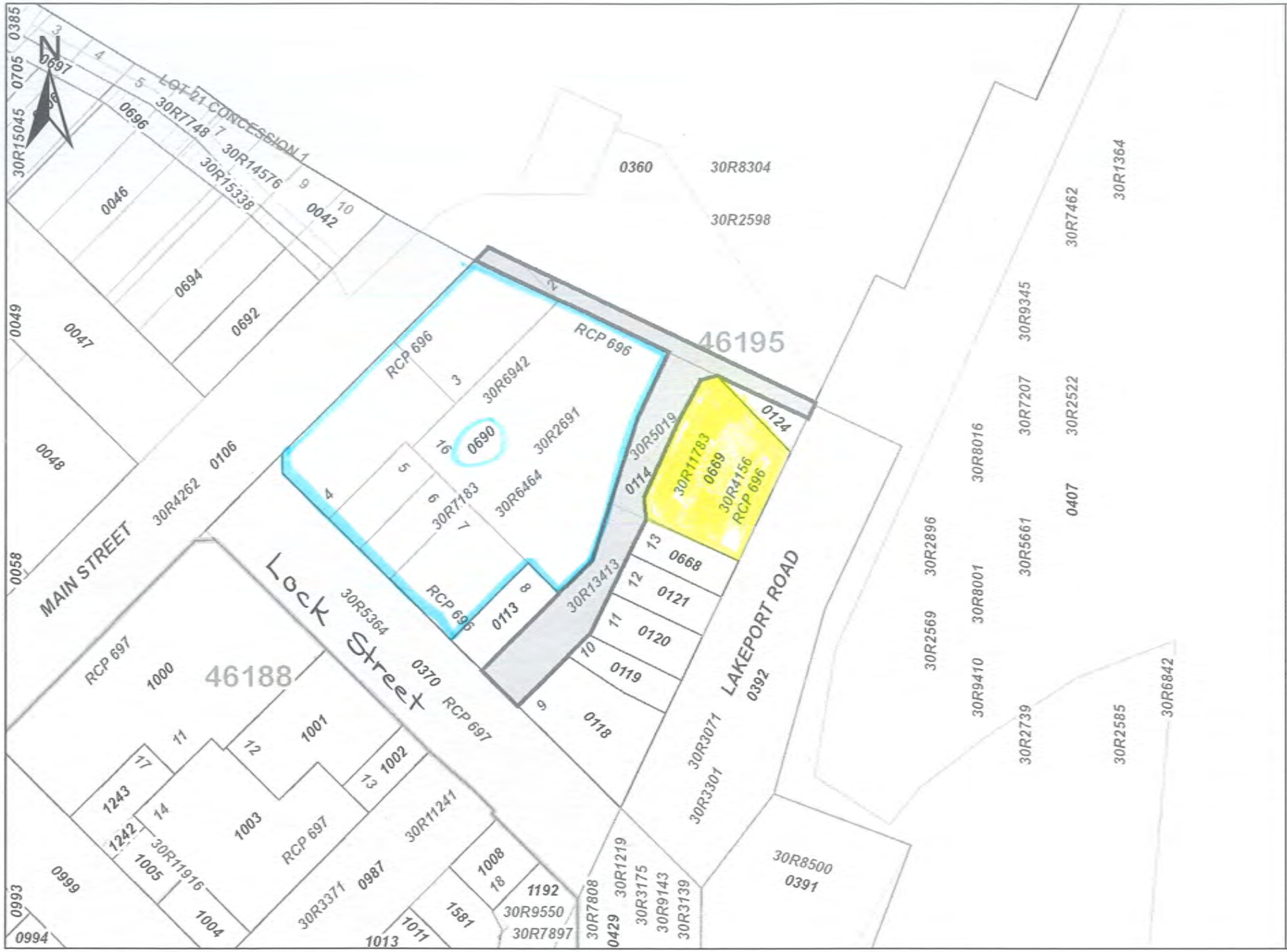
FOR DIMENSIONS OF PROPERTIES BOUNDARIES SEE RECORDED PLANS AND DOCUMENTS

ONLY MAJOR EASEMENTS ARE SHOWN

REFERENCE PLANS UNDERLYING MORE RECENT REFERENCE PLANS ARE NOT ILLUSTRATED

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PRINTED ON 04 FEB, 2019 AT 11:58:16
FOR SB

SCALE

0 30 meters

PROPERTY INDEX MAP

NIAGARA(No. 30)

LEGEND

FREEHOLD PROPERTY	
LEASEHOLD PROPERTY	
LIMITED INTEREST PROPERTY	
CONDOMINIUM PROPERTY	
RETIRED PIN (MAP UPDATE PENDING)	
PROPERTY NUMBER	0449
BLOCK NUMBER	08050
GEOGRAPHIC FABRIC	
EASEMENT	

THIS IS NOT A PLAN OF SURVEY

NOTES

REVIEW THE TITLE RECORDS FOR COMPLETE PROPERTY INFORMATION AS THIS MAP MAY NOT REFLECT RECENT REGISTRATIONS

THIS MAP WAS COMPILED FROM PLANS AND DOCUMENTS RECORDED IN THE LAND REGISTRATION SYSTEM AND HAS BEEN PREPARED FOR PROPERTY INDEXING PURPOSES ONLY

FOR DIMENSIONS OF PROPERTIES BOUNDARIES SEE RECORDED PLANS AND DOCUMENTS

ONLY MAJOR EASEMENTS ARE SHOWN

REFERENCE PLANS UNDERLYING MORE RECENT REFERENCE PLANS ARE NOT ILLUSTRATED

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PROPERTY OF THE
REGISTRY OFFICE

Plan 696
Registrar's Compiled Plan
Scale 1 in = 50 ft

PART 1

PLAN 71 REGIONAL ROAD NO. 87

MAIN STREET

BY-LAW 81-49 REG'D. NO. 562731

PART 1 30R6364

UNASSUMED PUBLIC ALLEY

30R2691

CLOSED BY ORDER NO. 662212

UNNAMED PUBLIC ALLEY (HOGANS ALLEY) CLOSED BY BY-LAW 88-197 REG'D & BY-LAW 88-198 REG'D. NO. 566192 PARTS 1, 2, 3 on 30R5019, & BY-LAW 90-0/ PART 1 on 30R6464, & BY-LAW 91-123 REG'D NO. 626804 PART 15 on 30R6464, REG'D NO. 607458 PART 5 on 30R6464.
PART 3 SUBJ. TO EASEMENT 497010
PART 4 30R4156 SUBJ. TO EASEMENT 497009

4 3 2 5 6 7 8 9 10 11 12 13 14 15 16

15 16 17 14 13 12 11 10 9 8 7 6 5 4 3 2 1

30R6464 PART 4 PART 6 PART 7 PART 8 PART 9

UN-NUMBERED LOT SURROUNDED BY ALLEYS

SUBJECT TO EASEMENT 497010

BY-LAW 81-49 REG'D NO. 562731

BY-LAW 80-242 REG'D NO. 428127

PART 1 30R5019 PART 2 30R5019 PART 3 30R5019 PART 4 30R5019 PART 5 30R5019 PART 6 30R5019

PART 1 30R2590 PART 4 30R2590 PART 1 PART 5 30R4156

RT-OF-WAY 496262

BY-LAW NO. 61-1

30R3501 PART 14

LAKEPORT ROAD (FORMERLY FRONT STREET)

PART 7

PORT DALHOUSIE HARBOUR

PART 1 30R2739

PROPERTY OF THE
REGISTRY OFFICE

PLAN # 31

N 31 PT. DALHOUSIE

LE 1 INCH = 40 FT.

LAKESIDE PARK - PLAN 696

MICROFILMED

Pencil - faint

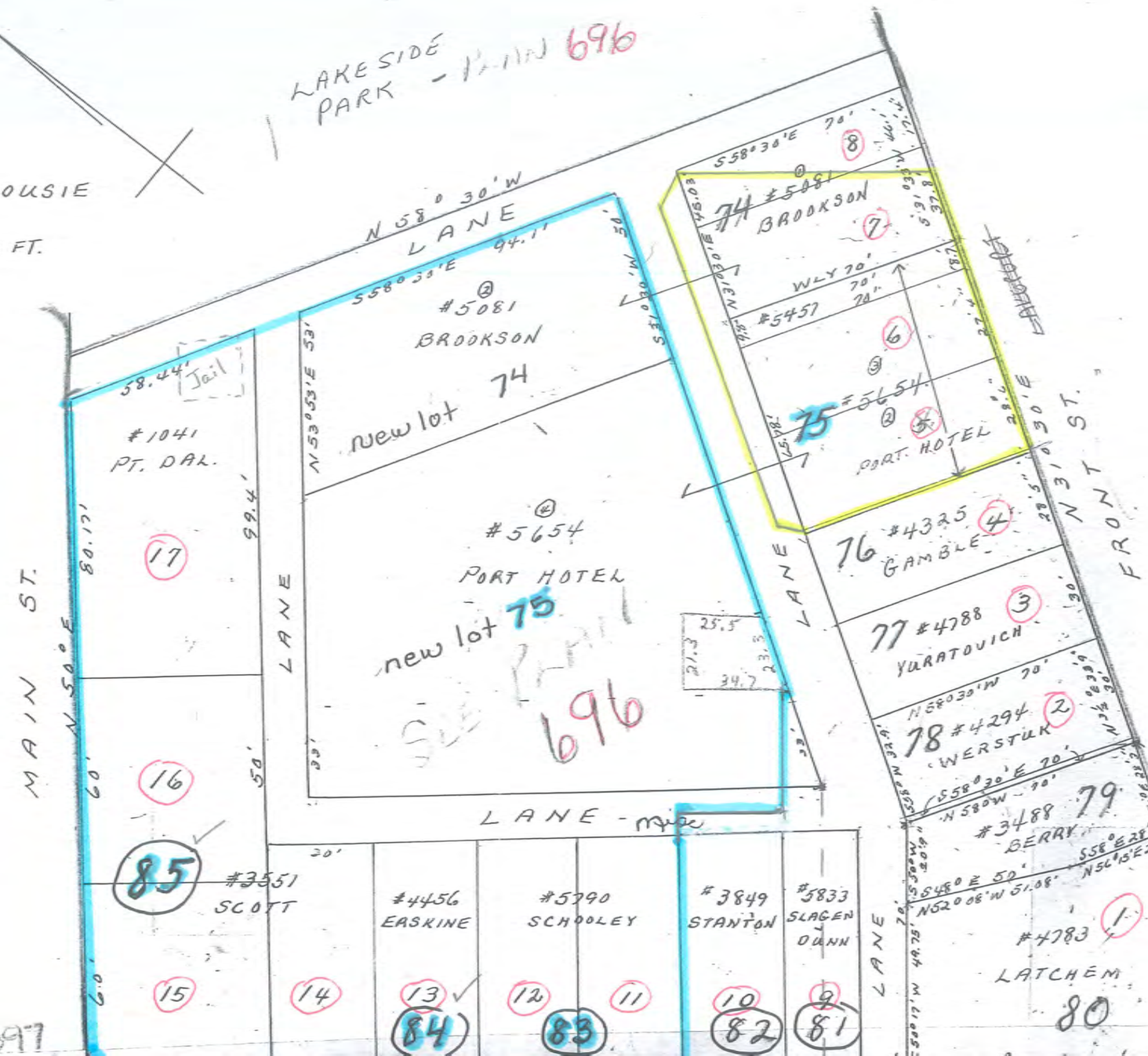
Lots 1-7 West Side Lot 25 Con 1

Lot 20 Con. 1

Plan 31

Plan 55

Section 12 Blk. 6



Chain Of Title (6)

for PIN 46195-0690 LT

Lands in blue

Lots 3, 4, 5, 6, 7 & 16 RC Pl 696

Chain Of Title

PIN 46195-0690 LT

Lands in blue

\#1041 Aug 22, 1894 — Nathan H. Pawling

↓ To

\#47827 Nov 2, 1959 — The Corporation Of The Village Of Port Dalhousie

↓ To

\#133951 Jan 31, 1966 — The Public Utilities Commission Of Port Dalhousie

↓ To

\#327741 Jan 2, 1976 — Thomas LaFlamme
Lucy LaFlamme

↓ To

Bernard J. Rowan
Dan T.P. Rowan
Bernard J. Rowan

#470951 Nov 21, 1983 — Bernard J. Rowan, Ian T. P. Rowan, Bernard J. Rowan

↓ To

#543859 June 26, 1987 — The Rowan Sprinkler Company Ltd.

↓ To

#558020 Feb 18, 1988 — Valerie Ann Krusty, Rastislav Krusty

↓ To

#628778 May 30, 1991 — Rusty Krusty Realty Inc.

↓ To

#650251 June 19, 1992 — Rastislav Krusty

↓ To

#717563 Oct 31, 1996 — Rastislav Krusty in trust

↓ To

1184557 Ontario Inc.

NR 5337 Sept 23, 2003 1184557 Ontario Inc.

To

Port Dalhousie
Vitalization Corporation

NR 449747 June 13, 2017 Name Change to

Union Waterfront Inc.
present owner

Chain Of Title

PIN 46195-0690 LT

Lands in blue

# 1120 Sept 26, 1896	Nathan H. Pawling
	↓ To
# 1949 July 12, 1913	Annie Holmes
	↓ To
# 3551 Dec 23/1938	Frank Scott Estate of Frank Scott
	↓ To
# 47828 Nov 2, 1959	Murray H. Scott
	↓ To
# 133951 Jan 31 1966	Port Dalhousie Public Utilities

327741 Jan 2, 1976 Thomas LaFlamme
Lucy LaFlamme

To

470951 Nov 21, 1983 Bernard J. Rowan
Ian T.P. Rowan
Bernard J. Rowan

To

543859 June 26, 1987 The Rowan Sprinkler
Company Ltd.

To

558020 Feb 18, 1988 Valerie Ann Kruty
Rastislav Kruty

To

628778 May 30, 1991 Rusty Kruty Realty Inc.

NR 5336 Sept 23, 2003 1149853 Ontario Inc

To

Port Dalhousie Vitalization Corporation

NR 449747 June 13, 2017 Name change to

Union Waterfront Inc.
present owner

Chain Of Title

PIN 46195 - 0690 LT

Lands in blue

\# 1876 July 30, 1912 Tax Deed — ?? of County Of Lincoln

To ↓

\# 1935 April 5, 1913 — John Johnson

↓ To

\# 3551 Dec 23, 1938 — Frank Scott
Estate of Frank Scott

To ↓

\# 47828 Nov 27, 1959 — Murray Scott

↓ To

\# 133951 Jan 31, 1966 — Port Dalhousie Public Utilities Commission

To ↓

Thomas La Flamme
Lucy La Flamme

327741 Jan 2, 1976 — Thomas LaFlamme, Lucy LaFlamme

To

470951 Nov 21, 1983 — Bernard J. Rowan, Dan T. P. Rowan, Bernard Rowan

To

543859 Jun 26, 1987 — The Rowan Sprinkler Company Ltd.

To

558020 Feb 18, 1988 — Valerie Ann Krusty, Rastislav Krusty

To

628778 May 30, 1991 — Rusty Krusty Realty Inc.

To

717563 Oct 31, 1996 — Rastislav Krusty in trust

To

1184557 Ontario Inc.

NR 5337 Sept 23, 2003 1184557 Ontario Inc.

To ↓

Port Dalhousie Vitalization Corporation

* NR 449747 June 13, 2017 Name change to

Union Waterfront Inc.
present owners

Chain Of Title

PIN 46195-0690LT

Lands in blue

\# 434 Feb 23, 1878 — Nathan H. Pawlenz, Robert Laurie

↓ To

\# 583 May 27, 1881 — Ellen Howse

↓ To

Henry Rolls

\# 1128 Oct 20, 1896 — Estate of Henry Rolls

↓ To

\# 1338 June 6, 1901 — Catharine Pearson

↓ To

Michael Harrigan
John Harrigan
Mary Harrigan
Margaret Howse

3303 July 5, 1932 — John Harrigan, Mary Harrigan, Michael Harrigan, Margaret Howse

↓ To

John Harrigan, Mary Harrigan

4261 Jan 17, 1947 — Estate of John Harrigan

↓ To

4456 April 15, 1948 — Peter Ruddy, Annie Ruddy

↓ To

258518 Dec 15, 1972 — Margaret Erskine

↓ To

263721 Mar 16, 1973 — Rita Lake (Rita)

↓ To

Wilfred Cheredaryk

430821 April 29, 1981 Wilfred Cheredaryk

To

510188 Jan 3, 1986 Kurt Rathfelder
Veronica Rathfelder

To

546348 July 30, 1987 Harold Arthur Coles

To

766708 April 14, 2000 Valerie Ann Kruty

To

814582 Sept 3, 2009 1405230 Ontario Limited

To

Port Dalhousie Vitalization Corporation

NR449747 June 13, 2017 Name change to Union Waterfront Inc.

present owners

Chain Of Title

PIN 46195-0690 LT

Lands in blue

#98 March 24, 1871 — Edward Mc Ardle

↓ To

#100 March 25, 1871 — Nathan Pawling

↓ To

#1348 Jan 30, 1903 — Patrick Harrigan
John McNulty (McNulty)

↓ To

#3450 April 3, 1937 — Michael J. Harrigan
John Harrigan
Mary Harrigan

↓ To

#5159 Nov 7, 1951 — Austin Hotel Ltd.

↓ To

Harry Wisniewski
Harry Wisniewski
Stanley Wisniewski

#140657 June 27, 1966 — Robert Donnelly Limited
Peter J. Ruby

↓ To

#193406 July 23, 1969 — Joe Rogola Sr.
Joe Rogola Jr.
Frank Rogola

To ↓

#214366 Oct 26, 1970 — Michael Panchyshyn

↓ To

1st 244017 May 8, 1972 — Michael Panchyshyn
Helen Panchyshyn

To ↓

1st 339712 Aug 11, 1976 — Albert Moore
Irene Moore

↓ To

Steven Werchohlad
Arthur J. Smith

\# 5790 May 31, 1954 Harry Wisniewski
Harry Wisniewski
Stanley Wisniewski

To

William F Schooley
Anne Schooley

Mtge foreclosure (default)

\# 62878 Jan 16, 1961 Estate of Frank T. Wyman

To

\# ? July 20, 1965 Peter J. Ruby
Robert Donnelly Limited

To

George Hucul (Hicul)
Grace Hucul

Foreclosure (default)

369889 Dec 21, 1977 — Arthur J. Smith, Steven Werchohlad

↓ To

447591 July 8, 1982 — Arthur Smith

↓ To

546028 July 24, 1987 — Norma Smith, Arthur J. Smith

↓ To

562261 May 3, 1988 — Arthur J. Smith

↓ To

RO814485 Aug 29, 2003 — Port Dalhousie Projects Inc.

↓ To

Port Dalhousie Vitalization Corporation

NR449747 June 13, 2017 Name change to

Union Waterfront Inc.

present owners

Ontario ServiceOntario

PARCEL REGISTER (ABBREVIATED) FOR PROPERTY IDENTIFIER

LAND REGISTRY OFFICE #30 | 46195-0690 (LT)

PREPARED FOR SB
ON 2019/02/04 AT 11:45:38

* CERTIFIED IN ACCORDANCE WITH THE LAND TITLES ACT * SUBJECT TO RESERVATIONS IN CROWN GRANT *

PROPERTY DESCRIPTION: LTS 3, 4 & 5 RCP696 GRANTHAM; LTS 6, 7 & 16 RCP 696 GRANTHAM; SUBJECT TO AN EASEMENT AS IN RO662213; SUBJECT TO AN EASEMENT AS IN RO662214; CITY OF ST. CATHARINES

PROPERTY REMARKS:

ESTATE/QUALIFIER:
FEE SIMPLE
LT CONVERSION QUALIFIED

RECENTLY:
CONSOLIDATION FROM 46195-0107, 46195-0108, 46195-0110, 46195-0111, 46195-0112, 46195-0116

PIN CREATION DATE:
2012/04/05

OWNERS' NAMES
UNION WATERFRONT INC.

CAPACITY SHARE
ROWN

REG. NUM.	DATE	INSTRUMENT TYPE	AMOUNT	PARTIES FROM	PARTIES TO	CERT/ CHKD
** PRINTOUT INCLUDES ALL DOCUMENT TYPES AND DELETED INSTRUMENTS SINCE 2012/04/05 **						
**SUBJECT, ON FIRST REGISTRATION UNDER THE LAND TITLES ACT, TO:						
** SUBSECTION 44(1) OF THE LAND TITLES ACT, EXCEPT PARAGRAPH 11, PARAGRAPH 14, PROVINCIAL SUCCESSION DUTIES *						
** AND ESCHEATS OR FORFEITURE TO THE CROWN.						
** THE RIGHTS OF ANY PERSON WHO WOULD, BUT FOR THE LAND TITLES ACT, BE ENTITLED TO THE LAND OR ANY PART OF						
** IT THROUGH LENGTH OF ADVERSE POSSESSION, PRESCRIPTION, MISDESCRIPTION OR BOUNDARIES SETTLED BY						
** CONVENTION.						
** ANY LEASE TO WHICH THE SUBSECTION 70(2) OF THE REGISTRY ACT APPLIES.						
**DATE OF CONVERSION TO LAND TITLES: 2003/09/22 **						
RO258518Z	1972/12/15	REST COV APL ANNEX				C
RO263721Z	1973/03/16	REST COV APL ANNEX				C
30R2598	1979/02/23	PLAN REFERENCE				C
30R2691	1979/07/06	PLAN REFERENCE				C
RO411996	1980/01/11	BYLAW				C
RO415143	1980/04/03	NOTICE OF LEASE			MALAFOURIS, DENNIS	C
RO416096	1980/04/30	AGREEMENT REMARKS: SKETCH ATTACHED.			THE CORPORATION OF THE CITY OF ST. CATHARINES	C
RO416097	1980/04/30	AGREEMENT REMARKS: SKETCH ATTACHED. ENCROACHMENT			THE CORPORATION OF THE CITY OF ST. CATHARINES	C

NOTE: ADJOINING PROPERTIES SHOULD BE INVESTIGATED TO ASCERTAIN DESCRIPTIVE INCONSISTENCIES, IF ANY, WITH DESCRIPTION REPRESENTED FOR THIS PROPERTY.
NOTE: ENSURE THAT YOUR PRINTOUT STATES THE TOTAL NUMBER OF PAGES AND THAT YOU HAVE PICKED THEM ALL UP.

REG. NUM.	DATE	INSTRUMENT TYPE	AMOUNT	PARTIES FROM	PARTIES TO	CERT/ CHKD
RO428127	1981/02/09	BYLAW				C
	REMARKS: SKETCH ATTACHED.					
RO494153	1985/03/27	AGREEMENT		*** DELETED AGAINST THIS PROPERTY ***		
					THE CORPORATION OF THE CITY OF ST. CATHARINES	
	REMARKS: SKETCH ATTACHED. ENCROACHMENT					
RO494154	1985/03/27	AGREEMENT		*** DELETED AGAINST THIS PROPERTY ***		
					THE CORPORATION OF THE CITY OF ST. CATHARINES	
	REMARKS: SKETCH ATTACHED. SITE PLAN					
RO500165	1985/07/15	AGREEMENT		*** DELETED AGAINST THIS PROPERTY ***		
					THE CORPORATION OF THE CITY OF ST. CATHARINES	
	REMARKS: SKETCH ATTACHED; SITE PLAN AMENDMENT					
RO561203	1988/04/19	AGREEMENT		*** DELETED AGAINST THIS PROPERTY ***		
					THE CITY OF ST. CATHARINES	
	REMARKS: SITE PLAN					
RO569444	1988/08/17	AGREEMENT		*** DELETED AGAINST THIS PROPERTY ***		
					THE CORPORATION OF THE CITY OF ST. CATHARINES	
	REMARKS: AMENDING SITE PLAN					
30R6464	1990/06/26	PLAN REFERENCE				C
30R6942	1991/08/06	PLAN REFERENCE				C
30R7183	1992/03/31	PLAN REFERENCE				C
RO662213	1993/02/12	TRANSFER EASEMENT			THE CONSUMERS' GAS CO. LTD.	C
	REMARKS: AND RIGHT OF WAY					
RO662214	1993/02/12	TRANSFER EASEMENT			BELL CANADA	C
RO766787	2000/04/19	AGREEMENT		KRUTY, RASTISLAV	1149853 ONTARIO INC.	C
	REMARKS: ENCROACHMENT AGREEMENT					
RO814484	2003/08/29	TRANSFER	$466,667	DONATELLI PRODUCTIONS LIMITED	PORT DALHOUSIE VITALIZATION CORPORATION	C
	REMARKS: PLANNING ACT STATEMENTS					
RO814485	2003/08/29	TRANSFER	$933,333	PORT DALHOUSIE PROJECTS INC.	PORT DALHOUSIE VITALIZATION CORPORATION	C
	REMARKS: PLANNING ACT STATEMENTS					

REG. NUM.	DATE	INSTRUMENT TYPE	AMOUNT	PARTIES FROM	PARTIES TO	CERT/ CHKD
RO814582	2003/09/03	TRANSFER	$450,000	1405230 ONTARIO LIMITED	PORT DALHOUSIE VITALIZATION CORPORATION	C
	REMARKS: PLANNING ACT STATEMENTS					
NR5334	2003/09/23	TRANSFER	$300,000	1546834 ONTARIO INC. TOUROUNTZAS, STEPHANIE	PORT DALHOUSIE VITALIZATION CORPORATION	C
NR5336	2003/09/23	TRANSFER	$450,000	1149853 ONTARIO INC.	PORT DALHOUSIE VITALIZATION CORPORATION	C
NR5337	2003/09/23	TRANSFER	$870,000	1184557 ONTARIO INC.	PORT DALHOUSIE VITALIZATION CORPORATION	C
NR12340	2003/12/12	NOTICE OF LEASE	$1	PORT DALHOUSIE VITALIZATION CORPORATION	PORT DALHOUSIE MANAGEMENT CORPORATION	C
	REMARKS: EXPIRY(5 YEARS)DATE: 2008/09/30					
NR16383	2004/02/04	NOTICE OF SUBLEASE	$1	PORT DALHOUSIE MANAGEMENT CORPORATION	1410088 ONTARIO INC.	C
NR18618	2004/03/02	BYLAW		THE CORPORATION OF THE CITY OF ST. CATHARINES		C
	REMARKS: RE: HERITAGE DESIGNATION					
NR159203	2007/11/14	CHARGE		*** DELETED AGAINST THIS PROPERTY *** PORT DALHOUSIE VITALIZATION CORPORATION	FIRSTONTARIO CREDIT UNION LIMITED	
NR159205	2007/11/14	NO ASSGN RENT GEN		*** DELETED AGAINST THIS PROPERTY *** PORT DALHOUSIE VITALIZATION CORPORATION	FIRSTONTARIO CREDIT UNION LIMITED	
	REMARKS: NR159203 RENTS					
NR197282	2008/12/15	NOTICE		*** DELETED AGAINST THIS PROPERTY *** PORT DALHOUSIE VITALIZATION CORPORATION	FIRSTONTARIO CREDIT UNION LIMITED	
	REMARKS: NR159203					
NR245325	2010/07/15	NOTICE		THE CORPORATION OF THE CITY OF ST. CATHARINES		C
NR245528	2010/07/16	NOTICE		THE CORPORATION OF THE CITY OF ST. CATHARINES		C
NR245529	2010/07/16	NOTICE		THE CORPORATION OF THE CITY OF ST. CATHARINES		C
NR245530	2010/07/16	NOTICE		THE CORPORATION OF THE CITY OF ST. CATHARINES		C
NR270297	2011/06/03	CHARGE		*** DELETED AGAINST THIS PROPERTY *** PORT DALHOUSIE VITALIZATION CORPORATION	PDVC DEVELOPMENTS INC.	
NR270298	2011/06/03	CHARGE		*** DELETED AGAINST THIS PROPERTY *** PORT DALHOUSIE VITALIZATION CORPORATION	PDVC DEVELOPMENTS INC.	

REG. NUM.	DATE	INSTRUMENT TYPE	AMOUNT	PARTIES FROM	PARTIES TO	CERT/ CHKD
NR281471	2011/10/12	TRANSFER OF CHARGE		*** DELETED AGAINST THIS PROPERTY *** PDVC DEVELOPMENTS INC.	2298642 ONTARIO INC.	
	REMARKS: NR270298.					
NR281473	2011/10/12	POSTPONEMENT		*** DELETED AGAINST THIS PROPERTY *** PDVC DEVELOPMENTS INC.	2298642 ONTARIO INC.	
	REMARKS: POSTPONES NR270297 TO NR281471					
NR281570	2011/10/13	TRANSFER OF CHARGE		*** DELETED AGAINST THIS PROPERTY *** 2298642 ONTARIO INC.	HARBOUREDGE MORTGAGE INVESTMENT CORPORATION	
	REMARKS: NR270298.					
NR294677	2012/04/02	APL CONSOLIDATE		PORT DALHOUSIE VITALIZATION CORPORATION		C
NR294973	2012/04/04	CHARGE	$10,000,000	PORT DALHOUSIE VITALIZATION CORPORATION	FIRSTONTARIO CREDIT UNION LIMITED	C
NR294976	2012/04/04	NO ASSGN RENT GEN		PORT DALHOUSIE VITALIZATION CORPORATION	FIRSTONTARIO CREDIT UNION LIMITED	C
	REMARKS: NR294973.					
NR295093	2012/04/10	DISCH OF CHARGE		*** COMPLETELY DELETED *** PDVC DEVELOPMENTS INC.		
	REMARKS: NR270297.					
NR295095	2012/04/10	DISCH OF CHARGE		*** COMPLETELY DELETED *** HARBOUREDGE MORTGAGE INVESTMENT CORPORATION		
	REMARKS: NR270298.					
NR295330	2012/04/12	CHARGE	$1,500,000	PORT DALHOUSIE VITALIZATION CORPORATION	SONI, SANJAY	C
NR295534	2012/04/13	DISCH OF CHARGE		*** COMPLETELY DELETED *** FIRSTONTARIO CREDIT UNION LIMITED		
	REMARKS: NR159203.					
NR297230	2012/05/03	TRANSFER OF CHARGE	$669,700	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330. *CORRECTIONS: AMOUNT CHANGED FROM $0 TO $669700.00 ON 2012/12/28 BY MOZGIEL, MARILYN.*					
NR297897	2012/05/10	TRANSFER OF CHARGE	$493,500	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330. *CORRECTIONS: AMOUNT CHANGED FROM $0 TO $493500.00 ON 2012/12/28 BY MOZGIEL, MARILYN.*					

REG. NUM.	DATE	INSTRUMENT TYPE	AMOUNT	PARTIES FROM	PARTIES TO	CERT/ CHKD
NR298934	2012/05/24	LR'S ORDER		LAND REGISTRAR, LRO NO. 30		C
	REMARKS: "S/T TO EASEMENT AS IN RO662214" ADDED TO DESCRIPTION					
NR300870	2012/06/14	NOTICE	$2	PORT DALHOUSIE VITALIZATION CORPORATION	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330					
NR300873	2012/06/14	TRANSFER OF CHARGE	$586,000	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
	CORRECTIONS: AMOUNT CHANGED FROM $0 TO $586000.00 ON 2012/12/28 BY MOZGIEL, MARILYN.					
NR300874	2012/06/14	TRANSFER OF CHARGE	$916,000	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
	CORRECTIONS: AMOUNT CHANGED FROM $0 TO $916000.00 ON 2012/12/28 BY MOZGIEL, MARILYN.					
NR300875	2012/06/14	TRANSFER OF CHARGE	$688,300	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
	CORRECTIONS: AMOUNT CHANGED FROM $0 TO $688300.00 ON 2012/12/28 BY MOZGIEL, MARILYN.					
NR300876	2012/06/14	TRANSFER OF CHARGE	$548,000	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
	CORRECTIONS: AMOUNT CHANGED FROM $0 TO $548000.00 ON 2012/12/28 BY MOZGIEL, MARILYN.					
NR302972	2012/07/06	CONSTRUCTION LIEN		*** COMPLETELY DELETED *** THE KIRKLAND PARTNERSHIP INC. STANFORD DOWNEY ARCHITECTS INC.		
NR303054	2012/07/09	DIS CONSTRUCT LIEN		*** COMPLETELY DELETED *** THE KIRKLAND PARTNERSHIP INC. STANFORD DOWNEY ARCHITECTS INC.		
	REMARKS: NR302972.					
NR303357	2012/07/13	TRANSFER OF CHARGE	$540,400	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
	CORRECTIONS: AMOUNT CHANGED FROM $0 TO $540400.00 ON 2012/12/28 BY MOZGIEL, MARILYN.					
NR305349	2012/08/01	TRANSFER OF CHARGE	$550,500	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C

REG. NUM.	DATE	INSTRUMENT TYPE	AMOUNT	PARTIES FROM	PARTIES TO	CERT/ CHKD
	REMARKS: NR295330.					
	CORRECTIONS: AMOUNT CHANGED FROM $0 TO $550500.00 ON 2012/12/28 BY MOZGIEL, MARILYN.					
NR306546	2012/08/17	CHARGE	$3,360,000	PORT DALHOUSIE VITALIZATION CORPORATION	TRAVELERS INSURANCE COMPANY OF CANADA	C
NR306548	2012/08/17	POSTPONEMENT		SONI, SANJAY OLYMPIA TRUST COMPANY	TRAVELERS INSURANCE COMPANY OF CANADA	C
	REMARKS: NR295330 TO NR306546					
NR308599	2012/09/13	TRANSFER OF CHARGE	$564,800	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
	CORRECTIONS: AMOUNT CHANGED FROM $0 TO $564800.00 ON 2012/12/28 BY MOZGIEL, MARILYN.					
NR311204	2012/10/18	NOTICE	$7,968,000	SONI, SANJAY OLYMPIA TRUST COMPANY	SONI, SANJAY	C
	REMARKS: NR295330					
	CORRECTIONS: AMOUNT CHANGED FROM $2 TO $7968000.00 ON 2012/12/28 BY MOZGIEL, MARILYN.					
NR311206	2012/10/18	TRANSFER OF CHARGE	$605,500	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
	CORRECTIONS: AMOUNT CHANGED FROM $0 TO $605500.00 ON 2012/12/28 BY MOZGIEL, MARILYN.					
NR315928	2012/12/19	TRANSFER OF CHARGE	$845,000	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
NR315929	2012/12/19	TRANSFER OF CHARGE	$506,300	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
NR320639	2013/03/08	TRANSFER OF CHARGE	$260,300	SONI, SANJAY	OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
NR320640	2013/03/08	TRANSFER OF CHARGE	$151,700	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
NR339287	2013/11/05	CONSTRUCTION LIEN		*** COMPLETELY DELETED *** STANFORD DOWNEY ARCHITECTS INC.		
NR339288	2013/11/05	CONSTRUCTION LIEN		*** COMPLETELY DELETED ***		

REG. NUM.	DATE	INSTRUMENT TYPE	AMOUNT	PARTIES FROM	PARTIES TO	CERT/ CHKD
				STANFORD DOWNEY ARCHITECTS INC.		
NR340861	2013/11/25	DIS CONSTRUCT LIEN		*** COMPLETELY DELETED *** STANFORD DOWNEY ARCHITECTS INC.		
	REMARKS: NR339287.					
NR340862	2013/11/25	DIS CONSTRUCT LIEN		*** COMPLETELY DELETED *** STANFORD DOWNEY ARCHITECTS INC.		
	REMARKS: NR339288.					
NR347039	2014/03/03	APL GOVT ORDER		*** COMPLETELY DELETED *** THE CORPORATION OF THE CITY OF ST. CATHARINES		
	REMARKS: PROPERTY STANDARDS					
NR349433	2014/04/08	NOTICE	$2	SONI, SANJAY OLYMPIA TRUST COMPANY	SONI, SANJAY	C
	REMARKS: NR295330					
NR353024	2014/05/30	TRANSFER OF CHARGE	$432,900	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
NR364768	2014/10/06	TRANSFER OF CHARGE	$329,345	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
NR364769	2014/10/06	TRANSFER OF CHARGE	$202,500	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
NR377526	2015/03/25	APL (GENERAL)		*** COMPLETELY DELETED *** THE CORPORATION OF THE CITY OF ST. CATHARINES		
	REMARKS: DELETE RO494153, RO494154, RO500165, RO561203 & RO569444					
NR388836	2015/08/06	CONSTRUCTION LIEN		*** COMPLETELY DELETED *** STANFORD DOWNEY ARCHITECTS INC.		
NR396145	2015/10/28	CERTIFICATE		*** COMPLETELY DELETED *** STANFORD DOWNEY ARCHITECTS INC.		
	REMARKS: CERTIFICATE OF ACTION NR388836					
NR406779	2016/03/04	APL (GENERAL)		*** COMPLETELY DELETED *** THE CORPORATION OF THE CITY OF ST. CATHARINES		

REG. NUM.	DATE	INSTRUMENT TYPE	AMOUNT	PARTIES FROM	PARTIES TO	CERT/ CHKD
	REMARKS: DELETES NR347039					
NR407615	2016/03/15	TRANSFER OF CHARGE		SONI, SANJAY	BUILDING & DEVELOPMENT MORTGAGES CANADA INC.,	C
	REMARKS: NR295330.					
NR410871	2016/04/28	TRANSFER OF CHARGE		OLYMPIA TRUST COMPANY	OLYMPIA TRUST COMPANY	C
	REMARKS: AS TO $44,000.00 NR295330					
NR432105	2016/11/29	APL DEL CONST LIEN		*** COMPLETELY DELETED *** PORT DALHOUSIE VITALIZATION CORPORATION		
	REMARKS: NR388836.					
NR432900	2016/12/06	CHARGE	$2,790,000	PORT DALHOUSIE VITALIZATION CORPORATION	BUILDING & DEVELOPMENT MORTGAGES CANADA INC.	C
NR432901	2016/12/06	POSTPONEMENT		OLYMPIA TRUST COMPANY BUILDING & DEVELOPMENT MORTGAGES CANADA INC.	BUILDING & DEVELOPMENT MORTGAGES CANADA INC.	C
	REMARKS: NR295330, NR410871 TO NR432900					
NR432905	2016/12/06	TRANSFER OF CHARGE		BUILDING & DEVELOPMENT MORTGAGES CANADA INC.	BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	C
	REMARKS: NR432900.					
NR434829	2016/12/28	TRANSFER OF CHARGE		BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	C
	REMARKS: NR432900					
NR439607	2017/02/22	TRANSFER OF CHARGE		BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	C
	REMARKS: NR432900 AND NR434829 NR432900					
NR440107	2017/02/28	NOTICE	$2	PORT DALHOUSIE VITALIZATION CORPORATION	BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	C
	REMARKS: NR432900					
NR441102	2017/03/09	TRANSFER OF CHARGE		BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	C
	REMARKS: THE ORIGINAL CHARGE IS NR432900. NR432900					
NR442339	2017/03/27	TRANSFER OF CHARGE		BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	C
	REMARKS: NR432900					
NR443408	2017/04/05	TRANSFER OF CHARGE		BUILDING & DEVELOPMENT MORTGAGES CANADA INC.	BUILDING & DEVELOPMENT MORTGAGES CANADA INC.	C

REG. NUM.	DATE	INSTRUMENT TYPE	AMOUNT	PARTIES FROM	PARTIES TO	CERT/ CHKD
				OLYMPIA TRUST COMPANY	OLYMPIA TRUST COMPANY	
	REMARKS: NR432900					
NR446504	2017/05/10	NOTICE		PORT DALHOUSIE VITALIZATION CORPORATION	BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	C
	REMARKS: NR432900, NR443408					
NR446505	2017/05/10	TRANSFER OF CHARGE		BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	C
	REMARKS: NR432900					
NR448963	2017/06/05	TRANSFER OF CHARGE		BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	C
	REMARKS: NR432900					
NR449654	2017/06/12	TRANSFER OF CHARGE		BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	C
	REMARKS: NR432900, NR448963 NR432900					
NR449747	2017/06/13	APL CH NAME OWNER		PORT DALHOUSIE VITALIZATION CORPORATION	UNION WATERFRONT INC.	C
NR453864	2017/07/21	NOTICE		UNION WATERFRONT INC.	BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	C
	REMARKS: NR432900					
NR453865	2017/07/21	TRANSFER OF CHARGE		BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	C
	REMARKS: NR449654 NR432900					
NR456457	2017/08/15	TRANSFER OF CHARGE		BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	C
	REMARKS: NR432900					
NR457596	2017/08/25	TRANSFER OF CHARGE		OLYMPIA TRUST COMPANY	BUILDING & DEVELOPMENT MORTGAGES CANADA INC.	C
	REMARKS: NR295330.					
NR469472	2017/12/22	CHARGE	$1,000,000	UNION WATERFRONT INC.	1871241 ONTARIO INC.	C
NR469473	2017/12/22	POSTPONEMENT		BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	1871241 ONTARIO INC.	C
	REMARKS: NR432900 TO NR469472					
NR469474	2017/12/22	POSTPONEMENT		OLYMPIA TRUST COMPANY	1871241 ONTARIO INC.	C

REG. NUM.	DATE	INSTRUMENT TYPE	AMOUNT	PARTIES FROM	PARTIES TO	CERT/ CHKD
	REMARKS: NR295330 TO NR469472			BUSINESS DEVELOPMENT MORTGAGES CANADA INC.		
NR488159	2018/08/08	APL COURT ORDER		ONTARIO SUPERIOR COURT OF JUSTICE	MSI SPERGEL INC.	C

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Chains Of Title (3)

for PIN 46195-0669LT

Lands in yellow

Lots 14 & pt lot 13 on RC Pl 696

Chain Of Title

PIN 46188-0669 LT

Lands in yellow

\# 829 July 21, 1888 — Nathan Pawling
Matilda Pawling

↓ To

\# ? Dec 7, 1916 — Bella Duffin
John Ferguson - died

↓ To

\# 2886 Aug 7, 1925 — Minnie Mary Ferguson

↓ To

\# 5081 Aug 7, 1951 — The Niagara, St. Catharines & Toronto Railway Company

↓ To

\# 218380 Jan 22, 1971 — Sidney H. Brookson

↓ To

The Corporation Of The City Of St Catharines

495720 Apr 29, 1985 The Corporation Of The City Of St Catharines

To

589368 July 6, 1989 Donatelli Productions Ltd

To

716732 Oct 10, 1996 Lakeport Foods Inc.

To

NR 12028 Dec 9, 2003 1184540 Ontario Inc.

To

Port Dalhousie Vitalization Corporation

NR 449747 June 13, 2017 Name change to

Union Waterfront Inc.
present owners

Chain Of Title

PIN 46195-0669 LT

Lands in yellow

\# 558 Oct 28, 1880 — Nathan H. Pauling

To ↓

\# 2594 Dec 21, 1921 — John Stanton
Estate of John Stanton

To ↓

\# 3458 May 20, 1937 — Alice Stanton

To ↓

\# 4325 June 13, 1947 — Wilfred L. Hart
Elsie A. Hart

To ↓

\# 39903 April 10, 1959 — Robert Gamble
Lillian Gamble

To ↓

Edward Sundborg
Joyce Sundborg

#141587 July 15, 1966 Edward Sunborg
Joyce Sunborg

To ↓

#344603 Nov 2, 1976 Anthony Heim
Gail Heim

↓ To

312351 Ontario Limited
carrying on business as
Arico (Arica) Developments

Mortgage Default

#392309 Jan 3, 1979 Anthony Heim
Gail Heim

To ↓

#421751 Sept 19, 1980 Cameron Thorburn
(Thorburn)

↓ To

Gerald Pietrobon

464988 July 29, 1983 Gerald Pietrobon

To ↓

576567 Dec 7, 1988 471749 Ontario Inc.

↓ To

766767 Ontario Inc.

Mortgage Default

623726 Feb 15, 1991 James Tucker

To ↓

638793 Nov 7, 1991 918804 Ontario Inc.

↓ To

NR 99534 April 12, 2006 711318 Ontario Inc.

To ↓

Port Dalhousie Vitalization Corporation

NR449747 June 13, 2017 Name change to

Union Waterfront Inc.

present owners

Chain Of Title

PIN 46195-0669 LT
Lands in yellow

Lot 5 Port Dalhousie

#98 March 24/1871 Edward McArdle

↓ To

#103 March 25, 1871 Nathan Pawling

↓ To

#445 May 31, 1878 Barney McGrath (Bernard)

↓ To

John Rogers
Michael Rogers

Mortgage Default

#831 Aug 11, 1881 The Sec (Security) Loan & Savings Co. St. Catharines

↓ To

Harvey Neelon

#1047 Sept 17, 1894 Estate of Harvey Neelon

To ↓

#1119 Sept 23, 1894 Mary A. Neelon

↓ To

#1299 June 29, 1900 John Stanton

To ↓

#1404 Feb 18, 1905 George F. Peterson

↓ To

Samuel Houston

#3298 March 30 1932 Estate of Samuel Houston

To ↓

#3424 Dec 1, 1936 Samuel A. Houston

↓ To

Louis J. Marck

3720 March 3, 1942 — Louis Marck

↓ To

3997 Dec 4, 1944 — Darwin R. Challinger

↓ To

4023 April 7, 1945 — Wilfred H. Maxwell

↓ To

4161 May 22, 1946 — Yoroslaw Kmit

↓ To

5078 July 31, 1951 — Dmytro Chaikowski
Anna Chaikowski

↓ To

5654 Nov 6, 1953 — Albert Plata
Albert Yanuk
Stanley Plata

↓ To

Port Hotel Ltd.

86608 Dec 12, 1962 Port Hotel Ltd. Limited

↓ To

399850 May 31, 1979 Scott A. Pegg

To ↓

589368 July 6, 1989 Donatelli Productions Limited

↓ To

716732 Oct 10, 1996 Lakeport Foods Inc.

To ↓

NR 12028 Dec 9/2003 1184540 Ontario Inc.

↓ To

Port Dalhousie Vitalization Corporation

NR 449747 June 13, 2017 Name change to

Union Waterfront Inc.
Present owners

* CERTIFIED IN ACCORDANCE WITH THE LAND TITLES ACT * SUBJECT TO RESERVATIONS IN CROWN GRANT *

PROPERTY DESCRIPTION: LT 14 RCP 696 S/T RO497010; PT LT 13 RCP 696, PT 2 30R11783 GRANTHAM;ST. CATHARINES

PROPERTY REMARKS:

ESTATE/QUALIFIER:
FEE SIMPLE
LT CONVERSION QUALIFIED

RECENTLY:
CONSOLIDATION FROM 46195-0123, 46195-0667

PIN CREATION DATE:
2006/05/01

OWNERS' NAMES
UNION WATERFRONT INC.

CAPACITY SHARE
ROWN

REG. NUM.	DATE	INSTRUMENT TYPE	AMOUNT	PARTIES FROM	PARTIES TO	CERT/ CHKD
** PRINTOUT INCLUDES ALL DOCUMENT TYPES AND DELETED INSTRUMENTS SINCE 2006/05/01 **						
**SUBJECT, ON FIRST REGISTRATION UNDER THE LAND TITLES ACT, TO:						
** SUBSECTION 44(1) OF THE LAND TITLES ACT, EXCEPT PARAGRAPH 11, PARAGRAPH 14, PROVINCIAL SUCCESSION DUTIES *						
** AND ESCHEATS OR FORFEITURE TO THE CROWN.						
** THE RIGHTS OF ANY PERSON WHO WOULD, BUT FOR THE LAND TITLES ACT, BE ENTITLED TO THE LAND OR ANY PART OF						
** IT THROUGH LENGTH OF ADVERSE POSSESSION, PRESCRIPTION, MISDESCRIPTION OR BOUNDARIES SETTLED BY						
** CONVENTION.						
** ANY LEASE TO WHICH THE SUBSECTION 70(2) OF THE REGISTRY ACT APPLIES.						
**DATE OF CONVERSION TO LAND TITLES: 2003/09/22 **						
30R2598	1979/02/23	PLAN REFERENCE				C
RO416096	1980/04/30	AGREEMENT			THE CORPORATION OF THE CITY OF ST. CATHARINES	C
	REMARKS: SKETCH ATTACHED.					
RO416097	1980/04/30	AGREEMENT			THE CORPORATION OF THE CITY OF ST. CATHARINES	C
	REMARKS: SKETCH ATTACHED. ENCROACHMENT					
RO423334	1980/10/23	AGREEMENT			THE CORPORATION OF THE CITY OF ST. CATHARINES	C
	REMARKS: ENCROACHMENT					
RO465534	1983/08/10	CONSTRUCTION LIEN		*** DELETED AGAINST THIS PROPERTY ***		
	REMARKS: DISCHARGED BY NR128131					
	CORRECTIONS: DELETED ON 2013/06/14 BY PIRSON, NANCY.					
RO468312	1983/09/29	CERT A CONST LIEN		*** DELETED AGAINST THIS PROPERTY ***		
	REMARKS: RO465534					

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REG. NUM.	DATE	INSTRUMENT TYPE	AMOUNT	PARTIES FROM	PARTIES TO	CERT/ CHKD
RO494153	1985/03/27	AGREEMENT			THE CORPORATION OF THE CITY OF ST. CATHARINES	C
	REMARKS: SKETCH ATTACHED. ENCROACHMENT					
RO494154	1985/03/27	AGREEMENT			THE CORPORATION OF THE CITY OF ST. CATHARINES	C
	REMARKS: SKETCH ATTACHED. SITE PLAN					
30R4156	1985/04/22	PLAN REFERENCE				C
RO496311	1985/05/07	DIS CONSTRUCT LIEN		*** DELETED AGAINST THIS PROPERTY ***		
	REMARKS: RO465534; DISCHARGED BY NR128131					
	CORRECTIONS: DELETED ON 2013/06/14 BY PIRSON, NANCY.					
RO497010	1985/05/24	TRANSFER EASEMENT			THE REGIONAL MUNICIPALITY OF NIAGARA	C
RO500165	1985/07/15	AGREEMENT			THE CORPORATION OF THE CITY OF ST. CATHARINES	C
	REMARKS: SKETCH ATTACHED; SITE PLAN AMENDMENT					
30R5019	1987/07/29	PLAN REFERENCE				C
RO569444	1988/08/17	AGREEMENT			THE CORPORATION OF THE CITY OF ST. CATHARINES	C
	REMARKS: AMENDING SITE PLAN					
NR12028	2003/12/09	TRANSFER	$1,690,000	1184540 ONTARIO INC.	PORT DALHOUSIE VITALIZATION CORPORATION	C
NR12334	2003/12/12	CHARGE		*** DELETED AGAINST THIS PROPERTY *** PORT DALHOUSIE VITALIZATION CORPORATION	FIRSTONTARIO CREDIT UNION LIMITED	
NR12337	2003/12/12	CHARGE		*** DELETED AGAINST THIS PROPERTY *** PORT DALHOUSIE VITALIZATION CORPORATION	FIRSTONTARIO CREDIT UNION LIMITED	
NR12340	2003/12/12	NOTICE OF LEASE	$1	PORT DALHOUSIE VITALIZATION CORPORATION	PORT DALHOUSIE MANAGEMENT CORPORATION	C
	REMARKS: EXPIRY(5 YEARS)DATE: 2008/09/30					
NR12352	2003/12/12	NO ASSG LESSOR INT		*** DELETED AGAINST THIS PROPERTY *** PORT DALHOUSIE VITALIZATION CORPORATION	FIRSTONTARIO CREDIT UNION LIMITED	
	REMARKS: NR12340, NR12334, NR12337					
30R11783	2006/03/27	PLAN REFERENCE				C
NR99534	2006/04/12	TRANSFER	$1	711318 ONTARIO INC.	PORT DALHOUSIE VITALIZATION CORPORATION	C
	REMARKS: PLANNING ACT STATEMENT ON PT 2 ON 30R11783					

NOTE: ADJOINING PROPERTIES SHOULD BE INVESTIGATED TO ASCERTAIN DESCRIPTIVE INCONSISTENCIES, IF ANY, WITH DESCRIPTION REPRESENTED FOR THIS PROPERTY.
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REG. NUM.	DATE	INSTRUMENT TYPE	AMOUNT	PARTIES FROM	PARTIES TO	CERT/ CHKD
NR100226	2006/04/20	APL CONSOLIDATE		PORT DALHOUSIE VITALIZATION CORPORATION PORT DALHOUSIE VITALIZATION CORPORATION		C
NR128131	2007/01/12	DIS CONSTRUCT LIEN		*** COMPLETELY DELETED ***	F. GROSSI CONSTRUCTION LTD	
	REMARKS: RE: RO468312 RO468312					
NR159203	2007/11/14	CHARGE		*** DELETED AGAINST THIS PROPERTY *** PORT DALHOUSIE VITALIZATION CORPORATION	FIRSTONTARIO CREDIT UNION LIMITED	
NR159205	2007/11/14	NO ASSGN RENT GEN		*** DELETED AGAINST THIS PROPERTY *** PORT DALHOUSIE VITALIZATION CORPORATION	FIRSTONTARIO CREDIT UNION LIMITED	
	REMARKS: NR159203 RENTS					
NR174076	2008/04/28	CHARGE		*** COMPLETELY DELETED *** PORT DALHOUSIE VITALIZATION CORPORATION	KING'S POINT (NIAGARA) LIMITED	
NR185831	2008/08/19	DISCH OF CHARGE		*** COMPLETELY DELETED *** KING'S POINT (NIAGARA) LIMITED		
	REMARKS: RE: NR174076					
NR197282	2008/12/15	NOTICE		*** DELETED AGAINST THIS PROPERTY *** PORT DALHOUSIE VITALIZATION CORPORATION	FIRSTONTARIO CREDIT UNION LIMITED	
	REMARKS: NR159203					
NR245325	2010/07/15	NOTICE		THE CORPORATION OF THE CITY OF ST. CATHARINES		C
NR245528	2010/07/16	NOTICE		THE CORPORATION OF THE CITY OF ST. CATHARINES		C
NR245529	2010/07/16	NOTICE		THE CORPORATION OF THE CITY OF ST. CATHARINES		C
NR245530	2010/07/16	NOTICE		THE CORPORATION OF THE CITY OF ST. CATHARINES		C
NR268621	2011/05/17	DISCH OF CHARGE		*** COMPLETELY DELETED *** FIRSTONTARIO CREDIT UNION LIMITED		
	REMARKS: NR12334.					
NR268627	2011/05/17	DISCH OF CHARGE		*** COMPLETELY DELETED *** FIRSTONTARIO CREDIT UNION LIMITED		
	REMARKS: NR12337.					
NR269125	2011/05/24	APL (GENERAL)		*** COMPLETELY DELETED ***		

REG. NUM.	DATE	INSTRUMENT TYPE	AMOUNT	PARTIES FROM	PARTIES TO	CERT/ CHKD
				FIRSTONTARIO CREDIT UNION LIMITED		
	REMARKS: DELETE NR12352					
NR270297	2011/06/03	CHARGE		*** DELETED AGAINST THIS PROPERTY *** PORT DALHOUSIE VITALIZATION CORPORATION	PDVC DEVELOPMENTS INC.	
NR270298	2011/06/03	CHARGE		*** DELETED AGAINST THIS PROPERTY *** PORT DALHOUSIE VITALIZATION CORPORATION	PDVC DEVELOPMENTS INC.	
NR279446	2011/09/19	APL COURT ORDER		PORT DALHOUSIE VITALIZATION CORPORATION	PORT DALHOUSIE VITALIZATION CORPORATION	C
	REMARKS: PART LOT CONTROL PROVISION OF PLANNING ACT					
NR281471	2011/10/12	TRANSFER OF CHARGE		*** DELETED AGAINST THIS PROPERTY *** PDVC DEVELOPMENTS INC.	2298642 ONTARIO INC.	
	REMARKS: NR270298.					
NR281473	2011/10/12	POSTPONEMENT		*** DELETED AGAINST THIS PROPERTY *** PDVC DEVELOPMENTS INC.	2298642 ONTARIO INC.	
	REMARKS: POSTPONES NR270297 TO NR281471					
NR281570	2011/10/13	TRANSFER OF CHARGE		*** DELETED AGAINST THIS PROPERTY *** 2298642 ONTARIO INC.	HARBOUREDGE MORTGAGE INVESTMENT CORPORATION	
	REMARKS: NR270298.					
NR294871	2012/04/03	LR'S ORDER		LAND REGISTRAR, LRO NO. 30		C
	REMARKS: DESCRIPTION					
NR294973	2012/04/04	CHARGE	$10,000,000	PORT DALHOUSIE VITALIZATION CORPORATION	FIRSTONTARIO CREDIT UNION LIMITED	C
NR294976	2012/04/04	NO ASSGN RENT GEN		PORT DALHOUSIE VITALIZATION CORPORATION	FIRSTONTARIO CREDIT UNION LIMITED	C
	REMARKS: NR294973.					
NR295093	2012/04/10	DISCH OF CHARGE		*** COMPLETELY DELETED *** PDVC DEVELOPMENTS INC.		
	REMARKS: NR270297.					
NR295095	2012/04/10	DISCH OF CHARGE		*** COMPLETELY DELETED *** HARBOUREDGE MORTGAGE INVESTMENT CORPORATION		
	REMARKS: NR270298.					
NR295330	2012/04/12	CHARGE	$1,500,000	PORT DALHOUSIE VITALIZATION CORPORATION	SONI, SANJAY	C
NR295534	2012/04/13	DISCH OF CHARGE		*** COMPLETELY DELETED ***		

REG. NUM.	DATE	INSTRUMENT TYPE	AMOUNT	PARTIES FROM	PARTIES TO	CERT/ CHKD
				FIRSTONTARIO CREDIT UNION LIMITED		
	REMARKS: NR159203.					
NR297230	2012/05/03	TRANSFER OF CHARGE	$669,700	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
	CORRECTIONS: AMOUNT CHANGED FROM $0 TO $669700.00 ON 2012/12/28 BY MOZGIEL, MARILYN.					
NR297897	2012/05/10	TRANSFER OF CHARGE	$493,500	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
	CORRECTIONS: AMOUNT CHANGED FROM $0 TO $493500.00 ON 2012/12/28 BY MOZGIEL, MARILYN.					
NR300870	2012/06/14	NOTICE	$2	PORT DALHOUSIE VITALIZATION CORPORATION	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330					
NR300873	2012/06/14	TRANSFER OF CHARGE	$586,000	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
	CORRECTIONS: AMOUNT CHANGED FROM $0 TO $586000.00 ON 2012/12/28 BY MOZGIEL, MARILYN.					
NR300874	2012/06/14	TRANSFER OF CHARGE	$916,000	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
	CORRECTIONS: AMOUNT CHANGED FROM $0 TO $916000.00 ON 2012/12/28 BY MOZGIEL, MARILYN.					
NR300875	2012/06/14	TRANSFER OF CHARGE	$688,300	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
	CORRECTIONS: AMOUNT CHANGED FROM $0 TO $688300.00 ON 2012/12/28 BY MOZGIEL, MARILYN.					
NR300876	2012/06/14	TRANSFER OF CHARGE	$548,000	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
	CORRECTIONS: AMOUNT CHANGED FROM $0 TO $548000.00 ON 2012/12/28 BY MOZGIEL, MARILYN.					
NR302972	2012/07/06	CONSTRUCTION LIEN		*** COMPLETELY DELETED *** THE KIRKLAND PARTNERSHIP INC. STANFORD DOWNEY ARCHITECTS INC.		
NR303054	2012/07/09	DIS CONSTRUCT LIEN		*** COMPLETELY DELETED *** THE KIRKLAND PARTNERSHIP INC.		

REG. NUM.	DATE	INSTRUMENT TYPE	AMOUNT	PARTIES FROM	PARTIES TO	CERT/ CHKD
				STANFORD DOWNEY ARCHITECTS INC.		
	REMARKS: NR302972.					
NR303357	2012/07/13	TRANSFER OF CHARGE	$540,400	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
	CORRECTIONS: AMOUNT CHANGED FROM $0 TO $540400.00 ON 2012/12/28 BY MOZGIEL, MARILYN.					
NR305349	2012/08/01	TRANSFER OF CHARGE	$550,500	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
	CORRECTIONS: AMOUNT CHANGED FROM $0 TO $550500.00 ON 2012/12/28 BY MOZGIEL, MARILYN.					
NR306546	2012/08/17	CHARGE	$3,360,000	PORT DALHOUSIE VITALIZATION CORPORATION	TRAVELERS INSURANCE COMPANY OF CANADA	C
NR306548	2012/08/17	POSTPONEMENT		SONI, SANJAY OLYMPIA TRUST COMPANY	TRAVELERS INSURANCE COMPANY OF CANADA	C
	REMARKS: NR295330 TO NR306546					
NR308599	2012/09/13	TRANSFER OF CHARGE	$564,800	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
	CORRECTIONS: AMOUNT CHANGED FROM $0 TO $564800.00 ON 2012/12/28 BY MOZGIEL, MARILYN.					
NR311204	2012/10/18	NOTICE	$7,968,000	SONI, SANJAY OLYMPIA TRUST COMPANY	SONI, SANJAY	C
	REMARKS: NR295330					
	CORRECTIONS: AMOUNT CHANGED FROM $2 TO $7968000.00 ON 2012/12/28 BY MOZGIEL, MARILYN.					
NR311206	2012/10/18	TRANSFER OF CHARGE	$605,500	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
	CORRECTIONS: AMOUNT CHANGED FROM $0 TO $605500.00 ON 2012/12/28 BY MOZGIEL, MARILYN.					
NR315928	2012/12/19	TRANSFER OF CHARGE	$845,000	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
NR315929	2012/12/19	TRANSFER OF CHARGE	$506,300	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
NR320639	2013/03/08	TRANSFER OF CHARGE	$260,300	SONI, SANJAY	OLYMPIA TRUST COMPANY	C

REG. NUM.	DATE	INSTRUMENT TYPE	AMOUNT	PARTIES FROM	PARTIES TO	CERT/ CHKD
	REMARKS: NR295330.					
NR320640	2013/03/08	TRANSFER OF CHARGE	$151,700	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
NR339287	2013/11/05	CONSTRUCTION LIEN		*** COMPLETELY DELETED *** STANFORD DOWNEY ARCHITECTS INC.		
NR339288	2013/11/05	CONSTRUCTION LIEN		*** COMPLETELY DELETED *** STANFORD DOWNEY ARCHITECTS INC.		
NR340861	2013/11/25	DIS CONSTRUCT LIEN		*** COMPLETELY DELETED *** STANFORD DOWNEY ARCHITECTS INC.		
	REMARKS: NR339287.					
NR340862	2013/11/25	DIS CONSTRUCT LIEN		*** COMPLETELY DELETED *** STANFORD DOWNEY ARCHITECTS INC.		
	REMARKS: NR339288.					
NR349433	2014/04/08	NOTICE	$2	SONI, SANJAY OLYMPIA TRUST COMPANY	SONI, SANJAY	C
	REMARKS: NR295330					
NR353024	2014/05/30	TRANSFER OF CHARGE	$432,900	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
NR364768	2014/10/06	TRANSFER OF CHARGE	$329,345	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
NR364769	2014/10/06	TRANSFER OF CHARGE	$202,500	SONI, SANJAY	SONI, SANJAY OLYMPIA TRUST COMPANY	C
	REMARKS: NR295330.					
NR388836	2015/08/06	CONSTRUCTION LIEN		*** COMPLETELY DELETED *** STANFORD DOWNEY ARCHITECTS INC.		
NR396145	2015/10/28	CERTIFICATE		*** COMPLETELY DELETED *** STANFORD DOWNEY ARCHITECTS INC.		
	REMARKS: CERTIFICATE OF ACTION NR388836					

REG. NUM.	DATE	INSTRUMENT TYPE	AMOUNT	PARTIES FROM	PARTIES TO	CERT/ CHKD
NR407615	2016/03/15	TRANSFER OF CHARGE		SONI, SANJAY	BUILDING & DEVELOPMENT MORTGAGES CANADA INC.,	C
	REMARKS: NR295330.					
NR410871	2016/04/28	TRANSFER OF CHARGE		OLYMPIA TRUST COMPANY	OLYMPIA TRUST COMPANY	C
	REMARKS: AS TO $44,000.00 NR295330					
NR432105	2016/11/29	APL DEL CONST LIEN		*** COMPLETELY DELETED *** PORT DALHOUSIE VITALIZATION CORPORATION		
	REMARKS: NR388836.					
NR432900	2016/12/06	CHARGE	$2,790,000	PORT DALHOUSIE VITALIZATION CORPORATION	BUILDING & DEVELOPMENT MORTGAGES CANADA INC.	C
NR432901	2016/12/06	POSTPONEMENT		OLYMPIA TRUST COMPANY BUILDING & DEVELOPMENT MORTGAGES CANADA INC.	BUILDING & DEVELOPMENT MORTGAGES CANADA INC.	C
	REMARKS: NR295330, NR410871 TO NR432900					
NR432905	2016/12/06	TRANSFER OF CHARGE		BUILDING & DEVELOPMENT MORTGAGES CANADA INC.	BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	C
	REMARKS: NR432900.					
NR434829	2016/12/28	TRANSFER OF CHARGE		BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	C
	REMARKS: NR432900					
NR439607	2017/02/22	TRANSFER OF CHARGE		BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	C
	REMARKS: NR432900 AND NR434829 NR432900					
NR440107	2017/02/28	NOTICE	$2	PORT DALHOUSIE VITALIZATION CORPORATION	BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	C
	REMARKS: NR432900					
NR441102	2017/03/09	TRANSFER OF CHARGE		BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	C
	REMARKS: THE ORIGINAL CHARGE IS NR432900. NR432900					
NR442339	2017/03/27	TRANSFER OF CHARGE		BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	C
	REMARKS: NR432900					
NR443408	2017/04/05	TRANSFER OF CHARGE		BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	C
	REMARKS: NR432900					

REG. NUM.	DATE	INSTRUMENT TYPE	AMOUNT	PARTIES FROM	PARTIES TO	CERT/ CHKD
NR446504	2017/05/10	NOTICE		PORT DALHOUSIE VITALIZATION CORPORATION	BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	C
	REMARKS: NR432900, NR443408					
NR446505	2017/05/10	TRANSFER OF CHARGE		BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	C
	REMARKS: NR432900					
NR448963	2017/06/05	TRANSFER OF CHARGE		BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	C
	REMARKS: NR432900					
NR449654	2017/06/12	TRANSFER OF CHARGE		BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	C
	REMARKS: NR432900, NR448963 NR432900					
NR449747	2017/06/13	APL CH NAME OWNER		PORT DALHOUSIE VITALIZATION CORPORATION	UNION WATERFRONT INC.	C
NR453864	2017/07/21	NOTICE		UNION WATERFRONT INC.	BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	C
	REMARKS: NR432900					
NR453865	2017/07/21	TRANSFER OF CHARGE		BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	C
	REMARKS: NR449654 NR432900					
NR456457	2017/08/15	TRANSFER OF CHARGE		BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	C
	REMARKS: NR432900					
NR457596	2017/08/25	TRANSFER OF CHARGE		OLYMPIA TRUST COMPANY	BUILDING & DEVELOPMENT MORTGAGES CANADA INC.	C
	REMARKS: NR295330.					
NR469472	2017/12/22	CHARGE	$1,000,000	UNION WATERFRONT INC.	1871241 ONTARIO INC.	C
NR469473	2017/12/22	POSTPONEMENT		BUILDING & DEVELOPMENT MORTGAGES CANADA INC. OLYMPIA TRUST COMPANY	1871241 ONTARIO INC.	C
	REMARKS: NR432900 TO NR469472					
NR469474	2017/12/22	POSTPONEMENT		OLYMPIA TRUST COMPANY BUSINESS DEVELOPMENT MORTGAGES CANADA INC.	1871241 ONTARIO INC.	C
	REMARKS: NR295330 TO NR469472					

REG. NUM.	DATE	INSTRUMENT TYPE	AMOUNT	PARTIES FROM	PARTIES TO	CERT/ CHKD
NR488159	2018/08/08	APL COURT ORDER		ONTARIO SUPERIOR COURT OF JUSTICE	MSI SPERGEL INC.	C

NOTE: ADJOINING PROPERTIES SHOULD BE INVESTIGATED TO ASCERTAIN DESCRIPTIVE INCONSISTENCIES, IF ANY, WITH DESCRIPTION REPRESENTED FOR THIS PROPERTY.
NOTE: ENSURE THAT YOUR PRINTOUT STATES THE TOTAL NUMBER OF PAGES AND THAT YOU HAVE PICKED THEM ALL UP.

By-Laws + Reference Plans

Closing old Laneways included in our present day lands.

No chain of title completed on these laneways.

Province of Ontario

Document General

Form 4 — Land Registration Reform Act, 1984

D

FOR OFFICE USE ONLY

662212
NUMBER
CERTIFICATE OF REGISTRATION
93 FEB 12 15:38
NIAGARA NORTH NO. 30
ST. CATHARINES
LAND REGISTRAR

(1) Registry XX Land Titles ☐

(2) Page 1 of 4 pages

(3) Property Identifier(s) Block Property Additional: See Schedule ☐

(4) Nature of Document
JUDGMENT, ss. 88(1), Registry Act

(5) Consideration
Dollars $ n/a
N/A

(6) Description
Part of the Alleys surrounding the Unnumbered Lot, Plan No. 31, in the City of St. Catharines, in the Regional Municipality of Niagara, (formerly in Town of Port Dalhousie, in the County of Lincoln), designated as Parts 8, 9, 10, 11, 12, 13 and 14 on Reference Plan 30R-6464.

New Property Identifiers Additional: See Schedule ☐

Executions Additional: See Schedule ☐

(7) This Document Contains: (a) Redescription New Easement Plan/Sketch ☐ (b) Schedule for: Description ✓ Additional Parties ☐ Other ☒

(8) This Document provides as follows:

See Attached Schedule

Continued on Schedule ☐

(9) This Document relates to instrument number(s)

(10) Party(ies) (Set out Status or Interest)
Name(s) — Signature(s) — Date of Signature Y M D

THE CORPORATION OF THE CITY OF ST. CATHARINES
by its solicitor — Denis Squires — 1992 06 09

(11) Address for Service City Hall, 50 Church Street, P. O. Box 3012, St. Catharines, Ontario L2R 7C2

(12) Party(ies) (Set out Status or Interest)
Name(s) — Signature(s) — Date of Signature Y M D

(13) Address for Service

(14) Municipal Address of Property

(15) Document Prepared by:
ANNETTE LEMELIN, City Solicitor
City Hall, 50 Church Street
P. O. Box 3012
St. Catharines, Ontario
L2R 7C2

FOR OFFICE USE ONLY

Fees and Tax	
Registration Fee	27-
Total	27-

April, 1985

Court File No. 29,653/92

ONTARIO COURT

(GENERAL DIVISION)

THE HONOURABLE MR. JUSTICE KOVACS

) THURSDAY, THE 2nd DAY OF
) June, 1992.

IN THE MATTER of the Registry Act, R.S.O. 1990, c. R.20, ss.88(1);

AND IN THE MATTER of an application by The Corporation of the City of St. Catharines for an order closing part of the Alleys surrounding the Unnumbered Lot, Plan 31, formerly in the Town of Port Dalhousie, in the City of St. Catharines, in the Regional Municipality of Niagara

B E T W E E N:

THE CORPORATION OF THE CITY OF ST. CATHARINES

Applicant

-and-

DONATELLI PRODUCTIONS LIMITED, RUSTY KRUTY REALTY INC., RASTISLAV KRUTY IN TRUST, VALERIE ANN KRUTY, PORT DALHOUSIE PROJECTS INC., GIOVANI DONATELLI and THE ESTATE OF NATHAN PAWLING, DECEASED

Respondents

JUDGMENT

THIS APPLICATION was heard this day at the Court House, 59 Church Street, St. Catharines, Ontario, service upon the Respondent, The Estate of Nathan Pawling, deceased, having been dispensed with, and in the presence of counsel for all other parties,

ON READING THE NOTICE OF APPLICATION AND THE EVIDENCE FILED BY THE PARTIES, and on hearing the submission of counsel for the parties,

THIS COURT ORDERS that the highway hereinafter described be and the same is hereby permanently closed:

Part of the Alleys surrounding the Unnumbered Lot, Plan 31, City of St. Catharines, Regional Municipality of Niagara, (formerly in the Town of Port Dalhousie, in the County of Lincoln), designated as Parts 8, 9, 10, 11, 12, 13 and 14 on Reference Plan 30R-6464.

J. D. Kennedy

Entered at ST. CATHARINES
Inscrit à ST. CATHARINES
in BOOK No. 92
au REGISTRE N° 1933
as Document No.
comme Document N°
on / le June 2 1993
By / Par

4

Court File No. 29,653/92

THE CORPORATION OF THE CITY OF ST. CATHARINES - and -
DONATELLI PRODUCTIONS LIMITED, RUSTY KRUTY REALTY INC., RASTISLAV KRUTY IN TRUST,
VALERIE ANN KRUTY, PORT DALHOUSIE PROJECTS INC., GIOVANI DONATELLI AND
THE ESTATE OF NATHAN PAWLING, DECEASED

ONTARIO COURT
(GENERAL DIVISION)

JUDGMENT

DENIS SQUIRES
Assistant City Solicitor
City Hall
50 Church Street
P. O. Box 3012
St. Catharines, Ontario
L2R 7C2

(416) 688-5600

Solicitor for the Applicant

Province of Ontario

Document General

Form 4 — Land Registration Reform Act, 1984

D

FOR OFFICE USE ONLY

NUMBER 566190
CERTIFICATE OF REGISTRATION
'88 JUN 30 12:31
NIAGARA NORTH NO. 30
ST. CATHARINES
John Grenmore
LAND REGISTRAR

(1) Registry [X] Land Titles [ ] (2) Page 1 of 4 pages MK

(3) Property Identifier(s) Block Property Additional: See Schedule [ ]

(4) Nature of Document

By-law No. 88-197

(5) Consideration

Not applicable Dollars $ n/a

(6) Description

In the City of St. Catharines, in the Regional Municipality of Niagara, formerly in the Town of Port Dalhousie, composed of part of the unnamed public alley (known as Hogan's Alley), Registered Plan No. 31, designated as Part 6 on Plan 30R-5019.

New Property Identifiers Additional: See Schedule [ ]

Executions Additional: See Schedule [ ]

(7) This Document Contains: (a) Redescription New Easement Plan/Sketch [ ] (b) Schedule for: Description [X] Additional Parties [ ] Other [X]

(8) This Document provides as follows:

See schedule attached

Continued on Schedule [ ]

(9) This Document relates to instrument number(s)

(10) Party(ies) (Set out Status or Interest)

Name(s)	Signature(s)	Date of Signature Y	M	D
THE CORPORATION OF THE CITY OF ST. CATHARINES by its City Solicitor	Annette Lemelin ANNETTE LEMELIN	1988	06	20

(11) Address for Service City Hall, P.O. Box 3012, St. Catharines, Ontario. L2R 7C2

(12) Party(ies) (Set out Status or Interest)

Name(s)	Signature(s)	Date of Signature Y	M	D

(13) Address for Service

(14) Municipal Address of Property

Not assigned

(15) Document Prepared by:

City Solicitor
City of St. Catharines
City Hall, P.O.Box 3012
St. Catharines, Ontario
L2R 7C2
/eh

FOR OFFICE USE ONLY

Fees and Tax	
Registration Fee	20 -
Total	

April, 1985

CERTIFIED COPY

CITY OF ST. CATHARINES

BY-LAW NO. 88-197

A By-law to authorize the stopping up and closing and the leasing or selling of part of an unnamed public alley shown on Registered Plan No. 31 and known as Hogan's Alley.

WHEREAS Section 298, subsection 1, of the Municipal Act, R.S.O. 1980, Chapter 302, provides that the Council of every municipality may pass by-laws for stopping up any highway or part of a highway and for leasing or selling the same;

AND WHEREAS the Council of the Corporation of the City of St. Catharines deems it desirable to stop up and close that part of Hogan's Alley, described in Schedule "A" attached hereto;

AND WHEREAS The Council of The Corporation of the City of St. Catharines has caused to be published in the St. Catharines Standard, in its issues of April 18th, April 25th, May 2nd and May 9th 1988, a notice pursuant to Section 301 of the Municipal Act, of its intention to consider and, if approved, to pass a by-law stopping up and closing and authorizing the leasing or selling of that part of Hogan's Alley described in Schedule "A" attached hereto;

NOW THEREFORE THE COUNCIL OF THE CORPORATION OF THE CITY OF ST. CATHARINES enacts as follows:

1. That part of Hogan's Alley, as described in Schedule "A" attached hereto, be and the same is hereby stopped up and closed.

2. That the portion of Hogan's Alley so stopped up and closed may be sold to any person, firm or corporation who shall have the right to

purchase the same in accordance with the provisions of the Municipal Act, upon such terms and conditions as may be approved by resolution of Council or may be leased to any person, firm or corporation upon such terms and conditions as may be approved by resolution of Council.

3. That the Mayor and Clerk are hereby authorized to execute a conveyance or conveyances or lease or leases of the said lands described in Schedule "A" attached hereto, and any other document or documents necessary to carry out the intent of this By-law, and the Clerk is hereby authorized to affix the corporate seal thereto and to deliver the same.

Read a first and second time this 16th day of May 1988.

Read a third time and passed this 16th day of May 1988.

DEPUTY CLERK

MAYOR.

CERTIFIED under the Hand of the Clerk and the Seal of the CORPORATION OF THE CITY OF ST. CATHARINES to be a TRUE COPY of By-law 88-197 of the Corporation of the City of St. Catharines

DATED the 17th day of May 1988

Deputy Clerk of the Corporation of the City of St. Catharines

No Objection by the Council of the Regional Municipality of Niagara, June 16, 1988

A.R. Pierson, Regional Clerk

SCHEDULE "A"

ALL AND SINGULAR that certain parcel or tract of land and premises situate, lying and being in the City of St. Catharines, in the Regional Municipality of Niagara, formerly in the Town of Port Dalhousie, in the County of Lincoln, and being composed of part of the unnamed public alley (known as Hogan's Alley), Registered Plan No. 31, designated as Part 6 on a Reference Plan deposited in the Registry Office for the Registry Division of Niagara North as No. 30R-5019.

Appendix D
Property Survey

TOPOGRAPHIC SURVEY

OF

LOTS 3 to 14, (Incl.) and LOT 16,
PART OF LOT 2,
ALL OF HOGAN'S ALLEY
REGISTRAR'S COMPILED PLAN 696
FORMERLY TOWN OF PORT DALHOUSIE
NOW IN THE
© CITY OF ST. CATHARINES
REGIONAL MUNICIPALITY OF NIAGARA

VERHAEGEN · STUBBERFIELD · HARTLEY · BREWER · BEZAIRE INC.

SCALE = 1:250

0 2.50 5.00 10.00 15.00 METRES 25.00

"METRIC" DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

ELEVATIONS

ELEVATIONS SHOWN ON THIS PLAN ARE IN METRES TO CANADIAN GEODETIC DATUM

BENCH MARK

BENCH MARK: 0011922U2501 ELEVATION = 89.662
PORT DALHOUSIE ST. JOHN'S CHURCH PARISH HALL, AT CORNER OF MAIN AND ANN STREETS, BOLT IN SOUTH OR MAIN STREET WALL, IN CONCRETE FOUNDATION, 74 CM WEST OF THIRD BUTTRESS FROM SOUTHEAST CORNER, 10 CM BELOW BRICKWORK.

AREA

0.6711 Ha., (1.658 Acres).

CAUTION

UNDERGROUND UTILITIES AND SERVICES SHOWN ON THIS PLAN ARE APPROXIMATE AND MUST BE VERIFIED BEFORE CONSTRUCTION

LEGEND

○ MHH	DENOTES HYDRO MANHOLE	✦ FH	DENOTES FIRE HYDRANT
○ MHS	DENOTES SEWER MANHOLE	✧ WM	DENOTES WATER METER
○ MHT	DENOTES TELEPHONE MANHOLE	✦ WVS	DENOTES WATER VALVE (Service)
○ MHTR	DENOTES TRAFFIC MANHOLE	✦ WVM	DENOTES WATER VALVE (Main)
○ MHW	DENOTES WATER MANHOLE	✧ GM	DENOTES GAS METER
⊞ CB	DENOTES CATCH BASIN	✦ GV	DENOTES GAS VALVE
⊞⊞ DCB	DENOTES DOUBLE CATCH BASIN	■ HM	DENOTES HYDRO METER
• LSc	DENOTES LIGHT STANDARD CONCRETE	■ PedT	DENOTES TELEPHONE PEDESTAL
• LSs	DENOTES LIGHT STANDARD STEEL	■ PedCTV	DENOTES CABLE TV PEDESTAL
• LSw	DENOTES LIGHT STANDARD WOOD	TRs	DENOTES TRAFFIC SIGN
• UPc	DENOTES UTILITY POLE CONCRETE	TRsg	DENOTES TRAFFIC SIGNAL
• UPs	DENOTES UTILITY POLE STEEL	TRsb	DENOTES TRAFFIC SIGNAL BOX
• UPw	DENOTES UTILITY POLE WOOD	TH	DENOTES TESTHOLE
• GP	DENOTES GUY POLE	BM	DENOTES BENCH MARK
• GW	DENOTES GUY WIRE	△ HCP	DENOTES HORIZONTAL CONTROL POINT
○ Bol	DENOTES BOLLARD	◯ VCP	DENOTES VERTICAL CONTROL POINT
• PM	DENOTES PARKING METER	⊛	DENOTES SHRUB
		○ SC	DENOTES SEWER CLEANOUT
TOC	DENOTES TOP OF CURB	INV	DENOTES INVERT
BOC	DENOTES BOTTOM OF CURB		

DECIDUOUS AND CONIFEROUS TREES ARE DENOTED DT AND CT RESPECTIVELY.
A PREFIX TO THE DESCRIPTION DESIGNATES THE NUMBER OF TREE TRUNKS WHEN TREES ARE CLUMPED TOGETHER AND A SUFFIX DENOTES THE TREE DIAMETER OR (NTS) NOT TO SCALE.

C (pipe size) C	DENOTES OVERHEAD CABLE TV LINE
G (pipe size) G	DENOTES GAS LINE
H (pipe size) H	DENOTES OVERHEAD HYDRO LINE
CS (pipe size) CS	DENOTES COMBINED SEWER
SA (pipe size) SA	DENOTES SANITARY SEWER
ST (pipe size) ST	DENOTES STORM SEWER
T (pipe size) T	DENOTES OVERHEAD TELEPHONE LINE
W (pipe size) W	DENOTES WATER LINE

UNDERGROUND CABLE, HYDRO OR TELEPHONE LINES ARE PREFIXED WITH THE LETTER "u" (CABLE = uC HYDRO = uH TELEPHONE = uT)

LEGEND AND NOTES

BEARINGS ARE UTM GRID DERIVED FROM OBSERVED REFERENCE POINTS "A" AND "B" BY REAL TIME NETWORK OBSERVATIONS.

DISTANCES ON THIS PLAN ARE GROUND AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED SCALE FACTOR OF 0.99983772

ALL MONUMENTS SHOWN THUSLY □ ARE IRON BARS (IB) UNLESS OTHERWISE NOTED.

SIB	DENOTES 25mm X 25mm X 1.22m STANDARD IRON BAR
SSIB	DENOTES 25mm X 25mm X 0.61m SHORT STANDARD IRON BAR
IB	DENOTES 16mm X 16mm X 0.61m IRON BAR
IB ø	DENOTES 19mm diameter X 0.61m ROUND IRON BAR
CC	DENOTES CUT-CROSS
CP	DENOTES 5mm X 50mm STEEL PIN
■	DENOTES SURVEY MONUMENT FOUND
□	DENOTES SURVEY MONUMENT SET AND MARKED 1744
WIT.	DENOTES WITNESS ⊥ DENOTES PERPENDICULAR
(S)	DENOTES SET (M) DENOTES MEASURED (D) DENOTES DEED
ORP	DENOTES OBSERVED REFERENCE POINT

SSIB'S SHOWN ON THIS PLAN HAVE BEEN SET IN LIEU OF SIB'S WHERE THE POSSIBILITY THAT UNDERGROUND UTILITIES EXIST.

(S/P)	DENOTES SET PROPORTIONALLY	(OU)	DENOTES ORIGIN UNKNOWN
(P)	DENOTES PLAN 30R-4156	(P1)	DENOTES PLAN 30R-11783
(P2)	DENOTES PLAN 30R-13413	(P3)	DENOTES PLAN 30R-5364
(P4)	DENOTES PLAN 30R-6464		
(1744)	DENOTES VERHAEGEN STUBBERFIELD HARTLEY BREWER BEZAIRE INC., O.L.S.		
(744)	DENOTES R. J. MATTHEWS, O.L.S.		

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE REGULATIONS MADE UNDER THEM.
2. THIS SURVEY WAS COMPLETED ON THE 18th. DAY OF NOVEMBER, 2016.

DATE NOVEMBER 29, 2016.

ANDREW S. MANTHA
ONTARIO LAND SURVEYOR
for VERHAEGEN · STUBBERFIELD · HARTLEY
BREWER · BEZAIRE INC.

INTEGRATION DATA

COORDINATES ARE DERIVED FROM GRID OBSERVATIONS USING THE CAN-NET NETWORK SERVICE AND ARE REFERRED TO UTM ZONE 17 (81° WEST LONGITUDE) NAD83 (CSRS) (2010.0).
COORDINATE VALUES ARE TO AN URBAN ACCURACY IN ACCORDANCE WITH SECTION 14(2) O.REG 216/10

POINT ID	NORTHING	EASTING
ORP-A	N4784700.463	E640888.390
ORP-B	N4784774.431	E640819.729
ORP-C	N4784774.494	E640927.624

COORDINATES CANNOT, IN THEMSELVES, BE USED TO RE-ESTABLISH CORNERS OR BOUNDARIES SHOWN ON THIS PLAN.

WINDSOR
944 Ottawa Street
N8X 2E1
Ph: (519)258-1772
Fax: (519)258-1791

VERHAEGEN STUBBERFIELD HARTLEY BREWER BEZAIRE INC.

LEAMINGTON
187 Talbot Street East
N8H 1L8
Ph: (519)322-2375
Fax: (519)322-2675

ONTARIO LAND SURVEYORS www.vshbbsurveys.com

DRAWN BY: CMM	CAD Date: November 29, 2016 2:03 PM		
CHECKED BY: A.S.M.	CAD File: 51340000.dwg		
WORK ORDER: 5-13400	FILE NO.: St. Catharines-R.C.P. 696-0	PLAN FILE NO.:	H-1596

Appendix E
City Directory Search

ENVIRONMENTAL RISK INFORMATION SERVICES

CITY DIRECTORY

Project Property: *Hogan's Alley, St. Catharines, Ontario*
Report Type: *City Directory*
Order No: *20190116227*
Information Source: *Vernon's Saint Catharines, Ontario City Directory*
Date Completed: *25/02/2019*

Environmental Risk Information Services
A division of Glacier Media Inc.
1.866.517.5204 | info@erisinfo.com | erisinfo.com

City Directory Information Source
Vernon's Saint Catharines, Ontario City Directory

PROJECT NUMBER: 20190116227	
Site Address:	Hogan's Alley, St. Catharines, Ontario
Year: 2012	
Site Listing:	-No Civic Listing
Adjacent Properties:	
80 Front Street	-Street Not Listed
90 Front Street	-Street Not Listed
96 Front Street	-Street Not Listed
100 Front Street	-Street Not Listed
80 Gertrude	-Address Not Listed
1 Lakeport Road	-Lakeside Park Carousel
10A Lakeport Road	-Address Not Listed

12 Lakeport Road	-Dalhousie Princess Cruises -Port Mansion Dinner & Theatre Restaurant -Tropical Rebel -PM Night Clib in the Port Mansion
14 Lakeport Road	-Delylas Gourmet Pizza & Italian Eatery
18A Lakeport Road	-Address Not Listed
26 Lakeport Road	-Residential (1 Tenant)
28 Lakeport Road	-Old Port Candy & Sweets -Red Hots Patio Bar
38 Lakeport Road	-Residential (1 Tenant) -DLR Clothing Accessories -Murphy's Restaurant & Tavern -Ziegler South Pacific
69 Lakeport Road	-Heywood Generating Station
78 Lakeport Road	-Residential (1 Tenant)
84 Lakeport Road	-Address Not Listed

1 Lock Street	-Marie's Seafood Tavern -Portview Restaurant
5 Lock Street	-Mina's Restaurant
9 Lock Street	-Dalhousie Princess Cruises
10 Lock Street	-Address Not Listed
12 Lock Street	-Spice of Life -St Cathatines Craft Guild & Co-Operative
15 Lock Street	-Lion Hotel
16 Lock Street	-My Cottage BBQ Brew -PDMC
17 Lock Street	-Arezzo -Candie's Ice Creamery -D'Angelo F -Everyday Well Being -Gifts of the Earth -Kilt & Clover -Medical Office -My Walk in Closet

	-Port Dalhousie Business Association -Scorecard Harry's Inc -Sips 'n' Sweets Café and Bake Shop
28 Lock Street	-Residential (1 Tenant)
30 Lock Street	-Residential (1 Tenant)
33 Lock Street	-Multi-Tenant Residential
37 Lock Street	-Residential (1 Tenant)
40 Lock Street	-Address Not Listed
110 Lock Street	-Address Not Listed
112 Lock Street	-Address Not Listed
114 Lock Street	-Address Not Listed
120 Lock Street	-Address Not Listed
2 Main Street	-Address Not Listed

Site Address:	Hogan's Alley, St. Catharines, Ontario
Year: 2007	
Site Listing:	-No Civic Listing
Adjacent Properties:	
80 Front Street	-Street Not Listed
90 Front Street	-Street Not Listed
96 Front Street	-Street Not Listed
100 Front Street	-Street Not Listed
80 Gertrude	-Address Not Listed
1 Lakeport Road	-Address Not Listed
10A Lakeport Road	-Address Not Listed
12 Lakeport Road	-Port Mansion Dinner & Theatre Restaurant -Dalhousie Princess Cruises -Tropical Rebel

14 Lakeport Road	-Da Pizza Joint LTD
18A Lakeport Road	-No Listed Designations -Magic Mountain Trading Co
26 Lakeport Road	-Windsand Clothier -Residential (1 Tenant)
28 Lakeport Road	-Old Port Candy & Sweets -Red Hots Patio Bar
38 Lakeport Road	-Murphy's Restaurant & Tavern -Brick Room Gallery -Residential (1 Tenant) -DLR Clothing Accessories
69 Lakeport Road	-Address Not Listed
78 Lakeport Road	-Residential (1 Tenant)
84 Lakeport Road	-Address Not Listed
1 Lock Street	-Marie's Seafood Tavern -Susgin Construction LTD

5 Lock Street	-Wiseguys Italian Eatery -Residential (1 Tenant)
9 Lock Street	-Cooke's Cycle -Dalhousie Princess Cruises
10 Lock Street	-Address Not Listed
12 Lock Street	-Spice of Life -St Cathatines Craft Guild & Co-Operative
15 Lock Street	-Lion Hotel -Residential (1 Tenant) -Medical Office
16 Lock Street	-My Cottage -Port Dalhousie Management Corp -Multi-Tenant Residential
17 Lock Street	-Medical Office -Scorecard Harry's Inc -The Kilt and Clover -Little Shop of Candles -Nook & Cranny Shop -Olson Foods & Bakery

	-Harbour Gift Shoppe -Monika's Casuals -Candie's Ice Creamery -Port Dalhousie Business Association -Gifts of the Earth
28 Lock Street	-Residential (1 Tenant)
30 Lock Street	-Residential (1 Tenant)
33 Lock Street	-Multi-Tenant Residential
37 Lock Street	-Residential (1 Tenant)
40 Lock Street	-Address Not Listed
110 Lock Street	-Address Not Listed
112 Lock Street	-Address Not Listed
114 Lock Street	-Address Not Listed
120 Lock Street	-Address Not Listed
2 Main Street	-Address Not Listed

PROJECT NUMBER: 20190116227	
Site Address:	Hogan's Alley, St. Catharines, Ontario
Year: 2002	
Site Listing:	-No Civic Listing
Adjacent Properties:	
80 Front Street	-Street Not Listed
90 Front Street	-Street Not Listed
96 Front Street	-Street Not Listed
100 Front Street	-Street Not Listed
80 Gertrude	-Address Not Listed
1 Lakeport Road	-Address Not Listed
10A Lakeport Road	-Address Not Listed
12 Lakeport Road	-Port Mansion Dinner & Theatre Restaurant -Residential (1 Tenant)

14 Lakeport Road	-Da Pizza Joint LTD
18A Lakeport Road	-No Listed Designations -Magic Mountain Trading Co
26 Lakeport Road	-Windsand Clothier
28 Lakeport Road	-Old Port Candy & Sweets
38 Lakeport Road	-Murphy's Restaurant & Tavern -Tony's Harbourfront Catering Inc -Brick Room Gallery -Residential (1 Tenant)
69 Lakeport Road	-Address Not Listed
78 Lakeport Road	-Residential (1 Tenant)
84 Lakeport Road	-Address Not Listed
1 Lock Street	-Marie's Seafood Tavern
5 Lock Street	-Wiseguys Italian Eatery

9 Lock Street	-Cooke's Cycle -Residential (1 Tenant)
10 Lock Street	-Address Not Listed
12 Lock Street	-Spice of Life -St Cathatines Craft Guild & Co-Operative
15 Lock Street	-Lion Hotel -Residential (1 Tenant)
16 Lock Street	-Muy Cottage -1307597 Ontario LTD -Residential (3 Tenants)
17 Lock Street	-Medical Office -Scorecard Harry's Inc -Kilt & Clover
28 Lock Street	-Residential (1 Tenant)
30 Lock Street	-Residential (1 Tenant)
33 Lock Street	-Multi-Tenant Residential

37 Lock Street	-Residential (1 Tenant)
40 Lock Street	-Address Not Listed
110 Lock Street	-Address Not Listed
112 Lock Street	-Address Not Listed
114 Lock Street	-Address Not Listed
120 Lock Street	-Address Not Listed
2 Main Street	-Address Not Listed

PROJECT NUMBER: 20190116227	
Site Address:	Hogan's Alley, St. Catharines, Ontario
Year: 1997	
Site Listing:	-No Civic Listing
Adjacent Properties:	
80 Front Street	-Street Not Listed

90 Front Street	-Street Not Listed
96 Front Street	-Street Not Listed
100 Front Street	-Street Not Listed
80 Gertrude	-Address Not Listed
1 Lakeport Road	-Address Not Listed
10A Lakeport Road	-Address Not Listed
12 Lakeport Road	-Port Mansion Restaurant -L A Nights at the Port Mansion
14 Lakeport Road	-Da Pizza Joint LTD -Taco Tequila
18A Lakeport Road	-No Listed Designations -Magic Mountain Trading Co
26 Lakeport Road	-Windsand Clothier -Read 'em Books
28 Lakeport Road	-Residential (1 Tenant)

38 Lakeport Road	-Murphy's Restaurant & Tavern -Tony's Harbourfront Catering Inc -Brick Room Gallery -Regatta Sport -Riverbank Traders Inc
69 Lakeport Road	-Address Not Listed
78 Lakeport Road	-Residential (1 Tenant)
84 Lakeport Road	-Address Not Listed
1 Lock Street	-Marie's Seafood Tavern -Rockway Sales
5 Lock Street	3-5 – Old Lock One Restaurant
9 Lock Street	-Vacant
10 Lock Street	-Address Not Listed
12 Lock Street	-St Cathatines Craft Guild & Co-Operative -Dalhousie Gallery -Murder & Mayhem

	-Riverbank Gifts & Lighthouse Tea Room -Selected Artisans Gallery
15 Lock Street	-Lion Tavern
16 Lock Street	-Lakeside Hotel
17 Lock Street	-Medical Office -Scorecard Harry's Inc -Lola in Port -Natalie's Sewing Services
28 Lock Street	-Residential (1 Tenant)
30 Lock Street	-Residential (2 Tenants)
33 Lock Street	-Multi-Tenant Residential
37 Lock Street	-Residential (1 Tenant)
40 Lock Street	-Address Not Listed
110 Lock Street	-Address Not Listed
112 Lock Street	-Address Not Listed

114 Lock Street	-Address Not Listed
120 Lock Street	-Address Not Listed
2 Main Street	-Address Not Listed

PROJECT NUMBER: 20190116227	
Site Address:	Hogan's Alley, St. Catharines, Ontario
Year: 1992	
Site Listing:	-No Civic Listing
Adjacent Properties:	
80 Front Street	-Street Not Listed
90 Front Street	-Street Not Listed
96 Front Street	-Street Not Listed
100 Front Street	-Street Not Listed
80 Gertrude	-Address Not Listed

1 Lakeport Road	-Address Not Listed
10A Lakeport Road	-Address Not Listed
12 Lakeport Road	-Port Mansion Restaurant
14 Lakeport Road	-No Return
18A Lakeport Road	-No Listed Designations -Magic Mountain Trading Co -Residential (1 Tenant)
26 Lakeport Road	-Wind Sand Clothier -Read 'Em Books
28 Lakeport Road	-Kettle Creek Canvas Co -Residential (1 Tenant)
38 Lakeport Road	-Murphy's Restaurant & Tavern -Tony's Harbourfront Catering Inc -Brick Room Gallery -Port Pourri -Dominick Stephen Photographer -Regatta Sport

69 Lakeport Road	-Address Not Listed
78 Lakeport Road	-Residential (1 Tenant)
84 Lakeport Road	-No Return
1 Lock Street	-Marie's Seafood Tavern
5 Lock Street	3-5 – Old Lock One Ice Cream Parlour
9 Lock Street	-Canadian Imperial Bank of Commerce
10 Lock Street	-Address Not Listed
12 Lock Street	-St Cathatines Craft Guild & Co-Operative -Sundance -Dalhousie Gallery -Murder & Mayhem
15 Lock Street	-Lion Tavern -Sodamistic
16 Lock Street	-Lakeside Hotel
17 Lock Street	-Medical Office

	-Scorecard Harry's Inc -Henley Café
28 Lock Street	-Residential (1 Tenant)
30 Lock Street	-Residential (2 Tenants)
33 Lock Street	-Multi-Tenant Residential
37 Lock Street	-Residential (1 Tenant)
40 Lock Street	-Address Not Listed
110 Lock Street	-Address Not Listed
112 Lock Street	-Address Not Listed
114 Lock Street	-Address Not Listed
120 Lock Street	-Address Not Listed
2 Main Street	-Address Not Listed

PROJECT NUMBER: 20190116227	
Site Address:	Hogan's Alley, St. Catharines, Ontario

Year: 1987	
Site Listing:	-No Civic Listing
Adjacent Properties:	
80 Front Street	-Street Not Listed
90 Front Street	-Street Not Listed
96 Front Street	-Street Not Listed
100 Front Street	-Street Not Listed
80 Gertrude	-Address Not Listed
1 Lakeport Road	-Address Not Listed
10A Lakeport Road	-Address Not Listed
12 Lakeport Road	-Port Mansion Restaurant
14 Lakeport Road	-Address Not Listed

18A Lakeport Road	-No Listed Designations -Southern Limits -Residential (1 Tenant)
26 Lakeport Road	-Insite Design -Pierrot Designer Clothing -Read 'Em Books
28 Lakeport Road	-Kettle Creek Canvas Co -Residential (1 Tenant)
38 Lakeport Road	-Murphy's Restaurant & Tavern -Brick Room Gallery -Edwina's Antiques -The Port Gallery -Country Keeping Room -Windsand
69 Lakeport Road	-Address Not Listed
78 Lakeport Road	-Residential (1 Tenant)
84 Lakeport Road	-No Return
1 Lock Street	-Marie's Seafood Tavern -Residential (1 Tenant)

5 Lock Street	3-5 – Old Lock One Ice Cream Parlour & Take-Out -Residential (1 Tenant)
9 Lock Street	-Canadian Imperial Bank of Commerce
10 Lock Street	-Address Not Listed
12 Lock Street	-St Cathatines Craft Guild & Co-Operative -Co-Op Art Gallery -Residential (1 Tenant)
15 Lock Street	-Lion Hotel -Residential (1 Tenant)
16 Lock Street	-Lakeside Hotel
17 Lock Street	-Address Not Listed
28 Lock Street	-Residential (1 Tenant)
30 Lock Street	-Residential (2 Tenants)
33 Lock Street	-Multi-Tenant Residential

37 Lock Street	-Residential (1 Tenant)
40 Lock Street	-Address Not Listed
110 Lock Street	-Address Not Listed
112 Lock Street	-Address Not Listed
114 Lock Street	-Address Not Listed
120 Lock Street	-Address Not Listed
2 Main Street	-Address Not Listed

PROJECT NUMBER: 20190116227	
Site Address:	Hogan's Alley, St. Catharines, Ontario
Year: 1982	
Site Listing:	-No Civic Listing
Adjacent Properties:	
80 Front Street	-Street Not Listed

90 Front Street	-Street Not Listed
96 Front Street	-Street Not Listed
100 Front Street	-Street Not Listed
80 Gertrude	-Address Not Listed
1 Lakeport Road	-Address Not Listed
10A Lakeport Road	-Address Not Listed
12 Lakeport Road	-Port Hotel Restaurant
14 Lakeport Road	-Address Not Listed
18A Lakeport Road	-No Listed Designations -Southern Limits -Residential (1 Tenant)
26 Lakeport Road	-Enchanting Antiques -Empress of India Restaurant
28 Lakeport Road	-Advertising Works

38 Lakeport Road	-Murphy's Restaurant & Tavern -Brick Room Gallery -Seniors Craft -Crabtree Antiques -Dunrobin -Craft Guild -Brass Rubbing Place -The Port Gallery -The Other Room
69 Lakeport Road	-Address Not Listed
78 Lakeport Road	-Residential (1 Tenant)
84 Lakeport Road	-Vacant
1 Lock Street	-Marie's Seafood Tavern
5 Lock Street	3-5 – Old Lock One Ice Cream Parlour & Take-Out
9 Lock Street	-Canadian Imperial Bank of Commerce
10 Lock Street	-Address Not Listed
12 Lock Street	-Vacant

15 Lock Street	-Lion Hotel -Residential (1 Tenant)
16 Lock Street	-Lakeside Hotel
17 Lock Street	-Address Not Listed
28 Lock Street	-Residential (1 Tenant)
30 Lock Street	-Residential (1 Tenant)
33 Lock Street	-Multi-Tenant Residential
37 Lock Street	-Residential (1 Tenant)
40 Lock Street	-Address Not Listed
110 Lock Street	-Address Not Listed
112 Lock Street	-Address Not Listed
114 Lock Street	-Address Not Listed
120 Lock Street	-Address Not Listed

2 Main Street	-Address Not Listed

PROJECT NUMBER: 20190116227	
Site Address:	Hogan's Alley, St. Catharines, Ontario
Year: 1977	
Site Listing:	-No Civic Listing
Adjacent Properties:	
80 Front Street	-Street Not Listed
90 Front Street	-Street Not Listed
96 Front Street	-Street Not Listed
100 Front Street	-Street Not Listed
80 Gertrude	-Address Not Listed
1 Lakeport Road	-Address Not Listed
10A Lakeport Road	-Address Not Listed

12 Lakeport Road	-Port Hotel Restaurant -Port Hotel
14 Lakeport Road	-Residential (2 Tenants)
18A Lakeport Road	-No Listed Designations -Residential (1 Tenant)
26 Lakeport Road	-Residential (1 Tenant)
28 Lakeport Road	-Vacant
38 Lakeport Road	-Vacant
69 Lakeport Road	-Address Not Listed
78 Lakeport Road	-Residential (1 Tenant)
84 Lakeport Road	-Residential (1 Tenant)
1 Lock Street	-Marie's Seafood Tavern
5 Lock Street	-Vic's English Style Fish & Chips -Residential (1 Tenant)

9 Lock Street	-Canadian Imperial Bank of Commerce
10 Lock Street	-Address Not Listed
12 Lock Street	-Antiques & Artifacts -Residential (1 Tenant)
15 Lock Street	-Lion Hotel -Residential (1 Tenant)
16 Lock Street	-Lakeside Hotel
17 Lock Street	-Address Not Listed
28 Lock Street	-Residential (1 Tenant)
30 Lock Street	-Vacant
33 Lock Street	-Multi-Tenant Residential
37 Lock Street	-Residential (1 Tenant)
40 Lock Street	-Address Not Listed

110 Lock Street	-Address Not Listed
112 Lock Street	-Address Not Listed
114 Lock Street	-Address Not Listed
120 Lock Street	-Address Not Listed
2 Main Street	-Address Not Listed

PROJECT NUMBER: 20190116227	
Site Address:	Hogan's Alley, St. Catharines, Ontario
Year: 1972	
Site Listing:	-No Civic Listing
Adjacent Properties:	
80 Front Street	-Street Not Listed
90 Front Street	-Street Not Listed
96 Front Street	-Street Not Listed

100 Front Street	-Street Not Listed
80 Gertrude	-Address Not Listed
1 Lakeport Road	-Address Not Listed
10A Lakeport Road	-Address Not Listed
12 Lakeport Road	-Port Hotel Restaurant -Port Hotel -Residential (1 Tenant)
14 Lakeport Road	-Residential (1 Tenant)
18A Lakeport Road	-No Listed Designations -Residential (1 Tenant)
26 Lakeport Road	-Residential (1 Tenant)
28 Lakeport Road	-Residential (1 Tenant)
38 Lakeport Road	-Latcham Bros
69 Lakeport Road	-Address Not Listed

78 Lakeport Road	-Residential (1 Tenant)
84 Lakeport Road	-Residential (1 Tenant)
1 Lock Street	-Marie's Seafood Tavern
5 Lock Street	-Vic's English Style Fish & Chips -Residential (1 Tenant)
9 Lock Street	-Canadian Imperial Bank of Commerce
10 Lock Street	-Vacant
12 Lock Street	-Residential (1 Tenant)
15 Lock Street	-Lion Hotel -Residential (1 Tenant)
16 Lock Street	-Austin Coffee Shop -Austin Hotel
17 Lock Street	-Vacant Store
28 Lock Street	-Residential (1 Tenant)

30 Lock Street	-Residential (1 Tenant)
33 Lock Street	-Multi-Tenant Residential
37 Lock Street	-Residential (1 Tenant)
40 Lock Street	-Address Not Listed
110 Lock Street	-Address Not Listed
112 Lock Street	-Address Not Listed
114 Lock Street	-Address Not Listed
120 Lock Street	-Address Not Listed
2 Main Street	-Address Not Listed

PROJECT NUMBER: 20190116227	
Site Address:	Hogan's Alley, St. Catharines, Ontario
Year: 1967	
Site Listing:	-No Civic Listing

Adjacent Properties:	
80 Front Street	-Street Not Listed
90 Front Street	-Street Not Listed
96 Front Street	-Street Not Listed
100 Front Street	-Street Not Listed
80 Gertrude	-Address Not Listed
1 Lakeport Road	-Address Not Listed
10A Lakeport Road	-Address Not Listed
12 Lakeport Road	-Port Hotel -Residential (1 Tenant)
14 Lakeport Road	-Residential (1 Tenant) -Beauty Box
18A Lakeport Road	-No Listed Designations -Residential (1 Tenant)

26 Lakeport Road	-Residential (1 Tenant) -Harbour View Confy
28 Lakeport Road	-Residential (1 Tenant)
38 Lakeport Road	-Latcham Bros Marine Grocers
69 Lakeport Road	-Address Not Listed
78 Lakeport Road	-Residential (1 Tenant)
84 Lakeport Road	-Residential (1 Tenant)
1 Lock Street	-Marina Restr -Residential (1 Tenant)
5 Lock Street	-Anderson's Novelty Shop
9 Lock Street	-Canadian Imperial Bank of Commerce
10 Lock Street	-Vacant
12 Lock Street	-Vacant
15 Lock Street	-Lion Hotel

	-Residential (1 Tenant)
16 Lock Street	-Austin Coffee Shop -Austin Hotel -Residential (1 Tenant)
17 Lock Street	-Scott, F & Son, Gro
28 Lock Street	-Residential (2 Tenants)
30 Lock Street	-Residential (2 Tenants)
33 Lock Street	-Multi-Tenant Residential
37 Lock Street	-Residential (1 Tenant)
40 Lock Street	-Address Not Listed
110 Lock Street	-Address Not Listed
112 Lock Street	-Address Not Listed
114 Lock Street	-Address Not Listed
120 Lock Street	-Address Not Listed

2 Main Street	-Address Not Listed

PROJECT NUMBER: 20190116227	
Site Address:	Hogan's Alley, St. Catharines, Ontario
Year: 1962	
Site Listing:	-No Civic Listing
Adjacent Properties:	
80 Front Street	-Street Not Listed
90 Front Street	-Street Not Listed
96 Front Street	-Street Not Listed
100 Front Street	-Street Not Listed
80 Gertrude	-Address Not Listed
1 Lakeport Road	-Address Not Listed
10A Lakeport Road	-Address Not Listed

12 Lakeport Road	-Port Hotel -Residential (3 Tenants)
14 Lakeport Road	-Residential (1 Tenant) -Beauty Box
18A Lakeport Road	-No Listed Designations -Residential (1 Tenant) -Dominion Restr
26 Lakeport Road	-Residential (1 Tenant) -Harbour View Coffee Shop
28 Lakeport Road	-Residential (1 Tenant) -Hungarian Restr
38 Lakeport Road	-Latcham Bros Marine Grocers -Residential (1 Tenant)
69 Lakeport Road	-Address Not Listed
78 Lakeport Road	-Residential (1 Tenant)
84 Lakeport Road	-Residential (2 Tenants)

1 Lock Street	-Mom's Snack Bar -Residential (1 Tenant)
5 Lock Street	-Address Not Listed
9 Lock Street	-Canadian Imperial Bank of Commerce
10 Lock Street	-Lincoln Shop
12 Lock Street	-Garden City Specialty Co
15 Lock Street	-Lion Hotel -Residential (1 Tenant)
16 Lock Street	-Austin House Restr
17 Lock Street	-Scott, F & Son, Grocery
28 Lock Street	-Residential (2 Tenants)
30 Lock Street	-Residential (2 Tenants)
33 Lock Street	-Multi-Tenant Residential

37 Lock Street	-Residential (1 Tenant)
40 Lock Street	-Address Not Listed
110 Lock Street	-Address Not Listed
112 Lock Street	-Address Not Listed
114 Lock Street	-Address Not Listed
120 Lock Street	-Address Not Listed
2 Main Street	-Address Not Listed

PROJECT NUMBER: 20190116227	
Site Address:	Hogan's Alley, St. Catharines, Ontario
Year: 1957	
Site Listing:	-No Civic Listing
Adjacent Properties:	
80 Front Street	-Street Not Listed

90 Front Street	-Street Not Listed
96 Front Street	-Street Not Listed
100 Front Street	-Street Not Listed
80 Gertrude	-Address Not Listed
1 Lakeport Road	-Street Not Listed
10A Lakeport Road	-Street Not Listed
12 Lakeport Road	-Street Not Listed
14 Lakeport Road	-Street Not Listed
18A Lakeport Road	-Street Not Listed
26 Lakeport Road	-Street Not Listed
28 Lakeport Road	-Street Not Listed
38 Lakeport Road	-Street Not Listed
69 Lakeport Road	-Street Not Listed

78 Lakeport Road	-Street Not Listed
84 Lakeport Road	-Street Not Listed
1 Lock Street	-Street Not Listed
5 Lock Street	-Street Not Listed
9 Lock Street	-Street Not Listed
10 Lock Street	-Street Not Listed
12 Lock Street	-Street Not Listed
15 Lock Street	-Street Not Listed
16 Lock Street	-Street Not Listed
17 Lock Street	-Street Not Listed
28 Lock Street	-Street Not Listed
30 Lock Street	-Street Not Listed

33 Lock Street	-Street Not Listed
37 Lock Street	-Street Not Listed
40 Lock Street	-Street Not Listed
110 Lock Street	-Street Not Listed
112 Lock Street	-Street Not Listed
114 Lock Street	-Street Not Listed
120 Lock Street	-Street Not Listed
2 Main Street	-Address Not Listed

PROJECT NUMBER: 20190116227	
Site Address:	Hogan's Alley, St. Catharines, Ontario
Year: 1952	
Site Listing:	-No Civic Listing
Adjacent Properties:	

80 Front Street	-Street Not Listed
90 Front Street	-Street Not Listed
96 Front Street	-Street Not Listed
100 Front Street	-Street Not Listed
80 Gertrude	-Street Not Listed
1 Lakeport Road	-Street Not Listed
10A Lakeport Road	-Street Not Listed
12 Lakeport Road	-Street Not Listed
14 Lakeport Road	-Street Not Listed
18A Lakeport Road	-Street Not Listed
26 Lakeport Road	-Street Not Listed
28 Lakeport Road	-Street Not Listed
38 Lakeport Road	-Street Not Listed

69 Lakeport Road	-Street Not Listed
78 Lakeport Road	-Street Not Listed
84 Lakeport Road	-Street Not Listed
1 Lock Street	-Street Not Listed
5 Lock Street	-Street Not Listed
9 Lock Street	-Street Not Listed
10 Lock Street	-Street Not Listed
12 Lock Street	-Street Not Listed
15 Lock Street	-Street Not Listed
16 Lock Street	-Street Not Listed
17 Lock Street	-Street Not Listed
28 Lock Street	-Street Not Listed

30 Lock Street	-Street Not Listed
33 Lock Street	-Street Not Listed
37 Lock Street	-Street Not Listed
40 Lock Street	-Street Not Listed
110 Lock Street	-Street Not Listed
112 Lock Street	-Street Not Listed
114 Lock Street	-Street Not Listed
120 Lock Street	-Street Not Listed
2 Main Street	-Address Not Listed

-All listings for businesses were listed as they are in the city directory.

-Listings that are residential are listed as “residential” with the number of tenants. The name of the residential tenant is not listed in the above city directory.

Appendix F
Regulatory Agency Documents

From:	Public Information Services
To:	Melissa Pley
Subject:	RE: Records Request - Properties in St. Catharines, Ontario
Date:	Thursday, January 17, 2019 10:19:29 AM
Attachments:	image001.jpg image002.png image003.png image004.png image005.png

---

No Records Found

Hello,

Thank you for your request for confirmation of public information.

- We confirm that there are **no fuel storage tanks records** in our database at the subject address(es).

For a further search in our archives please complete our release of public information form found at https://www.tssa.org/en/about-tssa/release-of-public-information.aspx?_mid_=392 and email the completed form to publicinformationservices@tssa.org or through mail along with a fee of $56.50 (including HST) per location. The fee is payable with credit card (Visa or MasterCard) or with a Cheque made payable to TSSA.

Although TSSA believes the information provided pursuant to your request is accurate, please note that TSSA does not warrant this information in any way whatsoever.

Kind regards,

Connie Hill | Public Information Agent
Facilities
345 Carlingview Drive
Toronto, Ontario M9W 6N9
Tel: +1-416-734-3383 | Fax: +1-416-231-6183 | E-Mail: publicinformationservices@tssa.org
www.tssa.org

From: Melissa Pley <Melissa.Pley@ghd.com>
Sent: January 17, 2019 9:26 AM
To: Public Information Services <publicinformationservices@tssa.org>
Subject: Records Request - Properties in St. Catharines, Ontario

Hello,

This email has been prepared to identify if any records exist for the following two properties:

- **12 Lakeport Road, St. Catharines, Ontario**
- **16 Lock Street, St. Catharines, Ontario**

If records exist, we will complete a Release of Public Information Form. If you have any questions, please don't hesitate to contact me.

Thanks,

Melissa Pley

GHD
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Appendix G
Environmental Database Search Report

ENVIRONMENTAL RISK INFORMATION SERVICES

DATABASE REPORT

Project Property:	*Union Waterfront Property* *Hogan's Alley* *St. Catharines ON L2N*
Project No:	*11131634*
Report Type:	*Standard Report*
Order No:	*20190116227*
Requested by:	*GHD Ltd.*
Date Completed:	*January 24, 2019*

Environmental Risk Information Services
A division of Glacier Media Inc.
1.866.517.5204 | info@erisinfo.com | erisinfo.com

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Executive Summary

Property Information:

Project Property:	*Union Waterfront Property* *Hogan's Alley St. Catharines ON L2N*
Project No:	*11131634*

Coordinates:

Latitude:	*43.202638*
Longitude:	*-79.265981*
UTM Northing:	*4,784,777.39*
UTM Easting:	*640,873.08*
UTM Zone:	*UTM Zone 17T*

Elevation:	*260 FT* *79.10 M*

Order Information:

Order No:	*20190116227*
Date Requested:	*January 16, 2019*
Requested by:	*GHD Ltd.*
Report Type:	*Standard Report*

Historical/Products:

City Directory Search	*CD - Subject Site plus 20 Adjacent Properties*

Executive Summary: Report Summary

Database	Name	Searched	Project Property	Within 0.25 km	Total
AAGR	Abandoned Aggregate Inventory	Y	0	0	0
AGR	Aggregate Inventory	Y	0	0	0
AMIS	Abandoned Mine Information System	Y	0	0	0
ANDR	Anderson's Waste Disposal Sites	Y	0	1	1
AUWR	Automobile Wrecking & Supplies	Y	0	0	0
BORE	Borehole	Y	0	1	1
CA	Certificates of Approval	Y	2	8	10
CFOT	Commercial Fuel Oil Tanks	Y	0	0	0
CHEM	Chemical Register	Y	0	0	0
CNG	Compressed Natural Gas Stations	Y	0	0	0
COAL	Inventory of Coal Gasification Plants and Coal Tar Sites	Y	0	0	0
CONV	Compliance and Convictions	Y	0	0	0
CPU	Certificates of Property Use	Y	0	0	0
DRL	Drill Hole Database	Y	0	0	0
DRYCLEANERS	Dry Cleaning Facilities	Y	0	0	0
EASR	Environmental Activity and Sector Registry	Y	0	0	0
EBR	Environmental Registry	Y	0	0	0
ECA	Environmental Compliance Approval	Y	0	2	2
EEM	Environmental Effects Monitoring	Y	0	0	0
EHS	ERIS Historical Searches	Y	1	4	5
EIIS	Environmental Issues Inventory System	Y	0	0	0
EMHE	Emergency Management Historical Event	Y	0	0	0
EXP	List of TSSA Expired Facilities	Y	0	0	0
FCON	Federal Convictions	Y	0	0	0
FCS	Contaminated Sites on Federal Land	Y	0	2	2
FOFT	Fisheries & Oceans Fuel Tanks	Y	0	6	6
FST	Fuel Storage Tank	Y	0	0	0
FSTH	Fuel Storage Tank - Historic	Y	0	0	0
GEN	Ontario Regulation 347 Waste Generators Summary	Y	0	22	22
GHG	Greenhouse Gas Emissions from Large Facilities	Y	0	0	0
HINC	TSSA Historic Incidents	Y	0	1	1
IAFT	Indian & Northern Affairs Fuel Tanks	Y	0	0	0
INC	TSSA Incidents	Y	0	0	0
LIMO	Landfill Inventory Management Ontario	Y	0	0	0
MINE	Canadian Mine Locations	Y	0	0	0
MISA PENALTY	Environmental Penalty Annual Report	Y	0	0	0

Database	Name	Searched	Project Property	Within 0.25 km	Total
MNR	Mineral Occurrences	Y	0	0	0
NATE	National Analysis of Trends in Emergencies System (NATES)	Y	0	0	0
NCPL	Non-Compliance Reports	Y	0	0	0
NDFT	National Defense & Canadian Forces Fuel Tanks	Y	0	0	0
NDSP	National Defense & Canadian Forces Spills	Y	0	0	0
NDWD	National Defence & Canadian Forces Waste Disposal Sites	Y	0	0	0
NEBI	National Energy Board Pipeline Incidents	Y	0	0	0
NEBW	National Energy Board Wells	Y	0	0	0
NEES	National Environmental Emergencies System (NEES)	Y	0	0	0
NPCB	National PCB Inventory	Y	0	0	0
NPRI	National Pollutant Release Inventory	Y	0	0	0
OGW	Oil and Gas Wells	Y	0	0	0
OOGW	Ontario Oil and Gas Wells	Y	0	0	0
OPCB	Inventory of PCB Storage Sites	Y	0	0	0
ORD	Orders	Y	0	0	0
PAP	Canadian Pulp and Paper	Y	0	0	0
PCFT	Parks Canada Fuel Storage Tanks	Y	0	0	0
PES	Pesticide Register	Y	0	0	0
PINC	TSSA Pipeline Incidents	Y	0	0	0
PRT	Private and Retail Fuel Storage Tanks	Y	0	0	0
PTTW	Permit to Take Water	Y	0	0	0
REC	Ontario Regulation 347 Waste Receivers Summary	Y	0	0	0
RSC	Record of Site Condition	Y	0	0	0
RST	Retail Fuel Storage Tanks	Y	0	2	2
SCT	Scott's Manufacturing Directory	Y	0	3	3
SPL	Ontario Spills	Y	0	6	6
SRDS	Wastewater Discharger Registration Database	Y	0	0	0
TANK	Anderson's Storage Tanks	Y	0	0	0
TCFT	Transport Canada Fuel Storage Tanks	Y	0	0	0
VAR	TSSA Variances for Abandonment of Underground Storage Tanks	Y	0	0	0
WDS	Waste Disposal Sites - MOE CA Inventory	Y	0	0	0
WDSH	Waste Disposal Sites - MOE 1991 Historical Approval Inventory	Y	0	1	1
WWIS	Water Well Information System	Y	1	9	10
	Total:		4	68	72

Executive Summary: Site Report Summary - Project Property

Map Key	DB	Company/Site Name	Address	Dir/Dist (m)	Elev diff (m)	Page Number
1	EHS		16 Lock St St. Catharines ON L2N5B5	-/0.0	0.36	25
2	CA	1049569 ONTARIO INC., SAMMY'S DOUBLE SCO	16 LOCK STREET (REAR) ST. CATHARINES CITY ON L2N 5B5	-/0.0	1.70	2
3	CA	R.M. OF NIAGARA	9 MAIN ST.-LAKESIDE PARK P.S. ST. CATHARINES CITY ON	-/0.0	-0.38	25
4	WWIS		PORT DALHOUSIE ON ***Well ID:*** 7141396	-/0.0	-0.69	25

Executive Summary: Site Report Summary - Surrounding Properties

Map Key	DB	Company/Site Name	Address	Dir/Dist (m)	Elev Diff (m)	Page Number
5	SPL	PRIVATE BUSINESS	CORNER OF LOCKE AND MAIN ST RESTAURANT ST. CATHARINES CITY ON	W/9.0	4.15	28
6	CA	ST. CATHARINES CITY	LOCK ST./LAKEPORT RD./MAIN ST. ST. CATHARINES CITY ON	SW/9.4	2.31	29
7	CA	R.M. OF NIAGARA	LAKESIDE PARK/LAKEPORT ROAD ST. CATHARINES CITY ON	E/11.6	-2.95	29
8	CA	BLUE ONION DELHI LTD.	17-19 LOCK ST. ST. CATHARINES CITY ON L2N 5B6	WSW/19.2	3.57	29
9	ECA	The Corporation of the City of St. Catharines	St. Catharines ON	S/22.5	2.73	30
9	ECA	The Corporation of the City of St. Catharines	St. Catharines ON	S/22.5	2.73	30
10	BORE		ON	E/24.2	-4.10	30
11	EHS		38 Lakeport Road St. Catharines ON L2N 4P5	SSE/24.6	1.70	31
12	SPL	PUC	26 LAKEPORT RD. MOTOR VEHICLE (OPERATING FLUID) ST. CATHARINES CITY ON L2N 4P5	SSE/25.4	0.44	31
13	CA	ST. CATHARINES CITY	LAKEPORT RD./LOCK ST. ST. CATHARINES CITY ON	SSE/46.0	2.77	32
13	CA	R.M. OF NIAGARA	LAKEPORT RD./LOCK ST./PT.LOT 1 ST. CATHARINES CITY ON	SSE/46.0	2.77	32
13	CA	R.M. OF NIAGARA	LAKEPORT RD./LOCK ST./PT.LOT 1 ST. CATHARINES CITY ON	SSE/46.0	2.77	32

Map Key	DB	Company/Site Name	Address	Dir/Dist (m)	Elev Diff (m)	Page Number
13	SPL	The Regional Municipality of Niagara	Lakeport St. & Lock St. St. Catharines ON	SSE/46.0	2.77	33
14	WWIS		St. Catharines ON ***Well ID:*** 7277008	ENE/48.6	-3.09	33
15	GEN	Poustie Dentistry Professional Corporation	17 Lock Street Suite 1 St. Catharines ON L2N 5B6	WSW/50.5	5.37	35
16	HINC		12 MAIN STREET ST. CATHARINES ON L2N 4T3	WSW/70.0	5.65	35
17	GEN	Seymour Hall Inc	15 Main St. St. Catharines ON	WSW/101.6	5.73	36
18	WWIS		St. Catharines ON ***Well ID:*** 7285477	SSE/106.8	-0.66	36
19	CA	JAMES ANDREW VANDERBURGH	DALHOUSIE AVE/LOCK ST. ST. CATHARINES CITY ON	WNW/124.4	5.65	39
20	WWIS		PORT DALHOUSIE ON ***Well ID:*** 3804314	NE/127.5	-3.71	39
21	FCS	PORT DALHOUSIE (Former coal storage area)	St. Catharines ON	N/136.2	-4.20	42
21	FCS	PORT DALHOUSIE-MARINA (No Contamination Identified)	St. Catharines ON	N/136.2	-4.20	49
21	FOFT	Port Dalhousie SCH (2)	Lake Ontario, Port Dalhousie, St. Catherines, ON; Latitude 43.204273 Longitude -79.265984 ON	N/136.2	-4.20	55
21	FOFT	Port Dalhousie SCH (1)	Lake Ontario, Port Dalhousie, St. Catherines, ON; Latitude 43.204273 Longitude -79.265984 ON	N/136.2	-4.20	56

Map Key	DB	Company/Site Name	Address	Dir/Dist (m)	Elev Diff (m)	Page Number
21	FOFT	Port Dalhousie SCH (2)	Lake Ontario, Port Dalhousie, St. Catherines, ON; Latitude 43.204273 Longitude -79.265984 ON	N/136.2	-4.20	57
21	FOFT	Port Dalhousie SCH (1)	Lake Ontario, Port Dalhousie, St. Catherines, ON; Latitude 43.204273 Longitude -79.265984 ON	N/136.2	-4.20	59
21	FOFT	Port Dalhousie SCH (1)	Lake Ontario, Port Dalhousie, St. Catherines, ON; Latitude 43.204273 Longitude -79.265984 ON	N/136.2	-4.20	60
21	FOFT	Port Dalhousie SCH (2)	Lake Ontario, Port Dalhousie, St. Catherines, ON; Latitude 43.204273 Longitude -79.265984 ON	N/136.2	-4.20	61
22	WWIS		St. Catharines ON ***Well ID:*** 7285475	SSE/136.5	-2.69	61
23	WWIS		St. Catharines ON ***Well ID:*** 7285479	SSE/137.7	-2.60	64
24	GEN	Compressor Systems International Inc.	19 MAIN STREET ST. CATHARINES (Port Dalhousie) ON	SW/140.2	5.31	67
24	GEN	Compressor Systems International Inc.	19 MAIN STREET ST. CATHARINES (Port Dalhousie) ON L2N 4T5	SW/140.2	5.31	68
24	GEN	CSI	19 MAIN STREET ST. CATHARINES ON L2N 4T5	SW/140.2	5.31	68
24	GEN	Compressor Systems International Inc.	19 MAIN STREET ST. CATHARINES (Port Dalhousie) ON	SW/140.2	5.31	68
24	GEN	BELL CANADA	19 MAIN STREET TORONTO ON L2N 4T5	SW/140.2	5.31	68
24	GEN	Compressure Systems International Inc.	19 MAIN STREET ST. CATHARINES (Port Dalhousie) ON L2N 4T5	SW/140.2	5.31	69

Map Key	DB	Company/Site Name	Address	Dir/Dist (m)	Elev Diff (m)	Page Number
24	GEN	Compressor Systems International Inc.	19 MAIN STREET ST. CATHARINES (Port Dalhousie) ON L2N 4T5	SW/140.2	5.31	69
25	WWIS		PORT DALHOUSE ON ***Well ID:*** 7218053	NNW/140.6	-4.03	69
26	WWIS		St. Catharines ON ***Well ID:*** 7285480	SSE/149.3	-2.86	72
27	EHS		57 Lakeport Rd St. Catharines ON L2N4P6	SSE/150.2	-3.38	75
27	EHS		57 Lakeport Rd St Catharines ON L2N	SSE/150.2	-3.38	75
28	WWIS		St. Catharines ON ***Well ID:*** 7285478	SSE/162.4	-4.09	75
29	SPL		Port Dalhousie St. Catharines ON	WNW/172.3	0.22	78
30	ANDR	Lakeport Rd Dump	St Catharines ON L2N 4S	SSW/182.9	-0.71	79
31	SPL		On the west side, behind Twelve Restaurant, 61 Lakeport Road St. Catharines ON L2N 4P6	SSE/189.4	-4.28	79
32	WDSH		Lakeport Rd. ST. CATHARINES ON	SSW/194.7	0.36	80
33	CA	768716 ONTARIO LTD., MAINSTREAM NON-PROF	25 MAIN STREET ST. CATHARINES CITY ON L2N 4T6	SW/201.0	5.74	80
34	GEN	Lincoln Fabrics Ltd.	63 Lakeport Rd. St. Catharines ON	S/207.6	-3.20	80
34	GEN	Lincoln Fabrics Ltd.	63 Lakeport Rd. St. Catharines ON L2N 4P6	S/207.6	-3.20	81

Map Key	DB	Company/Site Name	Address	Dir/Dist (m)	Elev Diff (m)	Page Number
34	GEN	LINCOLN FABRICS LTD. 24-613	63 LAKEPORT ROAD ST. CATHARINES ON L2N 4P6	S/207.6	-3.20	81
34	GEN	Lincoln Fabrics	63 Lakeport Rd. St. Catharines ON L2N 4P6	S/207.6	-3.20	81
34	GEN	Lincoln Fabrics Ltd.	63 Lakeport Rd. St. Catharines ON L2N 4P6	S/207.6	-3.20	82
34	GEN	LINCOLN FABRICS LTD.	63 LAKEPORT ROAD ST. CATHARINES ON L2N 4P6	S/207.6	-3.20	82
34	GEN	LINCOLN FABRICS LIMITED	63 LAKEPORT ROAD ST. CATHARINES ON L2N 4P6	S/207.6	-3.20	83
34	GEN	Lincoln Fabrics Ltd.	63 Lakeport Rd. St. Catharines ON L2N 4P6	S/207.6	-3.20	83
34	GEN	Lincoln Fabrics Ltd.	63 Lakeport Rd. St. Catharines ON L2N 4P6	S/207.6	-3.20	83
34	GEN	Lincoln Fabrics Ltd.	63 Lakeport Rd. St. Catharines ON L2N 4P6	S/207.6	-3.20	84
34	GEN	Lincoln Fabrics Ltd.	63 Lakeport Rd. St. Catharines ON L2N 4P6	S/207.6	-3.20	84
34	GEN	Lincoln Fabrics	63 Lakeport Rd. St. Catharines ON L2N 4P6	S/207.6	-3.20	84
34	GEN	Lincoln Fabrics	63 Lakeport Rd. St. Catharines ON L2N 4P6	S/207.6	-3.20	85
34	SCT	LINCOLN FABRICS LIMITED	63 LAKEPORT RD ST CATHARINES ON L2N 4P6	S/207.6	-3.20	85
34	SCT	Lincoln Fabrics Ltd.	63 Lakeport Rd St Catharines ON L2N 4P6	S/207.6	-3.20	85

Map Key	DB	Company/Site Name	Address	Dir/Dist (m)	Elev Diff (m)	Page Number
34	SCT	LINCOLN FABRICS LTD.	63 Lakeport Rd St. Catharines ON L2N 4P6	S/207.6	-3.20	86
35	RST	ST CATHARINES GAME & FISH ASSOC	61 LIGHTHOUSE RD ST CATHARINES ON L2N 7P4	E/209.4	-4.26	86
35	RST	ST CATHARINES GAME & FISH ASSOC	61 LIGHTHOUSE RD ST CATHARINES ON L2N7P4	E/209.4	-4.26	86
35	SPL		61 Lighthouse Rd St. Catharines ON	E/209.4	-4.26	86
36	WWIS		ON ***Well ID:*** 7262444	S/214.2	-3.99	87
37	EHS		61 & 63 Lakeport Road St. Catharines ON L2N 4P6	S/244.2	-2.52	87

Executive Summary: Summary By Data Source

ANDR - Anderson's Waste Disposal Sites

A search of the ANDR database, dated 1860s-Present has found that there are 1 ANDR site(s) within approximately 0.25 kilometers of the project property.

Lower Elevation	Address	Direction	Distance (m)	Map Key
Lakeport Rd Dump	St Catharines ON L2N 4S	SSW	182.92	30

BORE - Borehole

A search of the BORE database, dated 1875-Jul 2014 has found that there are 1 BORE site(s) within approximately 0.25 kilometers of the project property.

Lower Elevation	Address	Direction	Distance (m)	Map Key
	ON	E	24.25	10

CA - Certificates of Approval

A search of the CA database, dated 1985-Oct 30, 2011* has found that there are 10 CA site(s) within approximately 0.25 kilometers of the project property.

Equal/Higher Elevation	Address	Direction	Distance (m)	Map Key
1049569 ONTARIO INC., SAMMY'S DOUBLE SCO	16 LOCK STREET (REAR) ST. CATHARINES CITY ON L2N 5B5	-	0.00	2
ST. CATHARINES CITY	LOCK ST./LAKEPORT RD./MAIN ST. ST. CATHARINES CITY ON	SW	9.44	6
BLUE ONION DELHI LTD.	17-19 LOCK ST. ST. CATHARINES CITY ON L2N 5B6	WSW	19.18	8
ST. CATHARINES CITY	LAKEPORT RD./LOCK ST. ST. CATHARINES CITY ON	SSE	46.01	13

Equal/Higher Elevation	Address	Direction	Distance (m)	Map Key
R.M. OF NIAGARA	LAKEPORT RD./LOCK ST./PT.LOT 1 ST. CATHARINES CITY ON	SSE	46.01	13
R.M. OF NIAGARA	LAKEPORT RD./LOCK ST./PT.LOT 1 ST. CATHARINES CITY ON	SSE	46.01	13
JAMES ANDREW VANDERBURGH	DALHOUSIE AVE/LOCK ST. ST. CATHARINES CITY ON	WNW	124.43	19
768716 ONTARIO LTD., MAINSTREAM NON-PROF	25 MAIN STREET ST. CATHARINES CITY ON L2N 4T6	SW	200.98	33

Lower Elevation	Address	Direction	Distance (m)	Map Key
R.M. OF NIAGARA	9 MAIN ST.-LAKESIDE PARK P.S. ST. CATHARINES CITY ON	-	0.00	3
R.M. OF NIAGARA	LAKESIDE PARK/LAKEPORT ROAD ST. CATHARINES CITY ON	E	11.59	7

ECA - Environmental Compliance Approval

A search of the ECA database, dated Oct 2011-Dec 31, 2018 has found that there are 2 ECA site(s) within approximately 0.25 kilometers of the project property.

Equal/Higher Elevation	Address	Direction	Distance (m)	Map Key
The Corporation of the City of St. Catharines	St. Catharines ON	S	22.54	9
The Corporation of the City of St. Catharines	St. Catharines ON	S	22.54	9

EHS - ERIS Historical Searches

A search of the EHS database, dated 1999-Oct 31, 2018 has found that there are 5 EHS site(s) within approximately 0.25 kilometers of the project property.

Equal/Higher Elevation	Address	Direction	Distance (m)	Map Key
	16 Lock St St. Catharines ON L2N5B5	-	0.00	1
	38 Lakeport Road St. Catharines ON L2N 4P5	SSE	24.61	11

Lower Elevation	Address	Direction	Distance (m)	Map Key
	57 Lakeport Rd St. Catharines ON L2N4P6	SSE	150.22	27
	57 Lakeport Rd St Catharines ON L2N	SSE	150.22	27
	61 & 63 Lakeport Road St. Catharines ON L2N 4P6	S	244.23	37

FCS - Contaminated Sites on Federal Land

A search of the FCS database, dated Jun 2000-Oct 2018 has found that there are 2 FCS site(s) within approximately 0.25 kilometers of the project property.

Lower Elevation	Address	Direction	Distance (m)	Map Key
PORT DALHOUSIE-MARINA (No Contamination Identified)	St. Catharines ON	N	136.22	21
PORT DALHOUSIE (Former coal storage area)	St. Catharines ON	N	136.22	21

FOFT - Fisheries & Oceans Fuel Tanks

A search of the FOFT database, dated 1964-Sep 2017 has found that there are 6 FOFT site(s) within approximately 0.25 kilometers of the project property.

Lower Elevation	Address	Direction	Distance (m)	Map Key
Port Dalhousie SCH (1)	Lake Ontario, Port Dalhousie, St. Catherines, ON; Latitude 43.204273 Longitude -79.265984 ON	N	136.22	21

Port Dalhousie SCH (2)	Lake Ontario, Port Dalhousie, St. Catherines, ON; Latitude 43.204273 Longitude -79.265984 ON	N	136.22	21
Port Dalhousie SCH (2)	Lake Ontario, Port Dalhousie, St. Catherines, ON; Latitude 43.204273 Longitude -79.265984 ON	N	136.22	21
Port Dalhousie SCH (1)	Lake Ontario, Port Dalhousie, St. Catherines, ON; Latitude 43.204273 Longitude -79.265984 ON	N	136.22	21
Port Dalhousie SCH (1)	Lake Ontario, Port Dalhousie, St. Catherines, ON; Latitude 43.204273 Longitude -79.265984 ON	N	136.22	21
Port Dalhousie SCH (2)	Lake Ontario, Port Dalhousie, St. Catherines, ON; Latitude 43.204273 Longitude -79.265984 ON	N	136.22	21

GEN - Ontario Regulation 347 Waste Generators Summary

A search of the GEN database, dated 1986-June 30, 2018 has found that there are 22 GEN site(s) within approximately 0.25 kilometers of the project property.

Equal/Higher Elevation	Address	Direction	Distance (m)	Map Key
Poustie Dentistry Professional Corporation	17 Lock Street Suite 1 St. Catharines ON L2N 5B6	WSW	50.48	15
Seymour Hall Inc	15 Main St. St. Catharines ON	WSW	101.60	17
Compressor Systems International Inc.	19 MAIN STREET ST. CATHARINES (Port Dalhousie) ON	SW	140.23	24
Compressor Systems International Inc.	19 MAIN STREET ST. CATHARINES (Port Dalhousie) ON L2N 4T5	SW	140.23	24

Equal/Higher Elevation	Address	Direction	Distance (m)	Map Key
CSI	19 MAIN STREET ST. CATHARINES ON L2N 4T5	SW	140.23	24
Compressor Systems International Inc.	19 MAIN STREET ST. CATHARINES (Port Dalhousie) ON	SW	140.23	24
BELL CANADA	19 MAIN STREET TORONTO ON L2N 4T5	SW	140.23	24
Compressure Systems International Inc.	19 MAIN STREET ST. CATHARINES (Port Dalhousie) ON L2N 4T5	SW	140.23	24
Compressor Systems International Inc.	19 MAIN STREET ST. CATHARINES (Port Dalhousie) ON L2N 4T5	SW	140.23	24

Lower Elevation	Address	Direction	Distance (m)	Map Key
Lincoln Fabrics	63 Lakeport Rd. St. Catharines ON L2N 4P6	S	207.63	34
Lincoln Fabrics Ltd.	63 Lakeport Rd. St. Catharines ON L2N 4P6	S	207.63	34
LINCOLN FABRICS LTD. 24-613	63 LAKEPORT ROAD ST. CATHARINES ON L2N 4P6	S	207.63	34
LINCOLN FABRICS LIMITED	63 LAKEPORT ROAD ST. CATHARINES ON L2N 4P6	S	207.63	34
LINCOLN FABRICS LTD.	63 LAKEPORT ROAD ST. CATHARINES ON L2N 4P6	S	207.63	34
Lincoln Fabrics Ltd.	63 Lakeport Rd. St. Catharines ON L2N 4P6	S	207.63	34

Lincoln Fabrics Ltd.	63 Lakeport Rd. St. Catharines ON	S	207.63	34
Lincoln Fabrics Ltd.	63 Lakeport Rd. St. Catharines ON L2N 4P6	S	207.63	34
Lincoln Fabrics Ltd.	63 Lakeport Rd. St. Catharines ON L2N 4P6	S	207.63	34
Lincoln Fabrics Ltd.	63 Lakeport Rd. St. Catharines ON L2N 4P6	S	207.63	34
Lincoln Fabrics	63 Lakeport Rd. St. Catharines ON L2N 4P6	S	207.63	34
Lincoln Fabrics	63 Lakeport Rd. St. Catharines ON L2N 4P6	S	207.63	34
Lincoln Fabrics Ltd.	63 Lakeport Rd. St. Catharines ON L2N 4P6	S	207.63	34

HINC - TSSA Historic Incidents

A search of the HINC database, dated 2006-June 2009* has found that there are 1 HINC site(s) within approximately 0.25 kilometers of the project property.

Equal/Higher Elevation	Address	Direction	Distance (m)	Map Key
	12 MAIN STREET ST. CATHARINES ON L2N 4T3	WSW	70.00	16

RST - Retail Fuel Storage Tanks

A search of the RST database, dated 1999-Jul 31, 2018 has found that there are 2 RST site(s) within approximately 0.25 kilometers of the project property.

Lower Elevation	Address	Direction	Distance (m)	Map Key
ST CATHARINES GAME & FISH ASSOC	61 LIGHTHOUSE RD ST CATHARINES ON L2N 7P4	E	209.39	35

ST CATHARINES GAME & FISH ASSOC	61 LIGHTHOUSE RD ST CATHARINES ON L2N7P4	E	209.39	35

SCT - Scott's Manufacturing Directory

A search of the SCT database, dated 1992-Mar 2011* has found that there are 3 SCT site(s) within approximately 0.25 kilometers of the project property.

Lower Elevation	Address	Direction	Distance (m)	Map Key
LINCOLN FABRICS LTD.	63 Lakeport Rd St. Catharines ON L2N 4P6	S	207.63	34
Lincoln Fabrics Ltd.	63 Lakeport Rd St Catharines ON L2N 4P6	S	207.63	34
LINCOLN FABRICS LIMITED	63 LAKEPORT RD ST CATHARINES ON L2N 4P6	S	207.63	34

SPL - Ontario Spills

A search of the SPL database, dated 1988-Sep 2018 has found that there are 6 SPL site(s) within approximately 0.25 kilometers of the project property.

Equal/Higher Elevation	Address	Direction	Distance (m)	Map Key
PRIVATE BUSINESS	CORNER OF LOCKE AND MAIN ST RESTAURANT ST. CATHARINES CITY ON	W	9.00	5
PUC	26 LAKEPORT RD. MOTOR VEHICLE (OPERATING FLUID) ST. CATHARINES CITY ON L2N 4P5	SSE	25.45	12
The Regional Municipality of Niagara	Lakeport St. & Lock St. St. Catharines ON	SSE	46.01	13
	Port Dalhousie St. Catharines ON	WNW	172.27	29

Lower Elevation	Address	Direction	Distance (m)	Map Key

	On the west side, behind Twelve Restaurant, 61 Lakeport Road St. Catharines ON L2N 4P6	SSE	189.43	31
	61 Lighthouse Rd St. Catharines ON	E	209.39	35

WDSH - Waste Disposal Sites - MOE 1991 Historical Approval Inventory

A search of the WDSH database, dated Up to Oct 1990* has found that there are 1 WDSH site(s) within approximately 0.25 kilometers of the project property.

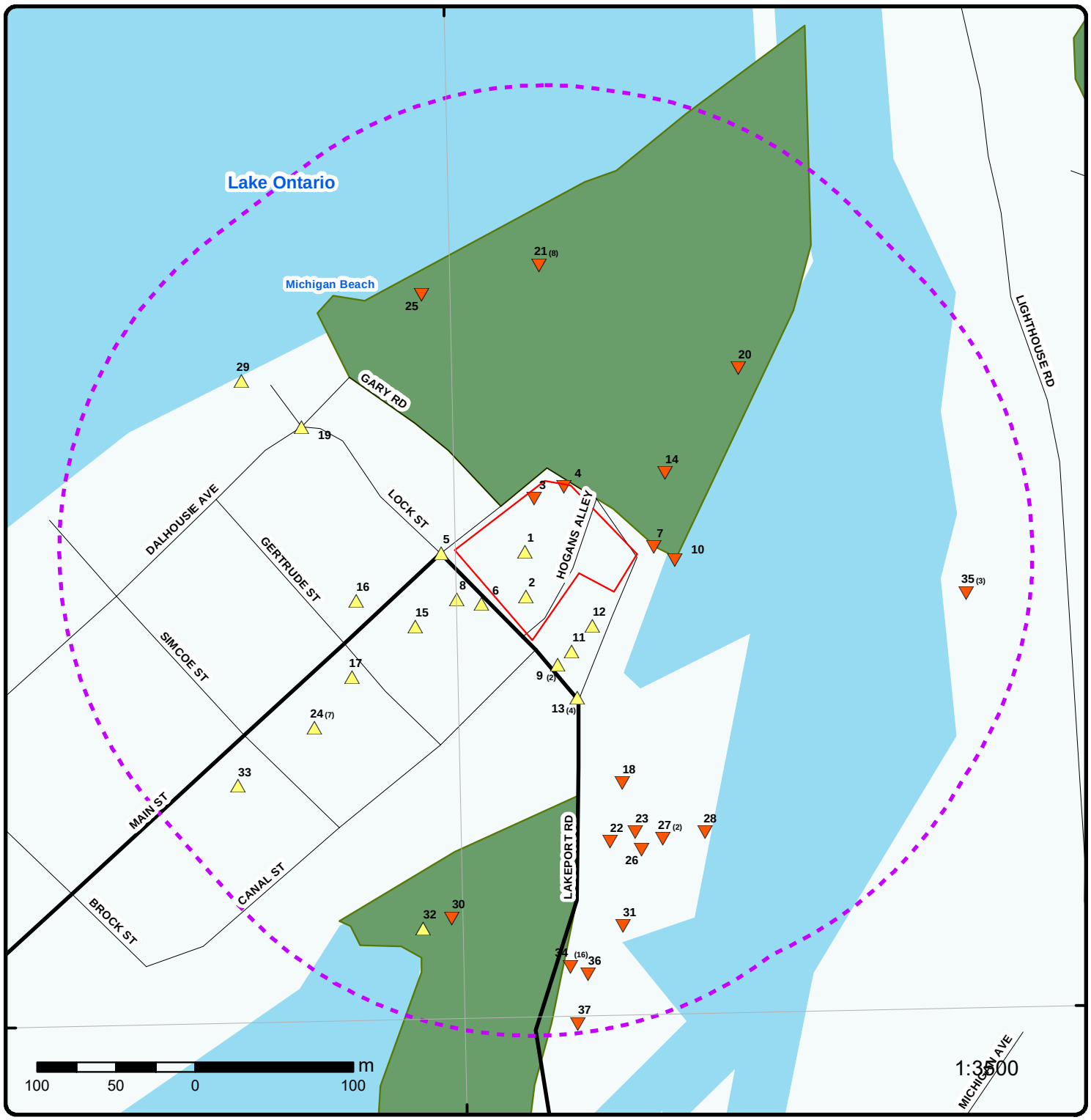
Equal/Higher Elevation	Address	Direction	Distance (m)	Map Key
	Lakeport Rd. ST. CATHARINES ON	SSW	194.72	32

WWIS - Water Well Information System

A search of the WWIS database, dated Dec 31, 2017 has found that there are 10 WWIS site(s) within approximately 0.25 kilometers of the project property.

Lower Elevation	Address	Direction	Distance (m)	Map Key
	PORT DALHOUSIE ON ***Well ID:*** 7141396	-	0.00	4
	St. Catharines ON ***Well ID:*** 7277008	ENE	48.60	14
	St. Catharines ON ***Well ID:*** 7285477	SSE	106.85	18
	PORT DALHOUSIE ON ***Well ID:*** 3804314	NE	127.52	20
	St. Catharines ON ***Well ID:*** 7285475	SSE	136.46	22
	St. Catharines ON ***Well ID:*** 7285479	SSE	137.68	23

PORT DALHOUSE ON ***Well ID:*** 7218053	NNW	140.63	**25**
St. Catharines ON ***Well ID:*** 7285480	SSE	149.27	**26**
St. Catharines ON ***Well ID:*** 7285478	SSE	162.42	**28**
ON ***Well ID:*** 7262444	S	214.22	**36**



Map : 0.25 Kilometer Radius

Order No: 20190116227

Address: Hogan's Alley, St. Catharines, ON, L2N

ERIS ENVIRONMENTAL RISK INFORMATION SERVICES

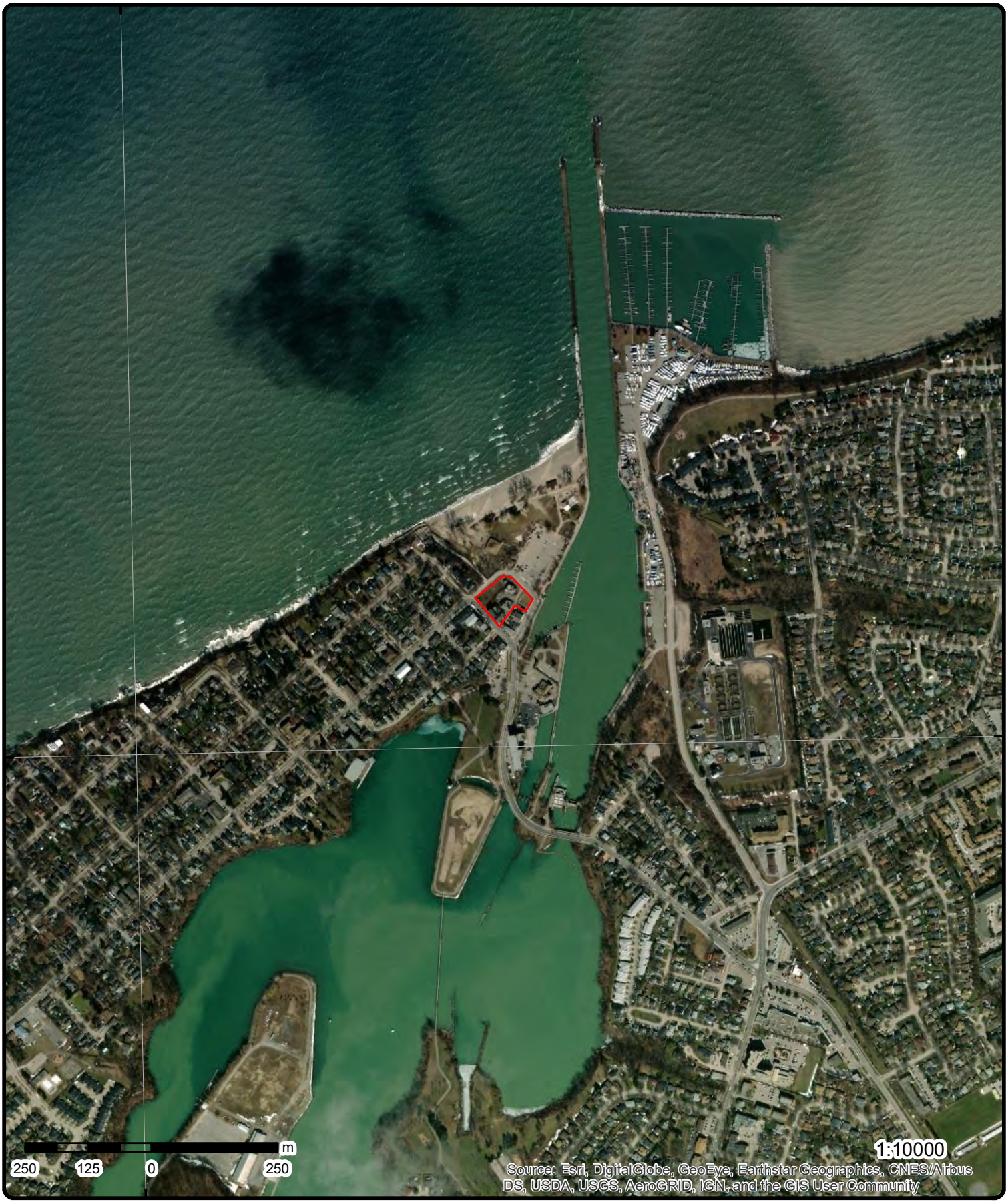
- Project Property
- Buffer Outline
- Eris Sites with Higher Elevation
- Eris Sites with Same Elevation
- Eris Sites with Lower Elevation
- Eris Sites with Unknown Elevation
- Expressway
- Principal Highway
- Secondary Highway
- Major Road
- Local road
- Trail
- Proposed Road
- Ferry Route/Ice Road
- Industrial and Resource - Regions
- Main Line
- Sidetrack
- Transit Line
- Abandoned Line
- National Park
- Provincial or Territorial Park
- Other Park
- Golf Course or Driving Range
- Park or Sports Field
- Other Recreation Area

Source: © 2015 DMTI Spatial Inc.

© ERIS Information Limited Partnership

79°16'30"W

43°12'N



43°12'N

Aerial (2017)

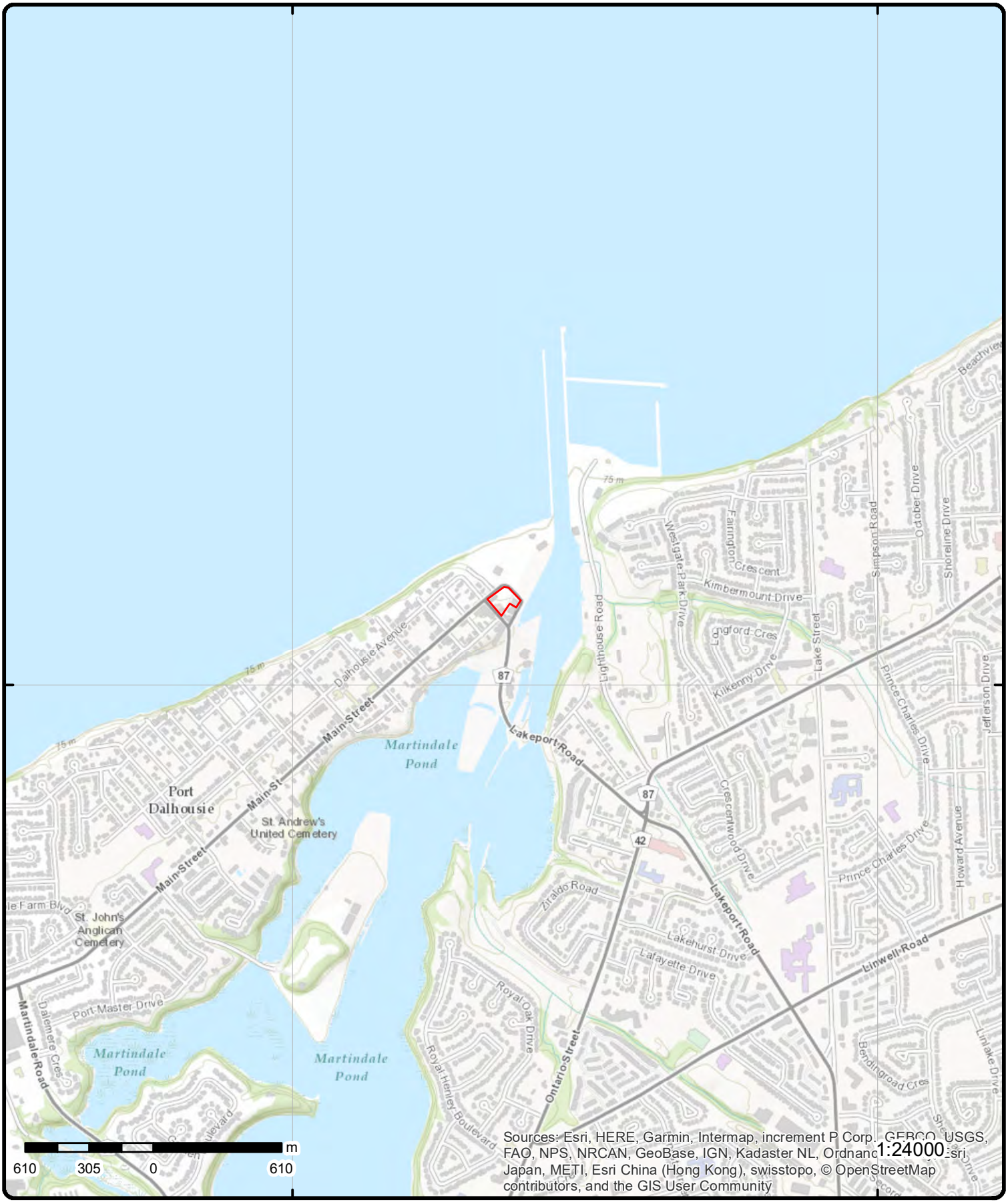
Address: Hogan's Alley, St. Catharines, ON, L2N

Source: ESRI World Imagery

Order No: 20190116227

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

© ERIS Information Limited Partnership



Topographic Map

Address: Hogan's Alley, St. Catharines, ON, L2N

Source: ESRI World Topographic Map

Order No: 20190116227

ERIS ENVIRONMENTAL RISK INFORMATION SERVICES

© ERIS Information Limited Partnership

Detail Report

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
1	1 of 1	-/0.0	79.5 / 0.36	16 Lock St St. Catharines ON L2N5B5	EHS

Order No:	20161228071	**Nearest Intersection:**	
Status:	C	**Municipality:**	St. Catharines (Port Dalhousie)
Report Type:	RSC Report (Urban)	**Client Prov/State:**	ON
Report Date:	05-JAN-17	**Search Radius (km):**	.3
Date Received:	28-DEC-16	**X:**	-79.266137
Previous Site Name:		**Y:**	43.202648
Lot/Building Size:			
Additional Info Ordered:			

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
2	1 of 1	-/0.0	80.8 / 1.70	1049569 ONTARIO INC., SAMMY'S DOUBLE SCO 16 LOCK STREET (REAR) ST. CATHARINES CITY ON L2N 5B5	CA

Certificate #:	8-2340-95-
Application Year:	95
Issue Date:	9/20/1995
Approval Type:	Industrial air
Status:	Approved
Application Type:	
Client Name:	
Client Address:	
Client City:	
Client Postal Code:	
Project Description:	EXHAUST FOR POTATO CHIP WAGON
Contaminants:	Odour/Fumes
Emission Control:	No Controls

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
3	1 of 1	-/0.0	78.7 / -0.38	R.M. OF NIAGARA 9 MAIN ST.-LAKESIDE PARK P.S. ST. CATHARINES CITY ON	CA

Certificate #:	8-2292-93-
Application Year:	93
Issue Date:	2/7/1994
Approval Type:	Industrial air
Status:	Approved in 1994
Application Type:	
Client Name:	
Client Address:	
Client City:	
Client Postal Code:	
Project Description:	STANDBY DEISEL GENERATOR
Contaminants:	Nitrogen Oxides
Emission Control:	No Controls

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
4	1 of 1	-/0.0	78.4 / -0.69	PORT DALHOUSIE ON	WWIS

Well ID:	7141396	***Data Entry Status:***	
Construction Date:		***Data Src:***	
Primary Water Use:	Monitoring	***Date Received:***	3/16/2010
Sec. Water Use:		***Selected Flag:***	Yes
Final Well Status:	Observation Wells	***Abandonment Rec:***	
Water Type:		***Contractor:***	6032
Casing Material:		***Form Version:***	7
Audit No:	Z108651	***Owner:***	
Tag:	A083872	***Street Name:***	LAKEPORT ROAD & MAIN STREET HOGAN'S ALLEY
Construction Method:		***County:***	NIAGARA (LINCOLN)
Elevation (m):		***Municipality:***	ST.CATHERINES CITY (GRANTHAM)
Elevation Reliability:		***Site Info:***	
Depth to Bedrock:		***Lot:***	
Well Depth:		***Concession:***	
Overburden/Bedrock:		***Concession Name:***	
Pump Rate:		***Easting NAD83:***	
Static Water Level:		***Northing NAD83:***	
Flowing (Y/N):		***Zone:***	
Flow Rate:		***UTM Reliability:***	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	1002949535	***Elevation:***	78.5
DP2BR:		***Elevrc:***	
Spatial Status:		***Zone:***	17
Code OB:		***East83:***	640885
Code OB Desc:		***Org CS:***	UTM83
Open Hole:		***North83:***	4784819
Cluster Kind:		***UTMRC:***	4
Date Completed:	01-FEB-10	***UTMRC Desc:***	margin of error : 30 m - 100 m
Remarks:		***Location Method:***	wwr
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	1003040917
Layer:	2
Color:	2
General Color:	GREY
Mat1:	05
Most Common Material:	CLAY
Mat2:	
Other Materials:	
Mat3:	66
Other Materials:	DENSE
Formation Top Depth:	2
Formation End Depth:	7
Formation End Depth UOM:	m

Overburden and Bedrock Materials Interval

Formation ID:	1003040916

Layer:	1
Color:	6
General Color:	BROWN
Mat1:	05
Most Common Material:	CLAY
Mat2:	
Other Materials:	
Mat3:	85
Other Materials:	SOFT
Formation Top Depth:	0
Formation End Depth:	2
Formation End Depth UOM:	m

Overburden and Bedrock Materials Interval

Formation ID:	1003040918
Layer:	3
Color:	7
General Color:	RED
Mat1:	26
Most Common Material:	ROCK
Mat2:	
Other Materials:	
Mat3:	66
Other Materials:	DENSE
Formation Top Depth:	7
Formation End Depth:	9.1
Formation End Depth UOM:	m

Annular Space/Abandonment Sealing Record

Plug ID:	1003040920
Layer:	1
Plug From:	0
Plug To:	.3
Plug Depth UOM:	m

Annular Space/Abandonment Sealing Record

Plug ID:	1003040921
Layer:	2
Plug From:	.3
Plug To:	4
Plug Depth UOM:	m

Method of Construction & Well Use

Method Construction ID:	1003040926
Method Construction Code:	6
Method Construction:	Boring
Other Method Construction:	

Pipe Information

Pipe ID:	1003040915
Casing No:	0
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	1003040923
Layer:	1
Material:	5
Open Hole or Material:	PLASTIC
Depth From:	0
Depth To:	4.6
Casing Diameter:	15
Casing Diameter UOM:	cm
Casing Depth UOM:	m

Construction Record - Screen

Screen ID:	1003040924
Layer:	1
Slot:	10
Screen Top Depth:	4.6
Screen End Depth:	9.1
Screen Material:	5
Screen Depth UOM:	m
Screen Diameter UOM:	cm
Screen Diameter:	18

Water Details

Water ID:	1003040922
Layer:	
Kind Code:	
Kind:	
Water Found Depth:	
Water Found Depth UOM:	m

Hole Diameter

Hole ID:	1003040919
Diameter:	36
Depth From:	0
Depth To:	9.1
Hole Depth UOM:	m
Hole Diameter UOM:	cm

5	*1 of 1*	*W/9.0*	*83.2 / 4.15*	***PRIVATE BUSINESS*** ***CORNER OF LOCKE AND MAIN ST*** ***RESTAURANT*** ***ST. CATHARINES CITY ON***	***SPL***

Ref No:	207236	***Discharger Report:***	
Site No:		***Material Group:***	
Incident Dt:	7/29/2001	***Client Type:***	
Year:		***Sector Type:***	
Incident Cause:	CONTAINER OVERFLOW	***Source Type:***	
Incident Event:		***Nearest Watercourse:***	
Contaminant Code:		***Site Name:***	
Contaminant Name:		***Site Address:***	
Contaminant Limit 1:		***Site District Office:***	
Contam Limit Freq 1:		***Site County/District:***	
Contaminant UN No 1:		***Site Postal Code:***	
Contaminant Qty:		***Site Region:***	
Environment Impact:	Possible	***Site Municipality:***	18103
Nature of Impact:	Water course or lake	***Site Lot:***	

Receiving Medium:	Land, Water	**Site Conc:**	
Receiving Env:		**Northing:**	
Health/Env Conseq:		**Easting:**	
MOE Response:		**Site Geo Ref Accu:**	
Dt MOE Arvl on Scn:		**Site Geo Ref Meth:**	
MOE Reported Dt:	7/29/2001	**Site Map Datum:**	
Dt Document Closed:			
Agency Involved:	WORKS		
SAC Action Class:			
Incident Reason:	UNKNOWN		
Incident Summary:	KILT 'N CLOVER: GREASE BIN OVERFLOWING TO LOT & NEARBY CATCHBASIN.CLEAN'G		

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6 | ***1 of 1*** | ***SW/9.4*** | ***81.4 / 2.31*** | ***ST. CATHARINES CITY***
LOCK ST./LAKEPORT RD./MAIN ST.
ST. CATHARINES CITY ON | ***CA***

Certificate #:	7-0346-94-
Application Year:	94
Issue Date:	5/11/1994
Approval Type:	Municipal water
Status:	Approved
Application Type:	
Client Name:	
Client Address:	
Client City:	
Client Postal Code:	
Project Description:	
Contaminants:	
Emission Control:	

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7 | ***1 of 1*** | ***E/11.6*** | ***76.1 / -2.95*** | ***R.M. OF NIAGARA***
LAKESIDE PARK/LAKEPORT ROAD
ST. CATHARINES CITY ON | ***CA***

Certificate #:	3-1362-93-
Application Year:	93
Issue Date:	1/11/1994
Approval Type:	Municipal sewage
Status:	Underwent 1st revision in 1994
Application Type:	
Client Name:	
Client Address:	
Client City:	
Client Postal Code:	
Project Description:	
Contaminants:	
Emission Control:	

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8 | ***1 of 1*** | ***WSW/19.2*** | ***82.7 / 3.57*** | ***BLUE ONION DELHI LTD.***
17-19 LOCK ST.
ST. CATHARINES CITY ON L2N 5B6 | ***CA***

Certificate #:	8-2175-88-
Application Year:	88
Issue Date:	11/18/1988
Approval Type:	Industrial air
Status:	Approved
Application Type:	
Client Name:	
Client Address:	

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB

Client City:
Client Postal Code:
Project Description: KITCHEN EXHAUST
Contaminants: Odour/Fumes
Emission Control:

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9 *1 of 2* *S/22.5* *81.8 / 2.73* ***The Corporation of the City of St. Catharines*** ***ECA***

St. Catharines ON

Approval No:	5623-4PAMPY	**MOE District:**	Niagara
Approval Date:	2001-08-20	**City:**	St. Catharines
Status:	Revoked and/or Replaced	**Longitude:**	-79.2659
Record Type:	ECA	**Latitude:**	43.202
Link Source:	IDS	**Geometry X:**	
SWP Area Name:	Niagara Peninsula	**Geometry Y:**	
Approval Type:	ECA-AIR		
Project Type:	AIR		
Address:			
Full Address:			
Full PDF Link:	https://www.accessenvironment.ene.gov.on.ca/instruments/7117-4NYP5N-14.pdf		

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9 *2 of 2* *S/22.5* *81.8 / 2.73* ***The Corporation of the City of St. Catharines*** ***ECA***

St. Catharines ON

Approval No:	9805-4ZGS9Y	**MOE District:**	Niagara
Approval Date:	2001-08-20	**City:**	St. Catharines
Status:	Approved	**Longitude:**	-79.2659
Record Type:	ECA	**Latitude:**	43.202
Link Source:	IDS	**Geometry X:**	
SWP Area Name:	Niagara Peninsula	**Geometry Y:**	
Approval Type:	ECA-AIR		
Project Type:	AIR		
Address:			
Full Address:			
Full PDF Link:	https://www.accessenvironment.ene.gov.on.ca/instruments/2628-4XWRBR-14.pdf		

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10 *1 of 1* *E/24.2* *75.0 / -4.10* ***ON*** ***BORE***

Borehole ID:	604725	**Type:**	Borehole
Use:	Observation/Monitoring	**Status:**	
Drill Method:	Test Pit	**UTM Zone:**	17
Easting:	640955	**Northing:**	4784773
Location Accuracy:		**Orig. Ground Elev m:**	76.8
Elev. Reliability Note:		**DEM Ground Elev m:**	74.6
Total Depth m:	-999	**Primary Name:**	
Township:		**Concession:**	
Lot:		**Municipality:**	
Completion Date:	OCT-1970	**Static Water Level:**	.2
Primary Water Use:	Not Used	**Sec. Water Use:**	

--Details--

Stratum ID:	218365627	**Top Depth(m):**	0.0
Bottom Depth(m):	0.1	**Stratum Desc:**	FILL,SAND,GRAVEL.
Stratum ID:	218365628	**Top Depth(m):**	0.1
Bottom Depth(m):	3.1	**Stratum Desc:**	FILL,SAND,SILT,WOOD.

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB

Stratum ID:	218365629	**Top Depth(m):**	3.1
Bottom Depth(m):	4.5	**Stratum Desc:**	TILL,SILT. GREY,DENSE, WATER STABLE AT 251.3 FEET.
Stratum ID:	218365630	**Top Depth(m):**	4.5
Bottom Depth(m):	4.9	**Stratum Desc:**	SILT(60),SAND(40). BROWN,VERY DENSE.
Stratum ID:	218365631	**Top Depth(m):**	4.9
Bottom Depth(m):	5.2	**Stratum Desc:**	TILL,SILT. BROWN.
Stratum ID:	218365632	**Top Depth(m):**	5.2
Bottom Depth(m):	5.8	**Stratum Desc:**	SAND(50),GRAVEL(50).VARI-COLOURED,DENSE.
Stratum ID:	218365633	**Top Depth(m):**	5.8
Bottom Depth(m):	6.2	**Stratum Desc:**	SILT. GREY,VERY DENSE.
Stratum ID:	218365634	**Top Depth(m):**	6.2
Bottom Depth(m):	6.9	**Stratum Desc:**	TILL,SILT(35), SAND(60). RED,VERY DENSE.
Stratum ID:	218365635	**Top Depth(m):**	6.9
Bottom Depth(m):		**Stratum Desc:**	BEDROCK,SHALE. RED,WEATHERED.

025 014 025 018 021

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11 | ***1 of 1*** | ***SSE/24.6*** | ***80.8 / 1.70*** | ***38 Lakeport Road*** ***St. Catharines ON L2N 4P5*** | ***EHS***

Order No:	20120618038	**Nearest Intersection:**	
Status:	C	**Municipality:**	
Report Type:	Standard Report	**Client Prov/State:**	ON
Report Date:	21-JUN-12	**Search Radius (km):**	.25
Date Received:	18-JUN-12	**X:**	-79.265789
Previous Site Name:		**Y:**	43.202075
Lot/Building Size:			
Additional Info Ordered:			

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12 | ***1 of 1*** | ***SSE/25.4*** | ***79.5 / 0.44*** | ***PUC*** ***26 LAKEPORT RD. MOTOR VEHICLE (OPERATING FLUID)*** ***ST. CATHARINES CITY ON L2N 4P5*** | ***SPL***

Ref No:	133210	**Discharger Report:**	
Site No:		**Material Group:**	
Incident Dt:	10/18/1996	**Client Type:**	
Year:		**Sector Type:**	
Incident Cause:	PIPE/HOSE LEAK	**Source Type:**	
Incident Event:		**Nearest Watercourse:**	
Contaminant Code:		**Site Name:**	
Contaminant Name:		**Site Address:**	
Contaminant Limit 1:		**Site District Office:**	
Contam Limit Freq 1:		**Site County/District:**	
Contaminant UN No 1:		**Site Postal Code:**	
Contaminant Qty:		**Site Region:**	
Environment Impact:	NOT ANTICIPATED	**Site Municipality:**	18103
Nature of Impact:		**Site Lot:**	
Receiving Medium:	LAND	**Site Conc:**	
Receiving Env:		**Northing:**	
Health/Env Conseq:		**Easting:**	PUC
MOE Response:		**Site Geo Ref Accu:**	
Dt MOE Arvl on Scn:		**Site Geo Ref Meth:**	
MOE Reported Dt:	10/18/1996	**Site Map Datum:**	
Dt Document Closed:			

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
Agency Involved:					
SAC Action Class:					
Incident Reason:		EQUIPMENT FAILURE			
Incident Summary:		ST. CATHARINES HYDRO - 115 L OF HYDRAULIC OIL TO PAVEMENT FROM TRUCK.			
13	1 of 4	SSE/46.0	81.9 / 2.77	ST. CATHARINES CITY LAKEPORT RD./LOCK ST. ST. CATHARINES CITY ON	CA
Certificate #:		7-1014-93-			
Application Year:		93			
Issue Date:		11/17/1993			
Approval Type:		Municipal water			
Status:		Approved			
Application Type:					
Client Name:					
Client Address:					
Client City:					
Client Postal Code:					
Project Description:					
Contaminants:					
Emission Control:					
13	2 of 4	SSE/46.0	81.9 / 2.77	R.M. OF NIAGARA LAKEPORT RD./LOCK ST./PT.LOT 1 ST. CATHARINES CITY ON	CA
Certificate #:		3-0957-93-006			
Application Year:		93			
Issue Date:		10/5/93			
Approval Type:		Municipal sewage			
Status:		Approved			
Application Type:					
Client Name:					
Client Address:					
Client City:					
Client Postal Code:					
Project Description:					
Contaminants:					
Emission Control:					
13	3 of 4	SSE/46.0	81.9 / 2.77	R.M. OF NIAGARA LAKEPORT RD./LOCK ST./PT.LOT 1 ST. CATHARINES CITY ON	CA
Certificate #:		3-0957-93-			
Application Year:		93			
Issue Date:		11/23/1993			
Approval Type:		Municipal sewage			
Status:		Cancelled			
Application Type:					
Client Name:					
Client Address:					
Client City:					
Client Postal Code:					
Project Description:					
Contaminants:					
Emission Control:					

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
13	4 of 4	SSE/46.0	81.9 / 2.77	The Regional Municipality of Niagara Lakeport St. & Lock St. St. Catharines ON	SPL

Ref No:	4438-8T23EP	**Discharger Report:**	
Site No:		**Material Group:**	
Incident Dt:	03-APR-12	**Client Type:**	
Year:		**Sector Type:**	Sewer
Incident Cause:	Pipe Or Hose Leak	**Source Type:**	
Incident Event:		**Nearest Watercourse:**	
Contaminant Code:	44	**Site Name:**	Forcemain<UNOFFICIAL>
Contaminant Name:	SEWAGE,RAW UNCHLORINATED	**Site Address:**	Lakeport St. & Lock St.
Contaminant Limit 1:		**Site District Office:**	
Contam Limit Freq 1:		**Site County/District:**	
Contaminant UN No 1:		**Site Postal Code:**	
Contaminant Qty:		**Site Region:**	
Environment Impact:	Not Anticipated	**Site Municipality:**	St. Catharines
Nature of Impact:	Surface Water Pollution	**Site Lot:**	
Receiving Medium:	Sewage - Municipal/Private and Commercial	**Site Conc:**	
Receiving Env:		**Northing:**	
Health/Env Conseq:		**Easting:**	
MOE Response:	Planned Field Response	**Site Geo Ref Accu:**	
Dt MOE Arvl on Scn:	04-APR-12	**Site Geo Ref Meth:**	
MOE Reported Dt:	03-APR-12	**Site Map Datum:**	
Dt Document Closed:			
Agency Involved:			
SAC Action Class:	Watercourse Spills		
Incident Reason:			
Incident Summary:	St. Catharines: Forcemain break, sewage to Lake Ontario		

14	1 of 1	ENE/48.6	76.0 / -3.09	St. Catharines ON	WWIS

Well ID:	7277008	**Data Entry Status:**	
Construction Date:		**Data Src:**	
Primary Water Use:		**Date Received:**	12/13/2016
Sec. Water Use:		**Selected Flag:**	Yes
Final Well Status:	Abandoned-Other	**Abandonment Rec:**	Yes
Water Type:		**Contractor:**	7484
Casing Material:		**Form Version:**	7
Audit No:	Z220726	**Owner:**	
Tag:		**Street Name:**	6 DELHOUSIE ST
Construction Method:		**County:**	NIAGARA (LINCOLN)
Elevation (m):		**Municipality:**	ST.CATHERINES CITY (GRANTHAM)
Elevation Reliability:		**Site Info:**	
Depth to Bedrock:		**Lot:**	
Well Depth:		**Concession:**	
Overburden/Bedrock:		**Concession Name:**	
Pump Rate:		**Easting NAD83:**	
Static Water Level:		**Northing NAD83:**	
Flowing (Y/N):		**Zone:**	
Flow Rate:		**UTM Reliability:**	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	1006305422	**Elevation:**	75.9
DP2BR:		**Elevrc:**	
Spatial Status:		**Zone:**	17
Code OB:		**East83:**	640949
Code OB Desc:		**Org CS:**	UTM83
Open Hole:		**North83:**	4784828
Cluster Kind:		**UTMRC:**	4

Date Completed: 27-OCT-16
Remarks:
Elevrc Desc:
Location Source Date:
Improvement Location Source:
Improvement Location Method:
Source Revision Comment:
Supplier Comment:
UTMRC Desc: margin of error : 30 m - 100 m
Location Method: gis

Overburden and Bedrock Materials Interval

Formation ID: 1006486279
Layer: 1
Color:
General Color:
Mat1:
Most Common Material:
Mat2:
Other Materials:
Mat3:
Other Materials:
Formation Top Depth: 0
Formation End Depth:
Formation End Depth UOM: ft

Annular Space/Abandonment Sealing Record

Plug ID: 1006486285
Layer: 1
Plug From: 0
Plug To: 15
Plug Depth UOM: ft

Method of Construction & Well Use

Method Construction ID: 1006486284
Method Construction Code:
Method Construction:
Other Method Construction:

Pipe Information

Pipe ID: 1006486278
Casing No: 0
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 1006486282
Layer:
Material:
Open Hole or Material:
Depth From:
Depth To:
Casing Diameter:
Casing Diameter UOM: inch
Casing Depth UOM: ft

Construction Record - Screen

Screen ID: 1006486283
Layer:
Slot:
Screen Top Depth:
Screen End Depth:
Screen Material:
Screen Depth UOM: ft
Screen Diameter UOM: inch
Screen Diameter:

Water Details

Water ID: 1006486281
Layer:
Kind Code:
Kind:
Water Found Depth:
Water Found Depth UOM: ft

Hole Diameter

Hole ID: 1006486280
Diameter:
Depth From:
Depth To:
Hole Depth UOM: ft
Hole Diameter UOM: inch

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15 | ***1 of 1*** | ***WSW/50.5*** | ***84.5 / 5.37*** | ***Poustie Dentistry Professional Corporation***
17 Lock Street Suite 1
St. Catharines ON L2N 5B6 | ***GEN***

Generator No.: ON5300857
Status: Registered
Approval Years: As of Jun 2018
Contam. Facility:
MHSW Facility:
SIC Code:
SIC Description:

PO Box No.:
Country: Canada
Choice of Contact:
Co Admin:
Phone No. Admin:

--Details--
Waste Code: 312 P
Waste Description: Pathological wastes

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16 | ***1 of 1*** | ***WSW/70.0*** | ***84.7 / 5.65*** | ***12 MAIN STREET***
ST. CATHARINES ON L2N 4T3 | ***HINC***

External File Num: FS INC 0905-02415
Date of Occurrence: 5/4/2009
Fuel Occurrence Type: Vapour Release
Fuel Type Involved: Natural Gas
Status Desc: Completed - Causal Analysis(End)
Job Type Desc: Incident/Near-Miss Occurrence (FS)
Oper. Type Involved: Construction Site (pipeline strike)
Service Interruptions: Yes
Property Damage: No
Fuel Life Cycle Stage: Transmission, Distribution and Transportation
Root Cause: Root Cause: Equipment/Material/Component:No Procedures:Yes Maintenance:No Design:No

Training:Yes Management:No Human Factors:Yes

Reported Details:
Fuel Category: Gaseous Fuel
Occurrence Type: Incident
Affiliation: Industry Stakeholder (Licensee/Registration/Certificate Holder, Facility Owner, etc.)
County Name: Niagara
Approx. Quant. Rel:
Nearby body of water:
Enter Drainage Syst.:
Approx. Quant. Unit:
Environmental Impact:

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17 | ***1 of 1*** | ***WSW/101.6*** | ***84.8 / 5.73*** | ***Seymour Hall Inc***
15 Main St.
St. Catharines ON | ***GEN***

Generator No.: ON4058089
Status:
Approval Years: 03,04
Contam. Facility:
MHSW Facility:
SIC Code:
SIC Description:

PO Box No.:
Country:
Choice of Contact:
Co Admin:
Phone No. Admin:

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18 | ***1 of 1*** | ***SSE/106.8*** | ***78.4 / -0.66*** | ***St. Catharines ON*** | ***WWIS***

Well ID: 7285477
Construction Date:
Primary Water Use: Monitoring
Sec. Water Use:
Final Well Status: Observation Wells
Water Type:
Casing Material:
Audit No: Z253849
Tag: A213611
Construction Method:
Elevation (m):
Elevation Reliability:
Depth to Bedrock:
Well Depth:
Overburden/Bedrock:
Pump Rate:
Static Water Level:
Flowing (Y/N):
Flow Rate:
Clear/Cloudy:

Data Entry Status:
Data Src:
Date Received: 4/20/2017
Selected Flag: Yes
Abandonment Rec:
Contractor: 7238
Form Version: 7
Owner:
Street Name: 57 LAKEPORT RD
County: NIAGARA (LINCOLN)
Municipality: ST.CATHERINES CITY (GRANTHAM)
Site Info:
Lot:
Concession:
Concession Name:
Easting NAD83:
Northing NAD83:
Zone:
UTM Reliability:

Bore Hole Information

Bore Hole ID: 1006383252
DP2BR:
Spatial Status:
Code OB:
Code OB Desc:
Open Hole:
Cluster Kind:
Date Completed: 20-MAR-17
Remarks:
Elevrc Desc:
Location Source Date:

Elevation: 77.76
Elevrc:
Zone: 17
East83: 640922
Org CS: UTM83
North83: 4784632
UTMRC: 4
UTMRC Desc: margin of error : 30 m - 100 m
Location Method: wwr

Improvement Location Source:
Improvement Location Method:
Source Revision Comment:
Supplier Comment:

Overburden and Bedrock Materials Interval

Formation ID: 1006689404
Layer: 3
Color:
General Color:
Mat1: 06
Most Common Material: SILT
Mat2:
Other Materials:
Mat3:
Other Materials:
Formation Top Depth: 10
Formation End Depth: 25
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 1006689402
Layer: 1
Color:
General Color:
Mat1:
Most Common Material:
Mat2: 60
Other Materials: CEMENTED
Mat3:
Other Materials:
Formation Top Depth: 0
Formation End Depth: .5
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 1006689403
Layer: 2
Color:
General Color:
Mat1: 01
Most Common Material: FILL
Mat2:
Other Materials:
Mat3:
Other Materials:
Formation Top Depth: .5
Formation End Depth: 10
Formation End Depth UOM: ft

Annular Space/Abandonment Sealing Record

Plug ID: 1006689413
Layer: 3
Plug From: 14

Plug To: 25
Plug Depth UOM: ft

Annular Space/Abandonment Sealing Record

Plug ID: 1006689412
Layer: 2
Plug From: .5
Plug To: 14
Plug Depth UOM: ft

Annular Space/Abandonment Sealing Record

Plug ID: 1006689411
Layer: 1
Plug From: 0
Plug To: .5
Plug Depth UOM: ft

Method of Construction & Well Use

Method Construction ID: 1006689410
Method Construction Code: B
Method Construction: Other Method
Other Method Construction: AUGER

Pipe Information

Pipe ID: 1006689401
Casing No: 0
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 1006689407
Layer: 1
Material: 5
Open Hole or Material: PLASTIC
Depth From: 0
Depth To: 15
Casing Diameter: 2
Casing Diameter UOM: inch
Casing Depth UOM: ft

Construction Record - Screen

Screen ID: 1006689408
Layer: 1
Slot: 10
Screen Top Depth: 15
Screen End Depth: 25
Screen Material: 5
Screen Depth UOM: ft
Screen Diameter UOM: inch
Screen Diameter:

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB

Water Details

Water ID:	1006689406
Layer:	1
Kind Code:	8
Kind:	Untested
Water Found Depth:	21
Water Found Depth UOM:	ft

Hole Diameter

Hole ID:	1006689405
Diameter:	8
Depth From:	0
Depth To:	25
Hole Depth UOM:	ft
Hole Diameter UOM:	inch

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
19	1 of 1	WNW/124.4	84.7 / 5.65	JAMES ANDREW VANDERBURGH DALHOUSIE AVE/LOCK ST. ST. CATHARINES CITY ON	CA

Certificate #:	3-1063-99-
Application Year:	99
Issue Date:	9/14/1999
Approval Type:	Municipal sewage
Status:	Approved
Application Type:	
Client Name:	
Client Address:	
Client City:	
Client Postal Code:	
Project Description:	
Contaminants:	
Emission Control:	

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
20	1 of 1	NE/127.5	75.4 / -3.71	PORT DALHOUSIE ON	WWIS

Well ID:	3804314	***Data Entry Status:***	
Construction Date:		***Data Src:***	
Primary Water Use:		***Date Received:***	12/6/2005
Sec. Water Use:		***Selected Flag:***	Yes
Final Well Status:	Observation Wells	***Abandonment Rec:***	
Water Type:		***Contractor:***	6607
Casing Material:		***Form Version:***	3
Audit No:	Z40256	***Owner:***	
Tag:	A034563	***Street Name:***	80 LIGHTHOUSE ROAD
Construction Method:		***County:***	NIAGARA (LINCOLN)
Elevation (m):		***Municipality:***	ST.CATHERINES CITY (GRANTHAM)
Elevation Reliability:		***Site Info:***	
Depth to Bedrock:		***Lot:***	
Well Depth:		***Concession:***	
Overburden/Bedrock:		***Concession Name:***	
Pump Rate:		***Easting NAD83:***	
Static Water Level:		***Northing NAD83:***	
Flowing (Y/N):		***Zone:***	
Flow Rate:		***UTM Reliability:***	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	11321427	**Elevation:**	75.48
DP2BR:		**Elevrc:**	
Spatial Status:		**Zone:**	17
Code OB:	o	**East83:**	640995
Code OB Desc:	Overburden	**Org CS:**	UTM83
Open Hole:		**North83:**	4784894
Cluster Kind:		**UTMRC:**	4
Date Completed:	01-NOV-05	**UTMRC Desc:**	margin of error : 30 m - 100 m
Remarks:		**Location Method:**	wwr
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	933014546
Layer:	1
Color:	6
General Color:	BROWN
Mat1:	01
Most Common Material:	FILL
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	0
Formation End Depth:	1.5
Formation End Depth UOM:	m

Overburden and Bedrock Materials Interval

Formation ID:	933014548
Layer:	3
Color:	2
General Color:	GREY
Mat1:	10
Most Common Material:	COARSE SAND
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	3
Formation End Depth:	3.75
Formation End Depth UOM:	m

Overburden and Bedrock Materials Interval

Formation ID:	933014547
Layer:	2
Color:	6
General Color:	BROWN
Mat1:	06
Most Common Material:	SILT
Mat2:	81
Other Materials:	SANDY
Mat3:	
Other Materials:	

Formation Top Depth: 1.5
Formation End Depth: 3
Formation End Depth UOM: m

Annular Space/Abandonment Sealing Record

Plug ID: 933282746
Layer: 1
Plug From: 0
Plug To: .75
Plug Depth UOM: m

Method of Construction & Well Use

Method Construction ID: 963804314
Method Construction Code: 6
Method Construction: Boring
Other Method Construction:

Pipe Information

Pipe ID: 11336282
Casing No: 1
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 930863527
Layer: 1
Material: 5
Open Hole or Material: PLASTIC
Depth From: 0
Depth To: .75
Casing Diameter: 5.1
Casing Diameter UOM: cm
Casing Depth UOM: m

Construction Record - Screen

Screen ID: 933415909
Layer: 1
Slot: 10
Screen Top Depth: .75
Screen End Depth: 3.75
Screen Material: 5
Screen Depth UOM: m
Screen Diameter UOM: cm
Screen Diameter: 6.4

Water Details

Water ID: 934068645
Layer: 1
Kind Code: 1
Kind: FRESH
Water Found Depth: 1.5
Water Found Depth UOM: m

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB

Hole Diameter

Hole ID:	11540577
Diameter:	21
Depth From:	0
Depth To:	3.75
Hole Depth UOM:	m
Hole Diameter UOM:	cm

21	*1 of 8*	*N/136.2*	*74.9 / -4.20*	***PORT DALHOUSIE (Former coal storage area)***	***FCS***
				St. Catharines ON	

SGC:	3526053
Site ID:	00016594
Departmental ID:	C S 04768
Depart Code:	DFO
Class Type:	
Class:	
Site Name:	PORT DALHOUSIE (Former coal storage area)
Site Name (FR):	PORT DALHOUSIE (Ancienne zone de stockage du charbon)
Site Status:	Active
Site Status Desc:	Initial testing completed. Detailed testing underway.
Site Status (FR):	Active
Description (FR):	Première analyse terminée. Analyse détaillée en cours.
Involv Code:	
Census Division:	Niagara
Municipality:	St. Catharines
Census Sub Class:	1
Latitude:	43.204273
Longitude:	-79.265984
Location:	
Protected Data:	0
FED:	89
Fed Electoral District:	St. Catharines
Fed Electoral District (FR):	St. Catharines
Metro:	
Nearest Pop. Area:	
Highest Step Cmpltd:	3
Site Deleted Flag:	
Created:	2006-12-06T03:29:00
Modified:	2018-04-27T13:11:03.243
Property No.:	8859
Est m³ Contmnted:	0
Est Ha Contmnted:	0
Est Tons Contamin:	0
Est Population at 1 Km:	5,100
Est Population at 10 Km:	181,852
Est Population at 25 Km:	412,796
Est Population at 5 Km:	114,329
Est Population at 50 Km:	1,684,369
Reporting Org:	Fisheries and Oceans Canada
Reporting Org (FR):	Pêches et Océans Canada
Reason for Involv:	Federal Real Property
Reason for Involv (FR):	Biens immobiliers fédéraux
Liable Third Party:	
Class (FR):	
Action Plan:	
Action Plan (FR):	
Site Mgmnt Strategy:	Other
Minimap URL:	http://www.tbs-sct.gc.ca/fcsi-rscf/minimap.aspx?fsi=00016594
Additional Info:	
Additional Info (FR):	

Management

Management Code: 9
Management Type (EN): Other
Management Type (FR): Autre type de gestion

Contamination

Contaminant: PAHs (polycyclic aromatic hydrocarbon)
Contamination (FR): HAP (hydrocarbures aromatiques polycycliques)
Medium Code: 5
Medium: Soil
Medium (FR): Sol

Contaminant: PHCs (petroleum hydrocarbons)
Contamination (FR): HCP (hydrocarbures pétroliers)
Medium Code: 5
Medium: Soil
Medium (FR): Sol

Annual Data

Fiscal Year: 2014-2015
Reporting Organization: DFO
Reporting Organization (EN): Fisheries and Oceans Canada
Reporting Organization (FR): Pêches et Océans Canada
Class Type:
Class (EN):
Class (FR):
CCME Flag:
CCME NCS Year:
Step Name (EN):
Step Name (FR):
Highest Step Completed: 3
Highest Step Completed Desc:
Planned Compl Date Step7:
Planned Compl Date Step8:
Planned Compl Date Step9:
Created:
Modified:
NCSCS Year:
Closed: No
Actual Cubic Metres Rem: 0
Actual Hectares Rem: 0
Actual Tons Remediated: 0
Total Asmt Expenditure: $0.00
Total Remediation Expenditure: $0.00
Total Care/Maint Expenditur: $0.00
Total Mntring Expenditure: $0.00
Ttl Expenditure Reduc Liabil:
FCSAP Asmt Expenditure: $0.00
FCSAP Remed Expenditure: $0.00
FCSAP Care/Maint Expenditur: $0.00
FCSAP Mntring Expenditure: $0.00

Annual Data

Fiscal Year: 2013-2014
Reporting Organization: DFO
Reporting Organization (EN): Fisheries and Oceans Canada
Reporting Organization (FR): Pêches et Océans Canada
Class Type:

Class (EN):
Class (FR):
CCME Flag:
CCME NCS Year:
Step Name (EN):
Step Name (FR):
Highest Step Completed: 3
Highest Step Completed Desc:
Planned Compl Date Step7:
Planned Compl Date Step8:
Planned Compl Date Step9:
Created:
Modified:
NCSCS Year:
Closed: No
Actual Cubic Metres Rem: 0
Actual Hectares Rem: 0
Actual Tons Remediated: 0
Total Asmt Expenditure: $0.00
Total Remediation Expenditure: $0.00
Total Care/Maint Expenditur: $0.00
Total Mntring Expenditure: $0.00
Ttl Expenditure Reduc Liabil:
FCSAP Asmt Expenditure: $0.00
FCSAP Remed Expenditure: $0.00
FCSAP Care/Maint Expenditur: $0.00
FCSAP Mntring Expenditure: $0.00

Annual Data

Fiscal Year: 2007-2008
Reporting Organization: DFO
Reporting Organization (EN): Fisheries and Oceans Canada
Reporting Organization (FR): Pêches et Océans Canada
Class Type:
Class (EN):
Class (FR):
CCME Flag:
CCME NCS Year:
Step Name (EN):
Step Name (FR):
Highest Step Completed: 3
Highest Step Completed Desc:
Planned Compl Date Step7:
Planned Compl Date Step8:
Planned Compl Date Step9:
Created:
Modified:
NCSCS Year:
Closed: No
Actual Cubic Metres Rem: 0
Actual Hectares Rem: 0
Actual Tons Remediated: 0
Total Asmt Expenditure: $20,468.06
Total Remediation Expenditure: $0.00
Total Care/Maint Expenditur: $0.00
Total Mntring Expenditure: $0.00
Ttl Expenditure Reduc Liabil:
FCSAP Asmt Expenditure: $16,374.45
FCSAP Remed Expenditure: $0.00
FCSAP Care/Maint Expenditur: $0.00
FCSAP Mntring Expenditure: $0.00

Annual Data

Fiscal Year:	2009-2010
Reporting Organization:	DFO
Reporting Organization (EN):	Fisheries and Oceans Canada
Reporting Organization (FR):	Pêches et Océans Canada
Class Type:	
Class (EN):	
Class (FR):	
CCME Flag:	
CCME NCS Year:	
Step Name (EN):	
Step Name (FR):	
Highest Step Completed:	3
Highest Step Completed Desc:	
Planned Compl Date Step7:	
Planned Compl Date Step8:	
Planned Compl Date Step9:	
Created:	
Modified:	
NCSCS Year:	
Closed:	No
Actual Cubic Metres Rem:	0
Actual Hectares Rem:	0
Actual Tons Remediated:	0
Total Asmt Expenditure:	$0.00
Total Remediation Expenditure:	$0.00
Total Care/Maint Expenditur:	$0.00
Total Mntring Expenditure:	$0.00
Ttl Expenditure Reduc Liabil:	
FCSAP Asmt Expenditure:	$0.00
FCSAP Remed Expenditure:	$0.00
FCSAP Care/Maint Expenditur:	$0.00
FCSAP Mntring Expenditure:	$0.00

Annual Data

Fiscal Year:	2011-2012
Reporting Organization:	DFO
Reporting Organization (EN):	Fisheries and Oceans Canada
Reporting Organization (FR):	Pêches et Océans Canada
Class Type:	
Class (EN):	
Class (FR):	
CCME Flag:	
CCME NCS Year:	
Step Name (EN):	
Step Name (FR):	
Highest Step Completed:	3
Highest Step Completed Desc:	
Planned Compl Date Step7:	
Planned Compl Date Step8:	
Planned Compl Date Step9:	
Created:	
Modified:	
NCSCS Year:	
Closed:	No
Actual Cubic Metres Rem:	0
Actual Hectares Rem:	0
Actual Tons Remediated:	0
Total Asmt Expenditure:	$0.00
Total Remediation Expenditure:	$0.00
Total Care/Maint Expenditur:	$0.00
Total Mntring Expenditure:	$0.00
Ttl Expenditure Reduc Liabil:	
FCSAP Asmt Expenditure:	$0.00

FCSAP Remed Expenditure: $0.00
FCSAP Care/Maint Expenditur: $0.00
FCSAP Mntring Expenditure: $0.00

Annual Data

Fiscal Year: 2008-2009
Reporting Organization: DFO
Reporting Organization (EN): Fisheries and Oceans Canada
Reporting Organization (FR): Pêches et Océans Canada
Class Type:
Class (EN):
Class (FR):
CCME Flag:
CCME NCS Year:
Step Name (EN):
Step Name (FR):
Highest Step Completed: 3
Highest Step Completed Desc:
Planned Compl Date Step7:
Planned Compl Date Step8:
Planned Compl Date Step9:
Created:
Modified:
NCSCS Year:
Closed: No
Actual Cubic Metres Rem: 0
Actual Hectares Rem: 0
Actual Tons Remediated: 0
Total Asmt Expenditure: $0.00
Total Remediation Expenditure: $0.00
Total Care/Maint Expenditur: $0.00
Total Mntring Expenditure: $0.00
Ttl Expenditure Reduc Liabil:
FCSAP Asmt Expenditure: $0.00
FCSAP Remed Expenditure: $0.00
FCSAP Care/Maint Expenditur: $0.00
FCSAP Mntring Expenditure: $0.00

Annual Data

Fiscal Year: 2015-2016
Reporting Organization: DFO
Reporting Organization (EN): Fisheries and Oceans Canada
Reporting Organization (FR): Pêches et Océans Canada
Class Type:
Class (EN):
Class (FR):
CCME Flag:
CCME NCS Year:
Step Name (EN):
Step Name (FR):
Highest Step Completed: 3
Highest Step Completed Desc:
Planned Compl Date Step7:
Planned Compl Date Step8:
Planned Compl Date Step9:
Created:
Modified:
NCSCS Year:
Closed: No
Actual Cubic Metres Rem: 0
Actual Hectares Rem: 0
Actual Tons Remediated: 0

Total Asmt Expenditure:	$0.00
Total Remediation Expenditure:	$0.00
Total Care/Maint Expenditur:	$0.00
Total Mntring Expenditure:	$0.00
Ttl Expenditure Reduc Liabil:	
FCSAP Asmt Expenditure:	$0.00
FCSAP Remed Expenditure:	$0.00
FCSAP Care/Maint Expenditur:	$0.00
FCSAP Mntring Expenditure:	$0.00

Annual Data

Fiscal Year:	2012-2013
Reporting Organization:	DFO
Reporting Organization (EN):	Fisheries and Oceans Canada
Reporting Organization (FR):	Pêches et Océans Canada
Class Type:	
Class (EN):	
Class (FR):	
CCME Flag:	
CCME NCS Year:	
Step Name (EN):	
Step Name (FR):	
Highest Step Completed:	3
Highest Step Completed Desc:	
Planned Compl Date Step7:	
Planned Compl Date Step8:	
Planned Compl Date Step9:	
Created:	
Modified:	
NCSCS Year:	
Closed:	No
Actual Cubic Metres Rem:	0
Actual Hectares Rem:	0
Actual Tons Remediated:	0
Total Asmt Expenditure:	$0.00
Total Remediation Expenditure:	$0.00
Total Care/Maint Expenditur:	$0.00
Total Mntring Expenditure:	$0.00
Ttl Expenditure Reduc Liabil:	
FCSAP Asmt Expenditure:	$0.00
FCSAP Remed Expenditure:	$0.00
FCSAP Care/Maint Expenditur:	$0.00
FCSAP Mntring Expenditure:	$0.00

Annual Data

Fiscal Year:	2010-2011
Reporting Organization:	DFO
Reporting Organization (EN):	Fisheries and Oceans Canada
Reporting Organization (FR):	Pêches et Océans Canada
Class Type:	
Class (EN):	
Class (FR):	
CCME Flag:	
CCME NCS Year:	
Step Name (EN):	
Step Name (FR):	
Highest Step Completed:	3
Highest Step Completed Desc:	
Planned Compl Date Step7:	
Planned Compl Date Step8:	
Planned Compl Date Step9:	
Created:	

Modified:	
NCSCS Year:	
Closed:	No
Actual Cubic Metres Rem:	0
Actual Hectares Rem:	0
Actual Tons Remediated:	0
Total Asmt Expenditure:	$0.00
Total Remediation Expenditure:	$0.00
Total Care/Maint Expenditur:	$0.00
Total Mntring Expenditure:	$0.00
Ttl Expenditure Reduc Liabil:	
FCSAP Asmt Expenditure:	$0.00
FCSAP Remed Expenditure:	$0.00
FCSAP Care/Maint Expenditur:	$0.00
FCSAP Mntring Expenditure:	$0.00

Annual Data

Fiscal Year:	2017-2018
Reporting Organization:	DFO
Reporting Organization (EN):	Fisheries and Oceans Canada
Reporting Organization (FR):	Pêches et Océans Canada
Class Type:	
Class (EN):	
Class (FR):	
CCME Flag:	
CCME NCS Year:	
Step Name (EN):	
Step Name (FR):	
Highest Step Completed:	3
Highest Step Completed Desc:	
Planned Compl Date Step7:	
Planned Compl Date Step8:	
Planned Compl Date Step9:	
Created:	
Modified:	
NCSCS Year:	
Closed:	No
Actual Cubic Metres Rem:	0
Actual Hectares Rem:	0
Actual Tons Remediated:	0
Total Asmt Expenditure:	$0.00
Total Remediation Expenditure:	$0.00
Total Care/Maint Expenditur:	$0.00
Total Mntring Expenditure:	$0.00
Ttl Expenditure Reduc Liabil:	
FCSAP Asmt Expenditure:	$0.00
FCSAP Remed Expenditure:	$0.00
FCSAP Care/Maint Expenditur:	$0.00
FCSAP Mntring Expenditure:	$0.00

Annual Data

Fiscal Year:	2016-2017
Reporting Organization:	DFO
Reporting Organization (EN):	Fisheries and Oceans Canada
Reporting Organization (FR):	Pêches et Océans Canada
Class Type:	
Class (EN):	
Class (FR):	
CCME Flag:	
CCME NCS Year:	
Step Name (EN):	
Step Name (FR):	

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB

Highest Step Completed:	3
Highest Step Completed Desc:	
Planned Compl Date Step7:	
Planned Compl Date Step8:	
Planned Compl Date Step9:	
Created:	
Modified:	
NCSCS Year:	
Closed:	No
Actual Cubic Metres Rem:	0
Actual Hectares Rem:	0
Actual Tons Remediated:	0
Total Asmt Expenditure:	$0.00
Total Remediation Expenditure:	$0.00
Total Care/Maint Expenditur:	$0.00
Total Mntring Expenditure:	$0.00
Ttl Expenditure Reduc Liabil:	
FCSAP Asmt Expenditure:	$0.00
FCSAP Remed Expenditure:	$0.00
FCSAP Care/Maint Expenditur:	$0.00
FCSAP Mntring Expenditure:	$0.00

Annual Data

Fiscal Year:	2006-2007
Reporting Organization:	DFO
Reporting Organization (EN):	Fisheries and Oceans Canada
Reporting Organization (FR):	Pêches et Océans Canada
Class Type:	
Class (EN):	
Class (FR):	
CCME Flag:	
CCME NCS Year:	
Step Name (EN):	
Step Name (FR):	
Highest Step Completed:	3
Highest Step Completed Desc:	
Planned Compl Date Step7:	
Planned Compl Date Step8:	
Planned Compl Date Step9:	
Created:	
Modified:	
NCSCS Year:	
Closed:	No
Actual Cubic Metres Rem:	0
Actual Hectares Rem:	0
Actual Tons Remediated:	0
Total Asmt Expenditure:	$0.00
Total Remediation Expenditure:	$0.00
Total Care/Maint Expenditur:	$0.00
Total Mntring Expenditure:	$0.00
Ttl Expenditure Reduc Liabil:	
FCSAP Asmt Expenditure:	$0.00
FCSAP Remed Expenditure:	$0.00
FCSAP Care/Maint Expenditur:	$0.00
FCSAP Mntring Expenditure:	$0.00

21	***2 of 8***	***N/136.2***	***74.9 / -4.20***	***PORT DALHOUSIE-MARINA (No Contamination Identified)*** ***St. Catharines ON***	***FCS***

SGC:	3526053
Site ID:	00012665

Departmental ID:	C S 05034
Depart Code:	DFO
Class Type:	
Class:	
Site Name:	PORT DALHOUSIE-MARINA (No Contamination Identified)
Site Name (FR):	PORT DALHOUSIE-MARINA (Aucune contamination détectée)
Site Status:	Closed
Site Status Desc:	Historical review completed. No further action required.
Site Status (FR):	Fermé
Description (FR):	Examen historique terminé. Aucune autre mesure nécessaire.
Involv Code:	
Census Division:	Niagara
Municipality:	St. Catharines
Census Sub Class:	1
Latitude:	43.204273
Longitude:	-79.265984
Location:	
Protected Data:	0
FED:	89
Fed Electoral District:	St. Catharines
Fed Electoral District (FR):	St. Catharines
Metro:	
Nearest Pop. Area:	
Highest Step Cmpltd:	2
Site Deleted Flag:	
Created:	2006-03-30T03:48:00
Modified:	2013-07-10T15:21:54.830
Property No.:	8859
Est m³ Contmnted:	0
Est Ha Contmnted:	0
Est Tons Contamin:	0
Est Population at 1 Km:	5,100
Est Population at 10 Km:	181,852
Est Population at 25 Km:	412,796
Est Population at 5 Km:	114,329
Est Population at 50 Km:	1,684,369
Reporting Org:	Fisheries and Oceans Canada
Reporting Org (FR):	Pêches et Océans Canada
Reason for Involv:	Federal Real Property
Reason for Involv (FR):	Biens immobiliers fédéraux
Liable Third Party:	
Class (FR):	
Action Plan:	
Action Plan (FR):	
Site Mgmnt Strategy:	Remediation
Minimap URL:	http://www.tbs-sct.gc.ca/fcsi-rscf/minimap.aspx?fsi=00012665
Additional Info:	
Additional Info (FR):	

Management

Management Code:	2
Management Type (EN):	Remediation
Management Type (FR):	Restauration

Annual Data

Fiscal Year:	2010-2011
Reporting Organization:	DFO
Reporting Organization (EN):	Fisheries and Oceans Canada
Reporting Organization (FR):	Pêches et Océans Canada
Class Type:	
Class (EN):	
Class (FR):	

CCME Flag:
CCME NCS Year:
Step Name (EN):
Step Name (FR):
Highest Step Completed: 2
Highest Step Completed Desc:
Planned Compl Date Step7:
Planned Compl Date Step8:
Planned Compl Date Step9:
Created:
Modified:
NCSCS Year:
Closed: No
Actual Cubic Metres Rem: 0
Actual Hectares Rem: 0
Actual Tons Remediated: 0
Total Asmt Expenditure: $0.00
Total Remediation Expenditure: $0.00
Total Care/Maint Expenditur: $0.00
Total Mntring Expenditure: $0.00
Ttl Expenditure Reduc Liabil:
FCSAP Asmt Expenditure: $0.00
FCSAP Remed Expenditure: $0.00
FCSAP Care/Maint Expenditur: $0.00
FCSAP Mntring Expenditure: $0.00

Annual Data

Fiscal Year: 2008-2009
Reporting Organization: DFO
Reporting Organization (EN): Fisheries and Oceans Canada
Reporting Organization (FR): Pêches et Océans Canada
Class Type:
Class (EN):
Class (FR):
CCME Flag:
CCME NCS Year:
Step Name (EN):
Step Name (FR):
Highest Step Completed: 2
Highest Step Completed Desc:
Planned Compl Date Step7:
Planned Compl Date Step8:
Planned Compl Date Step9:
Created:
Modified:
NCSCS Year:
Closed: No
Actual Cubic Metres Rem: 0
Actual Hectares Rem: 0
Actual Tons Remediated: 0
Total Asmt Expenditure: $0.00
Total Remediation Expenditure: $0.00
Total Care/Maint Expenditur: $0.00
Total Mntring Expenditure: $0.00
Ttl Expenditure Reduc Liabil:
FCSAP Asmt Expenditure: $0.00
FCSAP Remed Expenditure: $0.00
FCSAP Care/Maint Expenditur: $0.00
FCSAP Mntring Expenditure: $0.00

Annual Data

Fiscal Year: 2007-2008

Reporting Organization:	DFO
Reporting Organization (EN):	Fisheries and Oceans Canada
Reporting Organization (FR):	Pêches et Océans Canada
Class Type:	
Class (EN):	
Class (FR):	
CCME Flag:	
CCME NCS Year:	
Step Name (EN):	
Step Name (FR):	
Highest Step Completed:	2
Highest Step Completed Desc:	
Planned Compl Date Step7:	
Planned Compl Date Step8:	
Planned Compl Date Step9:	
Created:	
Modified:	
NCSCS Year:	
Closed:	No
Actual Cubic Metres Rem:	0
Actual Hectares Rem:	0
Actual Tons Remediated:	0
Total Asmt Expenditure:	$0.00
Total Remediation Expenditure:	$0.00
Total Care/Maint Expenditur:	$0.00
Total Mntring Expenditure:	$0.00
Ttl Expenditure Reduc Liabil:	
FCSAP Asmt Expenditure:	$0.00
FCSAP Remed Expenditure:	$0.00
FCSAP Care/Maint Expenditur:	$0.00
FCSAP Mntring Expenditure:	$0.00

Annual Data

Fiscal Year:	2012-2013
Reporting Organization:	DFO
Reporting Organization (EN):	Fisheries and Oceans Canada
Reporting Organization (FR):	Pêches et Océans Canada
Class Type:	
Class (EN):	
Class (FR):	
CCME Flag:	
CCME NCS Year:	
Step Name (EN):	
Step Name (FR):	
Highest Step Completed:	2
Highest Step Completed Desc:	
Planned Compl Date Step7:	
Planned Compl Date Step8:	
Planned Compl Date Step9:	
Created:	
Modified:	
NCSCS Year:	
Closed:	Yes
Actual Cubic Metres Rem:	0
Actual Hectares Rem:	0
Actual Tons Remediated:	0
Total Asmt Expenditure:	$0.00
Total Remediation Expenditure:	$0.00
Total Care/Maint Expenditur:	$0.00
Total Mntring Expenditure:	$0.00
Ttl Expenditure Reduc Liabil:	
FCSAP Asmt Expenditure:	$0.00
FCSAP Remed Expenditure:	$0.00
FCSAP Care/Maint Expenditur:	$0.00

FCSAP Mntring Expenditure: $0.00

Annual Data

Fiscal Year: 2009-2010
Reporting Organization: DFO
Reporting Organization (EN): Fisheries and Oceans Canada
Reporting Organization (FR): Pêches et Océans Canada
Class Type:
Class (EN):
Class (FR):
CCME Flag:
CCME NCS Year:
Step Name (EN):
Step Name (FR):
Highest Step Completed: 2
Highest Step Completed Desc:
Planned Compl Date Step7:
Planned Compl Date Step8:
Planned Compl Date Step9:
Created:
Modified:
NCSCS Year:
Closed: No
Actual Cubic Metres Rem: 0
Actual Hectares Rem: 0
Actual Tons Remediated: 0
Total Asmt Expenditure: $0.00
Total Remediation Expenditure: $0.00
Total Care/Maint Expenditur: $0.00
Total Mntring Expenditure: $0.00
Ttl Expenditure Reduc Liabil:
FCSAP Asmt Expenditure: $0.00
FCSAP Remed Expenditure: $0.00
FCSAP Care/Maint Expenditur: $0.00
FCSAP Mntring Expenditure: $0.00

Annual Data

Fiscal Year: 2006-2007
Reporting Organization: DFO
Reporting Organization (EN): Fisheries and Oceans Canada
Reporting Organization (FR): Pêches et Océans Canada
Class Type:
Class (EN):
Class (FR):
CCME Flag:
CCME NCS Year:
Step Name (EN):
Step Name (FR):
Highest Step Completed: 2
Highest Step Completed Desc:
Planned Compl Date Step7:
Planned Compl Date Step8:
Planned Compl Date Step9:
Created:
Modified:
NCSCS Year:
Closed: No
Actual Cubic Metres Rem: 0
Actual Hectares Rem: 0
Actual Tons Remediated: 0
Total Asmt Expenditure: $0.00
Total Remediation Expenditure: $0.00

Total Care/Maint Expenditur:	$0.00
Total Mntring Expenditure:	$0.00
Ttl Expenditure Reduc Liabil:	
FCSAP Asmt Expenditure:	$0.00
FCSAP Remed Expenditure:	$0.00
FCSAP Care/Maint Expenditur:	$0.00
FCSAP Mntring Expenditure:	$0.00

Annual Data

Fiscal Year:	2005-2006
Reporting Organization:	DFO
Reporting Organization (EN):	Fisheries and Oceans Canada
Reporting Organization (FR):	Pêches et Océans Canada
Class Type:	
Class (EN):	
Class (FR):	
CCME Flag:	
CCME NCS Year:	
Step Name (EN):	
Step Name (FR):	
Highest Step Completed:	2
Highest Step Completed Desc:	
Planned Compl Date Step7:	
Planned Compl Date Step8:	
Planned Compl Date Step9:	
Created:	
Modified:	
NCSCS Year:	
Closed:	No
Actual Cubic Metres Rem:	0
Actual Hectares Rem:	0
Actual Tons Remediated:	0
Total Asmt Expenditure:	$0.00
Total Remediation Expenditure:	$0.00
Total Care/Maint Expenditur:	$0.00
Total Mntring Expenditure:	$0.00
Ttl Expenditure Reduc Liabil:	
FCSAP Asmt Expenditure:	$0.00
FCSAP Remed Expenditure:	$0.00
FCSAP Care/Maint Expenditur:	$0.00
FCSAP Mntring Expenditure:	$0.00

Annual Data

Fiscal Year:	2011-2012
Reporting Organization:	DFO
Reporting Organization (EN):	Fisheries and Oceans Canada
Reporting Organization (FR):	Pêches et Océans Canada
Class Type:	
Class (EN):	
Class (FR):	
CCME Flag:	
CCME NCS Year:	
Step Name (EN):	
Step Name (FR):	
Highest Step Completed:	2
Highest Step Completed Desc:	
Planned Compl Date Step7:	
Planned Compl Date Step8:	
Planned Compl Date Step9:	
Created:	
Modified:	
NCSCS Year:	

Closed:	Yes
Actual Cubic Metres Rem:	0
Actual Hectares Rem:	0
Actual Tons Remediated:	0
Total Asmt Expenditure:	$0.00
Total Remediation Expenditure:	$0.00
Total Care/Maint Expenditur:	$0.00
Total Mntring Expenditure:	$0.00
Ttl Expenditure Reduc Liabil:	
FCSAP Asmt Expenditure:	$0.00
FCSAP Remed Expenditure:	$0.00
FCSAP Care/Maint Expenditur:	$0.00
FCSAP Mntring Expenditure:	$0.00

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
21	3 of 8	N/136.2	74.9 / -4.20	**Port Dalhousie SCH (2)** **Lake Ontario, Port Dalhousie, St. Catherines, ON; Latitude 43.204273 Longitude -79.265984** **ON**	FOFT

System No.:		**Tank Location:**	
Facility Type:		**Tank Capacity(L):**	
Installation Year:		**Storage Sys. Cap(L):**	
Operator:		**Petrol Prod. Stored:**	
Land Owner:			
Owner:			
Owner Address:			
Collection Name:	Non-DFO Tanks		

Foft 201709 Ca Cepareg

Tank ID (EC/DFO,Regl/Provl ID):	0
Contact Person:	
Date Inputted:	
Indoors/Outdoors:	Outdoors
Loc of Tank System Records:	East of Fuel Dock/Storage Building
Loc of Emergency Plan:	
Owner Type:	Non-DFO Other
Name of Owner:	S.20(1)(b)
Operator Type:	Non-DFO Other
Name of Operator:	S.20(1)(b)
Tank Description:	Port Dalhousie underground gasoline single wall fibreglass reinforced plastic tank without a liner, ONT-1025 Private Tank
Year of Tank Installation:	1991
Tank Installed by:	
Tank Manufacturer:	CAE
Year Manufactured:	
Serial No:	
Tank Status:	
Date of Status Change:	
Months of Service:	mid-April to Oct. 31
Type of Tank:	UST
Does this Tank have Piping?:	Yes
Type of Piping:	100% UG
Is Piping CEPA Regulated?:	No
Diametre of Piping:	
Tank Capacity:	4500
Product Stored:	Gasoline
Prod Transfer Area Desc:	
Product Transfer Area Requ:	Yes
Product Transfer Area Asse:	
Product Transfer Area Proc:	
UPI/API Standard:	Unknown - Underground Tank

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB

Other Standard No:	
Materials of Construction:	Steel
Other Tank Material:	
Piping Construction Materials:	Steel
Other Piping Materials:	
Secondary Containment:	Other
Other Secondary Containment:	Steel Berm
Piping Secondary Containment:	Unknown
Other Piping Secondary Cont.:	
Corrosion Protection Lookup:	Unknown
Other Corrosion Protection:	
Piping Corr. Protection Lookup:	Non-Corroding Material, Other
Other Piping Corr. Protection:	Galvanized
Type of Pump to OWS:	Not centrifugal/suction
Leak Detection:	Groundwater Monitoring
Other Leak Detection:	
Piping Leak Detection LU:	Groundwater Monitoring
Piping Leak Detection Data:	Groundwater Monitoring
Other Piping Leak Detection:	
No and Loc of GW Monitoring Wells:	One well located between fill pipes of diesel and gasoline tanks
Sump Leak Detection LU:	Unknown
Other Sump Leak Detection:	
Spill Containment LU:	Unknown
Other Spill Containment:	
Overfill Prevention:	Other
Other Overfill Protection:	In-Tank Model
Is Tank Required for Program?:	Unknown
Appl. Codes and Regulations LU:	CAN/CSA B-139-09, CCME Guidelines, CEPA
Is there an EERP for the site?:	FALSE
Additional Notes:	Tank Not owned by DFO
Comments:	Unknown if tank has internal liner, Co-axial vapour return line at fill pipe (VOC control), unknown if tank has diking Determined non-compliant with CCME Technical Guidelines on November 10, 2005 by Oakhill Environmental AG piping require monthly inspecti (Note: data in [Comments] field for some records is truncated from the source)

21	***4 of 8***	***N/136.2***	***74.9 / -4.20***	***Port Dalhousie SCH (1)*** ***Lake Ontario, Port Dalhousie, St. Catherines, ON; Latitude 43.204273 Longitude -79.265984*** ***ON***	***FOFT***

System No.:		***Tank Location:***	
Facility Type:		***Tank Capacity(L):***	
Installation Year:		***Storage Sys. Cap(L):***	
Operator:		***Petrol Prod. Stored:***	
Land Owner:			
Owner:			
Owner Address:			
Collection Name:	Storage Tank Systems		

Foft 201709 Ca Cepareg

Tank ID (EC/DFO,Regl/Provl ID):	0
Contact Person:	
Date Inputted:	
Indoors/Outdoors:	Outdoors
Loc of Tank System Records:	East of Fuel Dock/Storage Building
Loc of Emergency Plan:	
Owner Type:	Non-DFO Other
Name of Owner:	S.20(1)(b)
Operator Type:	Non-DFO Other

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB

Name of Operator:	S.20(1)(b)
Tank Description:	Port Dalhousie underground diesel single wall fibreglass reinforced plastic tank without a liner, ONT-1024 Private Tank
Year of Tank Installation:	1987
Tank Installed by:	
Tank Manufacturer:	CAE
Year Manufactured:	
Serial No:	
Tank Status:	
Date of Status Change:	
Months of Service:	mid-April to Oct. 31
Type of Tank:	UST
Does this Tank have Piping?:	Yes
Type of Piping:	100%UG
Is Piping CEPA Regulated?:	No
Diametre of Piping:	
Tank Capacity:	4500
Product Stored:	Diesel
Prod Transfer Area Desc:	
Product Transfer Area Requ:	Yes
Product Transfer Area Asse:	
Product Transfer Area Proc:	
UPI/API Standard:	Unknown - Underground Tank
Other Standard No:	
Materials of Construction:	Steel
Other Tank Material:	
Piping Construction Materials:	Steel
Other Piping Materials:	
Secondary Containment:	Unknown
Other Secondary Containment:	
Piping Secondary Containment:	Unknown
Other Piping Secondary Cont.:	
Corrosion Protection Lookup:	Unknown
Other Corrosion Protection:	
Piping Corr. Protection Lookup:	Unknown
Other Piping Corr. Protection:	
Type of Pump to OWS:	Not centrifugal/ Suction
Leak Detection:	Groundwater Monitoring, Interstitial Monitoring - Double Walled Tank
Other Leak Detection:	Monitoring port on tank to detect leaks
Piping Leak Detection LU:	Groundwater Monitoring
Piping Leak Detection Data:	Groundwater Monitoring
Other Piping Leak Detection:	
No and Loc of GW Monitoring Wells:	One well located between fill pipes of diesel and gasoline tanks
Sump Leak Detection LU:	Unknown
Other Sump Leak Detection:	
Spill Containment LU:	Unknown
Other Spill Containment:	
Overfill Prevention:	Other
Other Overfill Protection:	In-Tank Model
Is Tank Required for Program?:	Unknown
Appl. Codes and Regulations LU:	CAN/CSA B-139-09, CCME Guidelines, CEPA
Is there an EERP for the site?:	FALSE
Additional Notes:	Tank Not owned by DFO
Comments:	Unknown if tank has internal liner, Co-axial vapour return line at fill pipe (VOC control), unknown if tank has diking Determined non-compliant with CCME Technical Guidelines on November 10, 2005 by Oakhill Environmental AG piping require monthly inspecti (Note: data in [Comments] field for some records is truncated from the source)

21	*5 of 8*	*N/136.2*	*74.9 / -4.20*	***Port Dalhousie SCH (2)*** ***Lake Ontario, Port Dalhousie, St. Catherines, ON; Latitude 43.204273 Longitude -79.265984***	***FOFT***

System No.:
Facility Type:
Installation Year:
Operator:
Land Owner:
Owner:
Owner Address:
Collection Name: Storage Tank Systems

Tank Location:
Tank Capacity(L):
Storage Sys. Cap(L):
Petrol Prod. Stored:

<u>Foft 201709 Ca Cepareg</u>

Tank ID (EC/DFO,Regl/Provl ID): 0
Contact Person:
Date Inputted:
Indoors/Outdoors: Outdoors
Loc of Tank System Records: East of Fuel Dock/Storage Building
Loc of Emergency Plan:
Owner Type: Non-DFO Other
Name of Owner: S.20(1)(b)
Operator Type: Non-DFO Other
Name of Operator: S.20(1)(b)
Tank Description: Port Dalhousie underground gasoline single wall fibreglass reinforced plastic tank without a liner, ONT-1025

Private Tank
Year of Tank Installation: 1991
Tank Installed by:
Tank Manufacturer: CAE
Year Manufactured:
Serial No:
Tank Status:
Date of Status Change:
Months of Service: mid-April to Oct. 31
Type of Tank: UST
Does this Tank have Piping?: Yes
Type of Piping: 100% UG
Is Piping CEPA Regulated?: No
Diametre of Piping:
Tank Capacity: 4500
Product Stored: Gasoline
Prod Transfer Area Desc:
Product Transfer Area Requ: Yes
Product Transfer Area Asse:
Product Transfer Area Proc:
UPI/API Standard: Unknown - Underground Tank
Other Standard No:
Materials of Construction: Steel
Other Tank Material:
Piping Construction Materials: Steel
Other Piping Materials:
Secondary Containment: Other
Other Secondary Containment: Steel Berm
Piping Secondary Containment: Unknown
Other Piping Secondary Cont.:
Corrosion Protection Lookup: Unknown
Other Corrosion Protection:
Piping Corr. Protection Lookup: Non-Corroding Material, Other
Other Piping Corr. Protection: Galvanized
Type of Pump to OWS: Not centrifugal/suction
Leak Detection: Groundwater Monitoring

Other Leak Detection:	
Piping Leak Detection LU:	Groundwater Monitoring
Piping Leak Detection Data:	Groundwater Monitoring
Other Piping Leak Detection:	
No and Loc of GW Monitoring Wells:	One well located between fill pipes of diesel and gasoline tanks
Sump Leak Detection LU:	Unknown
Other Sump Leak Detection:	
Spill Containment LU:	Unknown
Other Spill Containment:	
Overfill Prevention:	Other
Other Overfill Protection:	In-Tank Model
Is Tank Required for Program?:	Unknown
Appl. Codes and Regulations LU:	CAN/CSA B-139-09, CCME Guidelines, CEPA
Is there an EERP for the site?:	FALSE
Additional Notes:	Tank Not owned by DFO
Comments:	Unknown if tank has internal liner, Co-axial vapour return line at fill pipe (VOC control), unknown if tank has diking Determined non-compliant with CCME Technical Guidelines on November 10, 2005 by Oakhill Environmental AG piping require monthly inspecti (Note: data in [Comments] field for some records is truncated from the source)

21	***6 of 8***	***N/136.2***	***74.9 / -4.20***	***Port Dalhousie SCH (1)*** ***Lake Ontario, Port Dalhousie, St. Catherines, ON; Latitude 43.204273 Longitude -79.265984*** ***ON***	***FOFT***

System No.:		***Tank Location:***	
Facility Type:		***Tank Capacity(L):***	
Installation Year:		***Storage Sys. Cap(L):***	
Operator:		***Petrol Prod. Stored:***	
Land Owner:			
Owner:			
Owner Address:			
Collection Name:	Non-DFO Tanks		

Foft 201709 Ca Cepareg

Tank ID (EC/DFO,Regl/Provl ID):	0
Contact Person:	
Date Inputted:	
Indoors/Outdoors:	Outdoors
Loc of Tank System Records:	East of Fuel Dock/Storage Building
Loc of Emergency Plan:	
Owner Type:	Non-DFO Other
Name of Owner:	S.20(1)(b)
Operator Type:	Non-DFO Other
Name of Operator:	S.20(1)(b)
Tank Description:	Port Dalhousie underground diesel single wall fibreglass reinforced plastic tank without a liner, ONT-1024 Private Tank
Year of Tank Installation:	1987
Tank Installed by:	
Tank Manufacturer:	CAE
Year Manufactured:	
Serial No:	
Tank Status:	
Date of Status Change:	
Months of Service:	mid-April to Oct. 31
Type of Tank:	UST
Does this Tank have Piping?:	Yes
Type of Piping:	100%UG
Is Piping CEPA Regulated?:	No
Diametre of Piping:	

Tank Capacity:	4500
Product Stored:	Diesel
Prod Transfer Area Desc:	
Product Transfer Area Requ:	Yes
Product Transfer Area Asse:	
Product Transfer Area Proc:	
UPI/API Standard:	Unknown - Underground Tank
Other Standard No:	
Materials of Construction:	Steel
Other Tank Material:	
Piping Construction Materials:	Steel
Other Piping Materials:	
Secondary Containment:	Unknown
Other Secondary Containment:	
Piping Secondary Containment:	Unknown
Other Piping Secondary Cont.:	
Corrosion Protection Lookup:	Unknown
Other Corrosion Protection:	
Piping Corr. Protection Lookup:	Unknown
Other Piping Corr. Protection:	
Type of Pump to OWS:	Not centrifugal/ Suction
Leak Detection:	Groundwater Monitoring, Interstitial Monitoring - Double Walled Tank
Other Leak Detection:	Monitoring port on tank to detect leaks
Piping Leak Detection LU:	Groundwater Monitoring
Piping Leak Detection Data:	Groundwater Monitoring
Other Piping Leak Detection:	
No and Loc of GW Monitoring Wells:	One well located between fill pipes of diesel and gasoline tanks
Sump Leak Detection LU:	Unknown
Other Sump Leak Detection:	
Spill Containment LU:	Unknown
Other Spill Containment:	
Overfill Prevention:	Other
Other Overfill Protection:	In-Tank Model
Is Tank Required for Program?:	Unknown
Appl. Codes and Regulations LU:	CAN/CSA B-139-09, CCME Guidelines, CEPA
Is there an EERP for the site?:	FALSE
Additional Notes:	Tank Not owned by DFO
Comments:	Unknown if tank has internal liner, Co-axial vapour return line at fill pipe (VOC control), unknown if tank has diking Determined non-compliant with CCME Technical Guidelines on November 10, 2005 by Oakhill Environmental AG piping require monthly inspecti (Note: data in [Comments] field for some records is truncated from the source)

21	***7 of 8***	***N/136.2***	***74.9 / -4.20***	***Port Dalhousie SCH (1)*** ***Lake Ontario, Port Dalhousie, St. Catherines, ON; Latitude 43.204273 Longitude -79.265984*** ***ON***	***FOFT***

System No.:		***Tank Location:***	
Facility Type:		***Tank Capacity(L):***	
Installation Year:		***Storage Sys. Cap(L):***	
Operator:		***Petrol Prod. Stored:***	
Land Owner:			
Owner:			
Owner Address:			
Collection Name:	Unknown		

Inventory No:	207
Tank ID:	0
Site Facility Name:	Port Dalhousie SCH (1)
Loc of Tank System:	Lake Ontario, Port Dalhousie, St. Catherines, ON; Latitude 43.204273 Longitude -79.265984
Tank Description:	Port Dalhousie underground diesel single wall fiberglass reinforced plastic tank without a liner, ONT-1024 Private Tank

Install Year:	1987
Year Manufactured:	
Tank Status:	
Removed Year:	
Type of Tank:	UST
Capacity of Tank/Tank System:	4500
Contents:	Diesel
Indoors/Outdoors:	Outdoors
Owner Type:	Non-DFO Other
Name of Owner:	Dalhousie Yacht Club
Land Owner:	DFO-SCH
Operator Type:	Non-DFO Other
Name of Operator:	Dalhousie Yacht Club

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
21	8 of 8	N/136.2	74.9 / -4.20	**Port Dalhousie SCH (2)** **Lake Ontario, Port Dalhousie, St. Catherines, ON; Latitude 43.204273 Longitude -79.265984** **ON**	FOFT

System No.:		**Tank Location:**	
Facility Type:		**Tank Capacity(L):**	
Installation Year:		**Storage Sys. Cap(L):**	
Operator:		**Petrol Prod. Stored:**	
Land Owner:			
Owner:			
Owner Address:			
Collection Name:	Unknown		

Inventory No:	208
Tank ID:	0
Site Facility Name:	Port Dalhousie SCH (2)
Loc of Tank System:	Lake Ontario, Port Dalhousie, St. Catherines, ON; Latitude 43.204273 Longitude -79.265984
Tank Description:	Port Dalhousie underground gasoline single wall fiberglass reinforced plastic tank without a liner, ONT-1025 Private Tank
Install Year:	1991
Year Manufactured:	
Tank Status:	
Removed Year:	
Type of Tank:	UST
Capacity of Tank/Tank System:	4500
Contents:	Gasoline
Indoors/Outdoors:	Outdoors
Owner Type:	Non-DFO Other
Name of Owner:	Dalhousie Yacht Club
Land Owner:	DFO-SCH
Operator Type:	Non-DFO Other
Name of Operator:	Dalhousie Yacht Club

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
22	1 of 1	SSE/136.5	76.4 / -2.69	**St. Catharines ON**	WWIS

Well ID:	7285475	**Data Entry Status:**	
Construction Date:		**Data Src:**	
Primary Water Use:	Monitoring	**Date Received:**	4/20/2017
Sec. Water Use:		**Selected Flag:**	Yes
Final Well Status:	Observation Wells	**Abandonment Rec:**	
Water Type:		**Contractor:**	7238
Casing Material:		**Form Version:**	7
Audit No:	Z253851	**Owner:**	
Tag:	A201638	**Street Name:**	57 LAKEPORT ROAD
Construction Method:		**County:**	NIAGARA (LINCOLN)
Elevation (m):		**Municipality:**	ST.CATHERINES CITY (GRANTHAM)
Elevation Reliability:		**Site Info:**	
Depth to Bedrock:		**Lot:**	

Well Depth:
Overburden/Bedrock:
Pump Rate:
Static Water Level:
Flowing (Y/N):
Flow Rate:
Clear/Cloudy:
Concession:
Concession Name:
Easting NAD83:
Northing NAD83:
Zone:
UTM Reliability:

Bore Hole Information

Bore Hole ID:	1006383246	***Elevation:***	75.93
DP2BR:		***Elevrc:***	
Spatial Status:		***Zone:***	17
Code OB:		***East83:***	640914
Code OB Desc:		***Org CS:***	UTM83
Open Hole:		***North83:***	4784595
Cluster Kind:		***UTMRC:***	4
Date Completed:	21-MAR-17	***UTMRC Desc:***	margin of error : 30 m - 100 m
Remarks:		***Location Method:***	wwr
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	1006689326
Layer:	3
Color:	2
General Color:	GREY
Mat1:	05
Most Common Material:	CLAY
Mat2:	84
Other Materials:	SILTY
Mat3:	
Other Materials:	
Formation Top Depth:	10
Formation End Depth:	30
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	1006689324
Layer:	1
Color:	
General Color:	
Mat1:	02
Most Common Material:	TOPSOIL
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	0
Formation End Depth:	.5
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID: 1006689325
Layer: 2
Color:
General Color:
Mat1: 01
Most Common Material: FILL
Mat2:
Other Materials:
Mat3:
Other Materials:
Formation Top Depth: .5
Formation End Depth: 10
Formation End Depth UOM: ft

Annular Space/Abandonment Sealing Record

Plug ID: 1006689336
Layer: 4
Plug From: 15
Plug To: 30
Plug Depth UOM: ft

Annular Space/Abandonment Sealing Record

Plug ID: 1006689333
Layer: 1
Plug From: 0
Plug To: .5
Plug Depth UOM: ft

Annular Space/Abandonment Sealing Record

Plug ID: 1006689334
Layer: 2
Plug From: .5
Plug To: 3.5
Plug Depth UOM: ft

Annular Space/Abandonment Sealing Record

Plug ID: 1006689335
Layer: 3
Plug From: 3.5
Plug To: 15
Plug Depth UOM: ft

Method of Construction & Well Use

Method Construction ID: 1006689332
Method Construction Code: B
Method Construction: Other Method
Other Method Construction: AUGER

Pipe Information

Pipe ID: 1006689323
Casing No: 0
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 1006689329
Layer: 1
Material: 5
Open Hole or Material: PLASTIC
Depth From: 0
Depth To: 4
Casing Diameter: 2
Casing Diameter UOM: inch
Casing Depth UOM: ft

Construction Record - Screen

Screen ID: 1006689330
Layer: 1
Slot: 10
Screen Top Depth: 4
Screen End Depth: 14
Screen Material: 5
Screen Depth UOM: ft
Screen Diameter UOM: inch
Screen Diameter:

Water Details

Water ID: 1006689328
Layer: 1
Kind Code: 8
Kind: Untested
Water Found Depth: 10
Water Found Depth UOM: ft

Hole Diameter

Hole ID: 1006689327
Diameter: 8
Depth From: 0
Depth To: 30
Hole Depth UOM: ft
Hole Diameter UOM: inch

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23 ***1 of 1*** ***SSE/137.7*** ***76.5 / -2.60*** ***St. Catharines ON*** ***WWIS***

Well ID: 7285479
Construction Date:
Primary Water Use: Monitoring
Sec. Water Use:
Final Well Status: Observation Wells
Water Type:
Casing Material:
Audit No: Z253847
Tag: A213608
Construction Method:
Elevation (m):
Elevation Reliability:

Data Entry Status:
Data Src:
Date Received: 4/20/2017
Selected Flag: Yes
Abandonment Rec:
Contractor: 7238
Form Version: 7
Owner:
Street Name: 57 LAKEPORT RD
County: NIAGARA (LINCOLN)
Municipality: ST.CATHERINES CITY (GRANTHAM)
Site Info:

Depth to Bedrock:
Well Depth:
Overburden/Bedrock:
Pump Rate:
Static Water Level:
Flowing (Y/N):
Flow Rate:
Clear/Cloudy:
Lot:
Concession:
Concession Name:
Easting NAD83:
Northing NAD83:
Zone:
UTM Reliability:

Bore Hole Information

Bore Hole ID: 1006383258
DP2BR:
Spatial Status:
Code OB:
Code OB Desc:
Open Hole:
Cluster Kind:
Date Completed: 20-MAR-17
Remarks:
Elevrc Desc:
Location Source Date:
Improvement Location Source:
Improvement Location Method:
Source Revision Comment:
Supplier Comment:
Elevation: 75.87
Elevrc:
Zone: 17
East83: 640930
Org CS: UTM83
North83: 4784601
UTMRC: 4
UTMRC Desc: margin of error : 30 m - 100 m
Location Method: wwr

Overburden and Bedrock Materials Interval

Formation ID: 1006689684
Layer: 1
Color:
General Color:
Mat1:
Most Common Material:
Mat2: 60
Other Materials: CEMENTED
Mat3:
Other Materials:
Formation Top Depth: 0
Formation End Depth: .5
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 1006689685
Layer: 2
Color:
General Color:
Mat1: 01
Most Common Material: FILL
Mat2:
Other Materials:
Mat3:
Other Materials:
Formation Top Depth: .5
Formation End Depth: 15
Formation End Depth UOM: ft

Overburden and Bedrock

Materials Interval

Formation ID:	1006689686
Layer:	3
Color:	2
General Color:	GREY
Mat1:	05
Most Common Material:	CLAY
Mat2:	84
Other Materials:	SILTY
Mat3:	
Other Materials:	
Formation Top Depth:	15
Formation End Depth:	45
Formation End Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	1006689695
Layer:	3
Plug From:	3.5
Plug To:	15
Plug Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	1006689693
Layer:	1
Plug From:	0
Plug To:	.5
Plug Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	1006689696
Layer:	4
Plug From:	15
Plug To:	45
Plug Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	1006689694
Layer:	2
Plug From:	.5
Plug To:	3.5
Plug Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	1006689692
Method Construction Code:	
Method Construction:	
Other Method Construction:	

Pipe Information

Pipe ID: 1006689683
Casing No: 0
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 1006689689
Layer: 1
Material: 5
Open Hole or Material: PLASTIC
Depth From: 0
Depth To: 4
Casing Diameter: 2
Casing Diameter UOM: inch
Casing Depth UOM: ft

Construction Record - Screen

Screen ID: 1006689690
Layer: 1
Slot: 10
Screen Top Depth: 4
Screen End Depth: 14
Screen Material: 5
Screen Depth UOM: ft
Screen Diameter UOM: inch
Screen Diameter:

Water Details

Water ID: 1006689688
Layer: 1
Kind Code: 8
Kind: Untested
Water Found Depth: 10
Water Found Depth UOM: ft

Hole Diameter

Hole ID: 1006689687
Diameter: 8
Depth From: 0
Depth To: 45
Hole Depth UOM: ft
Hole Diameter UOM: inch

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24 ***1 of 7*** ***SW/140.2*** ***84.4 / 5.31*** ***Compressor Systems International Inc.***
19 MAIN STREET
ST. CATHARINES (Port Dalhousie) ON ***GEN***

Generator No.: ON2515400
Status:
Approval Years: 2009
Contam. Facility:
MHSW Facility:
SIC Code: 333910
SIC Description: Pump and Compressor Manufacturing

PO Box No.:
Country:
Choice of Contact:
Co Admin:
Phone No. Admin:

--Details--

Waste Code: 252
Waste Description: WASTE OILS & LUBRICANTS

---

24 **2 of 7** **SW/140.2** **84.4 / 5.31** **Compressor Systems International Inc.** **GEN**
19 MAIN STREET
ST. CATHARINES (Port Dalhousie) ON L2N 4T5

Generator No.: ON2515400
Status:
Approval Years: 2012
Contam. Facility:
MHSW Facility:
SIC Code: 333910
SIC Description: Pump and Compressor Manufacturing

PO Box No.:
Country:
Choice of Contact:
Co Admin:
Phone No. Admin:

--Details--
Waste Code: 252
Waste Description: WASTE OILS & LUBRICANTS

---

24 **3 of 7** **SW/140.2** **84.4 / 5.31** **CSI** **GEN**
19 MAIN STREET
ST. CATHARINES ON L2N 4T5

Generator No.: ON2515400
Status:
Approval Years: 99,00,01
Contam. Facility:
MHSW Facility:
SIC Code: 3191
SIC Description: COMPRESSOR, ETC. IND.

PO Box No.:
Country:
Choice of Contact:
Co Admin:
Phone No. Admin:

--Details--
Waste Code: 252
Waste Description: WASTE OILS & LUBRICANTS

---

24 **4 of 7** **SW/140.2** **84.4 / 5.31** **Compressor Systems International Inc.** **GEN**
19 MAIN STREET
ST. CATHARINES (Port Dalhousie) ON

Generator No.: ON2515400
Status:
Approval Years: 2011
Contam. Facility:
MHSW Facility:
SIC Code: 333910
SIC Description:

PO Box No.:
Country:
Choice of Contact:
Co Admin:
Phone No. Admin:

--Details--
Waste Code: 252
Waste Description: WASTE OILS & LUBRICANTS

---

24 **5 of 7** **SW/140.2** **84.4 / 5.31** **BELL CANADA** **GEN**
19 MAIN STREET
TORONTO ON L2N 4T5

Generator No.: ON0033939

PO Box No.:

Status:
Approval Years: 95,96,97,98,99,00,01
Contam. Facility:
MHSW Facility:
SIC Code: 4821
SIC Description: TELECOMMUN. CARRRIERS

Country:
Choice of Contact:
Co Admin:
Phone No. Admin:

--Details--
Waste Code: 243
Waste Description: PCB'S

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24 | **6 of 7** | **SW/140.2** | **84.4 / 5.31** | **GEN**

Compressure Systems International Inc.
19 MAIN STREET
ST. CATHARINES (Port Dalhousie) ON L2N 4T5

Generator No.: ON2515400
Status:
Approval Years: 03,04
Contam. Facility:
MHSW Facility:
SIC Code: 333910
SIC Description: Pump & Compressor Mfg.

PO Box No.:
Country:
Choice of Contact:
Co Admin:
Phone No. Admin:

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24 | **7 of 7** | **SW/140.2** | **84.4 / 5.31** | **GEN**

Compressor Systems International Inc.
19 MAIN STREET
ST. CATHARINES (Port Dalhousie) ON L2N 4T5

Generator No.: ON2515400
Status:
Approval Years: 07,08
Contam. Facility:
MHSW Facility:
SIC Code: 333910
SIC Description: Pump and Compressor Manufacturing

PO Box No.:
Country:
Choice of Contact:
Co Admin:
Phone No. Admin:

--Details--
Waste Code: 252
Waste Description: WASTE OILS & LUBRICANTS

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25 | **1 of 1** | **NNW/140.6** | **75.1 / -4.03** | **WWIS**

PORT DALHOUSE ON

Well ID: 7218053
Construction Date:
Primary Water Use: Monitoring
Sec. Water Use:
Final Well Status: Observation Wells
Water Type:
Casing Material:
Audit No: Z156446
Tag: A136391
Construction Method:
Elevation (m):
Elevation Reliability:
Depth to Bedrock:
Well Depth:
Overburden/Bedrock:
Pump Rate:
Static Water Level:

Data Entry Status:
Data Src:
Date Received: 3/20/2014
Selected Flag: Yes
Abandonment Rec:
Contractor: 7484
Form Version: 7
Owner:
Street Name: 6 GARRY RD.
County: NIAGARA (LINCOLN)
Municipality: ST.CATHERINES CITY (GRANTHAM)
Site Info:
Lot:
Concession:
Concession Name:
Easting NAD83:
Northing NAD83:

Flowing (Y/N):
Flow Rate:
Clear/Cloudy:
Zone:
UTM Reliability:

Bore Hole Information

Bore Hole ID:	1004723748	***Elevation:***	75.21
DP2BR:		***Elevrc:***	
Spatial Status:		***Zone:***	17
Code OB:		***East83:***	640795
Code OB Desc:		***Org CS:***	UTM83
Open Hole:		***North83:***	4784940
Cluster Kind:		***UTMRC:***	4
Date Completed:	03-MAR-14	***UTMRC Desc:***	margin of error : 30 m - 100 m
Remarks:		***Location Method:***	wwr
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	1005096760
Layer:	2
Color:	6
General Color:	BROWN
Mat1:	05
Most Common Material:	CLAY
Mat2:	06
Other Materials:	SILT
Mat3:	
Other Materials:	
Formation Top Depth:	3
Formation End Depth:	10
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	1005096759
Layer:	1
Color:	6
General Color:	BROWN
Mat1:	28
Most Common Material:	SAND
Mat2:	05
Other Materials:	CLAY
Mat3:	08
Other Materials:	FINE SAND
Formation Top Depth:	0
Formation End Depth:	3
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	1005096761
Layer:	3
Color:	2

General Color:	GREY
Mat1:	06
Most Common Material:	SILT
Mat2:	28
Other Materials:	SAND
Mat3:	91
Other Materials:	WATER-BEARING
Formation Top Depth:	10
Formation End Depth:	15
Formation End Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	1005096769
Layer:	2
Plug From:	5
Plug To:	0
Plug Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	1005096768
Layer:	1
Plug From:	15
Plug To:	5
Plug Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	1005096767
Method Construction Code:	E
Method Construction:	Auger
Other Method Construction:	

Pipe Information

Pipe ID:	1005096758
Casing No:	0
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	1005096764
Layer:	1
Material:	5
Open Hole or Material:	PLASTIC
Depth From:	0
Depth To:	5
Casing Diameter:	2
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Screen

Screen ID:	1005096765
Layer:	1
Slot:	10

Screen Top Depth:	5
Screen End Depth:	15
Screen Material:	5
Screen Depth UOM:	ft
Screen Diameter UOM:	inch
Screen Diameter:	2.125

Water Details

Water ID:	1005096763
Layer:	1
Kind Code:	8
Kind:	Untested
Water Found Depth:	10
Water Found Depth UOM:	ft

Hole Diameter

Hole ID:	1005096762
Diameter:	6
Depth From:	0
Depth To:	15
Hole Depth UOM:	ft
Hole Diameter UOM:	inch

---

26 ***1 of 1*** ***SSE/149.3*** ***76.2 / -2.86*** ***St. Catharines ON*** ***WWIS***

Well ID:	7285480	**Data Entry Status:**	
Construction Date:		**Data Src:**	
Primary Water Use:	Monitoring	**Date Received:**	4/20/2017
Sec. Water Use:		**Selected Flag:**	Yes
Final Well Status:	0	**Abandonment Rec:**	
Water Type:		**Contractor:**	7238
Casing Material:		**Form Version:**	7
Audit No:	Z253846	**Owner:**	
Tag:	A213609	**Street Name:**	57 LAKEPORT RD
Construction Method:		**County:**	NIAGARA (LINCOLN)
Elevation (m):		**Municipality:**	ST.CATHERINES CITY (GRANTHAM)
Elevation Reliability:		**Site Info:**	
Depth to Bedrock:		**Lot:**	
Well Depth:		**Concession:**	
Overburden/Bedrock:		**Concession Name:**	
Pump Rate:		**Easting NAD83:**	
Static Water Level:		**Northing NAD83:**	
Flowing (Y/N):		**Zone:**	
Flow Rate:		**UTM Reliability:**	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	1006383261	**Elevation:**	75.48
DP2BR:		**Elevrc:**	
Spatial Status:		**Zone:**	17
Code OB:		**East83:**	640934
Code OB Desc:		**Org CS:**	UTM83
Open Hole:		**North83:**	4784590
Cluster Kind:		**UTMRC:**	4
Date Completed:	21-MAR-17	**UTMRC Desc:**	margin of error : 30 m - 100 m
Remarks:		**Location Method:**	wwr
Elevrc Desc:			
Location Source Date:			

Improvement Location Source:
Improvement Location Method:
Source Revision Comment:
Supplier Comment:

Overburden and Bedrock Materials Interval

Formation ID: 1006689709
Layer: 2
Color:
General Color:
Mat1: 05
Most Common Material: CLAY
Mat2: 84
Other Materials: SILTY
Mat3:
Other Materials:
Formation Top Depth: 10
Formation End Depth: 17.5
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 1006689708
Layer: 1
Color:
General Color:
Mat1: 01
Most Common Material: FILL
Mat2:
Other Materials:
Mat3:
Other Materials:
Formation Top Depth: 0
Formation End Depth: 10
Formation End Depth UOM: ft

Annular Space/Abandonment Sealing Record

Plug ID: 1006689716
Layer: 1
Plug From: 0
Plug To: .5
Plug Depth UOM: ft

Annular Space/Abandonment Sealing Record

Plug ID: 1006689718
Layer: 3
Plug From: 3.5
Plug To: 15
Plug Depth UOM: ft

Annular Space/Abandonment Sealing Record

Plug ID: 1006689719
Layer: 4

Plug From: 15
Plug To: 17.5
Plug Depth UOM: ft

Annular Space/Abandonment Sealing Record

Plug ID: 1006689717
Layer: 2
Plug From: .5
Plug To: 3.5
Plug Depth UOM: ft

Method of Construction & Well Use

Method Construction ID: 1006689715
Method Construction Code: B
Method Construction: Other Method
Other Method Construction: AUGER

Pipe Information

Pipe ID: 1006689707
Casing No: 0
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 1006689712
Layer: 1
Material: 5
Open Hole or Material: PLASTIC
Depth From: 0
Depth To: 4
Casing Diameter: 2
Casing Diameter UOM: inch
Casing Depth UOM: ft

Construction Record - Screen

Screen ID: 1006689713
Layer: 1
Slot: 10
Screen Top Depth: 4
Screen End Depth: 14
Screen Material: 5
Screen Depth UOM: ft
Screen Diameter UOM: inch
Screen Diameter:

Water Details

Water ID: 1006689711
Layer: 1
Kind Code: 8
Kind: Untested
Water Found Depth: 10
Water Found Depth UOM: ft

Hole Diameter

Hole ID:	1006689710
Diameter:	8
Depth From:	0
Depth To:	14
Hole Depth UOM:	ft
Hole Diameter UOM:	inch

---

27 ***1 of 2*** ***SSE/150.2*** ***75.7 / -3.38*** ***57 Lakeport Rd St. Catharines ON L2N4P6*** ***EHS***

Order No:	20160816071	***Nearest Intersection:***	
Status:	C	***Municipality:***	
Report Type:	Standard Report	***Client Prov/State:***	ON
Report Date:	23-AUG-16	***Search Radius (km):***	.25
Date Received:	16-AUG-16	***X:***	-79.265114
Previous Site Name:		***Y:***	43.200998
Lot/Building Size:			
Additional Info Ordered:	Topographic Maps; City Directory; Aerial Photos		

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27 ***2 of 2*** ***SSE/150.2*** ***75.7 / -3.38*** ***57 Lakeport Rd St Catharines ON L2N*** ***EHS***

Order No:	20130618033	***Nearest Intersection:***	
Status:	C	***Municipality:***	St. Catharines
Report Type:	Standard Report	***Client Prov/State:***	ON
Report Date:	27-JUN-13	***Search Radius (km):***	.25
Date Received:	18-JUN-13	***X:***	-79.265114
Previous Site Name:		***Y:***	43.200998
Lot/Building Size:			
Additional Info Ordered:	Fire Insur. Maps and/or Site Plans		

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28 ***1 of 1*** ***SSE/162.4*** ***75.0 / -4.09*** ***St. Catharines ON*** ***WWIS***

Well ID:	7285478	***Data Entry Status:***	
Construction Date:		***Data Src:***	
Primary Water Use:		***Date Received:***	4/20/2017
Sec. Water Use:	Monitoring	***Selected Flag:***	Yes
Final Well Status:	Observation Wells	***Abandonment Rec:***	
Water Type:		***Contractor:***	7238
Casing Material:		***Form Version:***	7
Audit No:	Z253848	***Owner:***	
Tag:	A201647	***Street Name:***	57 LAKEPORT RD
Construction Method:		***County:***	NIAGARA (LINCOLN)
Elevation (m):		***Municipality:***	ST.CATHERINES CITY (GRANTHAM)
Elevation Reliability:		***Site Info:***	
Depth to Bedrock:		***Lot:***	
Well Depth:		***Concession:***	
Overburden/Bedrock:		***Concession Name:***	
Pump Rate:		***Easting NAD83:***	
Static Water Level:		***Northing NAD83:***	
Flowing (Y/N):		***Zone:***	
Flow Rate:		***UTM Reliability:***	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	1006383255	***Elevation:***	75.16

DP2BR:		**Elevrc:**	
Spatial Status:		**Zone:**	17
Code OB:		**East83:**	640974
Code OB Desc:		**Org CS:**	UTM83
Open Hole:		**North83:**	4784601
Cluster Kind:		**UTMRC:**	4
Date Completed:	20-MAR-17	**UTMRC Desc:**	margin of error : 30 m - 100 m
Remarks:		**Location Method:**	wwr
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	1006689624
Layer:	1
Color:	
General Color:	
Mat1:	
Most Common Material:	
Mat2:	60
Other Materials:	CEMENTED
Mat3:	
Other Materials:	
Formation Top Depth:	0
Formation End Depth:	.5
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	1006689626
Layer:	3
Color:	
General Color:	
Mat1:	06
Most Common Material:	SILT
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	10
Formation End Depth:	25
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	1006689625
Layer:	2
Color:	
General Color:	
Mat1:	01
Most Common Material:	FILL
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	.5

Formation End Depth: 10
Formation End Depth UOM: ft

Annular Space/Abandonment Sealing Record

Plug ID: 1006689633
Layer: 1
Plug From: 0
Plug To: .5
Plug Depth UOM: ft

Annular Space/Abandonment Sealing Record

Plug ID: 1006689634
Layer: 2
Plug From: .5
Plug To: 4
Plug Depth UOM: ft

Annular Space/Abandonment Sealing Record

Plug ID: 1006689636
Layer: 4
Plug From: 16
Plug To: 20
Plug Depth UOM: ft

Annular Space/Abandonment Sealing Record

Plug ID: 1006689635
Layer: 3
Plug From: 4
Plug To: 16
Plug Depth UOM: ft

Method of Construction & Well Use

Method Construction ID: 1006689632
Method Construction Code:
Method Construction:
Other Method Construction:

Pipe Information

Pipe ID: 1006689623
Casing No: 0
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 1006689629
Layer: 1
Material: 5
Open Hole or Material: PLASTIC

Depth From:	0
Depth To:	5
Casing Diameter:	2
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Screen

Screen ID:	1006689630
Layer:	1
Slot:	10
Screen Top Depth:	5
Screen End Depth:	15
Screen Material:	5
Screen Depth UOM:	ft
Screen Diameter UOM:	inch
Screen Diameter:	

Water Details

Water ID:	1006689628
Layer:	1
Kind Code:	8
Kind:	Untested
Water Found Depth:	5
Water Found Depth UOM:	ft

Hole Diameter

Hole ID:	1006689627
Diameter:	8
Depth From:	0
Depth To:	20
Hole Depth UOM:	ft
Hole Diameter UOM:	inch

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29 | ***1 of 1*** | ***WNW/172.3*** | ***79.3 / 0.22*** | ***Port Dalhousie St. Catharines ON*** | ***SPL***

Ref No:	0543-AJUSGG	**Discharger Report:**	
Site No:	NA	**Material Group:**	
Incident Dt:	2/22/2017	**Client Type:**	
Year:		**Sector Type:**	Unknown / N/A
Incident Cause:		**Source Type:**	
Incident Event:	Overflow/Surcharge	**Nearest Watercourse:**	
Contaminant Code:	99	**Site Name:**	10 Dalhousie Ave<UNOFFICIAL>
Contaminant Name:	SILT	**Site Address:**	Port Dalhousie
Contaminant Limit 1:		**Site District Office:**	
Contam Limit Freq 1:		**Site County/District:**	
Contaminant UN No 1:		**Site Postal Code:**	
Contaminant Qty:	0.75 m³	**Site Region:**	
Environment Impact:		**Site Municipality:**	St. Catharines
Nature of Impact:		**Site Lot:**	
Receiving Medium:		**Site Conc:**	
Receiving Env:	Land	**Northing:**	4784886
Health/Env Conseq:		**Easting:**	640681
MOE Response:	No	**Site Geo Ref Accu:**	Map
Dt MOE Arvl on Scn:		**Site Geo Ref Meth:**	10 -100 metres eg. Topographic Map
MOE Reported Dt:	2/23/2017	**Site Map Datum:**	
Dt Document Closed:			
Agency Involved:			
SAC Action Class:	Land Spills		

Incident Reason: Unknown / N/A
Incident Summary: Silverline Group: 0.75 m^3 of red shale silt to beach, cleaning

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30 **1 of 1** **SSW/182.9** **78.4 / -0.71** **Lakeport Rd Dump** **ANDR**

St Catharines ON L2N 4S

Legal Description: Grantham Con 1 Lot 20 pt
Location Description: Lakeport Rd; On Lakeport Rd [Regional Rd 44] & Canal St, Port Dalhousie, on site M Rennie Park, adj. Twelve Mile Ck, Martindale Pond.
Municipality: St Catharines City
Current Municipality: St Catharines City
RM: Niagara Region
Facility: Dump
Date Active: 1960s-70s
Date Begun:
Date Complete: 1970
Area (Ha):
Landfill Type: open dump
Group Name: Twelve Mile Creek
Operated By: St Catharines C/St Lawrence Seaway Authority
Serial: MOEE 0046
NTS: 30M03
Diameter (m):

Historical Summary:

Lakeport Rd Dump MOEE 1994 Lakeport Rd cited as a closed waste disposal site in (Ontario Ministry of the Environment [1994] Waste disposal site inventory, [Toronto]: Ontario Environment, 1994., i, 196 pp., maps, ISBN 0772984093 99). On Lakeport Rd [Regional Rd 44] and Canal St, Port Dalhousie, on site M Rennie Park, adj. Twelve Mile Ck, Martindale Pond. Martindale Pond Dry Refuse Site CITY WANTS TWO SEAWAY LOTS AS DRY REFUSE DUMPING AREAS: City is negotiating with the St Lawrence Seaway Authority for two lots in the Port Dalhousie area, which would be used to supplement existing waste disposal areas. One is a water lot in Martindale Pond across from the Henley grandstand. It is is 2.3 acres and is located on the westerly side of Lakeport Rd, immediately opposite Lincoln Fabrics Ltd. It would be drained and divided from the adjoining watercourse by an earth dike. It would be rented from the Authority under a licensing arrangement. The city's other dry refuse areas are currently reaching capacity (St Catharines Standard Nov 2 1970).

Waste Type: MSW
UTM X Nad 27: 640800
UTM Y Nad 27: 4784325
UTM Zone: 17

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31 **1 of 1** **SSE/189.4** **74.8 / -4.28** **On the west side, behind Twelve Restaurant, 61 Lakeport Road St. Catharines ON L2N 4P6** **SPL**

Ref No:	1274-62U5QY	**Discharger Report:**	
Site No:		**Material Group:**	Oil
Incident Dt:	7/12/2004	**Client Type:**	
Year:		**Sector Type:**	
Incident Cause:	Unknown	**Source Type:**	
Incident Event:		**Nearest Watercourse:**	
Contaminant Code:	13	**Site Name:**	DALHOUSIE HARBOUR<UNOFFICIAL>
Contaminant Name:	DIESEL FUEL	**Site Address:**	
Contaminant Limit 1:		**Site District Office:**	Niagara
Contam Limit Freq 1:		**Site County/District:**	
Contaminant UN No 1:		**Site Postal Code:**	
Contaminant Qty:	1820 L	**Site Region:**	West Central
Environment Impact:	Possible	**Site Municipality:**	St. Catharines
Nature of Impact:	Surface Water Pollution	**Site Lot:**	
Receiving Medium:	Water	**Site Conc:**	
Receiving Env:		**Northing:**	
Health/Env Conseq:		**Easting:**	
MOE Response:		**Site Geo Ref Accu:**	

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB

Dt MOE Arvl on Scn:		**Site Geo Ref Meth:**	
MOE Reported Dt:	7/12/2004	**Site Map Datum:**	
Dt Document Closed:			
Agency Involved:			
SAC Action Class:			
Incident Reason:	Unknown - Reason not determined		
Incident Summary:	Dalhousie Harbour: 300-400 gal to L. Ontario		

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32 | **1 of 1** | **SSW/194.7** | **79.5 / 0.36** | **Lakeport Rd.**
ST. CATHARINES ON | **WDSH**

Site No.:	X0046
Region:	WESTCENTRAL
County:	NIAGARA
Concession:	
Lot:	Lakeport Rd.
Easting:	640800
Northing:	4784325
Zone:	17
Date Closed:	1970
Status:	CLOSED
Classification:	NO POTENTIAL FOR IMPACT ON HUMANS OR THE ENVIRONMENT
%CommericialWste:	n/a
%DomesticWste Rec:	n/a
%LiquidWste Rec:	n/a
%HazardousWste Rec:	n/a
%Non-haz.Wste Rec:	n/a
%Sewage/Sludge Rec:	n/a
%Other Wste Rec:	n/a

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33 | **1 of 1** | **SW/201.0** | **84.8 / 5.74** | **768716 ONTARIO LTD., MAINSTREAM NON-PROF**
25 MAIN STREET
ST. CATHARINES CITY ON L2N 4T6 | **CA**

Certificate #:	8-2227-95-
Application Year:	95
Issue Date:	5/16/1995
Approval Type:	Industrial air
Status:	Approved
Application Type:	
Client Name:	
Client Address:	
Client City:	
Client Postal Code:	
Project Description:	COMMERCIAL KITCHEN EXHAUST SYSTEM
Contaminants:	
Emission Control:	

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34 | **1 of 16** | **S/207.6** | **75.9 / -3.20** | **Lincoln Fabrics Ltd.**
63 Lakeport Rd.
St. Catharines ON | **GEN**

Generator No.:	ON9544115	**PO Box No.:**	
Status:		**Country:**	
Approval Years:	2013	**Choice of Contact:**	
Contam. Facility:		**Co Admin:**	
MHSW Facility:		**Phone No. Admin:**	
SIC Code:	339990		
SIC Description:	ALL OTHER MISCELLANEOUS MANUFACTURING		

--Details--
Waste Code: 252
Waste Description: WASTE OILS & LUBRICANTS

Waste Code: 146
Waste Description: OTHER SPECIFIED INORGANICS

Waste Code: 213
Waste Description: PETROLEUM DISTILLATES

---

34 ***2 of 16*** ***S/207.6*** ***75.9 / -3.20*** ***Lincoln Fabrics Ltd.*** ***GEN***
63 Lakeport Rd.
St. Catharines ON L2N 4P6

Generator No.: ON9544115
Status:
Approval Years: 2014
Contam. Facility: No
MHSW Facility: No
SIC Code: 339990
SIC Description: ALL OTHER MISCELLANEOUS MANUFACTURING
PO Box No.:
Country: Canada
Choice of Contact: CO_ADMIN
Co Admin: Kathy A Rodgers
Phone No. Admin: 905-934-3391 Ext.222

--Details--
Waste Code: 146
Waste Description: OTHER SPECIFIED INORGANICS

Waste Code: 252
Waste Description: WASTE OILS & LUBRICANTS

Waste Code: 213
Waste Description: PETROLEUM DISTILLATES

---

34 ***3 of 16*** ***S/207.6*** ***75.9 / -3.20*** ***LINCOLN FABRICS LTD. 24-613*** ***GEN***
63 LAKEPORT ROAD
ST. CATHARINES ON L2N 4P6

Generator No.: ON1156400
Status:
Approval Years: 92,93,94,95,96,97,98
Contam. Facility:
MHSW Facility:
SIC Code: 1829
SIC Description: OTHER SPUN YARN IND.
PO Box No.:
Country:
Choice of Contact:
Co Admin:
Phone No. Admin:

--Details--
Waste Code: 213
Waste Description: PETROLEUM DISTILLATES

Waste Code: 252
Waste Description: WASTE OILS & LUBRICANTS

---

34 ***4 of 16*** ***S/207.6*** ***75.9 / -3.20*** ***Lincoln Fabrics*** ***GEN***
63 Lakeport Rd.
St. Catharines ON L2N 4P6

Generator No.: ON9544115
Status: Registered
PO Box No.:
Country: Canada

Approval Years: As of Dec 2017
Contam. Facility:
MHSW Facility:
SIC Code:
SIC Description:
Choice of Contact:
Co Admin:
Phone No. Admin:

--Details--
Waste Code: 252 T
Waste Description: Waste crankcase oils and lubricants

Waste Code: 213 I
Waste Description: Petroleum distillates

Waste Code: 148 C
Waste Description: Misc. wastes and inorganic chemicals

Waste Code: 263 I
Waste Description: Misc. waste organic chemicals

---

34 | ***5 of 16*** | ***S/207.6*** | ***75.9 / -3.20*** | ***Lincoln Fabrics Ltd.***
63 Lakeport Rd.
St. Catharines ON L2N 4P6 | ***GEN***

Generator No.: ON9544115
Status:
Approval Years: 2010
Contam. Facility:
MHSW Facility:
SIC Code: 339990
SIC Description: All Other Miscellaneous Manufacturing
PO Box No.:
Country:
Choice of Contact:
Co Admin:
Phone No. Admin:

--Details--
Waste Code: 252
Waste Description: WASTE OILS & LUBRICANTS

Waste Code: 146
Waste Description: OTHER SPECIFIED INORGANICS

Waste Code: 213
Waste Description: PETROLEUM DISTILLATES

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34 | ***6 of 16*** | ***S/207.6*** | ***75.9 / -3.20*** | ***LINCOLN FABRICS LTD.***
63 LAKEPORT ROAD
ST. CATHARINES ON L2N 4P6 | ***GEN***

Generator No.: ON1156400
Status:
Approval Years: 89
Contam. Facility:
MHSW Facility:
SIC Code: 1829
SIC Description: OTHER SPUN YARN IND.
PO Box No.:
Country:
Choice of Contact:
Co Admin:
Phone No. Admin:

--Details--
Waste Code: 213
Waste Description: PETROLEUM DISTILLATES

Waste Code: 252
Waste Description: WASTE OILS & LUBRICANTS

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
34	7 of 16	S/207.6	75.9 / -3.20	LINCOLN FABRICS LIMITED 63 LAKEPORT ROAD ST. CATHARINES ON L2N 4P6	GEN

Generator No.: ON1156400
Status:
Approval Years: 99,00,01,02,03,04
Contam. Facility:
MHSW Facility:
SIC Code: 1829
SIC Description: OTHER SPUN YARN IND.

PO Box No.:
Country:
Choice of Contact:
Co Admin:
Phone No. Admin:

--Details--
Waste Code: 252
Waste Description: WASTE OILS & LUBRICANTS

Waste Code: 213
Waste Description: PETROLEUM DISTILLATES

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
34	8 of 16	S/207.6	75.9 / -3.20	Lincoln Fabrics Ltd. 63 Lakeport Rd. St. Catharines ON L2N 4P6	GEN

Generator No.: ON9544115
Status:
Approval Years: 2011
Contam. Facility:
MHSW Facility:
SIC Code: 339990
SIC Description: All Other Miscellaneous Manufacturing

PO Box No.:
Country:
Choice of Contact:
Co Admin:
Phone No. Admin:

--Details--
Waste Code: 213
Waste Description: PETROLEUM DISTILLATES

Waste Code: 252
Waste Description: WASTE OILS & LUBRICANTS

Waste Code: 146
Waste Description: OTHER SPECIFIED INORGANICS

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
34	9 of 16	S/207.6	75.9 / -3.20	Lincoln Fabrics Ltd. 63 Lakeport Rd. St. Catharines ON L2N 4P6	GEN

Generator No.: ON9544115
Status:
Approval Years: 2012
Contam. Facility:
MHSW Facility:
SIC Code: 339990
SIC Description: All Other Miscellaneous Manufacturing

PO Box No.:
Country:
Choice of Contact:
Co Admin:
Phone No. Admin:

--Details--
Waste Code: 146
Waste Description: OTHER SPECIFIED INORGANICS

Waste Code: 213

Waste Description: PETROLEUM DISTILLATES

Waste Code: 252
Waste Description: WASTE OILS & LUBRICANTS

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34 **10 of 16** **S/207.6** **75.9 / -3.20** **Lincoln Fabrics Ltd.**
63 Lakeport Rd.
St. Catharines ON L2N 4P6
GEN

Generator No.: ON9544115
Status:
Approval Years: 2009
Contam. Facility:
MHSW Facility:
SIC Code: 339990
SIC Description: All Other Miscellaneous Manufacturing

PO Box No.:
Country:
Choice of Contact:
Co Admin:
Phone No. Admin:

--Details--
Waste Code: 146
Waste Description: OTHER SPECIFIED INORGANICS

Waste Code: 213
Waste Description: PETROLEUM DISTILLATES

Waste Code: 252
Waste Description: WASTE OILS & LUBRICANTS

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34 **11 of 16** **S/207.6** **75.9 / -3.20** **Lincoln Fabrics Ltd.**
63 Lakeport Rd.
St. Catharines ON L2N 4P6
GEN

Generator No.: ON9544115
Status:
Approval Years: 04,05,06,07,08
Contam. Facility:
MHSW Facility:
SIC Code: 339990
SIC Description: All Other Miscellaneous Manufacturing

PO Box No.:
Country:
Choice of Contact:
Co Admin:
Phone No. Admin:

--Details--
Waste Code: 146
Waste Description: OTHER SPECIFIED INORGANICS

Waste Code: 146
Waste Description: OTHER SPECIFIED INORGANICS

Waste Code: 213
Waste Description: PETROLEUM DISTILLATES

Waste Code: 252
Waste Description: WASTE OILS & LUBRICANTS

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34 **12 of 16** **S/207.6** **75.9 / -3.20** **Lincoln Fabrics**
63 Lakeport Rd.
St. Catharines ON L2N 4P6
GEN

Generator No.: ON9544115
Status:
Approval Years: 2015

PO Box No.:
Country: Canada
Choice of Contact: CO_ADMIN

Contam. Facility: No
MHSW Facility: No
SIC Code: 339990
SIC Description: ALL OTHER MISCELLANEOUS MANUFACTURING
Co Admin: Kathy A Rodgers
Phone No. Admin: 905-934-3391 Ext.222

--Details--
Waste Code: 252
Waste Description: WASTE OILS & LUBRICANTS

Waste Code: 146
Waste Description: OTHER SPECIFIED INORGANICS

Waste Code: 213
Waste Description: PETROLEUM DISTILLATES

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
34	13 of 16	S/207.6	75.9 / -3.20	**Lincoln Fabrics** **63 Lakeport Rd.** **St. Catharines ON L2N 4P6**	GEN

Generator No.: ON9544115
Status:
Approval Years: 2016
Contam. Facility: No
MHSW Facility: No
SIC Code: 339990
SIC Description: ALL OTHER MISCELLANEOUS MANUFACTURING
PO Box No.:
Country: Canada
Choice of Contact: CO_ADMIN
Co Admin: Kathy A Rodgers
Phone No. Admin: 905-934-3391 Ext.222

--Details--
Waste Code: 146
Waste Description: OTHER SPECIFIED INORGANICS

Waste Code: 252
Waste Description: WASTE OILS & LUBRICANTS

Waste Code: 213
Waste Description: PETROLEUM DISTILLATES

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
34	14 of 16	S/207.6	75.9 / -3.20	**LINCOLN FABRICS LIMITED** **63 LAKEPORT RD** **ST CATHARINES ON L2N 4P6**	SCT

Established: 1955
Plant Size (ft²): 40000
Employment: 40

--Details--
Description: BROADWOVEN FABRIC MILLS, MANMADE FIBER AND SILK
SIC/NAICS Code: 2221

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
34	15 of 16	S/207.6	75.9 / -3.20	**Lincoln Fabrics Ltd.** **63 Lakeport Rd** **St Catharines ON L2N 4P6**	SCT

Established: 01-SEP-55
Plant Size (ft²): 40000
Employment:

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
--Details--					
Description:		Broad-Woven Fabric Mills			
SIC/NAICS Code:		313210			

34	16 of 16	S/207.6	75.9 / -3.20	**LINCOLN FABRICS LTD.** **63 Lakeport Rd** **St. Catharines ON L2N 4P6**	SCT

Established:	1955
Plant Size (ft²):	40000
Employment:	40

--Details--	
Description:	Broad-Woven Fabric Mills
SIC/NAICS Code:	313210

35	1 of 3	E/209.4	74.8 / -4.26	**ST CATHARINES GAME & FISH ASSOC** **61 LIGHTHOUSE RD** **ST CATHARINES ON L2N 7P4**	RST

Headcode:	00824400
Headcode Desc:	MARINAS
Phone:	
List Name:	
Description:	

35	2 of 3	E/209.4	74.8 / -4.26	**ST CATHARINES GAME & FISH ASSOC** **61 LIGHTHOUSE RD** **ST CATHARINES ON L2N7P4**	RST

Headcode:	00824400
Headcode Desc:	MARINAS
Phone:	9059376335
List Name:	
Description:	

35	3 of 3	E/209.4	74.8 / -4.26	**61 Lighthouse Rd** **St. Catharines ON**	SPL

Ref No:	8807-B39L9T	**Discharger Report:**	
Site No:	NA	**Material Group:**	
Incident Dt:	2018/08/02	**Client Type:**	
Year:		**Sector Type:**	Unknown / N/A
Incident Cause:		**Source Type:**	Watercraft/Vessel
Incident Event:	Leak/Break	**Nearest Watercourse:**	
Contaminant Code:	15	**Site Name:**	St. Catherines Game and Fish Lodge - Launch Dock<UNOFFICIAL>
Contaminant Name:	OIL (PETROLEUM BASED, NOT SPECIFIED)	**Site Address:**	61 Lighthouse Rd
Contaminant Limit 1:		**Site District Office:**	Niagara
Contam Limit Freq 1:		**Site County/District:**	Regional Municipality of Niagara
Contaminant UN No 1:	n/a	**Site Postal Code:**	
Contaminant Qty:	0 L	**Site Region:**	West Central
Environment Impact:		**Site Municipality:**	St. Catharines
Nature of Impact:		**Site Lot:**	
Receiving Medium:		**Site Conc:**	
Receiving Env:	Land; Surface Water	**Northing:**	4784936.86
Health/Env Conseq:	2 - Minor Environment	**Easting:**	641164.11
MOE Response:	No	**Site Geo Ref Accu:**	

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB

Dt MOE Arvl on Scn:		**Site Geo Ref Meth:**	
MOE Reported Dt:	2018/08/02	**Site Map Datum:**	
Dt Document Closed:			
Agency Involved:			
SAC Action Class:	Watercourse Spills		
Incident Reason:	Unknown / N/A		
Incident Summary:	St. Catherines FD - Oil to Launch Dock and Lake Ontario, Investigating		

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36 *1 of 1* *S/214.2* *75.1 / -3.99* *ON* **WWIS**

Well ID:	7262444	**Data Entry Status:**	Yes
Construction Date:		**Data Src:**	
Primary Water Use:		**Date Received:**	5/3/2016
Sec. Water Use:		**Selected Flag:**	Yes
Final Well Status:		**Abandonment Rec:**	
Water Type:		**Contractor:**	7464
Casing Material:		**Form Version:**	8
Audit No:	C31790	**Owner:**	
Tag:	A192012	**Street Name:**	
Construction Method:		**County:**	NIAGARA (LINCOLN)
Elevation (m):		**Municipality:**	ST.CATHERINES CITY (GRANTHAM)
Elevation Reliability:		**Site Info:**	
Depth to Bedrock:		**Lot:**	
Well Depth:		**Concession:**	
Overburden/Bedrock:		**Concession Name:**	
Pump Rate:		**Easting NAD83:**	
Static Water Level:		**Northing NAD83:**	
Flowing (Y/N):		**Zone:**	
Flow Rate:		**UTM Reliability:**	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	1005957905	**Elevation:**	76.72
DP2BR:		**Elevrc:**	
Spatial Status:		**Zone:**	17
Code OB:		**East83:**	640900
Code OB Desc:		**Org CS:**	UTM83
Open Hole:		**North83:**	4784511
Cluster Kind:		**UTMRC:**	4
Date Completed:	15-MAR-16	**UTMRC Desc:**	margin of error : 30 m - 100 m
Remarks:		**Location Method:**	wwr
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

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37 *1 of 1* *S/244.2* *76.6 / -2.52* ***61 & 63 Lakeport Road St. Catharines ON L2N 4P6*** **EHS**

Order No:	20181105119	**Nearest Intersection:**	
Status:	C	**Municipality:**	Niagara
Report Type:	Standard Report	**Client Prov/State:**	ON
Report Date:	12-NOV-18	**Search Radius (km):**	.25
Date Received:	05-NOV-18	**X:**	-79.265801
Previous Site Name:	Lincoln Fabrics; Maple Leaf Rubber co.;	**Y:**	43.199956
Lot/Building Size:	approximately 2 acres		
Additional Info Ordered:			

Unplottable Summary

Total: 31 Unplottable sites

DB	Company Name/Site Name	Address	City	Postal
CA	The Corporation of the City of St. Catharines	Lakeport Road	St. Catharines ON	
CA	ST. CATHARINES CITY	HOGAN'S ALLEY	ST. CATHARINES CITY ON	
CA	VINELAND FEED & SUPPLIES	17 MAIN STREET	LINCOLN TOWN ON	
CA	VINELAND FEED & SUPPLIES	17 MAIN STREET VINELAND	LINCOLN TOWN ON	
CA	The Regional Municipality of Niagara		Lincoln ON	
CA	The Regional Municipality of Niagara		Lincoln ON	
CA	The Regional Municipality of Niagara		Lincoln ON	
CA	The Regional Municipality of Niagara		St. Catharines ON	
CA	The Regional Municipality of Niagara		St. Catharines ON	
CA	The Regional Municipality of Niagara		St. Catharines ON	
CA	Jaycee Park	Lot 21/22, Con. 1 & 2	St. Catharines ON	
CA	Jaycee Park	Lot 21/22, Con. 1 & 2	St. Catharines ON	
CA	R.M. OF NIAGARA	LAKEPORT RD. SAN. FORCEMAIN	ST. CATHARINES CITY ON	
ECA	The Regional Municipality of Niagara	Regional Road 87 (Lakeshore Road)	St. Catharines ON	L2V 4T7
ECA	Regional Municipality of Niagara	Regional Road 87 (Lakeshore Road)	St. Catharines ON	
GEN	Bell Canada	VARIOUS BELL CANADA MANHOLES AND ACCESS CHAMBERS WITHIN THE MOE W.C. REGION	(SEE SCHEDULE "B") ON	
GEN	Bell Canada	VARIOUS BELL CANADA MANHOLES AND ACCESS CHAMBERS WITHIN THE MOE W.C. REGION	(SEE SCHEDULE "B") ON	K1P 6L9

GEN	Bell Canada	VARIOUS BELL CANADA MANHOLES AND ACCESS CHAMBERS WITHIN THE MOE W.C. REGION	(SEE SCHEDULE "B") ON	K1P 6L9
GEN	Bell Canada	VARIOUS BELL CANADA MANHOLES AND ACCESS CHAMBERS WITHIN THE MOE W.C. REGION	(SEE SCHEDULE "B") ON	K1P 6L9
LIMO	The Corporation of the City of St. Catharines Historic Landfill X0046	Michael Rennie Park Lot 21 Concession 1 St. Catharines	ON	
PTTW	St. Catharines Hydro Generation Inc.	Lot 21, Concession 1 City of St. Catharines, Regional Municipality of Niagara CITY OF ST. CATHARINES	ON	
SPL	NIAGARA, REGIONAL MUNICIPALITY	OLD WELLAND CANAL. FORCEMAIN AT END OF LAKEPORT RD/LAKESIDE PARK ACCESS RD. SANITARY SEWER SYSTEM/PUMPING STATION	ST. CATHARINES CITY ON	
SPL	NIAGARA, REGIONAL MUNICIPALITY	CANAL ROAD PORT WELLER WPCP (ST. CATHARINES) CANAL ROAD	ST. CATHARINES ON	
SPL	PETE COSCO HAULAGE	CANAL ROAD 1/2 KM SOUTH TO QUEENSTON	ST. CATHARINES CITY ON	
SPL	GENERAL MOTORS OF CANADA LTD.	DITCH ON WESTSIDE OF CANAL ROAD ST. CATHARINES PLANT 580 WELLAND AVENUE	ST. CATHARINES CITY ON	
SPL	BELL CANADA	AT ST. DAVID ST. & GLENRIDGE MOTOR VEHICLE (OPERATING FLUID)	ST. CATHARINES CITY ON	
SPL	J.P.POULTRY	FROM PARKING LOT ON HOGANS ALLEY, TO CREEK AND OUT TO YACHT CLUB TRANSPORT TRUCK (CARGO)	ST. CATHARINES CITY ON	
SPL	MOTOR VEHICLE	NORTHBOUND ALONG GOVERNMENT (CANAL) ROAD FROM CARLETON ST TO LOCK #1 MOTOR VEHICLE (OPERATING FLUID)	ST. CATHARINES CITY ON	
WWIS		lot 21 con 1	ON	
WWIS		lot 22	ON	
WWIS		lot 22	ON	

Unplottable Report

Site: ***The Corporation of the City of St. Catharines***
Lakeport Road St. Catharines ON

Database: ***CA***

Certificate #:	2208-73XN97
Application Year:	2007
Issue Date:	6/10/2007
Approval Type:	Municipal and Private Sewage Works
Status:	Approved
Application Type:	
Client Name:	
Client Address:	
Client City:	
Client Postal Code:	
Project Description:	
Contaminants:	
Emission Control:	

Site: ***ST. CATHARINES CITY***
HOGAN'S ALLEY ST. CATHARINES CITY ON

Database: ***CA***

Certificate #:	7-0229-87-
Application Year:	87
Issue Date:	3/24/1987
Approval Type:	Municipal water
Status:	Approved
Application Type:	
Client Name:	
Client Address:	
Client City:	
Client Postal Code:	
Project Description:	
Contaminants:	
Emission Control:	

Site: ***VINELAND FEED & SUPPLIES***
17 MAIN STREET LINCOLN TOWN ON

Database: ***CA***

Certificate #:	8-2013-87-
Application Year:	87
Issue Date:	2/3/1987
Approval Type:	Industrial air
Status:	Nullity, letter of concurrence issued
Application Type:	
Client Name:	
Client Address:	
Client City:	
Client Postal Code:	
Project Description:	COMBUSTION EQUIPMENT
Contaminants:	Nitrogen Oxides
Emission Control:	No Controls

Site: ***VINELAND FEED & SUPPLIES***
17 MAIN STREET VINELAND LINCOLN TOWN ON

Database: ***CA***

Certificate #:	8-2247-86-
Application Year:	86

Issue Date: 2/3/1987
Approval Type: Industrial air
Status: Nullity, letter of concurrence issued
Application Type:
Client Name:
Client Address:
Client City:
Client Postal Code:
Project Description: STEAM FLAKING SYSTEM
Contaminants: Suspended Particulate Matter
Emission Control: Cyclone

Site: ***The Regional Municipality of Niagara***
Lincoln ON

Database: ***CA***

Certificate #: 0375-7LJR3D
Application Year: 2009
Issue Date: 2/5/2009
Approval Type: Municipal and Private Sewage Works
Status: Approved
Application Type:
Client Name:
Client Address:
Client City:
Client Postal Code:
Project Description:
Contaminants:
Emission Control:

Site: ***The Regional Municipality of Niagara***
Lincoln ON

Database: ***CA***

Certificate #: 9662-5MRRLT
Application Year: 2003
Issue Date: 5/22/2003
Approval Type: Municipal and Private Sewage Works
Status: Approved
Application Type:
Client Name:
Client Address:
Client City:
Client Postal Code:
Project Description:
Contaminants:
Emission Control:

Site: ***The Regional Municipality of Niagara***
Lincoln ON

Database: ***CA***

Certificate #: 4084-7LKKTL
Application Year: 2009
Issue Date: 2/5/2009
Approval Type: Municipal and Private Sewage Works
Status: Approved
Application Type:
Client Name:
Client Address:
Client City:
Client Postal Code:
Project Description:
Contaminants:
Emission Control:

Site: ***The Regional Municipality of Niagara***
St. Catharines ON

Database: ***CA***

Certificate #: 0011-5KHPHJ
Application Year: 2003
Issue Date: 4/8/2003
Approval Type: Municipal and Private Sewage Works
Status: Approved
Application Type:
Client Name:
Client Address:
Client City:
Client Postal Code:
Project Description:
Contaminants:
Emission Control:

Site: ***The Regional Municipality of Niagara***
St. Catharines ON

Database: ***CA***

Certificate #: 0719-69DS9Q
Application Year: 2005
Issue Date: 4/27/2005
Approval Type: Air
Status: Revoked and/or Replaced
Application Type:
Client Name:
Client Address:
Client City:
Client Postal Code:
Project Description:
Contaminants:
Emission Control:

Site: ***The Regional Municipality of Niagara***
St. Catharines ON

Database: ***CA***

Certificate #: 0719-69DS9Q
Application Year: 2006
Issue Date: 7/27/2006
Approval Type: Air
Status: Revoked and/or Replaced
Application Type:
Client Name:
Client Address:
Client City:
Client Postal Code:
Project Description:
Contaminants:
Emission Control:

Site: ***Jaycee Park***
Lot 21/22, Con. 1 & 2 St. Catharines ON

Database: ***CA***

Certificate #: 9805-4ZGS9Y
Application Year: 01
Issue Date: 8/20/01
Approval Type: Industrial air
Status: Approved
Application Type: Amended CofA
Client Name: Corporation of the City of St. Catharines
Client Address: 50 Church Street, PO Box 3012
Client City: St. Catharines
Client Postal Code: L2R 7C2
Project Description: A 420m long passive gas venting trench was approved for operation at the Jaycee Park in St. Catharines under

Certificate of Approval (Air) No. 5623-4PAMPY, dated Sept 19, 2000. The purpose of the passive gas venting trench is to protect public health and safety by preventing subsurface migration of combustible landfill gas toward the houses on Royal Oak Dr, and Royal Henley Blvd. The approved gas venting trench consists of a combination of gravel and geosynthetic barriers and 18 vertical vent pipes to assist in venting the landfill gas. Recent investigations have prompted the City of St. Catharines to propose an expansion of this system by extending the approved gas venting trench by an additional 134m to the east and adding six additional vent pipes. The emission of landfill gas from the trench should not be a hazard of perceptible nuisance to the nearby residents, based on modelling the quality and quantity of landfill gas currently at the site.

Contaminants:
Emission Control:

Site: ***Jaycee Park***
Lot 21/22, Con. 1 & 2 St. Catharines ON

Database: ***CA***

Certificate #: 5623-4PAMPY
Application Year: 01
Issue Date: 8/20/01
Approval Type: Industrial air
Status: Revoked and/or Replaced
Application Type: New Certificate of Approval
Client Name: Corporation of the City of St. Catharines
Client Address: 50 Church Street, PO Box 3012
Client City: St. Catharines
Client Postal Code: L2R 7C2
Project Description: The City of St. Catharines proposes to install a landfill gas venting trench at Jaycee Park in St. Catharines to protect public health and safety by preventing subsurface migration of combustible landfill gas towards the neighbouring houses on Royal Oak Drive and Royal Henley Boulevard. The Trench will consist of a combination of gravel and geosynthetic barriers and vertical vent pipes to assist in venting of the landfill gas. The emission of landfill gas from the trench should not be a hazard or perceptible nuisance to the nearby residents, based on modeling the quality and quantity of landfill gas currently at the site.
Contaminants:
Emission Control:

Site: ***R.M. OF NIAGARA***
LAKEPORT RD. SAN. FORCEMAIN ST. CATHARINES CITY ON

Database: ***CA***

Certificate #: 3-1072-93-
Application Year: 93
Issue Date: 9/23/1993
Approval Type: Municipal sewage
Status: Approved
Application Type:
Client Name:
Client Address:
Client City:
Client Postal Code:
Project Description:
Contaminants:
Emission Control:

Site: ***The Regional Municipality of Niagara***
Regional Road 87 (Lakeshore Road) St. Catharines ON L2V 4T7

Database: ***ECA***

Approval No: 2525-9S3LPF
Approval Date: 2015-01-26
Status: Approved
Record Type: ECA
Link Source: IDS
SWP Area Name:
MOE District:
City: St. Catharines
Longitude:
Latitude:
Geometry X:
Geometry Y:
Approval Type: ECA-MUNICIPAL AND PRIVATE SEWAGE WORKS
Project Type: MUNICIPAL AND PRIVATE SEWAGE WORKS
Address: Regional Road 87 (Lakeshore Road)
Full Address:
Full PDF Link: https://www.accessenvironment.ene.gov.on.ca/instruments/0423-9HUJFV-14.pdf

Site: ***Regional Municipality of Niagara***
Regional Road 87 (Lakeshore Road) St. Catharines ON

Database: ***ECA***

Approval No:	6831-8UTR3W	***MOE District:***	
Approval Date:	2012-06-08	***City:***	St. Catharines
Status:	Approved	***Longitude:***	
Record Type:	ECA	***Latitude:***	
Link Source:	IDS	***Geometry X:***	
SWP Area Name:		***Geometry Y:***	
Approval Type:	ECA-MUNICIPAL AND PRIVATE SEWAGE WORKS		
Project Type:	MUNICIPAL AND PRIVATE SEWAGE WORKS		
Address:	Regional Road 87 (Lakeshore Road)		
Full Address:			
Full PDF Link:	https://www.accessenvironment.ene.gov.on.ca/instruments/2947-8URND8-14.pdf		

Site: ***Bell Canada***
VARIOUS BELL CANADA MANHOLES AND ACCESS CHAMBERS WITHIN THE MOE W.C. REGION (SEE SCHEDULE "B") ON

Database: ***GEN***

Generator No.:	ONR000302	***PO Box No.:***	
Status:		***Country:***	
Approval Years:	2013	***Choice of Contact:***	
Contam. Facility:		***Co Admin:***	
MHSW Facility:		***Phone No. Admin:***	
SIC Code:	517110, 517210, 517510		
SIC Description:	WIRED TELECOMMUNICATIONS CARRIERS, WIRELESS TELECOMMUNICATIONS CARRIERS (EXCEPT SATELLITE)		

--Details--

Waste Code:	252
Waste Description:	WASTE OILS & LUBRICANTS
Waste Code:	221
Waste Description:	LIGHT FUELS
Waste Code:	253
Waste Description:	EMULSIFIED OILS
Waste Code:	312
Waste Description:	PATHOLOGICAL WASTES
Waste Code:	150
Waste Description:	INERT INORGANIC WASTES
Waste Code:	251
Waste Description:	OIL SKIMMINGS & SLUDGES

Site: ***Bell Canada***
VARIOUS BELL CANADA MANHOLES AND ACCESS CHAMBERS WITHIN THE MOE W.C. REGION (SEE SCHEDULE "B") ON K1P 6L9

Database: ***GEN***

Generator No.:	ONR000302	***PO Box No.:***	
Status:		***Country:***	Canada
Approval Years:	2015	***Choice of Contact:***	CO_ADMIN
Contam. Facility:	No	***Co Admin:***	Julie Labelle
MHSW Facility:	No	***Phone No. Admin:***	514-870-0688 Ext.
SIC Code:	517110, 517210, 517510		
SIC Description:	WIRED TELECOMMUNICATIONS CARRIERS, WIRELESS TELECOMMUNICATIONS CARRIERS (EXCEPT SATELLITE), 517510		

--Details--

Waste Code:	150
Waste Description:	INERT INORGANIC WASTES

Waste Code: 312
Waste Description: PATHOLOGICAL WASTES

Waste Code: 253
Waste Description: EMULSIFIED OILS

Waste Code: 221
Waste Description: LIGHT FUELS

Waste Code: 252
Waste Description: WASTE OILS & LUBRICANTS

Waste Code: 251
Waste Description: OIL SKIMMINGS & SLUDGES

Site: ***Bell Canada***
VARIOUS BELL CANADA MANHOLES AND ACCESS CHAMBERS WITHIN THE MOE W.C. REGION (SEE SCHEDULE "B") ON K1P 6L9

Database: ***GEN***

Generator No.: ONR000302
Status:
Approval Years: 2014
Contam. Facility: No
MHSW Facility: No
SIC Code: 517110, 517210, 517510
SIC Description: WIRED TELECOMMUNICATIONS CARRIERS, WIRELESS TELECOMMUNICATIONS CARRIERS (EXCEPT SATELLITE), 517510

PO Box No.:
Country: Canada
Choice of Contact: CO_OFFICIAL
Co Admin:
Phone No. Admin:

--Details--
Waste Code: 253
Waste Description: EMULSIFIED OILS

Waste Code: 150
Waste Description: INERT INORGANIC WASTES

Waste Code: 251
Waste Description: OIL SKIMMINGS & SLUDGES

Waste Code: 252
Waste Description: WASTE OILS & LUBRICANTS

Waste Code: 221
Waste Description: LIGHT FUELS

Waste Code: 312
Waste Description: PATHOLOGICAL WASTES

Site: ***Bell Canada***
VARIOUS BELL CANADA MANHOLES AND ACCESS CHAMBERS WITHIN THE MOE W.C. REGION (SEE SCHEDULE "B") ON K1P 6L9

Database: ***GEN***

Generator No.: ONR000302
Status:
Approval Years: 2016
Contam. Facility: No
MHSW Facility: No
SIC Code: 517110, 517210, 517510
SIC Description: WIRED TELECOMMUNICATIONS CARRIERS, WIRELESS TELECOMMUNICATIONS CARRIERS (EXCEPT SATELLITE), 517510

PO Box No.:
Country: Canada
Choice of Contact: CO_ADMIN
Co Admin: Chloé Lamothe-Luneau
Phone No. Admin: 514-391-1021 Ext.

--Details--
Waste Code: 253
Waste Description: EMULSIFIED OILS

Waste Code: 251

Waste Description:	OIL SKIMMINGS & SLUDGES
Waste Code:	221
Waste Description:	LIGHT FUELS
Waste Code:	150
Waste Description:	INERT INORGANIC WASTES
Waste Code:	252
Waste Description:	WASTE OILS & LUBRICANTS
Waste Code:	312
Waste Description:	PATHOLOGICAL WASTES

Site: ***The Corporation of the City of St. Catharines Historic Landfill X0046***
Michael Rennie Park Lot 21 Concession 1 St. Catharines ON

Database: ***LIMO***

ECA/Instrument No:	X0046	***Air Emis Monitor:***	
Site Name:		***Natural Attenuation:***	
Oper Status 2016:	Historic	***Liners:***	
C of A Issue Date:		***Cover Material:***	
C of A Issued to:		***Leachate Off-Site:***	
Lndfl Gas Mgmt (P):		***Leachate On Site:***	
Lndfl Gas Mgmt (F):		***Req Coll Lndfll Gas:***	
Lndfl Gas Mgmt (E):		***Lndfll Gas Coll:***	
Lndfl Gas Mgmt Sys:		***Total Waste Rec:***	
Landfill Gas Mntr:		***TWR Methodology:***	
Leachate Coll Sys:		***TWR Unit:***	
ERC Est Vol (m3):		***Tot Aprv Cap Unit:***	
ERC Volume Unit:		***Financial Assurance:***	
ERC Dt Last Det:		***Last Report Year:***	
Landfill Type:		***MOE Region:***	
Source File Type:	Historic and Closed Landfills	***MOE District:***	
Fill Rate:		***Site County:***	
Fill Rate Unit:		***Lot:***	
Tot Fill Area (ha):		***Concession:***	
Tot Site Area (ha):		***Latitude:***	
Footprint:		***Longitude:***	
Tot Apprv Cap (m3):		***Easting:***	
Contam Atten Zone:		***Northing:***	
Grndwtr Mntr:		***UTM Zone:***	
Surf Wtr Mntr:		***Data Source:***	
Approved Waste Type:			
Client Site Name:	The Corporation of the City of St. Catharines Historic Landfill X0046		
ERC Methodology:			
Site Location Details:	Michael Rennie Park Lot 21 Concession 1 St. Catharines		
Service Area:			

Site: ***St. Catharines Hydro Generation Inc.***
Lot 21, Concession 1 City of St. Catharines, Regional Municipality of Niagara CITY OF ST. CATHARINES ON

Database: ***PTTW***

EBR Registry No:	012-4237	***Proposal Date:***	May 28, 2015
Ministry Ref. No:	3808-9WXJ54	***Notice Date:***	July 12, 2016
Notice Type:	Instrument Decision	***Year:***	2015
Company Name:	St. Catharines Hydro Generation Inc.		
Proponent Name:			
Proponent Address:	340 Vansickle Road , Unit 1, St. Catharines Ontario, Canada L2S 0C9		
Instrument Type:	(OWRA s. 34) - Permit to Take Water		
Location Other:			
URL:			

Location:

Lot 21, Concession 1 City of St. Catharines, Regional Municipality of Niagara CITY OF ST. CATHARINES

Site: ***NIAGARA, REGIONAL MUNICIPALITY***
OLD WELLAND CANAL. FORCEMAIN AT END OF LAKEPORT RD/LAKESIDE PARK ACCESS RD. SANITARY SEWER SYSTEM/PUMPING STATION ST. CATHARINES CITY ON

Database: ***SPL***

Ref No:	98921	***Discharger Report:***	
Site No:		***Material Group:***	
Incident Dt:	4/21/1994	***Client Type:***	
Year:		***Sector Type:***	
Incident Cause:	VALVE/FITTING LEAK OR FAILURE	***Source Type:***	
Incident Event:		***Nearest Watercourse:***	
Contaminant Code:		***Site Name:***	
Contaminant Name:		***Site Address:***	
Contaminant Limit 1:		***Site District Office:***	
Contam Limit Freq 1:		***Site County/District:***	
Contaminant UN No 1:		***Site Postal Code:***	
Contaminant Qty:		***Site Region:***	
Environment Impact:	NOT ANTICIPATED	***Site Municipality:***	18103
Nature of Impact:		***Site Lot:***	
Receiving Medium:	LAND	***Site Conc:***	
Receiving Env:		***Northing:***	
Health/Env Conseq:		***Easting:***	
MOE Response:		***Site Geo Ref Accu:***	
Dt MOE Arvl on Scn:		***Site Geo Ref Meth:***	
MOE Reported Dt:	4/21/1994	***Site Map Datum:***	
Dt Document Closed:			
Agency Involved:			
SAC Action Class:			
Incident Reason:	GASKET/JOINT		
Incident Summary:	NIAGARA R.M. -450L SEWAGETO ROADWAY DUE TO FORCE- MAIN BREAK,CONTAINED		

Site: ***NIAGARA, REGIONAL MUNICIPALITY***
CANAL ROAD PORT WELLER WPCP (ST. CATHARINES) CANAL ROAD ST. CATHARINES ON

Database: ***SPL***

Ref No:	183340	***Discharger Report:***	
Site No:		***Material Group:***	
Incident Dt:	7/9/2000	***Client Type:***	
Year:		***Sector Type:***	
Incident Cause:	WASTEWATER DISCHARGE TO WATERCOURSE	***Source Type:***	
Incident Event:		***Nearest Watercourse:***	
Contaminant Code:		***Site Name:***	
Contaminant Name:		***Site Address:***	
Contaminant Limit 1:		***Site District Office:***	
Contam Limit Freq 1:		***Site County/District:***	
Contaminant UN No 1:		***Site Postal Code:***	
Contaminant Qty:		***Site Region:***	
Environment Impact:	POSSIBLE	***Site Municipality:***	18103
Nature of Impact:	Water course or lake	***Site Lot:***	
Receiving Medium:	WATER	***Site Conc:***	
Receiving Env:		***Northing:***	4787550.00
Health/Env Conseq:		***Easting:***	644710.00
MOE Response:		***Site Geo Ref Accu:***	
Dt MOE Arvl on Scn:		***Site Geo Ref Meth:***	
MOE Reported Dt:	7/9/2000	***Site Map Datum:***	
Dt Document Closed:			
Agency Involved:			
SAC Action Class:			
Incident Reason:	POWER INTERRUPTION		
Incident Summary:	R-M NIAGARA PORT WELLER WPCP: 3712 M3 RAW CHLOR SEWAGE SPILL, PUMP FAIL.		

Site: ***PETE COSCO HAULAGE***
CANAL ROAD 1/2 KM SOUTH TO QUEENSTON ST. CATHARINES CITY ON

Database: ***SPL***

Ref No:	57457	***Discharger Report:***	
Site No:		***Material Group:***	
Incident Dt:	9/17/1991	***Client Type:***	
Year:		***Sector Type:***	
Incident Cause:	OTHER CONTAINER LEAK	***Source Type:***	
Incident Event:		***Nearest Watercourse:***	
Contaminant Code:		***Site Name:***	
Contaminant Name:		***Site Address:***	
Contaminant Limit 1:		***Site District Office:***	
Contam Limit Freq 1:		***Site County/District:***	
Contaminant UN No 1:		***Site Postal Code:***	
Contaminant Qty:		***Site Region:***	
Environment Impact:	POSSIBLE	***Site Municipality:***	18103
Nature of Impact:	Soil contamination	***Site Lot:***	
Receiving Medium:	LAND	***Site Conc:***	
Receiving Env:		***Northing:***	
Health/Env Conseq:		***Easting:***	M.O.E.
MOE Response:		***Site Geo Ref Accu:***	
Dt MOE Arvl on Scn:		***Site Geo Ref Meth:***	
MOE Reported Dt:	9/17/1991	***Site Map Datum:***	
Dt Document Closed:			
Agency Involved:			
SAC Action Class:			
Incident Reason:	OVERSTRESS/OVERPRESSURE		
Incident Summary:	PETE COSCO HAULAGE- HYDRAULIC OIL TO GROUND FROM FRONTEND LOADER.		

Site: ***GENERAL MOTORS OF CANADA LTD.***
DITCH ON WESTSIDE OF CANAL ROAD ST. CATHARINES PLANT 580 WELLAND AVENUE ST. CATHARINES CITY ON

Database: ***SPL***

Ref No:	47065	***Discharger Report:***	
Site No:		***Material Group:***	
Incident Dt:	2/28/1991	***Client Type:***	
Year:		***Sector Type:***	
Incident Cause:	OTHER CONTAINER LEAK	***Source Type:***	
Incident Event:		***Nearest Watercourse:***	
Contaminant Code:		***Site Name:***	
Contaminant Name:		***Site Address:***	
Contaminant Limit 1:		***Site District Office:***	
Contam Limit Freq 1:		***Site County/District:***	
Contaminant UN No 1:		***Site Postal Code:***	
Contaminant Qty:		***Site Region:***	
Environment Impact:	POSSIBLE	***Site Municipality:***	18103
Nature of Impact:	Soil contamination	***Site Lot:***	
Receiving Medium:	LAND	***Site Conc:***	
Receiving Env:		***Northing:***	
Health/Env Conseq:		***Easting:***	M.O.E.
MOE Response:		***Site Geo Ref Accu:***	
Dt MOE Arvl on Scn:		***Site Geo Ref Meth:***	
MOE Reported Dt:	2/28/1991	***Site Map Datum:***	
Dt Document Closed:			
Agency Involved:			
SAC Action Class:			
Incident Reason:	EQUIPMENT FAILURE		
Incident Summary:	GM-CUTTING FLUID TO STORMSEWER AND DITCH.		

Site: ***BELL CANADA***
AT ST. DAVID ST. & GLENRIDGE MOTOR VEHICLE (OPERATING FLUID) ST. CATHARINES CITY ON

Database: ***SPL***

Ref No:	199636	***Discharger Report:***	
Site No:		***Material Group:***	
Incident Dt:	5/1/2001	***Client Type:***	
Year:		***Sector Type:***	
Incident Cause:	PIPE/HOSE LEAK	***Source Type:***	
Incident Event:		***Nearest Watercourse:***	
Contaminant Code:		***Site Name:***	
Contaminant Name:		***Site Address:***	

Contaminant Limit 1:		***Site District Office:***	
Contam Limit Freq 1:		***Site County/District:***	
Contaminant UN No 1:		***Site Postal Code:***	
Contaminant Qty:		***Site Region:***	
Environment Impact:	Not Anticipated	***Site Municipality:***	18103
Nature of Impact:		***Site Lot:***	
Receiving Medium:	Land	***Site Conc:***	
Receiving Env:		***Northing:***	
Health/Env Conseq:		***Easting:***	
MOE Response:		***Site Geo Ref Accu:***	
Dt MOE Arvl on Scn:		***Site Geo Ref Meth:***	
MOE Reported Dt:	5/1/2001	***Site Map Datum:***	
Dt Document Closed:			
Agency Involved:	WORKS & FIRE		
SAC Action Class:			
Incident Reason:	EQUIPMENT FAILURE		
Incident Summary:	BELL CANADA - 200 L OF HYDRAULIC OIL TO ROAD FROM TRUCK.		

Site: ***J.P.POULTRY***
FROM PARKING LOT ON HOGANS ALLEY, TO CREEK AND OUT TO YACHT CLUB TRANSPORT TRUCK (CARGO) ST. CATHARINES CITY ON

Database: ***SPL***

Ref No:	35445	***Discharger Report:***	
Site No:		***Material Group:***	
Incident Dt:	5/29/1990	***Client Type:***	
Year:		***Sector Type:***	
Incident Cause:	OTHER CONTAINER LEAK	***Source Type:***	
Incident Event:		***Nearest Watercourse:***	
Contaminant Code:		***Site Name:***	
Contaminant Name:		***Site Address:***	
Contaminant Limit 1:		***Site District Office:***	
Contam Limit Freq 1:		***Site County/District:***	
Contaminant UN No 1:		***Site Postal Code:***	
Contaminant Qty:		***Site Region:***	
Environment Impact:	NOT ANTICIPATED	***Site Municipality:***	18103
Nature of Impact:		***Site Lot:***	
Receiving Medium:	LAND / WATER	***Site Conc:***	
Receiving Env:		***Northing:***	
Health/Env Conseq:		***Easting:***	F.D., WORKS, MOE
MOE Response:		***Site Geo Ref Accu:***	
Dt MOE Arvl on Scn:		***Site Geo Ref Meth:***	
MOE Reported Dt:	5/29/1990	***Site Map Datum:***	
Dt Document Closed:			
Agency Involved:			
SAC Action Class:			
Incident Reason:	WELD/SEAM FAILURE		
Incident Summary:	J.P. POULTRY-<100 L DIESEL FUEL TO 12 MILE CR.		

Site: ***MOTOR VEHICLE***
NORTHBOUND ALONG GOVERNMENT (CANAL) ROAD FROM CARLETON ST TO LOCK #1 MOTOR VEHICLE (OPERATING FLUID) ST. CATHARINES CITY ON

Database: ***SPL***

Ref No:	117992	***Discharger Report:***	
Site No:		***Material Group:***	
Incident Dt:	9/1/1995	***Client Type:***	
Year:		***Sector Type:***	
Incident Cause:	UNKNOWN	***Source Type:***	
Incident Event:		***Nearest Watercourse:***	
Contaminant Code:		***Site Name:***	
Contaminant Name:		***Site Address:***	
Contaminant Limit 1:		***Site District Office:***	
Contam Limit Freq 1:		***Site County/District:***	
Contaminant UN No 1:		***Site Postal Code:***	
Contaminant Qty:		***Site Region:***	
Environment Impact:	NOT ANTICIPATED	***Site Municipality:***	18103
Nature of Impact:		***Site Lot:***	
Receiving Medium:	LAND / AIR	***Site Conc:***	

Receiving Env:		***Northing:***	
Health/Env Conseq:		***Easting:***	ST CATHARINES WD
MOE Response:		***Site Geo Ref Accu:***	
Dt MOE Arvl on Scn:		***Site Geo Ref Meth:***	
MOE Reported Dt:	9/1/1995	***Site Map Datum:***	
Dt Document Closed:			
Agency Involved:			
SAC Action Class:			
Incident Reason:	UNKNOWN		
Incident Summary:	MOTOR VEHICLE-<50L DIESELTO ROAD. NO SEWERS. ST.CATHARINES WD NOTIFIED		

Site:

lot 21 con 1 ON

Database: ***WWIS***

Well ID:	6603691	***Data Entry Status:***	
Construction Date:		***Data Src:***	1
Primary Water Use:	Domestic	***Date Received:***	6/16/1986
Sec. Water Use:		***Selected Flag:***	Yes
Final Well Status:	Water Supply	***Abandonment Rec:***	
Water Type:		***Contractor:***	3030
Casing Material:		***Form Version:***	1
Audit No:		***Owner:***	
Tag:		***Street Name:***	
Construction Method:		***County:***	NIAGARA (LINCOLN)
Elevation (m):		***Municipality:***	LINCOLN TOWN (LOUTH)
Elevation Reliability:		***Site Info:***	
Depth to Bedrock:		***Lot:***	021
Well Depth:		***Concession:***	01
Overburden/Bedrock:		***Concession Name:***	
Pump Rate:		***Easting NAD83:***	
Static Water Level:		***Northing NAD83:***	
Flowing (Y/N):		***Zone:***	
Flow Rate:		***UTM Reliability:***	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10463291	***Elevation:***	
DP2BR:		***Elevrc:***	
Spatial Status:		***Zone:***	17
Code OB:	o	***East83:***	
Code OB Desc:	Overburden	***Org CS:***	
Open Hole:		***North83:***	
Cluster Kind:		***UTMRC:***	9
Date Completed:	07-MAY-86	***UTMRC Desc:***	unknown UTM
Remarks:		***Location Method:***	na
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932599265
Layer:	4
Color:	6
General Color:	BROWN
Mat1:	05
Most Common Material:	CLAY
Mat2:	81
Other Materials:	SANDY
Mat3:	
Other Materials:	
Formation Top Depth:	10

Formation End Depth: 15
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 932599262
Layer: 1
Color: 6
General Color: BROWN
Mat1: 02
Most Common Material: TOPSOIL
Mat2:
Other Materials:
Mat3:
Other Materials:
Formation Top Depth: 0
Formation End Depth: 1
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 932599266
Layer: 5
Color: 3
General Color: BLUE
Mat1: 05
Most Common Material: CLAY
Mat2:
Other Materials:
Mat3:
Other Materials:
Formation Top Depth: 15
Formation End Depth: 25
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 932599263
Layer: 2
Color: 6
General Color: BROWN
Mat1: 28
Most Common Material: SAND
Mat2:
Other Materials:
Mat3:
Other Materials:
Formation Top Depth: 1
Formation End Depth: 5
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 932599264
Layer: 3
Color: 6
General Color: BROWN
Mat1: 28
Most Common Material: SAND
Mat2:
Other Materials:
Mat3:

Other Materials:
Formation Top Depth: 5
Formation End Depth: 10
Formation End Depth UOM: ft

Method of Construction & Well Use

Method Construction ID: 966603691
Method Construction Code: 6
Method Construction: Boring
Other Method Construction:

Pipe Information

Pipe ID: 11011861
Casing No: 1
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 930752695
Layer: 2
Material: 2
Open Hole or Material: GALVANIZED
Depth From:
Depth To: 25
Casing Diameter: 30
Casing Diameter UOM: inch
Casing Depth UOM: ft

Construction Record - Casing

Casing ID: 930752694
Layer: 1
Material: 3
Open Hole or Material: CONCRETE
Depth From:
Depth To: 15
Casing Diameter: 36
Casing Diameter UOM: inch
Casing Depth UOM: ft

Results of Well Yield Testing

Pump Test ID: 996603691
Pump Set At:
Static Level: 5
Final Level After Pumping:
Recommended Pump Depth: 21
Pumping Rate:
Flowing Rate:
Recommended Pump Rate: 3
Levels UOM: ft
Rate UOM: GPM
Water State After Test Code:
Water State After Test:
Pumping Test Method:
Pumping Duration HR:
Pumping Duration MIN:
Flowing: N

Water Details

Water ID: 933950999
Layer: 2
Kind Code: 1
Kind: FRESH
Water Found Depth: 15
Water Found Depth UOM: ft

Water Details

Water ID: 933950998
Layer: 1
Kind Code: 1
Kind: FRESH
Water Found Depth: 5
Water Found Depth UOM: ft

Site:
lot 22 ON

Database:
WWIS

Well ID: 3803351
Construction Date:
Primary Water Use: Domestic
Sec. Water Use: Livestock
Final Well Status: Water Supply
Water Type:
Casing Material:
Audit No: 42652
Tag:
Construction Method:
Elevation (m):
Elevation Reliability:
Depth to Bedrock:
Well Depth:
Overburden/Bedrock:
Pump Rate:
Static Water Level:
Flowing (Y/N):
Flow Rate:
Clear/Cloudy:

Data Entry Status:
Data Src: 1
Date Received: 2/6/1990
Selected Flag: Yes
Abandonment Rec:
Contractor: 2123
Form Version: 1
Owner:
Street Name:
County: NIAGARA (LINCOLN)
Municipality: LINCOLN TOWN (LOUTH)
Site Info:
Lot: 022
Concession:
Concession Name:
Easting NAD83:
Northing NAD83:
Zone:
UTM Reliability:

Bore Hole Information

Bore Hole ID: 10241016
DP2BR:
Spatial Status:
Code OB: o
Code OB Desc: Overburden
Open Hole:
Cluster Kind:
Date Completed: 12-SEP-89
Remarks:
Elevrc Desc:
Location Source Date:
Improvement Location Source:
Improvement Location Method:
Source Revision Comment:
Supplier Comment:

Elevation:
Elevrc:
Zone: 17
East83:
Org CS:
North83:
UTMRC: 9
UTMRC Desc: unknown UTM
Location Method: na

Overburden and Bedrock Materials Interval

Formation ID: 931747172
Layer: 5
Color: 7
General Color: RED
Mat1: 05
Most Common Material: CLAY

Mat2: 11
Other Materials: GRAVEL
Mat3:
Other Materials:
Formation Top Depth: 49
Formation End Depth: 70
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 931747169
Layer: 2
Color: 2
General Color: GREY
Mat1: 05
Most Common Material: CLAY
Mat2:
Other Materials:
Mat3:
Other Materials:
Formation Top Depth: 3
Formation End Depth: 15
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 931747173
Layer: 6
Color: 7
General Color: RED
Mat1: 05
Most Common Material: CLAY
Mat2: 11
Other Materials: GRAVEL
Mat3:
Other Materials:
Formation Top Depth: 70
Formation End Depth: 72
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 931747171
Layer: 4
Color: 7
General Color: RED
Mat1: 05
Most Common Material: CLAY
Mat2: 12
Other Materials: STONES
Mat3:
Other Materials:
Formation Top Depth: 44
Formation End Depth: 49
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 931747170
Layer: 3
Color: 2
General Color: GREY

Mat1: 05
Most Common Material: CLAY
Mat2: 12
Other Materials: STONES
Mat3:
Other Materials:
Formation Top Depth: 15
Formation End Depth: 44
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 931747168
Layer: 1
Color: 6
General Color: BROWN
Mat1: 05
Most Common Material: CLAY
Mat2:
Other Materials:
Mat3:
Other Materials:
Formation Top Depth: 0
Formation End Depth: 3
Formation End Depth UOM: ft

Method of Construction & Well Use

Method Construction ID: 963803351
Method Construction Code: 4
Method Construction: Rotary (Air)
Other Method Construction:

Pipe Information

Pipe ID: 10789586
Casing No: 1
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 930408108
Layer: 1
Material: 1
Open Hole or Material: STEEL
Depth From:
Depth To: 72
Casing Diameter: 6
Casing Diameter UOM: inch
Casing Depth UOM: ft

Results of Well Yield Testing

Pump Test ID: 993803351
Pump Set At:
Static Level: 27
Final Level After Pumping: 70
Recommended Pump Depth:
Pumping Rate: 15
Flowing Rate:
Recommended Pump Rate: 10
Levels UOM: ft
Rate UOM: GPM

Water State After Test Code: 2
Water State After Test: CLOUDY
Pumping Test Method:
Pumping Duration HR: 1
Pumping Duration MIN: 30
Flowing: N

Water Details

Water ID: 933709252
Layer: 1
Kind Code: 5
Kind: Not stated
Water Found Depth: 70
Water Found Depth UOM: ft

Site:
lot 22 ON

Database:
WWIS

Well ID: 3803410
Construction Date:
Primary Water Use: Livestock
Sec. Water Use:
Final Well Status: Water Supply
Water Type:
Casing Material:
Audit No: 42638
Tag:
Construction Method:
Elevation (m):
Elevation Reliability:
Depth to Bedrock:
Well Depth:
Overburden/Bedrock:
Pump Rate:
Static Water Level:
Flowing (Y/N):
Flow Rate:
Clear/Cloudy:

Data Entry Status:
Data Src: 1
Date Received: 2/19/1991
Selected Flag: Yes
Abandonment Rec:
Contractor: 2123
Form Version: 1
Owner:
Street Name:
County: NIAGARA (LINCOLN)
Municipality: ST CATHARINES CITY
Site Info:
Lot: 022
Concession:
Concession Name:
Easting NAD83:
Northing NAD83:
Zone:
UTM Reliability:

Bore Hole Information

Bore Hole ID: 10241072
DP2BR: 32
Spatial Status:
Code OB: r
Code OB Desc: Bedrock
Open Hole:
Cluster Kind:
Date Completed: 14-JUN-90
Remarks:
Elevrc Desc:
Location Source Date:
Improvement Location Source:
Improvement Location Method:
Source Revision Comment:
Supplier Comment:

Elevation:
Elevrc:
Zone: 17
East83:
Org CS:
North83:
UTMRC: 9
UTMRC Desc: unknown UTM
Location Method: na

Overburden and Bedrock Materials Interval

Formation ID: 931747428
Layer: 4
Color: 7
General Color: RED
Mat1: 17
Most Common Material: SHALE

Mat2:
Other Materials:
Mat3:
Other Materials:
Formation Top Depth: 32
Formation End Depth: 60
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 931747427
Layer: 3
Color: 7
General Color: RED
Mat1: 05
Most Common Material: CLAY
Mat2: 11
Other Materials: GRAVEL
Mat3:
Other Materials:
Formation Top Depth: 14
Formation End Depth: 32
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 931747426
Layer: 2
Color: 7
General Color: RED
Mat1: 05
Most Common Material: CLAY
Mat2:
Other Materials:
Mat3:
Other Materials:
Formation Top Depth: 2
Formation End Depth: 14
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 931747425
Layer: 1
Color: 6
General Color: BROWN
Mat1: 05
Most Common Material: CLAY
Mat2:
Other Materials:
Mat3:
Other Materials:
Formation Top Depth: 0
Formation End Depth: 2
Formation End Depth UOM: ft

Method of Construction & Well Use

Method Construction ID: 963803410
Method Construction Code: 4
Method Construction: Rotary (Air)
Other Method Construction:

Pipe Information

Pipe ID:	10789642
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930408178
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	60
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pump Test ID:	993803410
Pump Set At:	
Static Level:	22
Final Level After Pumping:	60
Recommended Pump Depth:	
Pumping Rate:	1
Flowing Rate:	
Recommended Pump Rate:	1
Levels UOM:	ft
Rate UOM:	GPM
Water State After Test Code:	2
Water State After Test:	CLOUDY
Pumping Test Method:	
Pumping Duration HR:	1
Pumping Duration MIN:	0
Flowing:	N

Water Details

Water ID:	933709326
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	34
Water Found Depth UOM:	ft

Appendix: Database Descriptions

Environmental Risk Information Services (ERIS) can search the following databases. The extent of historical information varies with each database and current information is determined by what is publicly available to ERIS at the time of update. ***Note:*** *Databases denoted with " * " indicates that the database will no longer be updated. See the individual database description for more information.*

Abandoned Aggregate Inventory: Provincial AAGR

The MAAP Program maintains a database of abandoned pits and quarries. Please note that the database is only referenced by lot and concession and city/town location. The database provides information regarding the location, type, size, land use, status and general comments.*

Government Publication Date: Sept 2002*

Aggregate Inventory: Provincial AGR

The Ontario Ministry of Natural Resources maintains a database of all active pits and quarries. The database provides information regarding the registered owner/operator, location name, operation type, approval type, and maximum annual tonnage.

Government Publication Date: Up to Sep 2018

Abandoned Mine Information System: Provincial AMIS

The Abandoned Mines Information System contains data on known abandoned and inactive mines located on both Crown and privately held lands. The information was provided by the Ministry of Northern Development and Mines (MNDM), with the following disclaimer: "the database provided has been compiled from various sources, and the Ministry of Northern Development and Mines makes no representation and takes no responsibility that such information is accurate, current or complete". Reported information includes official mine name, status, background information, mine start/end date, primary commodity, mine features, hazards and remediation.

Government Publication Date: 1800-Nov 2016

Anderson's Waste Disposal Sites: Private ANDR

The information provided in this database was collected by examining various historical documents which aimed to characterize the likely position of former waste disposal sites from 1860 to present. The research initiative behind the creation of this database was to identify those sites that are missing from the Ontario MOE Waste Disposal Site Inventory, as well as to provide revisions and corrections to the positions and descriptions of sites currently listed in the MOE inventory. In addition to historic waste disposal facilities, the database also identifies certain auto wreckers and scrap yards that have been extrapolated from documentary sources. Please note that the data is not warranted to be complete, exhaustive or authoritative. The information was collected for research purposes only.

Government Publication Date: 1860s-Present

Automobile Wrecking & Supplies: Private AUWR

This database provides an inventory of known locations that are involved in the scrap metal, automobile wrecking/recycling, and automobile parts & supplies industry. Information is provided on the company name, location and business type.

Government Publication Date: 1999-Jul 31, 2018

Borehole: Provincial BORE

A borehole is the generalized term for any narrow shaft drilled in the ground, either vertically or horizontally. The information here includes geotechnical investigations or environmental site assessments, mineral exploration, or as a pilot hole for installing piers or underground utilities. Information is from many sources such as the Ministry of Transportation (MTO) boreholes from engineering reports and projects from the 1950 to 1990's in Southern Ontario. Boreholes from the Ontario Geological Survey (OGS) including The Urban Geology Analysis Information System (UGAIS) and the York Peel Durham Toronto (YPDT) database of the Conservation Authority Moraine Coalition. This database will include fields such as location, stratigraphy, depth, elevation, year drilled, etc. For all water well data or oil and gas well data for Ontario please refer to WWIS and OOGW.

Government Publication Date: 1875-Jul 2014

Certificates of Approval: Provincial CA

This database contains the following types of approvals: Air & Noise, Industrial Sewage, Municipal & Private Sewage, Waste Management Systems and Renewable Energy Approvals. The MOE in Ontario states that any facility that releases emissions to the atmosphere, discharges contaminants to ground or surface water, provides potable water supplies, or stores, transports or disposes of waste, must have a Certificate of Approval before it can operate lawfully. Fields include approval number, business name, address, approval date, approval type and status. This database will no longer be updated, as CofA's have been replaced by either Environmental Activity and Sector Registry (EASR) or Environmental Compliance Approval (ECA). Please refer to those individual databases for any information after Oct.31, 2011.

Government Publication Date: 1985-Oct 30, 2011*

Commercial Fuel Oil Tanks: Provincial CFOT

List of commercial underground fuel oil tanks made available by the Fuels Safety Program of the Technical Standards & Safety Authority (TSSA). Ontario Regulation 213/01 of the Technical Standards and Safety Act (2000) requires that all underground tanks be registered with the TSSA. Note: the Fuels Safety Division does not register waste oil tanks in apartments, office buildings, residences, etc., or aboveground gas or diesel tanks. Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of commercial fuel tanks in the province. The TSSA updates information in its system on an ongoing basis; this listing is a copy of the data captured at one moment in time and is hence limited by the record date provided here.

Government Publication Date: Feb 28, 2017

Chemical Register: Private CHEM

This database includes information from both a one time study conducted in 1992 and private source and is a listing of facilities that manufacture or distribute chemicals. The production of these chemical substances may involve one or more chemical reactions and/or chemical separation processes (i.e. fractionation, solvent extraction, crystallization, etc.).

Government Publication Date: 1999-Jul 31, 2018

Compressed Natural Gas Stations: Private CNG

Canada has a network of public access compressed natural gas (CNG) refuelling stations. These stations dispense natural gas in compressed form at 3,000 pounds per square inch (psi), the pressure which is allowed within the current Canadian codes and standards. The majority of natural gas refuelling is located at existing retail gasoline that have a separate refuelling island for natural gas. This list of stations is made available by the Canadian Natural Gas Vehicle Alliance.

Government Publication Date: Dec 2012 - Dec 2018

Inventory of Coal Gasification Plants and Coal Tar Sites: Provincial COAL

This inventory includes both the "Inventory of Coal Gasification Plant Waste Sites in Ontario-April 1987" and the Inventory of Industrial Sites Producing or Using Coal Tar and Related Tars in Ontario-November 1988) collected by the MOE. It identifies industrial sites that produced and continue to produce or use coal tar and other related tars. Detailed information is available and includes: facility type, size, land use, information on adjoining properties, soil condition, site operators/occupants, site description, potential environmental impacts and historic maps available. This was a one-time inventory.*

Government Publication Date: Apr 1987 and Nov 1988*

Compliance and Convictions: Provincial CONV

This database summarizes the fines and convictions handed down by the Ontario courts beginning in 1989. Companies and individuals named here have been found guilty of environmental offenses in Ontario courts of law.

Government Publication Date: 1989-Nov 2018

Certificates of Property Use: Provincial CPU

This is a subset taken from Ontario's Environmental Registry (EBR) database. It will include all CPU's on the registry such as (EPA s. 168.6) - Certificate of Property Use.

Government Publication Date: 1994-Nov 30, 2018

Drill Hole Database: Provincial DRL

The Ontario Drill Hole Database contains information on more than 113,000 percussion, overburden, sonic and diamond drill holes from assessment files on record with the department of Mines and Minerals. Please note that limited data is available for southern Ontario, as it was the last area to be completed. The database was created when surveys submitted to the Ministry were converted in the Assessment File Research Image Database (AFRI) project. However, the degree of accuracy (coordinates) as to the exact location of drill holes is dependent upon the source document submitted to the MNDM. Levels of accuracy used to locate holes are: centering on the mining claim; a sketch of the mining claim; a 1:50,000 map; a detailed company map; or from submitted a "Report of Work".

Government Publication Date: 1886 - Oct 2018

Dry Cleaning Facilities: Federal DRYCLEANERS

List of dry cleaning facilities made available by Environment and Climate Change Canada. Environment and Climate Change Canada's Tetrachloroethylene (Use in Dry Cleaning and Reporting Requirements) Regulations (SOR/2003-79) are intended to reduce releases of tetrachloroethylene to the environment from dry cleaning facilities.

Government Publication Date: Jan 2004-Dec 2016

Environmental Activity and Sector Registry: Provincial EASR

On October 31, 2011, a smarter, faster environmental approvals system came into effect in Ontario. The EASR allows businesses to register certain activities with the ministry, rather than apply for an approval. The registry is available for common systems and processes, to which preset rules of operation can be applied. The EASR is currently available for: heating systems, standby power systems and automotive refinishing. Businesses whose activities aren't subject to the EASR may apply for an ECA (Environmental Compliance Approval), Please see our ECA database.

Government Publication Date: Oct 2011-Dec 31, 2018

Environmental Registry: Provincial EBR

The Environmental Registry lists proposals, decisions and exceptions regarding policies, Acts, instruments, or regulations that could significantly affect the environment. Through the Registry, thirteen provincial ministries notify the public of upcoming proposals and invite their comments. For example, if a local business is requesting a permit, license, or certificate of approval to release substances into the air or water; these are notified on the registry. Data includes: Approval for discharge into the natural environment other than water (i.e. Air) - EPA s. 9, Approval for sewage works - OWRA s. 53(1), and EPA s. 27 - Approval for a waste disposal site. For information regarding Permit to Take Water (PTTW), Certificate of Property Use (CPU) and (ORD) Orders please refer to those individual databases.

Government Publication Date: 1994-Nov 30, 2018

Environmental Compliance Approval: Provincial ECA

On October 31, 2011, a smarter, faster environmental approvals system came into effect in Ontario. In the past, a business had to apply for multiple approvals (known as certificates of approval) for individual processes and pieces of equipment. Today, a business either registers itself, or applies for a single approval, depending on the types of activities it conducts. Businesses whose activities aren't subject to the EASR may apply for an ECA. A single ECA addresses all of a business's emissions, discharges and wastes. Separate approvals for air, noise and waste are no longer required. This database will also include Renewable Energy Approvals. For certificates of approval prior to Nov 1st, 2011, please refer to the CA database. For all Waste Disposal Sites please refer to the WDS database.

Government Publication Date: Oct 2011-Dec 31, 2018

Environmental Effects Monitoring: Federal EEM

The Environmental Effects Monitoring program assesses the effects of effluent from industrial or other sources on fish, fish habitat and human usage of fisheries resources. Since 1992, pulp and paper mills have been required to conduct EEM studies under the Pulp and Paper Effluent Regulations. This database provides information on the mill name, geographical location and sub-lethal toxicity data.

Government Publication Date: 1992-2007*

ERIS Historical Searches: Private EHS

ERIS has compiled a database of all environmental risk reports completed since March 1999. Available fields for this database include: site location, date of report, type of report, and search radius. As per all other databases, the ERIS database can be referenced on both the map and "Statistical Profile" page.

Government Publication Date: 1999-Oct 31, 2018

Environmental Issues Inventory System: Federal EIIS

The Environmental Issues Inventory System was developed through the implementation of the Environmental Issues and Remediation Plan. This plan was established to determine the location and severity of contaminated sites on inhabited First Nation reserves, and where necessary, to remediate those that posed a risk to health and safety; and to prevent future environmental problems. The EIIS provides information on the reserve under investigation, inventory number, name of site, environmental issue, site action (Remediation, Site Assessment), and date investigation completed.

Government Publication Date: 1992-2001*

Emergency Management Historical Event: Provincial EMHE

List of locations of historical occurrences of emergency events, including those assigned to the Ministry of Natural Resources by Order-In-Council (OIC) under the Emergency Management and Civil Protection Act, as well as events where MNR provided requested emergency response assistance. Many of these events will have involved community evacuations, significant structural loss, and/or involvement of MNR emergency response staff. These events fall into one of ten (10) type categories: Dam Failure; Drought / Low Water; Erosion; Flood; Forest Fire; Soil and Bedrock Instability; Petroleum Resource Center Event, EMO Requested Assistance, Continuity of Operations Event, Other Requested Assistance. EMHE record details are reproduced by ERIS under License with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2017.

Government Publication Date: Dec 31, 2016

List of TSSA Expired Facilities: Provincial EXP

List of facilities and tanks - for which there was once a registration - no longer registered with the Fuels Safety Program of the Technical Standards and Safety Authority (TSSA). Includes private fuel outlets, bulk plants, fuel oil tanks, gasoline stations, marinas, propane filling stations, liquid fuel tanks, piping systems, etc. Tanks which have been removed from the ground are included in the expired facilities inventory held by the TSSA. Notes: the Fuels Safety Division did not register private fuel underground/aboveground storage tanks prior to January of 1990, or furnace oil tanks prior to May 1, 2002; nor does the Division register waste oil tanks in apartments, office buildings, residences, etc., or aboveground gas or diesel tanks. Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of expired tanks/tank facilities in the province. The TSSA updates information in its system on an ongoing basis; this listing is hence limited by the record date provided here.

Government Publication Date: Feb 28, 2017

Federal Convictions: Federal FCON

Environment Canada maintains a database referred to as the "Environmental Registry" that details prosecutions under the Canadian Environmental Protection Act (CEPA) and the Fisheries Act (FA). Information is provided on the company name, location, charge date, offence and penalty.

Government Publication Date: 1988-Jun 2007*

Contaminated Sites on Federal Land: Federal FCS

The Federal Contaminated Sites Inventory includes information on known federal contaminated sites under the custodianship of departments, agencies and consolidated Crown corporations as well as those that are being or have been investigated to determine whether they have contamination arising from past use that could pose a risk to human health or the environment. The inventory also includes non-federal contaminated sites for which the Government of Canada has accepted some or all financial responsibility. It does not include sites where contamination has been caused by, and which are under the control of, enterprise Crown corporations, private individuals, firms or other levels of government.

Government Publication Date: Jun 2000-Oct 2018

Fisheries & Oceans Fuel Tanks: Federal FOFT

Fisheries & Oceans Canada maintains an inventory of aboveground & underground fuel storage tanks located on Fisheries & Oceans property or controlled by DFO. Our inventory provides information on the site name, location, tank owner, tank operator, facility type, storage tank location, tank contents & capacity, and date of tank installation.

Government Publication Date: 1964-Sep 2017

Fuel Storage Tank: Provincial FST

List of registered private and retail fuel storage tanks made available by the Fuels Safety Program of the Technical Standards & Safety Authority (TSSA). Ontario Regulation 213/01 of the Technical Standards and Safety Act (2000) requires that all underground tanks be registered with the TSSA. Notes: the Fuels Safety Division did not register private fuel underground/aboveground storage tanks prior to January of 1990, or furnace oil tanks prior to May 1, 2002; nor does the Division register waste oil tanks in apartments, office buildings, residences, etc., or aboveground gas or diesel tanks. Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of fuel storage tanks/tank facilities in the province. The TSSA updates information in its system on an ongoing basis; this listing is hence limited by the record date provided here.

Government Publication Date: Feb 28, 2017

Fuel Storage Tank - Historic: Provincial FSTH

The Fuels Safety Branch of the Ontario Ministry of Consumer and Commercial Relations maintained a database of all registered private fuel storage tanks. Public records of private fuel storage tanks are only available since the registration became effective in September 1989. This information is now collected by the Technical Standards and Safety Authority.

Government Publication Date: Pre-Jan 2010*

Ontario Regulation 347 Waste Generators Summary: Provincial GEN

Regulation 347 of the Ontario EPA defines a waste generation site as any site, equipment and/or operation involved in the production, collection, handling and/or storage of regulated wastes. A generator of regulated waste is required to register the waste generation site and each waste produced, collected, handled, or stored at the site. This database contains the registration number, company name and address of registered generators including the types of hazardous wastes generated. It includes data on waste generating facilities such as: drycleaners, waste treatment and disposal facilities, machine shops, electric power distribution etc. This information is a summary of all years from 1986 including the most currently available data. Some records may contain, within the company name, the phrase "See & Use..." followed by a series of letters and numbers. This occurs when one company is amalgamated with or taken over by another registered company. The number listed as "See & Use", refers to the new ownership and the other identification number refers to the original ownership. This phrase serves as a link between the 2 companies until operations have been fully transferred.

Government Publication Date: 1986-June 30, 2018

Greenhouse Gas Emissions from Large Facilities: Federal GHG

List of greenhouse gas emissions from large facilities made available by Environment Canada. Greenhouse gas emissions in kilotonnes of carbon dioxide equivalents (kt CO2 eq).

Government Publication Date: 2013-Dec 2016

TSSA Historic Incidents: Provincial HINC

List of historic incidences of spills and leaks of diesel, fuel oil, gasoline, natural gas, propane, and hydrogen recorded by the TSSA in their previous incident tracking system. The TSSA's Fuels Safety Program administers the Technical Standards & Safety Act 2000, providing fuel-related safety services associated with the safe transportation, storage, handling and use of fuels such as gasoline, diesel, propane, natural gas and hydrogen. Under this Act, the TSSA regulates fuel suppliers, storage facilities, transport trucks, pipelines, contractors and equipment or appliances that use fuels. Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of historical fuel spills and leaks in the province. This listing is a copy of the data captured at one moment in time and is hence limited by the record date provided here.

Government Publication Date: 2006-June 2009*

Indian & Northern Affairs Fuel Tanks: Federal IAFT

The Department of Indian & Northern Affairs Canada (INAC) maintains an inventory of aboveground & underground fuel storage tanks located on both federal and crown land. Our inventory provides information on the reserve name, location, facility type, site/facility name, tank type, material & ID number, tank contents & capacity, and date of tank installation.

Government Publication Date: 1950-Aug 2003*

TSSA Incidents: Provincial INC

List of spills and leaks of diesel, fuel oil, gasoline, natural gas, propane, and hydrogen reported to the Spills Action Centre (SAC) and made available by the Technical Standards and Safety Authority (TSSA). Under the Technical Standards & Safety Act (2000), the TSSA regulates fuel suppliers, storage facilities, transport trucks, pipelines, contractors, and equipment or appliances that use fuels. Includes incidents from fuel-related hazards such as spills, fires, and explosions. Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of fuel-related leaks, spills, and incidents in the province. The TSSA updates information in its system on an ongoing basis; this listing is hence limited by the record date provided here.

Government Publication Date: Feb 28, 2017

Landfill Inventory Management Ontario: Provincial LIMO

The Landfill Inventory Management Ontario (LIMO) database is updated every year, as the ministry compiles new and updated information. The inventory will include small and large landfills. Additionally, each year the ministry will request operators of the larger landfills complete a landfill data collection form that will be used to update LIMO and will include the following information from the previous operating year. This will include additional information such as estimated amount of total waste received, landfill capacity, estimated total remaining landfill capacity, fill rates, engineering designs, reporting and monitoring details, size of location, service area, approved waste types, leachate of site treatment, contaminant attenuation zone and more. The small landfills will include information such as site owner, site location and certificate of approval # and status.

Government Publication Date: Sep 30, 2017

Canadian Mine Locations: Private MINE

This information is collected from the Canadian & American Mines Handbook. The Mines database is a national database that provides over 290 listings on mines (listed as public companies) dealing primarily with precious metals and hard rocks. Listed are mines that are currently in operation, closed, suspended, or are still being developed (advanced projects). Their locations are provided as geographic coordinates (x, y and/or longitude, latitude). As of 2002, data pertaining to Canadian smelters and refineries has been appended to this database.

Government Publication Date: 1998-2009*

Environmental Penalty Annual Report: Provincial MISA PENALTY

This database contains data from Ontario's annual environmental penalty report published by the Ministry of the Environment and Climate Change. These reports provide information on environmental penalties for land or water violations issued to companies in one of the nine industrial sectors covered by the Municipal Industrial Strategy for Abatement (MISA) regulations.

Government Publication Date: Jan 1, 2011 - Dec 31, 2017

Mineral Occurrences: Provincial MNR

In the early 70's, the Ministry of Northern Development and Mines created an inventory of approximately 19,000 mineral occurrences in Ontario, in regard to metallic and industrial minerals, as well as some information on building stones and aggregate deposits. Please note that the "Horizontal Positional Accuracy" is approximately +/- 200 m. Many reference elements for each record were derived from field sketches using pace or chain/tape measurements against claim posts or topographic features in the area. The primary limiting factor for the level of positional accuracy is the scale of the source material. The testing of horizontal accuracy of the source materials was accomplished by comparing the plan metric (X and Y) coordinates of that point with the coordinates of the same point as defined from a source of higher accuracy.

Government Publication Date: 1846-Jan 2018

National Analysis of Trends in Emergencies System (NATES): Federal NATE

In 1974 Environment Canada established the National Analysis of Trends in Emergencies System (NATES) database, for the voluntary reporting of significant spill incidents. The data was to be used to assist in directing the work of the emergencies program. NATES ran from 1974 to 1994. Extensive information is available within this database including company names, place where the spill occurred, date of spill, cause, reason and source of spill, damage incurred, and amount, concentration, and volume of materials released.

Government Publication Date: 1974-1994*

Non-Compliance Reports: Provincial NCPL

The Ministry of the Environment provides information about non-compliant discharges of contaminants to air and water that exceed legal allowable limits, from regulated industrial and municipal facilities. A reported non-compliance failure may be in regard to a Control Order, Certificate of Approval, Sectoral Regulation or specific regulation/act.

Government Publication Date: Dec 31, 2016

National Defense & Canadian Forces Fuel Tanks: Federal NDFT

The Department of National Defense and the Canadian Forces maintains an inventory of all aboveground & underground fuel storage tanks located on DND lands. Our inventory provides information on the base name, location, tank type & capacity, tank contents, tank class, date of tank installation, date tank last used, and status of tank as of May 2001. This database will no longer be updated due to the new National Security protocols which have prohibited any release of this database.

Government Publication Date: Up to May 2001*

National Defense & Canadian Forces Spills: Federal NDSP

The Department of National Defense and the Canadian Forces maintains an inventory of spills to land and water. All spill sites have been classified under the "Transportation of Dangerous Goods Act - 1992". Our inventory provides information on the facility name, location, spill ID #, spill date, type of spill, as well as the quantity of substance spilled & recovered.

Government Publication Date: Mar 1999-Apr 2018

National Defence & Canadian Forces Waste Disposal Sites: Federal NDWD

The Department of National Defence and the Canadian Forces maintains an inventory of waste disposal sites located on DND lands. Where available, our inventory provides information on the base name, location, type of waste received, area of site, depth of site, year site opened/closed and status.

Government Publication Date: 2001-Apr 2007*

National Energy Board Pipeline Incidents: Federal NEBI

Locations of pipeline incidents from 2008 to present, made available by the National Energy Board (NEB). Includes incidents reported under the Onshore Pipeline Regulations and the Processing Plant Regulations related to pipelines under federal jurisdiction, does not include incident data related to pipelines under provincial or territorial jurisdiction.

Government Publication Date: 2008-Jun 30, 2018

National Energy Board Wells: Federal NEBW

The NEBW database contains information on onshore & offshore oil and gas wells that are outside provincial jurisdiction(s) and are thereby regulated by the National Energy Board. Data is provided regarding the operator, well name, well ID No./UWI, status, classification, well depth, spud and release date.

Government Publication Date: 1920-Feb 2003*

National Environmental Emergencies System (NEES): Federal NEES

In 2000, the Emergencies program implemented NEES, a reporting system for spills of hazardous substances. For the most part, this system only captured data from the Atlantic Provinces, some from Quebec and Ontario and a portion from British Columbia. Data for Alberta, Saskatchewan, Manitoba and the Territories was not captured. However, NEES is also a repository for previous Environment Canada spill datasets. NEES is composed of the historic datasets ' or Trends ' which dates from approximately 1974 to present. NEES Trends is a compilation of historic databases, which were merged and includes data from NATES (National Analysis of Trends in Emergencies System), ARTS (Atlantic Regional Trends System), and NEES. In 2001, the Emergencies Program determined that variations in reporting regimes and requirements between federal and provincial agencies made national spill reporting and trend analysis difficult to achieve. As a consequence, the department has focused efforts on capturing data on spills of substances which fall under its legislative authority only (CEPA and FA). As such, the NEES database will be decommissioned in December 2004.

Government Publication Date: 1974-2003*

National PCB Inventory: Federal NPCB

Environment Canada's National PCB inventory includes information on in-use PCB containing equipment in Canada including federal, provincial and private facilities. Federal out-of-service PCB containing equipment and PCB waste owned by the federal government or by federally regulated industries such as airlines, railway companies, broadcasting companies, telephone and telecommunications companies, pipeline companies, etc. are also listed. Although it is not Environment Canada's mandate to collect data on non-federal PCB waste, the National PCB inventory includes some information on provincial and private PCB waste and storage sites. Some addresses provided may be Head Office addresses and are not necessarily the location of where the waste is being used or stored.

Government Publication Date: 1988-2008*

National Pollutant Release Inventory: Federal NPRI

Environment Canada has defined the National Pollutant Release Inventory ("NPRI") as a federal government initiative designed to collect comprehensive national data regarding releases to air, water, or land, and waste transfers for recycling for more than 300 listed substances.

Government Publication Date: 1993-May 2017

Oil and Gas Wells: Private OGW

The Nickle's Energy Group (publisher of the Daily Oil Bulletin) collects information on drilling activity including operator and well statistics. The well information database includes name, location, class, status and depth. The main Nickle's database is updated on a daily basis, however, this database is updated on a monthly basis. More information is available at www.nickles.com.

Government Publication Date: 1988-August 31, 2018

Ontario Oil and Gas Wells: Provincial OOGW

In 1998, the MNR handed over to the Ontario Oil, Gas and Salt Resources Corporation, the responsibility of maintaining a database of oil and gas wells drilled in Ontario. The OGSR Library has over 20,000+ wells in their database. Information available for all wells in the ERIS database include well owner/operator, location, permit issue date, and well cap date, license No., status, depth and the primary target (rock unit) of the well being drilled. All geology/stratigraphy table information, plus all water table information is also provide for each well record.

Government Publication Date: 1800-May 2018

Inventory of PCB Storage Sites: Provincial OPCB

The Ontario Ministry of Environment, Waste Management Branch, maintains an inventory of PCB storage sites within the province. Ontario Regulation 11/82 (Waste Management - PCB) and Regulation 347 (Generator Waste Management) under the Ontario EPA requires the registration of inactive PCB storage equipment and/or disposal sites of PCB waste with the Ontario Ministry of Environment. This database contains information on: 1) waste quantities; 2) major and minor sites storing liquid or solid waste; and 3) a waste storage inventory.

Government Publication Date: 1987-Oct 2004; 2012-Dec 2013

Orders: Provincial ORD

This is a subset taken from Ontario's Environmental Registry (EBR) database. It will include all Orders on the registry such as (EPA s. 17) - Order for remedial work, (EPA s. 18) - Order for preventative measures, (EPA s. 43) - Order for removal of waste and restoration of site, (EPA s. 44) - Order for conformity with Act for waste disposal sites, (EPA s. 136) - Order for performance of environmental measures.

Government Publication Date: 1994-Nov 30, 2018

Canadian Pulp and Paper: Private PAP

This information is part of the Pulp and Paper Canada Directory. The Directory provides a comprehensive listing of the locations of pulp and paper mills and the products that they produce.

Government Publication Date: 1999, 2002, 2004, 2005, 2009-2014

Parks Canada Fuel Storage Tanks: Federal PCFT

Canadian Heritage maintains an inventory of known fuel storage tanks operated by Parks Canada, in both National Parks and at National Historic Sites. The database details information on site name, location, tank install/removal date, capacity, fuel type, facility type, tank design and owner/operator.

Government Publication Date: 1920-Jan 2005*

Pesticide Register: Provincial PES

The Ontario Ministry of the Environment and Climate Change maintains a database of licensed operators and vendors of registered pesticides.

Government Publication Date: 1988-Mar 2018

TSSA Pipeline Incidents: Provincial PINC

List of pipeline incidents (strikes, leaks, spills) made available by the Technical Standards and Safety Authority (TSSA). Under the Technical Standards & Safety Act (2000), the TSSA regulates fuel suppliers, storage facilities, transport trucks, pipelines, contractors, and equipment or appliances that use fuels. Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of pipeline incidents in the province. The TSSA updates information in its system on an ongoing basis; this listing is hence limited by the record date provided here.

Government Publication Date: Feb 28, 2017

Private and Retail Fuel Storage Tanks: Provincial PRT

The Fuels Safety Branch of the Ontario Ministry of Consumer and Commercial Relations maintained a database of all registered private fuel storage tanks and licensed retail fuel outlets. This database includes an inventory of locations that have gasoline, oil, waste oil, natural gas and/or propane storage tanks on their property. The MCCR no longer collects this information. This information is now collected by the Technical Standards and Safety Authority (TSSA).

Government Publication Date: 1989-1996*

Permit to Take Water: Provincial PTTW

This is a subset taken from Ontario's Environmental Registry (EBR) database. It will include all PTTW's on the registry such as OWRA s. 34 - Permit to take water.

Government Publication Date: 1994-Nov 30, 2018

Ontario Regulation 347 Waste Receivers Summary: Provincial REC

Part V of the Ontario Environmental Protection Act ("EPA") regulates the disposal of regulated waste through an operating waste management system or a waste disposal site operated or used pursuant to the terms and conditions of a Certificate of Approval or a Provisional Certificate of Approval. Regulation 347 of the Ontario EPA defines a waste receiving site as any site or facility to which waste is transferred by a waste carrier. A receiver of regulated waste is required to register the waste receiving facility. This database represents registered receivers of regulated wastes, identified by registration number, company name and address, and includes receivers of waste such as: landfills, incinerators, transfer stations, PCB storage sites, sludge farms and water pollution control plants. This information is a summary of all years from 1986 including the most currently available data.

Government Publication Date: 1986-2016

Record of Site Condition: Provincial RSC

The Record of Site Condition (RSC) is part of the Ministry of the Environment's Brownfields Environmental Site Registry. Protection from environmental cleanup orders for property owners is contingent upon documentation known as a record of site condition (RSC) being filed in the Environmental Site Registry. In order to file an RSC, the property must have been properly assessed and shown to meet the soil, sediment and groundwater standards appropriate for the use (such as residential) proposed to take place on the property. The Record of Site Condition Regulation (O. Reg. 153/04) details requirements related to site assessment and clean up.
RSCs filed after July 1, 2011 will also be included as part of the new (O.Reg. 511/09).

Government Publication Date: 1997-Sept 2001, Oct 2004-Sep 2018

Retail Fuel Storage Tanks: Private RST

This database includes an inventory of retail fuel outlet locations (including marinas) that have on their property gasoline, oil, waste oil, natural gas and / or propane storage tanks.

Government Publication Date: 1999-Jul 31, 2018

Scott's Manufacturing Directory: Private SCT

Scott's Directories is a data bank containing information on over 200,000 manufacturers across Canada. Even though Scott's listings are voluntary, it is the most comprehensive database of Canadian manufacturers available. Information concerning a company's address, plant size, and main products are included in this database.

Government Publication Date: 1992-Mar 2011*

Ontario Spills: Provincial SPL

This database identifies information such as location (approximate), type and quantity of contaminant, date of spill, environmental impact, cause, nature of impact, etc. Information from 1988-2002 was part of the ORIS (Occurrence Reporting Information System). The SAC (Spills Action Centre) handles all spills reported in Ontario. Regulations for spills in Ontario are part of the MOE's Environmental Protection Act, Part X.

Government Publication Date: 1988-Sep 2018

Wastewater Discharger Registration Database: Provincial SRDS

Information under this heading is combination of the following 2 programs. The Municipal/Industrial Strategy for Abatement (MISA) division of the Ontario Ministry of Environment maintained a database of all direct dischargers of toxic pollutants within nine sectors including: Electric Power Generation; Mining; Petroleum Refining; Organic Chemicals; Inorganic Chemicals; Pulp & Paper; Metal Casting; Iron & Steel; and Quarries. All sampling information is now collected and stored within the Sample Result Data Store (SRDS).

Government Publication Date: 1990-Dec 31, 2016

Anderson's Storage Tanks: Private TANK

The information provided in this database was collected by examining various historical documents, which identified the location of former storage tanks, containing substances such as fuel, water, gas, oil, and other various types of miscellaneous products. Information is available in regard to business operating at tank site, tank location, permit year, permit & installation type, no. of tanks installed & configuration and tank capacity. Data contained within this database pertains only to the city of Toronto and is not warranted to be complete, exhaustive or authoritative. The information was collected for research purposes only.

Government Publication Date: 1915-1953*

Transport Canada Fuel Storage Tanks: Federal TCFT

List of fuel storage tanks currently or previously owned or operated by Transport Canada. This inventory also includes tanks on The Pickering Lands, which refers to 7,530 hectares (18,600 acres) of land in Pickering, Markham, and Uxbridge owned by the Government of Canada since 1972; properties on this land has been leased by the government since 1975, and falls under the Site Management Policy of Transport Canada, but is administered by Public Works and Government Services Canada. This inventory provides information on the site name, location, tank age, capacity and fuel type.

Government Publication Date: 1970-Aug 2017

TSSA Variances for Abandonment of Underground Storage Tanks: Provincial VAR

List of variances granted for abandoned tanks. Under the Technical Standards and Safety Authority (TSSA) Liquid Fuels Handling Code and Fuel Oil Code, all underground storage tanks must be removed within two years of disuse. If removal of a tank is not feasible, an application may be sought for a variance from this code requirement.
Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of tank variances in the province. The TSSA updates information in its system on an ongoing basis; this listing is hence limited by the record date provided here.

Government Publication Date: Feb 28, 2017

Waste Disposal Sites - MOE CA Inventory: Provincial WDS

The Ontario Ministry of Environment, Waste Management Branch, maintains an inventory of known open (active or inactive) and closed disposal sites in the Province of Ontario. Active sites maintain a Certificate of Approval, are approved to receive and are receiving waste. Inactive sites maintain Certificate(s) of Approval but are not receiving waste. Closed sites are not receiving waste. The data contained within this database was compiled from the MOE's Certificate of Approval database. Locations of these sites may be cross-referenced to the Anderson database described under ERIS's Private Source Database section, by the CA number. All new Environmental Compliance Approvals handed out after Oct 31, 2011 for Waste Disposal Sites will still be found in this database.

Government Publication Date: Oct 2011-Dec 31, 2018

Waste Disposal Sites - MOE 1991 Historical Approval Inventory: Provincial WDSH

In June 1991, the Ontario Ministry of Environment, Waste Management Branch, published the "June 1991 Waste Disposal Site Inventory", of all known active and closed waste disposal sites as of October 30st, 1990. For each "active" site as of October 31st 1990, information is provided on site location, site/CA number, waste type, site status and site classification. For each "closed" site as of October 31st 1990, information is provided on site location, site/CA number, closure date and site classification. Locations of these sites may be cross-referenced to the Anderson database described under ERIS's Private Source Database section, by the CA number.

Government Publication Date: Up to Oct 1990*

Water Well Information System: Provincial WWIS

This database describes locations and characteristics of water wells found within Ontario in accordance with Regulation 903. It includes such information as coordinates, construction date, well depth, primary and secondary use, pump rate, static water level, well status, etc. Also included are detailed stratigraphy information, approximate depth to bedrock and the approximate depth to the water table.

Government Publication Date: Dec 31, 2017

Definitions

Database Descriptions: This section provides a detailed explanation for each database including: source, information available, time coverage, and acronyms used. They are listed in alphabetic order.

Detail Report: This is the section of the report which provides the most detail for each individual record. Records are summarized by location, starting with the project property followed by records in closest proximity.

Distance: The distance value is the distance between plotted points, not necessarily the distance between the sites' boundaries. All values are an approximation.

Direction: The direction value is the compass direction of the site in respect to the project property and/or center point of the report.

Elevation: The elevation value is taken from the location at which the records for the site address have been plotted. All values are an approximation. Source: Google Elevation API.

Executive Summary: This portion of the report is divided into 3 sections:

'Report Summary'- Displays a chart indicating how many records fall on the project property and, within the report search radii.

'Site Report Summary'-Project Property'- This section lists all the records which fall on the project property. For more details, see the 'Detail Report' section.

'Site Report Summary-Surrounding Properties'- This section summarizes all records on adjacent properties, listing them in order of proximity from the project property. For more details, see the 'Detail Report' section.

Map Key: The map key number is assigned according to closest proximity from the project property. Map Key numbers always start at #1. The project property will always have a map key of '1' if records are available. If there is a number in brackets beside the main number, this will indicate the number of records on that specific property. If there is no number in brackets, there is only one record for that property.

The symbol and colour used indicates 'elevation': the red inverted triangle will dictate 'ERIS Sites with Lower Elevation', the yellow triangle will dictate 'ERIS Sites with Higher Elevation' and the orange square will dictate 'ERIS Sites with Same Elevation.'

Unplottables: These are records that could not be mapped due to various reasons, including limited geographic information. These records may or may not be in your study area, and are included as reference.

Appendix H
Aerial Photographs











Appendix I
Topographic Map



Ontario Base Mapping (OBM) Data

Order No. 20160816071

- Spot Height (metre)
- Building Point
- Towers
- Utility Site Point
- Misc. Line
- Railroads
- Roads
- Trail
- Transportation Structure
- Utility Line
- Water Structure
- Drainage Line Feature
- River or Stream
- Airports
- Tanks
- Building to Scale
- Contour Line
- Pit or Quarry
- Waterbody
- Wetlands
- Concession
- Lots
- Municipalitiy
- Land Ownership
- Wooded Area
- Conservation Authority
- Conservation Area
- Municipal Park
- Provincial Park
- National Park
- Nature Reserve

Appendix J
Photographs of the Buildings and Property



View looking south along the west side of Site



View looking west along the north side of Site, showing the Sales Office



View looking south along the west side of Site, showing the Sales Office and Jail House



View looking north showing the central portion of Site



View looking south showing the west side of Site



View looking south showing the central portion of Site and the north side of the Hotel



View of the Site as seen from across the Canal



View looking south, showing the Jail House



View looking north showing the Jail House



View of the interior of the Jail House



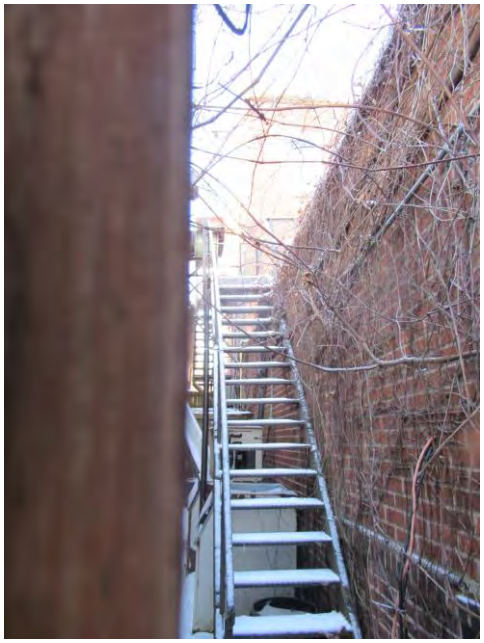
View of the interior of the Jail House, showing the former electrical panel



View looking up inside of the Jail House



View looking southeast, showing the Hotel



View looking south along the east side of the Hotel



View looking south, showing the north wall of the Hotel



View looking northwest showing the south wall of the Hotel



The inside of the Hotel, showing the general condition of the main floor



The inside of the Hotel, showing the general condition of the main floor



The inside of the Hotel, showing the stairwell to the basement



View looking up from the main floor inside of the Hotel



The former electrical room inside of the Hotel



View looking northwest at the fireplace located in the northwest corner of the Hotel



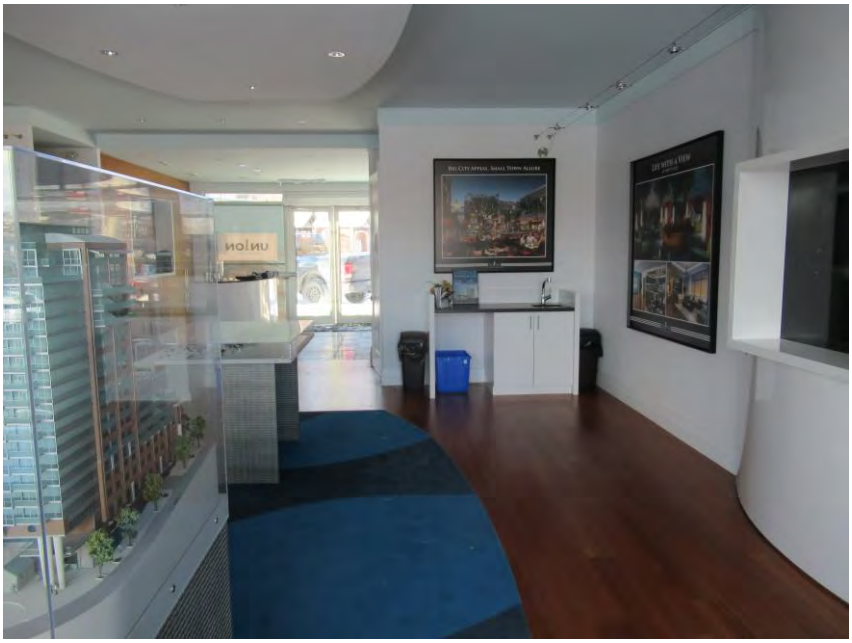
View looking south along the north side of Site, showing the Sales Office



View looking northwest along the east side of Site, showing the Sales Office



View looking north inside of the Sales Office



View looking south inside of the Sales Office



View looking east inside of the Sales Office



View looking north, showing Hogan's Alley and Lakeside Park



View looking northeast, showing adjacent property to the east



View looking south along Lakeport Road, showing adjacent properties to the east



View looking north along Main Street, showing the Municipal Pump House



View looking southwest, showing Main Street and adjacent properties to the west



View looking north, showing Hogan's Alley and adjacent properties to the east



View looking west, showing Lock Street and adjacent properties to the south



View looking north, showing adjacent property to the east



View looking northeast, showing Lock Street and adjacent properties to the east

about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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January 7, 2018 Reference No. 11131634

Mr. Jim Frank, P.Eng., MBA
Rankin Construction Inc.
222 Martindale Road, Box 1116
St. Catharines, Ontario L2R 7A3

Dear Mr. Frank:

Re: Environmental Screening
Union Waterfront Property – Port Dalhousie
16 Lock Street and 12 Lakeport Road
Port Dalhousie, Ontario

1. Introduction

GHD Limited (GHD) was retained by Rankin Construction Inc. (Rankin) to conduct an environmental screening investigation of two parcels of land located at 16 Lock Street and 12 Lakeport Road in Port Dalhousie, Ontario (Property or Site). It is GHD's understanding that Rankin has entered into an agreement to purchase the Property for the purpose of residential/commercial redevelopment, subject to the findings of environmental screening investigations.

The purpose of this environmental investigation is to screen for the presence of gross environmental impairment at the Site preparatory to Rankin waiving its environmental conditions associated with its offer to purchase the Property. It is noted that these investigations are not intended to replace thorough environmental due diligence which would normally include a Phase I Environmental Site Assessment and a Phase II Environmental Site Assessment. Due to the limited timeframe available in which waive environmental conditions, Rankin requested the completion of investigations that would provide a screening level assessment of groundwater quality (widespread Site contamination of groundwater and/or off-Site migration of contaminated groundwater) at the Site and limited soil quality data. It is understood that Rankin will use the results of this screening level assessment to assess whether or not to waive its environmental conditions in its offer to purchase the Property.

2. Scope of Work

As there was limited time within which to conduct proper inquiry into environmental conditions at the Site, GHD's scope of work was limited to screening groundwater quality at the Site, with particular emphasis on the downgradient Property boundary, and to collect soil samples for laboratory analyses. The scope of work conducted as part of the environmental screening investigations included the following:

- Review of existing reports for the Property to determine geological conditions and determine the direction of groundwater flow across the Site and to critically review information generated from limited soil vapour investigations previously conducted

- Review of historical aerial imagery for the Site as well as historical fire insurance plans to identify historical operations at the Site that are of environmental significance
- Conducting a Site reconnaissance to identify the existence of groundwater monitoring wells previously installed at the Site and to confirm the locations of three new groundwater monitoring wells to be installed by GHD on behalf of Rankin
- Coordination of laboratory analytical services, underground utility subcontractor services and drilling subcontractor services
- Advancing three boreholes at the Site, collection of soil samples from each of the three boreholes and submission of those samples for laboratory analyses
- Installation of three new groundwater monitoring wells in each of the three new monitoring wells near the downgradient Property boundary
- Determination of the depth to groundwater at newly installed wells and existing well locations
- Development of newly installed groundwater monitoring wells and purging of existing groundwater monitoring wells preparatory to groundwater sample collection
- Collection of groundwater samples and submission of those samples for laboratory analyses
- Reporting, including an assessment of existing and new field data as well as laboratory analytical data

3. Background

3.1 Current and Former Site Use

The 12 Lakeport Road parcel is located within 30 metres of a marina on Lake Ontario. The 16 Lock Street parcel is located west of 12 Lakeport Road across a right-of-way known as Hogan's Alley and is more than 30 metres removed from the marina. The 16 Lock Street parcel is approximately 1 acre in size while the 12 Lakeport Road parcel is approximately 0.2 acres in size. The Site location is shown on Figure 1 and a Site Plan is shown on Figure 2. The north portion of the16 Lock Street parcel is occupied by a former Jail House (heritage building) and a former residential sales office. The southern portion of this parcel is occupied by a vacant three story building. The remainder of this parcel is vacant with buildings formerly occupying the western portion having been demolished between 2012 and 2015. The 12 Lakeport Road parcel is vacant with the commercial building formerly occupying this parcel having been demolished between 2012 and 2015.

A review of historical fire insurance plans of the Site dated 1905, 1922 and 1962 indicate that the Property was formerly occupied by hotels, ice houses, and residential dwellings. Copies of the historical fire insurance plans have been included as Attachment A.

3.2 Topography, Geology and Hydrogeology

Relevant documents made available to GHD as part of the environmental screening investigations included:

- A July 8, 2004 report entitled Geotechnical Investigation, Proposed Commercial Development, Port Dalhousie, Ontario prepared by Soil-Mat Engineers and Consultants for Port Dalhousie Vitalization Corporation
- An August 27, 2010 letter entitled Supplemental Geotechnical Report, Groundwater Considerations, Proposed Port Place Development, Port Dalhousie, Ontario prepared by Soil-Mat Engineers and Consultants for Port Dalhousie Vitalization Corporation

These reports provided information regarding topography, overburden and bedrock geology as well as the depth to groundwater at the Site, which informed GHD in its design of the environmental screening investigations. Through a review of these reports and an inspection of the Site, GHD was able to confirm the current presence of one groundwater pumping well, two overburden groundwater wells and one bedrock groundwater well at the Site. GHD was able to incorporate these existing wells into the environmental screening investigations.

The Site topography generally slopes downwards in a northerly direction towards Lake Ontario from approximately 83.5 metres above mean sea level (m AMSL) to 76.5 m AMSL[1]. A review of the quaternary geology of the Site indicates that the overburden consists of predominantly fill, with some Lake Ontario beach and sand deposits and silty fine sand[2]. Bedrock beneath the overburden material consists of shale of the Queenston Formation[3].

The stratigraphy encountered in the boreholes advanced at the Site generally consisted of approximately 0.05 metres of topsoil, underlain by clayey silt and silt/sandy silt fill. Some debris including brick fragments, concrete fragments, glass and wood is present. Shale bedrock was encountered between 69 and 70 m AMSL. Copies of the stratigraphic logs are included as Attachment B.

Peat was encountered in boreholes advanced in the northern portion of the Site. Previous reports indicated the presence of elevated methane gas readings in this vicinity that were attributed to decaying peat. It is noted however, that the methodology employed to obtain methane gas readings was not reliable as the boreholes from which the methane readings were taken were not properly purged prior to taking methane gas measurements.

Groundwater elevation data presented in July 2004 indicates that overburden groundwater flow is generally in northerly direction towards Lake Ontario.

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[1] Topographic Survey of Lots 3 to 14, (Incl.) and Lot 16, Part of Lot 2, All of Hogan's Alley Registrar's Compiled Plan 696, 1:250, Mantha (2016)

[2] Quaternary Geology of the Niagara Area, Map P.764, Bernier, 1:50,000 Ontario Division of Mines

[3] Bedrock Geology of Ontario, Map 2544, 1:1,000,000, Ministry of Northern Development and Mines

4. Field Program

Between December 6, 2018 and January 2, 2019 GHD conducted the following activities at the Site.

4.1 Site Reconnaissance

Upon review of existing reports made available to GHD, a Site reconnaissance was conducted to confirm the presence or absence of existing groundwater monitoring wells. Through the inspection, GHD confirmed the presence of an existing pumping well (PW-1) and three existing monitoring wells (BH-103, BH105 and BH-106). The location of these wells is shown on Figure 2. Based on the location of the existing wells, GHD proposed to install three additional wells at the downgradient Property boundary. These wells are identified as MW1-18, MW2-18 and MW3-18 on Figure 2.

4.2 Soil Sample Collection

GHD retained Aardvark Drilling Inc. (Aardvark) and directed the advancement of three boreholes (MW1-18, MW2-18 and MW3-18) to facilitate soil screening, sample collection and the installation of monitoring wells on December 19, 2018. The three boreholes were advanced by Aardvark using a truck-mounted conventional drill-rig equipped with hollow-stem augers to depths ranging from 4.57 to 5.94 metres below ground surface (m BGS). The locations of the boreholes are shown on Figure 2.

Soils encountered during the investigation were logged using the Unified Soil Classification System (USCS), and were qualitatively and quantitatively screened for the presence of impact. Qualitative screening was based on visual and olfactory observations, while quantitative screening was based on the presence of undifferentiated VOCs in the headspace of soil samples collected as measured using a calibrated MiniRAE 2000 photoionization detector (PID). Soil samples exhibiting the strongest field evidence of impact were selected for laboratory analyses.

A total of four soil samples, including one field duplicate, were collected from three borehole locations for metals, volatile organic compounds (VOCs), petroleum hydrocarbons (PHCs), polychlorinated biphenyls (PCBs), and polycyclic aromatic hydrocarbons (PAHs) analyses. A field sample key is presented in Table 1.

All soil samples were placed into pre-cleaned sample bottles provided by the laboratory. The samples were packed on ice in a cooler and submitted under chain-of-custody protocol to Maxxam Analytics Inc. located in Mississauga, Ontario for analysis.

4.3 Monitoring Well Installation

Following the advancement of the three boreholes on December 19, 2018, Aardvark instrumented each borehole as a monitoring well using a 51 millimetre (mm) diameter polyvinyl chloride (PVC) pipe with a 3.05 metre (m) screen to facilitate groundwater monitoring and sample collection.

The three monitoring wells (MW1-18, MW2-18 and MW3-18) were installed in addition to the four existing on-Site monitoring wells (BH-103, BH-105, BH-106 and PW-1) installed in November, 2009 by Soil-Mat

Engineers and Consultants Ltd. The locations of the monitoring wells are shown on Figure 2. The construction details of the monitoring wells are presented in Table 2. Copies of monitoring well stratigraphic and instrumentation logs for monitoring wells installed by GHD are included as Attachment B.

4.4 Groundwater Sample Collection

Groundwater samples were collected by GHD from six of the seven on-Site groundwater monitoring wells in December 2018 for laboratory analysis of metals, VOCs, PHCs, and PAHs. A groundwater sample was not collected from PW-1 as it could not be properly developed. Prior to sample collection, monitoring wells were developed by removing a minimum of three well volumes of groundwater using dedicated Waterra™ tubing and foot valve. Groundwater parameters including pH, temperature, conductivity, and turbidity were monitored using a calibrated Horiba™ water quality checker during well development to confirm well stabilization. Groundwater was qualitatively screened for visual and olfactory evidence of chemical and/or petroleum impact during development activities. No visual or olfactory evidence of chemical or petroleum impact was identified. No free product was found on the surface of the groundwater within the monitoring wells.

All groundwater samples were placed into pre-cleaned sample bottles provided by the laboratory. The samples were submitted under chain-of-custody protocol to Maxxam Analytics Inc., in Mississauga, Ontario for analysis.

4.5 Groundwater Elevations

Groundwater elevation data was collected at seven on-Site monitoring wells on January 2, 2018. The depth to groundwater was measured at each well location relative to the top of riser, which was surveyed for vertical control with respect to benchmarks provided on a topographic survey completed in November 2016[1]. No free product was found on the surface of the groundwater within the monitoring wells.

Together with the top of riser elevation, the depth to groundwater was used to determine the groundwater elevation/potentiometric surface of groundwater at each monitoring well location. A summary of the groundwater level measurements and groundwater elevations are provided in Table 3. Groundwater elevations ranged from 75.05 m AMSL at BH-103 to 77.08 m AMSL at MW1-18.

5. Analytical Data Assessment

5.1 Environmental Quality Assessment guidelines

Based on a review of the Site conditions, it was determined that the 12 Lakeport Road parcel of the Property is located within 30 metres of a water body. As such, soil and groundwater quality analytical data generated from this parcel was assessed with respect to:

- Table 9 full depth generic site condition standards for Use within 30 metres of a water body in a non-potable groundwater condition, residential/ parkland/ institutional/ industrial/ commercial/ community property use, developed by the Ontario Ministry of the Environment, Conservation and Parks (MECP)

and presented in “Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (MECP, April 15, 2011).”

As the 16 Lock Street parcel of the Property is not located within 30 metres of a water body, soil and groundwater quality analytical data generated from this parcel was assessed with respect to:

- Table 3 full depth generic site condition standards in a non-potable groundwater condition, residential/parkland/institutional property use, developed by the Ontario Ministry of the Environment, Conservation and Parks (MECP) and presented in “Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (MECP, April 15, 2011).”

5.2 Groundwater Quality Analytical Data

GHD collected nine groundwater samples including one field duplicate and two trip blanks from six monitoring well locations identified as MW1-18, MW2-18, MW3-18, BH-103, BH-105 and BH-106 for analysis of metals, VOCs, PHCs, and PAHs. A summary of the laboratory analytical data is provided in Table 4 along with the applicable MECP Table 3 and Table 9 standards for comparative reference. A copy of the laboratory analytical reports is provided in Attachment C. Quality assurance/quality control data indicate that the groundwater sample analytical data are suitable for use without qualification.

Based on a review of the laboratory analytical data, as presented in Table 4, no exceedances of the cited groundwater quality standards were identified in any of the six wells.

5.3 Soil Quality Analytical Data

GHD collected four soil samples including one field duplicate from three borehole locations identified as MW1-18, MW2-18 and MW3-18 for analysis of metals, VOCs, PHCs, PCBs and PAHs. A summary of the laboratory analytical data is provided in Table 5 along with the applicable MECP Table 3 and Table 9 standards for comparative reference. A copy of the laboratory analytical reports is provided in Attachment C. Quality assurance/quality control data indicate that the soil quality analytical data are suitable for use without qualification.

Based on a review of the soil quality analytical data, as presented in Table 5, soils containing concentrations of metals, PAHs and VOCs in excess of the applicable soil quality standards were identified. These exceedances are also shown on Figure 3.

12 Lakeport Road Parcel

Of the two soil samples collected from the 12 Lakeport Road parcel, only one sample exceeded the applicable MECP Table 9 soil quality standards. Other than a marginal exceedance of the soil quality standard for methylene chloride in soil at borehole MW1-18, no exceedances of the applicable soil quality standard were detected at this location. Although the methylene chloride concentration of 0.07 parts per million (ppm) detected in soil at this location only marginally exceeds the applicable criterion of 0.05 ppm, the vertical and lateral extent of methylene chloride contaminated soil is not known.

16 Lock Street Parcel

One sample representative of the sandy silt fill in the northwestern corner of the 16 Lock Street parcel contained concentrations of various PAH compounds and lead at concentrations exceeding the applicable MECP Table 3 soil quality standards. PAH compounds including acenaphthene, anthracene, benzo (a) anthracene, benzo (a) pyrene, benzo (b) fluoranthene, benzo (k) fluoranthene, debenz (a,h) anthracene, fluoranthene and indeno (1,2,3-cd) pyrene were present in soil from 0.8 to 2.1 metres below ground surface at MW3-18. Lead was detected at 130 ppm which exceeds the MECP Table 3 soil quality standard of 120 ppm. The lateral and vertical extent of PAH and lead impact to soil on this parcel is not known.

6. Conclusions

Based on the environmental screening investigations completed at the Site, including all field and laboratory analytical data generated therefrom, the following conclusions have been developed regarding the soil and groundwater quality at the Site.

6.1 12 Lakeport Road Parcel

Due to its proximity to the marina, Table 9 soil and groundwater quality standards are applicable for residential redevelopment/land use for this parcel. Groundwater quality screening did not identify any exceedances of the Table 9 standards for groundwater suggesting that groundwater quality on this parcel is not contaminated and that contaminated groundwater is not migrating from the Site to the north. This screening data suggests that groundwater remediation is not required to facilitate redevelopment of this parcel.

Soil quality screening identified a marginal exceedance of the soil quality standard for methylene chloride in soil at MW1-18. The vertical and lateral extent of methylene chloride contaminated soil is not known. This soil quality screening data indicates that soil remediation with respect to methylene chloride is required to facilitate Site redevelopment for residential land use. Vertical and lateral delineation of methylene chloride impact is required to evaluate the potential cost of such soil remediation. Such soil remediation may be completed using timely methods such as dig and haul. The costs for such soil remediation may be offset by brownfield funding, if available. Alternatively, a Risk Assessment and Risk Management Measures could be implemented to facilitate residential redevelopment and allow for such contaminated soil to remain in place.

It should be noted that soil remediation is not required by regulation to facilitate commercial redevelopment of 12 Lakeport Road parcel. It is only required by regulation to facilitate residential redevelopment.

6.2 16 Lock Street Parcel

Table 3 soil and groundwater quality standards are applicable for residential redevelopment/land use of this parcel. Groundwater quality screening did not identify any exceedances of the Table 3 standards for groundwater suggesting that groundwater quality on this parcel is not contaminated and that contaminated groundwater is not migrating from the Site to the north. This screening data suggests that groundwater remediation is not required to facilitate redevelopment of this parcel.

Soil quality screening identified exceedances of the applicable MECP soil quality standards for lead and PAH compounds in soil at MW3-18. The vertical and lateral extent of lead and PAH contaminated soil is not known. This soil quality screening data indicates that soil remediation with respect to lead and PAHs is required to facilitate Site redevelopment for residential land use. Vertical and lateral delineation of lead and PAH impact is required to evaluate the potential cost of such soil remediation. Such soil remediation may be completed using timely methods such as dig and haul. The costs for such soil remediation may be offset by brownfield funding, if available. Alternatively, a Risk Assessment and Risk Management Measures could be implemented to facilitate residential redevelopment and allow for such contaminated soil to remain in place.

7. Closing

We trust that this environmental screening investigation provides you with sufficient preliminary information to inform your decision on waiving environmental conditions. We are happy to discuss these findings with you as you may require. Should you have any questions, please do not hesitate to contact the undersigned.

Sincerely,

GHD

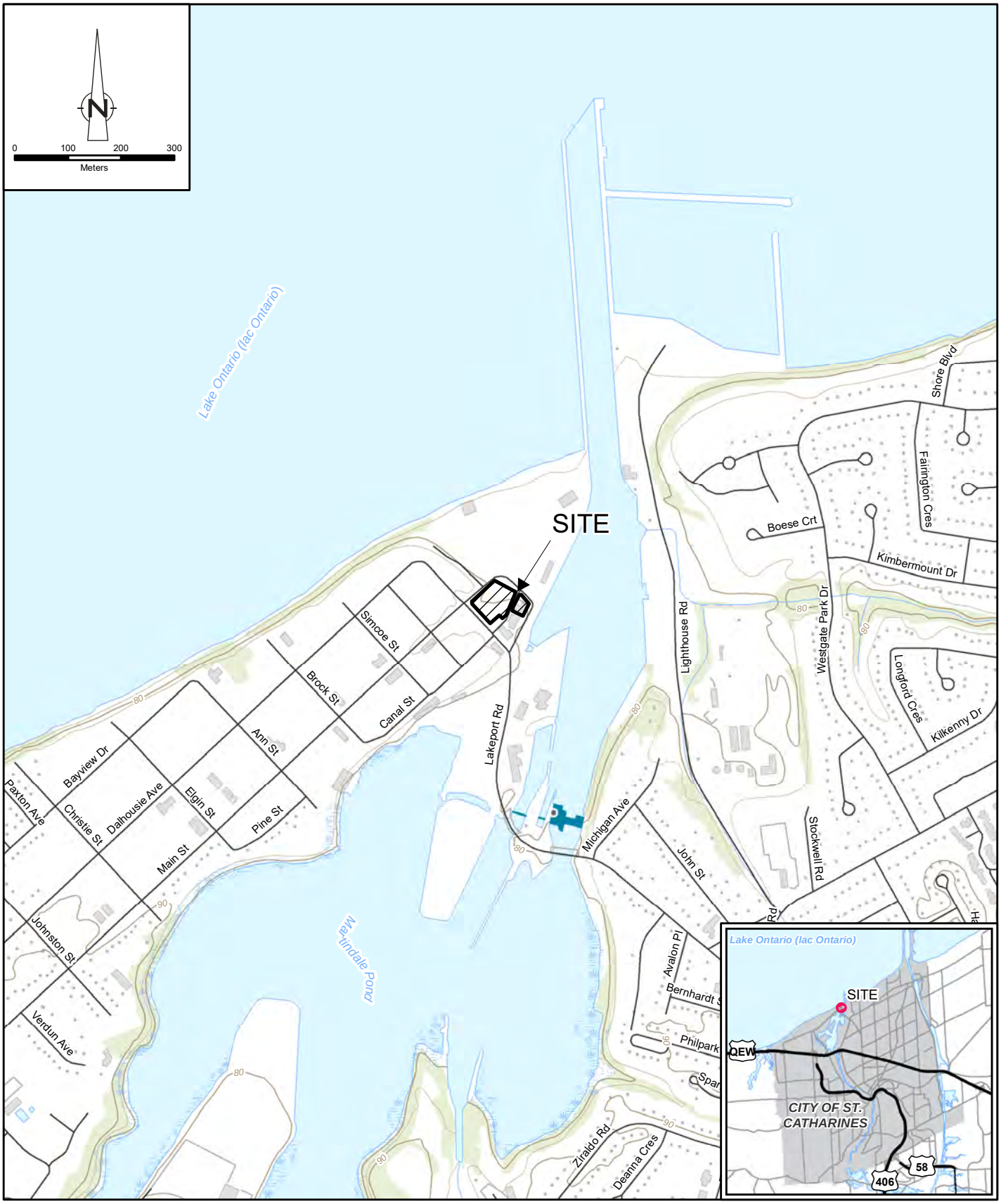
Melissa Pley, B.A.Sc.

Marc Gaudet, P. Eng.

MP/mma/6

Encl.

Figures



Source: MNRF NRVIS, 2019. Produced by GHD under licence from Ontario Ministry of Natural Resources and Forestry, © Queen's Printer 2019.
Coordinate System: NAD 1983 UTM Zone 17N

RANKIN CONSTRUCTION INC.
UNION WATERFRONT PROPERTY – PORT DALHOUSIE
16 LOCK STREET AND 12 LAKEPORT ROAD, ST. CATHARINES, ONTARIO
ENVIRONMENTAL INVESTIGATION

11131634-20
Jan 4, 2019

SITE LOCATION MAP

FIGURE 1

GIS File: Q:\GIS\PROJECTS\11131000s\11131634\Layouts\LETT001\11131634-20(LETT001)GIS-OT001.mxd



Source: Google Earth © Google

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RANKIN CONSTRUCTION INC.
UNION PROPERTY - PORT DALHOUSIE, ONTARIO
ENVIRONMENTAL INVESTIGATION

SITE PLAN

11131634-00

Jan 4, 2019

FIGURE 2

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LEGEND

SITE BOUNDARY

MONITORING WELL (SOIL-MAT, 2009)

MONITORING WELL (GHD, 2018)

MW3-18	12/19/2018 0.8-2.1 m BGS
Acenaphthene	0.013/0.34
Acenaphthylene	0.15/0.34
Anthracene	0.18/1.1
Benzo(a)anthracene	0.93/3.5
Benzo(a)pyrene	1.0/2.9
Benzo(b/j)fluoranthene	0.98/3.0
Benzo(g,h,i)perylene	0.44/1.3
Benzo(k)fluoranthene	0.35/1.1
Dibenz(a,h)anthracene	0.088/0.34
Fluoranthene	1.7/6.4
Fluorene	0.027/0.31
Indeno(1,2,3-cd)pyrene	0.48/1.7
Lead	110/130
Methylene chloride	ND(0.050)/ND(0.050)
PHC F2 (C10-C16)	20/ND(10)
Phenanthrene	0.55/3.7
Pyrene	1.5/5.9

LOCATION

SAMPLE DATE

SAMPLE DEPTH

RESULT (ug/g)

LOCATION

EXCEEDS TABLE 9

EXCEEDS TABLE 9 AND TABLE 3 RPI COARSE

EXCEEDS TABLE 9 AND TABLE 3 RPI MED/FINE

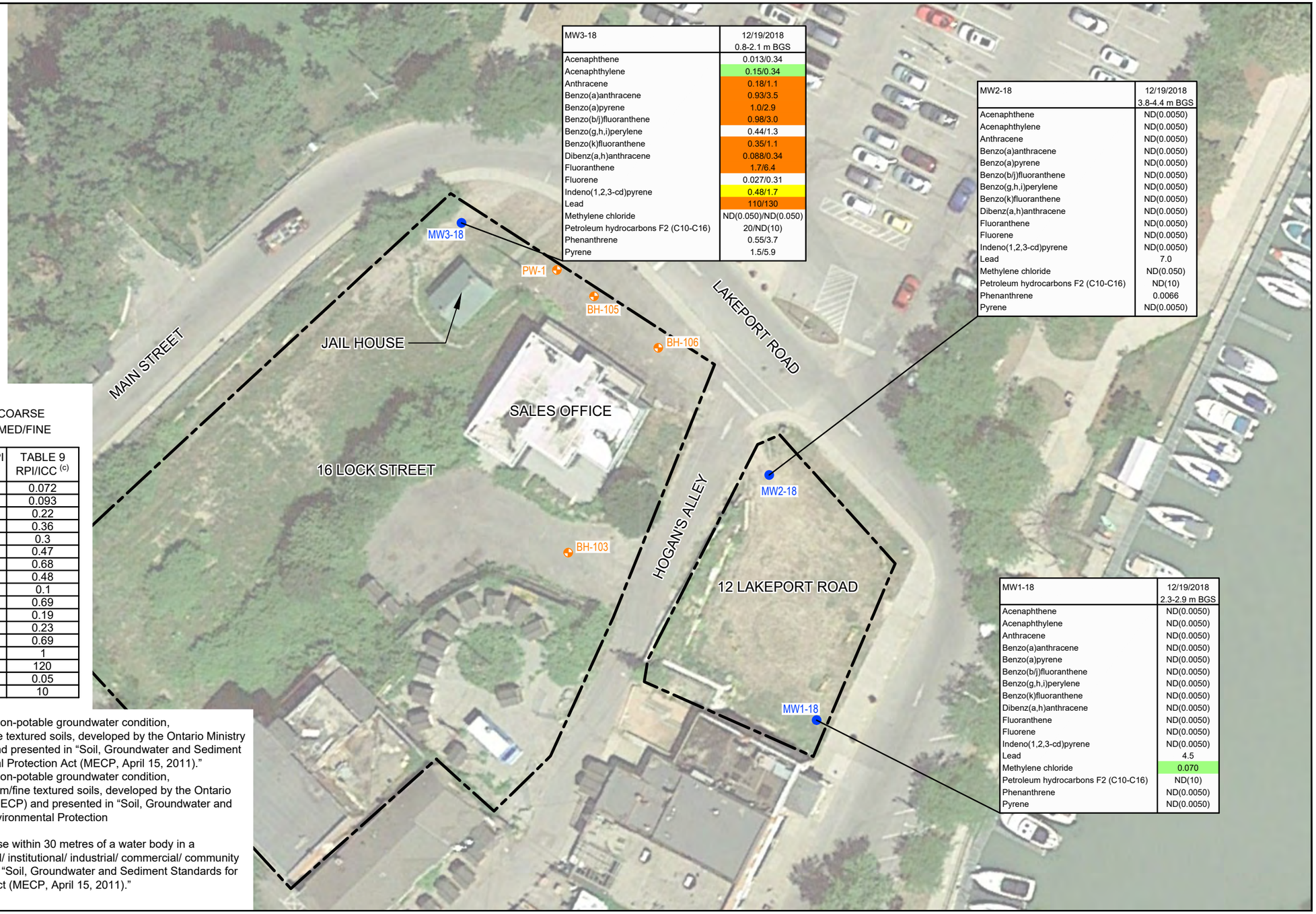
PARAMETER	TABLE 3 RPI Coarse [a]	TABLE 3 RPI Med/Fine [b]	TABLE 9 RPI/ICC [c]
Acenaphthene	7.9	58	0.072
Acenaphthylene	0.15	0.17	0.093
Anthracene	0.67	0.74	0.22
Benzo(a)anthracene	0.5	0.63	0.36
Benzo(a)pyrene	0.3	0.3	0.3
Benzo(b/j)fluoranthene	0.78	0.78	0.47
Benzo(g,h,i)perylene	6.6	7.8	0.68
Benzo(k)fluoranthene	0.78	0.78	0.48
Dibenz(a,h)anthracene	0.1	0.1	0.1
Fluoranthene	0.69	0.69	0.69
Fluorene	62	69	0.19
Indeno(1,2,3-cd)pyrene	0.38	0.48	0.23
Phenanthrene	6.2	7.8	0.69
Pyrene	78	78	1
Lead	120	120	120
Mythylene chloride	0.1	0.96	0.05
PHC F2 (C10-C16)	98	150	10

NOTE:

a) Table 3 full depth generic site condition standards in a non-potable groundwater condition, residential/parkland/institutional property use and coarse textured soils, developed by the Ontario Ministry of the Environment, Conservation and Parks (MECP) and presented in “Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (MECP, April 15, 2011).”

b) Table 3 full depth generic site condition standards in a non-potable groundwater condition, residential/parkland/institutional property use and medium/fine textured soils, developed by the Ontario Ministry of the Environment, Conservation and Parks (MECP) and presented in “Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (MECP, April 15, 2011).”

c) Table 9 full depth generic site condition standards for Use within 30 metres of a water body in a non-potable groundwater condition, residential/ parkland/ institutional/ industrial/ commercial/ community property use, developed by the MECP and presented in “Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (MECP, April 15, 2011).”



MW3-18	12/19/2018 0.8-2.1 m BGS
Acenaphthene	0.013/0.34
Acenaphthylene	0.15/0.34
Anthracene	0.18/1.1
Benzo(a)anthracene	0.93/3.5
Benzo(a)pyrene	1.0/2.9
Benzo(b/j)fluoranthene	0.98/3.0
Benzo(g,h,i)perylene	0.44/1.3
Benzo(k)fluoranthene	0.35/1.1
Dibenz(a,h)anthracene	0.088/0.34
Fluoranthene	1.7/6.4
Fluorene	0.027/0.31
Indeno(1,2,3-cd)pyrene	0.48/1.7
Lead	110/130
Methylene chloride	ND(0.050)/ND(0.050)
Petroleum hydrocarbons F2 (C10-C16)	20/ND(10)
Phenanthrene	0.55/3.7
Pyrene	1.5/5.9

MW2-18	12/19/2018 3.8-4.4 m BGS
Acenaphthene	ND(0.0050)
Acenaphthylene	ND(0.0050)
Anthracene	ND(0.0050)
Benzo(a)anthracene	ND(0.0050)
Benzo(a)pyrene	ND(0.0050)
Benzo(b/j)fluoranthene	ND(0.0050)
Benzo(g,h,i)perylene	ND(0.0050)
Benzo(k)fluoranthene	ND(0.0050)
Dibenz(a,h)anthracene	ND(0.0050)
Fluoranthene	ND(0.0050)
Fluorene	ND(0.0050)
Indeno(1,2,3-cd)pyrene	ND(0.0050)
Lead	7.0
Methylene chloride	ND(0.050)
Petroleum hydrocarbons F2 (C10-C16)	ND(10)
Phenanthrene	0.0066
Pyrene	ND(0.0050)

MW1-18	12/19/2018 2.3-2.9 m BGS
Acenaphthene	ND(0.0050)
Acenaphthylene	ND(0.0050)
Anthracene	ND(0.0050)
Benzo(a)anthracene	ND(0.0050)
Benzo(a)pyrene	ND(0.0050)
Benzo(b/j)fluoranthene	ND(0.0050)
Benzo(g,h,i)perylene	ND(0.0050)
Benzo(k)fluoranthene	ND(0.0050)
Dibenz(a,h)anthracene	ND(0.0050)
Fluoranthene	ND(0.0050)
Fluorene	ND(0.0050)
Indeno(1,2,3-cd)pyrene	ND(0.0050)
Lead	4.5
Methylene chloride	0.070
Petroleum hydrocarbons F2 (C10-C16)	ND(10)
Phenanthrene	ND(0.0050)
Pyrene	ND(0.0050)

Source: Google Earth © Google

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RANKIN CONSTRUCTION INC.
UNION PROPERTY - PORT DALHOUSIE, ONTARIO
ENVIRONMENTAL INVESTIGATION

SOIL ANALYTICAL RESULTS

11131634-00

Jan 4, 2019

FIGURE 3

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Tables

Table 1

Field Sample Key
Environmental Investigation
Union Waterfront Property - Port Dalhousie
16 Lock Street and 12 Lakeport Road
St. Catharines, Ontario

Location	Sample Identification	Sample Date	Media	Sample Interval (m BGS)	Chemical Analysis				
					Metals	VOCs	PHCs (F_1 to F_4)	PAHs	PCBs
MW1-18	GW-11131634-122118-MP-005	21-Dec-18	Groundwater	N/A	√	√	√	√	
MW2-18	GW-11131634-122118-MP-006	21-Dec-18	Groundwater	N/A	√	√	√	√	
MW3-18	GW-11131634-122118-MP-007	21-Dec-18	Groundwater	N/A	√	√	√	√	
BH-103	GW-11131634-121318-MP-001	13-Dec-18	Groundwater	N/A	√	√	√	√	
BH-105	GW-11131634-121318-MP-004	13-Dec-18	Groundwater	N/A	√	√	√	√	
BH-106	GW-11131634-121318-MP-002	13-Dec-18	Groundwater	N/A	√	√	√	√	
BH-106	GW-11131634-121318-MP-003	13-Dec-18	Groundwater	N/A	√	√	√	√	
MW1-18	SS-11131634-121918-MP-002	19-Dec-18	Soil	2.3-2.9	√	√	√	√	√
MW2-18	SS-11131634-121918-MP-001	19-Dec-18	Soil	3.8-4.4	√	√	√	√	√
MW3-18	SS-11131634-121918-MP-003	19-Dec-18	Soil	0.8-2.1	√	√	√	√	√
MW3-18	SS-11131634-121918-MP-004	19-Dec-18	Soil	0.8-2.1	√	√	√	√	√

Notes:

m BGS	metres Below Ground Surface
VOCs	Volatile Organic Compounds
PHCs (F_1 to F_4)	Petroleum Hydrocarbon Fractions 1 to 4
PAHs	Polyaromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
N/A	Not Applicable

Table 2

Well Construction Details
Environmental Investigation
Union Waterfront Property - Port Dalhousie
16 Lock Street and 12 Lakeport Road
St. Catharines, Ontario

Location	Ground Surface Elevation (m AMSL)	Measuring Point Elevation (m AMSL)	Screened Interval (m AMSL)			Sand Pack Interval (m AMSL)			Screened Geologic Unit
BH-103 [1]	80.4	80.35	N/A	-	N/A	N/A	-	N/A	N/A
BH-105[1][2]	76.98	76.88	74.53	-	71.48	N/A	-	N/A	N/A
BH-106[1]	77.15	77.10	N/A	-	N/A	N/A	-	N/A	N/A
PW-1[1]	76.91	76.69	72.31	-	67.81	N/A	-	N/A	N/A
MW1-18	78.45	78.27	77.08	-	74.03	77.38	-	73.88	Silty Sand/Sandy Silt
MW2-18	78.08	78.00	76.71	-	73.66	77.01	-	73.51	Clayey Silt/ Silt/Sandy Silt
MW3-18	76.77	76.59	75.7	-	72.66	75.86	-	71.44	Sandy Silt/Silt

Notes:

m AMSL metres above mean sea level

N/A data unavailable

[1] Installed by Soil-Mat Engineers and Consultants Ltd. in November, 2009.
No construction details available.

[2] Screened interval approximated using downwell camera
screened interval where applicable.

Table 3

Groundwater Level Data
Environmental Investigation
Union Waterfront Property - Port Dalhousie
16 Lock Street and 12 Lakeport Road
St. Catharines, Ontario

			01/02/19		
Monitoring Well Location	**Ground Surface Elevation (m AMSL)**	**Measuring Point Elevation (m AMSL)**	**Depth to Groundwater (m BTOR)**	**Depth to Product (m BTOR)**	**Groundwater Elevation (m AMSL)**
BH-103	80.4	80.35	5.30	NP	75.05
BH-105	76.98	76.88	1.31	NP	75.57
BH-106	77.15	77.10	1.48	NP	75.62
PW-1	76.91	76.69	1.31	NP	75.38
MW1-18	78.45	78.27	1.19	NP	77.08
MW2-18	78.08	78.00	1.04	NP	76.96
MW3-18	76.77	76.59	0.84	NP	75.75

Notes:

m BTOR	metres below top of riser
m AMSL	metres above mean sea level
NP	no product identified in the groundwater

Table 4

Groundwater Analytical Data
Environmental Investigation
Union Waterfront Property - Port Dalhousie
16 Lock Street and 12 Lakeport Road
St. Catharines, Ontario

			Sample Location:	BH-103	BH-105	BH-106	BH-106
			Sample ID:	GW-11131634-121318-MP-001	GW-11131634-121318-MP-004	GW-11131634-121318-MP-002	GW-11131634-121318-MP-003
			Sample Date:	12/13/2018	12/13/2018	12/13/2018	12/13/2018
							Duplicate
Parameters	**Units**	**MECP Table 3 Standard [a]**	**MECP Table 9 Standard[b]**				
Volatile Organic Compounds							
1,1,1,2-Tetrachloroethane	µg/L	3.3	3.4	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,1,1-Trichloroethane	µg/L	640	640	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
1,1,2,2-Tetrachloroethane	µg/L	3.2	3.3	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,1,2-Trichloroethane	µg/L	4.7	4.7	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,1-Dichloroethane	µg/L	320	320	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
1,1-Dichloroethene	µg/L	1.6	1.6	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
1,2-Dibromoethane (Ethylene dibromide)	µg/L	0.25	0.25	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
1,2-Dichlorobenzene	µg/L	4600	4600	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,2-Dichloroethane	µg/L	1.6	1.6	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,2-Dichloropropane	µg/L	16	16	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
1,3-Dichlorobenzene	µg/L	9600	7600	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,4-Dichlorobenzene	µg/L	8	8	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	470000	470000	ND(10)	ND(10)	ND(10)	ND(10)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	140000	140000	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Acetone	µg/L	130000	100000	ND(10)	ND(10)	ND(10)	ND(10)
Benzene	µg/L	44	44	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Bromodichloromethane	µg/L	85000	67000	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Bromoform	µg/L	380	380	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Bromomethane (Methyl bromide)	µg/L	5.6	5.6	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Carbon tetrachloride	µg/L	0.79	0.79	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Chlorobenzene	µg/L	630	500	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Chloroform (Trichloromethane)	µg/L	2.4	2.4	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
cis-1,2-Dichloroethene	µg/L	1.6	1.6	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
cis-1,3-Dichloropropene	µg/L	-	-	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)
cis-1,3-Dichloropropene/trans-1,3-Dichloropropene total	µg/L	5.2	5.2	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Dibromochloromethane	µg/L	82000	65000	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Dichlorodifluoromethane (CFC-12)	µg/L	4400	3500	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Ethylbenzene	µg/L	2300	1800	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Hexane	µg/L	51	51	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
m&p-Xylenes	µg/L	-	-	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Methyl tert butyl ether (MTBE)	µg/L	190	190	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Methylene chloride	µg/L	610	610	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
o-Xylene	µg/L	-	-	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Styrene	µg/L	1300	1300	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Tetrachloroethene	µg/L	1.6	1.6	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Toluene	µg/L	18000	14000	ND(0.20)	0.24	ND(0.20)	ND(0.20)
trans-1,2-Dichloroethene	µg/L	1.6	1.6	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
trans-1,3-Dichloropropene	µg/L	-	-	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)
Trichloroethene	µg/L	1.6	1.6	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Trichlorofluoromethane (CFC-11)	µg/L	2500	2000	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Vinyl chloride	µg/L	0.5	0.5	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Xylenes (total)	µg/L	4200	3300	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)

Table 4

Groundwater Analytical Data
Environmental Investigation
Union Waterfront Property - Port Dalhousie
16 Lock Street and 12 Lakeport Road
St. Catharines, Ontario

			Sample Location:	BH-103	BH-105	BH-106	BH-106
			Sample ID:	GW-11131634-121318-MP-001	GW-11131634-121318-MP-004	GW-11131634-121318-MP-002	GW-11131634-121318-MP-003
			Sample Date:	12/13/2018	12/13/2018	12/13/2018	12/13/2018
							Duplicate
Parameters	**Units**	**MECP Table 3 Standard [a]**	**MECP Table 9 Standard[b]**				
Polycyclic Aromatic Hydrocarbons							
1+2-Methylnaphthalene	µg/L	1800	1500	ND(0.071)	ND(0.071)	ND(0.071)	ND(0.071)
1-Methylnaphthalene	µg/L	1800	1500	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
2-Methylnaphthalene	µg/L	1800	1500	0.055	ND(0.050)	ND(0.050)	0.051
Acenaphthene	µg/L	600	600	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Acenaphthylene	µg/L	1.8	1.4	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Anthracene	µg/L	2.4	1	0.089	ND(0.050)	ND(0.050)	ND(0.050)
Benzo(a)anthracene	µg/L	4.7	1.8	0.15	ND(0.050)	ND(0.050)	ND(0.050)
Benzo(a)pyrene	µg/L	0.81	0.81	0.13	ND(0.010)	0.015	ND(0.010)
Benzo(b)fluoranthene/Benzo(j)fluoranthene	µg/L	0.75	0.75	0.18	ND(0.050)	ND(0.050)	ND(0.050)
Benzo(g,h,i)perylene	µg/L	0.2	0.2	0.075	ND(0.050)	ND(0.050)	ND(0.050)
Benzo(k)fluoranthene	µg/L	0.4	0.4	0.073	ND(0.050)	ND(0.050)	ND(0.050)
Chrysene	µg/L	1	0.7	0.12	ND(0.050)	ND(0.050)	ND(0.050)
Dibenz(a,h)anthracene	µg/L	0.52	0.4	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Fluoranthene	µg/L	130	73	0.42	ND(0.050)	ND(0.050)	ND(0.050)
Fluorene	µg/L	400	290	0.077	ND(0.050)	ND(0.050)	ND(0.050)
Indeno(1,2,3-cd)pyrene	µg/L	0.2	0.2	0.082	ND(0.050)	ND(0.050)	ND(0.050)
Naphthalene	µg/L	1400	1400	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Phenanthrene	µg/L	580	380	0.43	ND(0.030)	0.083	0.035
Pyrene	µg/L	68	5.7	0.31	ND(0.050)	ND(0.050)	ND(0.050)
Metals							
Antimony (dissolved)	µg/L	20000	16000	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Arsenic (dissolved)	µg/L	1900	1500	1.4	4.4	2.1	2.0
Barium (dissolved)	µg/L	29000	23000	38	200	210	210
Beryllium (dissolved)	µg/L	67	53	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Boron (dissolved)	µg/L	45000	36000	81	170	120	120
Cadmium (dissolved)	µg/L	2.7	2.1	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)
Chromium (dissolved)	µg/L	810	640	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Chromium VI (hexavalent)	µg/L	140	110	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Cobalt (dissolved)	µg/L	66	52	0.69	ND(0.50)	ND(0.50)	ND(0.50)
Copper (dissolved)	µg/L	87	69	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Lead (dissolved)	µg/L	25	20	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Mercury	µg/L	0.29	0.29	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Molybdenum (dissolved)	µg/L	9200	7300	3.0	ND(0.50)	ND(0.50)	ND(0.50)
Nickel (dissolved)	µg/L	490	390	2.7	1.2	ND(1.0)	1.1
Selenium (dissolved)	µg/L	63	50	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Silver (dissolved)	µg/L	1.5	1.2	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)
Sodium (dissolved)	µg/L	2300000	1800000	110000	35000	76000	74000
Thallium (dissolved)	µg/L	510	400	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Uranium (dissolved)	µg/L	420	330	3.1	1.1	0.15	0.17
Vanadium (dissolved)	µg/L	250	200	0.74	0.75	1.8	1.8
Zinc (dissolved)	µg/L	1100	890	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Petroleum Hydrocarbons							
Petroleum hydrocarbons F1 (C6-C10)	µg/L	750	420	ND(25)	ND(25)	ND(25)	ND(25)
Petroleum hydrocarbons F1 (C6-C10) - less BTEX	µg/L	750	420	ND(25)	ND(25)	ND(25)	ND(25)
Petroleum hydrocarbons F2 (C10-C16)	µg/L	150	150	ND(100)	ND(100)	ND(100)	ND(100)
Petroleum hydrocarbons F3 (C16-C34)	µg/L	500	500	ND(200)	ND(200)	ND(200)	ND(200)
Petroleum hydrocarbons F4 (C34-C50)	µg/L	500	500	ND(200)	ND(200)	ND(200)	ND(200)

Notes:

[a] Ontario Ministry of the Environment and Climate Change (MECP), "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011. Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition

[b] Ontario Ministry of the Environment and Climate Change (MECP), "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011. Table 8: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Groundwater Condition.

ND Not detected at the associated reporting limit.

NC No associated criteria

µg/L micrograms per litre

Table 4

Groundwater Analytical Data
Environmental Investigation
Union Waterfront Property - Port Dalhousie
16 Lock Street and 12 Lakeport Road
St. Catharines, Ontario

			Sample Location:	MW1-18	MW2-18	MW3-18
			Sample ID:	GW-11131634-122118-MP-005	GW-11131634-122118-MP-006	GW-11131634-122118-MP-007
			Sample Date:	12/21/2018	12/21/2018	12/21/2018
Parameters	**Units**	**MECP Table 3 Standard [a]**	**MECP Table 9 Standard[b]**			
Volatile Organic Compounds						
1,1,1,2-Tetrachloroethane	µg/L	3.3	3.4	ND(0.50)	ND(0.50)	ND(0.50)
1,1,1-Trichloroethane	µg/L	640	640	ND(0.20)	ND(0.20)	ND(0.20)
1,1,2,2-Tetrachloroethane	µg/L	3.2	3.3	ND(0.50)	ND(0.50)	ND(0.50)
1,1,2-Trichloroethane	µg/L	4.7	4.7	ND(0.50)	ND(0.50)	ND(0.50)
1,1-Dichloroethane	µg/L	320	320	ND(0.20)	ND(0.20)	ND(0.20)
1,1-Dichloroethene	µg/L	1.6	1.6	ND(0.20)	ND(0.20)	ND(0.20)
1,2-Dibromoethane (Ethylene dibromide)	µg/L	0.25	0.25	ND(0.20)	ND(0.20)	ND(0.20)
1,2-Dichlorobenzene	µg/L	4600	4600	ND(0.50)	ND(0.50)	ND(0.50)
1,2-Dichloroethane	µg/L	1.6	1.6	ND(0.50)	ND(0.50)	ND(0.50)
1,2-Dichloropropane	µg/L	16	16	ND(0.20)	ND(0.20)	ND(0.20)
1,3-Dichlorobenzene	µg/L	9600	7600	ND(0.50)	ND(0.50)	ND(0.50)
1,4-Dichlorobenzene	µg/L	8	8	ND(0.50)	ND(0.50)	ND(0.50)
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	470000	470000	ND(10)	ND(10)	ND(10)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	140000	140000	ND(5.0)	ND(5.0)	ND(5.0)
Acetone	µg/L	130000	100000	ND(10)	ND(10)	ND(10)
Benzene	µg/L	44	44	ND(0.20)	ND(0.20)	ND(0.20)
Bromodichloromethane	µg/L	85000	67000	ND(0.50)	ND(0.50)	ND(0.50)
Bromoform	µg/L	380	380	ND(1.0)	ND(1.0)	ND(1.0)
Bromomethane (Methyl bromide)	µg/L	5.6	5.6	ND(0.50)	ND(0.50)	ND(0.50)
Carbon tetrachloride	µg/L	0.79	0.79	ND(0.20)	ND(0.20)	ND(0.20)
Chlorobenzene	µg/L	630	500	ND(0.20)	ND(0.20)	ND(0.20)
Chloroform (Trichloromethane)	µg/L	2.4	2.4	ND(0.20)	ND(0.20)	ND(0.20)
cis-1,2-Dichloroethene	µg/L	1.6	1.6	ND(0.50)	ND(0.50)	ND(0.50)
cis-1,3-Dichloropropene	µg/L	-	-	ND(0.30)	ND(0.30)	ND(0.30)
cis-1,3-Dichloropropene/trans-1,3-Dichloropropene total	µg/L	5.2	5.2	ND(0.50)	ND(0.50)	ND(0.50)
Dibromochloromethane	µg/L	82000	65000	ND(0.50)	ND(0.50)	ND(0.50)
Dichlorodifluoromethane (CFC-12)	µg/L	4400	3500	ND(1.0)	ND(1.0)	ND(1.0)
Ethylbenzene	µg/L	2300	1800	ND(0.20)	ND(0.20)	ND(0.20)
Hexane	µg/L	51	51	ND(1.0)	ND(1.0)	ND(1.0)
m&p-Xylenes	µg/L	-	-	ND(0.20)	ND(0.20)	ND(0.20)
Methyl tert butyl ether (MTBE)	µg/L	190	190	ND(0.50)	ND(0.50)	ND(0.50)
Methylene chloride	µg/L	610	610	ND(2.0)	ND(2.0)	ND(2.0)
o-Xylene	µg/L	-	-	ND(0.20)	ND(0.20)	ND(0.20)
Styrene	µg/L	1300	1300	ND(0.50)	ND(0.50)	ND(0.50)
Tetrachloroethene	µg/L	1.6	1.6	ND(0.20)	ND(0.20)	ND(0.20)
Toluene	µg/L	18000	14000	ND(0.20)	ND(0.20)	ND(0.20)
trans-1,2-Dichloroethene	µg/L	1.6	1.6	ND(0.50)	ND(0.50)	ND(0.50)
trans-1,3-Dichloropropene	µg/L	-	-	ND(0.40)	ND(0.40)	ND(0.40)
Trichloroethene	µg/L	1.6	1.6	ND(0.20)	ND(0.20)	ND(0.20)
Trichlorofluoromethane (CFC-11)	µg/L	2500	2000	ND(0.50)	ND(0.50)	ND(0.50)
Vinyl chloride	µg/L	0.5	0.5	ND(0.20)	ND(0.20)	ND(0.20)
Xylenes (total)	µg/L	4200	3300	ND(0.20)	ND(0.20)	ND(0.20)

Table 4

Groundwater Analytical Data
Environmental Investigation
Union Waterfront Property - Port Dalhousie
16 Lock Street and 12 Lakeport Road
St. Catharines, Ontario

			Sample Location:	MW1-18	MW2-18	MW3-18
			Sample ID:	GW-11131634-122118-MP-005	GW-11131634-122118-MP-006	GW-11131634-122118-MP-007
			Sample Date:	12/21/2018	12/21/2018	12/21/2018
Parameters	**Units**	**MECP Table 3 Standard [a]**	**MECP Table 9 Standard[b]**			
Polycyclic Aromatic Hydrocarbons						
1+2-Methylnaphthalene	µg/L	1800	1500	ND(0.071)	ND(0.071)	ND(0.071)
1-Methylnaphthalene	µg/L	1800	1500	ND(0.050)	ND(0.050)	ND(0.050)
2-Methylnaphthalene	µg/L	1800	1500	ND(0.050)	ND(0.050)	ND(0.050)
Acenaphthene	µg/L	600	600	ND(0.050)	ND(0.050)	ND(0.050)
Acenaphthylene	µg/L	1.8	1.4	ND(0.050)	ND(0.050)	ND(0.050)
Anthracene	µg/L	2.4	1	ND(0.050)	ND(0.050)	ND(0.050)
Benzo(a)anthracene	µg/L	4.7	1.8	ND(0.050)	ND(0.050)	ND(0.050)
Benzo(a)pyrene	µg/L	0.81	0.81	ND(0.010)	ND(0.010)	ND(0.010)
Benzo(b)fluoranthene/Benzo(j)fluoranthene	µg/L	0.75	0.75	ND(0.050)	ND(0.050)	ND(0.050)
Benzo(g,h,i)perylene	µg/L	0.2	0.2	ND(0.050)	ND(0.050)	ND(0.050)
Benzo(k)fluoranthene	µg/L	0.4	0.4	ND(0.050)	ND(0.050)	ND(0.050)
Chrysene	µg/L	1	0.7	ND(0.050)	ND(0.050)	ND(0.050)
Dibenz(a,h)anthracene	µg/L	0.52	0.4	ND(0.050)	ND(0.050)	ND(0.050)
Fluoranthene	µg/L	130	73	0.30	0.18	ND(0.050)
Fluorene	µg/L	400	290	ND(0.050)	ND(0.050)	ND(0.050)
Indeno(1,2,3-cd)pyrene	µg/L	0.2	0.2	ND(0.050)	ND(0.050)	ND(0.050)
Naphthalene	µg/L	1400	1400	ND(0.050)	ND(0.050)	ND(0.050)
Phenanthrene	µg/L	580	380	0.23	0.16	0.045
Pyrene	µg/L	68	5.7	0.064	ND(0.050)	ND(0.050)
Metals						
Antimony (dissolved)	µg/L	20000	16000	0.62	ND(0.50)	ND(0.50)
Arsenic (dissolved)	µg/L	1900	1500	1.4	1.3	1.3
Barium (dissolved)	µg/L	29000	23000	100	86	280
Beryllium (dissolved)	µg/L	67	53	ND(0.50)	ND(0.50)	ND(0.50)
Boron (dissolved)	µg/L	45000	36000	220	120	170
Cadmium (dissolved)	µg/L	2.7	2.1	ND(0.10)	ND(0.10)	ND(0.10)
Chromium (dissolved)	µg/L	810	640	ND(5.0)	ND(5.0)	ND(5.0)
Chromium VI (hexavalent)	µg/L	140	110	ND(0.50)	1.4	ND(0.50)
Cobalt (dissolved)	µg/L	66	52	ND(0.50)	1.7	ND(0.50)
Copper (dissolved)	µg/L	87	69	1.2	5.3	ND(1.0)
Lead (dissolved)	µg/L	25	20	ND(0.50)	ND(0.50)	ND(0.50)
Mercury	µg/L	0.29	0.29	ND(0.1)	ND(0.1)	ND(0.1)
Molybdenum (dissolved)	µg/L	9200	7300	3.7	4.8	2.1
Nickel (dissolved)	µg/L	490	390	1.3	3.7	1.3
Selenium (dissolved)	µg/L	63	50	ND(2.0)	ND(2.0)	ND(2.0)
Silver (dissolved)	µg/L	1.5	1.2	ND(0.10)	ND(0.10)	ND(0.10)
Sodium (dissolved)	µg/L	2300000	1800000	24000	100000	63000
Thallium (dissolved)	µg/L	510	400	0.057	0.055	ND(0.050)
Uranium (dissolved)	µg/L	420	330	3.9	4.0	0.61
Vanadium (dissolved)	µg/L	250	200	1.0	1.0	1.1
Zinc (dissolved)	µg/L	1100	890	ND(5.0)	ND(5.0)	ND(5.0)
Petroleum Hydrocarbons						
Petroleum hydrocarbons F1 (C6-C10)	µg/L	750	420	ND(25)	ND(25)	ND(25)
Petroleum hydrocarbons F1 (C6-C10) - less BTEX	µg/L	750	420	ND(25)	ND(25)	ND(25)
Petroleum hydrocarbons F2 (C10-C16)	µg/L	150	150	ND(100)	ND(100)	ND(100)
Petroleum hydrocarbons F3 (C16-C34)	µg/L	500	500	ND(200)	ND(200)	ND(200)
Petroleum hydrocarbons F4 (C34-C50)	µg/L	500	500	ND(200)	ND(200)	ND(200)

Notes:

[a] Ontario Ministry of the Environment and Climate Change (MECP), "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011. Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition

[b] Ontario Ministry of the Environment and Climate Change (MECP), "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011. Table 8: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Groundwater Condition.

ND Not detected at the associated reporting limit.

NC No associated criteria

µg/L micrograms per litre

Table 5

Soil Analytical Data
Environmental Investigation
Union Waterfront Property - Port Dalhousie
16 Lock Street and 12 Lakeport Road
St. Catharines, Ontario

Sample Location:					MW1-18 [1]	MW2-18 [1]
Sample ID:					SS-11131634-121918-MP-002	SS-11131634-121918-MP-001
Sample Date:					12/19/2018	12/19/2018
Sample Depth:					2.3-2.9 m BGS	3.8-4.4 m BGS
Parameters	**Units**	**MECP Tbl 3 RPI Coarse Criteria [a]**	**MECP Tbl 3 RPI Med/Fine Criteria [b]**	**MECP Tbl 9 RPI/ICC Criteria [c]**		
Volatile Organic Compounds						
1,1,1,2-Tetrachloroethane	µg/g	0.058	0.05	0.05	ND(0.050)	ND(0.050)
1,1,1-Trichloroethane	µg/g	0.38	3.4	0.05	ND(0.050)	ND(0.050)
1,1,2,2-Tetrachloroethane	µg/g	0.05	0.05	0.05	ND(0.050)	ND(0.050)
1,1,2-Trichloroethane	µg/g	0.05	0.05	0.05	ND(0.050)	ND(0.050)
1,1-Dichloroethane	µg/g	3.5	11	0.05	ND(0.050)	ND(0.050)
1,1-Dichloroethene	µg/g	0.05	0.05	0.05	ND(0.050)	ND(0.050)
1,2-Dibromoethane (Ethylene dibromide)	µg/g	0.05	0.05	0.05	ND(0.050)	ND(0.050)
1,2-Dichlorobenzene	µg/g	3.4	4.3	0.05	ND(0.050)	ND(0.050)
1,2-Dichloroethane	µg/g	0.05	0.05	0.05	ND(0.050)	ND(0.050)
1,2-Dichloropropane	µg/g	0.05	0.085	0.05	ND(0.050)	ND(0.050)
1,3-Dichlorobenzene	µg/g	4.8	6	0.05	ND(0.050)	ND(0.050)
1,4-Dichlorobenzene	µg/g	0.083	0.097	0.05	ND(0.050)	ND(0.050)
2-Butanone (Methyl ethyl ketone) (MEK)	µg/g	16	44	0.5	ND(0.50)	ND(0.50)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/g	1.7	4.3	0.5	ND(0.50)	ND(0.50)
Acetone	µg/g	16	28	0.5	ND(0.50)	ND(0.50)
Benzene	µg/g	0.21	0.17	0.02	ND(0.020)	ND(0.020)
Bromodichloromethane	µg/g	13	13	0.05	ND(0.050)	ND(0.050)
Bromoform	µg/g	0.27	0.26	0.05	ND(0.050)	ND(0.050)
Bromomethane (Methyl bromide)	µg/g	0.05	0.05	0.05	ND(0.050)	ND(0.050)
Carbon tetrachloride	µg/g	0.05	0.12	0.05	ND(0.050)	ND(0.050)
Chlorobenzene	µg/g	2.4	2.7	0.05	ND(0.050)	ND(0.050)
Chloroform (Trichloromethane)	µg/g	0.05	0.18	0.05	ND(0.050)	ND(0.050)
cis-1,2-Dichloroethene	µg/g	3.4	30	0.05	ND(0.050)	ND(0.050)
cis-1,3-Dichloropropene	µg/g	-	-	-	ND(0.030)	ND(0.030)
cis-1,3-Dichloropropene/trans-1,3-Dichloropropene total	µg/g	0.05	0.083	0.05	ND(0.050)	ND(0.050)
Dibromochloromethane	µg/g	9.4	9.4	0.05	ND(0.050)	ND(0.050)
Dichlorodifluoromethane (CFC-12)	µg/g	16	25	0.05	ND(0.050)	ND(0.050)
Ethylbenzene	µg/g	2	15	0.05	ND(0.020)	ND(0.020)
Hexane	µg/g	2.8	34	0.05	ND(0.050)	ND(0.050)
m&p-Xylenes	µg/g	-	-	-	ND(0.020)	ND(0.020)
Methyl tert butyl ether (MTBE)	µg/g	0.75	1.4	0.05	ND(0.050)	ND(0.050)
Methylene chloride	µg/g	0.1	0.96	0.05	**0.070[c]**	ND(0.050)
o-Xylene	µg/g	-	-	-	ND(0.020)	ND(0.020)
Styrene	µg/g	0.7	2.2	0.05	ND(0.050)	ND(0.050)
Tetrachloroethene	µg/g	0.28	2.3	0.05	ND(0.050)	ND(0.050)
Toluene	µg/g	2.3	6	0.2	ND(0.020)	ND(0.020)
trans-1,2-Dichloroethene	µg/g	0.084	0.75	0.05	ND(0.050)	ND(0.050)
trans-1,3-Dichloropropene	µg/g	-	-	-	ND(0.040)	ND(0.040)
Trichloroethene	µg/g	0.061	0.52	0.05	ND(0.050)	ND(0.050)
Trichlorofluoromethane (CFC-11)	µg/g	4	5.8	0.25	ND(0.050)	ND(0.050)
Vinyl chloride	µg/g	0.02	0.022	0.02	ND(0.020)	ND(0.020)
Xylenes (total)	µg/g	3.1	25	0.05	ND(0.020)	ND(0.020)

Table 5

Soil Analytical Data
Environmental Investigation
Union Waterfront Property - Port Dalhousie
16 Lock Street and 12 Lakeport Road
St. Catharines, Ontario

Sample Location: **Sample ID:** **Sample Date:** **Sample Depth:** **Parameters**	**Units**	**MECP Tbl 3 RPI Coarse Criteria** [a]	**MECP Tbl 3 RPI Med/Fine Criteria** [b]	**MECP Tbl 9 RPI/ICC Criteria** [c]	**MW1-18** [1] **SS-11131634-121918-MP-002** **12/19/2018** **2.3-2.9 m BGS**	**MW2-18**[1] **SS-11131634-121918-MP-001** **12/19/2018** **3.8-4.4 m BGS**
Polycyclic Aromatic Hydrocarbons						
1+2-Methylnaphthalene	µg/g	0.99	3.4	0.59	ND(0.0071)	ND(0.0071)
1-Methylnaphthalene	µg/g	0.99	3.4	0.59	ND(0.0050)	ND(0.0050)
2-Methylnaphthalene	µg/g	0.99	3.4	0.59	ND(0.0050)	ND(0.0050)
Acenaphthene	µg/g	7.9	58	0.072	ND(0.0050)	ND(0.0050)
Acenaphthylene	µg/g	0.15	0.17	0.093	ND(0.0050)	ND(0.0050)
Anthracene	µg/g	0.67	0.74	0.22	ND(0.0050)	ND(0.0050)
Benzo(a)anthracene	µg/g	0.5	0.63	0.36	ND(0.0050)	ND(0.0050)
Benzo(a)pyrene	µg/g	0.3	0.3	0.3	ND(0.0050)	ND(0.0050)
Benzo(b)fluoranthene/Benzo(j)fluoranthene	µg/g	0.78	0.78	0.47	ND(0.0050)	ND(0.0050)
Benzo(g,h,i)perylene	µg/g	6.6	7.8	0.68	ND(0.0050)	ND(0.0050)
Benzo(k)fluoranthene	µg/g	0.78	0.78	0.48	ND(0.0050)	ND(0.0050)
Chrysene	µg/g	7	7.8	2.8	ND(0.0050)	ND(0.0050)
Dibenz(a,h)anthracene	µg/g	0.1	0.1	0.1	ND(0.0050)	ND(0.0050)
Fluoranthene	µg/g	0.69	0.69	0.69	ND(0.0050)	ND(0.0050)
Fluorene	µg/g	62	69	0.19	ND(0.0050)	ND(0.0050)
Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.48	0.23	ND(0.0050)	ND(0.0050)
Naphthalene	µg/g	0.6	0.75	0.09	ND(0.0050)	ND(0.0050)
Phenanthrene	µg/g	6.2	7.8	0.69	ND(0.0050)	0.0066
Pyrene	µg/g	78	78	1	ND(0.0050)	ND(0.0050)
Polychorlinated Biphenyls						
Aroclor-1242 (PCB-1242)	µg/g	-	-	-	ND(0.010)	ND(0.010)
Aroclor-1248 (PCB-1248)	µg/g	-	-	-	ND(0.010)	ND(0.010)
Aroclor-1254 (PCB-1254)	µg/g	-	-	-	ND(0.010)	ND(0.010)
Aroclor-1260 (PCB-1260)	µg/g	-	-	-	ND(0.010)	ND(0.010)
Total PCBs	µg/g	0.35	0.35	0.3	ND(0.010)	ND(0.010)
Petroleum Hydrocarbons						
Petroleum hydrocarbons F1 (C6-C10)	µg/g	55	65	25	ND(10)	ND(10)
Petroleum hydrocarbons F1 (C6-C10) - less BTEX	µg/g	55	65	25	ND(10)	ND(10)
Petroleum hydrocarbons F2 (C10-C16)	µg/g	98	150	10	ND(10)	ND(10)
Petroleum hydrocarbons F3 (C16-C34)	µg/g	300	1300	240	ND(50)	ND(50)
Petroleum hydrocarbons F4 (C34-C50)	µg/g	2800	5600	120	ND(50)	ND(50)

Soil Analytical Data
Environmental Investigation
Union Waterfront Property - Port Dalhousie
16 Lock Street and 12 Lakeport Road
St. Catharines, Ontario

Sample Location:					**MW1-18 [1]**	**MW2-18[1]**
Sample ID:					**SS-11131634-121918-MP-002**	**SS-11131634-121918-MP-001**
Sample Date:					**12/19/2018**	**12/19/2018**
Sample Depth:					**2.3-2.9 m BGS**	**3.8-4.4 m BGS**
Parameters	**Units**	**MECP Tbl 3 RPI Coarse Criteria [a]**	**MECP Tbl 3 RPI Med/Fine Criteria [b]**	**MECP Tbl 9 RPI/ICC Criteria [c]**		
Metals						
Antimony	µg/g	7.5	7.5	1.3	ND(0.20)	ND(0.20)
Arsenic	µg/g	18	18	18	2.5	5.7
Barium	µg/g	390	390	220	39	55
Beryllium	µg/g	4	5	2.5	0.23	0.47
Boron	µg/g	120	120	36	ND(5.0)	6.0
Boron (hot water soluble)	µg/g	1.5	1.5	1.5	0.12	0.082
Cadmium	µg/g	1.2	1.2	1.2	ND(0.10)	ND(0.10)
Chromium	µg/g	160	160	70	8.6	17
Chromium VI (hexavalent)	µg/g	8	10	0.66	ND(0.2)	ND(0.2)
Cobalt	µg/g	22	22	22	4.4	9.7
Copper	µg/g	140	180	92	25	31
Lead	µg/g	120	120	120	4.5	7.0
Mercury	µg/g	0.27	1.8	0.27	ND(0.050)	ND(0.050)
Molybdenum	µg/g	6.9	6.9	2	ND(0.50)	ND(0.50)
Nickel	µg/g	100	130	82	9.1	21
Selenium	µg/g	2.4	2.4	1.5	ND(0.50)	ND(0.50)
Silver	µg/g	20	25	0.5	ND(0.20)	ND(0.20)
Thallium	µg/g	1	1	1	0.059	0.10
Uranium	µg/g	23	23	2.5	0.44	0.60
Vanadium	µg/g	86	86	86	16	25
Zinc	µg/g	340	340	290	39	52
General Chemistry						
Conductivity	mS/cm	0.7	0.7	0.7	0.23	0.26
Cyanide (free)	µg/g	0.051	0.051	0.051	ND(0.01)	ND(0.01)
Moisture	%	-	-	-	13	12
pH, lab	s.u.	-	-	-	7.84	7.80
Sodium adsorption ratio (SAR)	none	5	5	5	0.24	0.35

Footnotes:

[a] Ontario Ministry of the Environment, Conservation and Parks (MECP), "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011. Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition for Residential/Parkland/Institutional Property Use and coarse textured soils.

[b] Ontario Ministry of the Environment, Conservation and Parks (MECP), "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011. Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition for Residential/Parkland/Institutional Property Use and fine/medium textured soils.

[c] Ontario Ministry of the Environment, Conservation and Parks (MECP), "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011. Table 9: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Groundwater Condition for Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use.

[1] Results compared to MECP Table 9 Criteria

[2] Results compared to MECP Table 3 Criteria

ND Not detected at the associated reporting limit.

NC No associated criteria

m BGS metres below ground surface

µg/g micrograms per gram

% percent

s.u. standard unit

1.6[a]	Concentration above MECP Table 3 RPI Standards for coarse textured soils
1.5[b]	Concentration above MECP Table 3 RPI Standards for fine/medium textured soils
0.5[c]	Concentration above MECP Table 9 ICC/RPI Standards

Soil Analytical Data
Environmental Investigation
Union Waterfront Property - Port Dalhousie
16 Lock Street and 12 Lakeport Road
St. Catharines, Ontario

Sample Location: **Sample ID:** **Sample Date:** **Sample Depth:** **Parameters**	**Units**	**MECP Tbl 3 RPI Coarse Criteria** [a]	**MECP Tbl 3 RPI Med/Fine Criteria** [b]	**MECP Tbl 9 RPI/ICC Criteria** [c]	**MW3-18**[2] **SS-11131634-121918-MP-003** **12/19/2018** **0.8-2.1 m BGS**	**MW3-18**[2] **SS-11131634-121918-MP-004** **12/19/2018** **0.8-2.1 m BGS** **Duplicate**
Volatile Organic Compounds						
1,1,1,2-Tetrachloroethane	µg/g	0.058	0.05	0.05	ND(0.050)	ND(0.050)
1,1,1-Trichloroethane	µg/g	0.38	3.4	0.05	ND(0.050)	ND(0.050)
1,1,2,2-Tetrachloroethane	µg/g	0.05	0.05	0.05	ND(0.050)	ND(0.050)
1,1,2-Trichloroethane	µg/g	0.05	0.05	0.05	ND(0.050)	ND(0.050)
1,1-Dichloroethane	µg/g	3.5	11	0.05	ND(0.050)	ND(0.050)
1,1-Dichloroethene	µg/g	0.05	0.05	0.05	ND(0.050)	ND(0.050)
1,2-Dibromoethane (Ethylene dibromide)	µg/g	0.05	0.05	0.05	ND(0.050)	ND(0.050)
1,2-Dichlorobenzene	µg/g	3.4	4.3	0.05	ND(0.050)	ND(0.050)
1,2-Dichloroethane	µg/g	0.05	0.05	0.05	ND(0.050)	ND(0.050)
1,2-Dichloropropane	µg/g	0.05	0.085	0.05	ND(0.050)	ND(0.050)
1,3-Dichlorobenzene	µg/g	4.8	6	0.05	ND(0.050)	ND(0.050)
1,4-Dichlorobenzene	µg/g	0.083	0.097	0.05	ND(0.050)	ND(0.050)
2-Butanone (Methyl ethyl ketone) (MEK)	µg/g	16	44	0.5	ND(0.50)	ND(0.50)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/g	1.7	4.3	0.5	ND(0.50)	ND(0.50)
Acetone	µg/g	16	28	0.5	ND(0.50)	ND(0.50)
Benzene	µg/g	0.21	0.17	0.02	ND(0.020)	ND(0.020)
Bromodichloromethane	µg/g	13	13	0.05	ND(0.050)	ND(0.050)
Bromoform	µg/g	0.27	0.26	0.05	ND(0.050)	ND(0.050)
Bromomethane (Methyl bromide)	µg/g	0.05	0.05	0.05	ND(0.050)	ND(0.050)
Carbon tetrachloride	µg/g	0.05	0.12	0.05	ND(0.050)	ND(0.050)
Chlorobenzene	µg/g	2.4	2.7	0.05	ND(0.050)	ND(0.050)
Chloroform (Trichloromethane)	µg/g	0.05	0.18	0.05	ND(0.050)	ND(0.050)
cis-1,2-Dichloroethene	µg/g	3.4	30	0.05	ND(0.050)	ND(0.050)
cis-1,3-Dichloropropene	µg/g	-	-	-	ND(0.030)	ND(0.030)
cis-1,3-Dichloropropene/trans-1,3-Dichloropropene total	µg/g	0.05	0.083	0.05	ND(0.050)	ND(0.050)
Dibromochloromethane	µg/g	9.4	9.4	0.05	ND(0.050)	ND(0.050)
Dichlorodifluoromethane (CFC-12)	µg/g	16	25	0.05	ND(0.050)	ND(0.050)
Ethylbenzene	µg/g	2	15	0.05	ND(0.020)	ND(0.020)
Hexane	µg/g	2.8	34	0.05	ND(0.050)	ND(0.050)
m&p-Xylenes	µg/g	-	-	-	ND(0.020)	ND(0.020)
Methyl tert butyl ether (MTBE)	µg/g	0.75	1.4	0.05	ND(0.050)	ND(0.050)
Methylene chloride	µg/g	0.1	0.96	0.05	ND(0.050)	ND(0.050)
o-Xylene	µg/g	-	-	-	ND(0.020)	ND(0.020)
Styrene	µg/g	0.7	2.2	0.05	ND(0.050)	ND(0.050)
Tetrachloroethene	µg/g	0.28	2.3	0.05	ND(0.050)	ND(0.050)
Toluene	µg/g	2.3	6	0.2	ND(0.020)	ND(0.020)
trans-1,2-Dichloroethene	µg/g	0.084	0.75	0.05	ND(0.050)	ND(0.050)
trans-1,3-Dichloropropene	µg/g	-	-	-	ND(0.040)	ND(0.040)
Trichloroethene	µg/g	0.061	0.52	0.05	ND(0.050)	ND(0.050)
Trichlorofluoromethane (CFC-11)	µg/g	4	5.8	0.25	ND(0.050)	ND(0.050)
Vinyl chloride	µg/g	0.02	0.022	0.02	ND(0.020)	ND(0.020)
Xylenes (total)	µg/g	3.1	25	0.05	ND(0.020)	ND(0.020)

Table 5

Soil Analytical Data
Environmental Investigation
Union Waterfront Property - Port Dalhousie
16 Lock Street and 12 Lakeport Road
St. Catharines, Ontario

Sample Location: **Sample ID:** **Sample Date:** **Sample Depth:** **Parameters**	**Units**	**MECP Tbl 3 RPI Coarse Criteria** [a]	**MECP Tbl 3 RPI Med/Fine Criteria** [b]	**MECP Tbl 9 RPI/ICC Criteria** [c]	**MW3-18**[2] **SS-11131634-121918-MP-003** **12/19/2018** **0.8-2.1 m BGS**	**MW3-18**[2] **SS-11131634-121918-MP-004** **12/19/2018** **0.8-2.1 m BGS** **Duplicate**
Polycyclic Aromatic Hydrocarbons						
1+2-Methylnaphthalene	µg/g	0.99	3.4	0.59	ND(0.0071)	0.12
1-Methylnaphthalene	µg/g	0.99	3.4	0.59	ND(0.0050)	0.064
2-Methylnaphthalene	µg/g	0.99	3.4	0.59	ND(0.0050)	0.054
Acenaphthene	µg/g	7.9	58	0.072	0.013	0.34
Acenaphthylene	µg/g	0.15	0.17	0.093	0.15	**0.34**[ab]
Anthracene	µg/g	0.67	0.74	0.22	0.18	**1.1**[ab]
Benzo(a)anthracene	µg/g	0.5	0.63	0.36	**0.93**[ab]	**3.5**[ab]
Benzo(a)pyrene	µg/g	0.3	0.3	0.3	**1.0**[ab]	**2.9**[ab]
Benzo(b)fluoranthene/Benzo(j)fluoranthene	µg/g	0.78	0.78	0.47	**0.98**[ab]	**3.0**[ab]
Benzo(g,h,i)perylene	µg/g	6.6	7.8	0.68	0.44	1.3
Benzo(k)fluoranthene	µg/g	0.78	0.78	0.48	0.35	**1.1**[ab]
Chrysene	µg/g	7	7.8	2.8	0.69	2.8
Dibenz(a,h)anthracene	µg/g	0.1	0.1	0.1	0.088	**0.34**[ab]
Fluoranthene	µg/g	0.69	0.69	0.69	**1.7**[ab]	**6.4**[ab]
Fluorene	µg/g	62	69	0.19	0.027	0.31
Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.48	0.23	**0.48**[a]	**1.7**[ab]
Naphthalene	µg/g	0.6	0.75	0.09	0.0083	0.070
Phenanthrene	µg/g	6.2	7.8	0.69	0.55	3.7
Pyrene	µg/g	78	78	1	1.5	5.9
Polychorlinated Biphenyls						
Aroclor-1242 (PCB-1242)	µg/g	-	-	-	ND(0.010)	ND(0.010)
Aroclor-1248 (PCB-1248)	µg/g	-	-	-	ND(0.010)	ND(0.010)
Aroclor-1254 (PCB-1254)	µg/g	-	-	-	ND(0.010)	ND(0.010)
Aroclor-1260 (PCB-1260)	µg/g	-	-	-	ND(0.010)	ND(0.010)
Total PCBs	µg/g	0.35	0.35	0.3	ND(0.010)	ND(0.010)
Petroleum Hydrocarbons						
Petroleum hydrocarbons F1 (C6-C10)	µg/g	55	65	25	ND(10)	ND(10)
Petroleum hydrocarbons F1 (C6-C10) - less BTEX	µg/g	55	65	25	ND(10)	ND(10)
Petroleum hydrocarbons F2 (C10-C16)	µg/g	98	150	10	20	ND(10)
Petroleum hydrocarbons F3 (C16-C34)	µg/g	300	1300	240	84	190
Petroleum hydrocarbons F4 (C34-C50)	µg/g	2800	5600	120	ND(50)	72

Table 5

Soil Analytical Data
Environmental Investigation
Union Waterfront Property - Port Dalhousie
16 Lock Street and 12 Lakeport Road
St. Catharines, Ontario

Sample Location:					MW3-18[2]	MW3-18[2]
Sample ID:					SS-11131634-121918-MP-003	SS-11131634-121918-MP-004
Sample Date:					12/19/2018	12/19/2018
Sample Depth:					0.8-2.1 m BGS	0.8-2.1 m BGS Duplicate
Parameters	**Units**	**MECP Tbl 3 RPI Coarse Criteria [a]**	**MECP Tbl 3 RPI Med/Fine Criteria [b]**	**MECP Tbl 9 RPI/ICC Criteria [c]**		
Metals						
Antimony	µg/g	7.5	7.5	1.3	0.47	0.48
Arsenic	µg/g	18	18	18	4.4	4.8
Barium	µg/g	390	390	220	100	110
Beryllium	µg/g	4	5	2.5	0.45	0.51
Boron	µg/g	120	120	36	6.4	7.0
Boron (hot water soluble)	µg/g	1.5	1.5	1.5	0.46	0.39
Cadmium	µg/g	1.2	1.2	1.2	0.26	0.21
Chromium	µg/g	160	160	70	17	18
Chromium VI (hexavalent)	µg/g	8	10	0.66	ND(0.2)	ND(0.2)
Cobalt	µg/g	22	22	22	8.1	8.8
Copper	µg/g	140	180	92	44	73
Lead	µg/g	120	120	120	110	**130[ab]**
Mercury	µg/g	0.27	1.8	0.27	0.16	0.19
Molybdenum	µg/g	6.9	6.9	2	0.76	0.62
Nickel	µg/g	100	130	82	18	19
Selenium	µg/g	2.4	2.4	1.5	ND(0.50)	ND(0.50)
Silver	µg/g	20	25	0.5	ND(0.20)	ND(0.20)
Thallium	µg/g	1	1	1	0.10	0.13
Uranium	µg/g	23	23	2.5	0.62	0.55
Vanadium	µg/g	86	86	86	23	25
Zinc	µg/g	340	340	290	110	150
General Chemistry						
Conductivity	mS/cm	0.7	0.7	0.7	0.23	0.23
Cyanide (free)	µg/g	0.051	0.051	0.051	ND(0.01)	ND(0.01)
Moisture	%	-	-	-	19	15
pH, lab	s.u.	-	-	-	7.73	7.70
Sodium adsorption ratio (SAR)	none	5	5	5	0.24	0.26

Footnotes:

[a] Ontario Ministry of the Environment, Conservation and Parks (MECP), "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011. Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition for Residential/Parkland/Institutional Property Use and coarse textured soils.

[b] Ontario Ministry of the Environment, Conservation and Parks (MECP), "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011. Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition for Residential/Parkland/Institutional Property Use and fine/medium textured soils.

[c] Ontario Ministry of the Environment, Conservation and Parks (MECP), "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011. Table 9: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Groundwater Co for Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use.

[1] Results compared to MECP Table 9 Criteria

[2] Results compared to MECP Table 3 Criteria

ND Not detected at the associated reporting limit.

NC No associated criteria

m BGS metres below ground surface

µg/g micrograms per gram

% percent

s.u. standard unit

1.6[a]	Concentration above MECP Table 3 RPI Standards for coarse textured soils
1.5[b]	Concentration above MECP Table 3 RPI Standards for fine/medium textured soils
0.5[c]	Concentration above MECP Table 9 ICC/RPI Standards

Attachments

Attachment A



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An SCM Company

175 Commerce Valley Drive W
Markham, Ontario L3T 7Z3

T: 905-882-6300
W: www.optaintel.ca

Report Completed By:

Sunita

Site Address:

Hogans Alley St. Catharines ON Canada

Project No:

1262018

Opta Order ID:

56245

Requested by:

Melissa Pley
GHD Limited

Date Completed:

12/12/2018 11:51:49 AM

Project Name: Port Dalhousie Environmental Investigation

Project #: 1262018

ENVIROSCAN Report

Search Area: Hogans Alley St. Catharines ON Canada

Requested by:
Melissa Pley
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Entire Agreement

The parties hereto acknowledge and agree to be bound by the terms and conditions hereof. The request form constitutes the entire agreement between the parties pertaining to the subject matter hereof and supersedes all prior and contemporaneous agreements, negotiations and discussions, whether oral or written, and there are no representations or warranties, or other agreements between the parties in connection with the subject matter hereof except as specifically set forth herein. No supplement, modification, waiver, or termination of the request shall be binding, unless confirmed in writing by the parties hereto.

Governing Document

In the event of any conflicts or inconsistencies between the provisions hereof and the Reports, the rights and obligations of the parties shall be deemed to be governed by the request form, which shall be the paramount document.

Law

This agreement shall be governed by and construed in accordance with the laws of the Province of Ontario and the laws of Canada applicable therein.

ENVIROSCAN Report

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6	(1905) Volume: Ontario Miscellaneous Firemap: 1
8	(1922) Volume: Port Dalhousie Firemap: 4
10	(1922) Volume: Port Dalhousie Firemap: 5
12	(1962) Volume: St Catharines Volume 1 Firemap: 102
14	(1962) Volume: St Catharines Volume 1 Firemap: 102
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18	(1962) Volume: St Catharines Volume 1 Firemap: 104

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Port Dalhousie Plan: 1568 (1887)
Sheet: 1 (1905)

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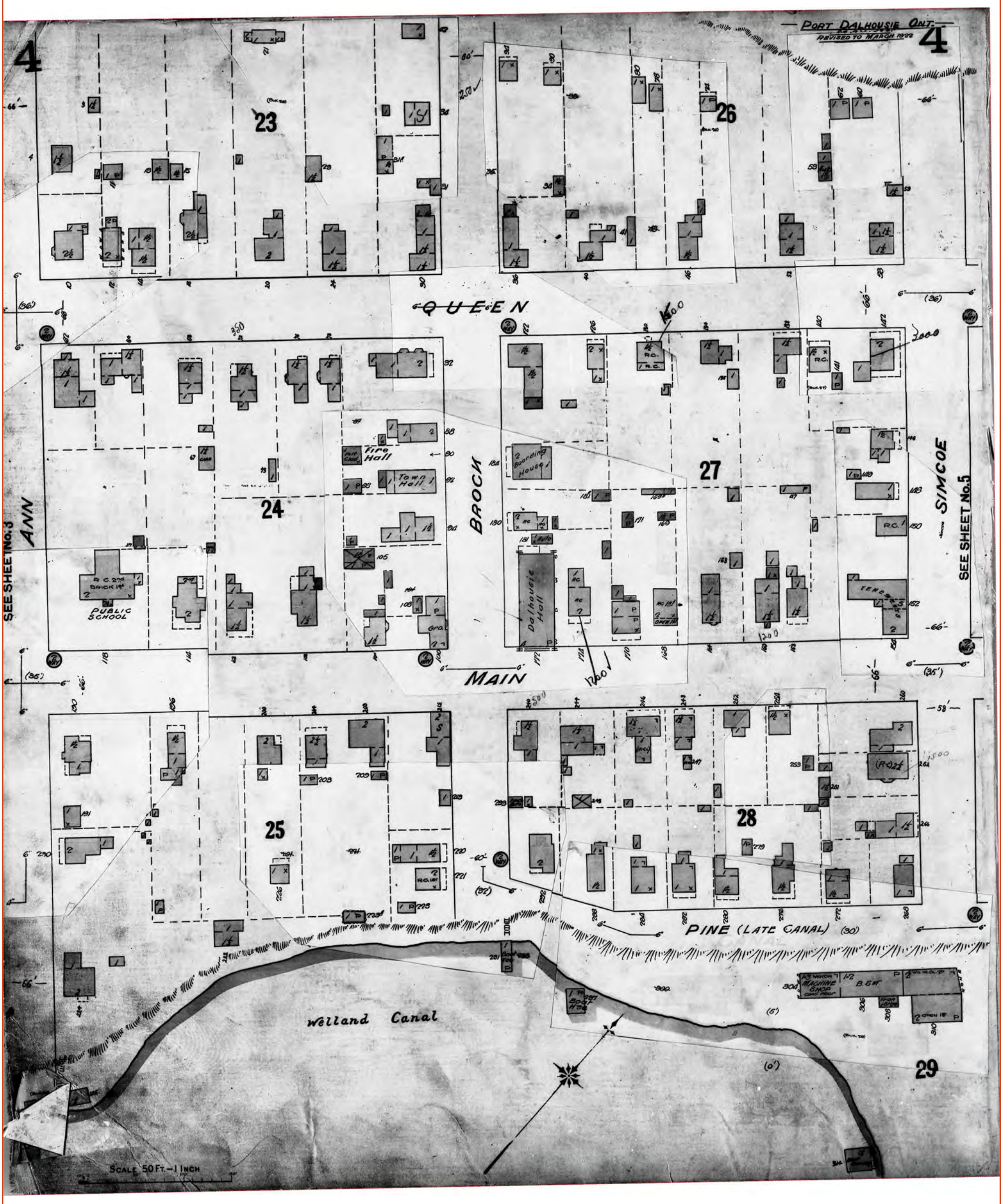


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Project Name: Port Dalhousie Environmental Investigation

Project #: 1262018

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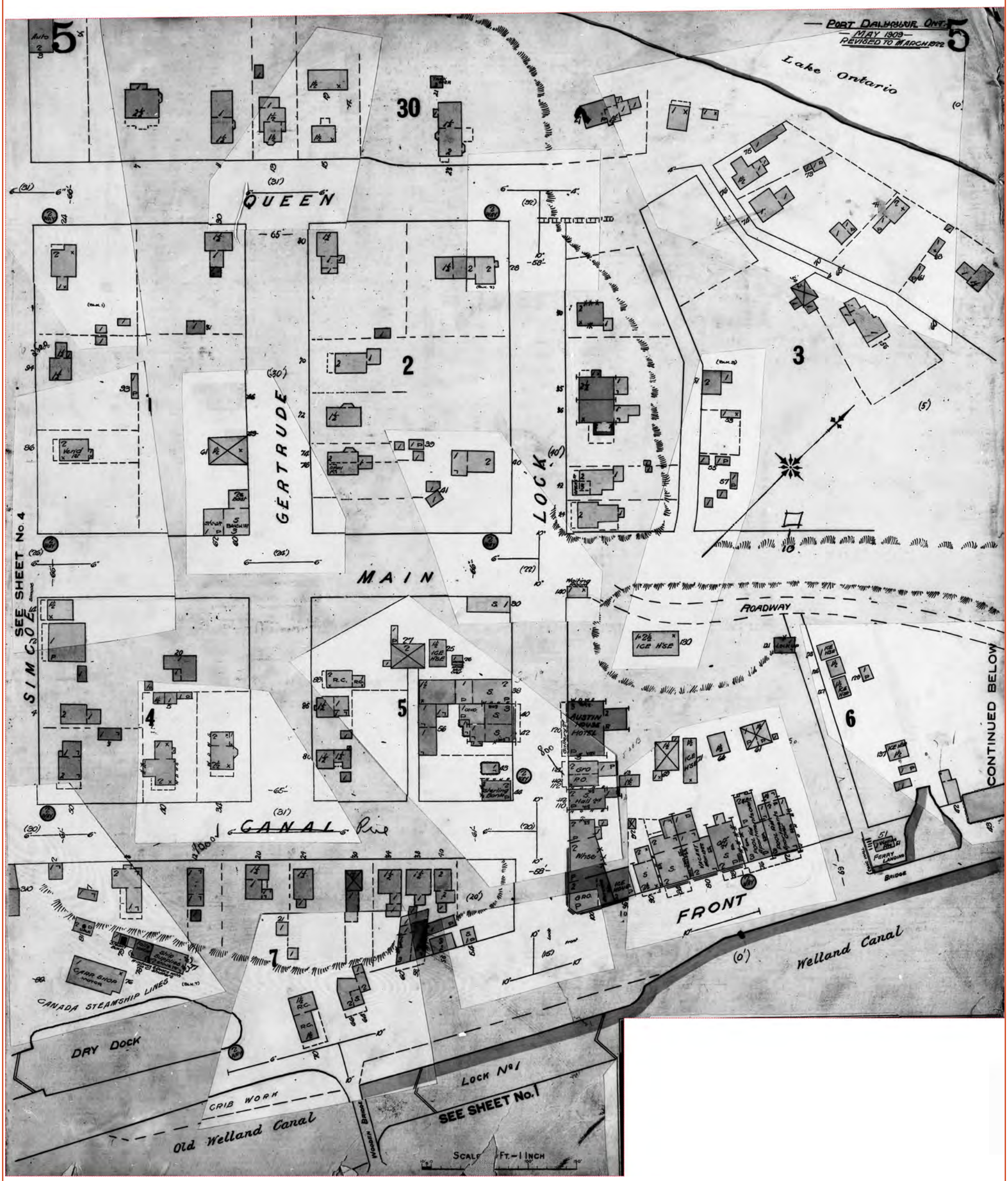
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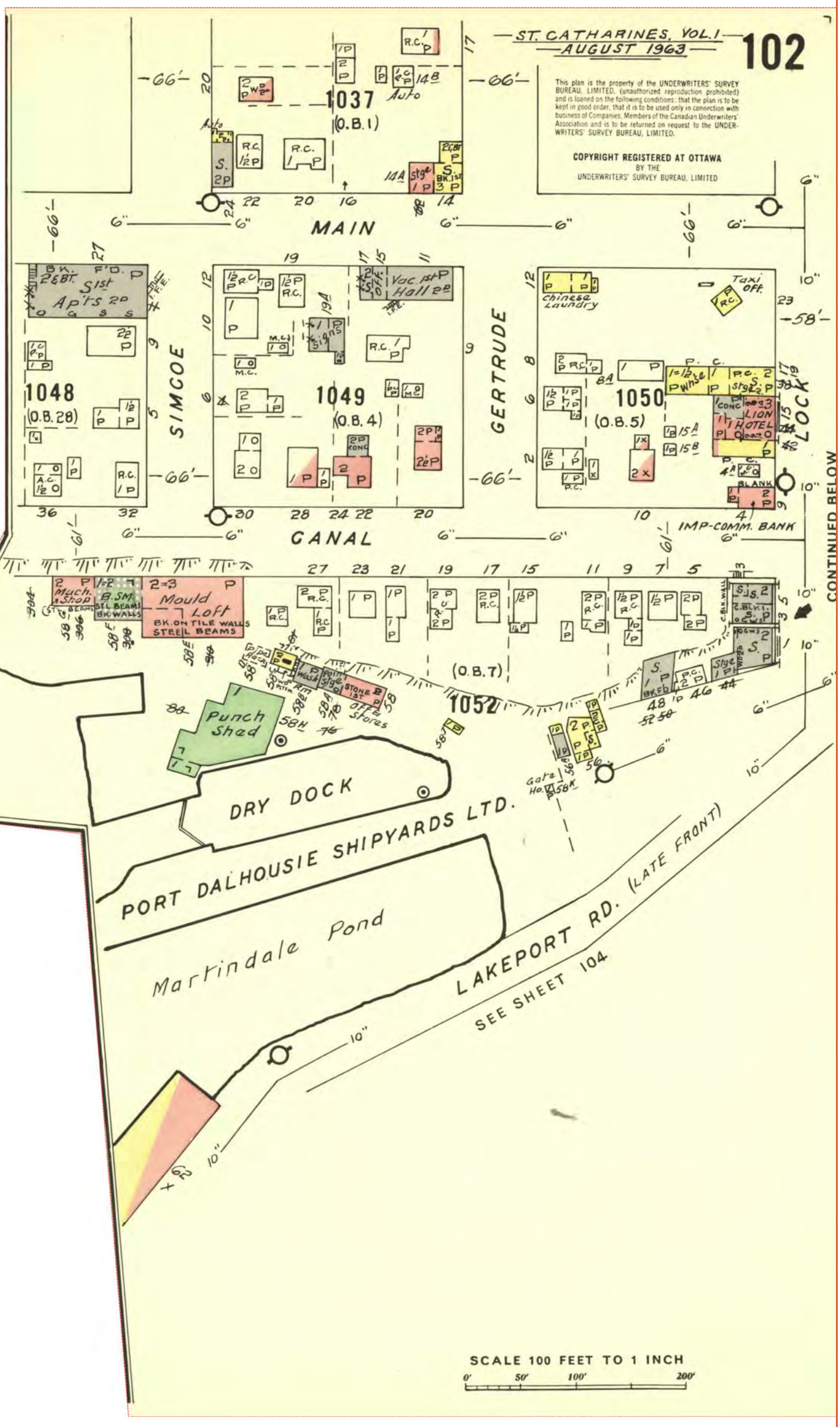


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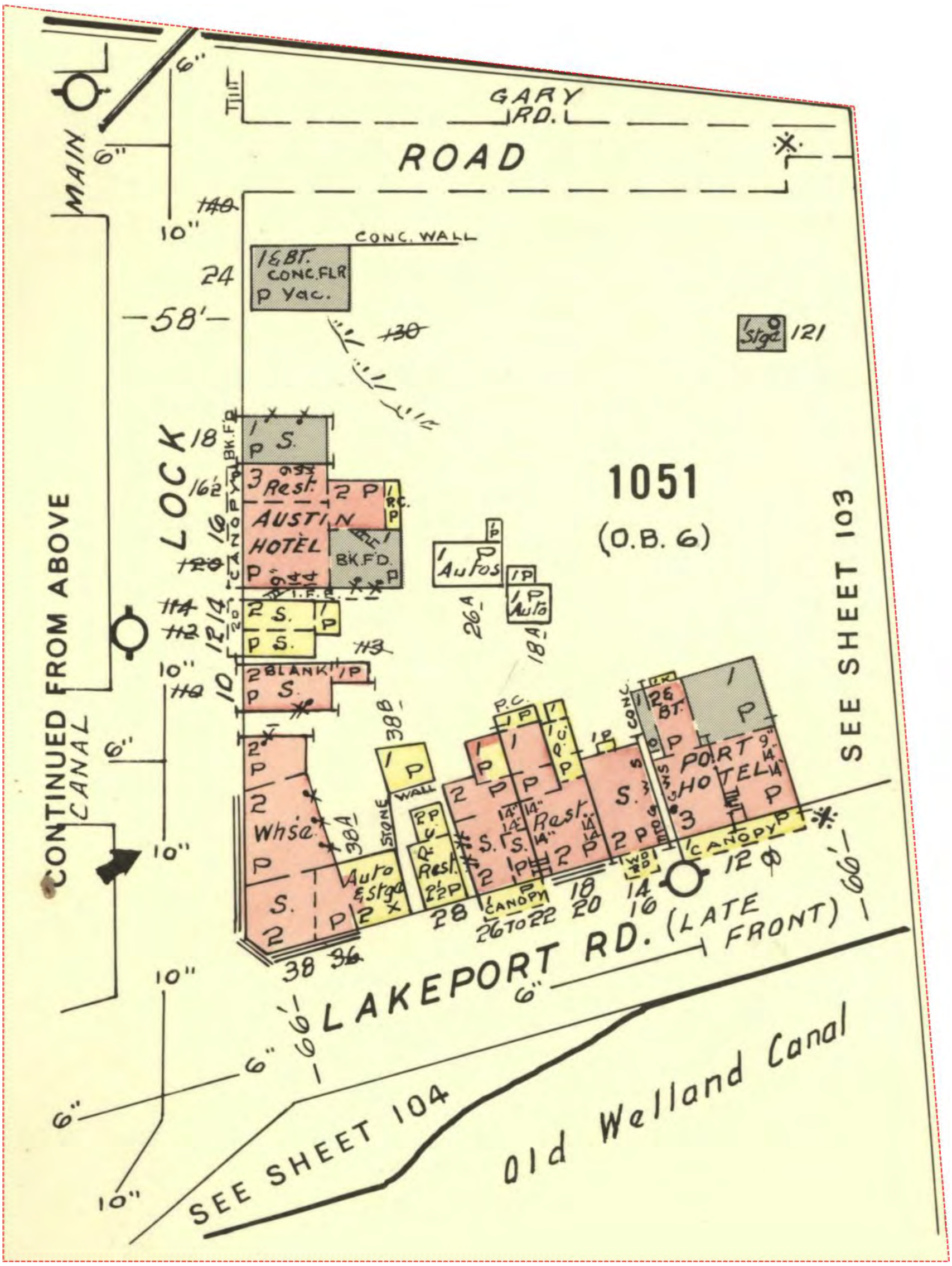


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Project Name: Port Dalhousie Environmental Investigation

Project #: 1262018

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— ST. CATHARINES, VOL. 1 —
— AUGUST 1963 —

103

Lake Ontario

DALHOUSIE AVE.

GARY ROAD

LAKESIDE PARK

ROAD

Band Stand

Ride

Ride PENT 4' OVER

Ride

Summer Cottages

Bathing Pavilion

Fire Hose Reel

Ride

Ride

Dancing Pavilion

LAKESIDE INN

Vac.

Lav's

R.C.

1040

(O.B. 31)

Bleachers

Grand Stand

Shelters

Shelter & Rest.

Administration Bldg.

car parking

M.C. Boat Stge & Repairs

PORT HOTEL

LAKEPORT RD.

CONC. BRIDGE

Old Welland Canal

SEE SHEET 102

SEE SHEET 105

SCALE 100 FEET TO 1 INCH
0' 50' 100' 200'

ENVIROSCAN Report

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— ST. CATHARINES, VOL. 1 —
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104

SEE SHEET 102

LOCK (LATE FRONT)

Auto Service
Vacant
Stge
Piled Sand
Off
Lake & Build'g Supplies

Dry Dock

LAKEPORT RD.

Rowing Club (O.B.8)
Boat H'se 1ST
Boat H'se 2D.
Boat H'se
Hall
Leg Stge 2D.

1053

Pump (NO A.S.)

LINCOLN FABRICS LTD
S.R.D.
Vacant
177 4TH
A.S.
Vacant
Vac
Vac
Stge & Coal
WALLS ONLY

Trans

pond

Martindale

Old Welland Canal

Gate H'se X

Lock H'se

CONC BRIDGE

Old LOCK No 1

(O. B. 36)

1054

CONC SWING BRIDGE

Pier

ROADWAY

(O. B. 36)

1055

SCALE 100 FEET TO 1 INCH
0' 50' 100' 200'

Attachment B

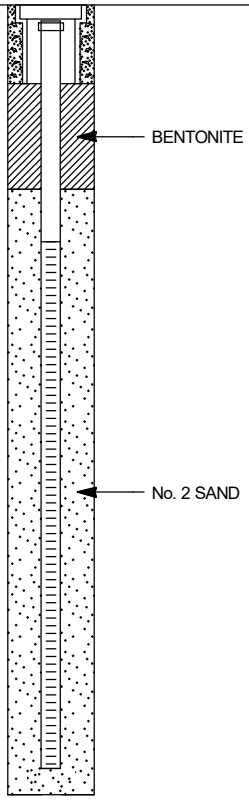
STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Union Property - Port Dalhousie
PROJECT NUMBER: 11131634
CLIENT: Rankin Construction Inc.
LOCATION: Port Dalhousie, Ontario

HOLE DESIGNATION: MW1-18
DATE COMPLETED: 19 December 2018
DRILLING METHOD: HSA
FIELD PERSONNEL: M. Pley

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m BGS
0	TOPSOIL- some vegetation (rootlets, grass), very soft, organic, black	0.05
0.5	FILL-SILTY SAND, firm, brown, moist to wet - brick fragments at 0.53m BGS	0.61
1.0	FILL-SILTY SAND/SANDY SILT, trace organics, brown, moist to wet	
1.5	FILL-SILT/SANDY SILT, very stiff, grey, moist	1.37
2.0		
2.5		
3.0	- trace fine gravel at 3.35m BGS	
3.5	- dry at 3.81m BGS	
4.0		
4.5	END OF BOREHOLE @ 4.57m BGS	4.57
5.0		
5.5		
6.0		
6.5		
7.0		
7.5		

MONITORING WELL



WELL DETAILS
Screened interval:
1.37 to 4.42m BGS
Length: 3.05m
Diameter: 51mm
Slot Size: 10
Material: PVC
Seal:
0.46 to 1.07m BGS
Material: BENTONITE
Sand Pack:
1.07 to 4.57m BGS
Material: No. 2 SAND

SAMPLE

NUMBER	INTERVAL	REC (%)	'N' VALUE	PID (ppm)
SS1		75	6	16.5
SS2		60	2	18.5
SS3		90	22	16.5
SS4		60	31	20.5
SS5		60	38	16.0
SS6		100	24	10.5

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (SS4)

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Union Property - Port Dalhousie
PROJECT NUMBER: 11131634
CLIENT: Rankin Construction Inc.
LOCATION: Port Dalhousie, Ontario

HOLE DESIGNATION: MW2-18
DATE COMPLETED: 19 December 2018
DRILLING METHOD: HSA
FIELD PERSONNEL: M. Pley

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m BGS	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	REC (%)	'N' VALUE	PID (ppm)
0	TOPSOIL, with some vegetation (rootlets, grass), organic, black	0.05						
		0.20				75	19	21.7
0.5	FILL-CLAYEY SILT with some sand and trace fine gravel, trace organics, very stiff, reddish brown, dry to moist	0.61	BENTONITE					
1.0	FILL-SILTY SAND AND GRAVEL with trace debris (red brick), very stiff, brown, dry to moist FILL-RED BRICK AND CONCRETE with trace silt and trace organics, hard, grey/red/black, dry					80	58	22.7
1.5		1.52						
2.0	FILL-CLAYEY SILT with some brick fragments, soft, brown, moist to wet - less silt at 2.13m BGS					10	4	38.2
		2.29						
2.5	FILL-SILTY/SANDY SILT, brey stiff, grey, moist					80	23	4.1
3.0			No. 2 SAND					
3.5						100	20	7.1
4.0	- trace gravel, more 'till-like at 4.27m BGS			001		100	24	11.8
4.5	END OF BOREHOLE @ 4.57m BGS	4.57						
5.0								
5.5								
6.0								
6.5								
7.0								
7.5								

WELL DETAILS
Screened interval:
1.37 to 4.42m BGS
Length: 3.05m
Diameter: 51mm
Slot Size: 10
Material: PVC
Seal:
0.46 to 1.07m BGS
Material: BENTONITE
Sand Pack:
1.07 to 4.57m BGS
Material: No. 2 SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (001)

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Union Property - Port Dalhousie
PROJECT NUMBER: 11131634
CLIENT: Rankin Construction Inc.
LOCATION: Port Dalhousie, Ontario

HOLE DESIGNATION: MW3-18
DATE COMPLETED: 19 December 2018
DRILLING METHOD: HSA
FIELD PERSONNEL: M. Pley

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m BGS	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	REC (%)	'N' VALUE	PID (ppm)
0.5	TOPSOIL with some vegetation (rootlets, grass), organic, brown	0.05	BENTONITE			75	11	0
1.0	FILL-SANDY SILT with some gravel, firm to stiff, brown, moist to wet - some black staining and organics, some clay at 0.91m BGS			003/004		85	7	0.8
1.5		1.52				80	1	0.1
2.0	FILL- SANDY SILT/SILT with trace gravel and trace organics, trace debris (glass), very soft, grey, moist to wet - black staining, some clay at 2.29m BGS							
2.5						80	0	0.1
3.0								
3.5	FILL-SILTY SAND, loose, grey/brown, wet	3.35	No. 2 SAND			100	3	0.1
4.0						100	0	0.0
4.5	FILL-CLAYEY SILT with trace organics, very soft, brown, moist - some organics (wood) at 4.57m BGS	4.27						
5.0						75	1	0.2
5.5						85	2	0.9
6.0	END OF BOREHOLE @ 5.94m BGS	5.94						
6.5								
7.0								
7.5								

WELL DETAILS
Screened interval:
1.07 to 4.11m BGS
Length: 3.05m
Diameter: 51mm
Slot Size: 10
Material: PVC
Seal:
0.15 to 1.07m BGS
Material: BENTONITE
Sand Pack:
1.07 to 5.94m BGS
Material: No. 2 SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (003/004)

OVERBURDEN LOG 1131634-UNIONPROPERTY-SC.GPJ GHD_Corp 3/1/19

Attachment C

Maxxam
A Bureau Veritas Group Company

Your P.O. #: 73514236
Your Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your C.O.C. #: 696809-01-01

Attention: 11131634 - PO - 73514236

GHD Limited
455 Phillip St
Waterloo, ON
CANADA N2L 3X2

Report Date: 2018/12/24
Report #: R5538909
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8X6184
Received: 2018/12/14, 15:51

Sample Matrix: Water
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	4	N/A	2018/12/24	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum	5	N/A	2018/12/21		EPA 8260C m
Chromium (VI) in Water	4	N/A	2018/12/21	CAM SOP-00436	EPA 7199 m
Petroleum Hydrocarbons F2-F4 in Water (1)	2	2018/12/20	2018/12/20	CAM SOP-00316	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1)	2	2018/12/20	2018/12/21	CAM SOP-00316	CCME PHC-CWS m
Mercury	4	2018/12/21	2018/12/21	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS	4	N/A	2018/12/18	CAM SOP-00447	EPA 6020B m
PAH Compounds in Water by GC/MS (SIM)	4	2018/12/20	2018/12/21	CAM SOP-00318	EPA 8270D m
Volatile Organic Compounds and F1 PHCs	5	N/A	2018/12/20	CAM SOP-00230	EPA 8260C 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.

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.
(1) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Maxxam conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003".

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Your P.O. #: 73514236
Your Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your C.O.C. #: 696809-01-01

Attention: 11131634 - PO - 73514236

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455 Phillip St
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CANADA N2L 3X2

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CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8X6184
Received: 2018/12/14, 15:51

Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Tanya Fidlin, Project Manager
Email: tfidlin@maxxam.ca
Phone# (905)817-5700
==========
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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Maxxam Job #: B8X6184
Report Date: 2018/12/24

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		IOH995	IOH996	IOH997	IOH998		
Sampling Date		2018/12/13 16:00	2018/12/13 16:30	2018/12/13 16:30	2018/12/13 17:00		
COC Number		696809-01-01	696809-01-01	696809-01-01	696809-01-01		
	UNITS	GW-11131634-121318 -MP-001	GW-11131634-121318 -MP-002	GW-11131634-121318 -MP-003	GW-11131634-121318 -MP-004	RDL	QC Batch
Metals							
Chromium (VI)	ug/L	ND	ND	ND	ND	0.50	5892920
Mercury (Hg)	ug/L	ND	ND	ND	ND	0.1	5900667
Dissolved Antimony (Sb)	ug/L	ND	ND	ND	ND	0.50	5893901
Dissolved Arsenic (As)	ug/L	1.4	2.1	2.0	4.4	1.0	5893901
Dissolved Barium (Ba)	ug/L	38	210	210	200	2.0	5893901
Dissolved Beryllium (Be)	ug/L	ND	ND	ND	ND	0.50	5893901
Dissolved Boron (B)	ug/L	81	120	120	170	10	5893901
Dissolved Cadmium (Cd)	ug/L	ND	ND	ND	ND	0.10	5893901
Dissolved Chromium (Cr)	ug/L	ND	ND	ND	ND	5.0	5893901
Dissolved Cobalt (Co)	ug/L	0.69	ND	ND	ND	0.50	5893901
Dissolved Copper (Cu)	ug/L	ND	ND	ND	ND	1.0	5893901
Dissolved Lead (Pb)	ug/L	ND	ND	ND	ND	0.50	5893901
Dissolved Molybdenum (Mo)	ug/L	3.0	ND	ND	ND	0.50	5893901
Dissolved Nickel (Ni)	ug/L	2.7	ND	1.1	1.2	1.0	5893901
Dissolved Selenium (Se)	ug/L	ND	ND	ND	ND	2.0	5893901
Dissolved Silver (Ag)	ug/L	ND	ND	ND	ND	0.10	5893901
Dissolved Sodium (Na)	ug/L	110000	76000	74000	35000	100	5893901
Dissolved Thallium (Tl)	ug/L	ND	ND	ND	ND	0.050	5893901
Dissolved Uranium (U)	ug/L	3.1	0.15	0.17	1.1	0.10	5893901
Dissolved Vanadium (V)	ug/L	0.74	1.8	1.8	0.75	0.50	5893901
Dissolved Zinc (Zn)	ug/L	ND	ND	ND	ND	5.0	5893901

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		IOH995	IOH996	IOH997	IOH998		
Sampling Date		2018/12/13 16:00	2018/12/13 16:30	2018/12/13 16:30	2018/12/13 17:00		
COC Number		696809-01-01	696809-01-01	696809-01-01	696809-01-01		
	UNITS	GW-11131634-121318-MP-001	GW-11131634-121318-MP-002	GW-11131634-121318-MP-003	GW-11131634-121318-MP-004	RDL	QC Batch
Calculated Parameters							
Methylnaphthalene, 2-(1-)	ug/L	ND	ND	ND	ND	0.071	5892358
Polyaromatic Hydrocarbons							
Acenaphthene	ug/L	ND	ND	ND	ND	0.050	5899617
Acenaphthylene	ug/L	ND	ND	ND	ND	0.050	5899617
Anthracene	ug/L	0.089	ND	ND	ND	0.050	5899617
Benzo(a)anthracene	ug/L	0.15	ND	ND	ND	0.050	5899617
Benzo(a)pyrene	ug/L	0.13	0.015	ND	ND	0.010	5899617
Benzo(b/j)fluoranthene	ug/L	0.18	ND	ND	ND	0.050	5899617
Benzo(g,h,i)perylene	ug/L	0.075	ND	ND	ND	0.050	5899617
Benzo(k)fluoranthene	ug/L	0.073	ND	ND	ND	0.050	5899617
Chrysene	ug/L	0.12	ND	ND	ND	0.050	5899617
Dibenz(a,h)anthracene	ug/L	ND	ND	ND	ND	0.050	5899617
Fluoranthene	ug/L	0.42	ND	ND	ND	0.050	5899617
Fluorene	ug/L	0.077	ND	ND	ND	0.050	5899617
Indeno(1,2,3-cd)pyrene	ug/L	0.082	ND	ND	ND	0.050	5899617
1-Methylnaphthalene	ug/L	ND	ND	ND	ND	0.050	5899617
2-Methylnaphthalene	ug/L	0.055	ND	0.051	ND	0.050	5899617
Naphthalene	ug/L	ND	ND	ND	ND	0.050	5899617
Phenanthrene	ug/L	0.43	0.083	0.035	ND	0.030	5899617
Pyrene	ug/L	0.31	ND	ND	ND	0.050	5899617
Surrogate Recovery (%)							
D10-Anthracene	%	110	97	100	116		5899617
D14-Terphenyl (FS)	%	66	62	59	79		5899617
D8-Acenaphthylene	%	108	100	99	105		5899617

RDL = Reportable Detection Limit
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ND = Not detected

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		IOH995	IOH996			IOH996		
Sampling Date		2018/12/13 16:00	2018/12/13 16:30			2018/12/13 16:30		
COC Number		696809-01-01	696809-01-01			696809-01-01		
	UNITS	GW-11131634-121318-MP-001	GW-11131634-121318-MP-002	RDL	QC Batch	GW-11131634-121318-MP-002 Lab-Dup	RDL	QC Batch
Calculated Parameters								
1,3-Dichloropropene (cis+trans)	ug/L	ND	ND	0.50	5891914			
Volatile Organics								
Acetone (2-Propanone)	ug/L	ND	ND	10	5896281	ND	10	5896281
Benzene	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
Bromodichloromethane	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
Bromoform	ug/L	ND	ND	1.0	5896281	ND	1.0	5896281
Bromomethane	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
Carbon Tetrachloride	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
Chlorobenzene	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
Chloroform	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
Dibromochloromethane	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
1,2-Dichlorobenzene	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
1,3-Dichlorobenzene	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
1,4-Dichlorobenzene	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
Dichlorodifluoromethane (FREON 12)	ug/L	ND	ND	1.0	5896281	ND	1.0	5896281
1,1-Dichloroethane	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
1,2-Dichloroethane	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
1,1-Dichloroethylene	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
cis-1,2-Dichloroethylene	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
trans-1,2-Dichloroethylene	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
1,2-Dichloropropane	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
cis-1,3-Dichloropropene	ug/L	ND	ND	0.30	5896281	ND	0.30	5896281
trans-1,3-Dichloropropene	ug/L	ND	ND	0.40	5896281	ND	0.40	5896281
Ethylbenzene	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
Ethylene Dibromide	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
Hexane	ug/L	ND	ND	1.0	5896281	ND	1.0	5896281
Methylene Chloride(Dichloromethane)	ug/L	ND	ND	2.0	5896281	ND	2.0	5896281
Methyl Ethyl Ketone (2-Butanone)	ug/L	ND	ND	10	5896281	ND	10	5896281
Methyl Isobutyl Ketone	ug/L	ND	ND	5.0	5896281	ND	5.0	5896281
Methyl t-butyl ether (MTBE)	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
Styrene	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		IOH995	IOH996			IOH996		
Sampling Date		2018/12/13 16:00	2018/12/13 16:30			2018/12/13 16:30		
COC Number		696809-01-01	696809-01-01			696809-01-01		
	UNITS	GW-11131634-121318-MP-001	GW-11131634-121318-MP-002	RDL	QC Batch	GW-11131634-121318-MP-002 Lab-Dup	RDL	QC Batch
1,1,1,2-Tetrachloroethane	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
1,1,2,2-Tetrachloroethane	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
Tetrachloroethylene	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
Toluene	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
1,1,1-Trichloroethane	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
1,1,2-Trichloroethane	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
Trichloroethylene	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
Trichlorofluoromethane (FREON 11)	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
Vinyl Chloride	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
p+m-Xylene	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
o-Xylene	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
Total Xylenes	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
F1 (C6-C10)	ug/L	ND	ND	25	5896281	ND	25	5896281
F1 (C6-C10) - BTEX	ug/L	ND	ND	25	5896281	ND	25	5896281
Surrogate Recovery (%)								
4-Bromofluorobenzene	%	102	102		5896281	102		5896281
D4-1,2-Dichloroethane	%	101	100		5896281	101		5896281
D8-Toluene	%	102	101		5896281	101		5896281

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		IOH997	IOH998	IOH999		
Sampling Date		2018/12/13 16:30	2018/12/13 17:00	2018/12/13		
COC Number		696809-01-01	696809-01-01	696809-01-01		
	UNITS	GW-11131634-121318-MP-003	GW-11131634-121318-MP-004	TRIP BLANK	RDL	QC Batch
Calculated Parameters						
1,3-Dichloropropene (cis+trans)	ug/L	ND	ND	ND	0.50	5891914
Volatile Organics						
Acetone (2-Propanone)	ug/L	ND	ND	ND	10	5896281
Benzene	ug/L	ND	ND	ND	0.20	5896281
Bromodichloromethane	ug/L	ND	ND	ND	0.50	5896281
Bromoform	ug/L	ND	ND	ND	1.0	5896281
Bromomethane	ug/L	ND	ND	ND	0.50	5896281
Carbon Tetrachloride	ug/L	ND	ND	ND	0.20	5896281
Chlorobenzene	ug/L	ND	ND	ND	0.20	5896281
Chloroform	ug/L	ND	ND	ND	0.20	5896281
Dibromochloromethane	ug/L	ND	ND	ND	0.50	5896281
1,2-Dichlorobenzene	ug/L	ND	ND	ND	0.50	5896281
1,3-Dichlorobenzene	ug/L	ND	ND	ND	0.50	5896281
1,4-Dichlorobenzene	ug/L	ND	ND	ND	0.50	5896281
Dichlorodifluoromethane (FREON 12)	ug/L	ND	ND	ND	1.0	5896281
1,1-Dichloroethane	ug/L	ND	ND	ND	0.20	5896281
1,2-Dichloroethane	ug/L	ND	ND	ND	0.50	5896281
1,1-Dichloroethylene	ug/L	ND	ND	ND	0.20	5896281
cis-1,2-Dichloroethylene	ug/L	ND	ND	ND	0.50	5896281
trans-1,2-Dichloroethylene	ug/L	ND	ND	ND	0.50	5896281
1,2-Dichloropropane	ug/L	ND	ND	ND	0.20	5896281
cis-1,3-Dichloropropene	ug/L	ND	ND	ND	0.30	5896281
trans-1,3-Dichloropropene	ug/L	ND	ND	ND	0.40	5896281
Ethylbenzene	ug/L	ND	ND	ND	0.20	5896281
Ethylene Dibromide	ug/L	ND	ND	ND	0.20	5896281
Hexane	ug/L	ND	ND	ND	1.0	5896281
Methylene Chloride(Dichloromethane)	ug/L	ND	ND	ND	2.0	5896281
Methyl Ethyl Ketone (2-Butanone)	ug/L	ND	ND	ND	10	5896281
Methyl Isobutyl Ketone	ug/L	ND	ND	ND	5.0	5896281
Methyl t-butyl ether (MTBE)	ug/L	ND	ND	ND	0.50	5896281
Styrene	ug/L	ND	ND	ND	0.50	5896281
1,1,1,2-Tetrachloroethane	ug/L	ND	ND	ND	0.50	5896281

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		IOH997	IOH998	IOH999		
Sampling Date		2018/12/13 16:30	2018/12/13 17:00	2018/12/13		
COC Number		696809-01-01	696809-01-01	696809-01-01		
	UNITS	GW-11131634-121318-MP-003	GW-11131634-121318-MP-004	TRIP BLANK	RDL	QC Batch
1,1,2,2-Tetrachloroethane	ug/L	ND	ND	ND	0.50	5896281
Tetrachloroethylene	ug/L	ND	ND	ND	0.20	5896281
Toluene	ug/L	ND	0.24	ND	0.20	5896281
1,1,1-Trichloroethane	ug/L	ND	ND	ND	0.20	5896281
1,1,2-Trichloroethane	ug/L	ND	ND	ND	0.50	5896281
Trichloroethylene	ug/L	ND	ND	ND	0.20	5896281
Trichlorofluoromethane (FREON 11)	ug/L	ND	ND	ND	0.50	5896281
Vinyl Chloride	ug/L	ND	ND	ND	0.20	5896281
p+m-Xylene	ug/L	ND	ND	ND	0.20	5896281
o-Xylene	ug/L	ND	ND	ND	0.20	5896281
Total Xylenes	ug/L	ND	ND	ND	0.20	5896281
F1 (C6-C10)	ug/L	ND	ND	ND	25	5896281
F1 (C6-C10) - BTEX	ug/L	ND	ND	ND	25	5896281
Surrogate Recovery (%)						
4-Bromofluorobenzene	%	101	101	101		5896281
D4-1,2-Dichloroethane	%	102	101	100		5896281
D8-Toluene	%	101	101	102		5896281

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		IOH995	IOH996	IOH997	IOH998		
Sampling Date		2018/12/13 16:00	2018/12/13 16:30	2018/12/13 16:30	2018/12/13 17:00		
COC Number		696809-01-01	696809-01-01	696809-01-01	696809-01-01		
	UNITS	GW-11131634-121318 -MP-001	GW-11131634-121318 -MP-002	GW-11131634-121318 -MP-003	GW-11131634-121318 -MP-004	RDL	QC Batch
F2-F4 Hydrocarbons							
F2 (C10-C16 Hydrocarbons)	ug/L	ND	ND	ND	ND	100	5899621
F3 (C16-C34 Hydrocarbons)	ug/L	ND	ND	ND	ND	200	5899621
F4 (C34-C50 Hydrocarbons)	ug/L	ND	ND	ND	ND	200	5899621
Reached Baseline at C50	ug/L	Yes	Yes	Yes	Yes		5899621
Surrogate Recovery (%)							
o-Terphenyl	%	106	104	104	102		5899621

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Sampler Initials: MP

TEST SUMMARY

Maxxam ID: IOH995 **Collected:** 2018/12/13
Sample ID: GW-11131634-121318-MP-001 **Shipped:**
Matrix: Water **Received:** 2018/12/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5892358	N/A	2018/12/24	Automated Statchk
1,3-Dichloropropene Sum	CALC	5891914	N/A	2018/12/21	Automated Statchk
Chromium (VI) in Water	IC	5892920	N/A	2018/12/21	Lang Le
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5899621	2018/12/20	2018/12/20	Zhiyue (Frank) Zhu
Mercury	CV/AA	5900667	2018/12/21	2018/12/21	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	5893901	N/A	2018/12/18	Arefa Dabhad
PAH Compounds in Water by GC/MS (SIM)	GC/MS	5899617	2018/12/20	2018/12/21	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5896281	N/A	2018/12/20	Anna Gabrielyan

Maxxam ID: IOH996 **Collected:** 2018/12/13
Sample ID: GW-11131634-121318-MP-002 **Shipped:**
Matrix: Water **Received:** 2018/12/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5892358	N/A	2018/12/24	Automated Statchk
1,3-Dichloropropene Sum	CALC	5891914	N/A	2018/12/21	Automated Statchk
Chromium (VI) in Water	IC	5892920	N/A	2018/12/21	Lang Le
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5899621	2018/12/20	2018/12/20	Zhiyue (Frank) Zhu
Mercury	CV/AA	5900667	2018/12/21	2018/12/21	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	5893901	N/A	2018/12/18	Arefa Dabhad
PAH Compounds in Water by GC/MS (SIM)	GC/MS	5899617	2018/12/20	2018/12/21	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5896281	N/A	2018/12/20	Anna Gabrielyan

Maxxam ID: IOH996 Dup **Collected:** 2018/12/13
Sample ID: GW-11131634-121318-MP-002 **Shipped:**
Matrix: Water **Received:** 2018/12/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5896281	N/A	2018/12/20	Anna Gabrielyan

Maxxam ID: IOH997 **Collected:** 2018/12/13
Sample ID: GW-11131634-121318-MP-003 **Shipped:**
Matrix: Water **Received:** 2018/12/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5892358	N/A	2018/12/24	Automated Statchk
1,3-Dichloropropene Sum	CALC	5891914	N/A	2018/12/21	Automated Statchk
Chromium (VI) in Water	IC	5892920	N/A	2018/12/21	Lang Le
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5899621	2018/12/20	2018/12/21	Zhiyue (Frank) Zhu
Mercury	CV/AA	5900667	2018/12/21	2018/12/21	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	5893901	N/A	2018/12/18	Arefa Dabhad
PAH Compounds in Water by GC/MS (SIM)	GC/MS	5899617	2018/12/20	2018/12/21	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5896281	N/A	2018/12/20	Anna Gabrielyan

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Maxxam Job #: B8X6184
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Sampler Initials: MP

TEST SUMMARY

Maxxam ID: IOH998
Sample ID: GW-11131634-121318-MP-004
Matrix: Water

Collected: 2018/12/13
Shipped:
Received: 2018/12/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5892358	N/A	2018/12/24	Automated Statchk
1,3-Dichloropropene Sum	CALC	5891914	N/A	2018/12/21	Automated Statchk
Chromium (VI) in Water	IC	5892920	N/A	2018/12/21	Lang Le
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5899621	2018/12/20	2018/12/21	Zhiyue (Frank) Zhu
Mercury	CV/AA	5900667	2018/12/21	2018/12/21	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	5893901	N/A	2018/12/18	Arefa Dabhad
PAH Compounds in Water by GC/MS (SIM)	GC/MS	5899617	2018/12/20	2018/12/21	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5896281	N/A	2018/12/20	Anna Gabrielyan

Maxxam ID: IOH999
Sample ID: TRIP BLANK
Matrix: Water

Collected: 2018/12/13
Shipped:
Received: 2018/12/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5891914	N/A	2018/12/21	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5896281	N/A	2018/12/20	Anna Gabrielyan

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GENERAL COMMENTS

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

Package 1	3.3°C

Results relate only to the items tested.

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

QUALITY ASSURANCE REPORT

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5896281	4-Bromofluorobenzene	2018/12/20	102 (3)	70 - 130	103	70 - 130	102	%		
5896281	D4-1,2-Dichloroethane	2018/12/20	101 (3)	70 - 130	99	70 - 130	99	%		
5896281	D8-Toluene	2018/12/20	102 (3)	70 - 130	102	70 - 130	100	%		
5899617	D10-Anthracene	2018/12/21	118	50 - 130	112	50 - 130	118	%		
5899617	D14-Terphenyl (FS)	2018/12/21	110	50 - 130	87	50 - 130	110	%		
5899617	D8-Acenaphthylene	2018/12/21	105	50 - 130	98	50 - 130	104	%		
5899621	o-Terphenyl	2018/12/20	108	60 - 130	109	60 - 130	104	%		
5892920	Chromium (VI)	2018/12/21	105	80 - 120	107	80 - 120	ND, RDL=0.50	ug/L	NC (1)	20
5893901	Dissolved Antimony (Sb)	2018/12/19	114	80 - 120	103	80 - 120	ND, RDL=0.50	ug/L	NC (1)	20
5893901	Dissolved Arsenic (As)	2018/12/19	106	80 - 120	99	80 - 120	ND, RDL=1.0	ug/L	NC (1)	20
5893901	Dissolved Barium (Ba)	2018/12/19	NC	80 - 120	99	80 - 120	ND, RDL=2.0	ug/L	2.6 (1)	20
5893901	Dissolved Beryllium (Be)	2018/12/19	121 (2)	80 - 120	99	80 - 120	ND, RDL=0.50	ug/L	NC (1)	20
5893901	Dissolved Boron (B)	2018/12/19	NC	80 - 120	97	80 - 120	ND, RDL=10	ug/L	1.7 (1)	20
5893901	Dissolved Cadmium (Cd)	2018/12/19	107	80 - 120	103	80 - 120	ND, RDL=0.10	ug/L	NC (1)	20
5893901	Dissolved Chromium (Cr)	2018/12/19	105	80 - 120	95	80 - 120	ND, RDL=5.0	ug/L	NC (1)	20
5893901	Dissolved Cobalt (Co)	2018/12/19	105	80 - 120	99	80 - 120	ND, RDL=0.50	ug/L	NC (1)	20
5893901	Dissolved Copper (Cu)	2018/12/19	110	80 - 120	96	80 - 120	ND, RDL=1.0	ug/L	NC (1)	20
5893901	Dissolved Lead (Pb)	2018/12/19	104	80 - 120	101	80 - 120	ND, RDL=0.50	ug/L	NC (1)	20
5893901	Dissolved Molybdenum (Mo)	2018/12/19	113	80 - 120	99	80 - 120	ND, RDL=0.50	ug/L	NC (1)	20
5893901	Dissolved Nickel (Ni)	2018/12/19	102	80 - 120	96	80 - 120	ND, RDL=1.0	ug/L	NC (1)	20
5893901	Dissolved Selenium (Se)	2018/12/19	103	80 - 120	102	80 - 120	ND, RDL=2.0	ug/L	NC (1)	20
5893901	Dissolved Silver (Ag)	2018/12/19	55 (2)	80 - 120	98	80 - 120	ND, RDL=0.10	ug/L	NC (1)	20
5893901	Dissolved Sodium (Na)	2018/12/19	NC	80 - 120	101	80 - 120	360, RDL=100	ug/L	4.9 (1)	20
5893901	Dissolved Thallium (Tl)	2018/12/19	105	80 - 120	101	80 - 120	ND, RDL=0.050	ug/L	NC (1)	20
5893901	Dissolved Uranium (U)	2018/12/19	105	80 - 120	103	80 - 120	ND, RDL=0.10	ug/L	7.5 (1)	20
5893901	Dissolved Vanadium (V)	2018/12/19	108	80 - 120	97	80 - 120	ND, RDL=0.50	ug/L	NC (1)	20
5893901	Dissolved Zinc (Zn)	2018/12/19	101	80 - 120	99	80 - 120	ND, RDL=5.0	ug/L	NC (1)	20
5896281	1,1,1,2-Tetrachloroethane	2018/12/20	98 (3)	70 - 130	98	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	1,1,1-Trichloroethane	2018/12/20	97 (3)	70 - 130	97	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	1,1,2,2-Tetrachloroethane	2018/12/20	102 (3)	70 - 130	101	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	1,1,2-Trichloroethane	2018/12/20	102 (3)	70 - 130	100	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5896281	1,1-Dichloroethane	2018/12/20	100 (3)	70 - 130	100	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	1,1-Dichloroethylene	2018/12/20	98 (3)	70 - 130	99	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	1,2-Dichlorobenzene	2018/12/20	97 (3)	70 - 130	96	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	1,2-Dichloroethane	2018/12/20	102 (3)	70 - 130	99	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	1,2-Dichloropropane	2018/12/20	102 (3)	70 - 130	102	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	1,3-Dichlorobenzene	2018/12/20	101 (3)	70 - 130	101	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	1,4-Dichlorobenzene	2018/12/20	101 (3)	70 - 130	101	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	Acetone (2-Propanone)	2018/12/20	107 (3)	60 - 140	104	60 - 140	ND, RDL=10	ug/L	NC (4)	30
5896281	Benzene	2018/12/20	97 (3)	70 - 130	97	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	Bromodichloromethane	2018/12/20	92 (3)	70 - 130	92	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	Bromoform	2018/12/20	98 (3)	70 - 130	97	70 - 130	ND, RDL=1.0	ug/L	NC (4)	30
5896281	Bromomethane	2018/12/20	96 (3)	60 - 140	95	60 - 140	ND, RDL=0.50	ug/L	NC (4)	30
5896281	Carbon Tetrachloride	2018/12/20	94 (3)	70 - 130	95	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	Chlorobenzene	2018/12/20	98 (3)	70 - 130	98	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	Chloroform	2018/12/20	98 (3)	70 - 130	98	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	cis-1,2-Dichloroethylene	2018/12/20	99 (3)	70 - 130	99	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	cis-1,3-Dichloropropene	2018/12/20	108 (3)	70 - 130	105	70 - 130	ND, RDL=0.30	ug/L	NC (4)	30
5896281	Dibromochloromethane	2018/12/20	99 (3)	70 - 130	98	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	Dichlorodifluoromethane (FREON 12)	2018/12/20	100 (3)	60 - 140	103	60 - 140	ND, RDL=1.0	ug/L	NC (4)	30
5896281	Ethylbenzene	2018/12/20	102 (3)	70 - 130	104	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	Ethylene Dibromide	2018/12/20	104 (3)	70 - 130	102	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	F1 (C6-C10) - BTEX	2018/12/20					ND, RDL=25	ug/L	NC (4)	30
5896281	F1 (C6-C10)	2018/12/20	89 (3)	60 - 140	94	60 - 140	ND, RDL=25	ug/L	NC (4)	30
5896281	Hexane	2018/12/20	100 (3)	70 - 130	102	70 - 130	ND, RDL=1.0	ug/L	NC (4)	30
5896281	Methyl Ethyl Ketone (2-Butanone)	2018/12/20	114 (3)	60 - 140	111	60 - 140	ND, RDL=10	ug/L	NC (4)	30
5896281	Methyl Isobutyl Ketone	2018/12/20	118 (3)	70 - 130	117	70 - 130	ND, RDL=5.0	ug/L	NC (4)	30
5896281	Methyl t-butyl ether (MTBE)	2018/12/20	105 (3)	70 - 130	104	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	Methylene Chloride(Dichloromethane)	2018/12/20	89 (3)	70 - 130	89	70 - 130	ND, RDL=2.0	ug/L	NC (4)	30
5896281	o-Xylene	2018/12/20	101 (3)	70 - 130	102	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	p+m-Xylene	2018/12/20	102 (3)	70 - 130	103	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	Styrene	2018/12/20	104 (3)	70 - 130	107	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30

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QUALITY ASSURANCE REPORT(CONT'D)

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5896281	Tetrachloroethylene	2018/12/20	96 (3)	70 - 130	97	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	Toluene	2018/12/20	98 (3)	70 - 130	98	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	Total Xylenes	2018/12/20					ND, RDL=0.20	ug/L	NC (4)	30
5896281	trans-1,2-Dichloroethylene	2018/12/20	96 (3)	70 - 130	97	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	trans-1,3-Dichloropropene	2018/12/20	111 (3)	70 - 130	107	70 - 130	ND, RDL=0.40	ug/L	NC (4)	30
5896281	Trichloroethylene	2018/12/20	97 (3)	70 - 130	98	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	Trichlorofluoromethane (FREON 11)	2018/12/20	95 (3)	70 - 130	96	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	Vinyl Chloride	2018/12/20	98 (3)	70 - 130	100	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5899617	1-Methylnaphthalene	2018/12/21	105	50 - 130	127	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	2-Methylnaphthalene	2018/12/21	96	50 - 130	109	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Acenaphthene	2018/12/21	93	50 - 130	92	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Acenaphthylene	2018/12/21	96	50 - 130	89	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Anthracene	2018/12/21	90	50 - 130	89	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Benzo(a)anthracene	2018/12/21	98	50 - 130	98	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Benzo(a)pyrene	2018/12/21	93	50 - 130	94	50 - 130	ND, RDL=0.010	ug/L	NC (1)	30
5899617	Benzo(b/j)fluoranthene	2018/12/21	92	50 - 130	102	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Benzo(g,h,i)perylene	2018/12/21	92	50 - 130	85	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Benzo(k)fluoranthene	2018/12/21	89	50 - 130	83	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Chrysene	2018/12/21	94	50 - 130	97	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Dibenz(a,h)anthracene	2018/12/21	87	50 - 130	74	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Fluoranthene	2018/12/21	100	50 - 130	80	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Fluorene	2018/12/21	92	50 - 130	83	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Indeno(1,2,3-cd)pyrene	2018/12/21	93	50 - 130	82	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Naphthalene	2018/12/21	91	50 - 130	91	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Phenanthrene	2018/12/21	95	50 - 130	94	50 - 130	ND, RDL=0.030	ug/L	2.4 (1)	30
5899617	Pyrene	2018/12/21	98	50 - 130	86	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899621	F2 (C10-C16 Hydrocarbons)	2018/12/21	104	50 - 130	102	60 - 130	ND, RDL=100	ug/L	NC (1)	30
5899621	F3 (C16-C34 Hydrocarbons)	2018/12/21	104	50 - 130	107	60 - 130	ND, RDL=200	ug/L	NC (1)	30
5899621	F4 (C34-C50 Hydrocarbons)	2018/12/21	103	50 - 130	101	60 - 130	ND, RDL=200	ug/L	NC (1)	30

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

QUALITY ASSURANCE REPORT(CONT'D)

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5900667	Mercury (Hg)	2018/12/21	96	75 - 125	99	80 - 120	ND, RDL=0.1	ug/L	NC (1)	20

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

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

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

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

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

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

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

(1) Duplicate Parent ID

(2) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(3) Matrix Spike Parent ID [IOH996-05]

(4) Duplicate Parent ID [IOH996-05]

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

VALIDATION SIGNATURE PAGE

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



Ewa Pranjic, M.Sc., C.Chem, 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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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#3000 GHD Limited	Company Name:	SAME AS INVOICE	Quotation #:	B80174	Maxxam Job #:	Bottle Order #:
Attention:	Jennifer Balkwill	Attention:		P.O. #:	7351423 6		696809
Address:	455 Phillip St Waterloo ON N2L 3X2	Address:		Project:	11131634	COC #:	Project Manager:
Tel:	(519) 884-7780 Ext: 3599 Fax: (519) 725-1394	Tel:	Fax:	Project Name:	Union Property - Port Dalhousie	C#696809-01-01	Tanya Fidlin
Email:	Jennifer.Balkwill@ghd.com, NationalEDDsupport@max	Email:		Site #:			
				Sampled By:	M. Pley		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___	☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other ___	

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC):

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 Metals Package	O.Reg 153 VOCs by HS & F1-F4	O.Reg 153 PAHs	Volatile Organic Compounds and F1 PHCs	# of Bottles	Comments
1	GW-1113163 4-12	1318-MP-001	12/13/2018	16:00	GW	X	X	X	X	X	8	
2	GW-1113163 4-12	1318-MP-002	12/13/2018	16:30	GW	X	X	X	X	X	8	
3	GW-1113163 4-12	1318-MP-003	12/13/2018	16:30	GW	X	X	X	X	X	8	
4	GW-1113163 4-12	1318-MP-004	12/13/2018	17:00	GW	X	X	X	X	X	8	
5	Trip Blank		—	—	~~GW~~ Water					X		
6												
7												
8												
9												
10												

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ *(call lab for #)*

14-Dec-18 15:51
Tanya Fidlin
B8X6184
FCN ENV-1224

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
- Melissa Pley	18/12/13	11:00		18/12/14	15:51	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt: 3/4/3	Custody Seal Present	Yes	No
		Intact		

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam
A Bureau Veritas Group Company

Your P.O. #: 73514236
Your Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your C.O.C. #: 696809-01-01

Attention: 11131634 - PO - 73514236

GHD Limited
455 Phillip St
Waterloo, ON
CANADA N2L 3X2

Report Date: 2018/12/24
Report #: R5538909
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8X6184
Received: 2018/12/14, 15:51

Sample Matrix: Water
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	4	N/A	2018/12/24	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum	5	N/A	2018/12/21		EPA 8260C m
Chromium (VI) in Water	4	N/A	2018/12/21	CAM SOP-00436	EPA 7199 m
Petroleum Hydrocarbons F2-F4 in Water (1)	2	2018/12/20	2018/12/20	CAM SOP-00316	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1)	2	2018/12/20	2018/12/21	CAM SOP-00316	CCME PHC-CWS m
Mercury	4	2018/12/21	2018/12/21	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS	4	N/A	2018/12/18	CAM SOP-00447	EPA 6020B m
PAH Compounds in Water by GC/MS (SIM)	4	2018/12/20	2018/12/21	CAM SOP-00318	EPA 8270D m
Volatile Organic Compounds and F1 PHCs	5	N/A	2018/12/20	CAM SOP-00230	EPA 8260C 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.

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.
(1) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Maxxam conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003".

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Your P.O. #: 73514236
Your Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your C.O.C. #: 696809-01-01

Attention: 11131634 - PO - 73514236

GHD Limited
455 Phillip St
Waterloo, ON
CANADA N2L 3X2

Report Date: 2018/12/24
Report #: R5538909
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8X6184
Received: 2018/12/14, 15:51

Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Tanya Fidlin, Project Manager
Email: tfidlin@maxxam.ca
Phone# (905)817-5700
==========
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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Maxxam Job #: B8X6184
Report Date: 2018/12/24

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		IOH995	IOH996	IOH997	IOH998		
Sampling Date		2018/12/13 16:00	2018/12/13 16:30	2018/12/13 16:30	2018/12/13 17:00		
COC Number		696809-01-01	696809-01-01	696809-01-01	696809-01-01		
	UNITS	GW-11131634-121318 -MP-001	GW-11131634-121318 -MP-002	GW-11131634-121318 -MP-003	GW-11131634-121318 -MP-004	RDL	QC Batch
Metals							
Chromium (VI)	ug/L	ND	ND	ND	ND	0.50	5892920
Mercury (Hg)	ug/L	ND	ND	ND	ND	0.1	5900667
Dissolved Antimony (Sb)	ug/L	ND	ND	ND	ND	0.50	5893901
Dissolved Arsenic (As)	ug/L	1.4	2.1	2.0	4.4	1.0	5893901
Dissolved Barium (Ba)	ug/L	38	210	210	200	2.0	5893901
Dissolved Beryllium (Be)	ug/L	ND	ND	ND	ND	0.50	5893901
Dissolved Boron (B)	ug/L	81	120	120	170	10	5893901
Dissolved Cadmium (Cd)	ug/L	ND	ND	ND	ND	0.10	5893901
Dissolved Chromium (Cr)	ug/L	ND	ND	ND	ND	5.0	5893901
Dissolved Cobalt (Co)	ug/L	0.69	ND	ND	ND	0.50	5893901
Dissolved Copper (Cu)	ug/L	ND	ND	ND	ND	1.0	5893901
Dissolved Lead (Pb)	ug/L	ND	ND	ND	ND	0.50	5893901
Dissolved Molybdenum (Mo)	ug/L	3.0	ND	ND	ND	0.50	5893901
Dissolved Nickel (Ni)	ug/L	2.7	ND	1.1	1.2	1.0	5893901
Dissolved Selenium (Se)	ug/L	ND	ND	ND	ND	2.0	5893901
Dissolved Silver (Ag)	ug/L	ND	ND	ND	ND	0.10	5893901
Dissolved Sodium (Na)	ug/L	110000	76000	74000	35000	100	5893901
Dissolved Thallium (Tl)	ug/L	ND	ND	ND	ND	0.050	5893901
Dissolved Uranium (U)	ug/L	3.1	0.15	0.17	1.1	0.10	5893901
Dissolved Vanadium (V)	ug/L	0.74	1.8	1.8	0.75	0.50	5893901
Dissolved Zinc (Zn)	ug/L	ND	ND	ND	ND	5.0	5893901

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		IOH995	IOH996	IOH997	IOH998		
Sampling Date		2018/12/13 16:00	2018/12/13 16:30	2018/12/13 16:30	2018/12/13 17:00		
COC Number		696809-01-01	696809-01-01	696809-01-01	696809-01-01		
	UNITS	GW-11131634-121318-MP-001	GW-11131634-121318-MP-002	GW-11131634-121318-MP-003	GW-11131634-121318-MP-004	RDL	QC Batch
Calculated Parameters							
Methylnaphthalene, 2-(1-)	ug/L	ND	ND	ND	ND	0.071	5892358
Polyaromatic Hydrocarbons							
Acenaphthene	ug/L	ND	ND	ND	ND	0.050	5899617
Acenaphthylene	ug/L	ND	ND	ND	ND	0.050	5899617
Anthracene	ug/L	0.089	ND	ND	ND	0.050	5899617
Benzo(a)anthracene	ug/L	0.15	ND	ND	ND	0.050	5899617
Benzo(a)pyrene	ug/L	0.13	0.015	ND	ND	0.010	5899617
Benzo(b/j)fluoranthene	ug/L	0.18	ND	ND	ND	0.050	5899617
Benzo(g,h,i)perylene	ug/L	0.075	ND	ND	ND	0.050	5899617
Benzo(k)fluoranthene	ug/L	0.073	ND	ND	ND	0.050	5899617
Chrysene	ug/L	0.12	ND	ND	ND	0.050	5899617
Dibenz(a,h)anthracene	ug/L	ND	ND	ND	ND	0.050	5899617
Fluoranthene	ug/L	0.42	ND	ND	ND	0.050	5899617
Fluorene	ug/L	0.077	ND	ND	ND	0.050	5899617
Indeno(1,2,3-cd)pyrene	ug/L	0.082	ND	ND	ND	0.050	5899617
1-Methylnaphthalene	ug/L	ND	ND	ND	ND	0.050	5899617
2-Methylnaphthalene	ug/L	0.055	ND	0.051	ND	0.050	5899617
Naphthalene	ug/L	ND	ND	ND	ND	0.050	5899617
Phenanthrene	ug/L	0.43	0.083	0.035	ND	0.030	5899617
Pyrene	ug/L	0.31	ND	ND	ND	0.050	5899617
Surrogate Recovery (%)							
D10-Anthracene	%	110	97	100	116		5899617
D14-Terphenyl (FS)	%	66	62	59	79		5899617
D8-Acenaphthylene	%	108	100	99	105		5899617

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		IOH995	IOH996			IOH996		
Sampling Date		2018/12/13 16:00	2018/12/13 16:30			2018/12/13 16:30		
COC Number		696809-01-01	696809-01-01			696809-01-01		
	UNITS	GW-11131634-121318-MP-001	GW-11131634-121318-MP-002	RDL	QC Batch	GW-11131634-121318-MP-002 Lab-Dup	RDL	QC Batch
Calculated Parameters								
1,3-Dichloropropene (cis+trans)	ug/L	ND	ND	0.50	5891914			
Volatile Organics								
Acetone (2-Propanone)	ug/L	ND	ND	10	5896281	ND	10	5896281
Benzene	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
Bromodichloromethane	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
Bromoform	ug/L	ND	ND	1.0	5896281	ND	1.0	5896281
Bromomethane	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
Carbon Tetrachloride	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
Chlorobenzene	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
Chloroform	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
Dibromochloromethane	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
1,2-Dichlorobenzene	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
1,3-Dichlorobenzene	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
1,4-Dichlorobenzene	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
Dichlorodifluoromethane (FREON 12)	ug/L	ND	ND	1.0	5896281	ND	1.0	5896281
1,1-Dichloroethane	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
1,2-Dichloroethane	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
1,1-Dichloroethylene	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
cis-1,2-Dichloroethylene	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
trans-1,2-Dichloroethylene	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
1,2-Dichloropropane	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
cis-1,3-Dichloropropene	ug/L	ND	ND	0.30	5896281	ND	0.30	5896281
trans-1,3-Dichloropropene	ug/L	ND	ND	0.40	5896281	ND	0.40	5896281
Ethylbenzene	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
Ethylene Dibromide	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
Hexane	ug/L	ND	ND	1.0	5896281	ND	1.0	5896281
Methylene Chloride(Dichloromethane)	ug/L	ND	ND	2.0	5896281	ND	2.0	5896281
Methyl Ethyl Ketone (2-Butanone)	ug/L	ND	ND	10	5896281	ND	10	5896281
Methyl Isobutyl Ketone	ug/L	ND	ND	5.0	5896281	ND	5.0	5896281
Methyl t-butyl ether (MTBE)	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
Styrene	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		IOH995	IOH996			IOH996		
Sampling Date		2018/12/13 16:00	2018/12/13 16:30			2018/12/13 16:30		
COC Number		696809-01-01	696809-01-01			696809-01-01		
	UNITS	GW-11131634-121318-MP-001	GW-11131634-121318-MP-002	RDL	QC Batch	GW-11131634-121318-MP-002 Lab-Dup	RDL	QC Batch
1,1,1,2-Tetrachloroethane	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
1,1,2,2-Tetrachloroethane	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
Tetrachloroethylene	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
Toluene	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
1,1,1-Trichloroethane	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
1,1,2-Trichloroethane	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
Trichloroethylene	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
Trichlorofluoromethane (FREON 11)	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
Vinyl Chloride	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
p+m-Xylene	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
o-Xylene	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
Total Xylenes	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
F1 (C6-C10)	ug/L	ND	ND	25	5896281	ND	25	5896281
F1 (C6-C10) - BTEX	ug/L	ND	ND	25	5896281	ND	25	5896281
Surrogate Recovery (%)								
4-Bromofluorobenzene	%	102	102		5896281	102		5896281
D4-1,2-Dichloroethane	%	101	100		5896281	101		5896281
D8-Toluene	%	102	101		5896281	101		5896281

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		IOH997	IOH998	IOH999		
Sampling Date		2018/12/13 16:30	2018/12/13 17:00	2018/12/13		
COC Number		696809-01-01	696809-01-01	696809-01-01		
	UNITS	GW-11131634-121318-MP-003	GW-11131634-121318-MP-004	TRIP BLANK	RDL	QC Batch
Calculated Parameters						
1,3-Dichloropropene (cis+trans)	ug/L	ND	ND	ND	0.50	5891914
Volatile Organics						
Acetone (2-Propanone)	ug/L	ND	ND	ND	10	5896281
Benzene	ug/L	ND	ND	ND	0.20	5896281
Bromodichloromethane	ug/L	ND	ND	ND	0.50	5896281
Bromoform	ug/L	ND	ND	ND	1.0	5896281
Bromomethane	ug/L	ND	ND	ND	0.50	5896281
Carbon Tetrachloride	ug/L	ND	ND	ND	0.20	5896281
Chlorobenzene	ug/L	ND	ND	ND	0.20	5896281
Chloroform	ug/L	ND	ND	ND	0.20	5896281
Dibromochloromethane	ug/L	ND	ND	ND	0.50	5896281
1,2-Dichlorobenzene	ug/L	ND	ND	ND	0.50	5896281
1,3-Dichlorobenzene	ug/L	ND	ND	ND	0.50	5896281
1,4-Dichlorobenzene	ug/L	ND	ND	ND	0.50	5896281
Dichlorodifluoromethane (FREON 12)	ug/L	ND	ND	ND	1.0	5896281
1,1-Dichloroethane	ug/L	ND	ND	ND	0.20	5896281
1,2-Dichloroethane	ug/L	ND	ND	ND	0.50	5896281
1,1-Dichloroethylene	ug/L	ND	ND	ND	0.20	5896281
cis-1,2-Dichloroethylene	ug/L	ND	ND	ND	0.50	5896281
trans-1,2-Dichloroethylene	ug/L	ND	ND	ND	0.50	5896281
1,2-Dichloropropane	ug/L	ND	ND	ND	0.20	5896281
cis-1,3-Dichloropropene	ug/L	ND	ND	ND	0.30	5896281
trans-1,3-Dichloropropene	ug/L	ND	ND	ND	0.40	5896281
Ethylbenzene	ug/L	ND	ND	ND	0.20	5896281
Ethylene Dibromide	ug/L	ND	ND	ND	0.20	5896281
Hexane	ug/L	ND	ND	ND	1.0	5896281
Methylene Chloride(Dichloromethane)	ug/L	ND	ND	ND	2.0	5896281
Methyl Ethyl Ketone (2-Butanone)	ug/L	ND	ND	ND	10	5896281
Methyl Isobutyl Ketone	ug/L	ND	ND	ND	5.0	5896281
Methyl t-butyl ether (MTBE)	ug/L	ND	ND	ND	0.50	5896281
Styrene	ug/L	ND	ND	ND	0.50	5896281
1,1,1,2-Tetrachloroethane	ug/L	ND	ND	ND	0.50	5896281

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		IOH997	IOH998	IOH999		
Sampling Date		2018/12/13 16:30	2018/12/13 17:00	2018/12/13		
COC Number		696809-01-01	696809-01-01	696809-01-01		
	UNITS	GW-11131634-121318-MP-003	GW-11131634-121318-MP-004	TRIP BLANK	RDL	QC Batch
1,1,2,2-Tetrachloroethane	ug/L	ND	ND	ND	0.50	5896281
Tetrachloroethylene	ug/L	ND	ND	ND	0.20	5896281
Toluene	ug/L	ND	0.24	ND	0.20	5896281
1,1,1-Trichloroethane	ug/L	ND	ND	ND	0.20	5896281
1,1,2-Trichloroethane	ug/L	ND	ND	ND	0.50	5896281
Trichloroethylene	ug/L	ND	ND	ND	0.20	5896281
Trichlorofluoromethane (FREON 11)	ug/L	ND	ND	ND	0.50	5896281
Vinyl Chloride	ug/L	ND	ND	ND	0.20	5896281
p+m-Xylene	ug/L	ND	ND	ND	0.20	5896281
o-Xylene	ug/L	ND	ND	ND	0.20	5896281
Total Xylenes	ug/L	ND	ND	ND	0.20	5896281
F1 (C6-C10)	ug/L	ND	ND	ND	25	5896281
F1 (C6-C10) - BTEX	ug/L	ND	ND	ND	25	5896281
Surrogate Recovery (%)						
4-Bromofluorobenzene	%	101	101	101		5896281
D4-1,2-Dichloroethane	%	102	101	100		5896281
D8-Toluene	%	101	101	102		5896281

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		IOH995	IOH996	IOH997	IOH998		
Sampling Date		2018/12/13 16:00	2018/12/13 16:30	2018/12/13 16:30	2018/12/13 17:00		
COC Number		696809-01-01	696809-01-01	696809-01-01	696809-01-01		
	UNITS	GW-11131634-121318 -MP-001	GW-11131634-121318 -MP-002	GW-11131634-121318 -MP-003	GW-11131634-121318 -MP-004	RDL	QC Batch
F2-F4 Hydrocarbons							
F2 (C10-C16 Hydrocarbons)	ug/L	ND	ND	ND	ND	100	5899621
F3 (C16-C34 Hydrocarbons)	ug/L	ND	ND	ND	ND	200	5899621
F4 (C34-C50 Hydrocarbons)	ug/L	ND	ND	ND	ND	200	5899621
Reached Baseline at C50	ug/L	Yes	Yes	Yes	Yes		5899621
Surrogate Recovery (%)							
o-Terphenyl	%	106	104	104	102		5899621

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

TEST SUMMARY

Maxxam ID: IOH995 **Collected:** 2018/12/13
Sample ID: GW-11131634-121318-MP-001 **Shipped:**
Matrix: Water **Received:** 2018/12/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5892358	N/A	2018/12/24	Automated Statchk
1,3-Dichloropropene Sum	CALC	5891914	N/A	2018/12/21	Automated Statchk
Chromium (VI) in Water	IC	5892920	N/A	2018/12/21	Lang Le
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5899621	2018/12/20	2018/12/20	Zhiyue (Frank) Zhu
Mercury	CV/AA	5900667	2018/12/21	2018/12/21	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	5893901	N/A	2018/12/18	Arefa Dabhad
PAH Compounds in Water by GC/MS (SIM)	GC/MS	5899617	2018/12/20	2018/12/21	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5896281	N/A	2018/12/20	Anna Gabrielyan

Maxxam ID: IOH996 **Collected:** 2018/12/13
Sample ID: GW-11131634-121318-MP-002 **Shipped:**
Matrix: Water **Received:** 2018/12/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5892358	N/A	2018/12/24	Automated Statchk
1,3-Dichloropropene Sum	CALC	5891914	N/A	2018/12/21	Automated Statchk
Chromium (VI) in Water	IC	5892920	N/A	2018/12/21	Lang Le
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5899621	2018/12/20	2018/12/20	Zhiyue (Frank) Zhu
Mercury	CV/AA	5900667	2018/12/21	2018/12/21	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	5893901	N/A	2018/12/18	Arefa Dabhad
PAH Compounds in Water by GC/MS (SIM)	GC/MS	5899617	2018/12/20	2018/12/21	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5896281	N/A	2018/12/20	Anna Gabrielyan

Maxxam ID: IOH996 Dup **Collected:** 2018/12/13
Sample ID: GW-11131634-121318-MP-002 **Shipped:**
Matrix: Water **Received:** 2018/12/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5896281	N/A	2018/12/20	Anna Gabrielyan

Maxxam ID: IOH997 **Collected:** 2018/12/13
Sample ID: GW-11131634-121318-MP-003 **Shipped:**
Matrix: Water **Received:** 2018/12/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5892358	N/A	2018/12/24	Automated Statchk
1,3-Dichloropropene Sum	CALC	5891914	N/A	2018/12/21	Automated Statchk
Chromium (VI) in Water	IC	5892920	N/A	2018/12/21	Lang Le
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5899621	2018/12/20	2018/12/21	Zhiyue (Frank) Zhu
Mercury	CV/AA	5900667	2018/12/21	2018/12/21	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	5893901	N/A	2018/12/18	Arefa Dabhad
PAH Compounds in Water by GC/MS (SIM)	GC/MS	5899617	2018/12/20	2018/12/21	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5896281	N/A	2018/12/20	Anna Gabrielyan

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

TEST SUMMARY

Maxxam ID: IOH998
Sample ID: GW-11131634-121318-MP-004
Matrix: Water

Collected: 2018/12/13
Shipped:
Received: 2018/12/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5892358	N/A	2018/12/24	Automated Statchk
1,3-Dichloropropene Sum	CALC	5891914	N/A	2018/12/21	Automated Statchk
Chromium (VI) in Water	IC	5892920	N/A	2018/12/21	Lang Le
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5899621	2018/12/20	2018/12/21	Zhiyue (Frank) Zhu
Mercury	CV/AA	5900667	2018/12/21	2018/12/21	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	5893901	N/A	2018/12/18	Arefa Dabhad
PAH Compounds in Water by GC/MS (SIM)	GC/MS	5899617	2018/12/20	2018/12/21	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5896281	N/A	2018/12/20	Anna Gabrielyan

Maxxam ID: IOH999
Sample ID: TRIP BLANK
Matrix: Water

Collected: 2018/12/13
Shipped:
Received: 2018/12/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5891914	N/A	2018/12/21	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5896281	N/A	2018/12/20	Anna Gabrielyan

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
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GENERAL COMMENTS

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

Package 1	3.3°C

Results relate only to the items tested.

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

QUALITY ASSURANCE REPORT

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5896281	4-Bromofluorobenzene	2018/12/20	102 (3)	70 - 130	103	70 - 130	102	%		
5896281	D4-1,2-Dichloroethane	2018/12/20	101 (3)	70 - 130	99	70 - 130	99	%		
5896281	D8-Toluene	2018/12/20	102 (3)	70 - 130	102	70 - 130	100	%		
5899617	D10-Anthracene	2018/12/21	118	50 - 130	112	50 - 130	118	%		
5899617	D14-Terphenyl (FS)	2018/12/21	110	50 - 130	87	50 - 130	110	%		
5899617	D8-Acenaphthylene	2018/12/21	105	50 - 130	98	50 - 130	104	%		
5899621	o-Terphenyl	2018/12/20	108	60 - 130	109	60 - 130	104	%		
5892920	Chromium (VI)	2018/12/21	105	80 - 120	107	80 - 120	ND, RDL=0.50	ug/L	NC (1)	20
5893901	Dissolved Antimony (Sb)	2018/12/19	114	80 - 120	103	80 - 120	ND, RDL=0.50	ug/L	NC (1)	20
5893901	Dissolved Arsenic (As)	2018/12/19	106	80 - 120	99	80 - 120	ND, RDL=1.0	ug/L	NC (1)	20
5893901	Dissolved Barium (Ba)	2018/12/19	NC	80 - 120	99	80 - 120	ND, RDL=2.0	ug/L	2.6 (1)	20
5893901	Dissolved Beryllium (Be)	2018/12/19	121 (2)	80 - 120	99	80 - 120	ND, RDL=0.50	ug/L	NC (1)	20
5893901	Dissolved Boron (B)	2018/12/19	NC	80 - 120	97	80 - 120	ND, RDL=10	ug/L	1.7 (1)	20
5893901	Dissolved Cadmium (Cd)	2018/12/19	107	80 - 120	103	80 - 120	ND, RDL=0.10	ug/L	NC (1)	20
5893901	Dissolved Chromium (Cr)	2018/12/19	105	80 - 120	95	80 - 120	ND, RDL=5.0	ug/L	NC (1)	20
5893901	Dissolved Cobalt (Co)	2018/12/19	105	80 - 120	99	80 - 120	ND, RDL=0.50	ug/L	NC (1)	20
5893901	Dissolved Copper (Cu)	2018/12/19	110	80 - 120	96	80 - 120	ND, RDL=1.0	ug/L	NC (1)	20
5893901	Dissolved Lead (Pb)	2018/12/19	104	80 - 120	101	80 - 120	ND, RDL=0.50	ug/L	NC (1)	20
5893901	Dissolved Molybdenum (Mo)	2018/12/19	113	80 - 120	99	80 - 120	ND, RDL=0.50	ug/L	NC (1)	20
5893901	Dissolved Nickel (Ni)	2018/12/19	102	80 - 120	96	80 - 120	ND, RDL=1.0	ug/L	NC (1)	20
5893901	Dissolved Selenium (Se)	2018/12/19	103	80 - 120	102	80 - 120	ND, RDL=2.0	ug/L	NC (1)	20
5893901	Dissolved Silver (Ag)	2018/12/19	55 (2)	80 - 120	98	80 - 120	ND, RDL=0.10	ug/L	NC (1)	20
5893901	Dissolved Sodium (Na)	2018/12/19	NC	80 - 120	101	80 - 120	360, RDL=100	ug/L	4.9 (1)	20
5893901	Dissolved Thallium (Tl)	2018/12/19	105	80 - 120	101	80 - 120	ND, RDL=0.050	ug/L	NC (1)	20
5893901	Dissolved Uranium (U)	2018/12/19	105	80 - 120	103	80 - 120	ND, RDL=0.10	ug/L	7.5 (1)	20
5893901	Dissolved Vanadium (V)	2018/12/19	108	80 - 120	97	80 - 120	ND, RDL=0.50	ug/L	NC (1)	20
5893901	Dissolved Zinc (Zn)	2018/12/19	101	80 - 120	99	80 - 120	ND, RDL=5.0	ug/L	NC (1)	20
5896281	1,1,1,2-Tetrachloroethane	2018/12/20	98 (3)	70 - 130	98	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	1,1,1-Trichloroethane	2018/12/20	97 (3)	70 - 130	97	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	1,1,2,2-Tetrachloroethane	2018/12/20	102 (3)	70 - 130	101	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	1,1,2-Trichloroethane	2018/12/20	102 (3)	70 - 130	100	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5896281	1,1-Dichloroethane	2018/12/20	100 (3)	70 - 130	100	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	1,1-Dichloroethylene	2018/12/20	98 (3)	70 - 130	99	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	1,2-Dichlorobenzene	2018/12/20	97 (3)	70 - 130	96	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	1,2-Dichloroethane	2018/12/20	102 (3)	70 - 130	99	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	1,2-Dichloropropane	2018/12/20	102 (3)	70 - 130	102	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	1,3-Dichlorobenzene	2018/12/20	101 (3)	70 - 130	101	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	1,4-Dichlorobenzene	2018/12/20	101 (3)	70 - 130	101	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	Acetone (2-Propanone)	2018/12/20	107 (3)	60 - 140	104	60 - 140	ND, RDL=10	ug/L	NC (4)	30
5896281	Benzene	2018/12/20	97 (3)	70 - 130	97	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	Bromodichloromethane	2018/12/20	92 (3)	70 - 130	92	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	Bromoform	2018/12/20	98 (3)	70 - 130	97	70 - 130	ND, RDL=1.0	ug/L	NC (4)	30
5896281	Bromomethane	2018/12/20	96 (3)	60 - 140	95	60 - 140	ND, RDL=0.50	ug/L	NC (4)	30
5896281	Carbon Tetrachloride	2018/12/20	94 (3)	70 - 130	95	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	Chlorobenzene	2018/12/20	98 (3)	70 - 130	98	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	Chloroform	2018/12/20	98 (3)	70 - 130	98	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	cis-1,2-Dichloroethylene	2018/12/20	99 (3)	70 - 130	99	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	cis-1,3-Dichloropropene	2018/12/20	108 (3)	70 - 130	105	70 - 130	ND, RDL=0.30	ug/L	NC (4)	30
5896281	Dibromochloromethane	2018/12/20	99 (3)	70 - 130	98	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	Dichlorodifluoromethane (FREON 12)	2018/12/20	100 (3)	60 - 140	103	60 - 140	ND, RDL=1.0	ug/L	NC (4)	30
5896281	Ethylbenzene	2018/12/20	102 (3)	70 - 130	104	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	Ethylene Dibromide	2018/12/20	104 (3)	70 - 130	102	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	F1 (C6-C10) - BTEX	2018/12/20					ND, RDL=25	ug/L	NC (4)	30
5896281	F1 (C6-C10)	2018/12/20	89 (3)	60 - 140	94	60 - 140	ND, RDL=25	ug/L	NC (4)	30
5896281	Hexane	2018/12/20	100 (3)	70 - 130	102	70 - 130	ND, RDL=1.0	ug/L	NC (4)	30
5896281	Methyl Ethyl Ketone (2-Butanone)	2018/12/20	114 (3)	60 - 140	111	60 - 140	ND, RDL=10	ug/L	NC (4)	30
5896281	Methyl Isobutyl Ketone	2018/12/20	118 (3)	70 - 130	117	70 - 130	ND, RDL=5.0	ug/L	NC (4)	30
5896281	Methyl t-butyl ether (MTBE)	2018/12/20	105 (3)	70 - 130	104	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	Methylene Chloride(Dichloromethane)	2018/12/20	89 (3)	70 - 130	89	70 - 130	ND, RDL=2.0	ug/L	NC (4)	30
5896281	o-Xylene	2018/12/20	101 (3)	70 - 130	102	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	p+m-Xylene	2018/12/20	102 (3)	70 - 130	103	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	Styrene	2018/12/20	104 (3)	70 - 130	107	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

QUALITY ASSURANCE REPORT(CONT'D)

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5896281	Tetrachloroethylene	2018/12/20	96 (3)	70 - 130	97	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	Toluene	2018/12/20	98 (3)	70 - 130	98	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	Total Xylenes	2018/12/20					ND, RDL=0.20	ug/L	NC (4)	30
5896281	trans-1,2-Dichloroethylene	2018/12/20	96 (3)	70 - 130	97	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	trans-1,3-Dichloropropene	2018/12/20	111 (3)	70 - 130	107	70 - 130	ND, RDL=0.40	ug/L	NC (4)	30
5896281	Trichloroethylene	2018/12/20	97 (3)	70 - 130	98	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	Trichlorofluoromethane (FREON 11)	2018/12/20	95 (3)	70 - 130	96	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	Vinyl Chloride	2018/12/20	98 (3)	70 - 130	100	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5899617	1-Methylnaphthalene	2018/12/21	105	50 - 130	127	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	2-Methylnaphthalene	2018/12/21	96	50 - 130	109	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Acenaphthene	2018/12/21	93	50 - 130	92	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Acenaphthylene	2018/12/21	96	50 - 130	89	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Anthracene	2018/12/21	90	50 - 130	89	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Benzo(a)anthracene	2018/12/21	98	50 - 130	98	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Benzo(a)pyrene	2018/12/21	93	50 - 130	94	50 - 130	ND, RDL=0.010	ug/L	NC (1)	30
5899617	Benzo(b/j)fluoranthene	2018/12/21	92	50 - 130	102	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Benzo(g,h,i)perylene	2018/12/21	92	50 - 130	85	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Benzo(k)fluoranthene	2018/12/21	89	50 - 130	83	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Chrysene	2018/12/21	94	50 - 130	97	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Dibenz(a,h)anthracene	2018/12/21	87	50 - 130	74	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Fluoranthene	2018/12/21	100	50 - 130	80	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Fluorene	2018/12/21	92	50 - 130	83	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Indeno(1,2,3-cd)pyrene	2018/12/21	93	50 - 130	82	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Naphthalene	2018/12/21	91	50 - 130	91	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Phenanthrene	2018/12/21	95	50 - 130	94	50 - 130	ND, RDL=0.030	ug/L	2.4 (1)	30
5899617	Pyrene	2018/12/21	98	50 - 130	86	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899621	F2 (C10-C16 Hydrocarbons)	2018/12/21	104	50 - 130	102	60 - 130	ND, RDL=100	ug/L	NC (1)	30
5899621	F3 (C16-C34 Hydrocarbons)	2018/12/21	104	50 - 130	107	60 - 130	ND, RDL=200	ug/L	NC (1)	30
5899621	F4 (C34-C50 Hydrocarbons)	2018/12/21	103	50 - 130	101	60 - 130	ND, RDL=200	ug/L	NC (1)	30

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

QUALITY ASSURANCE REPORT(CONT'D)

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5900667	Mercury (Hg)	2018/12/21	96	75 - 125	99	80 - 120	ND, RDL=0.1	ug/L	NC (1)	20

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

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

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

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

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

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

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

(1) Duplicate Parent ID

(2) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(3) Matrix Spike Parent ID [IOH996-05]

(4) Duplicate Parent ID [IOH996-05]

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Maxxam Job #: B8X6184
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GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

VALIDATION SIGNATURE PAGE

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



Ewa Pranjic, M.Sc., C.Chem, 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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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#3000 GHD Limited	Company Name:	SAME AS INVOICE	Quotation #:	B80174	Maxxam Job #:	Bottle Order #:
Attention:	Jennifer Balkwill	Attention:		P.O. #:	7351423 6		696809
Address:	455 Phillip St Waterloo ON N2L 3X2	Address:		Project:	11131634	COC #:	Project Manager:
Tel:	(519) 884-7780 Ext: 3599 Fax: (519) 725-1394	Tel:	Fax:	Project Name:	Union Property - Port Dalhousie	C#696809-01-01	Tanya Fidlin
Email:	Jennifer.Balkwill@ghd.com, NationalEDDsupport@max	Email:		Site #:			
				Sampled By:	M. Pley		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___	☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other ___	

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC):

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 Metals Package	O.Reg 153 VOCs by HS & F1-F4	O.Reg 153 PAHs	Volatile Organic Compounds and F1 PHCs	# of Bottles	Comments
1	GW-1113163 4-12	1318-MP-001	12/13/2018	16:00	GW	X	X	X	X	X	8	
2	GW-1113163 4-12	1318-MP-002	12/13/2018	16:30	GW	X	X	X	X	X	8	
3	GW-1113163 4-12	1318-MP-003	12/13/2018	16:30	GW	X	X	X	X	X	8	
4	GW-1113163 4-12	1318-MP-004	12/13/2018	17:00	GW	X	X	X	X	X	8	
5	Trip Blank		—	—	~~GW~~ Water					X		
6												
7												
8												
9												
10												

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ *(call lab for #)*

14-Dec-18 15:51
Tanya Fidlin
B8X6184
FCN ENV-1224

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
- Melissa Pley	18/12/13	11:00		18/12/14	15:51	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt: 3/4/3	Custody Seal Present	Yes	No
		Intact		

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam
A Bureau Veritas Group Company

Your P.O. #: 73514236
Your Project #: 11131634
Site Location: UNION PROPERTY - PORT DALHOUSIE
Your C.O.C. #: 667953-05-01

Attention: 11131634 - PO - 73514236

GHD Limited
455 Phillip St
Waterloo, ON
CANADA N2L 3X2

Report Date: 2019/01/03
Report #: R5546347
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8Y1691
Received: 2018/12/20, 16:48

Sample Matrix: Soil
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	4	N/A	2019/01/02	CAM SOP-00301	EPA 8270D m
Hot Water Extractable Boron	4	2018/12/24	2018/12/27	CAM SOP-00408	R153 Ana. Prot. 2011
1,3-Dichloropropene Sum	4	N/A	2018/12/28		EPA 8260C m
Free (WAD) Cyanide	2	2018/12/27	2018/12/28	CAM SOP-00457	OMOE E3015 m
Free (WAD) Cyanide	2	2018/12/28	2018/12/30	CAM SOP-00457	OMOE E3015 m
Conductivity	4	2018/12/31	2018/12/31	CAM SOP-00414	OMOE E3530 v1 m
Hexavalent Chromium in Soil by IC (1)	2	2018/12/27	2018/12/28	CAM SOP-00436	EPA 3060/7199 m
Hexavalent Chromium in Soil by IC (1)	2	2018/12/28	2018/12/28	CAM SOP-00436	EPA 3060/7199 m
Petroleum Hydrocarbons F2-F4 in Soil (2)	4	2018/12/28	2018/12/29	CAM SOP-00316	CCME CWS m
Strong Acid Leachable Metals by ICPMS	4	2018/12/24	2018/12/28	CAM SOP-00447	EPA 6020B m
Moisture	3	N/A	2018/12/27	CAM SOP-00445	Carter 2nd ed 51.2 m
Moisture	1	N/A	2018/12/28	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM)	4	2018/12/28	2018/12/29	CAM SOP-00318	EPA 8270D m
Polychlorinated Biphenyl in Soil	4	2019/01/02	2019/01/02	CAM SOP-00309	EPA 8082A m
pH CaCl2 EXTRACT	4	2018/12/28	2018/12/28	CAM SOP-00413	EPA 9045 D m
Sodium Adsorption Ratio (SAR)	4	N/A	2019/01/02	CAM SOP-00102	EPA 6010C
Volatile Organic Compounds and F1 PHCs	4	N/A	2018/12/27	CAM SOP-00230	EPA 8260C 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.

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.

Your P.O. #: 73514236
Your Project #: 11131634
Site Location: UNION PROPERTY - PORT DALHOUSIE
Your C.O.C. #: 667953-05-01

Attention: 11131634 - PO - 73514236

GHD Limited
455 Phillip St
Waterloo, ON
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Report Date: 2019/01/03
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CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8Y1691
Received: 2018/12/20, 16:48

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) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Maxxam conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Tanya Fidlin, Project Manager
Email: tfidlin@maxxam.ca
Phone# (905)817-5700
==========
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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Maxxam Job #: B8Y1691
Report Date: 2019/01/03

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY - PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

RESULTS OF ANALYSES OF SOIL

Maxxam ID		IPL808		IPL809		IPL810		
Sampling Date		2018/12/19 09:30		2018/12/19 11:00		2018/12/19 13:00		
COC Number		667953-05-01		667953-05-01		667953-05-01		
	UNITS	SS-11131634-121918-MP-001	QC Batch	SS-11131634-121918-MP-002	QC Batch	SS-11131634-121918-MP-003	RDL	QC Batch
Calculated Parameters								
Sodium Adsorption Ratio	N/A	0.35	5899546	0.24	5899546	0.24		5899546
Inorganics								
Conductivity	mS/cm	0.26	5907811	0.23	5907811	0.23	0.002	5907811
Moisture	%	12	5906483	13	5906666	19	1.0	5906372
Available (CaCl2) pH	pH	7.80	5906425	7.84	5906425	7.73		5906406
WAD Cyanide (Free)	ug/g	ND	5906295	ND	5906295	ND	0.01	5907856

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

Maxxam ID		IPL811		
Sampling Date		2018/12/19 13:00		
COC Number		667953-05-01		
	UNITS	SS-11131634-121918-MP-004	RDL	QC Batch
Calculated Parameters				
Sodium Adsorption Ratio	N/A	0.26		5900582
Inorganics				
Conductivity	mS/cm	0.23	0.002	5907811
Moisture	%	15	1.0	5906372
Available (CaCl2) pH	pH	7.70		5906406
WAD Cyanide (Free)	ug/g	ND	0.01	5907856

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B8Y1691
Report Date: 2019/01/03

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY - PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		IPL808	IPL809		IPL810		
Sampling Date		2018/12/19 09:30	2018/12/19 11:00		2018/12/19 13:00		
COC Number		667953-05-01	667953-05-01		667953-05-01		
	UNITS	SS-11131634-121918-MP-001	SS-11131634-121918-MP-002	QC Batch	SS-11131634-121918-MP-003	RDL	QC Batch
Inorganics							
Chromium (VI)	ug/g	ND	ND	5905340	ND	0.2	5906975
Metals							
Hot Water Ext. Boron (B)	ug/g	0.082	0.12	5904375	0.46	0.050	5904375
Acid Extractable Antimony (Sb)	ug/g	ND	ND	5904312	0.47	0.20	5904312
Acid Extractable Arsenic (As)	ug/g	5.7	2.5	5904312	4.4	1.0	5904312
Acid Extractable Barium (Ba)	ug/g	55	39	5904312	100	0.50	5904312
Acid Extractable Beryllium (Be)	ug/g	0.47	0.23	5904312	0.45	0.20	5904312
Acid Extractable Boron (B)	ug/g	6.0	ND	5904312	6.4	5.0	5904312
Acid Extractable Cadmium (Cd)	ug/g	ND	ND	5904312	0.26	0.10	5904312
Acid Extractable Chromium (Cr)	ug/g	17	8.6	5904312	17	1.0	5904312
Acid Extractable Cobalt (Co)	ug/g	9.7	4.4	5904312	8.1	0.10	5904312
Acid Extractable Copper (Cu)	ug/g	31	25	5904312	44	0.50	5904312
Acid Extractable Lead (Pb)	ug/g	7.0	4.5	5904312	110	1.0	5904312
Acid Extractable Molybdenum (Mo)	ug/g	ND	ND	5904312	0.76	0.50	5904312
Acid Extractable Nickel (Ni)	ug/g	21	9.1	5904312	18	0.50	5904312
Acid Extractable Selenium (Se)	ug/g	ND	ND	5904312	ND	0.50	5904312
Acid Extractable Silver (Ag)	ug/g	ND	ND	5904312	ND	0.20	5904312
Acid Extractable Thallium (Tl)	ug/g	0.10	0.059	5904312	0.10	0.050	5904312
Acid Extractable Uranium (U)	ug/g	0.60	0.44	5904312	0.62	0.050	5904312
Acid Extractable Vanadium (V)	ug/g	25	16	5904312	23	5.0	5904312
Acid Extractable Zinc (Zn)	ug/g	52	39	5904312	110	5.0	5904312
Acid Extractable Mercury (Hg)	ug/g	ND	ND	5904312	0.16	0.050	5904312

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B8Y1691
Report Date: 2019/01/03

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY - PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		IPL811		
Sampling Date		2018/12/19 13:00		
COC Number		667953-05-01		
	UNITS	**SS-11131634-121918-MP-004**	**RDL**	**QC Batch**
Inorganics				
Chromium (VI)	ug/g	ND	0.2	5906975
Metals				
Hot Water Ext. Boron (B)	ug/g	0.39	0.050	5904375
Acid Extractable Antimony (Sb)	ug/g	0.48	0.20	5904312
Acid Extractable Arsenic (As)	ug/g	4.8	1.0	5904312
Acid Extractable Barium (Ba)	ug/g	110	0.50	5904312
Acid Extractable Beryllium (Be)	ug/g	0.51	0.20	5904312
Acid Extractable Boron (B)	ug/g	7.0	5.0	5904312
Acid Extractable Cadmium (Cd)	ug/g	0.21	0.10	5904312
Acid Extractable Chromium (Cr)	ug/g	18	1.0	5904312
Acid Extractable Cobalt (Co)	ug/g	8.8	0.10	5904312
Acid Extractable Copper (Cu)	ug/g	73	0.50	5904312
Acid Extractable Lead (Pb)	ug/g	130	1.0	5904312
Acid Extractable Molybdenum (Mo)	ug/g	0.62	0.50	5904312
Acid Extractable Nickel (Ni)	ug/g	19	0.50	5904312
Acid Extractable Selenium (Se)	ug/g	ND	0.50	5904312
Acid Extractable Silver (Ag)	ug/g	ND	0.20	5904312
Acid Extractable Thallium (Tl)	ug/g	0.13	0.050	5904312
Acid Extractable Uranium (U)	ug/g	0.55	0.050	5904312
Acid Extractable Vanadium (V)	ug/g	25	5.0	5904312
Acid Extractable Zinc (Zn)	ug/g	150	5.0	5904312
Acid Extractable Mercury (Hg)	ug/g	0.19	0.050	5904312

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Sampler Initials: MP

SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		IPL808	IPL809	IPL810		
Sampling Date		2018/12/19 09:30	2018/12/19 11:00	2018/12/19 13:00		
COC Number		667953-05-01	667953-05-01	667953-05-01		
	UNITS	SS-11131634-121918-MP-001	SS-11131634-121918-MP-002	SS-11131634-121918-MP-003	RDL	QC Batch
Calculated Parameters						
Methylnaphthalene, 2-(1-)	ug/g	ND	ND	ND	0.0071	5899823
Polyaromatic Hydrocarbons						
Acenaphthene	ug/g	ND	ND	0.013	0.0050	5907087
Acenaphthylene	ug/g	ND	ND	0.15	0.0050	5907087
Anthracene	ug/g	ND	ND	0.18	0.0050	5907087
Benzo(a)anthracene	ug/g	ND	ND	0.93	0.0050	5907087
Benzo(a)pyrene	ug/g	ND	ND	1.0	0.0050	5907087
Benzo(b/j)fluoranthene	ug/g	ND	ND	0.98	0.0050	5907087
Benzo(g,h,i)perylene	ug/g	ND	ND	0.44	0.0050	5907087
Benzo(k)fluoranthene	ug/g	ND	ND	0.35	0.0050	5907087
Chrysene	ug/g	ND	ND	0.69	0.0050	5907087
Dibenz(a,h)anthracene	ug/g	ND	ND	0.088	0.0050	5907087
Fluoranthene	ug/g	ND	ND	1.7	0.0050	5907087
Fluorene	ug/g	ND	ND	0.027	0.0050	5907087
Indeno(1,2,3-cd)pyrene	ug/g	ND	ND	0.48	0.0050	5907087
1-Methylnaphthalene	ug/g	ND	ND	ND	0.0050	5907087
2-Methylnaphthalene	ug/g	ND	ND	ND	0.0050	5907087
Naphthalene	ug/g	ND	ND	0.0083	0.0050	5907087
Phenanthrene	ug/g	0.0066	ND	0.55	0.0050	5907087
Pyrene	ug/g	ND	ND	1.5	0.0050	5907087
Surrogate Recovery (%)						
D10-Anthracene	%	94	92	87		5907087
D14-Terphenyl (FS)	%	91	82	87		5907087
D8-Acenaphthylene	%	100	89	100		5907087

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B8Y1691
Report Date: 2019/01/03

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY - PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		IPL811		
Sampling Date		2018/12/19 13:00		
COC Number		667953-05-01		
	UNITS	SS-11131634-121918-MP-004	RDL	QC Batch
Calculated Parameters				
Methylnaphthalene, 2-(1-)	ug/g	0.12	0.071	5899823
Polyaromatic Hydrocarbons				
Acenaphthene	ug/g	0.34	0.050	5907087
Acenaphthylene	ug/g	0.34	0.050	5907087
Anthracene	ug/g	1.1	0.050	5907087
Benzo(a)anthracene	ug/g	3.5	0.050	5907087
Benzo(a)pyrene	ug/g	2.9	0.050	5907087
Benzo(b/j)fluoranthene	ug/g	3.0	0.050	5907087
Benzo(g,h,i)perylene	ug/g	1.3	0.050	5907087
Benzo(k)fluoranthene	ug/g	1.1	0.050	5907087
Chrysene	ug/g	2.8	0.050	5907087
Dibenz(a,h)anthracene	ug/g	0.34	0.050	5907087
Fluoranthene	ug/g	6.4	0.050	5907087
Fluorene	ug/g	0.31	0.050	5907087
Indeno(1,2,3-cd)pyrene	ug/g	1.7	0.050	5907087
1-Methylnaphthalene	ug/g	0.064	0.050	5907087
2-Methylnaphthalene	ug/g	0.054	0.050	5907087
Naphthalene	ug/g	0.070	0.050	5907087
Phenanthrene	ug/g	3.7	0.050	5907087
Pyrene	ug/g	5.9	0.050	5907087
Surrogate Recovery (%)				
D10-Anthracene	%	110		5907087
D14-Terphenyl (FS)	%	91		5907087
D8-Acenaphthylene	%	110		5907087

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B8Y1691
Report Date: 2019/01/03

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY - PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		IPL808	IPL809	IPL810		
Sampling Date		2018/12/19 09:30	2018/12/19 11:00	2018/12/19 13:00		
COC Number		667953-05-01	667953-05-01	667953-05-01		
	UNITS	SS-11131634-121918-MP-001	SS-11131634-121918-MP-002	SS-11131634-121918-MP-003	RDL	QC Batch
Calculated Parameters						
1,3-Dichloropropene (cis+trans)	ug/g	ND	ND	ND	0.050	5900183
Volatile Organics						
Acetone (2-Propanone)	ug/g	ND	ND	ND	0.50	5903746
Benzene	ug/g	ND	ND	ND	0.020	5903746
Bromodichloromethane	ug/g	ND	ND	ND	0.050	5903746
Bromoform	ug/g	ND	ND	ND	0.050	5903746
Bromomethane	ug/g	ND	ND	ND	0.050	5903746
Carbon Tetrachloride	ug/g	ND	ND	ND	0.050	5903746
Chlorobenzene	ug/g	ND	ND	ND	0.050	5903746
Chloroform	ug/g	ND	ND	ND	0.050	5903746
Dibromochloromethane	ug/g	ND	ND	ND	0.050	5903746
1,2-Dichlorobenzene	ug/g	ND	ND	ND	0.050	5903746
1,3-Dichlorobenzene	ug/g	ND	ND	ND	0.050	5903746
1,4-Dichlorobenzene	ug/g	ND	ND	ND	0.050	5903746
Dichlorodifluoromethane (FREON 12)	ug/g	ND	ND	ND	0.050	5903746
1,1-Dichloroethane	ug/g	ND	ND	ND	0.050	5903746
1,2-Dichloroethane	ug/g	ND	ND	ND	0.050	5903746
1,1-Dichloroethylene	ug/g	ND	ND	ND	0.050	5903746
cis-1,2-Dichloroethylene	ug/g	ND	ND	ND	0.050	5903746
trans-1,2-Dichloroethylene	ug/g	ND	ND	ND	0.050	5903746
1,2-Dichloropropane	ug/g	ND	ND	ND	0.050	5903746
cis-1,3-Dichloropropene	ug/g	ND	ND	ND	0.030	5903746
trans-1,3-Dichloropropene	ug/g	ND	ND	ND	0.040	5903746
Ethylbenzene	ug/g	ND	ND	ND	0.020	5903746
Ethylene Dibromide	ug/g	ND	ND	ND	0.050	5903746
Hexane	ug/g	ND	ND	ND	0.050	5903746
Methylene Chloride(Dichloromethane)	ug/g	ND	0.070	ND	0.050	5903746
Methyl Ethyl Ketone (2-Butanone)	ug/g	ND	ND	ND	0.50	5903746
Methyl Isobutyl Ketone	ug/g	ND	ND	ND	0.50	5903746
Methyl t-butyl ether (MTBE)	ug/g	ND	ND	ND	0.050	5903746
Styrene	ug/g	ND	ND	ND	0.050	5903746
1,1,1,2-Tetrachloroethane	ug/g	ND	ND	ND	0.050	5903746

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B8Y1691
Report Date: 2019/01/03

GHD Limited
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Site Location: UNION PROPERTY - PORT DALHOUSIE
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Sampler Initials: MP

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		IPL808	IPL809	IPL810		
Sampling Date		2018/12/19 09:30	2018/12/19 11:00	2018/12/19 13:00		
COC Number		667953-05-01	667953-05-01	667953-05-01		
	UNITS	**SS-11131634-121918-MP-001**	**SS-11131634-121918-MP-002**	**SS-11131634-121918-MP-003**	**RDL**	**QC Batch**
1,1,2,2-Tetrachloroethane	ug/g	ND	ND	ND	0.050	5903746
Tetrachloroethylene	ug/g	ND	ND	ND	0.050	5903746
Toluene	ug/g	ND	ND	ND	0.020	5903746
1,1,1-Trichloroethane	ug/g	ND	ND	ND	0.050	5903746
1,1,2-Trichloroethane	ug/g	ND	ND	ND	0.050	5903746
Trichloroethylene	ug/g	ND	ND	ND	0.050	5903746
Trichlorofluoromethane (FREON 11)	ug/g	ND	ND	ND	0.050	5903746
Vinyl Chloride	ug/g	ND	ND	ND	0.020	5903746
p+m-Xylene	ug/g	ND	ND	ND	0.020	5903746
o-Xylene	ug/g	ND	ND	ND	0.020	5903746
Total Xylenes	ug/g	ND	ND	ND	0.020	5903746
F1 (C6-C10)	ug/g	ND	ND	ND	10	5903746
F1 (C6-C10) - BTEX	ug/g	ND	ND	ND	10	5903746
Surrogate Recovery (%)						
4-Bromofluorobenzene	%	97	99	100		5903746
D10-o-Xylene	%	91	99	90		5903746
D4-1,2-Dichloroethane	%	114	98	79		5903746
D8-Toluene	%	100	114	121		5903746

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Report Date: 2019/01/03

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Site Location: UNION PROPERTY - PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		IPL811		
Sampling Date		2018/12/19 13:00		
COC Number		667953-05-01		
	UNITS	SS-11131634-121918-MP-004	RDL	QC Batch
Calculated Parameters				
1,3-Dichloropropene (cis+trans)	ug/g	ND	0.050	5900580
Volatile Organics				
Acetone (2-Propanone)	ug/g	ND	0.50	5903746
Benzene	ug/g	ND	0.020	5903746
Bromodichloromethane	ug/g	ND	0.050	5903746
Bromoform	ug/g	ND	0.050	5903746
Bromomethane	ug/g	ND	0.050	5903746
Carbon Tetrachloride	ug/g	ND	0.050	5903746
Chlorobenzene	ug/g	ND	0.050	5903746
Chloroform	ug/g	ND	0.050	5903746
Dibromochloromethane	ug/g	ND	0.050	5903746
1,2-Dichlorobenzene	ug/g	ND	0.050	5903746
1,3-Dichlorobenzene	ug/g	ND	0.050	5903746
1,4-Dichlorobenzene	ug/g	ND	0.050	5903746
Dichlorodifluoromethane (FREON 12)	ug/g	ND	0.050	5903746
1,1-Dichloroethane	ug/g	ND	0.050	5903746
1,2-Dichloroethane	ug/g	ND	0.050	5903746
1,1-Dichloroethylene	ug/g	ND	0.050	5903746
cis-1,2-Dichloroethylene	ug/g	ND	0.050	5903746
trans-1,2-Dichloroethylene	ug/g	ND	0.050	5903746
1,2-Dichloropropane	ug/g	ND	0.050	5903746
cis-1,3-Dichloropropene	ug/g	ND	0.030	5903746
trans-1,3-Dichloropropene	ug/g	ND	0.040	5903746
Ethylbenzene	ug/g	ND	0.020	5903746
Ethylene Dibromide	ug/g	ND	0.050	5903746
Hexane	ug/g	ND	0.050	5903746
Methylene Chloride(Dichloromethane)	ug/g	ND	0.050	5903746
Methyl Ethyl Ketone (2-Butanone)	ug/g	ND	0.50	5903746
Methyl Isobutyl Ketone	ug/g	ND	0.50	5903746
Methyl t-butyl ether (MTBE)	ug/g	ND	0.050	5903746
Styrene	ug/g	ND	0.050	5903746
1,1,1,2-Tetrachloroethane	ug/g	ND	0.050	5903746

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B8Y1691
Report Date: 2019/01/03

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY - PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		IPL811		
Sampling Date		2018/12/19 13:00		
COC Number		667953-05-01		
	UNITS	SS-11131634-121918-MP-004	RDL	QC Batch
1,1,2,2-Tetrachloroethane	ug/g	ND	0.050	5903746
Tetrachloroethylene	ug/g	ND	0.050	5903746
Toluene	ug/g	ND	0.020	5903746
1,1,1-Trichloroethane	ug/g	ND	0.050	5903746
1,1,2-Trichloroethane	ug/g	ND	0.050	5903746
Trichloroethylene	ug/g	ND	0.050	5903746
Trichlorofluoromethane (FREON 11)	ug/g	ND	0.050	5903746
Vinyl Chloride	ug/g	ND	0.020	5903746
p+m-Xylene	ug/g	ND	0.020	5903746
o-Xylene	ug/g	ND	0.020	5903746
Total Xylenes	ug/g	ND	0.020	5903746
F1 (C6-C10)	ug/g	ND	10	5903746
F1 (C6-C10) - BTEX	ug/g	ND	10	5903746
Surrogate Recovery (%)				
4-Bromofluorobenzene	%	99		5903746
D10-o-Xylene	%	86		5903746
D4-1,2-Dichloroethane	%	107		5903746
D8-Toluene	%	114		5903746

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Report Date: 2019/01/03

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Your P.O. #: 73514236
Sampler Initials: MP

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		IPL808	IPL809	IPL810	IPL811		
Sampling Date		2018/12/19 09:30	2018/12/19 11:00	2018/12/19 13:00	2018/12/19 13:00		
COC Number		667953-05-01	667953-05-01	667953-05-01	667953-05-01		
	UNITS	SS-11131634-121918-MP-001	SS-11131634-121918-MP-002	SS-11131634-121918-MP-003	SS-11131634-121918-MP-004	RDL	QC Batch
F2-F4 Hydrocarbons							
F2 (C10-C16 Hydrocarbons)	ug/g	ND	ND	20	ND	10	5907090
F3 (C16-C34 Hydrocarbons)	ug/g	ND	ND	84	190	50	5907090
F4 (C34-C50 Hydrocarbons)	ug/g	ND	ND	ND	72	50	5907090
Reached Baseline at C50	ug/g	Yes	Yes	Yes	Yes		5907090
Surrogate Recovery (%)							
o-Terphenyl	%	95	92	95	97		5907090

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B8Y1691
Report Date: 2019/01/03

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY - PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		IPL808	IPL809	IPL809	IPL810		
Sampling Date		2018/12/19 09:30	2018/12/19 11:00	2018/12/19 11:00	2018/12/19 13:00		
COC Number		667953-05-01	667953-05-01	667953-05-01	667953-05-01		
	UNITS	SS-11131634-121918-MP-001	SS-11131634-121918-MP-002	SS-11131634-121918-MP-002 Lab-Dup	SS-11131634-121918-MP-003	RDL	QC Batch
PCBs							
Aroclor 1242	ug/g	ND	ND	ND	ND	0.010	5911591
Aroclor 1248	ug/g	ND	ND	ND	ND	0.010	5911591
Aroclor 1254	ug/g	ND	ND	ND	ND	0.010	5911591
Aroclor 1260	ug/g	ND	ND	ND	ND	0.010	5911591
Total PCB	ug/g	ND	ND	ND	ND	0.010	5911591
Surrogate Recovery (%)							
Decachlorobiphenyl	%	127	122	125	91		5911591

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

Maxxam ID		IPL811		
Sampling Date		2018/12/19 13:00		
COC Number		667953-05-01		
	UNITS	SS-11131634-121918-MP-004	RDL	QC Batch
PCBs				
Aroclor 1242	ug/g	ND	0.010	5911591
Aroclor 1248	ug/g	ND	0.010	5911591
Aroclor 1254	ug/g	ND	0.010	5911591
Aroclor 1260	ug/g	ND	0.010	5911591
Total PCB	ug/g	ND	0.010	5911591
Surrogate Recovery (%)				
Decachlorobiphenyl	%	99		5911591

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B8Y1691
Report Date: 2019/01/03

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY - PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

TEST SUMMARY

Maxxam ID: IPL808
Sample ID: SS-11131634-121918-MP-001
Matrix: Soil

Collected: 2018/12/19
Shipped:
Received: 2018/12/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5899823	N/A	2019/01/02	Automated Statchk
Hot Water Extractable Boron	ICP	5904375	2018/12/24	2018/12/27	Jolly John
1,3-Dichloropropene Sum	CALC	5900183	N/A	2018/12/28	Automated Statchk
Free (WAD) Cyanide	TECH	5906295	2018/12/27	2018/12/28	Barbara Kalbasi Esfahani
Conductivity	AT	5907811	2018/12/31	2018/12/31	Kazzandra Adeva
Hexavalent Chromium in Soil by IC	IC/SPEC	5905340	2018/12/27	2018/12/28	Sally Norouz
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5907090	2018/12/28	2018/12/29	Zhiyue (Frank) Zhu
Strong Acid Leachable Metals by ICPMS	ICP/MS	5904312	2018/12/24	2018/12/28	Daniel Teclu
Moisture	BAL	5906483	N/A	2018/12/27	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5907087	2018/12/28	2018/12/29	Mitesh Raj
Polychlorinated Biphenyl in Soil	GC/ECD	5911591	2019/01/02	2019/01/02	Sarah Huang
pH CaCl2 EXTRACT	AT	5906425	2018/12/28	2018/12/28	Surinder Rai
Sodium Adsorption Ratio (SAR)	CALC/MET	5899546	N/A	2019/01/02	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5903746	N/A	2018/12/27	Yang (Philip) Yu

Maxxam ID: IPL809
Sample ID: SS-11131634-121918-MP-002
Matrix: Soil

Collected: 2018/12/19
Shipped:
Received: 2018/12/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5899823	N/A	2019/01/02	Automated Statchk
Hot Water Extractable Boron	ICP	5904375	2018/12/24	2018/12/27	Jolly John
1,3-Dichloropropene Sum	CALC	5900183	N/A	2018/12/28	Automated Statchk
Free (WAD) Cyanide	TECH	5906295	2018/12/27	2018/12/28	Barbara Kalbasi Esfahani
Conductivity	AT	5907811	2018/12/31	2018/12/31	Kazzandra Adeva
Hexavalent Chromium in Soil by IC	IC/SPEC	5905340	2018/12/27	2018/12/28	Sally Norouz
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5907090	2018/12/28	2018/12/29	Zhiyue (Frank) Zhu
Strong Acid Leachable Metals by ICPMS	ICP/MS	5904312	2018/12/24	2018/12/28	Daniel Teclu
Moisture	BAL	5906666	N/A	2018/12/27	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5907087	2018/12/28	2018/12/29	Mitesh Raj
Polychlorinated Biphenyl in Soil	GC/ECD	5911591	2019/01/02	2019/01/02	Sarah Huang
pH CaCl2 EXTRACT	AT	5906425	2018/12/28	2018/12/28	Surinder Rai
Sodium Adsorption Ratio (SAR)	CALC/MET	5899546	N/A	2019/01/02	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5903746	N/A	2018/12/27	Yang (Philip) Yu

Maxxam ID: IPL809 Dup
Sample ID: SS-11131634-121918-MP-002
Matrix: Soil

Collected: 2018/12/19
Shipped:
Received: 2018/12/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Polychlorinated Biphenyl in Soil	GC/ECD	5911591	2019/01/02	2019/01/02	Sarah Huang

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Maxxam Job #: B8Y1691
Report Date: 2019/01/03

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY - PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

TEST SUMMARY

Maxxam ID: IPL810
Sample ID: SS-11131634-121918-MP-003
Matrix: Soil

Collected: 2018/12/19
Shipped:
Received: 2018/12/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5899823	N/A	2019/01/02	Automated Statchk
Hot Water Extractable Boron	ICP	5904375	2018/12/24	2018/12/27	Jolly John
1,3-Dichloropropene Sum	CALC	5900183	N/A	2018/12/28	Automated Statchk
Free (WAD) Cyanide	TECH	5907856	2018/12/28	2018/12/30	Barbara Kalbasi Esfahani
Conductivity	AT	5907811	2018/12/31	2018/12/31	Kazzandra Adeva
Hexavalent Chromium in Soil by IC	IC/SPEC	5906975	2018/12/28	2018/12/28	Sally Norouz
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5907090	2018/12/28	2018/12/29	Zhiyue (Frank) Zhu
Strong Acid Leachable Metals by ICPMS	ICP/MS	5904312	2018/12/24	2018/12/28	Daniel Teclu
Moisture	BAL	5906372	N/A	2018/12/28	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5907087	2018/12/28	2018/12/29	Mitesh Raj
Polychlorinated Biphenyl in Soil	GC/ECD	5911591	2019/01/02	2019/01/02	Sarah Huang
pH CaCl2 EXTRACT	AT	5906406	2018/12/28	2018/12/28	Surinder Rai
Sodium Adsorption Ratio (SAR)	CALC/MET	5899546	N/A	2019/01/02	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5903746	N/A	2018/12/27	Yang (Philip) Yu

Maxxam ID: IPL811
Sample ID: SS-11131634-121918-MP-004
Matrix: Soil

Collected: 2018/12/19
Shipped:
Received: 2018/12/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5899823	N/A	2019/01/02	Automated Statchk
Hot Water Extractable Boron	ICP	5904375	2018/12/24	2018/12/27	Jolly John
1,3-Dichloropropene Sum	CALC	5900580	N/A	2018/12/28	Automated Statchk
Free (WAD) Cyanide	TECH	5907856	2018/12/28	2018/12/30	Barbara Kalbasi Esfahani
Conductivity	AT	5907811	2018/12/31	2018/12/31	Kazzandra Adeva
Hexavalent Chromium in Soil by IC	IC/SPEC	5906975	2018/12/28	2018/12/28	Sally Norouz
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5907090	2018/12/28	2018/12/29	Zhiyue (Frank) Zhu
Strong Acid Leachable Metals by ICPMS	ICP/MS	5904312	2018/12/24	2018/12/28	Daniel Teclu
Moisture	BAL	5906372	N/A	2018/12/27	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5907087	2018/12/28	2018/12/29	Mitesh Raj
Polychlorinated Biphenyl in Soil	GC/ECD	5911591	2019/01/02	2019/01/02	Sarah Huang
pH CaCl2 EXTRACT	AT	5906406	2018/12/28	2018/12/28	Surinder Rai
Sodium Adsorption Ratio (SAR)	CALC/MET	5900582	N/A	2019/01/02	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5903746	N/A	2018/12/27	Yang (Philip) Yu

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Maxxam Job #: B8Y1691
Report Date: 2019/01/03

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY - PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

GENERAL COMMENTS

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

Package 1	2.0°C

Samples analyzed for PCBs as per client request.

Sample IPL809 [SS-11131634-121918-MP-002] : SAR Analysis: Sodium was not detected. To report SAR the sodium detection limit was used in the calculation. This value represents a maximum ratio.

Sample IPL810 [SS-11131634-121918-MP-003] : SAR Analysis: Sodium was not detected. To report SAR the sodium detection limit was used in the calculation. This value represents a maximum ratio.

Sample IPL811 [SS-11131634-121918-MP-004] : PAH analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Maxxam Job #: B8Y1691
Report Date: 2019/01/03

QUALITY ASSURANCE REPORT

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY - PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5903746	4-Bromofluorobenzene	2018/12/27	86	60 - 140	101	60 - 140	98	%		
5903746	D10-o-Xylene	2018/12/27	89	60 - 130	85	60 - 130	90	%		
5903746	D4-1,2-Dichloroethane	2018/12/27	95	60 - 140	103	60 - 140	98	%		
5903746	D8-Toluene	2018/12/27	87	60 - 140	102	60 - 140	101	%		
5907087	D10-Anthracene	2018/12/28	89	50 - 130	97	50 - 130	92	%		
5907087	D14-Terphenyl (FS)	2018/12/28	88	50 - 130	89	50 - 130	84	%		
5907087	D8-Acenaphthylene	2018/12/28	92	50 - 130	100	50 - 130	96	%		
5907090	o-Terphenyl	2018/12/29	105	60 - 130	101	60 - 130	103	%		
5911591	Decachlorobiphenyl	2019/01/02	118 (3)	60 - 130	124	60 - 130	122	%		
5903746	1,1,1,2-Tetrachloroethane	2018/12/27	94	60 - 140	103	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	1,1,1-Trichloroethane	2018/12/27	93	60 - 140	96	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	1,1,2,2-Tetrachloroethane	2018/12/27	77	60 - 140	108	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	1,1,2-Trichloroethane	2018/12/27	100	60 - 140	102	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	1,1-Dichloroethane	2018/12/27	92	60 - 140	98	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	1,1-Dichloroethylene	2018/12/27	124	60 - 140	94	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	1,2-Dichlorobenzene	2018/12/27	93	60 - 140	101	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	1,2-Dichloroethane	2018/12/27	89	60 - 140	102	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	1,2-Dichloropropane	2018/12/27	106	60 - 140	101	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	1,3-Dichlorobenzene	2018/12/27	95	60 - 140	99	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	1,4-Dichlorobenzene	2018/12/27	94	60 - 140	102	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	Acetone (2-Propanone)	2018/12/27	110	60 - 140	101	60 - 140	ND, RDL=0.50	ug/g	NC (1)	50
5903746	Benzene	2018/12/27	90	60 - 140	96	60 - 130	ND, RDL=0.020	ug/g	NC (1)	50
5903746	Bromodichloromethane	2018/12/27	91	60 - 140	100	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	Bromoform	2018/12/27	77	60 - 140	110	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	Bromomethane	2018/12/27	95	60 - 140	98	60 - 140	ND, RDL=0.050	ug/g	NC (1)	50
5903746	Carbon Tetrachloride	2018/12/27	95	60 - 140	97	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	Chlorobenzene	2018/12/27	92	60 - 140	100	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	Chloroform	2018/12/27	92	60 - 140	99	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	cis-1,2-Dichloroethylene	2018/12/27	93	60 - 140	100	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	cis-1,3-Dichloropropene	2018/12/27	89	60 - 140	96	60 - 130	ND, RDL=0.030	ug/g	NC (1)	50
5903746	Dibromochloromethane	2018/12/27	94	60 - 140	106	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5903746	Dichlorodifluoromethane (FREON 12)	2018/12/27	91	60 - 140	92	60 - 140	ND, RDL=0.050	ug/g	NC (1)	50
5903746	Ethylbenzene	2018/12/27	94	60 - 140	95	60 - 130	ND, RDL=0.020	ug/g	NC (1)	50
5903746	Ethylene Dibromide	2018/12/27	95	60 - 140	108	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	F1 (C6-C10) - BTEX	2018/12/27					ND, RDL=10	ug/g	NC (1)	30
5903746	F1 (C6-C10)	2018/12/27	100	60 - 140	98	80 - 120	ND, RDL=10	ug/g	NC (1)	30
5903746	Hexane	2018/12/27	91	60 - 140	91	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	Methyl Ethyl Ketone (2-Butanone)	2018/12/27	86	60 - 140	112	60 - 140	ND, RDL=0.50	ug/g	NC (1)	50
5903746	Methyl Isobutyl Ketone	2018/12/27	88	60 - 140	111	60 - 130	ND, RDL=0.50	ug/g	NC (1)	50
5903746	Methyl t-butyl ether (MTBE)	2018/12/27	105	60 - 140	98	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	Methylene Chloride(Dichloromethane)	2018/12/27	114	60 - 140	102	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	o-Xylene	2018/12/27	89	60 - 140	95	60 - 130	ND, RDL=0.020	ug/g	NC (1)	50
5903746	p+m-Xylene	2018/12/27	89	60 - 140	92	60 - 130	ND, RDL=0.020	ug/g	NC (1)	50
5903746	Styrene	2018/12/27	86	60 - 140	97	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	Tetrachloroethylene	2018/12/27	99	60 - 140	100	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	Toluene	2018/12/27	73	60 - 140	91	60 - 130	ND, RDL=0.020	ug/g	NC (1)	50
5903746	Total Xylenes	2018/12/27					ND, RDL=0.020	ug/g	NC (1)	50
5903746	trans-1,2-Dichloroethylene	2018/12/27	108	60 - 140	99	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	trans-1,3-Dichloropropene	2018/12/27	80	60 - 140	101	60 - 130	ND, RDL=0.040	ug/g	NC (1)	50
5903746	Trichloroethylene	2018/12/27	96	60 - 140	99	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	Trichlorofluoromethane (FREON 11)	2018/12/27	98	60 - 140	99	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	Vinyl Chloride	2018/12/27	92	60 - 140	95	60 - 130	ND, RDL=0.020	ug/g	NC (1)	50
5904312	Acid Extractable Antimony (Sb)	2018/12/28	98	75 - 125	101	80 - 120	ND, RDL=0.20	ug/g		
5904312	Acid Extractable Arsenic (As)	2018/12/28	104	75 - 125	101	80 - 120	ND, RDL=1.0	ug/g		
5904312	Acid Extractable Barium (Ba)	2018/12/28	NC	75 - 125	96	80 - 120	ND, RDL=0.50	ug/g		
5904312	Acid Extractable Beryllium (Be)	2018/12/28	103	75 - 125	100	80 - 120	ND, RDL=0.20	ug/g		
5904312	Acid Extractable Boron (B)	2018/12/28	100	75 - 125	98	80 - 120	ND, RDL=5.0	ug/g		
5904312	Acid Extractable Cadmium (Cd)	2018/12/28	102	75 - 125	97	80 - 120	ND, RDL=0.10	ug/g		
5904312	Acid Extractable Chromium (Cr)	2018/12/28	107	75 - 125	98	80 - 120	ND, RDL=1.0	ug/g		
5904312	Acid Extractable Cobalt (Co)	2018/12/28	101	75 - 125	100	80 - 120	ND, RDL=0.10	ug/g		
5904312	Acid Extractable Copper (Cu)	2018/12/28	97	75 - 125	97	80 - 120	ND, RDL=0.50	ug/g		
5904312	Acid Extractable Lead (Pb)	2018/12/28	NC	75 - 125	102	80 - 120	ND, RDL=1.0	ug/g	1.1 (1)	30

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5904312	Acid Extractable Mercury (Hg)	2018/12/28	100	75 - 125	93	80 - 120	ND, RDL=0.050	ug/g		
5904312	Acid Extractable Molybdenum (Mo)	2018/12/28	101	75 - 125	100	80 - 120	ND, RDL=0.50	ug/g		
5904312	Acid Extractable Nickel (Ni)	2018/12/28	107	75 - 125	100	80 - 120	ND, RDL=0.50	ug/g		
5904312	Acid Extractable Selenium (Se)	2018/12/28	102	75 - 125	98	80 - 120	ND, RDL=0.50	ug/g		
5904312	Acid Extractable Silver (Ag)	2018/12/28	104	75 - 125	101	80 - 120	ND, RDL=0.20	ug/g		
5904312	Acid Extractable Thallium (Tl)	2018/12/28	106	75 - 125	102	80 - 120	ND, RDL=0.050	ug/g		
5904312	Acid Extractable Uranium (U)	2018/12/28	104	75 - 125	99	80 - 120	ND, RDL=0.050	ug/g		
5904312	Acid Extractable Vanadium (V)	2018/12/28	109	75 - 125	100	80 - 120	ND, RDL=5.0	ug/g		
5904312	Acid Extractable Zinc (Zn)	2018/12/28	NC	75 - 125	90	80 - 120	ND, RDL=5.0	ug/g		
5904375	Hot Water Ext. Boron (B)	2018/12/27	101	75 - 125	98	75 - 125	ND, RDL=0.050	ug/g	0.88 (1)	40
5905340	Chromium (VI)	2018/12/28	58 (2)	70 - 130	90	80 - 120	ND, RDL=0.2	ug/g	NC (1)	35
5906295	WAD Cyanide (Free)	2018/12/28	94	75 - 125	97	80 - 120	ND, RDL=0.01	ug/g	NC (1)	35
5906372	Moisture	2018/12/27							6.9 (1)	20
5906406	Available (CaCl2) pH	2018/12/28			100	97 - 103			0.11 (1)	N/A
5906425	Available (CaCl2) pH	2018/12/28			100	97 - 103			0.50 (1)	N/A
5906483	Moisture	2018/12/27							3.4 (1)	20
5906666	Moisture	2018/12/27							3.5 (1)	20
5906975	Chromium (VI)	2018/12/28	62 (2)	70 - 130	92	80 - 120	ND, RDL=0.2	ug/g	NC (1)	35
5907087	1-Methylnaphthalene	2018/12/28	97	50 - 130	102	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	2-Methylnaphthalene	2018/12/28	88	50 - 130	92	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Acenaphthene	2018/12/28	88	50 - 130	93	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Acenaphthylene	2018/12/28	92	50 - 130	92	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Anthracene	2018/12/28	88	50 - 130	92	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Benzo(a)anthracene	2018/12/28	103	50 - 130	112	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Benzo(a)pyrene	2018/12/28	91	50 - 130	95	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Benzo(b/j)fluoranthene	2018/12/28	89	50 - 130	100	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Benzo(g,h,i)perylene	2018/12/28	75	50 - 130	79	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Benzo(k)fluoranthene	2018/12/28	85	50 - 130	90	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Chrysene	2018/12/28	93	50 - 130	98	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Dibenz(a,h)anthracene	2018/12/28	79	50 - 130	85	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Fluoranthene	2018/12/28	99	50 - 130	98	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5907087	Fluorene	2018/12/28	89	50 - 130	97	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Indeno(1,2,3-cd)pyrene	2018/12/28	81	50 - 130	87	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Naphthalene	2018/12/28	77	50 - 130	82	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Phenanthrene	2018/12/28	89	50 - 130	94	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Pyrene	2018/12/28	98	50 - 130	95	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907090	F2 (C10-C16 Hydrocarbons)	2018/12/30	105	50 - 130	105	80 - 120	ND, RDL=10	ug/g	NC (1)	30
5907090	F3 (C16-C34 Hydrocarbons)	2018/12/30	103	50 - 130	103	80 - 120	ND, RDL=50	ug/g	NC (1)	30
5907090	F4 (C34-C50 Hydrocarbons)	2018/12/30	102	50 - 130	100	80 - 120	ND, RDL=50	ug/g	NC (1)	30
5907811	Conductivity	2018/12/31			104	90 - 110	ND, RDL=0.002	mS/cm	2.0 (1)	10
5907856	WAD Cyanide (Free)	2018/12/30	91	75 - 125	97	80 - 120	ND, RDL=0.01	ug/g	NC (1)	35
5911591	Aroclor 1242	2019/01/02					ND, RDL=0.010	ug/g	NC (4)	50
5911591	Aroclor 1248	2019/01/02					ND, RDL=0.010	ug/g	NC (4)	50
5911591	Aroclor 1254	2019/01/02					ND, RDL=0.010	ug/g	NC (4)	50
5911591	Aroclor 1260	2019/01/02	129 (3)	30 - 130	130	30 - 130	ND, RDL=0.010	ug/g	NC (4)	50
5911591	Total PCB	2019/01/02	129 (3)	30 - 130	130	30 - 130	ND, RDL=0.010	ug/g	NC (4)	50

N/A = Not Applicable

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

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

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

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

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

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

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

(1) Duplicate Parent ID

(2) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The sample was reanalyzed with the same results.

(3) Matrix Spike Parent ID [IPL809-03]

(4) Duplicate Parent ID [IPL809-03]

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B8Y1691
Report Date: 2019/01/03

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY - PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

VALIDATION SIGNATURE PAGE

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



Ewa Pranjic, M.Sc., C.Chem, 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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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#3000 GHD Limited	Company Name:	SAME AS INVOICE	Quotation #:	B80174	Maxxam Job #:	Bottle Order #:
Attention:	Jennifer Balkwill	Attention:		P.O. #:	~~7351186MP~~ 7351423-6		667953
Address:	455 Phillip St Waterloo ON N2L 3X2	Address:		Project:	~~15668~~ 11131634	COC #:	Project Manager:
Tel:	(519) 884-7780 Ext: 3599 Fax: (519) 725-1394	Tel:	Fax:	Project Name:	Union Property - Port Dalhousie	C#667953-05-01	Tanya Fidlin
Email:	Jennifer.Balkwill@ghd.com, NationalEDDsupport@max	Email:		Site #:			
				Sampled By:	M. Pley		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___	☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☒ Other ___	

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC):

Turnaround Time (TAT) Required:

Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O Reg 153 VOCs by HS & F1-F4	O Reg 153 VOCs by HS	O Reg 153 Metals & Inorganics Pkg	PAH	~~PHC~~	O Reg 558 TCLP Volatile Organics HS	TCLP PAH Compounds by GC/MS (SIM)	O Reg 558 TCLP PCBs	O Reg 558 TCLP Metals	Ignitability	# of Bottles	Comments
1	SS-11131634-121918-MP-001		12/19/18	9:30	SOIL		X	X	X	X							5	
2	SS-11131634-121918-MP-002			11:00	SOIL		X	X	X	X							5	
3	SS-11131634-121918-MP-003			13:00	SOIL		X	X	X	X							4	
4	SS-11131634-121918-MP-004			13:00	SOIL		X	X	X	X							4	
5					SOIL													
6					SOIL													
7					SOIL													
8					SOIL													
9					SOIL													
10					SOIL													

20-Dec-18 16:48
Tanya Fidlin
B8Y1691
FCN ENV-1216

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Tyler Mulhall - Tyler Mulhall	18/12/20	12:30	~~[illegible]~~	2018/12/20	16:48	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei	Custody Seal Present	Yes ☒	No ☐
	2 2 2	Intact	☒	☐

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxa Yellow: Client

87939

Maxxam Analytics International Corporation o/a Maxxam Analytics

EASTERN CONSTRUCTION
COMPANY LIMITED

May 5, 2005

Port Dalhousie Vitalization Corporation
Corporate Office
225 Ricardo Street, Suite 101, SS1
Niagara-on-the-Lake ON L0S 1J0

Attention: Mr. Eric Moog, President

Re: Proposed Development – Port Dalhousie

Dear Mr. Moog:

We have reviewed the preliminary drawings for this project prepared by Diamond Schmitt, Architects and the geotechnical reports prepared by Soil Mat Engineers. Our review was performed to consider construction methods that may be required as a result of a portion of the building extending below the level of the lake and ground water tables.

Our experience in constructing building foundations that penetrate static water tables suggests that measures to prevent water infiltration into the excavation area and the temporary lowering of water levels within the excavated area will be required.

Water infiltration into the deep excavation can be controlled through the use of temporary 'containment' dams such as steel sheet piling or continuous caisson wall construction. Either system will need to be evaluated in conjunction with other structural considerations for excavation and/or adjacent building support. In either case, effective means of water infiltration can be accomplished to perform necessary construction operations.

In addition to the construction of the containment 'dams', it will likely be necessary to perform some deep well dewatering (well points, e.g.) around the perimeter of the containment dams, in order to temporarily lower the local ground water levels. Deep well dewatering is performed by a number of firms in the Southern Ontario area, and they should be consulted for advice on the appropriate system & method, when all design information is available.

. . ./2

Eastern Construction has had considerable experience in constructing facilities below ground and lake water levels or in locations where below grade water conditions (arteries in rock seams, e.g.) has required the application of methods & expertise to control water infiltration. One of the largest and deepest excavations ever completed in Toronto was for an expansion to the Metro Toronto Convention Centre. Completely underground and within Toronto's filled lakefront, the excavation extended 65 feet below grade levels and over 40 feet below lake levels. Temporary perimeter dewatering systems and internal pumping provided adequate, dry conditions for all construction operations. Permanent below floor drainage systems and a hybrid perimeter waterproofing system were installed as a part of the final design requirements to ensure long term prevention of water infiltration into this below grade entertainment and convention facility.

Eastern Construction do not contemplate any insurmountable challenges during the construction of Port Dalhousie Vitalization Project.

Yours truly,

EASTERN CONSTRUCTION COMPANY LIMITED

Frank DeCaria, P. Eng.
President

/jl

PROJECT NO.: SM 041595-G

JULY 8, 2004

GEOTECHNICAL INVESTIGATION
PROPOSED COMMERCIAL DEVELOPMENT
PORT DALHOUSIE, ONTARIO

PREPARED FOR:

PORT DALHOUSIE VITALIZATION CORPORATION

Soil-Mat

BY

SOIL-MAT ENGINEERS & CONSULTANTS LTD.
130 LANCING DRIVE
HAMILTON, ONTARIO
L8W 3A1

REF

Soil-Mat

PROJECT NO.: SM 041595-G

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SOIL-MAT ENGINEERS & CONSULTANTS LTD.

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PHONE (905) 318-7440 FAX (905) 318-7455
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PROJECT NO.: SM 041595-G

July 8, 2004

PORT DALHOUSIE VITALIZATION CORPORATION
225 Ricardo Street, Suite 101
Niagara-on-the-Lake, Ontario
L0S 1J0

Attention: Mr. Eric Moog

GEOTECHNICAL INVESTIGATION
PROPOSED COMMERCIAL/RESIDENTIAL DEVELOPMENT
PORT DALHOUSIE, ONTARIO

Dear Sir,

We have completed the fieldwork and laboratory testing, and report preparation in connection with the above noted project. Our comments and recommendations, based on our findings at the borehole locations, are presented herein.

1. INTRODUCTION

We understand that the project will consist of the construction of a large commercial/entertainment complex including retail and restaurant spaces, three and four storey hotel buildings, an underground theatre, up to three levels of underground parking and a 20 storey condominium building. The purpose of this geotechnical investigation was to determine the subsurface conditions at the borehole locations and to interpret the results of this investigation with respect to the design and construction of the foundations and related earthworks for this project.

This report is based on the above summarised project description, and on the assumption that the design and construction will be performed in accordance with applicable codes and standards. Any significant deviations from the proposed project design may void the recommendations given in this report. If significant changes are made to the proposed design, then this office must be consulted to review the new design with respect to the results of this investigation. The information contained in this report does not reflect upon the environmental aspects of the site and therefore have not been addressed in this document.

2. PROCEDURE

A total of nineteen [19]-sampled boreholes were advanced at the locations illustrated on the enclosed Drawing No. 1, Borehole Location Plan. The borings were advanced using solid stem continuous flight auger equipment under the supervision of SOIL-MAT ENGINEERS. The borings were advanced in two sets, with Boreholes 1 to 12, inclusive, advanced on April 15 and 16, 2004 and Boreholes 13 to 19 on June 14, 15 and 22, 2004. The borings were extended with auger equipment to depths of 3.5 to 11.1 metres below the existing ground surface. In two of the borings the bedrock was cored using N size diamond drilling equipment to depths of 13.69 and 15.39 metres.

Representative samples of the subsoils were recovered from the borings at selected depth intervals using split barrel sampling equipment driven in accordance with the requirements of the ASTM test specification D1586, Standard Penetration Resistance Testing, [CSA A119.1]. After undergoing a general field examination, the soil samples were preserved and transported to the Soil-Mat laboratory for visual, tactile, and olfactory classifications. Routine moisture content tests were performed on all soil samples recovered from the borings. In addition a number of grain size analyses were conducted on select samples. The recovered rock cores were examined for recovery and Rock Quality Designation [RQD] and six selected samples were subjected to unconfined compressive strength testing. A total of five samples were submitted to an independent certified laboratory for chemical analyses.

Standpipes were installed in four of the boreholes, namely Boreholes 3, 6, 10 and 11, to allow for long-term groundwater level observations. The first set of boreholes revealed the presence of a peat layer in the northeast corner of the site. In order to evaluate the level of methane production from the organic soils 50 millimetre diameter monitoring wells were installed in two of the boreholes. These monitoring wells also served as standpipes for long-term groundwater monitoring. Bentonite clay gravel was used to backfill all of the borings.

The boreholes were located in the field by representatives of Soil-Mat Engineers as access permitted and approved by representatives of the Port Dalhousie Vitalization Corporation, with additional borings advanced at locations in consultation with the project structural engineer. The ground surface elevations were referenced to a site specific benchmark described as the top of the water valve on the east[1] side of Lock Street at the northwest corner of the 'My Cottage' building. The elevation of this temporary benchmark was taken as 82.90 metres from the survey plan produced by Mathews Cameron, Heywood – Kerry T. Howe Surveying Ltd., dated October 29, 2003, File 2003-150.

[1] For purposes of this report Lock Street is taken as running north toward Main Street, with Port Dalhousie Harbour to the southeast of the site.

The results of the subsurface investigation are detailed in Borehole Logs 1 to 19, inclusive, which can be found following the text of this report. It is noted that the boundaries of soil types indicated on the borehole logs are inferred from non-continuous soil sampling and observations made during drilling. These boundaries are intended to reflect transition zones for the purpose of geotechnical design and therefore should not be construed as the exact planes of geological change.

3. SITE DESCRIPTION AND SUBSURFACE CONDITIONS

The project site is located in Port Dalhousie, Ontario, in the block bounded by Lock Street, Main Street and Lakeport Road, as well as the northwest corner of Lock Street and Canal Street. The site is currently occupied by a number of existing retail and restaurant buildings and open patios. The ground surface drops quite steeply from Lock Street towards Port Dalhousie Harbour by approximately 6 metres.

The subsurface conditions encountered at the borehole locations are summarised as follows:

Asphalt/Concrete Pavers/Topsoil

The project site is largely surfaced with asphaltic concrete approximately 25 to 100 millimetres thick and 50 millimetre concrete paving stones. Some areas are grass covered with approximately 100 millimetres of topsoil present. The depth of topsoil encountered at the borehole locations is not considered to be representative of the depth of topsoil in all areas of the site.

Fill

Fill material was encountered in the upper levels of all of the boreholes except Borehole 12 which was located on Canal Street just west of Lock Street. as shown on Drawing No. 1. The fill is generally a variable mixture of Clayey Sandy Silt, Silty Sand and Gravel. The fill is generally brown, with occasional brick fragments and cinders, occasional black staining and traces of organic material, is moist to wet and loose in relative density.

Organic Soils

Much of the fill noted above contained traces of black staining. In Boreholes 4, 6, and 7 significant layers of organic soils were encountered at depths of 1.0 to 2.5 metres. The organic soils are typically Silt and Clay. In Boreholes 7, 13, 14 and 17 a layer of peat was encountered between approximately 4.4 and 5.5 metres. The highly organic soils are generally brown and black and exhibit very low unit weights. The very high moisture contents of samples taken from these levels attest to the high organic content in the area.

Clayey Silt

In Boreholes 1, 3 to 9, inclusive, 11 and 18 the fill and organic soils give way to Clayey Silt and Silty Clay. The Clayey Silt is brown to grey, with infilled oxidation fissures in the upper levels, traces of fine gravel, is moist and generally very stiff in consistency.

Silt/Sandy Silt

Silt/Sandy Silt was encountered in every borehole with the exception of Borehole 7 at depths of 1.3 to 7.0 metres. The native fine grained granular soils are brown to grey, with traces of, to some, fine gravel, thin layering, occasional wet dilatant seams, and are moist and dense. In Borehole 16 the lower level becomes dense Sandy Silt till that is reddish grey in colour with fine to medium gravel. The Silt/Sandy Silt was proven to termination in all of the boreholes with the exception of Boreholes 6, 7, 13 and 14.

Queenston Shale

In Boreholes 6, 7, 13 and 14 in the NE corner of the property, Queenston Shale was encountered at depths of 6.4 to 8.4 metres. The shale is red, with greenish grey layers, is highly weathered in the upper perhaps one metre, becoming more sound with depth. The Queenston Shale was cored a distance of approximately 6.0 metres in each of Boreholes 13 and 14. The core recovery ranged from 90 to 100 percent which is indicative of relative unweathered sound Shale. Often when coring shale the recovery is quite low as the more weathered rock breaks apart and is washed away by the coring wash water. The RQD for the recovered rock cores ranges from 23 to 76 percent with an average of 53 percent. These values are considered to be indicative of relatively sound to very sound rock. During coring most of the wash water was returned to the ground surface indicating continuous rock with tight vertical or horizontal fissures.

Unconfined compressive strength tests on selected specimens of the recovered rock cores yielded values for q_u of 54.6 to 83.9 MPa. The specific results are shown in the table following the text of this report. The density of the recovered Shale was determined to be in the range of 2650 kg/m^3. The good core recoveries, relative high RQD values and unconfined compressive strengths of the rock cores shows the Queenston Shale to be good quality sound rock.

Groundwater Observations

Groundwater was present in most of the boreholes at the completion of drilling. Standpipes were installed in Boreholes 3, 6, 10, 11, 13 and 14 to enable long-term groundwater level observations. The groundwater observations are summarised in Tables A1 and A2.

TABLE A1
GROUNDWATER OBSERVATIONS
Boreholes 1 to 12, installed April 15 and 16, 2004

Borehole	Ground Surface Elevation (m)	Groundwater Elevations* (m)		
		At Completion	April 30, 2004	June 22, 2004
1	80.05	76.45	Backfilled	Backfilled
2	80.04	74.54	Backfilled	Backfilled
3*	81.06	Dry	77.56	77.51
4	77.46	73.86	Backfilled	Backfilled
5	77.07	73.77	Backfilled	Backfilled
6*	77.01	73.71	75.71	75.56
7	77.11	74.71	Backfilled	Backfilled
8	76.70	74.30	Backfilled	Backfilled
9	83.32	Dry	Backfilled	Backfilled
10*	78.91	Dry	77.26	77.26
11*	82.51	75.81	78.31	78.36
12	83.08	Dry	Backfilled	Backfilled

*Piezometer observation well installed to bottom of Borehole. Well consists of slotted pipe from bottom of hole to 1500 mm above bottom, surrounded with screened well sand, and sealed with Bentonite clay gravel to ground surface.

TABLE A2
GROUNDWATER OBSERVATIONS
Boreholes 13 to 19, installed June 14, 15 and 22, 2004

Borehole	Ground Surface Elevation (m)	Groundwater Elevations (m)	
		At Completion	June 22, 2004
13#	76.90	N/A+ (June 15)	75.20
14#	77.69	N/A+ (June 14)	75.89
15	77.97	76.17	Backfilled
16	77.81	71.91	Backfilled
17	80.28	73.88	Backfilled
18	82.95	75.85	Backfilled
19	77.94	76.14	Backfilled

50mm diameter methane/groundwater monitoring well installed to 7.5 metres. Well consists of No. 10 screen in lower 6.0 metres surrounded with screened well sand and sealed with Bentonite clay gravel to ground surface.
+ Borehole full of wash water from bedrock coring, therefore no water level observation.

The groundwater levels appear to have stabilised and therefore the static groundwater elevation can be estimated with some confidence. The static groundwater level is estimated to be at approximately 78.5 metres at the top of the hill at Lock Street and decreases more or less linearly to approximately 75.5 metres at the bottom of the hill at the eastern limit of the property. It is noted that infiltration of groundwater from above these levels should be anticipated through more permeable seams due to trapped water, natural drainage through the filled-in erosion feature and from surface runoff. We should also note that the water levels could rise during heavy precipitation and spring runoff periods.

4. General Observations on Subsurface Conditions

With reference to the stratigraphic sections illustrated on Drawings Nos. 3 and 4, it is evident that an erosion feature existed in the area before the existing buildings were erected. Depths of fill exceeding 5 m are evident in certain exploratory borings located in the erosion gully with the ground water table located several meters above the base of fill or above the alluvium and peat encountered in some of the borings. Fortunately, the fill and alluvium in most borings exhibit relative low permeability and hence volume of seepage water should not be too great from this source. However, the soils below the ground water table in the area of Borehole Nos. 7, 8, 13 and 14 located in the north eastern portion of the site contain pervious sands that may yield large volumes of water in deep excavations required to reach solid bearing if conventional spread footings are contemplated. However, at this location, the high-rise 20-storey complex could be supported on caissons reaching down into the Queenston Shale and thereby eliminate the need for deep excavations. It is understood that the high rise building will be located in this lower portion of the site and that its ground floor level will practically coincide with the presently existing ground surface, at adjacent street level, however ramping down toward the west. Vehicular traffic will therefore have access directly from the adjacent street level.

Table B shows the ground surface elevations of the borehole locations and the approximate elevation of competent soil. Drawing No 2, following the text of this report, illustrates our interpretation of the competent soil elevation contours.

TABLE B
GROUND SURFACE AND COMPETENT SOIL ELEVATIONS

Borehole	Ground Surface Elevation (m)	Elevation of Competent Soil (m)
1	80.05	73.00
2	80.04	77.50
3	81.06	79.80
4	77.46	73.40
5	77.07	75.70

TABLE B - CONTINUED
GROUND SURFACE AND COMPETENT SOIL ELEVATIONS

6	77.01	73.00
7	77.11	70.00
8	76.70	71.60
9	83.32	80.50
10	78.91	77.50
11	82.51	75.80
12	83.08	79.00
13	76.90	69.70
14	77.69	72.20
15	77.97	75.70
16	77.81	76.50
17	80.28	74.90
18	82.95	80.50
19	77.94	75.80

5. Excavations

As noted above, the excavations required to accommodate the complex with its underground parking and theatre complex will essentially ramp down from the street level adjacent to the large Port Dalhousie parking lot. The excavation will extend west to Lock Street and north to Main Street. Since the excavations will extend practically to the property lines, and since the adjacent streets and buildings must be preserved, excavation support will be required. It is proposed to extend the excavations along Lock Street to at least 10 m below Lock Street level.

5.a Quality of Excavated Soils

Five samples of the overburden soils were submitted for chemical analyses by an independent certified laboratory. Specifically the samples were subjected to analyses for total petroleum hydrocarbons, both gas/diesel and heavy oils, as well as inorganic metals scans. The results of this testing is shown on the Agat Laboratories Certificates of Analysis following the text of this report. The results were compared with the MOE Guideline for Use at Contaminated Sites in Ontario, Table B, for industrial/commercial land use. The results show a number of parameters which exceed the guidelines. Specifically, sample BH 15 SS1 exceeds the criterion for mercury, and sample BH 17 SS 2 exceeds the guidelines for lead and zinc. Evidently some testing of the excavated soil will be required during construction to determine the appropriate disposal site for the material.

5.b Excavation Support

In determining the excavation support requirements, a review must be made of the adjacent and the on-site above- and below-ground structures to be supported. Consideration should be given to the sensitivity of structures to small movements, and the costs involved in supporting the excavation with respect to the cost of possibly purchasing or repairing the structures on adjacent properties.

Where small movements can be tolerated, and adequate space is available, then open cut excavations tend to be the most cost effective, although substantial volumes of engineered fill will subsequently be required to fill above the excavation slopes when construction has reached the final ground or street level. Some of the excavated fill will be suitable for reuse. In this case a staging area would likely be required to store the materials until they are required. If only small volumes of fill are involved, then all of the excavated material should be taken off site since the site will already be significantly cluttered without using up valuable space for stockpiles of fill. Excavation slopes above the ground water table may be assumed to remain stable on 1H:1V. However below the ground water table, flatter slopes will be required in accordance with the requirements of the Occupational Health and Safety Act.

Where space is not available to accommodate open cut excavations, but small movements of the adjacent structures can be tolerated, then a soldier-pile-timber lagging support system will suffice. The soldier piles must extend sufficiently below final base of excavation level to prevent kick out of the bottom of the soldier piles, and must be supported at intermediate levels as a function of the depth of the excavation and the rigidity of support required. For design purposes, the passive coefficient of lateral earth pressure in front of the soldier piles encased in concrete may be assumed to be 3 in the dense Silt/Sandy Silt and the width of the concrete encasement around the soldier pile may be assumed to be 3 times its actual width for calculation purposes. The active coefficient may be assumed to be a value between 0.25 and 0.35, depending on the amount of movements that can be tolerated, although the amount of movements that will actually occur are often dictated by the care with which the lagging boards are backfilled and the care with which the fill is compacted behind the lagging boards. All backfilling and compacting behind the lagging boards must be performed as soon as possible after the excavations have been extended to the next level. The retained unit weight of soil may be taken as 20 kN/m^3 [~130 pcf].

If movements of adjacent structures cannot be tolerated then rigid support systems are required, as to maintain the integrity of the supporting soils under the neighbouring buildings, then caisson walls are recommended. Such walls can be designed for end bearing of 500 kPa [~5 tsf] in the lower dense native soils, or 1,000 kPa [~10 tsf] in the underlying Queenston shale a minimum of 1.5 m below final base of excavation or deeper to develop the requisite earth pressure in front of the caisson wall. In this case, the at-rest earth pressure coefficient equal to about 0.5 should be considered in the design.

The excavation support must be designed as required by the Occupational Health and Safety Act and the Canadian Foundation Engineering Manual. This office should be given the opportunity to review the shoring shop drawings and design parameters before construction, and a representative of SOIL-MAT ENGINEERS should be on site to observe the installation of the shoring. The shoring can be supported either by anchors extending into the Shale bedrock or by rakes, although from a contractors point of view, rock anchors would be preferred, provided permission can be obtained from the neighbouring property owners to extend the anchors under their property. The shoring must be monitored for movements, and a plan must be available before the excavations begin, to rectify the shoring system should movements become apparent. It is noted that significant movements of the shoring system may take place if rakes are used to support the shores since compression of the rakes and the footings supporting the inclined raker loads must occur before the rakes can begin to carry load. In this regard, anchors are preferred since they pre-stress the shoring system to the design load even before the excavations reach their final grade.

A pre-construction survey should be undertaken of all nearby structures that could be affected by the proposed excavations.

5.c Ground Water Control

It is evident that the excavations will extend a few meters below the ground water table, assuming that excavations will be required to about Elevation 75 m. Excavation below the ground water in low permeability slightly cohesive soils should pose no special dewatering problems, however where high permeability soils are exposed, as in the area of Boreholes 7, 8, 13 and 14 substantial pumping may be required to control the ground water, depending on the depth of excavation required. It is therefore important that this office be involved with the excavation design process to review the information available, in detail, with respect to the proposed construction. Raising the base of excavation by a meter or so will reduce significantly the requirements for ground water control, although some dewatering wells might be required locally to control water in the area of the former erosion gully. These requirements can be reviewed and updated as design of the project continues. Regardless, the volume of water removed from the excavations should be monitored since this will provide valuable information on the sizing of the sump and pumps required for long-term perimeter and under floor drainage requirements. Depending on the design, a small pump test and possibly a dewatering expert might be required to provide assistance in the design of a dewatering system.

A storm water management facility is located just east of the property, west of the large Port Dalhousie Parking lot. This facility has anchors extending well west from the underground tank, possibly extending into the subject property. While the senior author of this report was the geotechnical consultant on that project, the details as to the length of the anchors are not available in house. This information would have to be searched out from the City Building Department or from the Design Consultants, Proctor and Redfern, now Earth Tech, of St. Catharines, Ontario

6. FOUNDATION CONSIDERATIONS

Our estimate as to the depth to competent ground is presented in Table B above and as contours on Drawing No. 2. From these, it is evident that portions of the proposed buildings could be supported on conventional spread footings founded in the competent Silt/Sandy Silt. The native undisturbed soils are capable of supporting a net allowable bearing pressure of 300 to 500 kPa [~3 to 5 tsf]. It must be understood that soil is naturally a variable material and does not remain absolutely consistent from one point to another on the same site, even in the same soil mass. Thus it is virtually impossible to prescribe effective support conditions afforded by the native soil at specific locations and elevations. For design purposes footings founded on the undisturbed native soils may be designed using a net allowable bearing pressure of 500 kPa [~5 tsf]. It is imperative that a representative of this office confirm the design bearing pressure during construction through footing bed inspections. It may be necessary in some cases to reduce the design bearing pressure or to locally lower the founding level. In this regard, construction should begin at the 'low end' of the site, and advance uphill and to either side of the buried erosion gully. This is to allow lowering of any particular footing, if required, to accommodate actual ground conditions encountered at the footing location without undermining adjacent, possibly higher, footings.

All footing beds must be hand clean of loose or disturbed material immediately prior to the placement of concrete. The native fine grained granular soils, while dense to very dense, are sensitive to disturbance from foot traffic. It may be advantageous to protect the founding soils by placing a thin skim coat of concrete immediately after excavation and inspection so that so that forms and reinforcing steel may be set without disturbing the founding soils.

Alternatively, where the depth to competent soil for conventional spread footings is beyond economic reach, portions of the proposed building could be supported on deep foundations extending into the underlying Queenston Shale. In this case concrete filled caisson foundations would be preferred. We would not recommend H-section piles on this site, given the condition of the Queenston Shale and the undetermined depth the piles would penetrate the Shale before reaching 'refusal', and the unknown stress relaxation of the piles with time after achieving final set. In addition, vibration set up during pile driving could damage existing buildings.

As discussed above, the Queenston Shale was cored at two locations in the area of the proposed 20-storey tower and the Shale was found to be good quality, sound rock with only the perhaps upper metre showing signs of severe weathering. Therefore, based on the results of our coring work, the relative high RQD values and percent core recoveries, and further, based on the results of our unconfined compression strength tests on core samples of the Shale rock, we recommend that the caissons be designed on the basis of an end bearing value of 3,500 kPa [~35 tsf] and a shaft resistance value of 750 kPa [~110 psi].

Since the above end bearing and shaft resistance values are expected to develop practically simultaneously at relative low strains, the above values can be used simultaneously in the caisson design. However, the contribution of the upper 1.5 m of the Queenston Shale should be neglected, given the weathered nature of the rock within this depth level. The effective shaft length should be at least 1.5 m, meaning a minimum total shaft length of 3.0 metres below the bedrock surface. The caissons would have to be at least 30 inches in diameter to allow physical access to the bottom of the caissons for detailed inspections.

There will be some differential settlements between portions of the complex supported on caissons and portions supported on conventional spread footings. This occurrence must be taken into account in the structural design, and could be as large as 15 to 20 mm. A pour strip should be incorporated to minimise the effects of differential settlements.

7. SEISMIC DESIGN CONSIDERATIONS

The Ontario Building Code Act, Ontario Regulation 413/90, specifies that all buildings be designed to withstand an equivalent lateral force representing the elastic response, V_e, which is assumed to act non-concurrently in any direction according to the following formula:

$$V_e = v*S*I*F*W$$

Where, v, the zonal velocity ratio, is 0.05 for St. Catharines and the foundation factor, F, applicable to the site subsoil conditions is 1.0 for caissons extending into the Queenston Shale and 1.3 for conventional spread footings. The other terms are evaluated by the structural engineers as a function of the design of the structure.

8. Permanent Perimeter and Underfloor Drainage Requirements

Depending on the location of the floor with respect to the erosion gully, the floor slab may either be constructed as a slab- on-grade or as a structural floor supported on grade, appreciating that some settlements of the structural floor could occur. Consideration might be given to ultimately supporting the structural slab on helical piers or similar light piles on frequent centres to minimise the structural requirements of the floor.

As with all concrete floor slabs, there is a tendency for the floor slabs to crack. The slab thickness, the amount of steel reinforcement and/or wire mesh placed into the concrete slab, the concrete mix design, and the support provided will therefore be a function of the owner's tolerance for cracks in, and movements of, the slabs-on-grade, etc.

A moisture barrier will be required under the floor slabs to act as a capillary break. Where 'non-damp' floor slabs are required, as for instance under sheet vinyl floor coverings, extra efforts will be required to damp proof the floor slab, as with the additional provisions of a heavy 'poly' sheet under the slab, damp proofing sprays and additives, etc. A recommended moisture barrier consists of at least 200 millimetres of well-compacted 20 millimetre clear crushed stone. At a minimum the moisture barrier material should contain no more than 10 percent passing the No. 4 sieve.

A permanent perimeter and under-floor drainage tile system should be provided to prevent the build up of water under the floor slabs and against the foundation walls. The size of the drains and sump will depend on the volume of water that enters the excavation during construction plus an extra to allow for loss of capacity possibly due to siltation. In this regard, clean outs should be provided. The volume of ground water control required during construction should therefore be monitored, as noted above, to assist in sizing the drainage facility required. For preliminary design purposes, the drainage pipes should be at least 150 mm in diameter, and be suitably filtered to ensure their long-term performance without becoming clogged with fines. A recommendation would be to surround the perforated Big 'O' (brand name) perforated pipe with 200 mm of 20 mm clear stone, and to surround the clear stone with a heavy filter fabric. The suppliers of the filter fabric should be consulted as to the type best suited for this project. This office should inspect the installation of the drains. Even a small holiday (break) in the filtering materials could result in loss of fines into the drains with attendant performance difficulties, including settlements of the ground surface. It is noted that the fine-grained granular soils present on site are readily eroded. The exterior grade around the structure should be sloped away from the structure to prevent ponding of water against the foundations.

9. Backfill and Earth Pressure on Basement Walls

Backfill against basement walls should consist of free-draining granular soil that is not susceptible to frost heaving. Backfill should be placed in lifts and compacted to 90% of its standard Proctor maximum dry density in areas where settlement is not critical. In settlement critical areas, i.e., below roadways, parking areas, etc. the backfill should be compacted to 95% of its Proctor value to within about 1 metre of final grade, and to 100% above that level.

Lateral earth pressures on basement walls can be estimated on the basis of backfill unit weight, γ = 20 kN/m^3, and a coefficient of lateral earth pressure, K = 0.35 if small lateral deformations are acceptable, or 0.5 in fill against rigid walls. Any additional pressures due to surcharge loading must be included in the design.

The basement walls should be damp proofed if accessible from the exterior, or should be fitted with drainage blankets and pans secured to the shoring support system to allow drainage to the perimeter drainage system.

10. Methane Gas

Significant deposits of peat were encountered on this site. Such peat often generates methane gas of sufficient volume to become dangerous if not properly vented. As noted above monitoring wells were installed in Boreholes 13 and 14 to evaluate the level of methane gas production in the peat. The methane levels were measured on June 22, 2004 using a Gastech GT1238ME hydrocarbon detection device. The results of the methane gas measurements are shown in Table C.

TABLE C
METHANE GAS MEASUREMENTS

Borehole	Probe Depth (m)	Time (min)*	Concentration (ppm)
13	0.5	0	>500
		3	250
		5	110
		8	100
		10	75
	1.0	10	>500
14	0.5	0	300
		3	125
		5	50
	1.0	5	310
	1.5	6	>500

*The 'Time' reading began when the gas wells were opened. The wells were sealed again after the readings were made.

Evidently, sufficient methane gas is being generated on site and possibly beyond the proposed building area to warrant its venting, and so to prevent its accumulation in the building.

11. GENERAL COMMENTS

The comments provided in this report are intended only for the guidance of the design architects and engineers. The borehole descriptions and logs are not to be considered descriptive of the conditions at locations other than the borehole locations. Given the subsurface conditions identified, the geotechnical engineer should be involved on an ongoing basis as the design of the underground portions of the development evolves.

Contractors bidding or undertaking work on this project should decide on their own explorations and their own interpretations of the factual borehole results, so that they might decide on how the subsurface conditions at the site will effect their operations.

All foundation construction, earth works and shoring work must be monitored to confirm that the geotechnical aspects of this project are performing as anticipated.

We trust that this preliminary Report meets with your requirements and that you will not hesitate to contact this office should there be any questions.

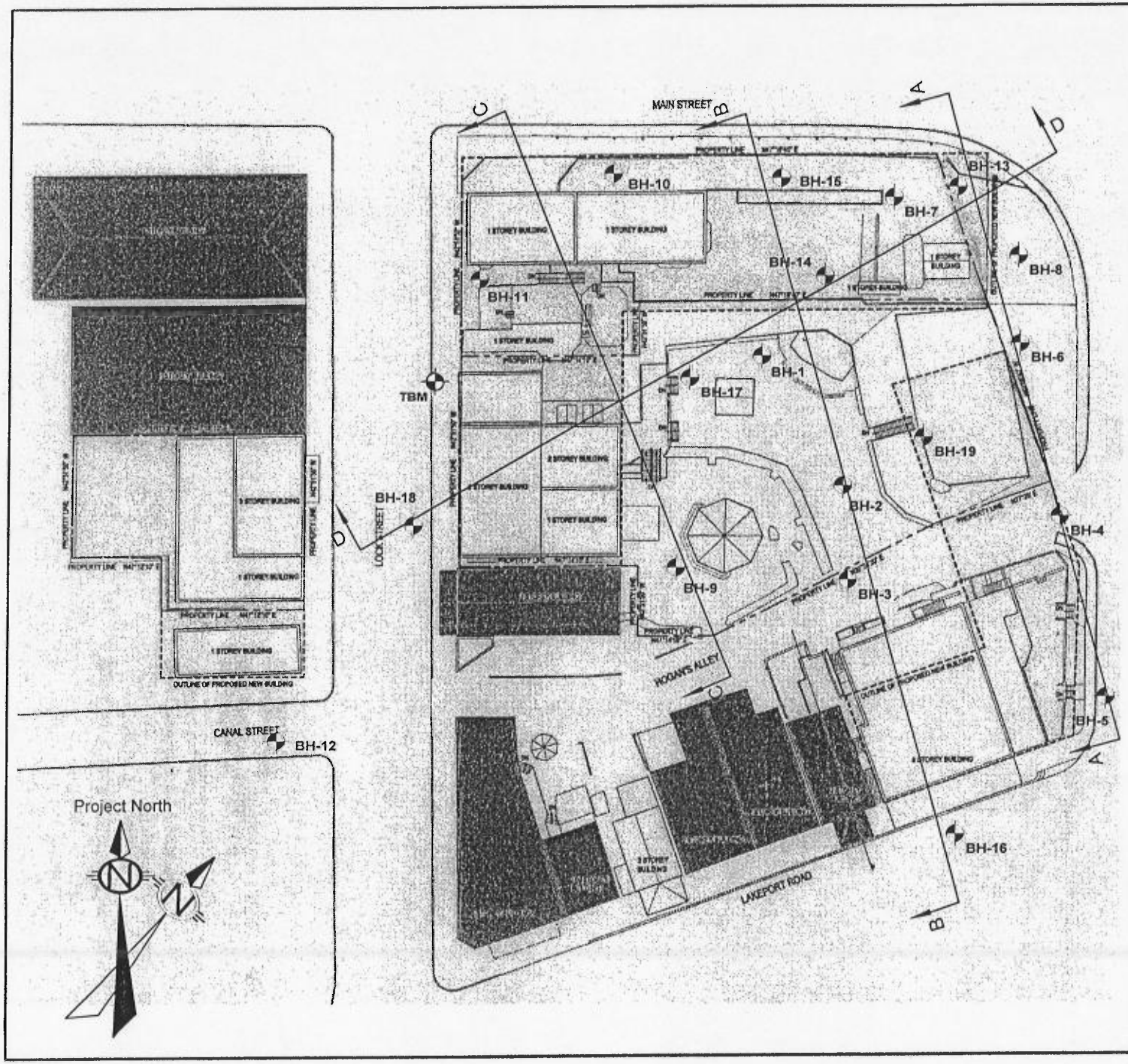
Yours very truly,
SOIL-MAT ENGINEERS & CONSULTANTS LTD.

Ian Shaw, B.Eng., EIT

Danny Schebesch, M.E.Sc., P.Eng.

Enclosures: Drawing No. 1 Borehole Location Plan
Drawing No. 2 Competent Soil Contour Plan
Drawing Nos. 3 and 4 Sections A-A to D-D
Borehole Log Nos. 1 to 19, inclusive
Unconfined Compressive Strength of Rock Cores
Grain Size Analyses No. 1 to 4, inclusive
Agat Laboratories Certificates of Analysis

Distribution: Port Dalhousie Vitalization Corporation [2]
Diamond and Schmitt Architects Incorporated [2]



LEGEND

BH-# Borehole

TBM Temporary Benchmark (water valve, elevation 82.90 metres)

NOTES:

1. This drawing should be read in conjunction with Soil-Mat Engineers & Consultants Ltd. report number SM 041595-G
2. Soil samples will be discarded after 3 months unless directed otherwise by client.
3. Topsoil depths may vary across site and from depths at borehole locations.
4. Base drawing provided by Port Dalhousie Vitalization Corporation.
5. Borehole locations are approximate.

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Engineers & Consultants Ltd.

CLIENT

Port Dalhousie
Vitalization Corporation

PROJECT TITLE

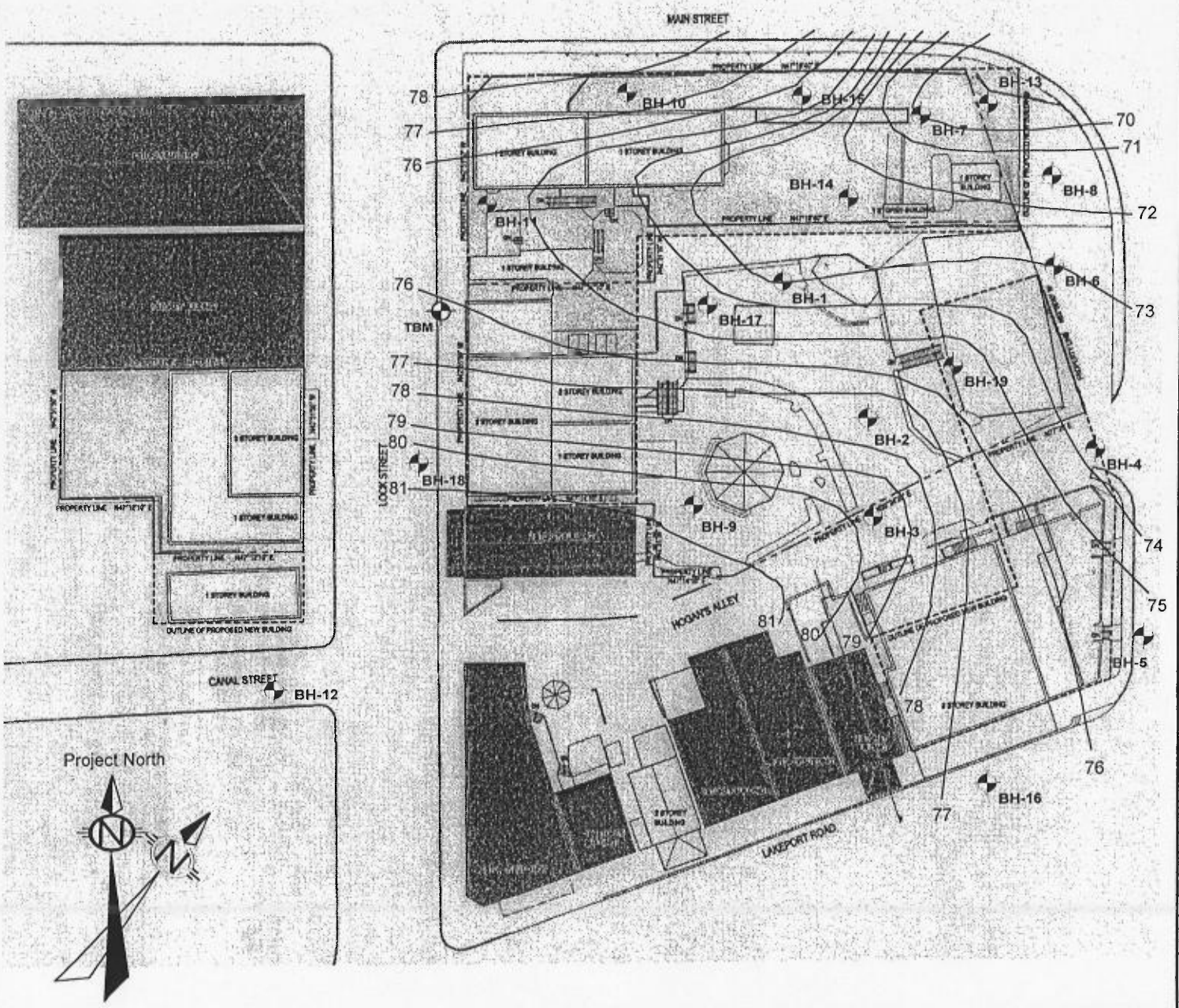
Geotechnical Investigation
Proposed Commercial Development
Port Dalhousie, Ontario

DRAWING TITLE

Borehole Location Plan

PROJECT No.	SM 041595-G
SCALE	N.T.S.
DATE	July 2004
CHECKED	
DRAWN	IS
FILENAME	041595 Borehole Location Plan.kcw

DRAWING No. 1



LEGEND

BH-# Borehole

TBM Temporary Benchmark (water valve, elevation 82.90 metres)

NOTES:

1. This drawing should be read in conjunction with Soil-Mat Engineers & Consultants Ltd. report number SM 041595-G
2. Contour lines are intended to illustrate the approximate elevation of competent soil. The information is interpolated from data at the borehole locations and are not intended as an exact representation of the conditions
3. Base drawing provided by Port Dalhousie Vitalization Corporation.
4. Borehole locations are approximate.

Soil-Mat

Engineers & Consultants Ltd.

CLIENT
Port Dalhousie Vitalization Corporation

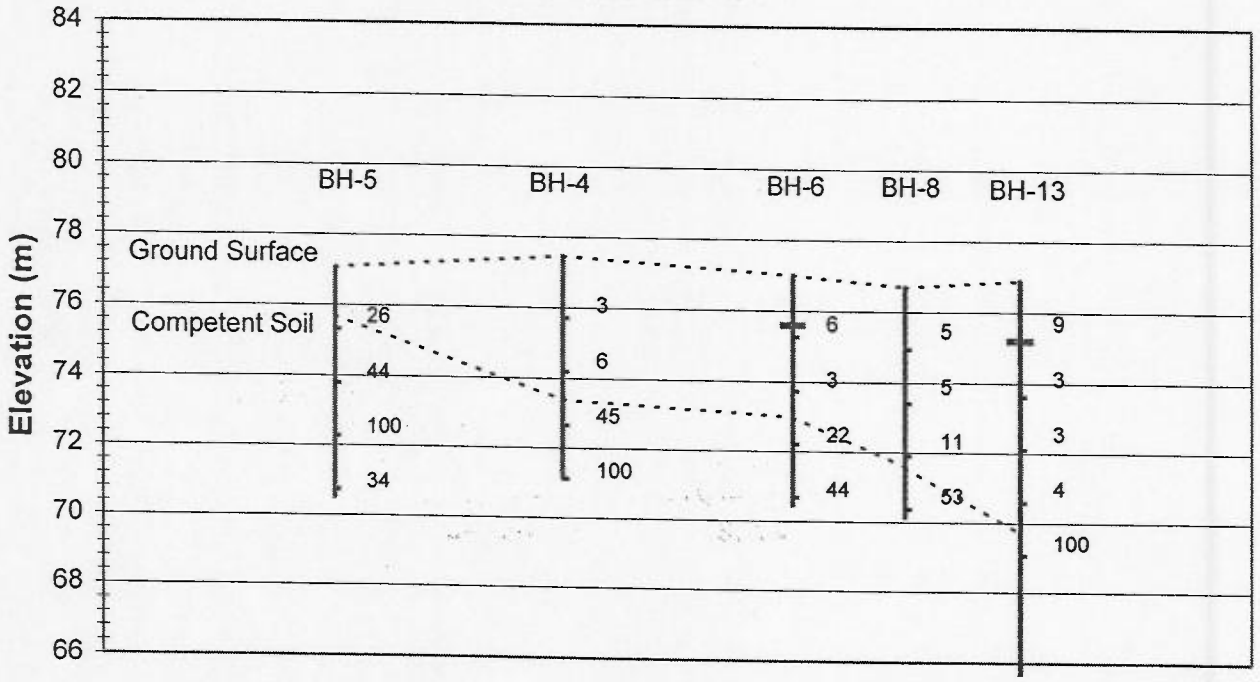
PROJECT TITLE
Geotechnical Investigation
Proposed Commercial Development
Port Dalhousie, Ontario

DRAWING TITLE
Competent Soil Contour Plan

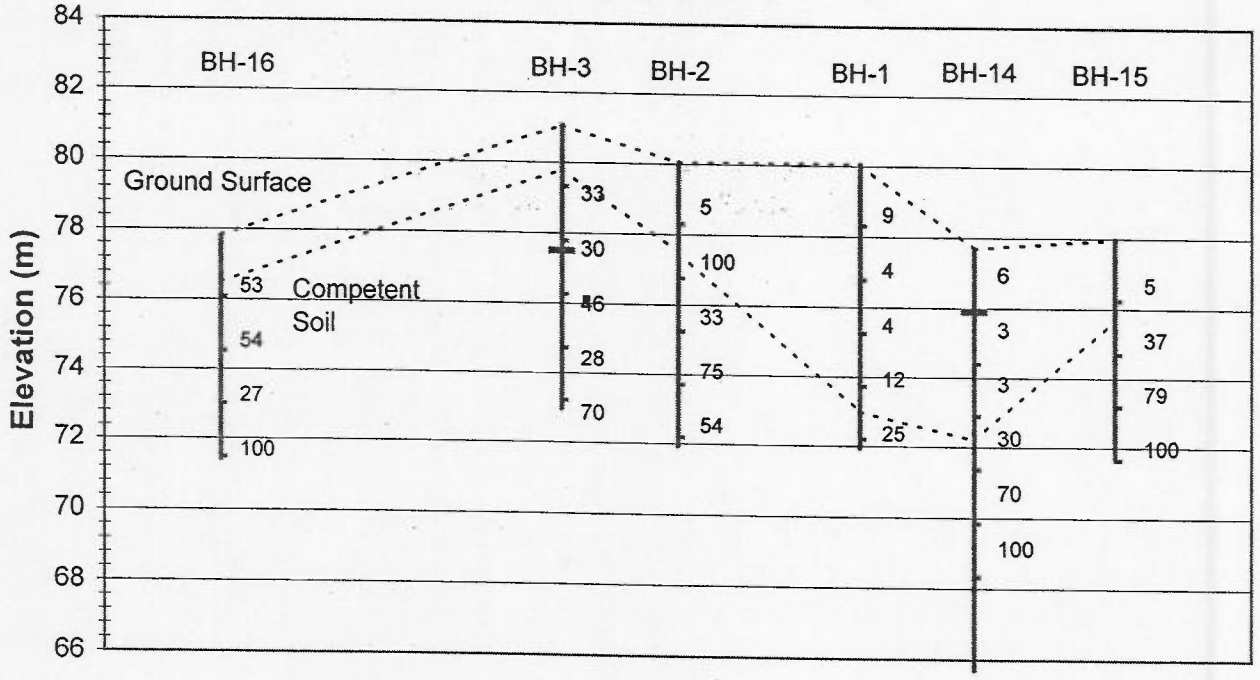
PROJECT No.	SM 041595-G
SCALE	N.T.S.
DATE	July 2004
CHECKED	
DRAWN	IS
FILENAME	041595 Contour Plan.kcw

DRAWING No. 2

Section A-A
Boreholes 5, 4, 6, 8, 13



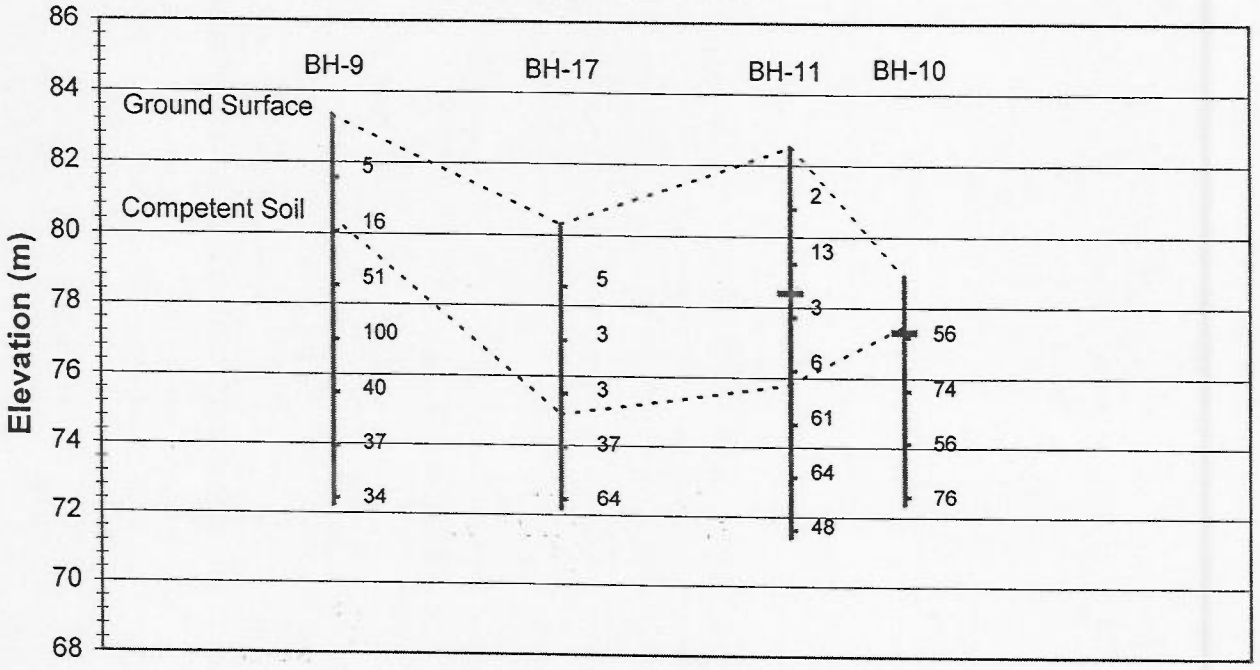
Section B-B
Boreholes 16, 3, 2, 1, 14, 15



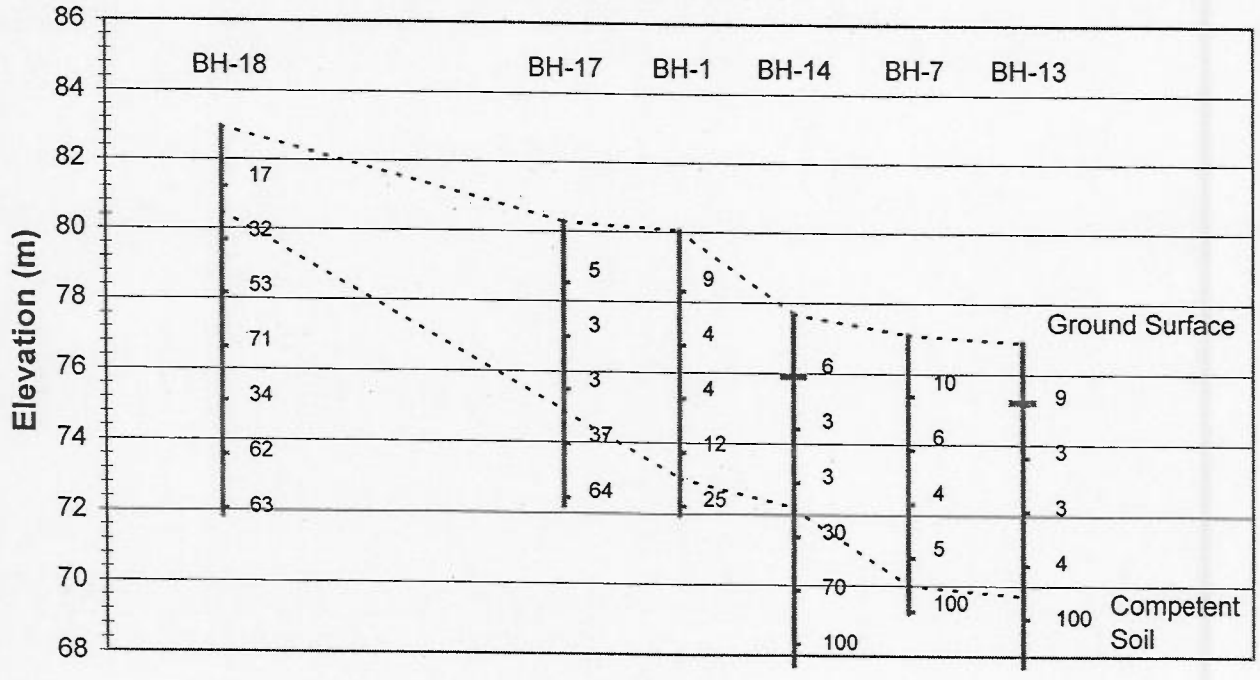
Note: These sections are not to scale and are inferred from information at the borehole locations

Drawing No. 3

Section C-C
Boreholes 9, 17, 11, 10



Section D-D
Boreholes 18, 17, 1, 14, 7, 13



Note: These sections are not to scale and are inferred from information at the borehole locations

Drawing No. 4

Project No: SM 041595-G

Project: Port Dalhousie Development

Location: Lock Street and Main Street

Client: PDVC

Log of Borehole No. 1

Borehole Location: See Drawing No. 1

Project Manager: Ian Shaw, B. Eng., EIT

Soil-Mat

SUBSURFACE PROFILE				SAMPLE						
Depth (ft / m)	Symbol	Description	Elevation	Type	Number	Blows/300mm	PP (kgf/cm2)	U.Wt.(kN/m3)	Recovery	Moisture Content w% (10 20 30 40) / Standard Penetration Test blows/300mm (20 40 60 80)
0 / 0		Ground Surface	80.05							
2		***Asphaltic Concrete*** Approximately 40 millimetres	79.35							
4		***Granular Fill*** Brown, medium grained, compact								
6 / 2		***Clayey Silt Fill*** Brown, traces of to some fine to medium gravel, brick fragments, occasional black staining, moist to wet, firm to loose		SS	1	9				
8										
10				SS	2	4				
12 / 4										
14			75.60							
16		***Sandy Clayey Silt*** Grey and black, organic material, wood fragments, wet, loose		SS	3	4				
18			74.50							
20 / 6		***Clayey Silt*** Brown, weathered, oxidized seams, moist, compact		SS	4	12				
22			73.00							
24		***Silty Sand/Sandy Silt*** Brown, layered, moderate dilatancy, compact								
26 / 8			71.95	SS	5	25				
28		End of Borehole								
30										
32 / 10										
34										
36										

NOTES:

1. Borehole advanced using solid stem continuous flight auger equipment on April 15, 2004 to a depth of 8.1 metres.
2. Water at a depth of 3.6 metres at completion of drilling. Borehole backfilled.
3. Soil samples will be discarded after three months unless otherwise directed by the client.

Drill Method: Solid Stem Auger

Drill Date: April 15, 2004

Hole Size: 150mm

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e-mail: info@soil-mat.on.ca

Datum: Geodetic

Checked by: IS

Sheet: 1 of 1

Project No: SM 041595-G

Project: Port Dalhousie Development

Location: Lock Street and Main Street

Client: PDVC

Log of Borehole No. 2

Borehole Location: See Drawing No. 1

Project Manager: Ian Shaw, B. Eng., EIT

Soil-Mat

SUBSURFACE PROFILE

SAMPLE

Depth (ft)	Depth (m)	Symbol	Description	Elevation	Type	Number	Blows/300mm	PP (kgf/cm2)	U.Wt.(kN/m3)	Recovery
0	0		Ground Surface	80.04						
			Asphaltic Concrete Approximately 40 millimetres							
			Granular Fill Brown, medium grained, compact							
6	2		***Clayey Sandy Silt Fill*** Brown, mottled, weathered, trace of fine gravel, moist to wet, loose		SS	1	5			
8				77.50						
			Silt/Sandy Silt Brown to grey, trace of to some fine gravel, occasional thin layering, wet dilatant seams in upper level, moist, dense to very dense		SS	2	100+			
16	4				SS	3	33			
20	6				SS	4	75			
26	8			71.94	SS	5	59			
			End of Borehole							

Moisture Content w% (10, 20, 30, 40)

Standard Penetration Test blows/300mm (20, 40, 60, 80)

NOTES:

1. Borehole advanced using solid stem continuous flight auger equipment on April 15, 2004 to a depth of 8.1 metres.
2. Water at a depth of 5.5 metres at completion of drilling. Borehole backfilled.
3. Soil samples will be discarded after three months unless otherwise directed by the client.

Drill Method: Solid Stem Auger

Drill Date: April 15, 2004

Hole Size: 150mm

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Sheet: 1 of 1

Project No: SM 041595-G

Project: Port Dalhousie Development

Location: Lock Street and Main Street

Client: PDVC

Log of Borehole No. 3

Borehole Location: See Drawing No. 1

Project Manager: Ian Shaw, B. Eng., EIT

Soil-Mat

SUBSURFACE PROFILE				SAMPLE						
Depth (ft / m)	Symbol	Description	Elevation	Type	Number	Blows/300mm	PP (kgf/cm2)	U.Wt.(kN/m3)	Recovery	Moisture Content w% (10 20 30 40); Standard Penetration Test • blows/300mm • (20 40 60 80)
0 / 0		Ground Surface	81.06							
		Asphaltic Concrete Approximately 40 millimetres	80.76							
2		***Granular Fill*** Brown, medium grained, compact	79.80							
4		***Sandy Silt Fill*** Brown, mottled, weathered, trace of fine gravel, moist to wet, loose to compact		SS	1	33				
6 / 2		***Silt/Sandy Silt*** Brown to grey, trace of to some fine gravel, occasional thin layering, occasional wet dilatant seams, moist, dense to very dense		SS	2	30				
8										
10										
12 / 4				SS	3	46				
14										
16										
18				SS	4	28				
20 / 6										
22										
24										
26 / 8			72.96	SS	5	70				
28		End of Borehole								
30										
32 / 10										
34										
36										

NOTES:

1. Borehole advanced using solid stem continuous flight auger equipment on April 15, 2004 to a depth of 8.1 metres.
2. No water present at completion of drilling. Standpipe installed and borehole backfilled.
3. Soil samples will be discarded after three months unless otherwise directed by the client.

Water Level Readings:

April 15 - dry
April 30 - 3.5m
June 22 - 3.55m

Drill Method: Solid Stem Auger

Drill Date: April 15, 2004

Hole Size: 150mm

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Sheet: 1 of 1

Project No: SM 041595-G

Project: Port Dalhousie Development

Location: Lock Street and Main Street

Client: PDVC

Log of Borehole No. 4

Borehole Location: See Drawing No. 1

Project Manager: Ian Shaw, B. Eng., EIT

Soil-Mat

SUBSURFACE PROFILE

SAMPLE

Depth (ft)	Depth (m)	Symbol	Description	Elevation	Type	Number	Blows/300mm	PP (kgf/cm2)	U.Wt.(kN/m3)	Recovery
0	0		Ground Surface	77.46						
			Asphaltic Concrete Approximately 75 millimetres	77.16						
			Granular Fill Brown, medium grained, compact	76.40						
6	2		***Silty Sand and Gravel Fill*** Brown, moist, compact		SS	1	3			
			Organic Clay and Silt Grey and black, wood fragments, wet, soft	75.00						
10			***Silty Clay*** Grey, moist to wet, soft	74.20	SS	2	6			
	4		***Sand*** Grey, medium grained, wet, loose to compact	73.40						
16			***Silt/Sandy Silt*** Grey to reddish brown, some fine gravel, 'till like', moist, dense		SS	3	45			
20	6			71.21	SS	4	100+			
			End of Borehole		spoon bouncing					

Moisture Content w% ▲ 10 20 30 40 ▲

Standard Penetration Test • blows/300mm • 20 40 60 80

NOTES:

1. Borehole advanced using solid stem continuous flight auger equipment on April 15, 2004 to a depth of 6.25 metres.
2. Water at a depth of 3.6 metres at completion of drilling. Borehole backfilled.
3. Soil samples will be discarded after three months unless otherwise directed by the client.

Drill Method: Solid Stem Auger

Drill Date: April 15, 2004

Hole Size: 150mm

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Sheet: 1 of 1

Project No: SM 041595-G

Project: Port Dalhousie Development

Location: Lock Street and Main Street

Client: PDVC

Log of Borehole No. 5

Borehole Location: See Drawing No. 1

Project Manager: Ian Shaw, B. Eng., EIT

Soil-Mat

SUBSURFACE PROFILE

SAMPLE

Depth (ft)	Depth (m)	Symbol	Description	Elevation	Type	Number	Blows/300mm	PP (kgf/cm2)	U.Wt.(kN/m3)	Recovery
0	0		Ground Surface	77.07						
0	0		***Asphaltic Concrete*** Approximately 50 millimetres							
2			***Silty Sand and Gravel Fill*** Brown, moist, compact	75.70						
6	2		***Clayey/Sandy Silt*** Brown, trace of fine gravel, oxidized seams, thin wet coarse sand seam, moist, compact	74.60	SS	1	26			
10			***Silt/Sandy Silt*** Brown and grey, trace of fine gravel, occasional wet seams, 'till like', moist to wet, dense		SS	2	45			
14	4									
16					SS	3	100+			
18										
20	6									
22				70.52	SS	4	34			
22			End of Borehole							
24			NOTES: 1. Borehole advanced using solid stem continuous flight auger equipment on April 15, 2004 to a depth of 6.55 metres.							
26	8		2. Water at a depth of 3.3 metres at completion of drilling. Borehole backfilled.							
28			3. Soil samples will be discarded after three months unless otherwise directed by the client.							
30										
32	10									
34										
36										

Moisture Content w%: 10 20 30 40

Standard Penetration Test blows/300mm: 20 40 60 80

Drill Method: Solid Stem Auger

Drill Date: April 15, 2004

Hole Size: 150mm

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Project No: SM 041595-G

Project: Port Dalhousie Development

Location: Lock Street and Main Street

Client: PDVC

Log of Borehole No. 6

Borehole Location: See Drawing No. 1

Project Manager: Ian Shaw, B. Eng., EIT

Soil-Mat

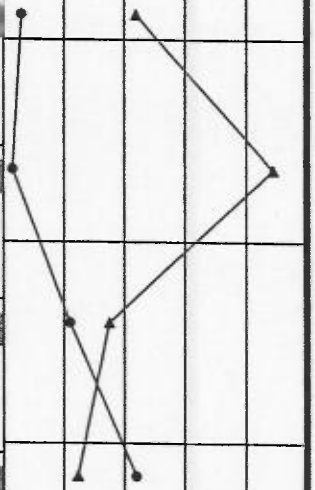
SUBSURFACE PROFILE

SAMPLE

Depth (ft / m)	Symbol	Description	Elevation	Type	Number	Blows/300mm	PP (kgf/cm2)	U.Wt.(kN/m3)	Recovery
0 / 0		Ground Surface	77.01						
0		***Asphaltic Concrete*** Approximately 50 millimetres							
2		***Granular Fill*** Brown, medium grained, compact							
4		***Clayey Silt Fill*** Brown and grey, trace of fine gravel, brick fragments, wet, soft		SS	1	6			
6 / 2			74.50						
8		***Silty Clay*** Grey and Black, brick fragments, organic staining, wet, soft		SS	2	3			
10			73.00						
12 / 4		***Clayey Silt*** Brown and grey, trace of fine gravel, weathered, layered, moist, compact		SS	3	22			
14			71.50						
16		***Silty Sand/Sandy Silt*** Grey, dilatant, wet, dense	70.60						
18 / 6			70.46	SS	4	44			
20		***Queenston Shale*** Red, highly weathered							
22		End of Borehole							
24									
26 / 8									
28									
30									
32 / 10									
34									
36									

Moisture Content w%: 10 20 30 40

Standard Penetration Test • blows/300mm •: 20 40 60 80



Water level readings:

April 15 - 3.3m
April 30 - 1.3m
June 22 - 1.45m

NOTES:

1. Borehole advanced using solid stem continuous flight auger equipment on April 15, 2004 to a depth of 6.55 metres.
2. Water at a depth of 3.3 metres at completion of drilling. Standpipe installed and borehole backfilled.
3. Soil samples will be discarded after three months unless otherwise directed by the client.

Drill Method: Solid Stem Auger

Drill Date: April 15, 2004

Hole Size: 150mm

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Sheet: 1 of 1

Project No: SM 041595-G

Project: Port Dalhousie Development

Location: Lock Street and Main Street

Client: PDVC

Log of Borehole No. 7

Borehole Location: See Drawing No. 1

Project Manager: Ian Shaw, B. Eng., EIT

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SUBSURFACE PROFILE

SAMPLE

Depth (ft)	Depth (m)	Symbol	Description	Elevation	Type	Number	Blows/300mm	PP (kgf/cm2)	U.Wt.(kN/m3)	Recovery
0	0		Ground Surface	77.11						
			Concrete Pavers Approximately 50 millimetres							
			Sand Fill Brown, medium grained, compact							
6	2		***Sandy Silt/Silty Sand Fill*** Brown and grey, some black staining, trace of fine gravel, brick fragments, moist to wet, loose	75.30	SS	1	10			
8			***Silty Clay/Clayey Silt*** Grey, mottled, moist to wet, stiff	74.70						
12	4		***Sand/Silty Sand*** Grey and black, organic material, wood fragments, distinct layers in lower level, wet, loose		SS	2	6			
16				72.30	SS	3	4			
18			***Peat*** Brown and black, organic material, wet, loose	71.60						
20	6		***Silty Clay*** Grey, fine to medium gravel, black staining, moist to wet, soft		SS	4	5			
24				70.00						
26	8		***Queenston Shale*** Red, greenish grey layers, highly weathered, hard	69.21	SS	5	100+			
			End of Borehole							

Moisture Content w% ▲ 10 20 30 40 ▲

Standard Penetration Test • blows/300mm • 20 40 60 80

76.4

NOTES:

1. Borehole advanced using solid stem continuous flight auger equipment on April 15, 2004 to a depth of 7.9 metres.
2. Water at a depth of 2.4 metres at completion of drilling. Borehole backfilled.
3. Soil samples will be discarded after three months unless otherwise directed by the client.

Drill Method: Solid Stem Auger

Drill Date: April 15, 2004

Hole Size: 150mm

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Sheet: 1 of 1

Project No: SM 041595-G

Project: Port Dalhousie Development

Location: Lock Street and Main Street

Client: PDVC

Log of Borehole No. 8

Borehole Location: See Drawing No. 1

Project Manager: Ian Shaw, B. Eng., EIT

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SUBSURFACE PROFILE				SAMPLE						
Depth (ft / m)	Symbol	Description	Elevation	Type	Number	Blows/300mm	PP (kgf/cm2)	U.Wt.(kN/m3)	Recovery	Moisture Content w% (10 20 30 40) / Standard Penetration Test • blows/300mm • (20 40 60 80)
0 / 0		Ground Surface	76.70							
		Topsoil Approximately 100 millimetres								
2		***Clayey Silt*** Brown to grey, black staining, trace of organic material, moist to wet, soft								
4										
6 / 2				SS	1	5				
8			74.20							
		Sand Grey, medium to coarse grained, trace of fine gravel, wet, loose								
10				SS	2	5				
12 / 4			72.70							
14		***Clayey Silt*** Grey, trace of fine gravel, moist, compact								
16			71.60	SS	3	11				
18		***Silt*** Brown, trace of sand and fine to medium gravel, shale fragments, 'till like', moist, dense								
20 / 6			70.15	SS	4	53				
22		End of Borehole								
24										
26 / 8		NOTES: 1. Borehole advanced using solid stem continuous flight auger equipment on April 15, 2004 to a depth of 6.55 metres.								
28										
30		2. Water at a depth of 2.4 metres at completion of drilling. Borehole backfilled.								
32										
34 / 10		3. Soil samples will be discarded after three months unless otherwise directed by the client.								
36										

Drill Method: Solid Stem Auger

Drill Date: April 15, 2004

Hole Size: 150mm

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Sheet: 1 of 1

Project No: SM 041595-G

Project: Port Dalhousie Development

Location: Lock Street and Main Street

Client: PDVC

Log of Borehole No. 9

Borehole Location: See Drawing No. 1

Project Manager: Ian Shaw, B. Eng., EIT

Soil-Mat

SUBSURFACE PROFILE

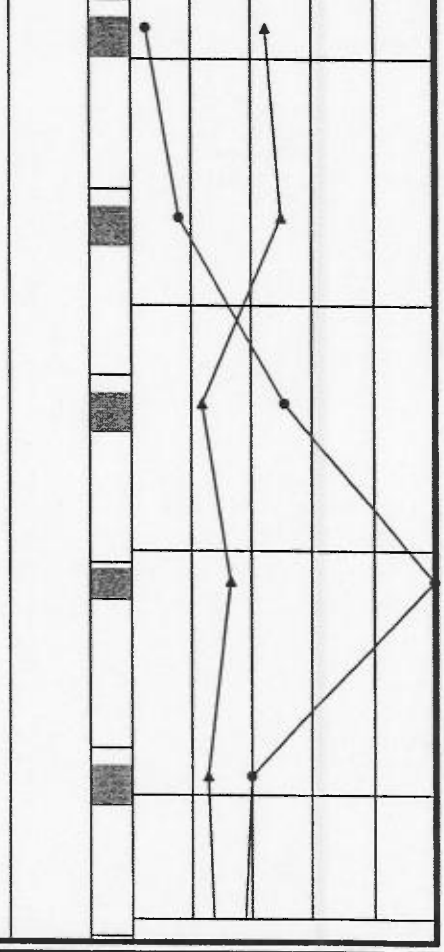
Depth (ft)	Depth (m)	Symbol	Description	Elevation
0	0		Ground Surface	83.32
			Asphaltic Concrete Approximately 25 millimetres	82.90
2			***Silty Sand and Gravel Fill*** Brown, moist, compact	
4			***Clayey Silt/Silty Clay Fill*** Brown and grey, some fine to medium gravel, brick fragments, moist, soft	
6	2			
8				80.60
10			***Clayey Silt/Silty Clay*** Brown, thin grey seams, weathered, trace of fine gravel, moist, very stiff	
12				79.30
	4			
14			***Silt/Sandy Silt*** Brown to grey, trace of to some fine gravel, thin layering, occasional wet dilatant seams, moist, dense	
16				
18				
20	6			
22				
24				
26	8			
28				

SAMPLE

Type	Number	Blows/300mm	PP (kgf/cm2)	U.Wt.(kN/m3)	Recovery
SS	1	5			
SS	2	16			
SS	3	51			
SS	4	100+			
SS	5	40			

Moisture Content w% (10 20 30 40)

Standard Penetration Test • blows/300mm • (20 40 60 80)



Drill Method: Solid Stem Auger

Drill Date: April 16, 2004

Hole Size: 150mm

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Project No: SM 041595-G

Project: Port Dalhousie Development

Location: Lock Street and Main Street

Client: PDVC

Log of Borehole No. 9

Borehole Location: See Drawing No. 1

Project Manager: Ian Shaw, B. Eng., EIT

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SUBSURFACE PROFILE				SAMPLE						
Depth	Symbol	Description	Elevation	Type	Number	Blows/300mm	PP (kgf/cm2)	U.Wt.(kN/m3)	Recovery	Moisture Content w% (10 20 30 40) / Standard Penetration Test • blows/300mm • (20 40 60 80)
31		***Silty/Sandy Silt*** Grey, trace of to some fine gravel, thin layering, occasional wet dilatant seams, moist, dense		SS	6	37				
33										
35										
11			72.22	SS	7	34				
37		End of Borehole								
39		NOTES: 1. Borehole advanced using solid stem continuous flight auger equipment on April 16, 2004 to a depth of 11.1 metres.								
41										
13		2. No water present at completion of drilling. Borehole backfilled.								
43										
45		3. Soil samples will be discarded after three months unless otherwise directed by the client.								
47										
49										
15										
51										
53										
55										
17										
57										
59										

Drill Method: Solid Stem Auger

Drill Date: April 16, 2004

Hole Size: 150mm

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Project No: SM 041595-G

Project: Port Dalhousie Development

Location: Lock Street and Main Street

Client: PDVC

Log of Borehole No. 10

Borehole Location: See Drawing No. 1

Project Manager: Ian Shaw, B. Eng., EIT

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SUBSURFACE PROFILE

Depth (ft)	Depth (m)	Symbol	Description	Elevation
0	0		Ground Surface	78.91
			Sand and Gravel Fill	78.61
2			Brown, medium grained, compact	
			Sandy Silt	
4			Brown, trace of fine gravel, weathered, possible fill, compact	77.50
6	2		***Silt/Sandy Silt***	
8			Brown to grey, trace of to some fine to medium gravel, occasional thin layering, occasional wet dilatant seams, moist, dense to very dense	
10				
12	4			
14				
16				
18				
20	6			
22				72.36
24			End of Borehole	
26	8			
28				
30				
32	10			
34				
36				

SAMPLE

Type	Number	Blows/300mm	PP (kgf/cm2)	U.Wt.(kN/m3)	Recovery
SS	1	56			
SS	2	74			
SS	3	56			
SS	4	76			

Moisture Content w%
10 20 30 40

Standard Penetration Test
blows/300mm
20 40 60 80

NOTES:
1. Borehole advanced using solid stem continuous flight auger equipment on April 16, 2004 to a depth of 6.55 metres.

2. No water present at completion of drilling. Standpipe installed and borehole backfilled.

3. Soil samples will be discarded after three months unless otherwise directed by the client.

Water Level Readings:

April 16 - dry
April 30 - 1.65m
June 22 - 1.65m

Drill Method: Solid Stem Auger

Drill Date: April 16, 2004

Hole Size: 150mm

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Project No: SM 041595-G

Project: Port Dalhousie Development

Location: Lock Street and Main Street

Client: PDVC

Log of Borehole No. 11

Borehole Location: See Drawing No. 1

Project Manager: Ian Shaw, B. Eng., EIT

Soil-Mat

SUBSURFACE PROFILE

Depth (ft)	Depth (m)	Symbol	Description	Elevation
0	0		Ground Surface	82.81
			Concrete Pavers Approximately 50 millimetres	
			Sand Brown, medium grained, compact	
			Silty Sand and Gravel Fill Brown, weathered, loose	
6	2			80.50
			Clayey Silt/Silty Clay Brown and reddish brown, some fine to medium gravel, layered, moist, stiff	
14	4			78.50
			Silty Clay Grey and black, organic material, thin sand seams in lower level, moist to wet, soft	
22	6			75.80
			Silt/Sandy Silt Grey, trace of to some fine gravel, occasional trace of clay, thin layering, occasional wet dilatant seams, moist, dense	
28	8			

SAMPLE

Type	Number	Blows/300mm	PP (kgf/cm2)	U.Wt.(kN/m3)	Recovery
SS	1	2			
SS	2	13			
SS	3	3			
SS	4	6			
SS	5	61			

Moisture Content w% 10 20 30 40

Standard Penetration Test • blows/300mm • 20 40 60 80

Drill Method: Solid Stem Auger

Drill Date: April 16, 2004

Hole Size: 150mm

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Project No: SM 041595-G

Project: Port Dalhousie Development

Location: Lock Street and Main Street

Client: PDVC

Log of Borehole No. 11

Borehole Location: See Drawing No. 1

Project Manager: Ian Shaw, B. Eng., EIT

Soil-Mat

SUBSURFACE PROFILE				SAMPLE						
Depth	Symbol	Description	Elevation	Type	Number	Blows/300mm	PP (kgf/cm2)	U.Wt.(kN/m3)	Recovery	Moisture Content w% (10 20 30 40) / Standard Penetration Test • blows/300mm • (20 40 60 80)
31		***Silty/Sandy Silt*** Grey, trace of to some fine gravel, occasional trace of clay, thin layering, occasional wet dilatant seams, moist, dense		SS	6	64				
33										
35										
11			71.71	SS	7	48				
37		End of Borehole								
39		NOTES: 1. Borehole advanced using solid stem continuous flight auger equipment on April 16, 2004 to a depth of 11.1 metres.								Water Level Readings: April 16 - 6.7m April 30 - 4.2m June 22 - 4.15m
41		2. Water at a depth of 6.7 metres at completion of drilling. Standpipe installed borehole backfilled.								
13										
43										
45		3. Soil samples will be discarded after three months unless otherwise directed by the client.								
47										
49										
15										
51										
53										
55										
17										
57										
59										

Drill Method: Solid Stem Auger

Drill Date: April 16, 2004

Hole Size: 150mm

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Project No: SM 041595-G

Project: Port Dalhousie Development

Location: Lock Street and Main Street

Client: PDVC

Log of Borehole No. 12

Borehole Location: See Drawing No. 1

Project Manager: Ian Shaw, B. Eng., EIT

Soil-Mat

SUBSURFACE PROFILE				SAMPLE						
Depth (ft / m)	Symbol	Description	Elevation	Type	Number	Blows/300mm	PP (kgf/cm2)	U.Wt.(kN/m3)	Recovery	Moisture Content w% (10 20 30 40) / Standard Penetration Test • blows/300mm • (20 40 60 80)
0 / 0		Ground Surface	83.08							
		Asphaltic Concrete Approximately 100 millimetres	82.70							
2		***Granular Fill*** Brown, medium grained, compact								
4		***Silty Clay*** Grey, moist to wet, soft								
6 / 2				SS	1	2				
8										
10				SS	2	4				
12 / 4			79.00							
14		***Silt/Sandy Silt*** Grey, trace of fine to medium gravel, occasional thin layering, occasional wet dilatant seams, moist, dense								
16				SS	3	61				
18										
20 / 6										
			76.53	SS	4	61				
22		End of Borehole								
24		NOTES: 1. Borehole advanced using solid stem continuous flight auger equipment on April 16, 2004 to a depth of 6.55 metres.								
26 / 8		2. No water present at completion of drilling. Borehole backfilled.								
28		3. Soil samples will be discarded after three months unless otherwise directed by the client.								
30										
32 / 10										
34										
36										

Drill Method: Solid Stem Auger

Drill Date: April 16, 2004

Hole Size: 150mm

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Project No: SM 041595-G

Project: Port Dalhousie Development

Location: Lock Street and Main Street

Client: PDVC

Log of Borehole No. 13

Borehole Location: See Drawing No. 1

Project Manager: Ian Shaw, B. Eng., EIT

Soil-Mat

SUBSURFACE PROFILE				SAMPLE						
Depth (ft / m)	Symbol	Description	Elevation	Type	Number	Blows/300mm	PP (kgf/cm2)	U.Wt.(kN/m3)	Recovery	Moisture Content w% (10 20 30 40) / Standard Penetration Test • blows/300mm • (20 40 60 80)
0 / 0		Ground Surface	76.90							
		Concrete Pavers Approximately 50 millimetres								
		Sand Fill Brown, medium grained, compact								
		Sandy Silt/Silty Sand Fill Brown and grey, some black staining, trace of fine gravel, brick fragments, occasional organic material, moist to wet, loose		SS	1	9				
2 / 2			74.50							
		Sandy Silt/Clayey Silt Grey and black, trace of organic material, wet, loose		SS	2	3				
4 / 4			72.50							
		Peat Brown and black, organic material, wet, loose		SS	3	3				
			71.40							
		Sandy Silt Grey, some fine to medium gravel, wet, loose		SS	4	4				
6 / 6			69.70							
		Queenston Shale Red, greenish grey layers		SS	5	100+				
8 / 8		Run 1: 7.77m to 9.27m Recovery = 90% RQD = 57%		N	6					
		Run 2: 9.27m to 10.67m Recovery = 95% RQD = 51%		N	7					
10 / 10										Continuous return of coring wash water
12 / 12										
14 / 14										
16 / 16										
18 / 18										
20 / 20										
22 / 22										
24 / 24										
26 / 26										
28 / 28										
30 / 30										
32 / 32										
34 / 34										
36 / 36										

Drill Method: Solid Stem Auger

Drill Date: June 15, 2004

Hole Size: 150mm

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Project No: SM 041595-G

Project: Port Dalhousie Development

Location: Lock Street and Main Street

Client: PDVC

Log of Borehole No. 13

Borehole Location: See Drawing No. 1

Project Manager: Ian Shaw, B. Eng., EIT

Soil-Mat

SUBSURFACE PROFILE				SAMPLE						
Depth	Symbol	Description	Elevation	Type	Number	Blows/300mm	PP (kgf/cm2)	U.Wt.(kN/m3)	Recovery	Moisture Content ▲ w% ▲ 10 20 30 40 / Standard Penetration Test • blows/300mm • 20 40 60 80
38		Run 3: 10.67m to 12.27m Recovery = 100% RQD = 70%	65.60	N	8					Continuous return of coring wash water
40										
42 – 13		Run 4: 12.27m to 13.69m Recovery = 100% RQD = 63%		N	9					
44			63.11							
46		End of Borehole								
48		NOTES: 1. Borehole advanced using solid stem continuous flight auger equipment on June 15, 2004 to a depth of 7.77 metres. Rock cored using N size diamond drill equipment to a depth of 13.69 metres								
50 – 15										Water Level Readings:
52										June 22 - 1.7m
54		2. 50mm diameter monitoring well installed to a depth of 7.5 metres.								
56 – 17										
58		3. Soil samples will be discarded after three months, rock cores after twelve months unless otherwise directed by the client.								
60										
62 – 19										
64										
66										
68 – 21										
70										
72										

Drill Method: Solid Stem Auger

Drill Date: June 15, 2004

Hole Size: 150mm

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Project No: SM 041595-G

Project: Port Dalhousie Development

Location: Lock Street and Main Street

Client: PDVC

Log of Borehole No. 14

Borehole Location: See Drawing No. 1

Project Manager: Ian Shaw, B. Eng., EIT

Soil-Mat

Depth (ft)	Depth (m)	Description	Elevation	Type	Number	Blows/300mm	PP (kgf/cm2)	U.Wt.(kN/m3)	Recovery
0	0	Ground Surface	77.69						
0–6	0–2	***Topsoil*** Approximately 100 millimetres ***Sandy Silt/Clayey Silt Fill*** Brown and black, some fine to medium gravel, moist to wet, loose		SS	1	6			
8–14	2–4	***Sand/Silty Sand*** Grey, medium to coarse grained, some black organic staining, wet to saturated, loose	75.30	SS	2	3			
16–18	4–6	***Peat*** Brown and black, organic material,wood and rootlets, wet, loose	73.30	SS	3	3			
20–26	6–8	***Silt/Sandy Silt*** Grey, fine to medium gravel, shale fragments, occasional thin clayey seams, moist, dense	72.20	SS	4	30			
28–36	8–10	***Queenston Shale*** Red, greenish grey layers Run 1: 9.22m to 10.82m Recovery = 90% RQD = 76%	69.30	SS N	5 7	77			

Moisture Content w% (10 20 30 40)

Standard Penetration Test • blows/300mm • (20 40 60 80)

Continuous return of coring wash water

Drill Method: Solid Stem Auger

Drill Date: June 14, 2004

Hole Size: 150mm

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Project No: SM 041595-G

Project: Port Dalhousie Development

Location: Lock Street and Main Street

Client: PDVC

Log of Borehole No. 14

Borehole Location: See Drawing No. 1

Project Manager: Ian Shaw, B. Eng., EIT

Soil-Mat

SUBSURFACE PROFILE				SAMPLE						
Depth	Symbol	Description	Elevation	Type	Number	Blows/300mm	PP (kgf/cm2)	U.Wt.(kN/m3)	Recovery	Moisture Content w% ▲ 10 20 30 40 ▲ / Standard Penetration Test • blows/300mm • 20 40 60 80
38			66.39							
40		Run 2: 10.82m to 12.34m Recovery = 100% RQD = 55%		N	8					Continuous return of coring wash water
42 13		Run 3: 12.34m to 13.89m Recovery = 95% RQD = 23%		N	9					
44										
46		Run 4: 13.89m to 15.39m Recovery = 100% RQD = 30%								
48				N	10					
50 15			62.30							
52		End of Borehole								Water Level Readings:
54		NOTES: 1. Borehole advanced using solid stem continuous flight auger equipment on June 15, 2004 to a depth of 9.22 metres. Rock cored using N size diamond drill equipment to a depth of 15.39 metres								June 22 - 1.8m
56 17		2. 50mm diameter monitoring well installed to a depth of 7.5 metres.								
58		3. Soil samples will be discarded after three months, rock cores after twelve months unless otherwise directed by the client.								
60										
62 19										
64										
66										
68										
70 21										
72										

Drill Method: Solid Stem Auger

Drill Date: June 14, 2004

Hole Size: 150mm

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Sheet: 2 of 2

Project No: SM 041595-G

Project: Port Dalhousie Development

Location: Lock Street and Main Street

Client: PDVC

Log of Borehole No. 15

Borehole Location: See Drawing No. 1

Project Manager: Ian Shaw, B. Eng., EIT

Soil-Mat

SUBSURFACE PROFILE

SAMPLE

Depth (ft / m)	Symbol	Description	Elevation	Type	Number	Blows/300mm	PP (kgf/cm2)	U.Wt.(kN/m3)	Recovery
0 / 0		Ground Surface	77.97						
0 – 2 / 0 – 0.6		***Sand and Gravel Fill*** Brown, medium grained, compact							
2 – 6 / 0.6 – 2		***Silty Sand/Sandy Silt Fill*** Brown, mottled/weathered, trace of fine gravel, moist, loose		SS	1	5			
6 – 20 / 2 – 6		***Silt/Sandy Silt*** Brown to grey, trace of to some fine to medium gravel, occasional thin layering, occasional wet dilatant seams, moist, dense to very dense	75.70	SS	2	37			
				SS	3	79			
20 – 22 / 6 – 6.7		***Silty Sand*** Brown, wet, dilatant, dense	72.00 / 71.67	SS	4	100+ spoon bouncing			
22 / 6.7		End of Borehole							

NOTES:

1. Borehole advanced using solid stem continuous flight auger equipment on June 14, 2004 to a depth of 6.3 metres.
2. Borehole caved to a depth of 2.0 metres, water at a depth of 1.8 metres at completion. Borehole backfilled.
3. Soil samples will be discarded after three months unless otherwise directed by the client.

Moisture Content w% 10 20 30 40

Standard Penetration Test • blows/300mm • 20 40 60 80

Drill Method: Solid Stem Auger

Drill Date: June 14, 2004

Hole Size: 150mm

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130 Lancing Drive, Hamilton, ON L8W 3A1
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e-mail: info@soil-mat.on.ca

Datum: Geodetic

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Sheet: 1 of 1

Project No: SM 041595-G

Project: Port Dalhousie Development

Location: Lock Street and Main Street

Client: PDVC

Log of Borehole No. 16

Borehole Location: See Drawing No. 1

Project Manager: Ian Shaw, B. Eng., EIT

Soil-Mat

SUBSURFACE PROFILE

SAMPLE

Depth (ft)	Depth (m)	Symbol	Description	Elevation	Type	Number	Blows/300mm	PP (kgf/cm2)	U.Wt.(kN/m3)	Recovery
0	0		Ground Surface	77.81						
2			***Asphaltic Concrete*** Approximately 75 millimetres	77.20						
4			***Granular Fill*** Approximately 500 millimetres	76.50						
6	2		***Silty Sand/Sandy Silt*** Brown, trace of fine gravel, weathered, possible fill, moist, compact		SS	1	53			
8			***Silt/Sandy Silt*** Brown to grey, trace of to some fine to medium gravel, occasional thin layering, occasional wet dilatant seams, moist, dense							
10					SS	2	54			
12	4									
14										
16					SS	3	27			
18				72.30						
20	6		***Sandy Silt Till*** Reddish grey, fine to medium gravel, weathered shale fragments, dense	71.41	SS	4	100+			
22			End of Borehole							
24										
26	8									
28										
30										
32	10									
34										
36										

Moisture Content w%: ▲ 10 20 30 40 ▲

Standard Penetration Test • blows/300mm •: 20 40 60 80

NOTES:

1. Borehole advanced using solid stem continuous flight auger equipment on June 14, 2004 to a depth of 6.4 metres.
2. Water at a depth of 5.9 metres at completion. Borehole backfilled.
3. Soil samples will be discarded after three months unless otherwise directed by the client.

Drill Method: Solid Stem Auger

Drill Date: June 14, 2004

Hole Size: 150mm

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Sheet: 1 of 1

Project No: SM 041595-G

Project: Port Dalhousie Development

Location: Lock Street and Main Street

Client: PDVC

Log of Borehole No. 17

Borehole Location: See Drawing No. 1

Project Manager: Ian Shaw, B. Eng., EIT

Soil-Mat

SUBSURFACE PROFILE

Depth (ft)	Depth (m)	Symbol	Description	Elevation
0	0		Ground Surface	80.28
			Asphaltic Concrete Approximately 40 millimetres	79.58
			Granular Fill Brown, medium grained, compact	
6	2		***Sandy Silt/Clayey Silt Fill*** Brown, traces of to some fine to medium gravel, brick fragments and cinders, occasional black staining, moist to wet, loose	
14	4			75.90
16			***Sandy Clayey Silt*** Grey and black, layers of organic material/peat, wood fragments, wet, loose	
18				74.90
20	6		***Silty Sand/Sandy Silt*** Brown with some grey, weathered in upper level, trace of fine gravel, moist, dense	
26	8			72.18
28			End of Borehole	

SAMPLE

Type	Number	Blows/300mm	PP (kgf/cm2)	U.Wt.(kN/m3)	Recovery
SS	1	5			
SS	2	3			
SS	3	3			
SS	4	37			
SS	5	64			

Moisture Content w% (10 20 30 40)

Standard Penetration Test • blows/300mm • (20 40 60 80)

NOTES:

1. Borehole advanced using solid stem continuous flight auger equipment on June 15, 2004 to a depth of 8.1 metres.
2. Water at a depth of 6.4 metres at completion of drilling. Borehole backfilled.
3. Soil samples will be discarded after three months unless otherwise directed by the client.

Drill Method: Solid Stem Auger

Drill Date: June 15, 2004

Hole Size: 150mm

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Sheet: 1 of 1

Project No: SM 041595-G

Project: Port Dalhousie Development

Location: Lock Street and Main Street

Client: PDVC

Log of Borehole No. 18

Borehole Location: See Drawing No. 1

Project Manager: Ian Shaw, B. Eng., EIT

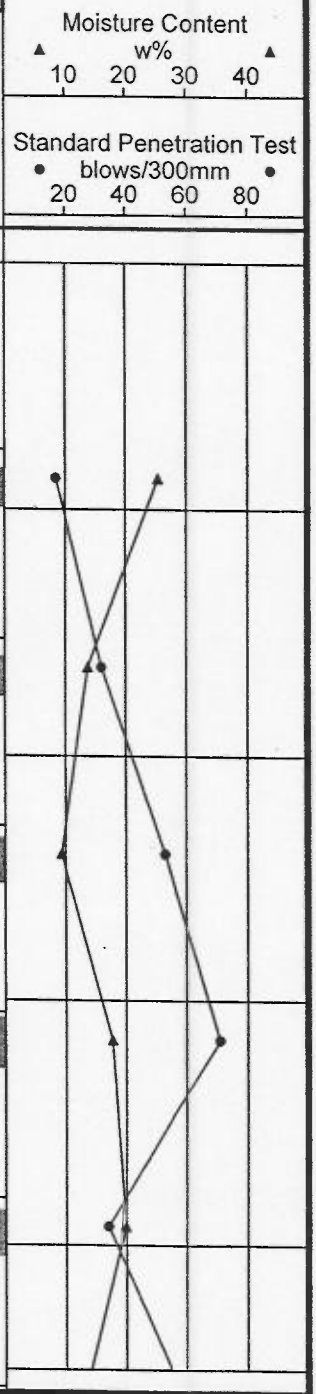
Soil-Mat

SUBSURFACE PROFILE

Depth (ft)	Depth (m)	Symbol	Description	Elevation
0	0		Ground Surface	82.95
			Asphaltic Concrete Approximately 100 millimetres	82.35
2			***Granular Base*** Approximately 500 millimetres	81.80
4			***Silty Sand and Gravel Fill*** Brown, weathered, loose	
6	2		***Clayey Silt*** Brown, mottled, trace of sand, thin layering, moist, compact	80.50
8			***Silt/Sandy Silt*** Brown to grey, trace of to some fine gravel, occasional trace of clay, thin layering, occasional wet dilatant seams, moist, dense	
10				
12	4			
14				
16				
18				
20	6			
22				
24				
26	8			
28				

SAMPLE

Type	Number	Blows/300mm	PP (kgf/cm2)	U.Wt.(kN/m3)	Recovery
SS	1	17			
SS	2	32			
SS	3	53			
SS	4	71			
SS	5	34			



Drill Method: Solid Stem Auger

Drill Date: June 15, 2004

Hole Size: 150mm

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Project No: SM 041595-G

Project: Port Dalhousie Development

Location: Lock Street and Main Street

Client: PDVC

Log of Borehole No. 18

Borehole Location: See Drawing No. 1

Project Manager: Ian Shaw, B. Eng., EIT

Soil-Mat

SUBSURFACE PROFILE				SAMPLE						
Depth	Symbol	Description	Elevation	Type	Number	Blows/300mm	PP (kgf/cm2)	U.Wt.(kN/m3)	Recovery	Moisture Content w% 10 20 30 40 / Standard Penetration Test blows/300mm 20 40 60 80
31		***Silty/Sandy Silt*** Grey, trace of to some fine gravel, occasional trace of clay, thin layering, occasional wet dilatant seams, moist, dense		SS	6	62				
33										
35										
11			71.85	SS	7	63				
37		End of Borehole								
39		NOTES: 1. Borehole advanced using solid stem continuous flight auger equipment on June 15, 2004 to a depth of 11.1 metres.								
41										
13		2. Water at a depth of 7.1 metres at completion of drilling. Borehole backfilled.								
43										
45		3. Soil samples will be discarded after three months unless otherwise directed by the client.								
47										
49										
15										
51										
53										
55										
17										
57										
59										

Drill Method: Solid Stem Auger

Drill Date: June 15, 2004

Hole Size: 150mm

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Sheet: 2 of 2

Project No: SM 041595-G

Project: Port Dalhousie Development

Location: Lock Street and Main Street

Client: PDVC

Log of Borehole No. 19

Borehole Location: See Drawing No. 1

Project Manager: Ian Shaw, B. Eng., EIT

Soil-Mat

SUBSURFACE PROFILE

SAMPLE

Depth (ft)	Depth (m)	Symbol	Description	Elevation	Type	Number	Blows/300mm	PP (kgf/cm2)	U.Wt.(kN/m3)	Recovery
0	0		Ground Surface	77.94						
			Topsoil Approximately 100 millimetres							
			Sandy Silt/Silty Sand Fill Brown, some fine gravel, moist, loose to compact	76.60	SS	1	5			
	2		***Clayey Silt*** Grey, trace of fine gravel, some thin layering, traces of organic material and organic staining, moist, loose	75.80	SS	2	23			
			Silty Sand/Sandy Silt Brown to grey, dilatant, moist to wet, compact to dense	74.44						
	4		End of Borehole							
	6									
	8									
	10									

Moisture Content w% (10 20 30 40)

Standard Penetration Test • blows/300mm • (20 40 60 80)

NOTES:

1. Borehole advanced using solid stem continuous flight auger equipment on June 22, 2004 to a depth of 3.5 metres.
2. Water at a depth of 1.8 metres at completion of drilling. Borehole backfilled.
3. Soil samples will be discarded after three months unless otherwise directed by the client.

Drill Method: Solid Stem Auger

Drill Date: June 22, 2004

Hole Size: 150mm

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Sheet: 1 of 1

Rock Core		Date Tested	Average Diameter D [mm]	Average Heigth H [mm]	Dry Weight (mass) [g]	Break Load Q_{ult} [lb]	Break Load Q_{ult} [kN]	Aspect Ratio Factor C_F	Estimated Area A [m^2]	Estimated Volume V [m^3]	Estimated Density ρ_{conc} [kg/m^3]	Unconfined Compressive Strength q_u [MPa]	Shear Strength S_u [MPa]
6	BH 14 depth: 46.0 ft	29-Jun-04	54.1	91.0	548.0	43930	195.4	0.98	0.00230	0.00021	2619.7	83.3	41.7
10	BH 13 depth: 46.5 ft		54.0	79.5	480.4	29286	130.3	0.96	0.00229	0.00018	2638.5	54.6	27.3
11	BH 13 depth: 39.5 ft		53.8	109.7	665.4	39947	177.7	1.00	0.00227	0.00025	2668.2	78.2	39.1
12	BH 13 depth: 41.2 ft		53.6	72.8	443.5	37522	166.9	0.94	0.00226	0.00016	2699.9	69.5	34.8
13	BH 14 depth: 36.5 ft		53.7	110.0	662.5	42737	190.1	1.00	0.00226	0.00025	2659.2	83.9	42.0
14	BH 14 depth: 35.7 ft		53.6	99.0	596.6	39754	176.8	0.99	0.00226	0.00022	2670.7	77.6	38.8

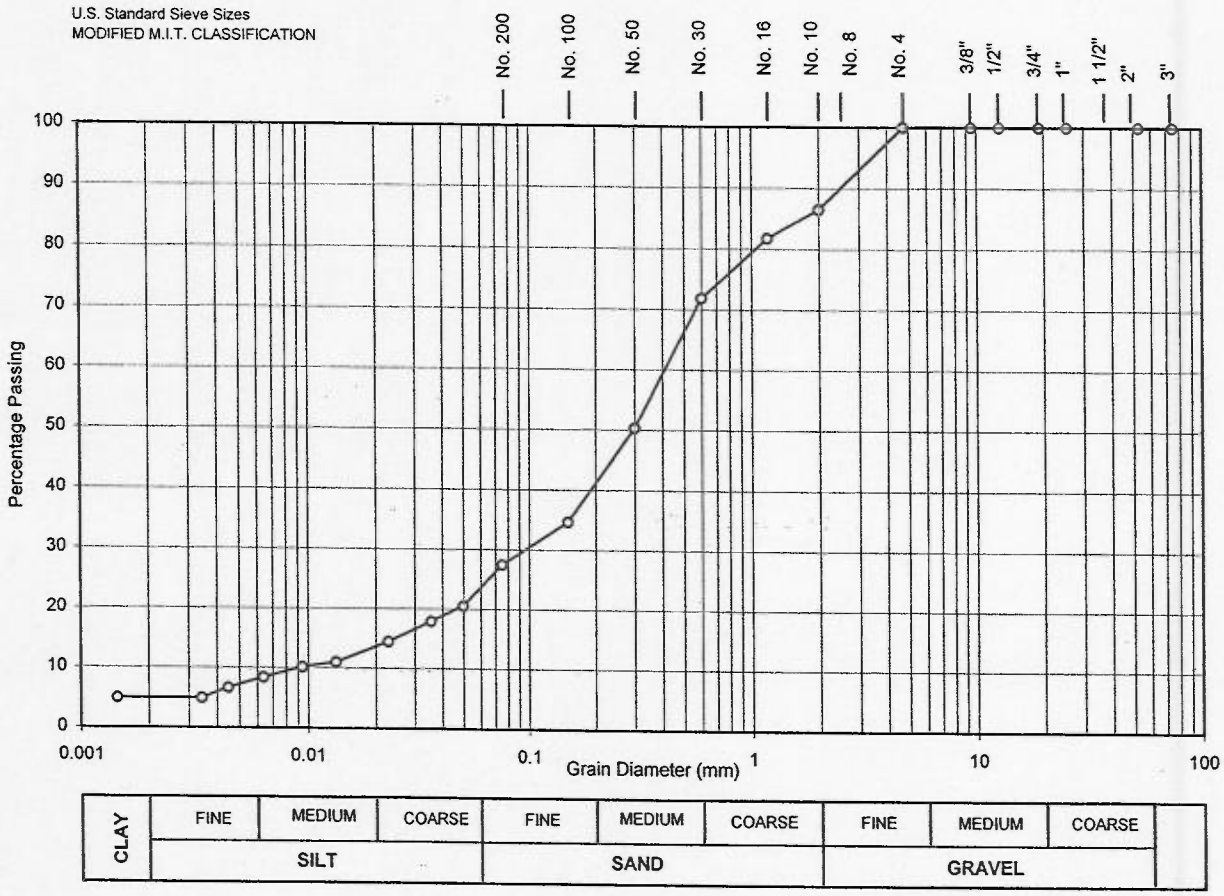
SOIL-MAT ENGINEERS & CONSULTANTS LTD.

UNCONFINED COMPRESSIVE STRENGTH OF ROCK CORES

Project No.: 041595-G

June 29, 2004

Mechanical & Hydrometer Analyses



Sample No.:	SS2
Borehole No.:	14
Depth [ft]:	10 - 11.5
CLAY [%]:	4
SILT [%]:	19
SAND [%]:	65
GRAVEL [%]:	12
D_{10} (Effective Diam. in mm):	0.009

Notes:

Soil Description:

Greying brown Silty SAND, with some Gravel, with trace of Clay

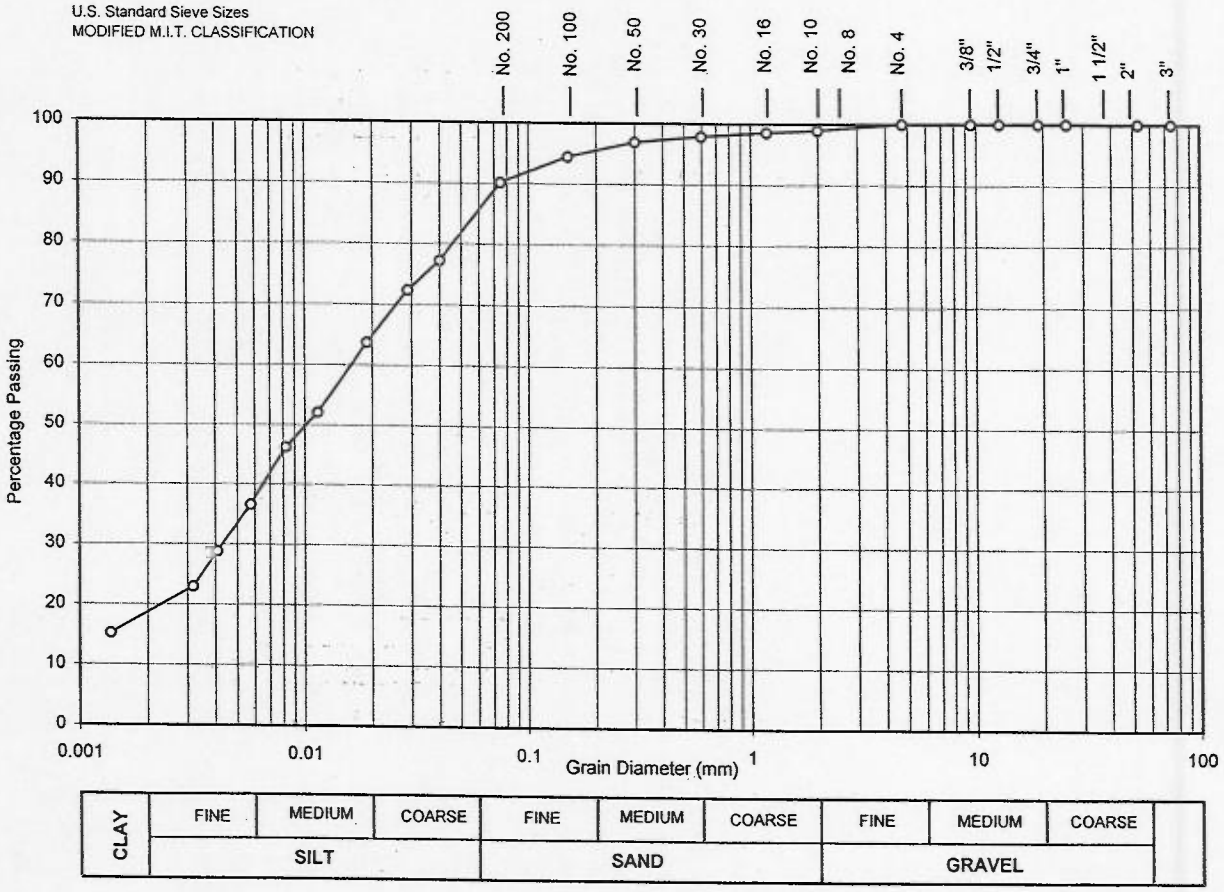
Coefficient of Uniformity C_U:

Coefficient of Curvature C_C:

SOIL-MAT ENGINEERS & CONSULTANTS LTD.

July 1, 2004	**Grain Size Analysis No. 1**	**Project No.: SM 041595-G**

Mechanical & Hydrometer Analyses



Sample No.:	SS4
Borehole No.:	17
Depth [ft]:	20 - 21.5
CLAY [%]:	19
SILT [%]:	66
SAND [%]:	15
GRAVEL [%]:	0
D_{10} (Effective Diam. in mm):	<0.001

Notes:

Soil Description:

Light brown Clayey SILT, with some Sand

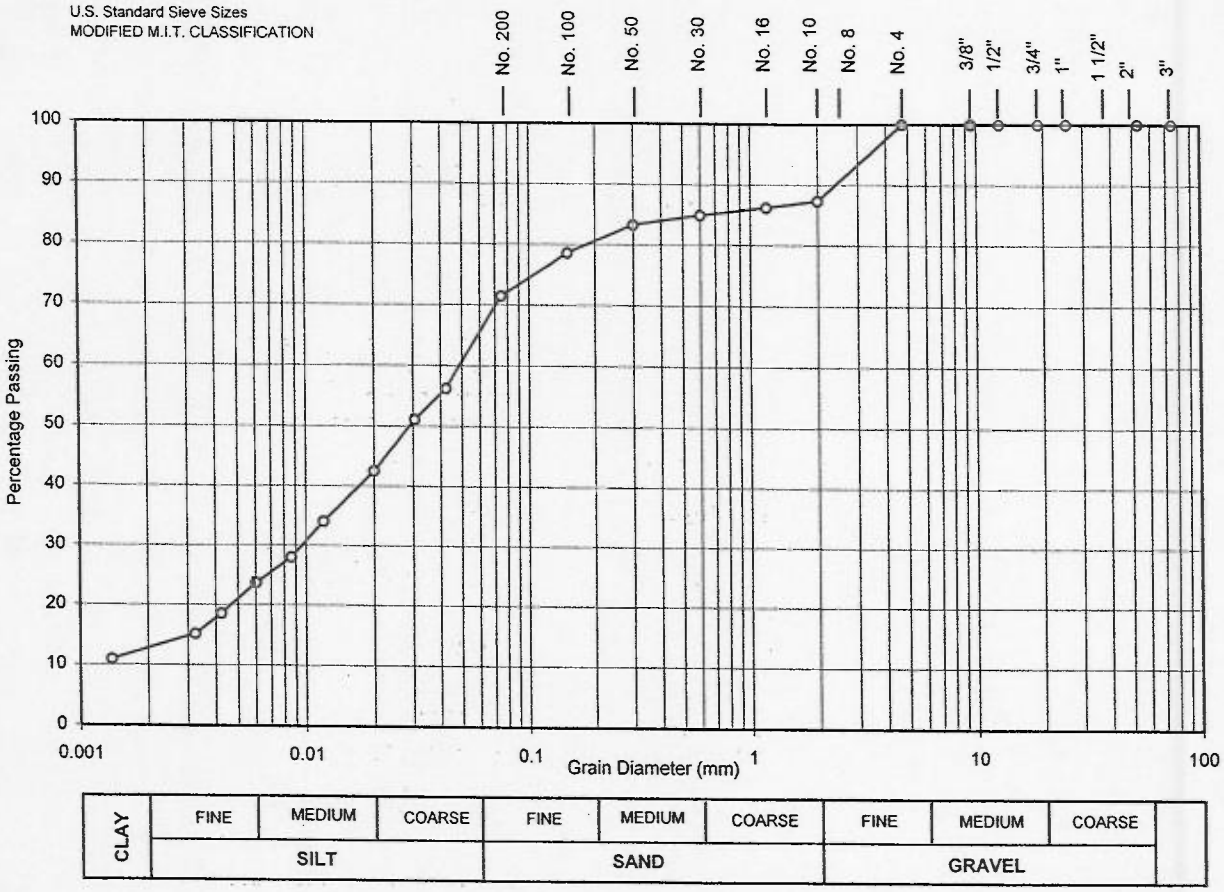
Coefficient of Uniformity C_U:

Coefficient of Curvature C_C:

SOIL-MAT ENGINEERS & CONSULTANTS LTD.

July 1, 2004	**Grain Size Analysis No. 2**	**Project No.: SM 041595-G**

Mechanical & Hydrometer Analyses



Sample No.:	SS2
Borehole No.:	18
Depth [ft]:	10 - 11.5
CLAY [%]:	12
SILT [%]:	64
SAND [%]:	12
GRAVEL [%]:	12
D_{10} (Effective Diam. in mm):	0.001

Notes:

Soil Description: **Light brown Clayey SILT, with some Sand and Gravel**

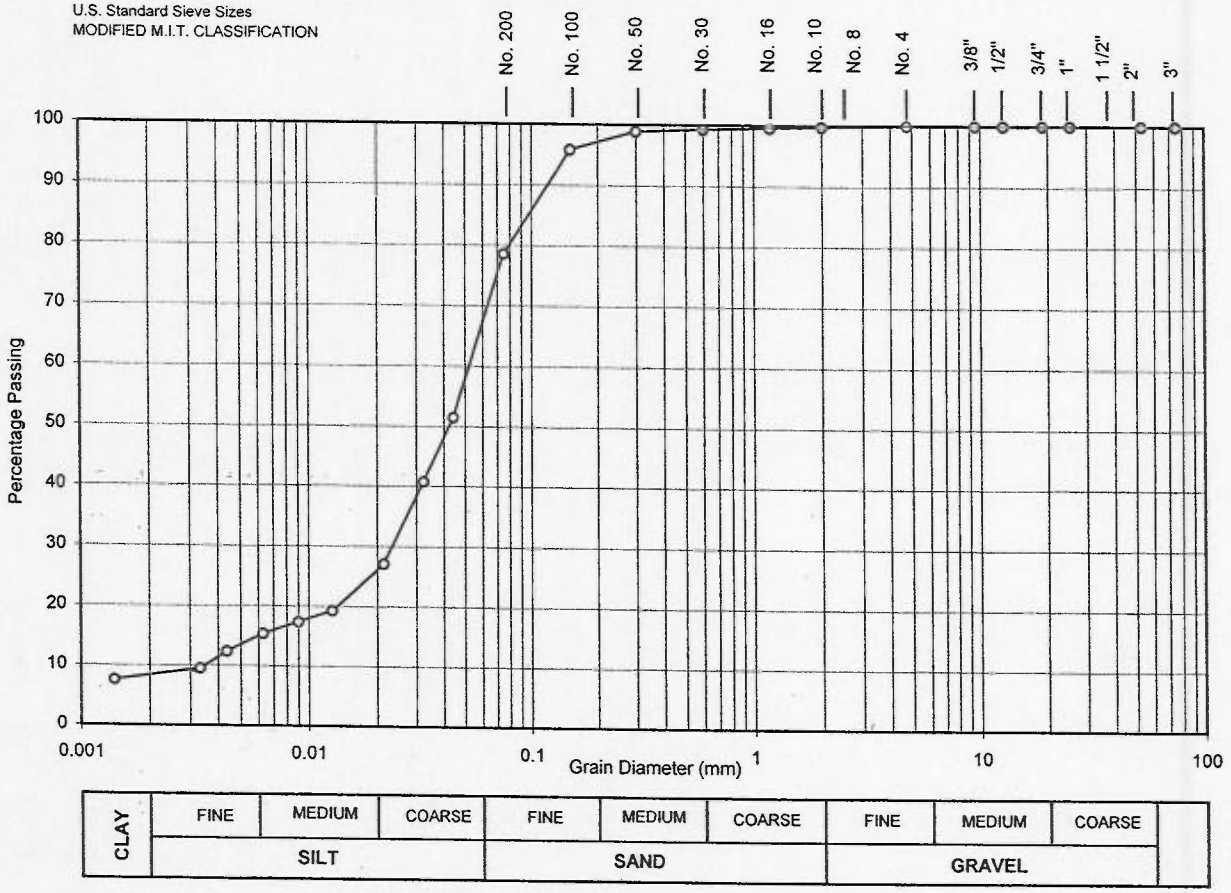
Coefficient of Uniformity C_U: **50.0**

Coefficient of Curvature C_C: **2.0**

SOIL-MAT ENGINEERS & CONSULTANTS LTD.

July 1, 2004	**Grain Size Analysis No. 3**	**Project No.: SM 041595-G**

Mechanical & Hydrometer Analyses



Sample No.:	SS5	Notes:
Borehole No.:	18	
Depth [ft]:	25 - 26.5	
CLAY [%]:	9	Soil Description:
SILT [%]:	59	**Light brown, Sandy SILT, with some Clay.**
SAND [%]:	32	
GRAVEL [%]:	0	
D_{10} (Effective Diam. in mm):	0.003	Coefficient of Uniformity C_U: 13.7 — Coefficient of Curvature C_C: 3.9

SOIL-MAT ENGINEERS & CONSULTANTS LTD.

July 1, 2004	**Grain Size Analysis No. 4**	**Project No.: SM 041595-G**

AGAT WORK ORDER 04T086672

Certificate of Analysis

CLIENT NAME SOIL MAT ENGINEERS & CONSULTANTS LT **ATTENTION:** KEITH GLEADALL(SM041595)

OCS Decom Guidelines [soil]

DATE SAMPLED Jun 14, 2004 **DATE RECEIVED** Jun 17, 2004 **DATE REPORTED** Jun 24, 2004 **SAMPLE TYPE** Soil

	Unit	MDL	Guideline	BH 15 SS1 401221	BH 17 SS1 401222	BH 17 SS2 401223	BH 18 SS1 401224	BH 20 SS1 401225
Antimony	µg/g	1.6	40	<1.6	<1.6	<1.6	<1.6	<1.6
Arsenic	µg/g	0.6	40	4.3	4.5	17.0	3.8	2.7
Barium	µg/g	0.3	1500	69.9	148	505	146	38.1
Beryllium	µg/g	0.4	1.2	0.7	0.7	0.6	0.9	<0.4
Boron (Hot Water Extractable)	µg/g	0.032	2.0	0.484	0.357	1.27	0.126	0.218
Cadmium	µg/g	0.4	12	<0.4	<0.4	1.2	<0.4	<0.4
Chromium	µg/g	0.6	750	16.2	22.8	39.6	28.3	10.5
Cobalt	µg/g	0.3	80	7.7	10.2	10.5	12.6	5.2
Copper	µg/g	0.3	225	37.2	35.1	118	28.1	26.9
Lead	µg/g	0.5	1000	31.6	149	**2070**	11.6	4.4
Molybdenum	µg/g	0.5	40	<0.5	<0.5	1.5	<0.5	<0.5
Nickel	µg/g	0.6	150	17.9	24.1	29.3	31.4	11.9
Selenium	µg/g	0.8	10	<0.8	<0.8	2.0	<0.8	<0.8
Silver	µg/g	0.4	40	<0.4	<0.4	0.9	<0.4	<0.4
Thallium	µg/g	0.4	32	<0.4	<0.4	<0.4	<0.4	<0.4
Vanadium	µg/g	0.4	200	24.5	28.8	27.4	37.6	16.0
Zinc	µg/g	0.4	600	61.7	331	**1120**	67.8	38.4
Chromium, Hexavalent	µg/g	0.382	8.0	<0.382	<0.382	<0.382	<0.382	<0.382
Cyanide, Free	µg/g	7.4	100	<7.4	<7.4	<7.4	<7.4	<7.4
Mercury	µg/g	0.011	10	**20.5**	0.215	2.22	0.022	0.023
Electrical Conductivity (2:1)	mS/cm	0.001	1.4	0.520	0.662	0.314	**1.89**	0.182
Sodium Adsorption Ratio			12	3.83	0.537	0.337	7.53	0.300
pH 2:1 Water:Soil Extraction		N/A		7.96	7.78	7.62	7.79	8.15

COMMENTS M.D.L. - Method Detection Limit
Guideline refers to Table B (Ind/Comm)

Certified By: Elizabeth Polakowska

Elizabeth Polakowska, Analyst

AGAT WORK ORDER 04T086672

Certificate of Analysis

CLIENT NAME SOIL MAT ENGINEERS & CONSULTANTS LT **ATTENTION:** KEITH GLEADALL(SM041595)

(P & T) TPH/TEH - Soil

DATE SAMPLED Jun 14, 2004 **DATE RECEIVED** Jun 17, 2004 **DATE REPORTED** Jun 24, 2004 **SAMPLE TYPE** Soil

	Unit	MDL	Guideline	BH 15 SS1 401221	BH 17 SS1 401222	BH 17 SS2 401223	BH 18 SS1 401224	BH 20 SS1 401225
TPgH (Gas, C5-C10)	µg/g	0.2		<0.2	<0.2	<0.2	<0.2	<0.2
TEH (Diesel, C10-C24)	µg/g	6.0		<6.0	<6.0	<6.0	<6.0	<6.0
TPH (Gas / Diesel)	µg/g	6.2	1000	<6.2	<6.2	<6.2	<6.2	<6.2

COMMENTS
M.D.L. - Method Detection Limit
Guideline refers to Table B (Ind./Comm.)
Results are based on the dry weight of the soil.
Results relate only to the items tested.

Certified By: Jordy Takeuchi

y Takeuchi, BSc.H(Chem. Eng), BSc (Biology), C. C

AGAT WORK ORDER 04T086672

Certificate of Analysis

CLIENT NAME SOIL MAT ENGINEERS & CONSULTANTS LT **ATTENTION:** KEITH GLEADALL(SM041595)

Petroleum Hydrocarbons (Heavy Oils) [soil]

DATE SAMPLED Jun 14, 2004 **DATE RECEIVED** Jun 17, 2004 **DATE REPORTED** Jun 24, 2004 **SAMPLE TYPE** Soil

	Unit	MDL	Guideline	BH 15 SS1 401221	BH 17 SS1 401222	BH 17 SS2 401223	BH 18 SS1 401224	BH 20 SS1 401225
Petroleum Hydrocarbons (heavy oils)-	µg/g	250	5000	300	<250	<250	<250	<250

COMMENTS
M.D.L. - Method Detection Limit
Guideline refers to Table B (Ind./Comm.)
Result is based on the dry weight of the soil.
Silica gel cleanup was used to remove any animal/vegetable oil.
Results relate only to the items tested.

Certified By: Jacky Takeuchi

y Takeuchi, BSc.H(Chem. Eng), BSc (Biology), C. C

Appendix C
Sampling and Analysis Plan

February 14, 2019 Reference No. 11177775

Mr. Jim Frank, P.Eng., MBA
Rankin Construction Inc.
222 Martindale Road, Box 1116
St. Catharines, Ontario
L2R 7A3

Dear Mr. Frank:

Re: Proposed Scope of Work and Cost Estimate – Phase Two Environmental Site Assessments
Rankin Construction Inc.
Union Waterfront Property – 16 Lock Street and 12 Lakeport Road, Port Dalhousie, Ontario

1. Introduction

GHD Limited (GHD) is pleased to provide this scope of work and cost estimate to Rankin Construction Inc. (Rankin) to conduct two Phase Two Environmental Site Assessments (ESAs) for 12 Lakeport Road and 16 Lock Street in Port Dalhousie, Ontario, comprising the Union Waterfront Property (Property or Site). It is GHD's understanding that Rankin requires Phase Two ESAs to be completed for the Property to facilitate mortgage financing for the acquisition of the Property and future re-development of the Site as mixed residential/commercial land use.

GHD has developed the following scope of work to investigate the environmental conditions at the Site in response to known and potential environmental concerns identified in the Phase One ESAs conducted by GHD in February, 2019. Seeing as the two properties are not connected, two separate Phase Two ESAs are required for 12 Lakeport Road and 16 Lock Street properties.

1.1 Potential Environmental Concerns

GHD identified the following potential or known environmental concerns at each of the properties during the Phase One ESA activities:

16 Lock Street

- Polycyclic aromatic hydrocarbons (PAHs) and lead contamination identified by GHD in the northwest corner of the Site during an environmental screening investigation conducted in December 2018.
- A peat layer identified in a previous geotechnical report as a source of methane gas, located in the central and northern portions of the Site.
- Potential use of heating fuel (oil or coal) during former commercial retail/restaurant/hotel land use at the former Hotel located at the southeast corner of the Site.
- The presence of a former taxi stand with an underground gasoline service tank located southwest of the property, at the southeastern corner of Lock Street and Main Street.

- The presence of a former laundry/dry cleaning facility located south of the Site, at the northeastern corner of Main Street and Gertrude Street.
- The presence of a dry cleaning facility located south of the Site at 14 Main Street.

12 Lakeport Road

- Methylene chloride contamination identified by GHD in the southeast corner of the Site during an environmental screening investigation conducted in December, 2018.
- Fill of an unknown quantity exists across the Site due to the presence of the former Welland Canal located north of the Site, along the present-day Lakeport Road.
- Former ship repair and storage facility with an underground gasoline service tank located northeast of the Site, on the western edge of the Canal.
- Potential use of heating fuel (oil or coal) during former commercial retail/restaurant/hotel land use.

2. Proposed Scope of Work

2.1 Health and Safety Plan

Prior to the commencement of the Phase Two activities, GHD will prepare a Site-specific health and safety plan (HASP) to outline any hazards and/or risks present at the Site, and to ensure the safety of all GHD staff and subcontractors while on Site.

2.2 Utility Clearance

Prior to conducting any intrusive activities at the Site, GHD will retain the services of a private utility locator as well as the services Ontario One-Call to complete public utility locates to identify the presence of any underground utilities at the Site. GHD will review all locates and conduct a visual assessment with subcontractors on Site, prior to conducting intrusive activities.

2.3 Soil Quality Investigation

GHD will retain a licensed drilling contractor to advance three boreholes to a maximum depth of 6.10 metres below ground surface (m BGS) and nine boreholes to a maximum depth of 3.05 m BGS to facilitate the collection of soil samples for field screening and laboratory analysis.

Soils encountered during the soil quality investigation will be logged in accordance with the Unified Soil Classification System (USCS), and will be qualitatively and quantitatively screened for the presence of environmental impairment. Qualitative screening will consist of visual and olfactory observations of the soils. Qualitative screening will consist of measuring for the presence of undifferentiated volatile organic compounds (VOCs) in the headspace of the collected soil samples using a calibrated MiniRAE 2000 photoionization detector (PID).

Based on the results of the field screening, one soil sample exhibiting the strongest evidence of environmental impairment from the fill material in each borehole location will be submitted to an accredited laboratory for analysis of one or more of the following: metals, PAHs, petroleum hydrocarbons (PHC) fractions F1 to F4, benzene, toluene, ethylbenzene and xylene (BTEX), volatile organic compounds (VOCs), pH, electrical conductivity (EC) and/or sodium adsorption ratio (SAR). Soil samples will be collected in laboratory-supplied pre-cleaned containers and submitted to an accredited laboratory for analysis. For quality assurance/quality control (QA/QC) purposes, one duplicate sample will be collected from each property for every ten samples for analysis of metals, PAHs, PHCs F1 to F4, VOCs, pH, EC and SAR, and one trip blank will be submitted for analysis of VOCs and PHC fraction F1. Additionally, two samples will be selected from each property for grain size analysis.

The rational, borehole depth and contaminants of concern identified for each investigative location is provided in Table 1.1. The proposed locations of the boreholes are presented on Figure 1.

Table 1.1 Investigative Locations Rationale

Location	Rationale	Depth (m BGS)	Contaminants of Concern
12 Lakeport Road			
MW4-19	Investigate soil and groundwater quality along the northeast corner of the Site, in the vicinity of the former underground gasoline service tank and ship repair facility located north of the Site, along the west side of the Canal.	6.10	Metals, PAHs, PHCs, pH, EC and SAR
BH1-19, BH2-19 and BH3-19	Delineate the methylene chloride contamination detected in MW1-18.	3.05	Metals, PAHs, PHCs, VOCs (methylene chloride), pH, EC and SAR
BH4-19 and BH5-19	Investigate the quality of the fill material at 12 Lakeport Road.	3.05	Metals, PAHs, PHCs, pH, EC and SAR
16 Lock Street			
MW5-19	Investigate the soil and groundwater quality in the vicinity of the former hotel.	6.10	Metals, PHCs, PAHs, pH, EC and SAR
MW6-19	Investigate the soil and groundwater quality in the vicinity of a former taxi stand with underground gasoline service tank and former dry cleaning facilities located south of the Site, along Main Street.	6.10	Metals, PAHs, PHCs, BTEX, pH, EC and SAR
SVP1-19 and SVP2-19	To instigate the presence of peat and facilitate methane gas monitoring.	3.05	Methane, Metals, PAHs, PHCs, pH, EC and SAR
16 Lock Street			
BH6-19 and BH7-19	Delineate PAH and metals contamination detected in MW3-18.	3.05	Metals, PAHs, pH, EC and SAR

2.4 Groundwater Quality Investigation

GHD will retain a licensed drilling contractor to instrument the three 6.10 metre deep boreholes identified as MW4-19, MW5-19 and MW6-19 as monitoring wells to facilitate groundwater monitoring and sample collection. Each monitoring well will be instrumented with a 50 millimetre (mm) diameter polyvinyl chloride (PVC) pipe, a 0.61 metre long screened interval of which will straddle the groundwater table, dedicated Waterra™ tubing and foot valve, j-plug and an aluminum flushmount casing.

Following installation, GHD will survey each of the monitoring well locations with respect to existing on-Site monitoring wells to determine the elevation of each monitoring well riser pipe and casing with respect to mean sea level (MSL). GHD will monitor the groundwater recovery in each well upon installation. Once the groundwater level has stabilized, GHD will measure the depth to water with respect to MSL in the ten on-Site monitoring wells using an oil/water interface probe to determine the presence of light non-aqueous phase liquid (LNAPL) and the groundwater flow direction across the Site.

Prior to sampling, GHD will develop each newly installed monitoring well by removing three to five well volumes using inertial techniques and ensure that the groundwater quality is stable using a calibrated Horiba™ water quality monitor to measure temperature, pH, conductivity, turbidity, dissolved oxygen and oxidation-reduction potential of the groundwater.

GHD proposes to collect a total of five groundwater samples including one field duplicate from each property and one trip blank for QA/QC purposes for analysis of one or more of the following parameters: metals, PAHs, PHCs F1 to F4 and/or VOCs. Groundwater samples will be collected in laboratory supplied pre-cleaned containers and submitted to an accredited laboratory for analysis.

2.5 Methane Gas Investigation

GHD will retain a licensed drilling contractor to instrument two 3.05 metre deep boreholes identified as SVP1-19 and SVP2-19 as soil vapour probes to facilitate methane gas monitoring from in the peat layer on the 16 Lock Street property. Each probe will be instrumented with a 50 mm diameter PVC pipe with a 1.52 metre long screened layer of which will straddle the peat layer, nipple and valve style plug and an aluminum flushmount casing.

GHD proposes to collect a total of three soil vapour samples including one field duplicate and one trip blank for QA/QC purposes. Each sample will be submitted to an accredited laboratory for analysis of matrix gasses including methane, oxygen, carbon dioxide, carbon monoxide and helium.

Prior to sampling, GHD will purge a minimum of three to five probe volumes from each soil vapour probe using a Gilian® personal air sampling pump calibrated to a flow rate of 200 milliliters per minute (ml/min) to ensure that samples are representative of the soil vapour conditions at the Site. Once purged, soil vapour samples will be collected using pre-cleaned, laboratory supplied 1.4 litre Summa™ canisters equipped with mass flow controllers.

During sampling, GHD will implement the following QA/QC measures:

- A residual vacuum of a minimum of 5 inches of mercury (“Hg) will be maintained in each Summa™ canister upon completion of the sample collection. The residual vacuum will be measured by the laboratory prior to sample analysis to ensure that the canister was not compromised during transport.
- A sample train tightness test will be completed prior to sample collection to ensure no leaks are present in the sampling train, including the tubing, fittings and shorud apparatus.
- Helium will be used as a tracer compound and released into the sample shroud at ground surface during the collection of each soil vapour sample. GHD will monitor the concentration of helium within the shroud and the sample train using a MGD-2002 helium detector to ensure ambient air infiltration does not compromise the samples. If greater than two-percent of the tracer compound source concentration is detected in the soil vapour train, the sample will be considered compromised.

3. Reporting

Upon receipt, the analytical data will be assessed with respect to applicable soil, soil vapour and groundwater quality standards. One draft report, including a summary of the investigative activities completed and an assessment of the soil, soil vapour and groundwater analytical results will be prepared by GHD for each property (16 Lock Street and 12 Lakeport Road) and submitted to Rankin for review.

Based on a review of the Site conditions, soil and groundwater analytical data will be assessed with respect to the following guidelines at each of the properties:

16 Lock Street

- Table 3 full depth generic site condition standards in a non-potable groundwater condition, residential/parkland/institutional property use, developed by the Ontario Ministry of the Environment, Conservation and Parks (MECP) and presented in “Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (MECP, April 15, 2011).”

12 Lakeport Road

- Table 9 full depth generic site condition standards for Use within 30 metres of a water body in a non-potable groundwater condition, residential/ parkland/ institutional/ industrial/ commercial/ community property use, developed by the Ontario MECP and presented in “Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (MECP, April 15, 2011).”

4. Cost Estimate and Schedule

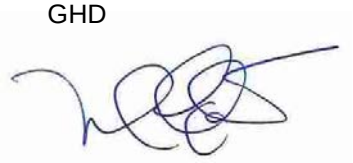
The total estimated cost for the proposed scope of work is $29,425 (excluding HST), as detailed in Table 1. This cost estimate does not include the costs associated with disposal of soil cuttings and purge water. Upon receipt of authorization to proceed, GHD is prepared to commence the proposed scope of

work. It is anticipated that soil quality investigative activities, monitoring well installation and soil vapor probe installation can be completed within two days subject to driller availability, followed by two days to complete groundwater monitoring and quality investigative activities and one day to complete the methane gas investigative activities. Two draft reports detailing the findings of the Phase Two investigative activities completed at the 16 Lock Street property and 12 Lakeport Road property can be provided to Rankin within two weeks of receipt of the laboratory analytical data. Upon receipt of review and commenting by Rankin, the reports can be finalized.

We appreciate the opportunity to provide this proposed scope of work and cost estimate to Rankin. Should you have any questions, please do not hesitate to contact the undersigned.

Sincerely,

GHD



Marc Gaudet, P.Eng.

MP/mma/2

Encl.



Source: Google Earth © Google

0 5 10 15m

LEGEND

- SITE BOUNDARY
- MONITORING WELL (SOIL-MAT, 2009)
- MONITORING WELL (GHD, 2018)
- PROPOSED MONITORING LOCATION
- PROPOSED SOIL GAS PROBE LOCATION
- PROPOSED SHALLOW BOREHOLE LOCATION

RANKIN CONSTRUCTION INC.
UNION WATERFRONT PROPERTY
12 LAKEPORT ROAD AND 16 LOCK STREET

11177775-00
Feb 8, 2019

SITE PLAN AND PROPOSED INVESTIGATIVE LOCATIONS

FIGURE 1

CAD File: P:\drawings\11177000s\11177775\11177775-CORR\11177775-00(FRAN002)\11177775-00(FRAN002)GN\11177775-00(FRAN002)GN-WA001.dwg

Appendix D
Borehole Stratigraphic and Monitoring Well Instrumentation Logs

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Union Waterfront Phase Two
PROJECT NUMBER: 11189766
CLIENT: Rankin Construction Inc.
LOCATION: 16 Lock St., St. Catharines, ON

HOLE DESIGNATION: BH6-19
DATE COMPLETED: March 5, 2019
DRILLING METHOD: Geoprobe
FIELD PERSONNEL: M. Pley

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m BGS	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
0	TOPSOIL, some vegetation (rootlets, grass), organic, moist	0.06						
	SAND AND GRAVEL (FILL), brown, moist	0.30		1				0.2
0.5	SANDY SILT/SILTY SAND (FILL), with trace gravel, trace organics, brown, moist							
1.0				2				0.3
	- some clay, grey, wet at 1.22m BGS							
1.5								
2.0				3				0.3
	- some organics, black, moist at 2.44m BGS							
2.5				4				0.2
3.0	END OF BOREHOLE @ 3.05m BGS	3.05						
3.5								
4.0								
4.5								
5.0								
5.5								
6.0								
6.5								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (oval) GRAIN SIZE ANALYSIS (rectangle)

OVERBURDEN LOG 11189766-LOCK.GPJ CRA_CORP.GDT 3/26/19

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Union Waterfront Phase Two
PROJECT NUMBER: 11189766
CLIENT: Rankin Construction Inc.
LOCATION: 16 Lock St., St. Catharines, ON

HOLE DESIGNATION: BH7-19
DATE COMPLETED: March 5, 2019
DRILLING METHOD: Geoprobe
FIELD PERSONNEL: M. Pley

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m BGS	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	TOPSOIL, some vegetation (rootlets, grass), brown, moist, organic	0.06						
0.5	SAND AND GRAVEL (FILL), brown, moist	0.61		1				0.2
1.0	SANDY SILT/SILTY SAND (FILL), with trace gravel, trace organics, trace debris (brick), brown, moist - grey, wet at 1.22m BGS			2				0.2
1.5								
2.0				3				0.3
2.5				4				0.2
3.0	END OF BOREHOLE @ 3.05m BGS	3.05						
3.5								
4.0								
4.5								
5.0								
5.5								
6.0								
6.5								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (2)

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Union Waterfront Phase Two
PROJECT NUMBER: 11189766
CLIENT: Rankin Construction Inc.
LOCATION: 16 Lock St., St. Catharines, ON

HOLE DESIGNATION: BH8-19
DATE COMPLETED: March 5, 2019
DRILLING METHOD: Geoprobe
FIELD PERSONNEL: M. Pley

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m BGS	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	TOPSOIL, some vegetation (rootlets, grass), brown, moist, organic	0.06						
	SANDY SILT/SILTY SAND (FILL), with trace gravel, trace organics, brown, moist			1				0.4
				2				0.4
	- trace debris (brick) at 1.52m BGS			3				0.4
	SAND (FILL), with some silt, loose, reddish brown, wet, trace organics	2.29						
	- grey at 2.74m BGS			4				0.3
	- reddish brown at 3.66m BGS			5				0.2
	SANDY SILT/SILTY SAND (FILL), with some clay, brown and grey, trace organics	4.27		6				0.2
	END OF BOREHOLE @ 4.57m BGS	4.57						

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (2)

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Union Property - Port Dalhousie
PROJECT NUMBER: 11131634
CLIENT: Rankin Construction Inc.
LOCATION: Port Dalhousie, Ontario

HOLE DESIGNATION: MW3-18
DATE COMPLETED: December 19, 2018
DRILLING METHOD: HSA
FIELD PERSONNEL: M. Pley

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m BGS	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	REC (%)	'N' VALUE	PID (ppm)
0	TOPSOIL with some vegetation (rootlets, grass), organic, brown	0.05						
0.5	FILL-SANDY SILT/SILTY SAND with some gravel, firm to stiff, brown, moist to wet		BENTONITE			75	11	0
1.0	- some black staining and organics, some clay at 0.91m BGS			003/004		85	7	0.8
1.5	- grey, trace debris (glass), very soft, moist to wet at 1.52m BGS					80	1	0.1
2.0	- black staining, some clay at 2.29m BGS							
2.5						80	0	0.1
3.0								
3.5	FILL-SILTY SAND, loose, grey/brown, wet	3.35	No. 2 SAND			100	3	0.1
4.0						100	0	0.0
4.5	FILL-CLAYEY SILT with trace organics, very soft, brown, moist - some organics (wood) at 4.57m BGS	4.27						
5.0						75	1	0.2
5.5						85	2	0.9
6.0	END OF BOREHOLE @ 5.94m BGS	5.94						
6.5								
7.0								
7.5								

WELL DETAILS
Screened interval:
1.07 to 4.11m BGS
Length: 3.05m
Diameter: 51mm
Slot Size: 10
Material: PVC
Seal:
0.15 to 1.07m BGS
Material: BENTONITE
Sand Pack:
1.07 to 5.94m BGS
Material: No. 2 SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (oval)

OVERBURDEN LOG 11131634-UNIONPROPERTY-SC.GPJ CRA_CORP.GDT 3/26/19

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Union Waterfront Phase Two
PROJECT NUMBER: 11189766
CLIENT: Rankin Construction Inc.
LOCATION: 16 Lock St., St. Catharines, ON

HOLE DESIGNATION: MW5-19
DATE COMPLETED: March 4, 2019
DRILLING METHOD: Geoprobe
FIELD PERSONNEL: M. Pley

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
0	GRAVEL (FILL), with some sand, grey, dry		CONCRETE					
		0.30		1				0.1
0.5	SANDY SILT/SILTY SAND (FILL), with some clay, some debris (concrete, brick, glass, asphalt), brown/black, moist							
		0.76						
1.0	CLAYEY SILT (FILL), with trace gravel, trace organics, brown, moist			2				0.4
1.5								
2.0			BENTONITE	3				0.7
	- less clay content at 2.13m BGS							
		2.29						
2.5	SILT/SANDY SILT (FILL), with some clay, brown with some black staining, moist to wet			4				1.2
3.0	- grey with brown mottling at 2.44m BGS							
3.5				5				0.8
		3.81						
4.0	SANDY SILT (FILL), brown, moist		SAND PACK	6				0.7
4.5								
5.0				7				0.6
5.5			WELL SCREEN					
	CLAYEY SILT (FILL), with trace gravel, grey, wet	5.49						
		5.64		8				0.2
6.0	SILTY SAND (FILL), with trace clay, brown, wet							
6.5				9				-
		6.86						
7.0	END OF BOREHOLE @ 6.86m BGS							
7.5								
8.0								

WELL DETAILS
Screened interval:
3.81 to 6.86m BGS
Length: 3.05m
Diameter: 51mm
Slot Size: #10
Material: PVC
Sand Pack:
3.81 to 6.86m BGS
Material: No. 2 Silica

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (2)

OVERBURDEN LOG 11189766-LOCK.GPJ CRA_CORP.GDT 3/26/19

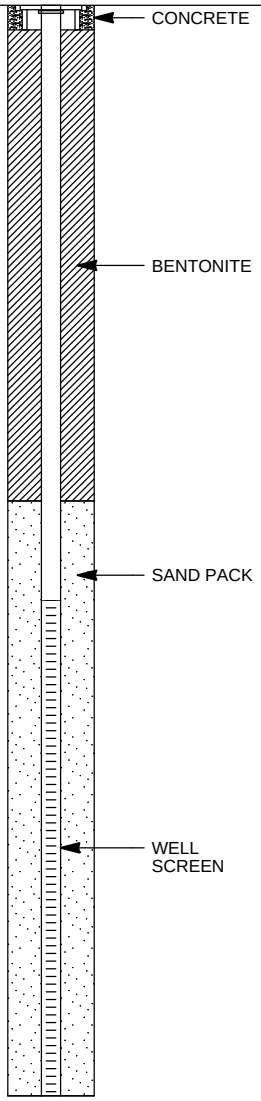
STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Union Waterfront Phase Two
PROJECT NUMBER: 11189766
CLIENT: Rankin Construction Inc.
LOCATION: 16 Lock St., St. Catharines, ON

HOLE DESIGNATION: MW6-19
DATE COMPLETED: March 5, 2019
DRILLING METHOD: Geoprobe
FIELD PERSONNEL: M. Pley

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m BGS
0	TOPSOIL, some vegetation (rootlets, grass), brown, moist, organic	0.06
0.5	SILTY SAND/SANDY SILT (FILL), with trace gravel, brown, moist	
1.0	- trace debris (brick) and trace organics at 0.91m BGS	
1.5		
2.0		
	- no debris at 2.29m BGS	
2.5	CLAYEY SILT (FILL), with some sand, trace organics, brown, wet	2.44
3.0	SANDY SILT (FILL), with trace gravel, brown, moist	3.05
3.5		
	- some clay at 3.81m BGS	
4.0		
	- some organics, dark brown at 4.27m BGS	
4.5		
5.0		
5.5	CLAYEY SILT (FILL), with some sand, trace gravel, grey, moist	5.33
6.0		
6.5		
7.0	END OF BOREHOLE @ 6.86m BGS	6.86
7.5		
8.0		

MONITOR INSTALLATION



WELL DETAILS
Screened interval:
3.66 to 6.71m BGS
Length: 3.05m
Diameter: 51mm
Slot Size: #10
Material: PVC
Sand Pack:
3.05 to 6.71m BGS
Material: No. 2 Silica

SAMPLE NUMBER	INTERVAL	REC (%)	'N' VALUE	PID (ppm)
1				0.3
2				0.3
3				0.2
4				0.3
5				0.2
6				0.2
7				0.0
8				0.0
9				-

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (oval) GRAIN SIZE ANALYSIS (rectangle)

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Union Waterfront Phase Two
PROJECT NUMBER: 11189766
CLIENT: Rankin Construction Inc.
LOCATION: 16 Lock St., St. Catharines, ON

HOLE DESIGNATION: SVP1-19
DATE COMPLETED: March 5, 2019
DRILLING METHOD: Geoprobe
FIELD PERSONNEL: M. Pley

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
0	TOPSOIL, some vegetation (rootlets, grass), brown, moist	0.06	CONCRETE					
	SAND AND GRAVEL (FILL), grey and brown, moist to dry	0.30	BENTONITE	1				0.4
0.5	SANDY SILT/SILTY SAND (FILL), with trace organics, trace debris (concrete and brick), brown, moist		SAND PACK					
1.0	- trace gravel, wet at 1.22m BGS			2				0.3
1.5			WELL SCREEN					
2.0				3				0.4
2.5	- highly organic, grey/black at 2.74m BGS		WELL DETAILS Screened interval: 0.76 to 2.29m BGS Length: 1.52m Diameter: 51mm Slot Size: #10 Material: PVC Sand Pack: 0.61 to 2.29m BGS Material: No. 2 Silica	4				0.4
3.0	- trace organics, brown at 3.05m BGS							
3.5	- highly organic, soft, grey/black, wet at 3.66m BGS			5				0.4
	SANDY SILT/SILTY SAND (FILL), with some clay, brown and grey, trace organics	3.81						
4.0				6				0.3
4.5	END OF BOREHOLE @ 4.57m BGS	4.57						
5.0								
5.5								
6.0								
6.5								
7.0								
7.5								
8.0								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (4)

OVERBURDEN LOG 11189766-LOCK.GPJ CRA_CORP.GDT 3/26/19

Appendix E
Laboratory Analytical Report

Maxxam
A Bureau Veritas Group Company

Your P.O. #: 73514236
Your Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your C.O.C. #: 696809-01-01

Attention: 11131634 - PO - 73514236

GHD Limited
455 Phillip St
Waterloo, ON
CANADA N2L 3X2

Report Date: 2018/12/24
Report #: R5538909
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8X6184
Received: 2018/12/14, 15:51

Sample Matrix: Water
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	4	N/A	2018/12/24	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum	5	N/A	2018/12/21		EPA 8260C m
Chromium (VI) in Water	4	N/A	2018/12/21	CAM SOP-00436	EPA 7199 m
Petroleum Hydrocarbons F2-F4 in Water (1)	2	2018/12/20	2018/12/20	CAM SOP-00316	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1)	2	2018/12/20	2018/12/21	CAM SOP-00316	CCME PHC-CWS m
Mercury	4	2018/12/21	2018/12/21	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS	4	N/A	2018/12/18	CAM SOP-00447	EPA 6020B m
PAH Compounds in Water by GC/MS (SIM)	4	2018/12/20	2018/12/21	CAM SOP-00318	EPA 8270D m
Volatile Organic Compounds and F1 PHCs	5	N/A	2018/12/20	CAM SOP-00230	EPA 8260C 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.

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.
(1) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Maxxam conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003".

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Your P.O. #: 73514236
Your Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your C.O.C. #: 696809-01-01

Attention: 11131634 - PO - 73514236

GHD Limited
455 Phillip St
Waterloo, ON
CANADA N2L 3X2

Report Date: 2018/12/24
Report #: R5538909
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8X6184
Received: 2018/12/14, 15:51

Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Tanya Fidlin, Project Manager
Email: tfidlin@maxxam.ca
Phone# (905)817-5700
==========
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B8X6184
Report Date: 2018/12/24

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		IOH995	IOH996	IOH997	IOH998		
Sampling Date		2018/12/13 16:00	2018/12/13 16:30	2018/12/13 16:30	2018/12/13 17:00		
COC Number		696809-01-01	696809-01-01	696809-01-01	696809-01-01		
	UNITS	GW-11131634-121318-MP-001	GW-11131634-121318-MP-002	GW-11131634-121318-MP-003	GW-11131634-121318-MP-004	RDL	QC Batch
Metals							
Chromium (VI)	ug/L	ND	ND	ND	ND	0.50	5892920
Mercury (Hg)	ug/L	ND	ND	ND	ND	0.1	5900667
Dissolved Antimony (Sb)	ug/L	ND	ND	ND	ND	0.50	5893901
Dissolved Arsenic (As)	ug/L	1.4	2.1	2.0	4.4	1.0	5893901
Dissolved Barium (Ba)	ug/L	38	210	210	200	2.0	5893901
Dissolved Beryllium (Be)	ug/L	ND	ND	ND	ND	0.50	5893901
Dissolved Boron (B)	ug/L	81	120	120	170	10	5893901
Dissolved Cadmium (Cd)	ug/L	ND	ND	ND	ND	0.10	5893901
Dissolved Chromium (Cr)	ug/L	ND	ND	ND	ND	5.0	5893901
Dissolved Cobalt (Co)	ug/L	0.69	ND	ND	ND	0.50	5893901
Dissolved Copper (Cu)	ug/L	ND	ND	ND	ND	1.0	5893901
Dissolved Lead (Pb)	ug/L	ND	ND	ND	ND	0.50	5893901
Dissolved Molybdenum (Mo)	ug/L	3.0	ND	ND	ND	0.50	5893901
Dissolved Nickel (Ni)	ug/L	2.7	ND	1.1	1.2	1.0	5893901
Dissolved Selenium (Se)	ug/L	ND	ND	ND	ND	2.0	5893901
Dissolved Silver (Ag)	ug/L	ND	ND	ND	ND	0.10	5893901
Dissolved Sodium (Na)	ug/L	110000	76000	74000	35000	100	5893901
Dissolved Thallium (Tl)	ug/L	ND	ND	ND	ND	0.050	5893901
Dissolved Uranium (U)	ug/L	3.1	0.15	0.17	1.1	0.10	5893901
Dissolved Vanadium (V)	ug/L	0.74	1.8	1.8	0.75	0.50	5893901
Dissolved Zinc (Zn)	ug/L	ND	ND	ND	ND	5.0	5893901

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		IOH995	IOH996	IOH997	IOH998		
Sampling Date		2018/12/13 16:00	2018/12/13 16:30	2018/12/13 16:30	2018/12/13 17:00		
COC Number		696809-01-01	696809-01-01	696809-01-01	696809-01-01		
	UNITS	GW-11131634-121318-MP-001	GW-11131634-121318-MP-002	GW-11131634-121318-MP-003	GW-11131634-121318-MP-004	RDL	QC Batch
Calculated Parameters							
Methylnaphthalene, 2-(1-)	ug/L	ND	ND	ND	ND	0.071	5892358
Polyaromatic Hydrocarbons							
Acenaphthene	ug/L	ND	ND	ND	ND	0.050	5899617
Acenaphthylene	ug/L	ND	ND	ND	ND	0.050	5899617
Anthracene	ug/L	0.089	ND	ND	ND	0.050	5899617
Benzo(a)anthracene	ug/L	0.15	ND	ND	ND	0.050	5899617
Benzo(a)pyrene	ug/L	0.13	0.015	ND	ND	0.010	5899617
Benzo(b/j)fluoranthene	ug/L	0.18	ND	ND	ND	0.050	5899617
Benzo(g,h,i)perylene	ug/L	0.075	ND	ND	ND	0.050	5899617
Benzo(k)fluoranthene	ug/L	0.073	ND	ND	ND	0.050	5899617
Chrysene	ug/L	0.12	ND	ND	ND	0.050	5899617
Dibenz(a,h)anthracene	ug/L	ND	ND	ND	ND	0.050	5899617
Fluoranthene	ug/L	0.42	ND	ND	ND	0.050	5899617
Fluorene	ug/L	0.077	ND	ND	ND	0.050	5899617
Indeno(1,2,3-cd)pyrene	ug/L	0.082	ND	ND	ND	0.050	5899617
1-Methylnaphthalene	ug/L	ND	ND	ND	ND	0.050	5899617
2-Methylnaphthalene	ug/L	0.055	ND	0.051	ND	0.050	5899617
Naphthalene	ug/L	ND	ND	ND	ND	0.050	5899617
Phenanthrene	ug/L	0.43	0.083	0.035	ND	0.030	5899617
Pyrene	ug/L	0.31	ND	ND	ND	0.050	5899617
Surrogate Recovery (%)							
D10-Anthracene	%	110	97	100	116		5899617
D14-Terphenyl (FS)	%	66	62	59	79		5899617
D8-Acenaphthylene	%	108	100	99	105		5899617

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		IOH995	IOH996			IOH996		
Sampling Date		2018/12/13 16:00	2018/12/13 16:30			2018/12/13 16:30		
COC Number		696809-01-01	696809-01-01			696809-01-01		
	UNITS	GW-11131634-121318-MP-001	GW-11131634-121318-MP-002	RDL	QC Batch	GW-11131634-121318-MP-002 Lab-Dup	RDL	QC Batch
Calculated Parameters								
1,3-Dichloropropene (cis+trans)	ug/L	ND	ND	0.50	5891914			
Volatile Organics								
Acetone (2-Propanone)	ug/L	ND	ND	10	5896281	ND	10	5896281
Benzene	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
Bromodichloromethane	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
Bromoform	ug/L	ND	ND	1.0	5896281	ND	1.0	5896281
Bromomethane	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
Carbon Tetrachloride	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
Chlorobenzene	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
Chloroform	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
Dibromochloromethane	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
1,2-Dichlorobenzene	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
1,3-Dichlorobenzene	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
1,4-Dichlorobenzene	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
Dichlorodifluoromethane (FREON 12)	ug/L	ND	ND	1.0	5896281	ND	1.0	5896281
1,1-Dichloroethane	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
1,2-Dichloroethane	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
1,1-Dichloroethylene	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
cis-1,2-Dichloroethylene	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
trans-1,2-Dichloroethylene	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
1,2-Dichloropropane	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
cis-1,3-Dichloropropene	ug/L	ND	ND	0.30	5896281	ND	0.30	5896281
trans-1,3-Dichloropropene	ug/L	ND	ND	0.40	5896281	ND	0.40	5896281
Ethylbenzene	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
Ethylene Dibromide	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
Hexane	ug/L	ND	ND	1.0	5896281	ND	1.0	5896281
Methylene Chloride(Dichloromethane)	ug/L	ND	ND	2.0	5896281	ND	2.0	5896281
Methyl Ethyl Ketone (2-Butanone)	ug/L	ND	ND	10	5896281	ND	10	5896281
Methyl Isobutyl Ketone	ug/L	ND	ND	5.0	5896281	ND	5.0	5896281
Methyl t-butyl ether (MTBE)	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
Styrene	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		IOH995	IOH996			IOH996		
Sampling Date		2018/12/13 16:00	2018/12/13 16:30			2018/12/13 16:30		
COC Number		696809-01-01	696809-01-01			696809-01-01		
	UNITS	GW-11131634-121318 -MP-001	GW-11131634-121318 -MP-002	RDL	QC Batch	GW-11131634-121318 -MP-002 Lab-Dup	RDL	QC Batch
1,1,1,2-Tetrachloroethane	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
1,1,2,2-Tetrachloroethane	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
Tetrachloroethylene	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
Toluene	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
1,1,1-Trichloroethane	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
1,1,2-Trichloroethane	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
Trichloroethylene	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
Trichlorofluoromethane (FREON 11)	ug/L	ND	ND	0.50	5896281	ND	0.50	5896281
Vinyl Chloride	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
p+m-Xylene	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
o-Xylene	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
Total Xylenes	ug/L	ND	ND	0.20	5896281	ND	0.20	5896281
F1 (C6-C10)	ug/L	ND	ND	25	5896281	ND	25	5896281
F1 (C6-C10) - BTEX	ug/L	ND	ND	25	5896281	ND	25	5896281
Surrogate Recovery (%)								
4-Bromofluorobenzene	%	102	102		5896281	102		5896281
D4-1,2-Dichloroethane	%	101	100		5896281	101		5896281
D8-Toluene	%	102	101		5896281	101		5896281

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B8X6184
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GHD Limited
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Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		IOH997	IOH998	IOH999		
Sampling Date		2018/12/13 16:30	2018/12/13 17:00	2018/12/13		
COC Number		696809-01-01	696809-01-01	696809-01-01		
	UNITS	GW-11131634-121318-MP-003	GW-11131634-121318-MP-004	TRIP BLANK	RDL	QC Batch
Calculated Parameters						
1,3-Dichloropropene (cis+trans)	ug/L	ND	ND	ND	0.50	5891914
Volatile Organics						
Acetone (2-Propanone)	ug/L	ND	ND	ND	10	5896281
Benzene	ug/L	ND	ND	ND	0.20	5896281
Bromodichloromethane	ug/L	ND	ND	ND	0.50	5896281
Bromoform	ug/L	ND	ND	ND	1.0	5896281
Bromomethane	ug/L	ND	ND	ND	0.50	5896281
Carbon Tetrachloride	ug/L	ND	ND	ND	0.20	5896281
Chlorobenzene	ug/L	ND	ND	ND	0.20	5896281
Chloroform	ug/L	ND	ND	ND	0.20	5896281
Dibromochloromethane	ug/L	ND	ND	ND	0.50	5896281
1,2-Dichlorobenzene	ug/L	ND	ND	ND	0.50	5896281
1,3-Dichlorobenzene	ug/L	ND	ND	ND	0.50	5896281
1,4-Dichlorobenzene	ug/L	ND	ND	ND	0.50	5896281
Dichlorodifluoromethane (FREON 12)	ug/L	ND	ND	ND	1.0	5896281
1,1-Dichloroethane	ug/L	ND	ND	ND	0.20	5896281
1,2-Dichloroethane	ug/L	ND	ND	ND	0.50	5896281
1,1-Dichloroethylene	ug/L	ND	ND	ND	0.20	5896281
cis-1,2-Dichloroethylene	ug/L	ND	ND	ND	0.50	5896281
trans-1,2-Dichloroethylene	ug/L	ND	ND	ND	0.50	5896281
1,2-Dichloropropane	ug/L	ND	ND	ND	0.20	5896281
cis-1,3-Dichloropropene	ug/L	ND	ND	ND	0.30	5896281
trans-1,3-Dichloropropene	ug/L	ND	ND	ND	0.40	5896281
Ethylbenzene	ug/L	ND	ND	ND	0.20	5896281
Ethylene Dibromide	ug/L	ND	ND	ND	0.20	5896281
Hexane	ug/L	ND	ND	ND	1.0	5896281
Methylene Chloride(Dichloromethane)	ug/L	ND	ND	ND	2.0	5896281
Methyl Ethyl Ketone (2-Butanone)	ug/L	ND	ND	ND	10	5896281
Methyl Isobutyl Ketone	ug/L	ND	ND	ND	5.0	5896281
Methyl t-butyl ether (MTBE)	ug/L	ND	ND	ND	0.50	5896281
Styrene	ug/L	ND	ND	ND	0.50	5896281
1,1,1,2-Tetrachloroethane	ug/L	ND	ND	ND	0.50	5896281

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		IOH997	IOH998	IOH999		
Sampling Date		2018/12/13 16:30	2018/12/13 17:00	2018/12/13		
COC Number		696809-01-01	696809-01-01	696809-01-01		
	UNITS	**GW-11131634-121318 -MP-003**	**GW-11131634-121318 -MP-004**	**TRIP BLANK**	**RDL**	**QC Batch**
1,1,2,2-Tetrachloroethane	ug/L	ND	ND	ND	0.50	5896281
Tetrachloroethylene	ug/L	ND	ND	ND	0.20	5896281
Toluene	ug/L	ND	0.24	ND	0.20	5896281
1,1,1-Trichloroethane	ug/L	ND	ND	ND	0.20	5896281
1,1,2-Trichloroethane	ug/L	ND	ND	ND	0.50	5896281
Trichloroethylene	ug/L	ND	ND	ND	0.20	5896281
Trichlorofluoromethane (FREON 11)	ug/L	ND	ND	ND	0.50	5896281
Vinyl Chloride	ug/L	ND	ND	ND	0.20	5896281
p+m-Xylene	ug/L	ND	ND	ND	0.20	5896281
o-Xylene	ug/L	ND	ND	ND	0.20	5896281
Total Xylenes	ug/L	ND	ND	ND	0.20	5896281
F1 (C6-C10)	ug/L	ND	ND	ND	25	5896281
F1 (C6-C10) - BTEX	ug/L	ND	ND	ND	25	5896281
Surrogate Recovery (%)						
4-Bromofluorobenzene	%	101	101	101		5896281
D4-1,2-Dichloroethane	%	102	101	100		5896281
D8-Toluene	%	101	101	102		5896281

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		IOH995	IOH996	IOH997	IOH998		
Sampling Date		2018/12/13 16:00	2018/12/13 16:30	2018/12/13 16:30	2018/12/13 17:00		
COC Number		696809-01-01	696809-01-01	696809-01-01	696809-01-01		
	UNITS	GW-11131634-121318 -MP-001	GW-11131634-121318 -MP-002	GW-11131634-121318 -MP-003	GW-11131634-121318 -MP-004	RDL	QC Batch
F2-F4 Hydrocarbons							
F2 (C10-C16 Hydrocarbons)	ug/L	ND	ND	ND	ND	100	5899621
F3 (C16-C34 Hydrocarbons)	ug/L	ND	ND	ND	ND	200	5899621
F4 (C34-C50 Hydrocarbons)	ug/L	ND	ND	ND	ND	200	5899621
Reached Baseline at C50	ug/L	Yes	Yes	Yes	Yes		5899621
Surrogate Recovery (%)							
o-Terphenyl	%	106	104	104	102		5899621

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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GHD Limited
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Site Location: UNION PROPERTY- PORT DALHOUSIE
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Sampler Initials: MP

TEST SUMMARY

Maxxam ID: IOH995 **Collected:** 2018/12/13
Sample ID: GW-11131634-121318-MP-001 **Shipped:**
Matrix: Water **Received:** 2018/12/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5892358	N/A	2018/12/24	Automated Statchk
1,3-Dichloropropene Sum	CALC	5891914	N/A	2018/12/21	Automated Statchk
Chromium (VI) in Water	IC	5892920	N/A	2018/12/21	Lang Le
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5899621	2018/12/20	2018/12/20	Zhiyue (Frank) Zhu
Mercury	CV/AA	5900667	2018/12/21	2018/12/21	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	5893901	N/A	2018/12/18	Arefa Dabhad
PAH Compounds in Water by GC/MS (SIM)	GC/MS	5899617	2018/12/20	2018/12/21	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5896281	N/A	2018/12/20	Anna Gabrielyan

Maxxam ID: IOH996 **Collected:** 2018/12/13
Sample ID: GW-11131634-121318-MP-002 **Shipped:**
Matrix: Water **Received:** 2018/12/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5892358	N/A	2018/12/24	Automated Statchk
1,3-Dichloropropene Sum	CALC	5891914	N/A	2018/12/21	Automated Statchk
Chromium (VI) in Water	IC	5892920	N/A	2018/12/21	Lang Le
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5899621	2018/12/20	2018/12/20	Zhiyue (Frank) Zhu
Mercury	CV/AA	5900667	2018/12/21	2018/12/21	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	5893901	N/A	2018/12/18	Arefa Dabhad
PAH Compounds in Water by GC/MS (SIM)	GC/MS	5899617	2018/12/20	2018/12/21	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5896281	N/A	2018/12/20	Anna Gabrielyan

Maxxam ID: IOH996 Dup **Collected:** 2018/12/13
Sample ID: GW-11131634-121318-MP-002 **Shipped:**
Matrix: Water **Received:** 2018/12/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5896281	N/A	2018/12/20	Anna Gabrielyan

Maxxam ID: IOH997 **Collected:** 2018/12/13
Sample ID: GW-11131634-121318-MP-003 **Shipped:**
Matrix: Water **Received:** 2018/12/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5892358	N/A	2018/12/24	Automated Statchk
1,3-Dichloropropene Sum	CALC	5891914	N/A	2018/12/21	Automated Statchk
Chromium (VI) in Water	IC	5892920	N/A	2018/12/21	Lang Le
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5899621	2018/12/20	2018/12/21	Zhiyue (Frank) Zhu
Mercury	CV/AA	5900667	2018/12/21	2018/12/21	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	5893901	N/A	2018/12/18	Arefa Dabhad
PAH Compounds in Water by GC/MS (SIM)	GC/MS	5899617	2018/12/20	2018/12/21	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5896281	N/A	2018/12/20	Anna Gabrielyan

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

TEST SUMMARY

Maxxam ID: IOH998
Sample ID: GW-11131634-121318-MP-004
Matrix: Water

Collected: 2018/12/13
Shipped:
Received: 2018/12/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5892358	N/A	2018/12/24	Automated Statchk
1,3-Dichloropropene Sum	CALC	5891914	N/A	2018/12/21	Automated Statchk
Chromium (VI) in Water	IC	5892920	N/A	2018/12/21	Lang Le
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5899621	2018/12/20	2018/12/21	Zhiyue (Frank) Zhu
Mercury	CV/AA	5900667	2018/12/21	2018/12/21	Medhat Nasr
Dissolved Metals by ICPMS	ICP/MS	5893901	N/A	2018/12/18	Arefa Dabhad
PAH Compounds in Water by GC/MS (SIM)	GC/MS	5899617	2018/12/20	2018/12/21	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5896281	N/A	2018/12/20	Anna Gabrielyan

Maxxam ID: IOH999
Sample ID: TRIP BLANK
Matrix: Water

Collected: 2018/12/13
Shipped:
Received: 2018/12/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5891914	N/A	2018/12/21	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5896281	N/A	2018/12/20	Anna Gabrielyan

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
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GENERAL COMMENTS

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

Package 1	3.3°C

Results relate only to the items tested.

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Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B8X6184
Report Date: 2018/12/24

QUALITY ASSURANCE REPORT

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5896281	4-Bromofluorobenzene	2018/12/20	102 (3)	70 - 130	103	70 - 130	102	%		
5896281	D4-1,2-Dichloroethane	2018/12/20	101 (3)	70 - 130	99	70 - 130	99	%		
5896281	D8-Toluene	2018/12/20	102 (3)	70 - 130	102	70 - 130	100	%		
5899617	D10-Anthracene	2018/12/21	118	50 - 130	112	50 - 130	118	%		
5899617	D14-Terphenyl (FS)	2018/12/21	110	50 - 130	87	50 - 130	110	%		
5899617	D8-Acenaphthylene	2018/12/21	105	50 - 130	98	50 - 130	104	%		
5899621	o-Terphenyl	2018/12/20	108	60 - 130	109	60 - 130	104	%		
5892920	Chromium (VI)	2018/12/21	105	80 - 120	107	80 - 120	ND, RDL=0.50	ug/L	NC (1)	20
5893901	Dissolved Antimony (Sb)	2018/12/19	114	80 - 120	103	80 - 120	ND, RDL=0.50	ug/L	NC (1)	20
5893901	Dissolved Arsenic (As)	2018/12/19	106	80 - 120	99	80 - 120	ND, RDL=1.0	ug/L	NC (1)	20
5893901	Dissolved Barium (Ba)	2018/12/19	NC	80 - 120	99	80 - 120	ND, RDL=2.0	ug/L	2.6 (1)	20
5893901	Dissolved Beryllium (Be)	2018/12/19	121 (2)	80 - 120	99	80 - 120	ND, RDL=0.50	ug/L	NC (1)	20
5893901	Dissolved Boron (B)	2018/12/19	NC	80 - 120	97	80 - 120	ND, RDL=10	ug/L	1.7 (1)	20
5893901	Dissolved Cadmium (Cd)	2018/12/19	107	80 - 120	103	80 - 120	ND, RDL=0.10	ug/L	NC (1)	20
5893901	Dissolved Chromium (Cr)	2018/12/19	105	80 - 120	95	80 - 120	ND, RDL=5.0	ug/L	NC (1)	20
5893901	Dissolved Cobalt (Co)	2018/12/19	105	80 - 120	99	80 - 120	ND, RDL=0.50	ug/L	NC (1)	20
5893901	Dissolved Copper (Cu)	2018/12/19	110	80 - 120	96	80 - 120	ND, RDL=1.0	ug/L	NC (1)	20
5893901	Dissolved Lead (Pb)	2018/12/19	104	80 - 120	101	80 - 120	ND, RDL=0.50	ug/L	NC (1)	20
5893901	Dissolved Molybdenum (Mo)	2018/12/19	113	80 - 120	99	80 - 120	ND, RDL=0.50	ug/L	NC (1)	20
5893901	Dissolved Nickel (Ni)	2018/12/19	102	80 - 120	96	80 - 120	ND, RDL=1.0	ug/L	NC (1)	20
5893901	Dissolved Selenium (Se)	2018/12/19	103	80 - 120	102	80 - 120	ND, RDL=2.0	ug/L	NC (1)	20
5893901	Dissolved Silver (Ag)	2018/12/19	55 (2)	80 - 120	98	80 - 120	ND, RDL=0.10	ug/L	NC (1)	20
5893901	Dissolved Sodium (Na)	2018/12/19	NC	80 - 120	101	80 - 120	360, RDL=100	ug/L	4.9 (1)	20
5893901	Dissolved Thallium (Tl)	2018/12/19	105	80 - 120	101	80 - 120	ND, RDL=0.050	ug/L	NC (1)	20
5893901	Dissolved Uranium (U)	2018/12/19	105	80 - 120	103	80 - 120	ND, RDL=0.10	ug/L	7.5 (1)	20
5893901	Dissolved Vanadium (V)	2018/12/19	108	80 - 120	97	80 - 120	ND, RDL=0.50	ug/L	NC (1)	20
5893901	Dissolved Zinc (Zn)	2018/12/19	101	80 - 120	99	80 - 120	ND, RDL=5.0	ug/L	NC (1)	20
5896281	1,1,1,2-Tetrachloroethane	2018/12/20	98 (3)	70 - 130	98	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	1,1,1-Trichloroethane	2018/12/20	97 (3)	70 - 130	97	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	1,1,2,2-Tetrachloroethane	2018/12/20	102 (3)	70 - 130	101	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	1,1,2-Trichloroethane	2018/12/20	102 (3)	70 - 130	100	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5896281	1,1-Dichloroethane	2018/12/20	100 (3)	70 - 130	100	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	1,1-Dichloroethylene	2018/12/20	98 (3)	70 - 130	99	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	1,2-Dichlorobenzene	2018/12/20	97 (3)	70 - 130	96	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	1,2-Dichloroethane	2018/12/20	102 (3)	70 - 130	99	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	1,2-Dichloropropane	2018/12/20	102 (3)	70 - 130	102	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	1,3-Dichlorobenzene	2018/12/20	101 (3)	70 - 130	101	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	1,4-Dichlorobenzene	2018/12/20	101 (3)	70 - 130	101	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	Acetone (2-Propanone)	2018/12/20	107 (3)	60 - 140	104	60 - 140	ND, RDL=10	ug/L	NC (4)	30
5896281	Benzene	2018/12/20	97 (3)	70 - 130	97	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	Bromodichloromethane	2018/12/20	92 (3)	70 - 130	92	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	Bromoform	2018/12/20	98 (3)	70 - 130	97	70 - 130	ND, RDL=1.0	ug/L	NC (4)	30
5896281	Bromomethane	2018/12/20	96 (3)	60 - 140	95	60 - 140	ND, RDL=0.50	ug/L	NC (4)	30
5896281	Carbon Tetrachloride	2018/12/20	94 (3)	70 - 130	95	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	Chlorobenzene	2018/12/20	98 (3)	70 - 130	98	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	Chloroform	2018/12/20	98 (3)	70 - 130	98	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	cis-1,2-Dichloroethylene	2018/12/20	99 (3)	70 - 130	99	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	cis-1,3-Dichloropropene	2018/12/20	108 (3)	70 - 130	105	70 - 130	ND, RDL=0.30	ug/L	NC (4)	30
5896281	Dibromochloromethane	2018/12/20	99 (3)	70 - 130	98	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	Dichlorodifluoromethane (FREON 12)	2018/12/20	100 (3)	60 - 140	103	60 - 140	ND, RDL=1.0	ug/L	NC (4)	30
5896281	Ethylbenzene	2018/12/20	102 (3)	70 - 130	104	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	Ethylene Dibromide	2018/12/20	104 (3)	70 - 130	102	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	F1 (C6-C10) - BTEX	2018/12/20					ND, RDL=25	ug/L	NC (4)	30
5896281	F1 (C6-C10)	2018/12/20	89 (3)	60 - 140	94	60 - 140	ND, RDL=25	ug/L	NC (4)	30
5896281	Hexane	2018/12/20	100 (3)	70 - 130	102	70 - 130	ND, RDL=1.0	ug/L	NC (4)	30
5896281	Methyl Ethyl Ketone (2-Butanone)	2018/12/20	114 (3)	60 - 140	111	60 - 140	ND, RDL=10	ug/L	NC (4)	30
5896281	Methyl Isobutyl Ketone	2018/12/20	118 (3)	70 - 130	117	70 - 130	ND, RDL=5.0	ug/L	NC (4)	30
5896281	Methyl t-butyl ether (MTBE)	2018/12/20	105 (3)	70 - 130	104	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	Methylene Chloride(Dichloromethane)	2018/12/20	89 (3)	70 - 130	89	70 - 130	ND, RDL=2.0	ug/L	NC (4)	30
5896281	o-Xylene	2018/12/20	101 (3)	70 - 130	102	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	p+m-Xylene	2018/12/20	102 (3)	70 - 130	103	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	Styrene	2018/12/20	104 (3)	70 - 130	107	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5896281	Tetrachloroethylene	2018/12/20	96 (3)	70 - 130	97	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	Toluene	2018/12/20	98 (3)	70 - 130	98	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	Total Xylenes	2018/12/20					ND, RDL=0.20	ug/L	NC (4)	30
5896281	trans-1,2-Dichloroethylene	2018/12/20	96 (3)	70 - 130	97	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	trans-1,3-Dichloropropene	2018/12/20	111 (3)	70 - 130	107	70 - 130	ND, RDL=0.40	ug/L	NC (4)	30
5896281	Trichloroethylene	2018/12/20	97 (3)	70 - 130	98	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5896281	Trichlorofluoromethane (FREON 11)	2018/12/20	95 (3)	70 - 130	96	70 - 130	ND, RDL=0.50	ug/L	NC (4)	30
5896281	Vinyl Chloride	2018/12/20	98 (3)	70 - 130	100	70 - 130	ND, RDL=0.20	ug/L	NC (4)	30
5899617	1-Methylnaphthalene	2018/12/21	105	50 - 130	127	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	2-Methylnaphthalene	2018/12/21	96	50 - 130	109	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Acenaphthene	2018/12/21	93	50 - 130	92	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Acenaphthylene	2018/12/21	96	50 - 130	89	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Anthracene	2018/12/21	90	50 - 130	89	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Benzo(a)anthracene	2018/12/21	98	50 - 130	98	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Benzo(a)pyrene	2018/12/21	93	50 - 130	94	50 - 130	ND, RDL=0.010	ug/L	NC (1)	30
5899617	Benzo(b/j)fluoranthene	2018/12/21	92	50 - 130	102	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Benzo(g,h,i)perylene	2018/12/21	92	50 - 130	85	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Benzo(k)fluoranthene	2018/12/21	89	50 - 130	83	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Chrysene	2018/12/21	94	50 - 130	97	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Dibenz(a,h)anthracene	2018/12/21	87	50 - 130	74	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Fluoranthene	2018/12/21	100	50 - 130	80	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Fluorene	2018/12/21	92	50 - 130	83	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Indeno(1,2,3-cd)pyrene	2018/12/21	93	50 - 130	82	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Naphthalene	2018/12/21	91	50 - 130	91	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899617	Phenanthrene	2018/12/21	95	50 - 130	94	50 - 130	ND, RDL=0.030	ug/L	2.4 (1)	30
5899617	Pyrene	2018/12/21	98	50 - 130	86	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5899621	F2 (C10-C16 Hydrocarbons)	2018/12/21	104	50 - 130	102	60 - 130	ND, RDL=100	ug/L	NC (1)	30
5899621	F3 (C16-C34 Hydrocarbons)	2018/12/21	104	50 - 130	107	60 - 130	ND, RDL=200	ug/L	NC (1)	30
5899621	F4 (C34-C50 Hydrocarbons)	2018/12/21	103	50 - 130	101	60 - 130	ND, RDL=200	ug/L	NC (1)	30

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

QUALITY ASSURANCE REPORT(CONT'D)

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5900667	Mercury (Hg)	2018/12/21	96	75 - 125	99	80 - 120	ND, RDL=0.1	ug/L	NC (1)	20

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

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

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

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

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

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

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

(1) Duplicate Parent ID

(2) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(3) Matrix Spike Parent ID [IOH996-05]

(4) Duplicate Parent ID [IOH996-05]

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Maxxam Job #: B8X6184
Report Date: 2018/12/24

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY- PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

VALIDATION SIGNATURE PAGE

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



Ewa Pranjic, M.Sc., C.Chem, 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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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:
Company Name: #3000 GHD Limited
Attention: Jennifer Balkwill
Address: 455 Phillip St, Waterloo ON N2L 3X2
Tel: (519) 884-7780 Ext: 3599 Fax: (519) 725-1394
Email: Jennifer.Balkwill@ghd.com, NationalEDDsupport@max

REPORT TO:
Company Name: SAME AS INVOICE
Attention:
Address:
Tel: Fax:
Email:

PROJECT INFORMATION:
Quotation #: B80174
P.O. #: 7351423 6
Project: 11131634
Project Name: Union Property - Port Dalhousie
Site #:
Sampled By: M. Pley

Laboratory Use Only:
Maxxam Job #:
Bottle Order #: 696809
COC #: C#696809-01-01
Project Manager: Tanya Fidlin

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agr/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ☐ PWQO ☐ Other

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects
Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.
Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle) Metals / Hg / Cr VI	O.Reg 153 Metals Package	O.Reg 153 VOCs by HS & F1-F4	O.Reg 153 PAHs	Volatile Organic Compounds and F1 PHCs	# of Bottles	Comments
1	GW-11131634-12	1318-MP-001	12/13/2018	16:00	GW	X	X	X	X	≋	8	
2	GW-11131634-12	1318-MP-002	12/13/2018	16:30	GW	X	X	X	X	≋	8	
3	GW-11131634-12	1318-MP-003	12/13/2018	16:30	GW	X	X	X	X	≋	8	
4	GW-11131634-12	1318-MP-004	12/13/2018	17:00	GW	X	X	X	X	≋	8	
5	Trip Blank		—	—	~~GW~~ Water					X		
6												
7												
8												
9												
10												

14-Dec-18 15:51
Tanya Fidlin
B8X6184
FCN ENV-1224

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
- Melissa Pley	18/12/13	11:00		18/12/14	15:51	

Laboratory Use Only
Time Sensitive
Temperature (°C) on Recei: 3/4/3
Custody Seal Present ☐ Yes ☐ No ☑
Intact

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam
A Bureau Veritas Group Company

Your P.O. #: 73514236
Your Project #: 11131634
Site Location: UNION PROPERTY-PORT DALHOUSIE
Your C.O.C. #: 697620-01-01

Attention: 11131634 - PO - 73514236

GHD Limited
455 Phillip St
Waterloo, ON
CANADA N2L 3X2

Report Date: 2019/01/02
Report #: R5545261
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8Y3349
Received: 2018/12/21, 16:30

Sample Matrix: Water
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	3	N/A	2019/01/02	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum	4	N/A	2018/12/28		EPA 8260C m
Chromium (VI) in Water	3	N/A	2018/12/31	CAM SOP-00436	EPA 7199 m
Petroleum Hydrocarbons F2-F4 in Water (1)	3	2018/12/28	2018/12/31	CAM SOP-00316	CCME PHC-CWS m
Mercury	3	2019/01/02	2019/01/02	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS	3	N/A	2018/12/28	CAM SOP-00447	EPA 6020B m
PAH Compounds in Water by GC/MS (SIM)	3	2018/12/28	2018/12/29	CAM SOP-00318	EPA 8270D m
Volatile Organic Compounds and F1 PHCs	4	N/A	2018/12/28	CAM SOP-00230	EPA 8260C 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.

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.
(1) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Maxxam conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Your P.O. #: 73514236
Your Project #: 11131634
Site Location: UNION PROPERTY-PORT DALHOUSIE
Your C.O.C. #: 697620-01-01

Attention: 11131634 - PO - 73514236

GHD Limited
455 Phillip St
Waterloo, ON
CANADA N2L 3X2

Report Date: 2019/01/02
Report #: R5545261
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8Y3349
Received: 2018/12/21, 16:30

reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Tanya Fidlin, Project Manager
Email: tfidlin@maxxam.ca
Phone# (905)817-5700

==========

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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Maxxam Job #: B8Y3349
Report Date: 2019/01/02

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY-PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		IPV091			IPV091		
Sampling Date		2018/12/21 12:00			2018/12/21 12:00		
COC Number		697620-01-01			697620-01-01		
	UNITS	GW-11131634-122118 -MP-005	RDL	QC Batch	GW-11131634-122118 -MP-005 Lab-Dup	RDL	QC Batch
Metals							
Chromium (VI)	ug/L	ND	0.50	5897313			
Mercury (Hg)	ug/L	ND	0.1	5910614	ND	0.1	5910614
Dissolved Antimony (Sb)	ug/L	0.62	0.50	5903826			
Dissolved Arsenic (As)	ug/L	1.4	1.0	5903826			
Dissolved Barium (Ba)	ug/L	100	2.0	5903826			
Dissolved Beryllium (Be)	ug/L	ND	0.50	5903826			
Dissolved Boron (B)	ug/L	220	10	5903826			
Dissolved Cadmium (Cd)	ug/L	ND	0.10	5903826			
Dissolved Chromium (Cr)	ug/L	ND	5.0	5903826			
Dissolved Cobalt (Co)	ug/L	ND	0.50	5903826			
Dissolved Copper (Cu)	ug/L	1.2	1.0	5903826			
Dissolved Lead (Pb)	ug/L	ND	0.50	5903826			
Dissolved Molybdenum (Mo)	ug/L	3.7	0.50	5903826			
Dissolved Nickel (Ni)	ug/L	1.3	1.0	5903826			
Dissolved Selenium (Se)	ug/L	ND	2.0	5903826			
Dissolved Silver (Ag)	ug/L	ND	0.10	5903826			
Dissolved Sodium (Na)	ug/L	24000	100	5903826			
Dissolved Thallium (Tl)	ug/L	0.057	0.050	5903826			
Dissolved Uranium (U)	ug/L	3.9	0.10	5903826			
Dissolved Vanadium (V)	ug/L	1.0	0.50	5903826			
Dissolved Zinc (Zn)	ug/L	ND	5.0	5903826			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

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Maxxam Job #: B8Y3349
Report Date: 2019/01/02

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY-PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		IPV092	IPV093		
Sampling Date		2018/12/21 12:30	2018/12/21 13:00		
COC Number		697620-01-01	697620-01-01		
	UNITS	GW-11131634-122118-MP-006	GW-11131634-122118-MP-007	RDL	QC Batch
Metals					
Chromium (VI)	ug/L	1.4	ND	0.50	5897313
Mercury (Hg)	ug/L	ND	ND	0.1	5910614
Dissolved Antimony (Sb)	ug/L	ND	ND	0.50	5903826
Dissolved Arsenic (As)	ug/L	1.3	1.3	1.0	5903826
Dissolved Barium (Ba)	ug/L	86	280	2.0	5903826
Dissolved Beryllium (Be)	ug/L	ND	ND	0.50	5903826
Dissolved Boron (B)	ug/L	120	170	10	5903826
Dissolved Cadmium (Cd)	ug/L	ND	ND	0.10	5903826
Dissolved Chromium (Cr)	ug/L	ND	ND	5.0	5903826
Dissolved Cobalt (Co)	ug/L	1.7	ND	0.50	5903826
Dissolved Copper (Cu)	ug/L	5.3	ND	1.0	5903826
Dissolved Lead (Pb)	ug/L	ND	ND	0.50	5903826
Dissolved Molybdenum (Mo)	ug/L	4.8	2.1	0.50	5903826
Dissolved Nickel (Ni)	ug/L	3.7	1.3	1.0	5903826
Dissolved Selenium (Se)	ug/L	ND	ND	2.0	5903826
Dissolved Silver (Ag)	ug/L	ND	ND	0.10	5903826
Dissolved Sodium (Na)	ug/L	100000	63000	100	5903826
Dissolved Thallium (Tl)	ug/L	0.055	ND	0.050	5903826
Dissolved Uranium (U)	ug/L	4.0	0.61	0.10	5903826
Dissolved Vanadium (V)	ug/L	1.0	1.1	0.50	5903826
Dissolved Zinc (Zn)	ug/L	ND	ND	5.0	5903826

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B8Y3349
Report Date: 2019/01/02

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY-PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		IPV091	IPV092	IPV093		
Sampling Date		2018/12/21 12:00	2018/12/21 12:30	2018/12/21 13:00		
COC Number		697620-01-01	697620-01-01	697620-01-01		
	UNITS	GW-11131634-122118-MP-005	GW-11131634-122118-MP-006	GW-11131634-122118-MP-007	RDL	QC Batch
Calculated Parameters						
Methylnaphthalene, 2-(1-)	ug/L	ND	ND	ND	0.071	5901536
Polyaromatic Hydrocarbons						
Acenaphthene	ug/L	ND	ND	ND	0.050	5907757
Acenaphthylene	ug/L	ND	ND	ND	0.050	5907757
Anthracene	ug/L	ND	ND	ND	0.050	5907757
Benzo(a)anthracene	ug/L	ND	ND	ND	0.050	5907757
Benzo(a)pyrene	ug/L	ND	ND	ND	0.010	5907757
Benzo(b/j)fluoranthene	ug/L	ND	ND	ND	0.050	5907757
Benzo(g,h,i)perylene	ug/L	ND	ND	ND	0.050	5907757
Benzo(k)fluoranthene	ug/L	ND	ND	ND	0.050	5907757
Chrysene	ug/L	ND	ND	ND	0.050	5907757
Dibenz(a,h)anthracene	ug/L	ND	ND	ND	0.050	5907757
Fluoranthene	ug/L	0.30	0.18	ND	0.050	5907757
Fluorene	ug/L	ND	ND	ND	0.050	5907757
Indeno(1,2,3-cd)pyrene	ug/L	ND	ND	ND	0.050	5907757
1-Methylnaphthalene	ug/L	ND	ND	ND	0.050	5907757
2-Methylnaphthalene	ug/L	ND	ND	ND	0.050	5907757
Naphthalene	ug/L	ND	ND	ND	0.050	5907757
Phenanthrene	ug/L	0.23	0.16	0.045	0.030	5907757
Pyrene	ug/L	0.064	ND	ND	0.050	5907757
Surrogate Recovery (%)						
D10-Anthracene	%	100	94	73		5907757
D14-Terphenyl (FS)	%	86	62	50		5907757
D8-Acenaphthylene	%	99	94	90		5907757

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B8Y3349
Report Date: 2019/01/02

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY-PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		IPV091	IPV092	IPV093	IPV094		
Sampling Date		2018/12/21 12:00	2018/12/21 12:30	2018/12/21 13:00	2018/12/21		
COC Number		697620-01-01	697620-01-01	697620-01-01	697620-01-01		
	UNITS	GW-11131634-122118-MP-005	GW-11131634-122118-MP-006	GW-11131634-122118-MP-007	TRIP BLANK	RDL	QC Batch
Calculated Parameters							
1,3-Dichloropropene (cis+trans)	ug/L	ND	ND	ND	ND	0.50	5902617
Volatile Organics							
Acetone (2-Propanone)	ug/L	ND	ND	ND	ND	10	5903723
Benzene	ug/L	ND	ND	ND	ND	0.20	5903723
Bromodichloromethane	ug/L	ND	ND	ND	ND	0.50	5903723
Bromoform	ug/L	ND	ND	ND	ND	1.0	5903723
Bromomethane	ug/L	ND	ND	ND	ND	0.50	5903723
Carbon Tetrachloride	ug/L	ND	ND	ND	ND	0.20	5903723
Chlorobenzene	ug/L	ND	ND	ND	ND	0.20	5903723
Chloroform	ug/L	ND	ND	ND	ND	0.20	5903723
Dibromochloromethane	ug/L	ND	ND	ND	ND	0.50	5903723
1,2-Dichlorobenzene	ug/L	ND	ND	ND	ND	0.50	5903723
1,3-Dichlorobenzene	ug/L	ND	ND	ND	ND	0.50	5903723
1,4-Dichlorobenzene	ug/L	ND	ND	ND	ND	0.50	5903723
Dichlorodifluoromethane (FREON 12)	ug/L	ND	ND	ND	ND	1.0	5903723
1,1-Dichloroethane	ug/L	ND	ND	ND	ND	0.20	5903723
1,2-Dichloroethane	ug/L	ND	ND	ND	ND	0.50	5903723
1,1-Dichloroethylene	ug/L	ND	ND	ND	ND	0.20	5903723
cis-1,2-Dichloroethylene	ug/L	ND	ND	ND	ND	0.50	5903723
trans-1,2-Dichloroethylene	ug/L	ND	ND	ND	ND	0.50	5903723
1,2-Dichloropropane	ug/L	ND	ND	ND	ND	0.20	5903723
cis-1,3-Dichloropropene	ug/L	ND	ND	ND	ND	0.30	5903723
trans-1,3-Dichloropropene	ug/L	ND	ND	ND	ND	0.40	5903723
Ethylbenzene	ug/L	ND	ND	ND	ND	0.20	5903723
Ethylene Dibromide	ug/L	ND	ND	ND	ND	0.20	5903723
Hexane	ug/L	ND	ND	ND	ND	1.0	5903723
Methylene Chloride(Dichloromethane)	ug/L	ND	ND	ND	ND	2.0	5903723
Methyl Ethyl Ketone (2-Butanone)	ug/L	ND	ND	ND	ND	10	5903723
Methyl Isobutyl Ketone	ug/L	ND	ND	ND	ND	5.0	5903723
Methyl t-butyl ether (MTBE)	ug/L	ND	ND	ND	ND	0.50	5903723
Styrene	ug/L	ND	ND	ND	ND	0.50	5903723
1,1,1,2-Tetrachloroethane	ug/L	ND	ND	ND	ND	0.50	5903723

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B8Y3349
Report Date: 2019/01/02

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY-PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		IPV091	IPV092	IPV093	IPV094		
Sampling Date		2018/12/21 12:00	2018/12/21 12:30	2018/12/21 13:00	2018/12/21		
COC Number		697620-01-01	697620-01-01	697620-01-01	697620-01-01		
	UNITS	**GW-11131634-122118 -MP-005**	**GW-11131634-122118 -MP-006**	**GW-11131634-122118 -MP-007**	**TRIP BLANK**	**RDL**	**QC Batch**
1,1,2,2-Tetrachloroethane	ug/L	ND	ND	ND	ND	0.50	5903723
Tetrachloroethylene	ug/L	ND	ND	ND	ND	0.20	5903723
Toluene	ug/L	ND	ND	ND	ND	0.20	5903723
1,1,1-Trichloroethane	ug/L	ND	ND	ND	ND	0.20	5903723
1,1,2-Trichloroethane	ug/L	ND	ND	ND	ND	0.50	5903723
Trichloroethylene	ug/L	ND	ND	ND	ND	0.20	5903723
Trichlorofluoromethane (FREON 11)	ug/L	ND	ND	ND	ND	0.50	5903723
Vinyl Chloride	ug/L	ND	ND	ND	ND	0.20	5903723
p+m-Xylene	ug/L	ND	ND	ND	ND	0.20	5903723
o-Xylene	ug/L	ND	ND	ND	ND	0.20	5903723
Total Xylenes	ug/L	ND	ND	ND	ND	0.20	5903723
F1 (C6-C10)	ug/L	ND	ND	ND	ND	25	5903723
F1 (C6-C10) - BTEX	ug/L	ND	ND	ND	ND	25	5903723
Surrogate Recovery (%)							
4-Bromofluorobenzene	%	99	99	99	99		5903723
D4-1,2-Dichloroethane	%	107	105	107	106		5903723
D8-Toluene	%	101	101	101	102		5903723

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B8Y3349
Report Date: 2019/01/02

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY-PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		IPV091	IPV092	IPV093		
Sampling Date		2018/12/21 12:00	2018/12/21 12:30	2018/12/21 13:00		
COC Number		697620-01-01	697620-01-01	697620-01-01		
	UNITS	**GW-11131634-122118 -MP-005**	**GW-11131634-122118 -MP-006**	**GW-11131634-122118 -MP-007**	**RDL**	**QC Batch**
F2-F4 Hydrocarbons						
F2 (C10-C16 Hydrocarbons)	ug/L	ND	ND	ND	100	5907758
F3 (C16-C34 Hydrocarbons)	ug/L	ND	ND	ND	200	5907758
F4 (C34-C50 Hydrocarbons)	ug/L	ND	ND	ND	200	5907758
Reached Baseline at C50	ug/L	Yes	Yes	Yes		5907758
Surrogate Recovery (%)						
o-Terphenyl	%	118	119	119		5907758

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B8Y3349
Report Date: 2019/01/02

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY-PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

TEST SUMMARY

Maxxam ID: IPV091 **Collected:** 2018/12/21
Sample ID: GW-11131634-122118-MP-005 **Shipped:**
Matrix: Water **Received:** 2018/12/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5901536	N/A	2019/01/02	Automated Statchk
1,3-Dichloropropene Sum	CALC	5902617	N/A	2018/12/28	Automated Statchk
Chromium (VI) in Water	IC	5897313	N/A	2018/12/31	Lang Le
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5907758	2018/12/28	2018/12/31	Biljana Lazovic
Mercury	CV/AA	5910614	2019/01/02	2019/01/02	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	5903826	N/A	2018/12/28	Thao Nguyen
PAH Compounds in Water by GC/MS (SIM)	GC/MS	5907757	2018/12/28	2018/12/29	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5903723	N/A	2018/12/28	John Wu

Maxxam ID: IPV091 Dup **Collected:** 2018/12/21
Sample ID: GW-11131634-122118-MP-005 **Shipped:**
Matrix: Water **Received:** 2018/12/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury	CV/AA	5910614	2019/01/02	2019/01/02	Ron Morrison

Maxxam ID: IPV092 **Collected:** 2018/12/21
Sample ID: GW-11131634-122118-MP-006 **Shipped:**
Matrix: Water **Received:** 2018/12/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5901536	N/A	2019/01/02	Automated Statchk
1,3-Dichloropropene Sum	CALC	5902617	N/A	2018/12/28	Automated Statchk
Chromium (VI) in Water	IC	5897313	N/A	2018/12/31	Lang Le
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5907758	2018/12/28	2018/12/31	Biljana Lazovic
Mercury	CV/AA	5910614	2019/01/02	2019/01/02	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	5903826	N/A	2018/12/28	Thao Nguyen
PAH Compounds in Water by GC/MS (SIM)	GC/MS	5907757	2018/12/28	2018/12/29	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5903723	N/A	2018/12/28	John Wu

Maxxam ID: IPV093 **Collected:** 2018/12/21
Sample ID: GW-11131634-122118-MP-007 **Shipped:**
Matrix: Water **Received:** 2018/12/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5901536	N/A	2019/01/02	Automated Statchk
1,3-Dichloropropene Sum	CALC	5902617	N/A	2018/12/28	Automated Statchk
Chromium (VI) in Water	IC	5897313	N/A	2018/12/31	Lang Le
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5907758	2018/12/28	2018/12/31	Biljana Lazovic
Mercury	CV/AA	5910614	2019/01/02	2019/01/02	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	5903826	N/A	2018/12/28	Thao Nguyen
PAH Compounds in Water by GC/MS (SIM)	GC/MS	5907757	2018/12/28	2018/12/29	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5903723	N/A	2018/12/28	John Wu

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Maxxam Job #: B8Y3349
Report Date: 2019/01/02

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY-PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

TEST SUMMARY

Maxxam ID: IPV094
Sample ID: TRIP BLANK
Matrix: Water

Collected: 2018/12/21
Shipped:
Received: 2018/12/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5902617	N/A	2018/12/28	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5903723	N/A	2018/12/28	John Wu

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Site Location: UNION PROPERTY-PORT DALHOUSIE
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Sampler Initials: MP

GENERAL COMMENTS

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

Package 1	6.0°C

Results relate only to the items tested.

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Maxxam Job #: B8Y3349
Report Date: 2019/01/02

QUALITY ASSURANCE REPORT

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY-PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5903723	4-Bromofluorobenzene	2018/12/28	102	70 - 130	102	70 - 130	99	%		
5903723	D4-1,2-Dichloroethane	2018/12/28	106	70 - 130	103	70 - 130	102	%		
5903723	D8-Toluene	2018/12/28	102	70 - 130	102	70 - 130	102	%		
5907757	D10-Anthracene	2018/12/29	96	50 - 130	105	50 - 130	99	%		
5907757	D14-Terphenyl (FS)	2018/12/29	87	50 - 130	98	50 - 130	92	%		
5907757	D8-Acenaphthylene	2018/12/29	96	50 - 130	102	50 - 130	96	%		
5907758	o-Terphenyl	2018/12/31	115	60 - 130	121	60 - 130	117	%		
5897313	Chromium (VI)	2018/12/31	103	80 - 120	105	80 - 120	ND, RDL=0.50	ug/L	NC (1)	20
5903723	1,1,1,2-Tetrachloroethane	2018/12/28	97	70 - 130	97	70 - 130	ND, RDL=0.50	ug/L	NC (1)	30
5903723	1,1,1-Trichloroethane	2018/12/28	97	70 - 130	98	70 - 130	ND, RDL=0.20	ug/L	NC (1)	30
5903723	1,1,2,2-Tetrachloroethane	2018/12/28	102	70 - 130	99	70 - 130	ND, RDL=0.50	ug/L	NC (1)	30
5903723	1,1,2-Trichloroethane	2018/12/28	107	70 - 130	104	70 - 130	ND, RDL=0.50	ug/L	NC (1)	30
5903723	1,1-Dichloroethane	2018/12/28	103	70 - 130	102	70 - 130	ND, RDL=0.20	ug/L	NC (1)	30
5903723	1,1-Dichloroethylene	2018/12/28	100	70 - 130	100	70 - 130	ND, RDL=0.20	ug/L	NC (1)	30
5903723	1,2-Dichlorobenzene	2018/12/28	97	70 - 130	96	70 - 130	ND, RDL=0.50	ug/L	NC (1)	30
5903723	1,2-Dichloroethane	2018/12/28	107	70 - 130	104	70 - 130	ND, RDL=0.50	ug/L	NC (1)	30
5903723	1,2-Dichloropropane	2018/12/28	104	70 - 130	103	70 - 130	ND, RDL=0.20	ug/L	NC (1)	30
5903723	1,3-Dichlorobenzene	2018/12/28	101	70 - 130	100	70 - 130	ND, RDL=0.50	ug/L	NC (1)	30
5903723	1,4-Dichlorobenzene	2018/12/28	101	70 - 130	99	70 - 130	ND, RDL=0.50	ug/L	NC (1)	30
5903723	Acetone (2-Propanone)	2018/12/28	114	60 - 140	109	60 - 140	ND, RDL=10	ug/L	3.7 (1)	30
5903723	Benzene	2018/12/28	99	70 - 130	97	70 - 130	ND, RDL=0.20	ug/L	NC (1)	30
5903723	Bromodichloromethane	2018/12/28	94	70 - 130	93	70 - 130	ND, RDL=0.50	ug/L	NC (1)	30
5903723	Bromoform	2018/12/28	97	70 - 130	94	70 - 130	ND, RDL=1.0	ug/L	NC (1)	30
5903723	Bromomethane	2018/12/28	94	60 - 140	90	60 - 140	ND, RDL=0.50	ug/L	NC (1)	30
5903723	Carbon Tetrachloride	2018/12/28	95	70 - 130	96	70 - 130	ND, RDL=0.20	ug/L	NC (1)	30
5903723	Chlorobenzene	2018/12/28	98	70 - 130	97	70 - 130	ND, RDL=0.20	ug/L	NC (1)	30
5903723	Chloroform	2018/12/28	100	70 - 130	99	70 - 130	ND, RDL=0.20	ug/L	NC (1)	30
5903723	cis-1,2-Dichloroethylene	2018/12/28	101	70 - 130	99	70 - 130	ND, RDL=0.50	ug/L	NC (1)	30
5903723	cis-1,3-Dichloropropene	2018/12/28	100	70 - 130	94	70 - 130	ND, RDL=0.30	ug/L	NC (1)	30
5903723	Dibromochloromethane	2018/12/28	98	70 - 130	96	70 - 130	ND, RDL=0.50	ug/L	NC (1)	30
5903723	Dichlorodifluoromethane (FREON 12)	2018/12/28	93	60 - 140	94	60 - 140	ND, RDL=1.0	ug/L	NC (1)	30

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5903723	Ethylbenzene	2018/12/28	102	70 - 130	102	70 - 130	ND, RDL=0.20	ug/L	NC (1)	30
5903723	Ethylene Dibromide	2018/12/28	104	70 - 130	101	70 - 130	ND, RDL=0.20	ug/L	NC (1)	30
5903723	F1 (C6-C10) - BTEX	2018/12/28					ND, RDL=25	ug/L	NC (1)	30
5903723	F1 (C6-C10)	2018/12/28	91	60 - 140	94	60 - 140	ND, RDL=25	ug/L	NC (1)	30
5903723	Hexane	2018/12/28	101	70 - 130	101	70 - 130	ND, RDL=1.0	ug/L	NC (1)	30
5903723	Methyl Ethyl Ketone (2-Butanone)	2018/12/28	122	60 - 140	115	60 - 140	ND, RDL=10	ug/L	NC (1)	30
5903723	Methyl Isobutyl Ketone	2018/12/28	125	70 - 130	120	70 - 130	ND, RDL=5.0	ug/L	NC (1)	30
5903723	Methyl t-butyl ether (MTBE)	2018/12/28	106	70 - 130	105	70 - 130	ND, RDL=0.50	ug/L	NC (1)	30
5903723	Methylene Chloride(Dichloromethane)	2018/12/28	92	70 - 130	89	70 - 130	ND, RDL=2.0	ug/L	NC (1)	30
5903723	o-Xylene	2018/12/28	100	70 - 130	100	70 - 130	ND, RDL=0.20	ug/L	NC (1)	30
5903723	p+m-Xylene	2018/12/28	101	70 - 130	101	70 - 130	ND, RDL=0.20	ug/L	NC (1)	30
5903723	Styrene	2018/12/28	103	70 - 130	103	70 - 130	ND, RDL=0.50	ug/L	NC (1)	30
5903723	Tetrachloroethylene	2018/12/28	94	70 - 130	95	70 - 130	ND, RDL=0.20	ug/L	0.093 (1)	30
5903723	Toluene	2018/12/28	96	70 - 130	97	70 - 130	ND, RDL=0.20	ug/L	NC (1)	30
5903723	Total Xylenes	2018/12/28					ND, RDL=0.20	ug/L	NC (1)	30
5903723	trans-1,2-Dichloroethylene	2018/12/28	97	70 - 130	97	70 - 130	ND, RDL=0.50	ug/L	NC (1)	30
5903723	trans-1,3-Dichloropropene	2018/12/28	102	70 - 130	95	70 - 130	ND, RDL=0.40	ug/L	NC (1)	30
5903723	Trichloroethylene	2018/12/28	97	70 - 130	97	70 - 130	ND, RDL=0.20	ug/L	0.46 (1)	30
5903723	Trichlorofluoromethane (FREON 11)	2018/12/28	95	70 - 130	96	70 - 130	ND, RDL=0.50	ug/L	NC (1)	30
5903723	Vinyl Chloride	2018/12/28	98	70 - 130	98	70 - 130	ND, RDL=0.20	ug/L	NC (1)	30
5903826	Dissolved Antimony (Sb)	2018/12/28	103	80 - 120	98	80 - 120	ND, RDL=0.50	ug/L	NC (1)	20
5903826	Dissolved Arsenic (As)	2018/12/28	98	80 - 120	95	80 - 120	ND, RDL=1.0	ug/L	NC (1)	20
5903826	Dissolved Barium (Ba)	2018/12/28	NC	80 - 120	96	80 - 120	ND, RDL=2.0	ug/L	1.2 (1)	20
5903826	Dissolved Beryllium (Be)	2018/12/28	98	80 - 120	97	80 - 120	ND, RDL=0.50	ug/L	NC (1)	20
5903826	Dissolved Boron (B)	2018/12/28	96	80 - 120	94	80 - 120	ND, RDL=10	ug/L	2.4 (1)	20
5903826	Dissolved Cadmium (Cd)	2018/12/28	97	80 - 120	97	80 - 120	ND, RDL=0.10	ug/L	NC (1)	20
5903826	Dissolved Chromium (Cr)	2018/12/28	96	80 - 120	95	80 - 120	ND, RDL=5.0	ug/L	NC (1)	20
5903826	Dissolved Cobalt (Co)	2018/12/28	96	80 - 120	96	80 - 120	ND, RDL=0.50	ug/L	NC (1)	20
5903826	Dissolved Copper (Cu)	2018/12/28	97	80 - 120	96	80 - 120	ND, RDL=1.0	ug/L	NC (1)	20
5903826	Dissolved Lead (Pb)	2018/12/28	91	80 - 120	94	80 - 120	ND, RDL=0.50	ug/L	NC (1)	20
5903826	Dissolved Molybdenum (Mo)	2018/12/28	104	80 - 120	99	80 - 120	ND, RDL=0.50	ug/L	6.1 (1)	20

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5903826	Dissolved Nickel (Ni)	2018/12/28	94	80 - 120	95	80 - 120	ND, RDL=1.0	ug/L	2.2 (1)	20
5903826	Dissolved Selenium (Se)	2018/12/28	94	80 - 120	97	80 - 120	ND, RDL=2.0	ug/L	NC (1)	20
5903826	Dissolved Silver (Ag)	2018/12/28	93	80 - 120	95	80 - 120	ND, RDL=0.10	ug/L	NC (1)	20
5903826	Dissolved Sodium (Na)	2018/12/28	NC	80 - 120	94	80 - 120	ND, RDL=100	ug/L	2.0 (1)	20
5903826	Dissolved Thallium (Tl)	2018/12/28	91	80 - 120	94	80 - 120	ND, RDL=0.050	ug/L	NC (1)	20
5903826	Dissolved Uranium (U)	2018/12/28	91	80 - 120	92	80 - 120	ND, RDL=0.10	ug/L	4.5 (1)	20
5903826	Dissolved Vanadium (V)	2018/12/28	100	80 - 120	96	80 - 120	ND, RDL=0.50	ug/L	NC (1)	20
5903826	Dissolved Zinc (Zn)	2018/12/28	92	80 - 120	95	80 - 120	ND, RDL=5.0	ug/L	NC (1)	20
5907757	1-Methylnaphthalene	2018/12/29	114	50 - 130	119	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5907757	2-Methylnaphthalene	2018/12/29	103	50 - 130	107	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5907757	Acenaphthene	2018/12/29	99	50 - 130	104	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5907757	Acenaphthylene	2018/12/29	99	50 - 130	103	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5907757	Anthracene	2018/12/29	92	50 - 130	100	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5907757	Benzo(a)anthracene	2018/12/29	104	50 - 130	111	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5907757	Benzo(a)pyrene	2018/12/29	97	50 - 130	108	50 - 130	ND, RDL=0.010	ug/L	NC (1)	30
5907757	Benzo(b/j)fluoranthene	2018/12/29	101	50 - 130	114	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5907757	Benzo(g,h,i)perylene	2018/12/29	101	50 - 130	113	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5907757	Benzo(k)fluoranthene	2018/12/29	102	50 - 130	106	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5907757	Chrysene	2018/12/29	98	50 - 130	108	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5907757	Dibenz(a,h)anthracene	2018/12/29	91	50 - 130	102	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5907757	Fluoranthene	2018/12/29	100	50 - 130	109	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5907757	Fluorene	2018/12/29	100	50 - 130	104	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5907757	Indeno(1,2,3-cd)pyrene	2018/12/29	98	50 - 130	109	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5907757	Naphthalene	2018/12/29	95	50 - 130	99	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5907757	Phenanthrene	2018/12/29	98	50 - 130	105	50 - 130	ND, RDL=0.030	ug/L	NC (1)	30
5907757	Pyrene	2018/12/29	97	50 - 130	106	50 - 130	ND, RDL=0.050	ug/L	NC (1)	30
5907758	F2 (C10-C16 Hydrocarbons)	2018/12/31	105	50 - 130	106	60 - 130	ND, RDL=100	ug/L	NC (1)	30
5907758	F3 (C16-C34 Hydrocarbons)	2018/12/31	NC	50 - 130	109	60 - 130	ND, RDL=200	ug/L	NC (1)	30
5907758	F4 (C34-C50 Hydrocarbons)	2018/12/31	102	50 - 130	103	60 - 130	ND, RDL=200	ug/L	NC (1)	30

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5910614	Mercury (Hg)	2019/01/02	97 (2)	75 - 125	96	80 - 120	ND, RDL=0.1	ug/L	NC (3)	20

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

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

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

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

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

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

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

(1) Duplicate Parent ID

(2) Matrix Spike Parent ID [IPV091-04]

(3) Duplicate Parent ID [IPV091-04]

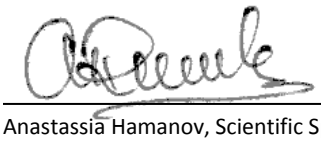
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Maxxam Job #: B8Y3349
Report Date: 2019/01/02

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY-PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

VALIDATION SIGNATURE PAGE

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



Anastassia Hamanov, Scientific Specialist

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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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#3000 GHD Limited	Company Name:	SAME AS INVOICE	Quotation #:	B80174	Maxxam Job #:	Bottle Order #: 697620
Attention:	Jennifer Balkwill	Attention:	11131634 - PO - 73514236	P.O. #:	73514236		
Address:	455 Phillip St Waterloo ON N2L 3X2	Address:	–	Project:	11131634		
Tel:	(519) 884-7780 Ext: 3599 Fax: (519) 725-1394	Tel:	Fax:	Project Name:	Union Property - Port Dalhousie	COC #: C#697620-01-01	Project Manager: Tanya Fidlin
Email:	Jennifer.Balkwill@ghd.com, NationalEDDsupport@max	Email:	NationalEDDsupport@maxxam.ca; Jennifer.Balkwill@g	Site #:			
				Sampled By:	M. Pley		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___	☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other ___	

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O Reg 153 Metals Package	O Reg 153 VOCs by HS & F1-F4	O Reg 153 PAHs	Volatile Organic Compounds and F1 PHCs					# of Bottles	Comments
1	GW-11131634-12	118-MP-005	12/21/18	12:00	GW	X	X	X	X						8	
2	GW-11131634-12	2118-MP-006	↓	12:30	GW	X	X	X	X						8	
3	GW-11131634-12	2118-MP-007	↓	13:00	GW	X	X	X	X						8	
4	TRIP BLANK		–	–	Water					X					2	
5																
6																
7																
8																
9																
10																

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ *(call lab for #)*

RECD IN WATERLOO

21-Dec-18 16:30
Tanya Fidlin
B8Y3349
CA2 ENV-1356

ICE

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Laboratory Use Only				
Melissa Pley	18/12/21	16:30	MATTHEW AMIN	2018/12/21	16:30		Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
			Peter Mikrut	2018/12/21	16:30			8/7/2	Present		
									Intact		

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxa Yellow: Client

WO #488140

4/6/3

Maxxam
A Bureau Veritas Group Company

Your P.O. #: 73514236
Your Project #: 11131634
Site Location: UNION PROPERTY - PORT DALHOUSIE
Your C.O.C. #: 667953-05-01

Attention: 11131634 - PO - 73514236

GHD Limited
455 Phillip St
Waterloo, ON
CANADA N2L 3X2

Report Date: 2019/01/03
Report #: R5546347
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8Y1691
Received: 2018/12/20, 16:48

Sample Matrix: Soil
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	4	N/A	2019/01/02	CAM SOP-00301	EPA 8270D m
Hot Water Extractable Boron	4	2018/12/24	2018/12/27	CAM SOP-00408	R153 Ana. Prot. 2011
1,3-Dichloropropene Sum	4	N/A	2018/12/28		EPA 8260C m
Free (WAD) Cyanide	2	2018/12/27	2018/12/28	CAM SOP-00457	OMOE E3015 m
Free (WAD) Cyanide	2	2018/12/28	2018/12/30	CAM SOP-00457	OMOE E3015 m
Conductivity	4	2018/12/31	2018/12/31	CAM SOP-00414	OMOE E3530 v1 m
Hexavalent Chromium in Soil by IC (1)	2	2018/12/27	2018/12/28	CAM SOP-00436	EPA 3060/7199 m
Hexavalent Chromium in Soil by IC (1)	2	2018/12/28	2018/12/28	CAM SOP-00436	EPA 3060/7199 m
Petroleum Hydrocarbons F2-F4 in Soil (2)	4	2018/12/28	2018/12/29	CAM SOP-00316	CCME CWS m
Strong Acid Leachable Metals by ICPMS	4	2018/12/24	2018/12/28	CAM SOP-00447	EPA 6020B m
Moisture	3	N/A	2018/12/27	CAM SOP-00445	Carter 2nd ed 51.2 m
Moisture	1	N/A	2018/12/28	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM)	4	2018/12/28	2018/12/29	CAM SOP-00318	EPA 8270D m
Polychlorinated Biphenyl in Soil	4	2019/01/02	2019/01/02	CAM SOP-00309	EPA 8082A m
pH CaCl2 EXTRACT	4	2018/12/28	2018/12/28	CAM SOP-00413	EPA 9045 D m
Sodium Adsorption Ratio (SAR)	4	N/A	2019/01/02	CAM SOP-00102	EPA 6010C
Volatile Organic Compounds and F1 PHCs	4	N/A	2018/12/27	CAM SOP-00230	EPA 8260C 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.

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.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

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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. 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) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Maxxam conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Tanya Fidlin, Project Manager
Email: tfidlin@maxxam.ca
Phone# (905)817-5700
==========
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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Report Date: 2019/01/03

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY - PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

RESULTS OF ANALYSES OF SOIL

Maxxam ID		IPL808		IPL809		IPL810		
Sampling Date		2018/12/19 09:30		2018/12/19 11:00		2018/12/19 13:00		
COC Number		667953-05-01		667953-05-01		667953-05-01		
	UNITS	SS-11131634-121918-MP-001	QC Batch	SS-11131634-121918-MP-002	QC Batch	SS-11131634-121918-MP-003	RDL	QC Batch
Calculated Parameters								
Sodium Adsorption Ratio	N/A	0.35	5899546	0.24	5899546	0.24		5899546
Inorganics								
Conductivity	mS/cm	0.26	5907811	0.23	5907811	0.23	0.002	5907811
Moisture	%	12	5906483	13	5906666	19	1.0	5906372
Available (CaCl2) pH	pH	7.80	5906425	7.84	5906425	7.73		5906406
WAD Cyanide (Free)	ug/g	ND	5906295	ND	5906295	ND	0.01	5907856

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

Maxxam ID		IPL811		
Sampling Date		2018/12/19 13:00		
COC Number		667953-05-01		
	UNITS	SS-11131634-121918-MP-004	RDL	QC Batch
Calculated Parameters				
Sodium Adsorption Ratio	N/A	0.26		5900582
Inorganics				
Conductivity	mS/cm	0.23	0.002	5907811
Moisture	%	15	1.0	5906372
Available (CaCl2) pH	pH	7.70		5906406
WAD Cyanide (Free)	ug/g	ND	0.01	5907856

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		IPL808	IPL809		IPL810		
Sampling Date		2018/12/19 09:30	2018/12/19 11:00		2018/12/19 13:00		
COC Number		667953-05-01	667953-05-01		667953-05-01		
	UNITS	SS-11131634-121918-MP-001	SS-11131634-121918-MP-002	QC Batch	SS-11131634-121918-MP-003	RDL	QC Batch
Inorganics							
Chromium (VI)	ug/g	ND	ND	5905340	ND	0.2	5906975
Metals							
Hot Water Ext. Boron (B)	ug/g	0.082	0.12	5904375	0.46	0.050	5904375
Acid Extractable Antimony (Sb)	ug/g	ND	ND	5904312	0.47	0.20	5904312
Acid Extractable Arsenic (As)	ug/g	5.7	2.5	5904312	4.4	1.0	5904312
Acid Extractable Barium (Ba)	ug/g	55	39	5904312	100	0.50	5904312
Acid Extractable Beryllium (Be)	ug/g	0.47	0.23	5904312	0.45	0.20	5904312
Acid Extractable Boron (B)	ug/g	6.0	ND	5904312	6.4	5.0	5904312
Acid Extractable Cadmium (Cd)	ug/g	ND	ND	5904312	0.26	0.10	5904312
Acid Extractable Chromium (Cr)	ug/g	17	8.6	5904312	17	1.0	5904312
Acid Extractable Cobalt (Co)	ug/g	9.7	4.4	5904312	8.1	0.10	5904312
Acid Extractable Copper (Cu)	ug/g	31	25	5904312	44	0.50	5904312
Acid Extractable Lead (Pb)	ug/g	7.0	4.5	5904312	110	1.0	5904312
Acid Extractable Molybdenum (Mo)	ug/g	ND	ND	5904312	0.76	0.50	5904312
Acid Extractable Nickel (Ni)	ug/g	21	9.1	5904312	18	0.50	5904312
Acid Extractable Selenium (Se)	ug/g	ND	ND	5904312	ND	0.50	5904312
Acid Extractable Silver (Ag)	ug/g	ND	ND	5904312	ND	0.20	5904312
Acid Extractable Thallium (Tl)	ug/g	0.10	0.059	5904312	0.10	0.050	5904312
Acid Extractable Uranium (U)	ug/g	0.60	0.44	5904312	0.62	0.050	5904312
Acid Extractable Vanadium (V)	ug/g	25	16	5904312	23	5.0	5904312
Acid Extractable Zinc (Zn)	ug/g	52	39	5904312	110	5.0	5904312
Acid Extractable Mercury (Hg)	ug/g	ND	ND	5904312	0.16	0.050	5904312

RDL = Reportable Detection Limit
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ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		IPL811		
Sampling Date		2018/12/19 13:00		
COC Number		667953-05-01		
	UNITS	**SS-11131634-121918-MP-004**	**RDL**	**QC Batch**
Inorganics				
Chromium (VI)	ug/g	ND	0.2	5906975
Metals				
Hot Water Ext. Boron (B)	ug/g	0.39	0.050	5904375
Acid Extractable Antimony (Sb)	ug/g	0.48	0.20	5904312
Acid Extractable Arsenic (As)	ug/g	4.8	1.0	5904312
Acid Extractable Barium (Ba)	ug/g	110	0.50	5904312
Acid Extractable Beryllium (Be)	ug/g	0.51	0.20	5904312
Acid Extractable Boron (B)	ug/g	7.0	5.0	5904312
Acid Extractable Cadmium (Cd)	ug/g	0.21	0.10	5904312
Acid Extractable Chromium (Cr)	ug/g	18	1.0	5904312
Acid Extractable Cobalt (Co)	ug/g	8.8	0.10	5904312
Acid Extractable Copper (Cu)	ug/g	73	0.50	5904312
Acid Extractable Lead (Pb)	ug/g	130	1.0	5904312
Acid Extractable Molybdenum (Mo)	ug/g	0.62	0.50	5904312
Acid Extractable Nickel (Ni)	ug/g	19	0.50	5904312
Acid Extractable Selenium (Se)	ug/g	ND	0.50	5904312
Acid Extractable Silver (Ag)	ug/g	ND	0.20	5904312
Acid Extractable Thallium (Tl)	ug/g	0.13	0.050	5904312
Acid Extractable Uranium (U)	ug/g	0.55	0.050	5904312
Acid Extractable Vanadium (V)	ug/g	25	5.0	5904312
Acid Extractable Zinc (Zn)	ug/g	150	5.0	5904312
Acid Extractable Mercury (Hg)	ug/g	0.19	0.050	5904312

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SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		IPL808	IPL809	IPL810		
Sampling Date		2018/12/19 09:30	2018/12/19 11:00	2018/12/19 13:00		
COC Number		667953-05-01	667953-05-01	667953-05-01		
	UNITS	SS-11131634-121918-MP-001	SS-11131634-121918-MP-002	SS-11131634-121918-MP-003	RDL	QC Batch
Calculated Parameters						
Methylnaphthalene, 2-(1-)	ug/g	ND	ND	ND	0.0071	5899823
Polyaromatic Hydrocarbons						
Acenaphthene	ug/g	ND	ND	0.013	0.0050	5907087
Acenaphthylene	ug/g	ND	ND	0.15	0.0050	5907087
Anthracene	ug/g	ND	ND	0.18	0.0050	5907087
Benzo(a)anthracene	ug/g	ND	ND	0.93	0.0050	5907087
Benzo(a)pyrene	ug/g	ND	ND	1.0	0.0050	5907087
Benzo(b/j)fluoranthene	ug/g	ND	ND	0.98	0.0050	5907087
Benzo(g,h,i)perylene	ug/g	ND	ND	0.44	0.0050	5907087
Benzo(k)fluoranthene	ug/g	ND	ND	0.35	0.0050	5907087
Chrysene	ug/g	ND	ND	0.69	0.0050	5907087
Dibenz(a,h)anthracene	ug/g	ND	ND	0.088	0.0050	5907087
Fluoranthene	ug/g	ND	ND	1.7	0.0050	5907087
Fluorene	ug/g	ND	ND	0.027	0.0050	5907087
Indeno(1,2,3-cd)pyrene	ug/g	ND	ND	0.48	0.0050	5907087
1-Methylnaphthalene	ug/g	ND	ND	ND	0.0050	5907087
2-Methylnaphthalene	ug/g	ND	ND	ND	0.0050	5907087
Naphthalene	ug/g	ND	ND	0.0083	0.0050	5907087
Phenanthrene	ug/g	0.0066	ND	0.55	0.0050	5907087
Pyrene	ug/g	ND	ND	1.5	0.0050	5907087
Surrogate Recovery (%)						
D10-Anthracene	%	94	92	87		5907087
D14-Terphenyl (FS)	%	91	82	87		5907087
D8-Acenaphthylene	%	100	89	100		5907087

RDL = Reportable Detection Limit
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SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		IPL811		
Sampling Date		2018/12/19 13:00		
COC Number		667953-05-01		
	UNITS	**SS-11131634-121918-MP-004**	**RDL**	**QC Batch**
Calculated Parameters				
Methylnaphthalene, 2-(1-)	ug/g	0.12	0.071	5899823
Polyaromatic Hydrocarbons				
Acenaphthene	ug/g	0.34	0.050	5907087
Acenaphthylene	ug/g	0.34	0.050	5907087
Anthracene	ug/g	1.1	0.050	5907087
Benzo(a)anthracene	ug/g	3.5	0.050	5907087
Benzo(a)pyrene	ug/g	2.9	0.050	5907087
Benzo(b/j)fluoranthene	ug/g	3.0	0.050	5907087
Benzo(g,h,i)perylene	ug/g	1.3	0.050	5907087
Benzo(k)fluoranthene	ug/g	1.1	0.050	5907087
Chrysene	ug/g	2.8	0.050	5907087
Dibenz(a,h)anthracene	ug/g	0.34	0.050	5907087
Fluoranthene	ug/g	6.4	0.050	5907087
Fluorene	ug/g	0.31	0.050	5907087
Indeno(1,2,3-cd)pyrene	ug/g	1.7	0.050	5907087
1-Methylnaphthalene	ug/g	0.064	0.050	5907087
2-Methylnaphthalene	ug/g	0.054	0.050	5907087
Naphthalene	ug/g	0.070	0.050	5907087
Phenanthrene	ug/g	3.7	0.050	5907087
Pyrene	ug/g	5.9	0.050	5907087
Surrogate Recovery (%)				
D10-Anthracene	%	110		5907087
D14-Terphenyl (FS)	%	91		5907087
D8-Acenaphthylene	%	110		5907087

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VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		IPL808	IPL809	IPL810		
Sampling Date		2018/12/19 09:30	2018/12/19 11:00	2018/12/19 13:00		
COC Number		667953-05-01	667953-05-01	667953-05-01		
	UNITS	SS-11131634-121918-MP-001	SS-11131634-121918-MP-002	SS-11131634-121918-MP-003	RDL	QC Batch
Calculated Parameters						
1,3-Dichloropropene (cis+trans)	ug/g	ND	ND	ND	0.050	5900183
Volatile Organics						
Acetone (2-Propanone)	ug/g	ND	ND	ND	0.50	5903746
Benzene	ug/g	ND	ND	ND	0.020	5903746
Bromodichloromethane	ug/g	ND	ND	ND	0.050	5903746
Bromoform	ug/g	ND	ND	ND	0.050	5903746
Bromomethane	ug/g	ND	ND	ND	0.050	5903746
Carbon Tetrachloride	ug/g	ND	ND	ND	0.050	5903746
Chlorobenzene	ug/g	ND	ND	ND	0.050	5903746
Chloroform	ug/g	ND	ND	ND	0.050	5903746
Dibromochloromethane	ug/g	ND	ND	ND	0.050	5903746
1,2-Dichlorobenzene	ug/g	ND	ND	ND	0.050	5903746
1,3-Dichlorobenzene	ug/g	ND	ND	ND	0.050	5903746
1,4-Dichlorobenzene	ug/g	ND	ND	ND	0.050	5903746
Dichlorodifluoromethane (FREON 12)	ug/g	ND	ND	ND	0.050	5903746
1,1-Dichloroethane	ug/g	ND	ND	ND	0.050	5903746
1,2-Dichloroethane	ug/g	ND	ND	ND	0.050	5903746
1,1-Dichloroethylene	ug/g	ND	ND	ND	0.050	5903746
cis-1,2-Dichloroethylene	ug/g	ND	ND	ND	0.050	5903746
trans-1,2-Dichloroethylene	ug/g	ND	ND	ND	0.050	5903746
1,2-Dichloropropane	ug/g	ND	ND	ND	0.050	5903746
cis-1,3-Dichloropropene	ug/g	ND	ND	ND	0.030	5903746
trans-1,3-Dichloropropene	ug/g	ND	ND	ND	0.040	5903746
Ethylbenzene	ug/g	ND	ND	ND	0.020	5903746
Ethylene Dibromide	ug/g	ND	ND	ND	0.050	5903746
Hexane	ug/g	ND	ND	ND	0.050	5903746
Methylene Chloride(Dichloromethane)	ug/g	ND	0.070	ND	0.050	5903746
Methyl Ethyl Ketone (2-Butanone)	ug/g	ND	ND	ND	0.50	5903746
Methyl Isobutyl Ketone	ug/g	ND	ND	ND	0.50	5903746
Methyl t-butyl ether (MTBE)	ug/g	ND	ND	ND	0.050	5903746
Styrene	ug/g	ND	ND	ND	0.050	5903746
1,1,1,2-Tetrachloroethane	ug/g	ND	ND	ND	0.050	5903746

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Maxxam ID		IPL808	IPL809	IPL810		
Sampling Date		2018/12/19 09:30	2018/12/19 11:00	2018/12/19 13:00		
COC Number		667953-05-01	667953-05-01	667953-05-01		
	UNITS	**SS-11131634-121918-MP-001**	**SS-11131634-121918-MP-002**	**SS-11131634-121918-MP-003**	**RDL**	**QC Batch**
1,1,2,2-Tetrachloroethane	ug/g	ND	ND	ND	0.050	5903746
Tetrachloroethylene	ug/g	ND	ND	ND	0.050	5903746
Toluene	ug/g	ND	ND	ND	0.020	5903746
1,1,1-Trichloroethane	ug/g	ND	ND	ND	0.050	5903746
1,1,2-Trichloroethane	ug/g	ND	ND	ND	0.050	5903746
Trichloroethylene	ug/g	ND	ND	ND	0.050	5903746
Trichlorofluoromethane (FREON 11)	ug/g	ND	ND	ND	0.050	5903746
Vinyl Chloride	ug/g	ND	ND	ND	0.020	5903746
p+m-Xylene	ug/g	ND	ND	ND	0.020	5903746
o-Xylene	ug/g	ND	ND	ND	0.020	5903746
Total Xylenes	ug/g	ND	ND	ND	0.020	5903746
F1 (C6-C10)	ug/g	ND	ND	ND	10	5903746
F1 (C6-C10) - BTEX	ug/g	ND	ND	ND	10	5903746
Surrogate Recovery (%)						
4-Bromofluorobenzene	%	97	99	100		5903746
D10-o-Xylene	%	91	99	90		5903746
D4-1,2-Dichloroethane	%	114	98	79		5903746
D8-Toluene	%	100	114	121		5903746

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B8Y1691
Report Date: 2019/01/03

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY - PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		IPL811		
Sampling Date		2018/12/19 13:00		
COC Number		667953-05-01		
	UNITS	SS-11131634-121918-MP-004	RDL	QC Batch
Calculated Parameters				
1,3-Dichloropropene (cis+trans)	ug/g	ND	0.050	5900580
Volatile Organics				
Acetone (2-Propanone)	ug/g	ND	0.50	5903746
Benzene	ug/g	ND	0.020	5903746
Bromodichloromethane	ug/g	ND	0.050	5903746
Bromoform	ug/g	ND	0.050	5903746
Bromomethane	ug/g	ND	0.050	5903746
Carbon Tetrachloride	ug/g	ND	0.050	5903746
Chlorobenzene	ug/g	ND	0.050	5903746
Chloroform	ug/g	ND	0.050	5903746
Dibromochloromethane	ug/g	ND	0.050	5903746
1,2-Dichlorobenzene	ug/g	ND	0.050	5903746
1,3-Dichlorobenzene	ug/g	ND	0.050	5903746
1,4-Dichlorobenzene	ug/g	ND	0.050	5903746
Dichlorodifluoromethane (FREON 12)	ug/g	ND	0.050	5903746
1,1-Dichloroethane	ug/g	ND	0.050	5903746
1,2-Dichloroethane	ug/g	ND	0.050	5903746
1,1-Dichloroethylene	ug/g	ND	0.050	5903746
cis-1,2-Dichloroethylene	ug/g	ND	0.050	5903746
trans-1,2-Dichloroethylene	ug/g	ND	0.050	5903746
1,2-Dichloropropane	ug/g	ND	0.050	5903746
cis-1,3-Dichloropropene	ug/g	ND	0.030	5903746
trans-1,3-Dichloropropene	ug/g	ND	0.040	5903746
Ethylbenzene	ug/g	ND	0.020	5903746
Ethylene Dibromide	ug/g	ND	0.050	5903746
Hexane	ug/g	ND	0.050	5903746
Methylene Chloride(Dichloromethane)	ug/g	ND	0.050	5903746
Methyl Ethyl Ketone (2-Butanone)	ug/g	ND	0.50	5903746
Methyl Isobutyl Ketone	ug/g	ND	0.50	5903746
Methyl t-butyl ether (MTBE)	ug/g	ND	0.050	5903746
Styrene	ug/g	ND	0.050	5903746
1,1,1,2-Tetrachloroethane	ug/g	ND	0.050	5903746

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B8Y1691
Report Date: 2019/01/03

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY - PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		IPL811		
Sampling Date		2018/12/19 13:00		
COC Number		667953-05-01		
	UNITS	**SS-11131634-121918-MP-004**	**RDL**	**QC Batch**
1,1,2,2-Tetrachloroethane	ug/g	ND	0.050	5903746
Tetrachloroethylene	ug/g	ND	0.050	5903746
Toluene	ug/g	ND	0.020	5903746
1,1,1-Trichloroethane	ug/g	ND	0.050	5903746
1,1,2-Trichloroethane	ug/g	ND	0.050	5903746
Trichloroethylene	ug/g	ND	0.050	5903746
Trichlorofluoromethane (FREON 11)	ug/g	ND	0.050	5903746
Vinyl Chloride	ug/g	ND	0.020	5903746
p+m-Xylene	ug/g	ND	0.020	5903746
o-Xylene	ug/g	ND	0.020	5903746
Total Xylenes	ug/g	ND	0.020	5903746
F1 (C6-C10)	ug/g	ND	10	5903746
F1 (C6-C10) - BTEX	ug/g	ND	10	5903746
Surrogate Recovery (%)				
4-Bromofluorobenzene	%	99		5903746
D10-o-Xylene	%	86		5903746
D4-1,2-Dichloroethane	%	107		5903746
D8-Toluene	%	114		5903746

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Sampler Initials: MP

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		IPL808	IPL809	IPL810	IPL811		
Sampling Date		2018/12/19 09:30	2018/12/19 11:00	2018/12/19 13:00	2018/12/19 13:00		
COC Number		667953-05-01	667953-05-01	667953-05-01	667953-05-01		
	UNITS	SS-11131634-121918-MP-001	SS-11131634-121918-MP-002	SS-11131634-121918-MP-003	SS-11131634-121918-MP-004	RDL	QC Batch
F2-F4 Hydrocarbons							
F2 (C10-C16 Hydrocarbons)	ug/g	ND	ND	20	ND	10	5907090
F3 (C16-C34 Hydrocarbons)	ug/g	ND	ND	84	190	50	5907090
F4 (C34-C50 Hydrocarbons)	ug/g	ND	ND	ND	72	50	5907090
Reached Baseline at C50	ug/g	Yes	Yes	Yes	Yes		5907090
Surrogate Recovery (%)							
o-Terphenyl	%	95	92	95	97		5907090

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Your P.O. #: 73514236
Sampler Initials: MP

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		IPL808	IPL809	IPL809	IPL810		
Sampling Date		2018/12/19 09:30	2018/12/19 11:00	2018/12/19 11:00	2018/12/19 13:00		
COC Number		667953-05-01	667953-05-01	667953-05-01	667953-05-01		
	UNITS	SS-11131634-121918-MP-001	SS-11131634-121918-MP-002	SS-11131634-121918-MP-002 Lab-Dup	SS-11131634-121918-MP-003	RDL	QC Batch
PCBs							
Aroclor 1242	ug/g	ND	ND	ND	ND	0.010	5911591
Aroclor 1248	ug/g	ND	ND	ND	ND	0.010	5911591
Aroclor 1254	ug/g	ND	ND	ND	ND	0.010	5911591
Aroclor 1260	ug/g	ND	ND	ND	ND	0.010	5911591
Total PCB	ug/g	ND	ND	ND	ND	0.010	5911591
Surrogate Recovery (%)							
Decachlorobiphenyl	%	127	122	125	91		5911591

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

Maxxam ID		IPL811		
Sampling Date		2018/12/19 13:00		
COC Number		667953-05-01		
	UNITS	SS-11131634-121918-MP-004	RDL	QC Batch
PCBs				
Aroclor 1242	ug/g	ND	0.010	5911591
Aroclor 1248	ug/g	ND	0.010	5911591
Aroclor 1254	ug/g	ND	0.010	5911591
Aroclor 1260	ug/g	ND	0.010	5911591
Total PCB	ug/g	ND	0.010	5911591
Surrogate Recovery (%)				
Decachlorobiphenyl	%	99		5911591

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B8Y1691
Report Date: 2019/01/03

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY - PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

TEST SUMMARY

Maxxam ID: IPL808
Sample ID: SS-11131634-121918-MP-001
Matrix: Soil

Collected: 2018/12/19
Shipped:
Received: 2018/12/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5899823	N/A	2019/01/02	Automated Statchk
Hot Water Extractable Boron	ICP	5904375	2018/12/24	2018/12/27	Jolly John
1,3-Dichloropropene Sum	CALC	5900183	N/A	2018/12/28	Automated Statchk
Free (WAD) Cyanide	TECH	5906295	2018/12/27	2018/12/28	Barbara Kalbasi Esfahani
Conductivity	AT	5907811	2018/12/31	2018/12/31	Kazzandra Adeva
Hexavalent Chromium in Soil by IC	IC/SPEC	5905340	2018/12/27	2018/12/28	Sally Norouz
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5907090	2018/12/28	2018/12/29	Zhiyue (Frank) Zhu
Strong Acid Leachable Metals by ICPMS	ICP/MS	5904312	2018/12/24	2018/12/28	Daniel Teclu
Moisture	BAL	5906483	N/A	2018/12/27	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5907087	2018/12/28	2018/12/29	Mitesh Raj
Polychlorinated Biphenyl in Soil	GC/ECD	5911591	2019/01/02	2019/01/02	Sarah Huang
pH CaCl2 EXTRACT	AT	5906425	2018/12/28	2018/12/28	Surinder Rai
Sodium Adsorption Ratio (SAR)	CALC/MET	5899546	N/A	2019/01/02	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5903746	N/A	2018/12/27	Yang (Philip) Yu

Maxxam ID: IPL809
Sample ID: SS-11131634-121918-MP-002
Matrix: Soil

Collected: 2018/12/19
Shipped:
Received: 2018/12/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5899823	N/A	2019/01/02	Automated Statchk
Hot Water Extractable Boron	ICP	5904375	2018/12/24	2018/12/27	Jolly John
1,3-Dichloropropene Sum	CALC	5900183	N/A	2018/12/28	Automated Statchk
Free (WAD) Cyanide	TECH	5906295	2018/12/27	2018/12/28	Barbara Kalbasi Esfahani
Conductivity	AT	5907811	2018/12/31	2018/12/31	Kazzandra Adeva
Hexavalent Chromium in Soil by IC	IC/SPEC	5905340	2018/12/27	2018/12/28	Sally Norouz
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5907090	2018/12/28	2018/12/29	Zhiyue (Frank) Zhu
Strong Acid Leachable Metals by ICPMS	ICP/MS	5904312	2018/12/24	2018/12/28	Daniel Teclu
Moisture	BAL	5906666	N/A	2018/12/27	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5907087	2018/12/28	2018/12/29	Mitesh Raj
Polychlorinated Biphenyl in Soil	GC/ECD	5911591	2019/01/02	2019/01/02	Sarah Huang
pH CaCl2 EXTRACT	AT	5906425	2018/12/28	2018/12/28	Surinder Rai
Sodium Adsorption Ratio (SAR)	CALC/MET	5899546	N/A	2019/01/02	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5903746	N/A	2018/12/27	Yang (Philip) Yu

Maxxam ID: IPL809 Dup
Sample ID: SS-11131634-121918-MP-002
Matrix: Soil

Collected: 2018/12/19
Shipped:
Received: 2018/12/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Polychlorinated Biphenyl in Soil	GC/ECD	5911591	2019/01/02	2019/01/02	Sarah Huang

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Maxxam Job #: B8Y1691
Report Date: 2019/01/03

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY - PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

TEST SUMMARY

Maxxam ID: IPL810
Sample ID: SS-11131634-121918-MP-003
Matrix: Soil

Collected: 2018/12/19
Shipped:
Received: 2018/12/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5899823	N/A	2019/01/02	Automated Statchk
Hot Water Extractable Boron	ICP	5904375	2018/12/24	2018/12/27	Jolly John
1,3-Dichloropropene Sum	CALC	5900183	N/A	2018/12/28	Automated Statchk
Free (WAD) Cyanide	TECH	5907856	2018/12/28	2018/12/30	Barbara Kalbasi Esfahani
Conductivity	AT	5907811	2018/12/31	2018/12/31	Kazzandra Adeva
Hexavalent Chromium in Soil by IC	IC/SPEC	5906975	2018/12/28	2018/12/28	Sally Norouz
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5907090	2018/12/28	2018/12/29	Zhiyue (Frank) Zhu
Strong Acid Leachable Metals by ICPMS	ICP/MS	5904312	2018/12/24	2018/12/28	Daniel Teclu
Moisture	BAL	5906372	N/A	2018/12/28	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5907087	2018/12/28	2018/12/29	Mitesh Raj
Polychlorinated Biphenyl in Soil	GC/ECD	5911591	2019/01/02	2019/01/02	Sarah Huang
pH CaCl2 EXTRACT	AT	5906406	2018/12/28	2018/12/28	Surinder Rai
Sodium Adsorption Ratio (SAR)	CALC/MET	5899546	N/A	2019/01/02	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5903746	N/A	2018/12/27	Yang (Philip) Yu

Maxxam ID: IPL811
Sample ID: SS-11131634-121918-MP-004
Matrix: Soil

Collected: 2018/12/19
Shipped:
Received: 2018/12/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5899823	N/A	2019/01/02	Automated Statchk
Hot Water Extractable Boron	ICP	5904375	2018/12/24	2018/12/27	Jolly John
1,3-Dichloropropene Sum	CALC	5900580	N/A	2018/12/28	Automated Statchk
Free (WAD) Cyanide	TECH	5907856	2018/12/28	2018/12/30	Barbara Kalbasi Esfahani
Conductivity	AT	5907811	2018/12/31	2018/12/31	Kazzandra Adeva
Hexavalent Chromium in Soil by IC	IC/SPEC	5906975	2018/12/28	2018/12/28	Sally Norouz
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5907090	2018/12/28	2018/12/29	Zhiyue (Frank) Zhu
Strong Acid Leachable Metals by ICPMS	ICP/MS	5904312	2018/12/24	2018/12/28	Daniel Teclu
Moisture	BAL	5906372	N/A	2018/12/27	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5907087	2018/12/28	2018/12/29	Mitesh Raj
Polychlorinated Biphenyl in Soil	GC/ECD	5911591	2019/01/02	2019/01/02	Sarah Huang
pH CaCl2 EXTRACT	AT	5906406	2018/12/28	2018/12/28	Surinder Rai
Sodium Adsorption Ratio (SAR)	CALC/MET	5900582	N/A	2019/01/02	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5903746	N/A	2018/12/27	Yang (Philip) Yu

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Site Location: UNION PROPERTY - PORT DALHOUSIE
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Sampler Initials: MP

GENERAL COMMENTS

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

Package 1	2.0°C

Samples analyzed for PCBs as per client request.

Sample IPL809 [SS-11131634-121918-MP-002] : SAR Analysis: Sodium was not detected. To report SAR the sodium detection limit was used in the calculation. This value represents a maximum ratio.

Sample IPL810 [SS-11131634-121918-MP-003] : SAR Analysis: Sodium was not detected. To report SAR the sodium detection limit was used in the calculation. This value represents a maximum ratio.

Sample IPL811 [SS-11131634-121918-MP-004] : PAH analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Maxxam Job #: B8Y1691
Report Date: 2019/01/03

QUALITY ASSURANCE REPORT

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY - PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5903746	4-Bromofluorobenzene	2018/12/27	86	60 - 140	101	60 - 140	98	%		
5903746	D10-o-Xylene	2018/12/27	89	60 - 130	85	60 - 130	90	%		
5903746	D4-1,2-Dichloroethane	2018/12/27	95	60 - 140	103	60 - 140	98	%		
5903746	D8-Toluene	2018/12/27	87	60 - 140	102	60 - 140	101	%		
5907087	D10-Anthracene	2018/12/28	89	50 - 130	97	50 - 130	92	%		
5907087	D14-Terphenyl (FS)	2018/12/28	88	50 - 130	89	50 - 130	84	%		
5907087	D8-Acenaphthylene	2018/12/28	92	50 - 130	100	50 - 130	96	%		
5907090	o-Terphenyl	2018/12/29	105	60 - 130	101	60 - 130	103	%		
5911591	Decachlorobiphenyl	2019/01/02	118 (3)	60 - 130	124	60 - 130	122	%		
5903746	1,1,1,2-Tetrachloroethane	2018/12/27	94	60 - 140	103	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	1,1,1-Trichloroethane	2018/12/27	93	60 - 140	96	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	1,1,2,2-Tetrachloroethane	2018/12/27	77	60 - 140	108	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	1,1,2-Trichloroethane	2018/12/27	100	60 - 140	102	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	1,1-Dichloroethane	2018/12/27	92	60 - 140	98	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	1,1-Dichloroethylene	2018/12/27	124	60 - 140	94	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	1,2-Dichlorobenzene	2018/12/27	93	60 - 140	101	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	1,2-Dichloroethane	2018/12/27	89	60 - 140	102	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	1,2-Dichloropropane	2018/12/27	106	60 - 140	101	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	1,3-Dichlorobenzene	2018/12/27	95	60 - 140	99	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	1,4-Dichlorobenzene	2018/12/27	94	60 - 140	102	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	Acetone (2-Propanone)	2018/12/27	110	60 - 140	101	60 - 140	ND, RDL=0.50	ug/g	NC (1)	50
5903746	Benzene	2018/12/27	90	60 - 140	96	60 - 130	ND, RDL=0.020	ug/g	NC (1)	50
5903746	Bromodichloromethane	2018/12/27	91	60 - 140	100	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	Bromoform	2018/12/27	77	60 - 140	110	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	Bromomethane	2018/12/27	95	60 - 140	98	60 - 140	ND, RDL=0.050	ug/g	NC (1)	50
5903746	Carbon Tetrachloride	2018/12/27	95	60 - 140	97	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	Chlorobenzene	2018/12/27	92	60 - 140	100	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	Chloroform	2018/12/27	92	60 - 140	99	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	cis-1,2-Dichloroethylene	2018/12/27	93	60 - 140	100	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	cis-1,3-Dichloropropene	2018/12/27	89	60 - 140	96	60 - 130	ND, RDL=0.030	ug/g	NC (1)	50
5903746	Dibromochloromethane	2018/12/27	94	60 - 140	106	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5903746	Dichlorodifluoromethane (FREON 12)	2018/12/27	91	60 - 140	92	60 - 140	ND, RDL=0.050	ug/g	NC (1)	50
5903746	Ethylbenzene	2018/12/27	94	60 - 140	95	60 - 130	ND, RDL=0.020	ug/g	NC (1)	50
5903746	Ethylene Dibromide	2018/12/27	95	60 - 140	108	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	F1 (C6-C10) - BTEX	2018/12/27					ND, RDL=10	ug/g	NC (1)	30
5903746	F1 (C6-C10)	2018/12/27	100	60 - 140	98	80 - 120	ND, RDL=10	ug/g	NC (1)	30
5903746	Hexane	2018/12/27	91	60 - 140	91	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	Methyl Ethyl Ketone (2-Butanone)	2018/12/27	86	60 - 140	112	60 - 140	ND, RDL=0.50	ug/g	NC (1)	50
5903746	Methyl Isobutyl Ketone	2018/12/27	88	60 - 140	111	60 - 130	ND, RDL=0.50	ug/g	NC (1)	50
5903746	Methyl t-butyl ether (MTBE)	2018/12/27	105	60 - 140	98	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	Methylene Chloride(Dichloromethane)	2018/12/27	114	60 - 140	102	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	o-Xylene	2018/12/27	89	60 - 140	95	60 - 130	ND, RDL=0.020	ug/g	NC (1)	50
5903746	p+m-Xylene	2018/12/27	89	60 - 140	92	60 - 130	ND, RDL=0.020	ug/g	NC (1)	50
5903746	Styrene	2018/12/27	86	60 - 140	97	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	Tetrachloroethylene	2018/12/27	99	60 - 140	100	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	Toluene	2018/12/27	73	60 - 140	91	60 - 130	ND, RDL=0.020	ug/g	NC (1)	50
5903746	Total Xylenes	2018/12/27					ND, RDL=0.020	ug/g	NC (1)	50
5903746	trans-1,2-Dichloroethylene	2018/12/27	108	60 - 140	99	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	trans-1,3-Dichloropropene	2018/12/27	80	60 - 140	101	60 - 130	ND, RDL=0.040	ug/g	NC (1)	50
5903746	Trichloroethylene	2018/12/27	96	60 - 140	99	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	Trichlorofluoromethane (FREON 11)	2018/12/27	98	60 - 140	99	60 - 130	ND, RDL=0.050	ug/g	NC (1)	50
5903746	Vinyl Chloride	2018/12/27	92	60 - 140	95	60 - 130	ND, RDL=0.020	ug/g	NC (1)	50
5904312	Acid Extractable Antimony (Sb)	2018/12/28	98	75 - 125	101	80 - 120	ND, RDL=0.20	ug/g		
5904312	Acid Extractable Arsenic (As)	2018/12/28	104	75 - 125	101	80 - 120	ND, RDL=1.0	ug/g		
5904312	Acid Extractable Barium (Ba)	2018/12/28	NC	75 - 125	96	80 - 120	ND, RDL=0.50	ug/g		
5904312	Acid Extractable Beryllium (Be)	2018/12/28	103	75 - 125	100	80 - 120	ND, RDL=0.20	ug/g		
5904312	Acid Extractable Boron (B)	2018/12/28	100	75 - 125	98	80 - 120	ND, RDL=5.0	ug/g		
5904312	Acid Extractable Cadmium (Cd)	2018/12/28	102	75 - 125	97	80 - 120	ND, RDL=0.10	ug/g		
5904312	Acid Extractable Chromium (Cr)	2018/12/28	107	75 - 125	98	80 - 120	ND, RDL=1.0	ug/g		
5904312	Acid Extractable Cobalt (Co)	2018/12/28	101	75 - 125	100	80 - 120	ND, RDL=0.10	ug/g		
5904312	Acid Extractable Copper (Cu)	2018/12/28	97	75 - 125	97	80 - 120	ND, RDL=0.50	ug/g		
5904312	Acid Extractable Lead (Pb)	2018/12/28	NC	75 - 125	102	80 - 120	ND, RDL=1.0	ug/g	1.1 (1)	30

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5904312	Acid Extractable Mercury (Hg)	2018/12/28	100	75 - 125	93	80 - 120	ND, RDL=0.050	ug/g		
5904312	Acid Extractable Molybdenum (Mo)	2018/12/28	101	75 - 125	100	80 - 120	ND, RDL=0.50	ug/g		
5904312	Acid Extractable Nickel (Ni)	2018/12/28	107	75 - 125	100	80 - 120	ND, RDL=0.50	ug/g		
5904312	Acid Extractable Selenium (Se)	2018/12/28	102	75 - 125	98	80 - 120	ND, RDL=0.50	ug/g		
5904312	Acid Extractable Silver (Ag)	2018/12/28	104	75 - 125	101	80 - 120	ND, RDL=0.20	ug/g		
5904312	Acid Extractable Thallium (Tl)	2018/12/28	106	75 - 125	102	80 - 120	ND, RDL=0.050	ug/g		
5904312	Acid Extractable Uranium (U)	2018/12/28	104	75 - 125	99	80 - 120	ND, RDL=0.050	ug/g		
5904312	Acid Extractable Vanadium (V)	2018/12/28	109	75 - 125	100	80 - 120	ND, RDL=5.0	ug/g		
5904312	Acid Extractable Zinc (Zn)	2018/12/28	NC	75 - 125	90	80 - 120	ND, RDL=5.0	ug/g		
5904375	Hot Water Ext. Boron (B)	2018/12/27	101	75 - 125	98	75 - 125	ND, RDL=0.050	ug/g	0.88 (1)	40
5905340	Chromium (VI)	2018/12/28	58 (2)	70 - 130	90	80 - 120	ND, RDL=0.2	ug/g	NC (1)	35
5906295	WAD Cyanide (Free)	2018/12/28	94	75 - 125	97	80 - 120	ND, RDL=0.01	ug/g	NC (1)	35
5906372	Moisture	2018/12/27							6.9 (1)	20
5906406	Available (CaCl2) pH	2018/12/28			100	97 - 103			0.11 (1)	N/A
5906425	Available (CaCl2) pH	2018/12/28			100	97 - 103			0.50 (1)	N/A
5906483	Moisture	2018/12/27							3.4 (1)	20
5906666	Moisture	2018/12/27							3.5 (1)	20
5906975	Chromium (VI)	2018/12/28	62 (2)	70 - 130	92	80 - 120	ND, RDL=0.2	ug/g	NC (1)	35
5907087	1-Methylnaphthalene	2018/12/28	97	50 - 130	102	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	2-Methylnaphthalene	2018/12/28	88	50 - 130	92	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Acenaphthene	2018/12/28	88	50 - 130	93	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Acenaphthylene	2018/12/28	92	50 - 130	92	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Anthracene	2018/12/28	88	50 - 130	92	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Benzo(a)anthracene	2018/12/28	103	50 - 130	112	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Benzo(a)pyrene	2018/12/28	91	50 - 130	95	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Benzo(b/j)fluoranthene	2018/12/28	89	50 - 130	100	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Benzo(g,h,i)perylene	2018/12/28	75	50 - 130	79	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Benzo(k)fluoranthene	2018/12/28	85	50 - 130	90	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Chrysene	2018/12/28	93	50 - 130	98	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Dibenz(a,h)anthracene	2018/12/28	79	50 - 130	85	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Fluoranthene	2018/12/28	99	50 - 130	98	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40

Maxxam Job #: B8Y1691
Report Date: 2019/01/03

QUALITY ASSURANCE REPORT(CONT'D)

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY - PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5907087	Fluorene	2018/12/28	89	50 - 130	97	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Indeno(1,2,3-cd)pyrene	2018/12/28	81	50 - 130	87	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Naphthalene	2018/12/28	77	50 - 130	82	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Phenanthrene	2018/12/28	89	50 - 130	94	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907087	Pyrene	2018/12/28	98	50 - 130	95	50 - 130	ND, RDL=0.0050	ug/g	NC (1)	40
5907090	F2 (C10-C16 Hydrocarbons)	2018/12/30	105	50 - 130	105	80 - 120	ND, RDL=10	ug/g	NC (1)	30
5907090	F3 (C16-C34 Hydrocarbons)	2018/12/30	103	50 - 130	103	80 - 120	ND, RDL=50	ug/g	NC (1)	30
5907090	F4 (C34-C50 Hydrocarbons)	2018/12/30	102	50 - 130	100	80 - 120	ND, RDL=50	ug/g	NC (1)	30
5907811	Conductivity	2018/12/31			104	90 - 110	ND, RDL=0.002	mS/cm	2.0 (1)	10
5907856	WAD Cyanide (Free)	2018/12/30	91	75 - 125	97	80 - 120	ND, RDL=0.01	ug/g	NC (1)	35
5911591	Aroclor 1242	2019/01/02					ND, RDL=0.010	ug/g	NC (4)	50
5911591	Aroclor 1248	2019/01/02					ND, RDL=0.010	ug/g	NC (4)	50
5911591	Aroclor 1254	2019/01/02					ND, RDL=0.010	ug/g	NC (4)	50
5911591	Aroclor 1260	2019/01/02	129 (3)	30 - 130	130	30 - 130	ND, RDL=0.010	ug/g	NC (4)	50
5911591	Total PCB	2019/01/02	129 (3)	30 - 130	130	30 - 130	ND, RDL=0.010	ug/g	NC (4)	50

N/A = Not Applicable

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

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

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

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

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

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

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

(1) Duplicate Parent ID

(2) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The sample was reanalyzed with the same results.

(3) Matrix Spike Parent ID [IPL809-03]

(4) Duplicate Parent ID [IPL809-03]

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Maxxam Job #: B8Y1691
Report Date: 2019/01/03

GHD Limited
Client Project #: 11131634
Site Location: UNION PROPERTY - PORT DALHOUSIE
Your P.O. #: 73514236
Sampler Initials: MP

VALIDATION SIGNATURE PAGE

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



Ewa Pranjic, M.Sc., C.Chem, 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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CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#3000 GHD Limited	Company Name:	SAME AS INVOICE	Quotation #:	B80174	Maxxam Job #:	Bottle Order #:
Attention:	Jennifer Balkwill	Attention:		P.O. #:	~~7351186NA~~ 73514236		667953
Address:	455 Phillip St Waterloo ON N2L 3X2	Address:		Project:	~~[illegible]~~ 11131634	COC #:	Project Manager:
Tel:	(519) 884-7780 Ext: 3599 Fax: (519) 725-1394	Tel:	Fax:	Project Name:	Union Property - Port Dalhousie	C#667953-05-01	Tanya Fidlin
Email:	Jennifer.Balkwill@ghd.com, NationalEDDsupport@max	Email:		Site #:			
				Sampled By:	M. Pley		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine	☐ CCME ☐ Sanitary Sewer Bylaw	
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ Reg 558 ☐ Storm Sewer Bylaw	
☐ Table 3 ☐ Agri/Other ☐ For RSC	☐ MISA Municipality ____	
☐ Table ___	☐ PWQO	
	☒ Other ____	

Include Criteria on Certificate of Analysis (Y/N)? ____

Turnaround Time (TAT) Required:

Please provide advance notice for rush projects

Regular (Standard) TAT: X
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ____ Time Required: ____ ☐
Rush Confirmation Number: ____ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O Reg 153 VOCs by HS & F1-F4	O Reg 153 VOCs by HS	O Reg 153 Metals & Inorganics Pkg	PAH	PHC	O Reg 558 TCLP Volatile Organics HS	TCLP PAH Compounds by GC/MS (SIM)	O Reg 558 TCLP PCBs	O Reg 558 TCLP Metals	Ignitability	# of Bottles	Comments
1	SS-11131634-121918-MP-001		12/19/18	9:30	SOIL		X	X	X	X							5	
2	SS-11131634-121918-MP-002		↓	11:00	SOIL		X	X	X	X							5	
3	SS-11131634-121918-MP-003			13:00	SOIL		X	X	X	X							4	
4	SS-11131634-121918-MP-004		↓	13:00	SOIL		X	X	X	X							4	
5					SOIL													
6					SOIL													
7					SOIL													
8					SOIL													
9					SOIL													
10					SOIL													

20-Dec-18 16:48
Tanya Fidlin
B8Y1691
ECN ENV-1216

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Tyler Mulhall - Tyler Mulhall	18/12/20	12:30	~~[illegible]~~ [illegible]	2018/12/20	16:48	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	2 2 2	Present		
		Intact	✓	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxa Yellow: Client

87939

Maxxam Analytics International Corporation o/a Maxxam Analytics

GHD Limited (Waterloo)
ATTN: JENNIFER BALKWILL
455 PHILLIP STREET
WATERLOO ON N2L 3X2

Date Received: 08-MAR-19
Report Date: 14-MAR-19 13:57 (MT)
Version: FINAL

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L2242183

Project P.O. #: 73514923
Job Reference: 11189766
C of C Numbers:
Legal Site Desc: St.Catherines 16 Lock St

Rick Hawthorne
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2242183-1 GW-11189766-030719-TM-002 Sampled By: TM/MP on 07-MAR-19 @ 10:40 Matrix: WATER							
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD			No Unit	12-MAR-19		
Dissolved Metals Filtration Location	FIELD			No Unit	12-MAR-19		
Antimony (Sb)-Dissolved	0.15		0.10	ug/L	12-MAR-19	20000	20000
Arsenic (As)-Dissolved	0.76		0.10	ug/L	12-MAR-19	1900	1900
Barium (Ba)-Dissolved	69.4		0.10	ug/L	12-MAR-19	29000	29000
Beryllium (Be)-Dissolved	<0.10		0.10	ug/L	12-MAR-19	67	67
Boron (B)-Dissolved	164		10	ug/L	12-MAR-19	45000	45000
Cadmium (Cd)-Dissolved	0.012		0.010	ug/L	12-MAR-19	2.7	2.7
Chromium (Cr)-Dissolved	<0.50		0.50	ug/L	12-MAR-19	810	810
Cobalt (Co)-Dissolved	1.56		0.10	ug/L	12-MAR-19	66	66
Copper (Cu)-Dissolved	1.41		0.20	ug/L	12-MAR-19	87	87
Lead (Pb)-Dissolved	<0.050		0.050	ug/L	12-MAR-19	25	25
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	12-MAR-19	0.29	2.8
Molybdenum (Mo)-Dissolved	4.80		0.050	ug/L	12-MAR-19	9200	9200
Nickel (Ni)-Dissolved	4.56		0.50	ug/L	12-MAR-19	490	490
Selenium (Se)-Dissolved	0.865		0.050	ug/L	12-MAR-19	63	63
Silver (Ag)-Dissolved	<0.050		0.050	ug/L	12-MAR-19	1.5	1.5
Sodium (Na)-Dissolved	101000	DLHC	500	ug/L	12-MAR-19	2300000	2300000
Thallium (Tl)-Dissolved	0.043		0.010	ug/L	12-MAR-19	510	510
Uranium (U)-Dissolved	4.76		0.010	ug/L	12-MAR-19	420	420
Vanadium (V)-Dissolved	<0.50		0.50	ug/L	12-MAR-19	250	250
Zinc (Zn)-Dissolved	1.1		1.0	ug/L	12-MAR-19	1100	1100
Speciated Metals							
Chromium, Hexavalent	<0.50		0.50	ug/L	11-MAR-19	140	140
Volatile Organic Compounds							
Acetone	<30	OWP	30	ug/L	13-MAR-19	130000	130000
Benzene	<0.50	OWP	0.50	ug/L	13-MAR-19	44	430
Bromodichloromethane	<2.0	OWP	2.0	ug/L	13-MAR-19	85000	85000
Bromoform	<5.0	OWP	5.0	ug/L	13-MAR-19	380	770
Bromomethane	<0.50	OWP	0.50	ug/L	13-MAR-19	5.6	56
Carbon tetrachloride	<0.20	OWP	0.20	ug/L	13-MAR-19	0.79	8.4
Chlorobenzene	<0.50	OWP	0.50	ug/L	13-MAR-19	630	630
Dibromochloromethane	<2.0	OWP	2.0	ug/L	13-MAR-19	82000	82000
Chloroform	<1.0	OWP	1.0	ug/L	13-MAR-19	2.4	22
1,2-Dibromoethane	<0.20	OWP	0.20	ug/L	13-MAR-19	0.25	0.83
1,2-Dichlorobenzene	<0.50	OWP	0.50	ug/L	13-MAR-19	4600	9600
1,3-Dichlorobenzene	<0.50	OWP	0.50	ug/L	13-MAR-19	9600	9600
1,4-Dichlorobenzene	<0.50	OWP	0.50	ug/L	13-MAR-19	8	67
Dichlorodifluoromethane	<2.0	OWP	2.0	ug/L	13-MAR-19	4400	4400
1,1-Dichloroethane	<0.50	OWP	0.50	ug/L	13-MAR-19	320	3100
1,2-Dichloroethane	<0.50	OWP	0.50	ug/L	13-MAR-19	1.6	12
1,1-Dichloroethylene	<0.50	OWP	0.50	ug/L	13-MAR-19	1.6	17
cis-1,2-Dichloroethylene	<0.50	OWP	0.50	ug/L	13-MAR-19	1.6	17
trans-1,2-Dichloroethylene	<0.50	OWP	0.50	ug/L	13-MAR-19	1.6	17
Methylene Chloride	<5.0	OWP	5.0	ug/L	13-MAR-19	610	5500

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T3 Non-Potable Ground Water (Coarse and Fine)

#1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse) **#2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)**

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2242183-1 GW-11189766-030719-TM-002							
Sampled By: TM/MP on 07-MAR-19 @ 10:40							
Matrix: WATER							
Volatile Organic Compounds							
1,2-Dichloropropane	<0.50	OWP	0.50	ug/L	13-MAR-19	16	140
cis-1,3-Dichloropropene	<0.30	OWP	0.30	ug/L	13-MAR-19		
trans-1,3-Dichloropropene	<0.30	OWP	0.30	ug/L	13-MAR-19		
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L	14-MAR-19	5.2	45
Ethylbenzene	<0.50	OWP	0.50	ug/L	13-MAR-19	2300	2300
n-Hexane	<0.50	OWP	0.50	ug/L	13-MAR-19	51	520
Methyl Ethyl Ketone	<20	OWP	20	ug/L	13-MAR-19	470000	1500000
Methyl Isobutyl Ketone	<20	OWP	20	ug/L	13-MAR-19	140000	580000
MTBE	<2.0	OWP	2.0	ug/L	13-MAR-19	190	1400
Styrene	<0.50	OWP	0.50	ug/L	14-MAR-19	1300	9100
1,1,1,2-Tetrachloroethane	<0.50	OWP	0.50	ug/L	13-MAR-19	3.3	28
1,1,2,2-Tetrachloroethane	<0.50	OWP	0.50	ug/L	13-MAR-19	3.2	15
Tetrachloroethylene	<0.50	OWP	0.50	ug/L	13-MAR-19	1.6	17
Toluene	<0.50	OWP	0.50	ug/L	13-MAR-19	18000	18000
1,1,1-Trichloroethane	<0.50	OWP	0.50	ug/L	13-MAR-19	640	6700
1,1,2-Trichloroethane	<0.50	OWP	0.50	ug/L	13-MAR-19	4.7	30
Trichloroethylene	<0.50	OWP	0.50	ug/L	13-MAR-19	1.6	17
Trichlorofluoromethane	<5.0	OWP	5.0	ug/L	13-MAR-19	2500	2500
Vinyl chloride	<0.50	OWP	0.50	ug/L	13-MAR-19	0.5	1.7
o-Xylene	<0.30	OWP	0.30	ug/L	13-MAR-19		
m+p-Xylenes	<0.40	OWP	0.40	ug/L	13-MAR-19		
Xylenes (Total)	<0.50		0.50	ug/L	14-MAR-19	4200	4200
Surrogate: 4-Bromofluorobenzene	96.9		70-130	%	13-MAR-19		
Surrogate: 1,4-Difluorobenzene	99.9		70-130	%	13-MAR-19		
Hydrocarbons							
F1 (C6-C10)	<25	OWP	25	ug/L	13-MAR-19	750	750
F1-BTEX	<25		25	ug/L	14-MAR-19	750	750
F2 (C10-C16)	<100	OWP	100	ug/L	12-MAR-19	150	150
F2-Naphth	<100		100	ug/L	14-MAR-19		
F3 (C16-C34)	<250	OWP	250	ug/L	12-MAR-19	500	500
F3-PAH	<250		250	ug/L	14-MAR-19		
F4 (C34-C50)	<250	OWP	250	ug/L	12-MAR-19	500	500
Total Hydrocarbons (C6-C50)	<370		370	ug/L	14-MAR-19		
Chrom. to baseline at nC50	YES			No Unit	12-MAR-19		
Surrogate: 2-Bromobenzotrifluoride	102.0		60-140	%	12-MAR-19		
Surrogate: 3,4-Dichlorotoluene	89.5		60-140	%	13-MAR-19		
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	<0.020		0.020	ug/L	12-MAR-19	600	1700
Acenaphthylene	<0.020		0.020	ug/L	12-MAR-19	1.8	1.8
Anthracene	<0.020		0.020	ug/L	12-MAR-19	2.4	2.4
Benzo(a)anthracene	<0.020		0.020	ug/L	12-MAR-19	4.7	4.7
Benzo(a)pyrene	<0.010		0.010	ug/L	12-MAR-19	0.81	0.81
Benzo(b)fluoranthene	<0.020		0.020	ug/L	12-MAR-19	0.75	0.75
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	12-MAR-19	0.2	0.2
Benzo(k)fluoranthene	<0.020		0.020	ug/L	12-MAR-19	0.4	0.4
Chrysene	<0.020		0.020	ug/L	12-MAR-19	1	1

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T3 Non-Potable Ground Water (Coarse and Fine)

#1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse) **#2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)**

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2		
L2242183-1 GW-11189766-030719-TM-002 Sampled By: TM/MP on 07-MAR-19 @ 10:40 Matrix: WATER									
Polycyclic Aromatic Hydrocarbons									
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	12-MAR-19	0.52	0.52		
Fluoranthene	0.031		0.020	ug/L	12-MAR-19	130	130		
Fluorene	0.032		0.020	ug/L	12-MAR-19	400	400		
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	12-MAR-19	0.2	0.2		
1+2-Methylnaphthalenes	0.494		0.028	ug/L	12-MAR-19	1800	1800		
1-Methylnaphthalene	0.174		0.020	ug/L	12-MAR-19	1800	1800		
2-Methylnaphthalene	0.320		0.020	ug/L	12-MAR-19	1800	1800		
Naphthalene	0.077		0.050	ug/L	12-MAR-19	1400	6400		
Phenanthrene	0.061		0.020	ug/L	12-MAR-19	580	580		
Pyrene	0.031		0.020	ug/L	12-MAR-19	68	68		
Surrogate: d10-Acenaphthene	103.8		60-140	%	12-MAR-19				
Surrogate: d12-Chrysene	104.4		60-140	%	12-MAR-19				
Surrogate: d8-Naphthalene	108.0		60-140	%	12-MAR-19				
Surrogate: d10-Phenanthrene	108.2		60-140	%	12-MAR-19				
L2242183-2 GW-11189766-030719-TM-003 Sampled By: TM/MP on 07-MAR-19 @ 10:40 Matrix: WATER						#1	#2		
Dissolved Metals									
Dissolved Mercury Filtration Location	FIELD			No Unit	12-MAR-19				
Dissolved Metals Filtration Location	FIELD			No Unit	12-MAR-19				
Antimony (Sb)-Dissolved	0.15		0.10	ug/L	12-MAR-19	20000	20000		
Arsenic (As)-Dissolved	0.80		0.10	ug/L	12-MAR-19	1900	1900		
Barium (Ba)-Dissolved	69.3		0.10	ug/L	12-MAR-19	29000	29000		
Beryllium (Be)-Dissolved	<0.10		0.10	ug/L	12-MAR-19	67	67		
Boron (B)-Dissolved	158		10	ug/L	12-MAR-19	45000	45000		
Cadmium (Cd)-Dissolved	0.011		0.010	ug/L	12-MAR-19	2.7	2.7		
Chromium (Cr)-Dissolved	<0.50		0.50	ug/L	12-MAR-19	810	810		
Cobalt (Co)-Dissolved	1.58		0.10	ug/L	12-MAR-19	66	66		
Copper (Cu)-Dissolved	1.38		0.20	ug/L	12-MAR-19	87	87		
Lead (Pb)-Dissolved	<0.050		0.050	ug/L	12-MAR-19	25	25		
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	12-MAR-19	0.29	2.8		
Molybdenum (Mo)-Dissolved	4.70		0.050	ug/L	12-MAR-19	9200	9200		
Nickel (Ni)-Dissolved	4.57		0.50	ug/L	12-MAR-19	490	490		
Selenium (Se)-Dissolved	0.916		0.050	ug/L	12-MAR-19	63	63		
Silver (Ag)-Dissolved	<0.050		0.050	ug/L	12-MAR-19	1.5	1.5		
Sodium (Na)-Dissolved	103000	DLHC	500	ug/L	12-MAR-19	2300000	2300000		
Thallium (Tl)-Dissolved	0.041		0.010	ug/L	12-MAR-19	510	510		
Uranium (U)-Dissolved	4.75		0.010	ug/L	12-MAR-19	420	420		
Vanadium (V)-Dissolved	<0.50		0.50	ug/L	12-MAR-19	250	250		
Zinc (Zn)-Dissolved	<1.0		1.0	ug/L	12-MAR-19	1100	1100		
Speciated Metals									
Chromium, Hexavalent	<0.50		0.50	ug/L	11-MAR-19	140	140		
Volatile Organic Compounds									
Acetone	<30	OWP	30	ug/L	13-MAR-19	130000	130000		
Benzene	<0.50	OWP	0.50	ug/L	13-MAR-19				

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T3 Non-Potable Ground Water (Coarse and Fine)

#1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse) **#2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)**

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2242183-2 GW-11189766-030719-TM-003							
Sampled By: TM/MP on 07-MAR-19 @ 10:40							
Matrix: WATER							
Volatile Organic Compounds							
						44	430
Bromodichloromethane	<2.0	OWP	2.0	ug/L	13-MAR-19	85000	85000
Bromoform	<5.0	OWP	5.0	ug/L	13-MAR-19	380	770
Bromomethane	<0.50	OWP	0.50	ug/L	13-MAR-19	5.6	56
Carbon tetrachloride	<0.20	OWP	0.20	ug/L	13-MAR-19	0.79	8.4
Chlorobenzene	<0.50	OWP	0.50	ug/L	13-MAR-19	630	630
Dibromochloromethane	<2.0	OWP	2.0	ug/L	13-MAR-19	82000	82000
Chloroform	<1.0	OWP	1.0	ug/L	13-MAR-19	2.4	22
1,2-Dibromoethane	<0.20	OWP	0.20	ug/L	13-MAR-19	0.25	0.83
1,2-Dichlorobenzene	<0.50	OWP	0.50	ug/L	13-MAR-19	4600	9600
1,3-Dichlorobenzene	<0.50	OWP	0.50	ug/L	13-MAR-19	9600	9600
1,4-Dichlorobenzene	<0.50	OWP	0.50	ug/L	13-MAR-19	8	67
Dichlorodifluoromethane	<2.0	OWP	2.0	ug/L	13-MAR-19	4400	4400
1,1-Dichloroethane	<0.50	OWP	0.50	ug/L	13-MAR-19	320	3100
1,2-Dichloroethane	<0.50	OWP	0.50	ug/L	13-MAR-19	1.6	12
1,1-Dichloroethylene	<0.50	OWP	0.50	ug/L	13-MAR-19	1.6	17
cis-1,2-Dichloroethylene	<0.50	OWP	0.50	ug/L	13-MAR-19	1.6	17
trans-1,2-Dichloroethylene	<0.50	OWP	0.50	ug/L	13-MAR-19	1.6	17
Methylene Chloride	<5.0	OWP	5.0	ug/L	13-MAR-19	610	5500
1,2-Dichloropropane	<0.50	OWP	0.50	ug/L	13-MAR-19	16	140
cis-1,3-Dichloropropene	<0.30	OWP	0.30	ug/L	13-MAR-19		
trans-1,3-Dichloropropene	<0.30	OWP	0.30	ug/L	13-MAR-19		
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L	14-MAR-19	5.2	45
Ethylbenzene	<0.50	OWP	0.50	ug/L	13-MAR-19	2300	2300
n-Hexane	<0.50	OWP	0.50	ug/L	13-MAR-19	51	520
Methyl Ethyl Ketone	<20	OWP	20	ug/L	13-MAR-19	470000	1500000
Methyl Isobutyl Ketone	<20	OWP	20	ug/L	13-MAR-19	140000	580000
MTBE	<2.0	OWP	2.0	ug/L	13-MAR-19	190	1400
Styrene	<0.50	OWP	0.50	ug/L	14-MAR-19	1300	9100
1,1,1,2-Tetrachloroethane	<0.50	OWP	0.50	ug/L	13-MAR-19	3.3	28
1,1,2,2-Tetrachloroethane	<0.50	OWP	0.50	ug/L	13-MAR-19	3.2	15
Tetrachloroethylene	<0.50	OWP	0.50	ug/L	13-MAR-19	1.6	17
Toluene	<0.50	OWP	0.50	ug/L	13-MAR-19	18000	18000
1,1,1-Trichloroethane	<0.50	OWP	0.50	ug/L	13-MAR-19	640	6700
1,1,2-Trichloroethane	<0.50	OWP	0.50	ug/L	13-MAR-19	4.7	30
Trichloroethylene	<0.50	OWP	0.50	ug/L	13-MAR-19	1.6	17
Trichlorofluoromethane	<5.0	OWP	5.0	ug/L	13-MAR-19	2500	2500
Vinyl chloride	<0.50	OWP	0.50	ug/L	13-MAR-19	0.5	1.7
o-Xylene	<0.30	OWP	0.30	ug/L	13-MAR-19		
m+p-Xylenes	<0.40	OWP	0.40	ug/L	13-MAR-19		
Xylenes (Total)	<0.50		0.50	ug/L	14-MAR-19	4200	4200
Surrogate: 4-Bromofluorobenzene	96.1		70-130	%	13-MAR-19		
Surrogate: 1,4-Difluorobenzene	99.7		70-130	%	13-MAR-19		
Hydrocarbons							
F1 (C6-C10)	<25	OWP	25	ug/L	13-MAR-19	750	750
F1-BTEX	<25		25	ug/L	14-MAR-19	750	750

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T3 Non-Potable Ground Water (Coarse and Fine)

#1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse) **#2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)**

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2		
L2242183-2 GW-11189766-030719-TM-003 Sampled By: TM/MP on 07-MAR-19 @ 10:40 Matrix: WATER									
Hydrocarbons									
F2 (C10-C16)	<100	OWP	100	ug/L	12-MAR-19	150	150		
F2-Naphth	<100		100	ug/L	14-MAR-19				
F3 (C16-C34)	<250	OWP	250	ug/L	12-MAR-19	500	500		
F3-PAH	<250		250	ug/L	14-MAR-19				
F4 (C34-C50)	<250	OWP	250	ug/L	12-MAR-19	500	500		
Total Hydrocarbons (C6-C50)	<370		370	ug/L	14-MAR-19				
Chrom. to baseline at nC50	YES			No Unit	12-MAR-19				
Surrogate: 2-Bromobenzotrifluoride	96.2		60-140	%	12-MAR-19				
Surrogate: 3,4-Dichlorotoluene	81.0		60-140	%	13-MAR-19				
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	<0.020		0.020	ug/L	12-MAR-19	600	1700		
Acenaphthylene	<0.020		0.020	ug/L	12-MAR-19	1.8	1.8		
Anthracene	<0.020		0.020	ug/L	12-MAR-19	2.4	2.4		
Benzo(a)anthracene	<0.020		0.020	ug/L	12-MAR-19	4.7	4.7		
Benzo(a)pyrene	<0.010		0.010	ug/L	12-MAR-19	0.81	0.81		
Benzo(b)fluoranthene	<0.020		0.020	ug/L	12-MAR-19	0.75	0.75		
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	12-MAR-19	0.2	0.2		
Benzo(k)fluoranthene	<0.020		0.020	ug/L	12-MAR-19	0.4	0.4		
Chrysene	<0.020		0.020	ug/L	12-MAR-19	1	1		
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	12-MAR-19	0.52	0.52		
Fluoranthene	0.029		0.020	ug/L	12-MAR-19	130	130		
Fluorene	0.031		0.020	ug/L	12-MAR-19	400	400		
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	12-MAR-19	0.2	0.2		
1+2-Methylnaphthalenes	0.490		0.028	ug/L	12-MAR-19	1800	1800		
1-Methylnaphthalene	0.170		0.020	ug/L	12-MAR-19	1800	1800		
2-Methylnaphthalene	0.320		0.020	ug/L	12-MAR-19	1800	1800		
Naphthalene	0.077		0.050	ug/L	12-MAR-19	1400	6400		
Phenanthrene	0.058		0.020	ug/L	12-MAR-19	580	580		
Pyrene	0.030		0.020	ug/L	12-MAR-19	68	68		
Surrogate: d10-Acenaphthene	105.0		60-140	%	12-MAR-19				
Surrogate: d12-Chrysene	91.2		60-140	%	12-MAR-19				
Surrogate: d8-Naphthalene	105.4		60-140	%	12-MAR-19				
Surrogate: d10-Phenanthrene	106.7		60-140	%	12-MAR-19				
L2242183-3 GW-11189766-030719-TM-004 Sampled By: TM/MP on 07-MAR-19 @ 11:50 Matrix: WATER						#1	#2		
Dissolved Metals									
Dissolved Mercury Filtration Location	FIELD			No Unit	12-MAR-19				
Dissolved Metals Filtration Location	FIELD			No Unit	12-MAR-19				
Antimony (Sb)-Dissolved	<1.0	DLHC	1.0	ug/L	12-MAR-19	20000	20000		
Arsenic (As)-Dissolved	<1.0	DLHC	1.0	ug/L	12-MAR-19	1900	1900		
Barium (Ba)-Dissolved	178	DLHC	1.0	ug/L	12-MAR-19	29000	29000		
Beryllium (Be)-Dissolved	<1.0	DLHC	1.0	ug/L	12-MAR-19	67	67		
Boron (B)-Dissolved	120	DLHC	100	ug/L	12-MAR-19	45000	45000		
Cadmium (Cd)-Dissolved	0.165	DLHC	0.050	ug/L	12-MAR-19	2.7	2.7		

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T3 Non-Potable Ground Water (Coarse and Fine)

#1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse) **#2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)**

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2242183-3 GW-11189766-030719-TM-004 Sampled By: TM/MP on 07-MAR-19 @ 11:50 Matrix: WATER							
Dissolved Metals							
Chromium (Cr)-Dissolved	<5.0	DLHC	5.0	ug/L	12-MAR-19	810	810
Cobalt (Co)-Dissolved	3.7	DLHC	1.0	ug/L	12-MAR-19	66	66
Copper (Cu)-Dissolved	<2.0	DLHC	2.0	ug/L	12-MAR-19	87	87
Lead (Pb)-Dissolved	<0.50	DLHC	0.50	ug/L	12-MAR-19	25	25
Mercury (Hg)-Dissolved	<0.010		0.010	ug/L	12-MAR-19	0.29	2.8
Molybdenum (Mo)-Dissolved	1.54	DLHC	0.50	ug/L	12-MAR-19	9200	9200
Nickel (Ni)-Dissolved	7.2	DLHC	5.0	ug/L	12-MAR-19	490	490
Selenium (Se)-Dissolved	1.06	DLHC	0.50	ug/L	12-MAR-19	63	63
Silver (Ag)-Dissolved	<0.50	DLHC	0.50	ug/L	12-MAR-19	1.5	1.5
Sodium (Na)-Dissolved	1310000	DLHC	5000	ug/L	12-MAR-19	2300000	2300000
Thallium (Tl)-Dissolved	<0.10	DLHC	0.10	ug/L	12-MAR-19	510	510
Uranium (U)-Dissolved	3.50	DLHC	0.10	ug/L	12-MAR-19	420	420
Vanadium (V)-Dissolved	<5.0	DLHC	5.0	ug/L	12-MAR-19	250	250
Zinc (Zn)-Dissolved	<10	DLHC	10	ug/L	12-MAR-19	1100	1100
Speciated Metals							
Chromium, Hexavalent	<0.50		0.50	ug/L	11-MAR-19	140	140
Volatile Organic Compounds							
Acetone	<30	OWP	30	ug/L	14-MAR-19	130000	130000
Benzene	<0.50	OWP	0.50	ug/L	14-MAR-19	44	430
Bromodichloromethane	<2.0	OWP	2.0	ug/L	14-MAR-19	85000	85000
Bromoform	<5.0	OWP	5.0	ug/L	14-MAR-19	380	770
Bromomethane	<0.50	OWP	0.50	ug/L	14-MAR-19	5.6	56
Carbon tetrachloride	<0.20	OWP	0.20	ug/L	14-MAR-19	0.79	8.4
Chlorobenzene	<0.50	OWP	0.50	ug/L	14-MAR-19	630	630
Dibromochloromethane	<2.0	OWP	2.0	ug/L	14-MAR-19	82000	82000
Chloroform	<1.0	OWP	1.0	ug/L	14-MAR-19	2.4	22
1,2-Dibromoethane	<0.20	OWP	0.20	ug/L	14-MAR-19	0.25	0.83
1,2-Dichlorobenzene	<0.50	OWP	0.50	ug/L	14-MAR-19	4600	9600
1,3-Dichlorobenzene	<0.50	OWP	0.50	ug/L	14-MAR-19	9600	9600
1,4-Dichlorobenzene	<0.50	OWP	0.50	ug/L	14-MAR-19	8	67
Dichlorodifluoromethane	<2.0	OWP	2.0	ug/L	14-MAR-19	4400	4400
1,1-Dichloroethane	<0.50	OWP	0.50	ug/L	14-MAR-19	320	3100
1,2-Dichloroethane	<0.50	OWP	0.50	ug/L	14-MAR-19	1.6	12
1,1-Dichloroethylene	<0.50	OWP	0.50	ug/L	14-MAR-19	1.6	17
cis-1,2-Dichloroethylene	<0.50	OWP	0.50	ug/L	14-MAR-19	1.6	17
trans-1,2-Dichloroethylene	<0.50	OWP	0.50	ug/L	14-MAR-19	1.6	17
Methylene Chloride	<5.0	OWP	5.0	ug/L	14-MAR-19	610	5500
1,2-Dichloropropane	<0.50	OWP	0.50	ug/L	14-MAR-19	16	140
cis-1,3-Dichloropropene	<0.30	OWP	0.30	ug/L	14-MAR-19		
trans-1,3-Dichloropropene	<0.30	OWP	0.30	ug/L	14-MAR-19		
1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L	14-MAR-19	5.2	45
Ethylbenzene	<0.50	OWP	0.50	ug/L	14-MAR-19	2300	2300
n-Hexane	<0.50	OWP	0.50	ug/L	14-MAR-19	51	520
Methyl Ethyl Ketone	<20	OWP	20	ug/L	14-MAR-19	470000	1500000
Methyl Isobutyl Ketone	<20	OWP	20	ug/L	14-MAR-19	140000	580000

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T3 Non-Potable Ground Water (Coarse and Fine)

#1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse) **#2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)**

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2242183-3 GW-11189766-030719-TM-004 Sampled By: TM/MP on 07-MAR-19 @ 11:50 Matrix: WATER							
Volatile Organic Compounds							
MTBE	<2.0	OWP	2.0	ug/L	14-MAR-19	190	1400
Styrene	<0.50	OWP	0.50	ug/L	14-MAR-19	1300	9100
1,1,1,2-Tetrachloroethane	<0.50	OWP	0.50	ug/L	14-MAR-19	3.3	28
1,1,2,2-Tetrachloroethane	<0.50	OWP	0.50	ug/L	14-MAR-19	3.2	15
Tetrachloroethylene	<0.50	OWP	0.50	ug/L	14-MAR-19	1.6	17
Toluene	<0.50	OWP	0.50	ug/L	14-MAR-19	18000	18000
1,1,1-Trichloroethane	<0.50	OWP	0.50	ug/L	14-MAR-19	640	6700
1,1,2-Trichloroethane	<0.50	OWP	0.50	ug/L	14-MAR-19	4.7	30
Trichloroethylene	<0.50	OWP	0.50	ug/L	14-MAR-19	1.6	17
Trichlorofluoromethane	<5.0	OWP	5.0	ug/L	14-MAR-19	2500	2500
Vinyl chloride	<0.50	OWP	0.50	ug/L	14-MAR-19	0.5	1.7
o-Xylene	<0.30	OWP	0.30	ug/L	14-MAR-19		
m+p-Xylenes	<0.40	OWP	0.40	ug/L	14-MAR-19		
Xylenes (Total)	<0.50		0.50	ug/L	14-MAR-19	4200	4200
Surrogate: 4-Bromofluorobenzene	94.3		70-130	%	14-MAR-19		
Surrogate: 1,4-Difluorobenzene	97.4		70-130	%	14-MAR-19		
Hydrocarbons							
F1 (C6-C10)	<25	OWP	25	ug/L	14-MAR-19	750	750
F1-BTEX	<25		25	ug/L	14-MAR-19	750	750
F2 (C10-C16)	<100	OWP	100	ug/L	14-MAR-19	150	150
F2-Naphth	<100		100	ug/L	14-MAR-19		
F3 (C16-C34)	<250	OWP	250	ug/L	14-MAR-19	500	500
F3-PAH	<250		250	ug/L	14-MAR-19		
F4 (C34-C50)	<250	OWP	250	ug/L	14-MAR-19	500	500
Total Hydrocarbons (C6-C50)	<370		370	ug/L	14-MAR-19		
Chrom. to baseline at nC50	YES			No Unit	14-MAR-19		
Surrogate: 2-Bromobenzotrifluoride	91.2		60-140	%	14-MAR-19		
Surrogate: 3,4-Dichlorotoluene	73.0		60-140	%	14-MAR-19		
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	0.065		0.020	ug/L	14-MAR-19	600	1700
Acenaphthylene	<0.020		0.020	ug/L	14-MAR-19	1.8	1.8
Anthracene	0.212		0.020	ug/L	14-MAR-19	2.4	2.4
Benzo(a)anthracene	0.249		0.020	ug/L	14-MAR-19	4.7	4.7
Benzo(a)pyrene	0.147		0.010	ug/L	14-MAR-19	0.81	0.81
Benzo(b)fluoranthene	0.201		0.020	ug/L	14-MAR-19	0.75	0.75
Benzo(g,h,i)perylene	0.071		0.020	ug/L	14-MAR-19	0.2	0.2
Benzo(k)fluoranthene	0.080		0.020	ug/L	14-MAR-19	0.4	0.4
Chrysene	0.208		0.020	ug/L	14-MAR-19	1	1
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	14-MAR-19	0.52	0.52
Fluoranthene	0.692		0.020	ug/L	14-MAR-19	130	130
Fluorene	0.151		0.020	ug/L	14-MAR-19	400	400
Indeno(1,2,3-cd)pyrene	0.105		0.020	ug/L	14-MAR-19	0.2	0.2
1+2-Methylnaphthalenes	0.459		0.028	ug/L	14-MAR-19	1800	1800
1-Methylnaphthalene	0.142		0.020	ug/L	14-MAR-19	1800	1800
2-Methylnaphthalene	0.317		0.020	ug/L	14-MAR-19	1800	1800
Naphthalene	0.138		0.050	ug/L	14-MAR-19	1400	6400

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T3 Non-Potable Ground Water (Coarse and Fine)

#1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse) **#2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)**

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2		
L2242183-3 GW-11189766-030719-TM-004 Sampled By: TM/MP on 07-MAR-19 @ 11:50 Matrix: WATER									
Polycyclic Aromatic Hydrocarbons									
Phenanthrene	1.02		0.020	ug/L	14-MAR-19	580	580		
Pyrene	0.507		0.020	ug/L	14-MAR-19	68	68		
Surrogate: d10-Acenaphthene	96.7		60-140	%	14-MAR-19				
Surrogate: d12-Chrysene	93.3		60-140	%	14-MAR-19				
Surrogate: d8-Naphthalene	96.3		60-140	%	14-MAR-19				
Surrogate: d10-Phenanthrene	103.5		60-140	%	14-MAR-19				

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - T3 Non-Potable Ground Water (Coarse and Fine)

#1: T3-Non-Potable Ground Water-All Types of Property Uses (Coarse) **#2: T3-Non-Potable Ground Water-All Types of Property Uses (Fine)**

Reference Information

Sample Parameter Qualifier key listed:

Qualifier	Description
OWP	Organic water sample contained visible sediment (must be included as part of analysis). Measured concentrations of organic substances in water can be biased high due to presence of sediment.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference***
CR-CR6-IC-R511-WT	Water	Hex Chrom-O.Reg 153/04 (July 2011)	EPA 7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

F1-F4-511-CALC-WT	Water	F1-F4 Hydrocarbon Calculated Parameters	CCME CWS-PHC, Pub #1310, Dec 2001-L

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F1-HS-511-WT	Water	F1-O.Reg 153/04 (July 2011)	E3398/CCME TIER 1-HS

Fraction F1 is determined by analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

F2-F4-511-WT	Water	F2-F4-O.Reg 153/04 (July 2011)	EPA 3511/CCME Tier 1

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from water using a hexane micro-extraction technique. Instrumental analysis is by GC-FID, as per the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Tier 1 Method, CCME, 2001.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

HG-D-UG/L-CVAA-WT	Water	Diss. Mercury in Water by CVAAS (ug/L)	EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

MET-D-UG/L-MS-WT	Water	Diss. Metals in Water by ICPMS (ug/L)	EPA 200.8

The metal constituents of a non-acidified sample that pass through a membrane filter prior to ICP/MS analysis.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

METHYLNAPS-CALC-WT	Water	PAH-Calculated Parameters	SW846 8270

Reference Information

PAH-511-WT	Water	PAH-O. Reg 153/04 (July 2011)	SW846 3510/8270

Aqueous samples, fortified with surrogates, are extracted using liquid/liquid extraction technique. The sample extracts are concentrated and then analyzed using GC/MS. Results for benzo(b) fluoranthene may include contributions from benzo(j)fluoranthene, if also present in the sample.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

VOC-1,3-DCP-CALC-WT	Water	Regulation 153 VOCs	SW8260B/SW8270C
VOC-511-HS-WT	Water	VOC by GCMS HS O.Reg 153/04 (July 2011)	SW846 8260

Liquid samples are analyzed by headspace GC/MSD.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

XYLENES-SUM-CALC-WT	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Total xylenes represents the sum of o-xylene and m&p-xylene.

*** ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody numbers:

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA		

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Quality Control Report

Workorder: L2242183 Report Date: 14-MAR-19

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CR-CR6-IC-R511-WT	**Water**							
Batch R4557587								
WG3003854-10 DUP		**WG3003854-8**						
Chromium, Hexavalent		<0.50	<0.50	RPD-NA	ug/L	N/A	20	11-MAR-19
WG3003854-7 LCS								
Chromium, Hexavalent			97.7		%		80-120	11-MAR-19
WG3003854-6 MB								
Chromium, Hexavalent			<0.50		ug/L		0.5	11-MAR-19
WG3003854-9 MS		**WG3003854-8**						
Chromium, Hexavalent			93.8		%		70-130	11-MAR-19
F1-HS-511-WT	**Water**							
Batch R4558107								
WG3001898-4 DUP		**WG3001898-3**						
F1 (C6-C10)		<25	<25	RPD-NA	ug/L	N/A	30	13-MAR-19
WG3001898-1 LCS								
F1 (C6-C10)			95.3		%		80-120	12-MAR-19
WG3001898-2 MB								
F1 (C6-C10)			<25		ug/L		25	12-MAR-19
Surrogate: 3,4-Dichlorotoluene			130.2		%		60-140	12-MAR-19
WG3001898-5 MS		**WG3001898-3**						
F1 (C6-C10)			75.7		%		60-140	13-MAR-19
Batch R4563129								
WG3002261-1 LCS								
F1 (C6-C10)			94.2		%		80-120	13-MAR-19
WG3002261-2 MB								
F1 (C6-C10)			<25		ug/L		25	14-MAR-19
Surrogate: 3,4-Dichlorotoluene			94.7		%		60-140	14-MAR-19
F2-F4-511-WT	**Water**							
Batch R4561041								
WG3004221-2 LCS								
F2 (C10-C16)			99.2		%		70-130	12-MAR-19
F3 (C16-C34)			100.5		%		70-130	12-MAR-19
F4 (C34-C50)			101.4		%		70-130	12-MAR-19
WG3004221-1 MB								
F2 (C10-C16)			<100		ug/L		100	12-MAR-19
F3 (C16-C34)			<250		ug/L		250	12-MAR-19
F4 (C34-C50)			<250		ug/L		250	12-MAR-19
Surrogate: 2-Bromobenzotrifluoride			98.1		%		60-140	12-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-511-WT	**Water**							
Batch R4564070								
WG3005586-2 LCS								
F2 (C10-C16)			101.4		%		70-130	14-MAR-19
F3 (C16-C34)			103.3		%		70-130	14-MAR-19
F4 (C34-C50)			103.4		%		70-130	14-MAR-19
WG3005586-1 MB								
F2 (C10-C16)			<100		ug/L		100	14-MAR-19
F3 (C16-C34)			<250		ug/L		250	14-MAR-19
F4 (C34-C50)			<250		ug/L		250	14-MAR-19
Surrogate: 2-Bromobenzotrifluoride			89.8		%		60-140	14-MAR-19
HG-D-UG/L-CVAA-WT	**Water**							
Batch R4558298								
WG3004320-3 DUP		**L2242183-1**						
Mercury (Hg)-Dissolved		<0.010	<0.010	RPD-NA	ug/L	N/A	20	12-MAR-19
WG3004320-2 LCS								
Mercury (Hg)-Dissolved			102.0		%		80-120	12-MAR-19
WG3004320-1 MB								
Mercury (Hg)-Dissolved			<0.010		ug/L		0.01	12-MAR-19
WG3004320-4 MS		**L2242183-2**						
Mercury (Hg)-Dissolved			94.6		%		70-130	12-MAR-19
MET-D-UG/L-MS-WT	**Water**							
Batch R4558415								
WG3004257-4 DUP		**WG3004257-3**						
Antimony (Sb)-Dissolved		0.15	0.14		ug/L	5.7	20	12-MAR-19
Arsenic (As)-Dissolved		0.76	0.72		ug/L	4.8	20	12-MAR-19
Barium (Ba)-Dissolved		69.4	69.7		ug/L	0.5	20	12-MAR-19
Beryllium (Be)-Dissolved		<0.10	<0.10	RPD-NA	ug/L	N/A	20	12-MAR-19
Boron (B)-Dissolved		164	157		ug/L	4.4	20	12-MAR-19
Cadmium (Cd)-Dissolved		0.0119	0.0106		ug/L	12	20	12-MAR-19
Chromium (Cr)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	12-MAR-19
Cobalt (Co)-Dissolved		1.56	1.57		ug/L	0.7	20	12-MAR-19
Copper (Cu)-Dissolved		1.41	1.41		ug/L	0.2	20	12-MAR-19
Lead (Pb)-Dissolved		<0.050	<0.050	RPD-NA	ug/L	N/A	20	12-MAR-19
Molybdenum (Mo)-Dissolved		4.80	4.57		ug/L	5.0	20	12-MAR-19
Nickel (Ni)-Dissolved		4.56	4.65		ug/L	2.0	20	12-MAR-19
Selenium (Se)-Dissolved		0.865	0.926		ug/L	6.7	20	12-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT	**Water**							
Batch R4558415								
WG3004257-4 DUP		**WG3004257-3**						
Silver (Ag)-Dissolved		<0.050	<0.050	RPD-NA	ug/L	N/A	20	12-MAR-19
Sodium (Na)-Dissolved		101000	101000		ug/L	0.5	20	12-MAR-19
Thallium (Tl)-Dissolved		0.043	0.041		ug/L	4.3	20	12-MAR-19
Uranium (U)-Dissolved		4.76	4.53		ug/L	5.1	20	12-MAR-19
Vanadium (V)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	12-MAR-19
Zinc (Zn)-Dissolved		1.1	<1.0	RPD-NA	ug/L	N/A	20	12-MAR-19
WG3004257-2 LCS								
Antimony (Sb)-Dissolved			98.7		%		80-120	12-MAR-19
Arsenic (As)-Dissolved			98.5		%		80-120	12-MAR-19
Barium (Ba)-Dissolved			97.5		%		80-120	12-MAR-19
Beryllium (Be)-Dissolved			94.2		%		80-120	12-MAR-19
Boron (B)-Dissolved			94.9		%		80-120	12-MAR-19
Cadmium (Cd)-Dissolved			97.2		%		80-120	12-MAR-19
Chromium (Cr)-Dissolved			101.5		%		80-120	12-MAR-19
Cobalt (Co)-Dissolved			101.9		%		80-120	12-MAR-19
Copper (Cu)-Dissolved			101.4		%		80-120	12-MAR-19
Lead (Pb)-Dissolved			96.3		%		80-120	12-MAR-19
Molybdenum (Mo)-Dissolved			102.7		%		80-120	12-MAR-19
Nickel (Ni)-Dissolved			101.6		%		80-120	12-MAR-19
Selenium (Se)-Dissolved			97.5		%		80-120	12-MAR-19
Silver (Ag)-Dissolved			100.6		%		80-120	12-MAR-19
Sodium (Na)-Dissolved			104.6		%		80-120	12-MAR-19
Thallium (Tl)-Dissolved			96.6		%		80-120	12-MAR-19
Uranium (U)-Dissolved			96.4		%		80-120	12-MAR-19
Vanadium (V)-Dissolved			103.3		%		80-120	12-MAR-19
Zinc (Zn)-Dissolved			96.1		%		80-120	12-MAR-19
WG3004257-1 MB								
Antimony (Sb)-Dissolved			<0.10		ug/L		0.1	12-MAR-19
Arsenic (As)-Dissolved			<0.10		ug/L		0.1	12-MAR-19
Barium (Ba)-Dissolved			<0.10		ug/L		0.1	12-MAR-19
Beryllium (Be)-Dissolved			<0.10		ug/L		0.1	12-MAR-19
Boron (B)-Dissolved			<10		ug/L		10	12-MAR-19
Cadmium (Cd)-Dissolved			<0.0050		ug/L		0.005	12-MAR-19
Chromium (Cr)-Dissolved			<0.50		ug/L		0.5	12-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT	**Water**							
Batch R4558415								
WG3004257-1 MB								
Cobalt (Co)-Dissolved			<0.10		ug/L		0.1	12-MAR-19
Copper (Cu)-Dissolved			<0.20		ug/L		0.2	12-MAR-19
Lead (Pb)-Dissolved			<0.050		ug/L		0.05	12-MAR-19
Molybdenum (Mo)-Dissolved			<0.050		ug/L		0.05	12-MAR-19
Nickel (Ni)-Dissolved			<0.50		ug/L		0.5	12-MAR-19
Selenium (Se)-Dissolved			<0.050		ug/L		0.05	12-MAR-19
Silver (Ag)-Dissolved			<0.050		ug/L		0.05	12-MAR-19
Sodium (Na)-Dissolved			<50		ug/L		50	12-MAR-19
Thallium (Tl)-Dissolved			<0.010		ug/L		0.01	12-MAR-19
Uranium (U)-Dissolved			<0.010		ug/L		0.01	12-MAR-19
Vanadium (V)-Dissolved			<0.50		ug/L		0.5	12-MAR-19
Zinc (Zn)-Dissolved			<1.0		ug/L		1	12-MAR-19
WG3004257-5 MS		**WG3004257-6**						
Antimony (Sb)-Dissolved			100.5		%		70-130	12-MAR-19
Arsenic (As)-Dissolved			111.5		%		70-130	12-MAR-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	12-MAR-19
Beryllium (Be)-Dissolved			106.0		%		70-130	12-MAR-19
Boron (B)-Dissolved			N/A	MS-B	%		-	12-MAR-19
Cadmium (Cd)-Dissolved			96.2		%		70-130	12-MAR-19
Chromium (Cr)-Dissolved			105.6		%		70-130	12-MAR-19
Cobalt (Co)-Dissolved			99.0		%		70-130	12-MAR-19
Copper (Cu)-Dissolved			92.4		%		70-130	12-MAR-19
Lead (Pb)-Dissolved			89.5		%		70-130	12-MAR-19
Molybdenum (Mo)-Dissolved			107.0		%		70-130	12-MAR-19
Nickel (Ni)-Dissolved			94.3		%		70-130	12-MAR-19
Selenium (Se)-Dissolved			119.2		%		70-130	12-MAR-19
Silver (Ag)-Dissolved			71.0		%		70-130	12-MAR-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	12-MAR-19
Thallium (Tl)-Dissolved			92.0		%		70-130	12-MAR-19
Uranium (U)-Dissolved			N/A	MS-B	%		-	12-MAR-19
Vanadium (V)-Dissolved			110.8		%		70-130	12-MAR-19
Zinc (Zn)-Dissolved			91.1		%		70-130	12-MAR-19
PAH-511-WT	**Water**							

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Water**							
Batch R4558790								
WG3004221-2 LCS								
1-Methylnaphthalene			94.1		%		50-140	12-MAR-19
2-Methylnaphthalene			92.2		%		50-140	12-MAR-19
Acenaphthene			98.2		%		50-140	12-MAR-19
Acenaphthylene			103.0		%		50-140	12-MAR-19
Anthracene			104.1		%		50-140	12-MAR-19
Benzo(a)anthracene			118.5		%		50-140	12-MAR-19
Benzo(a)pyrene			99.4		%		50-140	12-MAR-19
Benzo(b)fluoranthene			98.3		%		50-140	12-MAR-19
Benzo(g,h,i)perylene			99.0		%		50-140	12-MAR-19
Benzo(k)fluoranthene			95.0		%		50-140	12-MAR-19
Chrysene			104.0		%		50-140	12-MAR-19
Dibenzo(ah)anthracene			101.5		%		50-140	12-MAR-19
Fluoranthene			107.0		%		50-140	12-MAR-19
Fluorene			105.4		%		50-140	12-MAR-19
Indeno(1,2,3-cd)pyrene			113.4		%		50-140	12-MAR-19
Naphthalene			90.4		%		50-140	12-MAR-19
Phenanthrene			110.2		%		50-140	12-MAR-19
Pyrene			109.3		%		50-140	12-MAR-19
WG3004221-1 MB								
1-Methylnaphthalene			<0.020		ug/L		0.02	12-MAR-19
2-Methylnaphthalene			<0.020		ug/L		0.02	12-MAR-19
Acenaphthene			<0.020		ug/L		0.02	12-MAR-19
Acenaphthylene			<0.020		ug/L		0.02	12-MAR-19
Anthracene			<0.020		ug/L		0.02	12-MAR-19
Benzo(a)anthracene			<0.020		ug/L		0.02	12-MAR-19
Benzo(a)pyrene			<0.010		ug/L		0.01	12-MAR-19
Benzo(b)fluoranthene			<0.020		ug/L		0.02	12-MAR-19
Benzo(g,h,i)perylene			<0.020		ug/L		0.02	12-MAR-19
Benzo(k)fluoranthene			<0.020		ug/L		0.02	12-MAR-19
Chrysene			<0.020		ug/L		0.02	12-MAR-19
Dibenzo(ah)anthracene			<0.020		ug/L		0.02	12-MAR-19
Fluoranthene			<0.020		ug/L		0.02	12-MAR-19
Fluorene			<0.020		ug/L		0.02	12-MAR-19
Indeno(1,2,3-cd)pyrene			<0.020		ug/L		0.02	12-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Water**							
Batch R4558790								
WG3004221-1 MB								
Naphthalene			<0.050		ug/L		0.05	12-MAR-19
Phenanthrene			<0.020		ug/L		0.02	12-MAR-19
Pyrene			<0.020		ug/L		0.02	12-MAR-19
Surrogate: d8-Naphthalene			93.6		%		60-140	12-MAR-19
Surrogate: d10-Phenanthrene			108.3		%		60-140	12-MAR-19
Surrogate: d12-Chrysene			97.9		%		60-140	12-MAR-19
Surrogate: d10-Acenaphthene			99.5		%		60-140	12-MAR-19
Batch R4563751								
WG3005586-2 LCS								
1-Methylnaphthalene			86.2		%		50-140	14-MAR-19
2-Methylnaphthalene			84.5		%		50-140	14-MAR-19
Acenaphthene			87.6		%		50-140	14-MAR-19
Acenaphthylene			90.0		%		50-140	14-MAR-19
Anthracene			90.6		%		50-140	14-MAR-19
Benzo(a)anthracene			90.0		%		50-140	14-MAR-19
Benzo(a)pyrene			90.5		%		50-140	14-MAR-19
Benzo(b)fluoranthene			89.4		%		50-140	14-MAR-19
Benzo(g,h,i)perylene			93.8		%		50-140	14-MAR-19
Benzo(k)fluoranthene			91.8		%		50-140	14-MAR-19
Chrysene			86.6		%		50-140	14-MAR-19
Dibenzo(ah)anthracene			86.8		%		50-140	14-MAR-19
Fluoranthene			96.5		%		50-140	14-MAR-19
Fluorene			94.1		%		50-140	14-MAR-19
Indeno(1,2,3-cd)pyrene			99.6		%		50-140	14-MAR-19
Naphthalene			87.9		%		50-140	14-MAR-19
Phenanthrene			99.1		%		50-140	14-MAR-19
Pyrene			99.6		%		50-140	14-MAR-19
WG3005586-1 MB								
1-Methylnaphthalene			<0.020		ug/L		0.02	14-MAR-19
2-Methylnaphthalene			<0.020		ug/L		0.02	14-MAR-19
Acenaphthene			<0.020		ug/L		0.02	14-MAR-19
Acenaphthylene			<0.020		ug/L		0.02	14-MAR-19
Anthracene			<0.020		ug/L		0.02	14-MAR-19
Benzo(a)anthracene			<0.020		ug/L		0.02	14-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Water**							
Batch R4563751								
WG3005586-1 MB								
Benzo(a)pyrene			<0.010		ug/L		0.01	14-MAR-19
Benzo(b)fluoranthene			<0.020		ug/L		0.02	14-MAR-19
Benzo(g,h,i)perylene			<0.020		ug/L		0.02	14-MAR-19
Benzo(k)fluoranthene			<0.020		ug/L		0.02	14-MAR-19
Chrysene			<0.020		ug/L		0.02	14-MAR-19
Dibenzo(ah)anthracene			<0.020		ug/L		0.02	14-MAR-19
Fluoranthene			<0.020		ug/L		0.02	14-MAR-19
Fluorene			<0.020		ug/L		0.02	14-MAR-19
Indeno(1,2,3-cd)pyrene			<0.020		ug/L		0.02	14-MAR-19
Naphthalene			<0.050		ug/L		0.05	14-MAR-19
Phenanthrene			<0.020		ug/L		0.02	14-MAR-19
Pyrene			<0.020		ug/L		0.02	14-MAR-19
Surrogate: d8-Naphthalene			99.5		%		60-140	14-MAR-19
Surrogate: d10-Phenanthrene			101.5		%		60-140	14-MAR-19
Surrogate: d12-Chrysene			95.5		%		60-140	14-MAR-19
Surrogate: d10-Acenaphthene			95.8		%		60-140	14-MAR-19
VOC-511-HS-WT	**Water**							
Batch R4558107								
WG3001898-4 DUP		**WG3001898-3**						
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	13-MAR-19
1,1,2,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	13-MAR-19
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	13-MAR-19
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	13-MAR-19
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	13-MAR-19
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	13-MAR-19
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	13-MAR-19
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	13-MAR-19
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	13-MAR-19
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	13-MAR-19
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	13-MAR-19
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	13-MAR-19
Acetone		<30	<30	RPD-NA	ug/L	N/A	30	13-MAR-19
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	13-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4558107								
WG3001898-4 DUP		**WG3001898-3**						
Bromodichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	13-MAR-19
Bromoform		<5.0	<5.0	RPD-NA	ug/L	N/A	30	13-MAR-19
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	13-MAR-19
Carbon tetrachloride		<0.20	<0.20	RPD-NA	ug/L	N/A	30	13-MAR-19
Chlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	13-MAR-19
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	13-MAR-19
cis-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	13-MAR-19
cis-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	13-MAR-19
Dibromochloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	13-MAR-19
Dichlorodifluoromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	13-MAR-19
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	13-MAR-19
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	13-MAR-19
m+p-Xylenes		<0.40	<0.40	RPD-NA	ug/L	N/A	30	13-MAR-19
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	13-MAR-19
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	13-MAR-19
Methylene Chloride		<5.0	<5.0	RPD-NA	ug/L	N/A	30	13-MAR-19
MTBE		<2.0	<2.0	RPD-NA	ug/L	N/A	30	13-MAR-19
o-Xylene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	13-MAR-19
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	13-MAR-19
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	13-MAR-19
trans-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	13-MAR-19
trans-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	13-MAR-19
Trichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	13-MAR-19
Trichlorofluoromethane		<5.0	<5.0	RPD-NA	ug/L	N/A	30	13-MAR-19
Vinyl chloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	13-MAR-19
WG3001898-1 LCS								
1,1,1,2-Tetrachloroethane			104.4		%		70-130	12-MAR-19
1,1,2,2-Tetrachloroethane			99.2		%		70-130	12-MAR-19
1,1,1-Trichloroethane			108.4		%		70-130	12-MAR-19
1,1,2-Trichloroethane			105.1		%		70-130	12-MAR-19
1,1-Dichloroethane			110.7		%		70-130	12-MAR-19
1,1-Dichloroethylene			106.9		%		70-130	12-MAR-19
1,2-Dibromoethane			99.8		%		70-130	12-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4558107								
WG3001898-1 LCS								
1,2-Dichlorobenzene			108.3		%		70-130	12-MAR-19
1,2-Dichloroethane			105.9		%		70-130	12-MAR-19
1,2-Dichloropropane			108.6		%		70-130	12-MAR-19
1,3-Dichlorobenzene			108.9		%		70-130	12-MAR-19
1,4-Dichlorobenzene			110.4		%		70-130	12-MAR-19
Acetone			107.1		%		60-140	12-MAR-19
Benzene			110.7		%		70-130	12-MAR-19
Bromodichloromethane			105.9		%		70-130	12-MAR-19
Bromoform			101.9		%		70-130	12-MAR-19
Bromomethane			129.8		%		60-140	12-MAR-19
Carbon tetrachloride			108.4		%		70-130	12-MAR-19
Chlorobenzene			108.3		%		70-130	12-MAR-19
Chloroform			108.8		%		70-130	12-MAR-19
cis-1,2-Dichloroethylene			100.6		%		70-130	12-MAR-19
cis-1,3-Dichloropropene			107.7		%		70-130	12-MAR-19
Dibromochloromethane			104.1		%		70-130	12-MAR-19
Dichlorodifluoromethane			82.1		%		50-140	12-MAR-19
Ethylbenzene			104.2		%		70-130	12-MAR-19
n-Hexane			104.8		%		70-130	12-MAR-19
m+p-Xylenes			105.7		%		70-130	12-MAR-19
Methyl Ethyl Ketone			96.0		%		60-140	12-MAR-19
Methyl Isobutyl Ketone			91.2		%		60-140	12-MAR-19
Methylene Chloride			102.3		%		70-130	12-MAR-19
MTBE			107.0		%		70-130	12-MAR-19
o-Xylene			103.2		%		70-130	12-MAR-19
Tetrachloroethylene			109.2		%		70-130	12-MAR-19
Toluene			104.5		%		70-130	12-MAR-19
trans-1,2-Dichloroethylene			102.9		%		70-130	12-MAR-19
trans-1,3-Dichloropropene			105.0		%		70-130	12-MAR-19
Trichloroethylene			114.0		%		70-130	12-MAR-19
Trichlorofluoromethane			116.0		%		60-140	12-MAR-19
Vinyl chloride			89.4		%		60-140	12-MAR-19
WG3001898-2 MB								
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	12-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4558107								
WG3001898-2 MB								
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	12-MAR-19
1,1,1-Trichloroethane			<0.50		ug/L		0.5	12-MAR-19
1,1,2-Trichloroethane			<0.50		ug/L		0.5	12-MAR-19
1,1-Dichloroethane			<0.50		ug/L		0.5	12-MAR-19
1,1-Dichloroethylene			<0.50		ug/L		0.5	12-MAR-19
1,2-Dibromoethane			<0.20		ug/L		0.2	12-MAR-19
1,2-Dichlorobenzene			<0.50		ug/L		0.5	12-MAR-19
1,2-Dichloroethane			<0.50		ug/L		0.5	12-MAR-19
1,2-Dichloropropane			<0.50		ug/L		0.5	12-MAR-19
1,3-Dichlorobenzene			<0.50		ug/L		0.5	12-MAR-19
1,4-Dichlorobenzene			<0.50		ug/L		0.5	12-MAR-19
Acetone			<30		ug/L		30	12-MAR-19
Benzene			<0.50		ug/L		0.5	12-MAR-19
Bromodichloromethane			<2.0		ug/L		2	12-MAR-19
Bromoform			<5.0		ug/L		5	12-MAR-19
Bromomethane			<0.50		ug/L		0.5	12-MAR-19
Carbon tetrachloride			<0.20		ug/L		0.2	12-MAR-19
Chlorobenzene			<0.50		ug/L		0.5	12-MAR-19
Chloroform			<1.0		ug/L		1	12-MAR-19
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	12-MAR-19
cis-1,3-Dichloropropene			<0.30		ug/L		0.3	12-MAR-19
Dibromochloromethane			<2.0		ug/L		2	12-MAR-19
Dichlorodifluoromethane			<2.0		ug/L		2	12-MAR-19
Ethylbenzene			<0.50		ug/L		0.5	12-MAR-19
n-Hexane			<0.50		ug/L		0.5	12-MAR-19
m+p-Xylenes			<0.40		ug/L		0.4	12-MAR-19
Methyl Ethyl Ketone			<20		ug/L		20	12-MAR-19
Methyl Isobutyl Ketone			<20		ug/L		20	12-MAR-19
Methylene Chloride			<5.0		ug/L		5	12-MAR-19
MTBE			<2.0		ug/L		2	12-MAR-19
o-Xylene			<0.30		ug/L		0.3	12-MAR-19
Tetrachloroethylene			<0.50		ug/L		0.5	12-MAR-19
Toluene			<0.50		ug/L		0.5	12-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch	**R4558107**							
WG3001898-2	**MB**							
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	12-MAR-19
trans-1,3-Dichloropropene			<0.30		ug/L		0.3	12-MAR-19
Trichloroethylene			<0.50		ug/L		0.5	12-MAR-19
Trichlorofluoromethane			<5.0		ug/L		5	12-MAR-19
Vinyl chloride			<0.50		ug/L		0.5	12-MAR-19
Surrogate: 1,4-Difluorobenzene			100.4		%		70-130	12-MAR-19
Surrogate: 4-Bromofluorobenzene			97.9		%		70-130	12-MAR-19
WG3001898-5	**MS**	**WG3001898-3**						
1,1,1,2-Tetrachloroethane			107.5		%		50-140	13-MAR-19
1,1,2,2-Tetrachloroethane			123.8		%		50-140	13-MAR-19
1,1,1-Trichloroethane			104.4		%		50-140	13-MAR-19
1,1,2-Trichloroethane			121.2		%		50-140	13-MAR-19
1,1-Dichloroethane			113.1		%		50-140	13-MAR-19
1,1-Dichloroethylene			98.8		%		50-140	13-MAR-19
1,2-Dibromoethane			118.4		%		50-140	13-MAR-19
1,2-Dichlorobenzene			107.8		%		50-140	13-MAR-19
1,2-Dichloroethane			123.9		%		50-140	13-MAR-19
1,2-Dichloropropane			118.1		%		50-140	13-MAR-19
1,3-Dichlorobenzene			100.2		%		50-140	13-MAR-19
1,4-Dichlorobenzene			102.4		%		50-140	13-MAR-19
Acetone			150.9	MES	%		50-140	13-MAR-19
Benzene			112.0		%		50-140	13-MAR-19
Bromodichloromethane			116.0		%		50-140	13-MAR-19
Bromoform			119.3		%		50-140	13-MAR-19
Bromomethane			121.0		%		50-140	13-MAR-19
Carbon tetrachloride			102.3		%		50-140	13-MAR-19
Chlorobenzene			107.3		%		50-140	13-MAR-19
Chloroform			113.7		%		50-140	13-MAR-19
cis-1,2-Dichloroethylene			104.2		%		50-140	13-MAR-19
cis-1,3-Dichloropropene			105.6		%		50-140	13-MAR-19
Dibromochloromethane			115.9		%		50-140	13-MAR-19
Dichlorodifluoromethane			67.4		%		50-140	13-MAR-19
Ethylbenzene			95.6		%		50-140	13-MAR-19
n-Hexane			94.5		%		50-140	13-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4558107								
WG3001898-5 MS		**WG3001898-3**						
m+p-Xylenes			96.4		%		50-140	13-MAR-19
Methyl Ethyl Ketone			135.5		%		50-140	13-MAR-19
Methyl Isobutyl Ketone			121.1		%		50-140	13-MAR-19
Methylene Chloride			111.0		%		50-140	13-MAR-19
MTBE			106.5		%		50-140	13-MAR-19
o-Xylene			98.0		%		50-140	13-MAR-19
Tetrachloroethylene			96.0		%		50-140	13-MAR-19
Toluene			99.1		%		50-140	13-MAR-19
trans-1,2-Dichloroethylene			95.8		%		50-140	13-MAR-19
trans-1,3-Dichloropropene			100.1		%		50-140	13-MAR-19
Trichloroethylene			107.3		%		50-140	13-MAR-19
Trichlorofluoromethane			104.5		%		50-140	13-MAR-19
Vinyl chloride			79.7		%		50-140	13-MAR-19
Batch R4563129								
WG3002261-1 LCS								
1,1,1,2-Tetrachloroethane			105.6		%		70-130	13-MAR-19
1,1,2,2-Tetrachloroethane			73.7		%		70-130	13-MAR-19
1,1,1-Trichloroethane			111.4		%		70-130	13-MAR-19
1,1,2-Trichloroethane			100.8		%		70-130	13-MAR-19
1,1-Dichloroethane			116.4		%		70-130	13-MAR-19
1,1-Dichloroethylene			112.8		%		70-130	13-MAR-19
1,2-Dibromoethane			98.8		%		70-130	13-MAR-19
1,2-Dichlorobenzene			109.5		%		70-130	13-MAR-19
1,2-Dichloroethane			104.0		%		70-130	13-MAR-19
1,2-Dichloropropane			110.8		%		70-130	13-MAR-19
1,3-Dichlorobenzene			112.5		%		70-130	13-MAR-19
1,4-Dichlorobenzene			111.5		%		70-130	13-MAR-19
Acetone			102.9		%		60-140	13-MAR-19
Benzene			114.0		%		70-130	13-MAR-19
Bromodichloromethane			104.1		%		70-130	13-MAR-19
Bromoform			91.6		%		70-130	13-MAR-19
Bromomethane			136.8		%		60-140	13-MAR-19
Carbon tetrachloride			110.7		%		70-130	13-MAR-19
Chlorobenzene			109.9		%		70-130	13-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4563129								
WG3002261-1 LCS								
Chloroform			112.6		%		70-130	13-MAR-19
cis-1,2-Dichloroethylene			111.2		%		70-130	13-MAR-19
cis-1,3-Dichloropropene			101.6		%		70-130	13-MAR-19
Dibromochloromethane			97.9		%		70-130	13-MAR-19
Dichlorodifluoromethane			110.0		%		50-140	13-MAR-19
Ethylbenzene			105.6		%		70-130	13-MAR-19
n-Hexane			110.2		%		70-130	13-MAR-19
m+p-Xylenes			105.8		%		70-130	13-MAR-19
Methyl Ethyl Ketone			95.0		%		60-140	13-MAR-19
Methyl Isobutyl Ketone			92.0		%		60-140	13-MAR-19
Methylene Chloride			105.8		%		70-130	13-MAR-19
MTBE			110.3		%		70-130	13-MAR-19
o-Xylene			104.0		%		70-130	13-MAR-19
Styrene			107.7		%		70-130	13-MAR-19
Tetrachloroethylene			107.8		%		70-130	13-MAR-19
Toluene			107.3		%		70-130	13-MAR-19
trans-1,2-Dichloroethylene			115.5		%		70-130	13-MAR-19
trans-1,3-Dichloropropene			98.7		%		70-130	13-MAR-19
Trichloroethylene			114.6		%		70-130	13-MAR-19
Trichlorofluoromethane			124.2		%		60-140	13-MAR-19
Vinyl chloride			99.7		%		60-140	13-MAR-19
WG3002261-2 MB								
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	14-MAR-19
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	14-MAR-19
1,1,1-Trichloroethane			<0.50		ug/L		0.5	14-MAR-19
1,1,2-Trichloroethane			<0.50		ug/L		0.5	14-MAR-19
1,1-Dichloroethane			<0.50		ug/L		0.5	14-MAR-19
1,1-Dichloroethylene			<0.50		ug/L		0.5	14-MAR-19
1,2-Dibromoethane			<0.20		ug/L		0.2	14-MAR-19
1,2-Dichlorobenzene			<0.50		ug/L		0.5	14-MAR-19
1,2-Dichloroethane			<0.50		ug/L		0.5	14-MAR-19
1,2-Dichloropropane			<0.50		ug/L		0.5	14-MAR-19
1,3-Dichlorobenzene			<0.50		ug/L		0.5	14-MAR-19
1,4-Dichlorobenzene			<0.50		ug/L		0.5	14-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4563129								
WG3002261-2 MB								
Acetone			<30		ug/L		30	14-MAR-19
Benzene			<0.50		ug/L		0.5	14-MAR-19
Bromodichloromethane			<2.0		ug/L		2	14-MAR-19
Bromoform			<5.0		ug/L		5	14-MAR-19
Bromomethane			<0.50		ug/L		0.5	14-MAR-19
Carbon tetrachloride			<0.20		ug/L		0.2	14-MAR-19
Chlorobenzene			<0.50		ug/L		0.5	14-MAR-19
Chloroform			<1.0		ug/L		1	14-MAR-19
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	14-MAR-19
cis-1,3-Dichloropropene			<0.30		ug/L		0.3	14-MAR-19
Dibromochloromethane			<2.0		ug/L		2	14-MAR-19
Dichlorodifluoromethane			<2.0		ug/L		2	14-MAR-19
Ethylbenzene			<0.50		ug/L		0.5	14-MAR-19
n-Hexane			<0.50		ug/L		0.5	14-MAR-19
m+p-Xylenes			<0.40		ug/L		0.4	14-MAR-19
Methyl Ethyl Ketone			<20		ug/L		20	14-MAR-19
Methyl Isobutyl Ketone			<20		ug/L		20	14-MAR-19
Methylene Chloride			<5.0		ug/L		5	14-MAR-19
MTBE			<2.0		ug/L		2	14-MAR-19
o-Xylene			<0.30		ug/L		0.3	14-MAR-19
Styrene			<0.50		ug/L		0.5	14-MAR-19
Tetrachloroethylene			<0.50		ug/L		0.5	14-MAR-19
Toluene			<0.50		ug/L		0.5	14-MAR-19
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	14-MAR-19
trans-1,3-Dichloropropene			<0.30		ug/L		0.3	14-MAR-19
Trichloroethylene			<0.50		ug/L		0.5	14-MAR-19
Trichlorofluoromethane			<5.0		ug/L		5	14-MAR-19
Vinyl chloride			<0.50		ug/L		0.5	14-MAR-19
Surrogate: 1,4-Difluorobenzene			101.0		%		70-130	14-MAR-19
Surrogate: 4-Bromofluorobenzene			95.5		%		70-130	14-MAR-19
Batch R4563251								
WG3002323-7 LCS								
Styrene			99.5		%		70-130	13-MAR-19
WG3002323-8 MB								

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Water**							
Batch R4563251								
WG3002323-8 MB								
Styrene			<0.50		ug/L		0.5	13-MAR-19

Quality Control Report

Workorder: L2242183 Report Date: 14-MAR-19

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

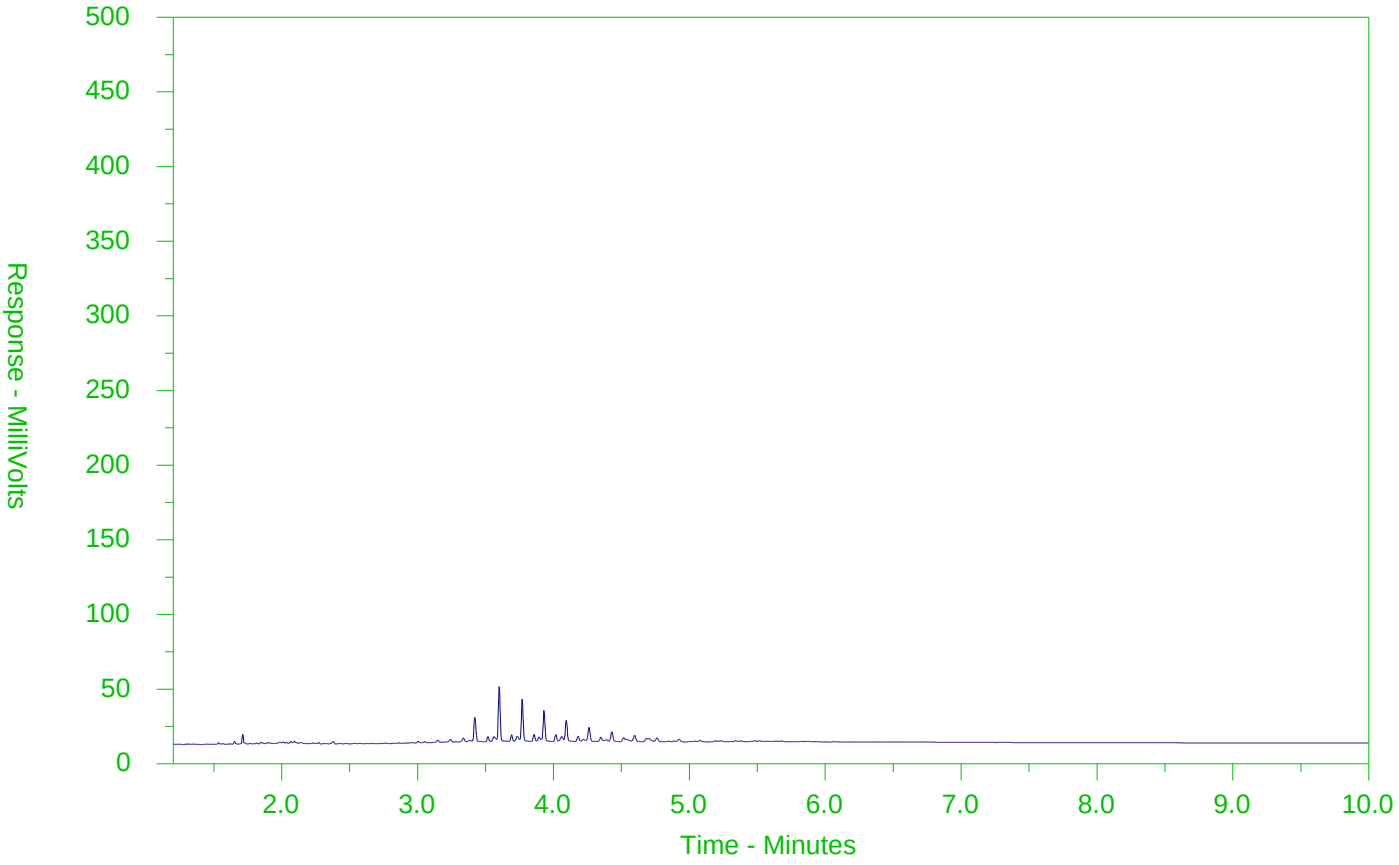
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2242183-1
Client Sample ID: GW-11189766-030719-TM-002



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →		← Motor Oils/Lube Oils/Grease →	
←Diesel/Jet Fuels→			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

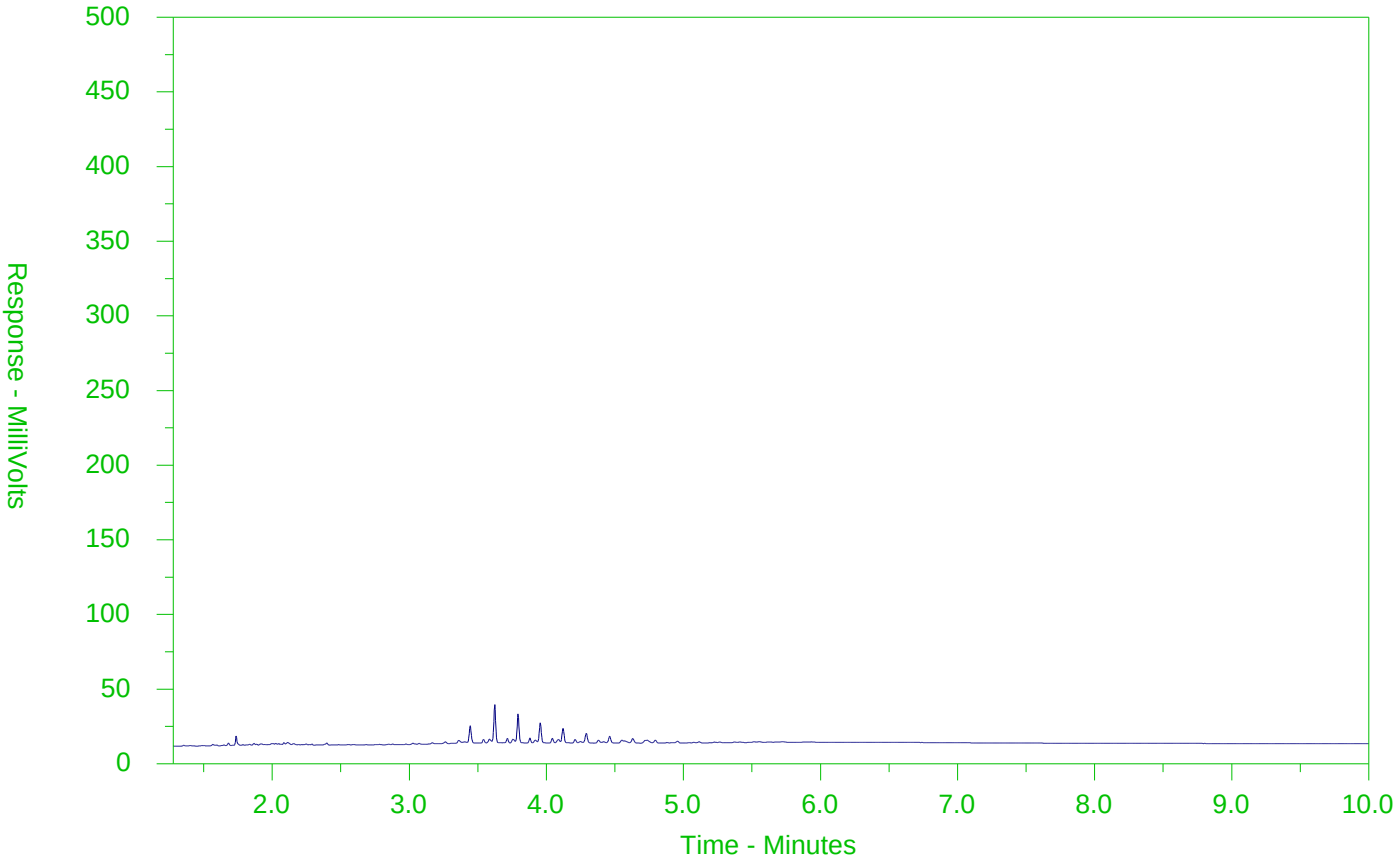
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2242183-2
Client Sample ID: GW-11189766-030719-TM-003



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →		← Motor Oils/Lube Oils/Grease →	
←Diesel/Jet Fuels→			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

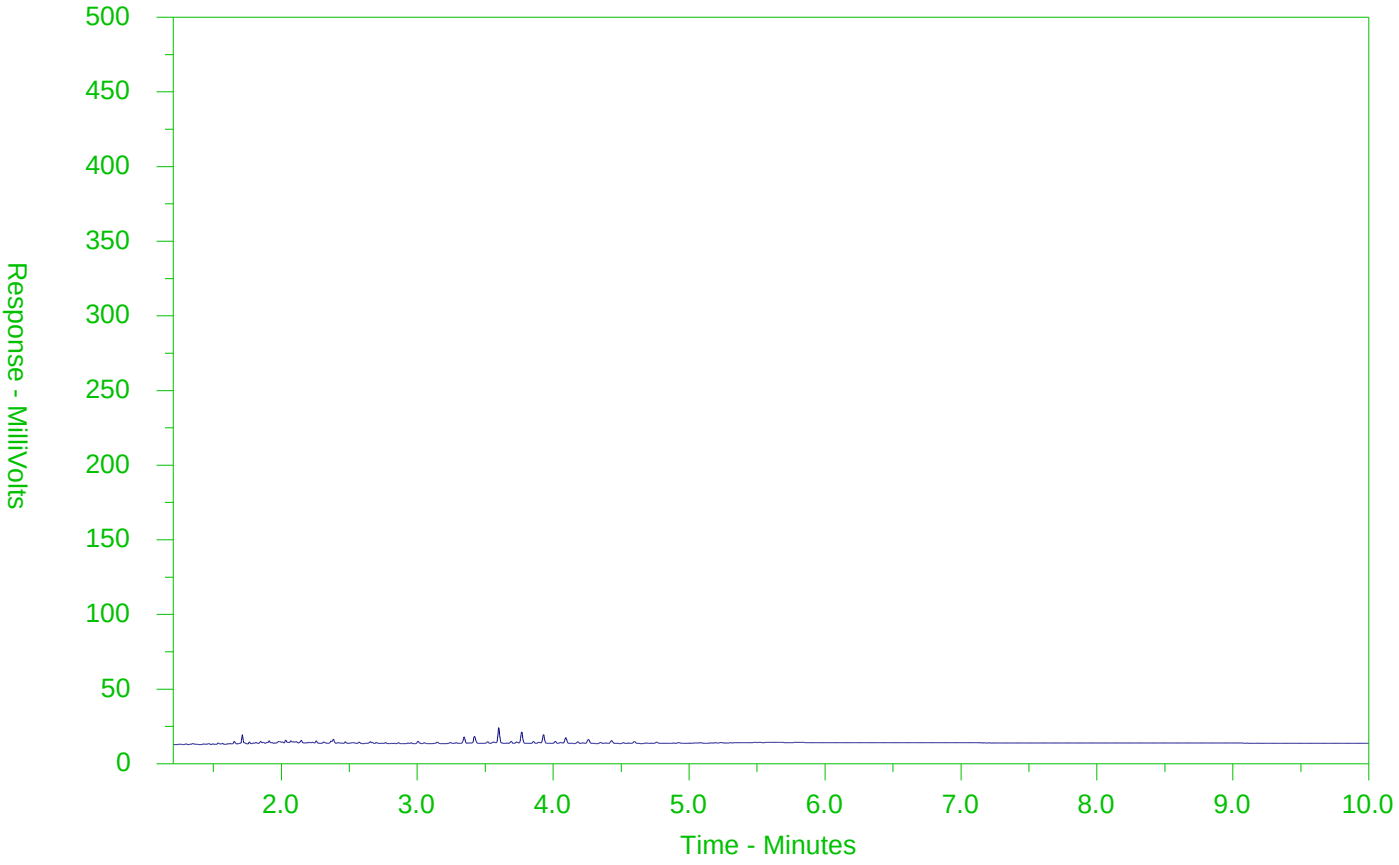
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2242183-3
Client Sample ID: GW-11189766-030719-TM-004



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →		← Motor Oils/Lube Oils/Grease →	
←Diesel/Jet Fuels→			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L2242183-COFC

COC Number: 17 - 030819-1

Page 1 of 1

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	
Company:	GHD LIMITED - ACCT #13791	Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Contact:	Jennifer Balkwill	Quality Control (QC) Report with Report	☑ YES ☐ NO
Phone:	519-340-4286	☐ Compare Results to Criteria on Report - provide details below if box checked	
	Company address below will appear on the final report	Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Street:	455 Phillip Street	Email 1 or Fax	melissa.pley@ghd.com
City/Province:	Waterloo, Ontario	Email 2	jennifer.balkwill@ghd.com
Postal Code:	N2L 3X2	Email 3	marc.gaudet@ghd.com
Invoice To	Same as Report To ☑ YES ☐ NO	**Invoice Distribution**	
	Copy of Invoice with Report ☐ YES ☑ NO	Select Invoice Distribution:	☐ EMAIL ☑ MAIL ☐ FAX
Company:	GHD Limited	Email 1 or Fax	melissa.pley@ghd.com
Contact:	Jennifer Balkwill	Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	13791	AFE/Cost Center:	PO#:
Job #:	11189766 - ~~12 Lakeport CR~~, St. Catharines (6 Lock St.	Major/Minor Code:	Routing Code:
PO / AFE:	73514923	Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (lab use only): L2242183 ✓ ALS Contact: Rick H Sampler: T.Mulhall and M.Pley

- Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	O Reg 153 Metals	PAHs	PHCs	VOCs	VOCs / F1	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	GW-11189766-030719-TM-002	7-Mar-19	10:40	Water	7	R	R	R	R			
	GW-11189766-030719-TM-003	7-Mar-19	10:40	Water	7	R	R	R	R			
	GW-11189766-030719-TM-004	7-Mar-19	11:50	Water	7	R	R	R	R			
	SS-11189766-030419-MP-022	4-Mar-19	16:30	Soil	4	R	R	R				
	SS-11189766-030519-MP-023	5-Mar-19	14:30	Soil	4	R	R	R				
	SS-11189766-030519-MP-024	6-Mar-19	14:30	Soil	5	R	R	R				
	SS-11189766-030519-MP-025	7-Mar-19	16:15	Soil	5	R	R	R				
	Trip Blank	7-Mar-19	—	Water	2					R		

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Please compare to Table 3 (RPI) Criteria

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☐ Custody seal intact ☑ Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				1.2			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Melissa Pley	Date: March 8, 2019	Time: 11:00	Received by:	Date:	Time:	Received by:	Date: Mar 8/19	Time: 16:45

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

GHD Limited (Waterloo)
ATTN: JENNIFER BALKWILL
455 PHILLIP STREET
WATERLOO ON N2L 3X2

Date Received: 06-MAR-19
Report Date: 15-MAR-19 12:21 (MT)
Version: FINAL

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L2240805

Project P.O. #: 73514923
Job Reference: 11189766
C of C Numbers: 11189766-02
Legal Site Desc:

Rick Hawthorne
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2240805-1 SS-11189766-030419-MP-009							
Sampled By: M.PLEY on 04-MAR-19 @ 15:00							
Matrix: SOIL							
Physical Tests							
Conductivity	2.26		0.0040	mS/cm	08-MAR-19	*0.7	*0.7
% Moisture	18.6		0.10	%	08-MAR-19		
pH	7.20		0.10	pH units	12-MAR-19		
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	08-MAR-19	0.051	0.051
Saturated Paste Extractables							
SAR	<0.10		0.10	SAR	08-MAR-19	5	5
Calcium (Ca)	534		0.50	mg/L	08-MAR-19		
Magnesium (Mg)	39.5		0.50	mg/L	08-MAR-19		
Sodium (Na)	7.42		0.50	mg/L	08-MAR-19		
Metals							
Antimony (Sb)	<1.0		1.0	ug/g	08-MAR-19	7.5	7.5
Arsenic (As)	5.1		1.0	ug/g	08-MAR-19	18	18
Barium (Ba)	69.6		1.0	ug/g	08-MAR-19	390	390
Beryllium (Be)	0.61		0.50	ug/g	08-MAR-19	4	5
Boron (B)	6.1		5.0	ug/g	08-MAR-19	120	120
Boron (B), Hot Water Ext.	0.40		0.10	ug/g	08-MAR-19	1.5	1.5
Cadmium (Cd)	<0.50		0.50	ug/g	08-MAR-19	1.2	1.2
Chromium (Cr)	19.5		1.0	ug/g	08-MAR-19	160	160
Cobalt (Co)	8.9		1.0	ug/g	08-MAR-19	22	22
Copper (Cu)	62.6		1.0	ug/g	08-MAR-19	140	180
Lead (Pb)	40.5		1.0	ug/g	08-MAR-19	120	120
Mercury (Hg)	0.215		0.0050	ug/g	08-MAR-19	0.27	1.8
Molybdenum (Mo)	<1.0		1.0	ug/g	08-MAR-19	6.9	6.9
Nickel (Ni)	20.0		1.0	ug/g	08-MAR-19	100	130
Selenium (Se)	<1.0		1.0	ug/g	08-MAR-19	2.4	2.4
Silver (Ag)	<0.20		0.20	ug/g	08-MAR-19	20	25
Thallium (Tl)	<0.50		0.50	ug/g	08-MAR-19	1	1
Uranium (U)	<1.0		1.0	ug/g	08-MAR-19	23	23
Vanadium (V)	28.5		1.0	ug/g	08-MAR-19	86	86
Zinc (Zn)	67.2		5.0	ug/g	08-MAR-19	340	340
Speciated Metals							
Chromium, Hexavalent	<0.20		0.20	ug/g	08-MAR-19	8	10
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	11-MAR-19	55	65
F2 (C10-C16)	<10		10	ug/g	07-MAR-19	98	150
F2-Naphth	<10		10	ug/g	15-MAR-19		
F3 (C16-C34)	<50		50	ug/g	07-MAR-19	300	1300
F3-PAH	<50		50	ug/g	15-MAR-19		
F4 (C34-C50)	<50		50	ug/g	07-MAR-19	2800	5600
Total Hydrocarbons (C6-C50)	<72		72	ug/g	15-MAR-19		
Chrom. to baseline at nC50	YES			No Unit	07-MAR-19		
Surrogate: 2-Bromobenzotrifluoride	98.8		60-140	%	07-MAR-19		
Surrogate: 3,4-Dichlorotoluene	98.3		60-140	%	11-MAR-19		
Polycyclic Aromatic Hydrocarbons							

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T3-SOIL-RPI-C/F

#1: T3-Soil-Res/Park/Inst. Property Use (Coarse)

#2: T3-Soil-Res/Park/Inst. Property Use (Fine)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2		
L2240805-1 SS-11189766-030419-MP-009 Sampled By: M.PLEY on 04-MAR-19 @ 15:00 Matrix: SOIL									
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	<0.050		0.050	ug/g	11-MAR-19	7.9	58		
Acenaphthylene	<0.050		0.050	ug/g	11-MAR-19	0.15	0.17		
Anthracene	<0.050		0.050	ug/g	11-MAR-19	0.67	0.74		
Benzo(a)anthracene	<0.050		0.050	ug/g	11-MAR-19	0.5	0.63		
Benzo(a)pyrene	<0.050		0.050	ug/g	11-MAR-19	0.3	0.3		
Benzo(b)fluoranthene	<0.050		0.050	ug/g	11-MAR-19	0.78	0.78		
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	11-MAR-19	6.6	7.8		
Benzo(k)fluoranthene	<0.050		0.050	ug/g	11-MAR-19	0.78	0.78		
Chrysene	<0.050		0.050	ug/g	11-MAR-19	7	7.8		
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	11-MAR-19	0.1	0.1		
Fluoranthene	<0.050		0.050	ug/g	11-MAR-19	0.69	0.69		
Fluorene	<0.050		0.050	ug/g	11-MAR-19	62	69		
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	11-MAR-19	0.38	0.48		
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	13-MAR-19	0.99	3.4		
1-Methylnaphthalene	<0.030		0.030	ug/g	11-MAR-19	0.99	3.4		
2-Methylnaphthalene	<0.030		0.030	ug/g	11-MAR-19	0.99	3.4		
Naphthalene	<0.013		0.013	ug/g	11-MAR-19	0.6	0.75		
Phenanthrene	<0.046		0.046	ug/g	11-MAR-19	6.2	7.8		
Pyrene	<0.050		0.050	ug/g	11-MAR-19	78	78		
Surrogate: 2-Fluorobiphenyl	99.7		50-140	%	11-MAR-19				
Surrogate: p-Terphenyl d14	87.4		50-140	%	11-MAR-19				
L2240805-2 SS-11189766-030519-MP-010 Sampled By: M.PLEY on 05-MAR-19 @ 10:30 Matrix: SOIL						#1	#2		
Physical Tests									
Conductivity	0.122		0.0040	mS/cm	08-MAR-19	0.7	0.7		
% Moisture	13.1		0.10	%	07-MAR-19				
pH	7.58		0.10	pH units	12-MAR-19				
Cyanides									
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	08-MAR-19	0.051	0.051		
Saturated Paste Extractables									
SAR	0.19		0.10	SAR	08-MAR-19	5	5		
Calcium (Ca)	17.1		0.50	mg/L	08-MAR-19				
Magnesium (Mg)	2.09		0.50	mg/L	08-MAR-19				
Sodium (Na)	3.18		0.50	mg/L	08-MAR-19				
Metals									
Antimony (Sb)	2.8		1.0	ug/g	08-MAR-19	7.5	7.5		
Arsenic (As)	7.0		1.0	ug/g	08-MAR-19	18	18		
Barium (Ba)	98.0		1.0	ug/g	08-MAR-19	390	390		
Beryllium (Be)	<0.50		0.50	ug/g	08-MAR-19	4	5		
Boron (B)	5.5		5.0	ug/g	08-MAR-19	120	120		
Boron (B), Hot Water Ext.	0.15		0.10	ug/g	08-MAR-19	1.5	1.5		
Cadmium (Cd)	<0.50		0.50	ug/g	08-MAR-19	1.2	1.2		
Chromium (Cr)	13.3		1.0	ug/g	08-MAR-19	160	160		

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T3-SOIL-RPI-C/F

#1: T3-Soil-Res/Park/Inst. Property Use (Coarse) **#2: T3-Soil-Res/Park/Inst. Property Use (Fine)**

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2240805-2 SS-11189766-030519-MP-010							
Sampled By: M.PLEY on 05-MAR-19 @ 10:30							
Matrix: SOIL							
Metals							
Cobalt (Co)	7.2		1.0	ug/g	08-MAR-19	22	22
Copper (Cu)	37.4		1.0	ug/g	08-MAR-19	140	180
Lead (Pb)	499		1.0	ug/g	08-MAR-19	*120	*120
Mercury (Hg)	0.118		0.0050	ug/g	08-MAR-19	0.27	1.8
Molybdenum (Mo)	<1.0		1.0	ug/g	08-MAR-19	6.9	6.9
Nickel (Ni)	15.0		1.0	ug/g	08-MAR-19	100	130
Selenium (Se)	<1.0		1.0	ug/g	08-MAR-19	2.4	2.4
Silver (Ag)	<0.20		0.20	ug/g	08-MAR-19	20	25
Thallium (Tl)	<0.50		0.50	ug/g	08-MAR-19	1	1
Uranium (U)	<1.0		1.0	ug/g	08-MAR-19	23	23
Vanadium (V)	23.3		1.0	ug/g	08-MAR-19	86	86
Zinc (Zn)	179		5.0	ug/g	08-MAR-19	340	340
Speciated Metals							
Chromium, Hexavalent	1.01		0.20	ug/g	08-MAR-19	8	10
Volatile Organic Compounds							
Acetone	<0.50		0.50	ug/g	15-MAR-19	16	28
Benzene	<0.0068		0.0068	ug/g	15-MAR-19	0.21	0.17
Bromodichloromethane	<0.050		0.050	ug/g	15-MAR-19	13	13
Bromoform	<0.050		0.050	ug/g	15-MAR-19	0.27	0.26
Bromomethane	<0.050		0.050	ug/g	15-MAR-19	0.05	0.05
Carbon tetrachloride	<0.050		0.050	ug/g	15-MAR-19	0.05	0.12
Chlorobenzene	<0.050		0.050	ug/g	15-MAR-19	2.4	2.7
Dibromochloromethane	<0.050		0.050	ug/g	15-MAR-19	9.4	9.4
Chloroform	<0.050		0.050	ug/g	15-MAR-19	0.05	0.18
1,2-Dibromoethane	<0.050		0.050	ug/g	15-MAR-19	0.05	0.05
1,2-Dichlorobenzene	<0.050		0.050	ug/g	15-MAR-19	3.4	4.3
1,3-Dichlorobenzene	<0.050		0.050	ug/g	15-MAR-19	4.8	6
1,4-Dichlorobenzene	<0.050		0.050	ug/g	15-MAR-19	0.083	0.097
Dichlorodifluoromethane	<0.050		0.050	ug/g	15-MAR-19	16	25
1,1-Dichloroethane	<0.050		0.050	ug/g	15-MAR-19	3.5	11
1,2-Dichloroethane	<0.050		0.050	ug/g	15-MAR-19	0.05	0.05
1,1-Dichloroethylene	<0.050		0.050	ug/g	15-MAR-19	0.05	0.05
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	15-MAR-19	3.4	30
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	15-MAR-19	0.084	0.75
Methylene Chloride	<0.050		0.050	ug/g	15-MAR-19	0.1	0.96
1,2-Dichloropropane	<0.050		0.050	ug/g	15-MAR-19	0.05	0.085
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	15-MAR-19		
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	15-MAR-19		
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g	15-MAR-19	0.05	0.083
Ethylbenzene	<0.018		0.018	ug/g	15-MAR-19	2	15
n-Hexane	<0.050		0.050	ug/g	15-MAR-19	2.8	34
Methyl Ethyl Ketone	<0.50		0.50	ug/g	15-MAR-19	16	44
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	15-MAR-19	1.7	4.3
MTBE	<0.050		0.050	ug/g	15-MAR-19	0.75	1.4
Styrene	<0.050		0.050	ug/g	15-MAR-19	0.7	2.2

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T3-SOIL-RPI-C/F

#1: T3-Soil-Res/Park/Inst. Property Use (Coarse)

#2: T3-Soil-Res/Park/Inst. Property Use (Fine)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2240805-2 SS-11189766-030519-MP-010							
Sampled By: M.PLEY on 05-MAR-19 @ 10:30							
Matrix: SOIL							
Volatile Organic Compounds							
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	15-MAR-19	0.058	0.05
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	15-MAR-19	0.05	0.05
Tetrachloroethylene	<0.050		0.050	ug/g	15-MAR-19	0.28	2.3
Toluene	<0.080		0.080	ug/g	15-MAR-19	2.3	6
1,1,1-Trichloroethane	<0.050		0.050	ug/g	15-MAR-19	0.38	3.4
1,1,2-Trichloroethane	<0.050		0.050	ug/g	15-MAR-19	0.05	0.05
Trichloroethylene	<0.010		0.010	ug/g	15-MAR-19	0.061	0.52
Trichlorofluoromethane	<0.050		0.050	ug/g	15-MAR-19	4	5.8
Vinyl chloride	<0.020		0.020	ug/g	15-MAR-19	0.02	0.022
o-Xylene	<0.020		0.020	ug/g	15-MAR-19		
m+p-Xylenes	<0.030		0.030	ug/g	15-MAR-19		
Xylenes (Total)	<0.050		0.050	ug/g	08-MAR-19	3.1	25
Surrogate: 4-Bromofluorobenzene	91.5		50-140	%	15-MAR-19		
Surrogate: 1,4-Difluorobenzene	100.3		50-140	%	15-MAR-19		
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	08-MAR-19	55	65
F1-BTEX	<5.0		5.0	ug/g	15-MAR-19	55	65
F2 (C10-C16)	<10		10	ug/g	07-MAR-19	98	150
F2-Naphth	<10		10	ug/g	15-MAR-19		
F3 (C16-C34)	<50		50	ug/g	07-MAR-19	300	1300
F3-PAH	<50		50	ug/g	15-MAR-19		
F4 (C34-C50)	<50		50	ug/g	07-MAR-19	2800	5600
Total Hydrocarbons (C6-C50)	<72		72	ug/g	15-MAR-19		
Chrom. to baseline at nC50	YES			No Unit	07-MAR-19		
Surrogate: 2-Bromobenzotrifluoride	92.5		60-140	%	07-MAR-19		
Surrogate: 3,4-Dichlorotoluene	101.5		60-140	%	08-MAR-19		
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	<0.050		0.050	ug/g	11-MAR-19	7.9	58
Acenaphthylene	<0.050		0.050	ug/g	11-MAR-19	0.15	0.17
Anthracene	0.051		0.050	ug/g	11-MAR-19	0.67	0.74
Benzo(a)anthracene	0.100		0.050	ug/g	11-MAR-19	0.5	0.63
Benzo(a)pyrene	0.088		0.050	ug/g	11-MAR-19	0.3	0.3
Benzo(b)fluoranthene	<0.156	DLM	0.16	ug/g	11-MAR-19	0.78	0.78
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	11-MAR-19	6.6	7.8
Benzo(k)fluoranthene	0.150	DLM	0.15	ug/g	11-MAR-19	0.78	0.78
Chrysene	0.100		0.050	ug/g	11-MAR-19	7	7.8
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	11-MAR-19	0.1	0.1
Fluoranthene	0.189		0.050	ug/g	11-MAR-19	0.69	0.69
Fluorene	<0.050		0.050	ug/g	11-MAR-19	62	69
Indeno(1,2,3-cd)pyrene	0.054		0.050	ug/g	11-MAR-19	0.38	0.48
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	13-MAR-19	0.99	3.4
1-Methylnaphthalene	<0.030		0.030	ug/g	11-MAR-19	0.99	3.4
2-Methylnaphthalene	<0.030		0.030	ug/g	11-MAR-19	0.99	3.4
Naphthalene	<0.013		0.013	ug/g	11-MAR-19	0.6	0.75
Phenanthrene	0.157		0.046	ug/g	11-MAR-19	6.2	7.8
Pyrene	0.147		0.050	ug/g	11-MAR-19	78	78

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T3-SOIL-RPI-C/F

#1: T3-Soil-Res/Park/Inst. Property Use (Coarse)

#2: T3-Soil-Res/Park/Inst. Property Use (Fine)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2		
L2240805-2 SS-11189766-030519-MP-010									
Sampled By: M.PLEY on 05-MAR-19 @ 10:30									
Matrix: SOIL									
Polycyclic Aromatic Hydrocarbons									
Surrogate: 2-Fluorobiphenyl	101.3		50-140	%	11-MAR-19				
Surrogate: p-Terphenyl d14	90.3		50-140	%	11-MAR-19				
L2240805-3 SS-11189766-030519-MP-011									
Sampled By: M.PLEY on 05-MAR-19 @ 10:30									
Matrix: SOIL						#1	#2		
Particle Size									
% >75um	22.2		1.0	%	13-MAR-19				
L2240805-4 SS-11189766-030519-MP-012									
Sampled By: M.PLEY on 05-MAR-19 @ 12:30									
Matrix: SOIL						#1	#2		
Physical Tests									
Conductivity	0.177		0.0040	mS/cm	08-MAR-19	0.7	0.7		
% Moisture	11.2		0.10	%	08-MAR-19				
pH	7.52		0.10	pH units	12-MAR-19				
Cyanides									
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	08-MAR-19	0.051	0.051		
Saturated Paste Extractables									
SAR	0.32		0.10	SAR	08-MAR-19	5	5		
Calcium (Ca)	22.6		0.50	mg/L	08-MAR-19				
Magnesium (Mg)	2.17		0.50	mg/L	08-MAR-19				
Sodium (Na)	5.89		0.50	mg/L	08-MAR-19				
Metals									
Antimony (Sb)	1.3		1.0	ug/g	08-MAR-19	7.5	7.5		
Arsenic (As)	6.3		1.0	ug/g	08-MAR-19	18	18		
Barium (Ba)	89.7		1.0	ug/g	08-MAR-19	390	390		
Beryllium (Be)	<0.50		0.50	ug/g	08-MAR-19	4	5		
Boron (B)	5.5		5.0	ug/g	08-MAR-19	120	120		
Boron (B), Hot Water Ext.	0.18		0.10	ug/g	08-MAR-19	1.5	1.5		
Cadmium (Cd)	<0.50		0.50	ug/g	08-MAR-19	1.2	1.2		
Chromium (Cr)	15.2		1.0	ug/g	08-MAR-19	160	160		
Cobalt (Co)	7.3		1.0	ug/g	08-MAR-19	22	22		
Copper (Cu)	39.1		1.0	ug/g	08-MAR-19	140	180		
Lead (Pb)	151		1.0	ug/g	08-MAR-19	*120	*120		
Mercury (Hg)	0.210		0.0050	ug/g	08-MAR-19	0.27	1.8		
Molybdenum (Mo)	<1.0		1.0	ug/g	08-MAR-19	6.9	6.9		
Nickel (Ni)	15.5		1.0	ug/g	08-MAR-19	100	130		
Selenium (Se)	<1.0		1.0	ug/g	08-MAR-19	2.4	2.4		
Silver (Ag)	<0.20		0.20	ug/g	08-MAR-19	20	25		
Thallium (Tl)	<0.50		0.50	ug/g	08-MAR-19	1	1		
Uranium (U)	<1.0		1.0	ug/g	08-MAR-19	23	23		
Vanadium (V)	23.4		1.0	ug/g	08-MAR-19	86	86		
Zinc (Zn)	105		5.0	ug/g	08-MAR-19	340	340		
Speciated Metals									

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T3-SOIL-RPI-C/F

#1: T3-Soil-Res/Park/Inst. Property Use (Coarse) **#2: T3-Soil-Res/Park/Inst. Property Use (Fine)**

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2240805-4 SS-11189766-030519-MP-012							
Sampled By: M.PLEY on 05-MAR-19 @ 12:30							
Matrix: SOIL							
Speciated Metals							
Chromium, Hexavalent	<0.20		0.20	ug/g	08-MAR-19	8	10
Volatile Organic Compounds							
Acetone	<0.50		0.50	ug/g	15-MAR-19	16	28
Benzene	<0.0068		0.0068	ug/g	15-MAR-19	0.21	0.17
Bromodichloromethane	<0.050		0.050	ug/g	15-MAR-19	13	13
Bromoform	<0.050		0.050	ug/g	15-MAR-19	0.27	0.26
Bromomethane	<0.050		0.050	ug/g	15-MAR-19	0.05	0.05
Carbon tetrachloride	<0.050		0.050	ug/g	15-MAR-19	0.05	0.12
Chlorobenzene	<0.050		0.050	ug/g	15-MAR-19	2.4	2.7
Dibromochloromethane	<0.050		0.050	ug/g	15-MAR-19	9.4	9.4
Chloroform	<0.050		0.050	ug/g	15-MAR-19	0.05	0.18
1,2-Dibromoethane	<0.050		0.050	ug/g	15-MAR-19	0.05	0.05
1,2-Dichlorobenzene	<0.050		0.050	ug/g	15-MAR-19	3.4	4.3
1,3-Dichlorobenzene	<0.050		0.050	ug/g	15-MAR-19	4.8	6
1,4-Dichlorobenzene	<0.050		0.050	ug/g	15-MAR-19	0.083	0.097
Dichlorodifluoromethane	<0.050		0.050	ug/g	15-MAR-19	16	25
1,1-Dichloroethane	<0.050		0.050	ug/g	15-MAR-19	3.5	11
1,2-Dichloroethane	<0.050		0.050	ug/g	15-MAR-19	0.05	0.05
1,1-Dichloroethylene	<0.050		0.050	ug/g	15-MAR-19	0.05	0.05
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	15-MAR-19	3.4	30
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	15-MAR-19	0.084	0.75
Methylene Chloride	<0.050		0.050	ug/g	15-MAR-19	0.1	0.96
1,2-Dichloropropane	<0.050		0.050	ug/g	15-MAR-19	0.05	0.085
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	15-MAR-19		
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	15-MAR-19		
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g	15-MAR-19	0.05	0.083
Ethylbenzene	<0.018		0.018	ug/g	15-MAR-19	2	15
n-Hexane	<0.050		0.050	ug/g	15-MAR-19	2.8	34
Methyl Ethyl Ketone	<0.50		0.50	ug/g	15-MAR-19	16	44
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	15-MAR-19	1.7	4.3
MTBE	<0.050		0.050	ug/g	15-MAR-19	0.75	1.4
Styrene	<0.050		0.050	ug/g	15-MAR-19	0.7	2.2
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	15-MAR-19	0.058	0.05
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	15-MAR-19	0.05	0.05
Tetrachloroethylene	<0.050		0.050	ug/g	15-MAR-19	0.28	2.3
Toluene	<0.080		0.080	ug/g	15-MAR-19	2.3	6
1,1,1-Trichloroethane	<0.050		0.050	ug/g	15-MAR-19	0.38	3.4
1,1,2-Trichloroethane	<0.050		0.050	ug/g	15-MAR-19	0.05	0.05
Trichloroethylene	<0.010		0.010	ug/g	15-MAR-19	0.061	0.52
Trichlorofluoromethane	<0.050		0.050	ug/g	15-MAR-19	4	5.8
Vinyl chloride	<0.020		0.020	ug/g	15-MAR-19	0.02	0.022
o-Xylene	<0.020		0.020	ug/g	15-MAR-19		
m+p-Xylenes	<0.030		0.030	ug/g	15-MAR-19		
Xylenes (Total)	<0.050		0.050	ug/g	15-MAR-19	3.1	25
Surrogate: 4-Bromofluorobenzene	86.8		50-140	%	15-MAR-19		
Surrogate: 1,4-Difluorobenzene	99.7		50-140	%	15-MAR-19		

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T3-SOIL-RPI-C/F

#1: T3-Soil-Res/Park/Inst. Property Use (Coarse)

#2: T3-Soil-Res/Park/Inst. Property Use (Fine)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2240805-4 SS-11189766-030519-MP-012							
Sampled By: M.PLEY on 05-MAR-19 @ 12:30							
Matrix: SOIL							
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	08-MAR-19	55	65
F1-BTEX	<5.0		5.0	ug/g	15-MAR-19	55	65
F2 (C10-C16)	<10		10	ug/g	07-MAR-19	98	150
F2-Naphth	<10		10	ug/g	15-MAR-19		
F3 (C16-C34)	195		50	ug/g	07-MAR-19	300	1300
F3-PAH	181		50	ug/g	15-MAR-19		
F4 (C34-C50)	106		50	ug/g	07-MAR-19	2800	5600
F4G-SG (GHH-Silica)	300		250	ug/g	07-MAR-19	2800	5600
Total Hydrocarbons (C6-C50)	301		72	ug/g	15-MAR-19		
Chrom. to baseline at nC50	NO			No Unit	07-MAR-19		
Surrogate: 2-Bromobenzotrifluoride	100.0		60-140	%	07-MAR-19		
Surrogate: 3,4-Dichlorotoluene	99.4		60-140	%	08-MAR-19		
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	0.120		0.050	ug/g	11-MAR-19	7.9	58
Acenaphthylene	0.145		0.050	ug/g	11-MAR-19	0.15	0.17
Anthracene	0.458		0.050	ug/g	11-MAR-19	0.67	0.74
Benzo(a)anthracene	1.71		0.050	ug/g	11-MAR-19	*0.5	*0.63
Benzo(a)pyrene	1.41		0.050	ug/g	11-MAR-19	*0.3	*0.3
Benzo(b)fluoranthene	1.65		0.050	ug/g	11-MAR-19	*0.78	*0.78
Benzo(g,h,i)perylene	0.958		0.050	ug/g	11-MAR-19	6.6	7.8
Benzo(k)fluoranthene	0.889		0.050	ug/g	11-MAR-19	*0.78	*0.78
Chrysene	1.64		0.050	ug/g	11-MAR-19	7	7.8
Dibenzo(ah)anthracene	0.353		0.050	ug/g	11-MAR-19	*0.1	*0.1
Fluoranthene	3.16		0.050	ug/g	11-MAR-19	*0.69	*0.69
Fluorene	0.124		0.050	ug/g	11-MAR-19	62	69
Indeno(1,2,3-cd)pyrene	1.25		0.050	ug/g	11-MAR-19	*0.38	*0.48
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	13-MAR-19	0.99	3.4
1-Methylnaphthalene	<0.030		0.030	ug/g	11-MAR-19	0.99	3.4
2-Methylnaphthalene	<0.030		0.030	ug/g	11-MAR-19	0.99	3.4
Naphthalene	0.015		0.013	ug/g	11-MAR-19	0.6	0.75
Phenanthrene	1.45		0.046	ug/g	11-MAR-19	6.2	7.8
Pyrene	2.56		0.050	ug/g	11-MAR-19	78	78
Surrogate: 2-Fluorobiphenyl	101.2		50-140	%	11-MAR-19		
Surrogate: p-Terphenyl d14	96.5		50-140	%	11-MAR-19		
L2240805-5 SS-11189766-030519-MP-013							
Sampled By: M.PLEY on 05-MAR-19 @ 14:00							
Matrix: SOIL							
Physical Tests							
Conductivity	0.325		0.0040	mS/cm	08-MAR-19	0.7	0.7
% Moisture	15.5		0.10	%	08-MAR-19		
pH	7.32		0.10	pH units	12-MAR-19		
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	08-MAR-19	0.051	0.051
Saturated Paste Extractables							
SAR	1.55		0.10	SAR	08-MAR-19	5	5

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T3-SOIL-RPI-C/F

#1: T3-Soil-Res/Park/Inst. Property Use (Coarse) **#2: T3-Soil-Res/Park/Inst. Property Use (Fine)**

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2240805-5 SS-11189766-030519-MP-013							
Sampled By: M.PLEY on 05-MAR-19 @ 14:00							
Matrix: SOIL							
Saturated Paste Extractables							
Calcium (Ca)	26.1		0.50	mg/L	08-MAR-19		
Magnesium (Mg)	3.61		0.50	mg/L	08-MAR-19		
Sodium (Na)	31.8		0.50	mg/L	08-MAR-19		
Metals							
Antimony (Sb)	1.9		1.0	ug/g	08-MAR-19	7.5	7.5
Arsenic (As)	7.9		1.0	ug/g	08-MAR-19	18	18
Barium (Ba)	129		1.0	ug/g	08-MAR-19	390	390
Beryllium (Be)	0.57		0.50	ug/g	08-MAR-19	4	5
Boron (B)	7.9		5.0	ug/g	08-MAR-19	120	120
Boron (B), Hot Water Ext.	0.49		0.10	ug/g	08-MAR-19	1.5	1.5
Cadmium (Cd)	1.35		0.50	ug/g	08-MAR-19	*1.2	*1.2
Chromium (Cr)	18.0		1.0	ug/g	08-MAR-19	160	160
Cobalt (Co)	9.2		1.0	ug/g	08-MAR-19	22	22
Copper (Cu)	48.3		1.0	ug/g	08-MAR-19	140	180
Lead (Pb)	214		1.0	ug/g	08-MAR-19	*120	*120
Mercury (Hg)	0.292		0.0050	ug/g	08-MAR-19	*0.27	1.8
Molybdenum (Mo)	<1.0		1.0	ug/g	08-MAR-19	6.9	6.9
Nickel (Ni)	18.5		1.0	ug/g	08-MAR-19	100	130
Selenium (Se)	<1.0		1.0	ug/g	08-MAR-19	2.4	2.4
Silver (Ag)	<0.20		0.20	ug/g	08-MAR-19	20	25
Thallium (Tl)	<0.50		0.50	ug/g	08-MAR-19	1	1
Uranium (U)	<1.0		1.0	ug/g	08-MAR-19	23	23
Vanadium (V)	27.3		1.0	ug/g	08-MAR-19	86	86
Zinc (Zn)	603		5.0	ug/g	08-MAR-19	*340	*340
Speciated Metals							
Chromium, Hexavalent	<0.20		0.20	ug/g	08-MAR-19	8	10
Volatile Organic Compounds							
Acetone	<0.50		0.50	ug/g	15-MAR-19	16	28
Benzene	<0.0068		0.0068	ug/g	15-MAR-19	0.21	0.17
Bromodichloromethane	<0.050		0.050	ug/g	15-MAR-19	13	13
Bromoform	<0.050		0.050	ug/g	15-MAR-19	0.27	0.26
Bromomethane	<0.050		0.050	ug/g	15-MAR-19	0.05	0.05
Carbon tetrachloride	<0.050		0.050	ug/g	15-MAR-19	0.05	0.12
Chlorobenzene	<0.050		0.050	ug/g	15-MAR-19	2.4	2.7
Dibromochloromethane	<0.050		0.050	ug/g	15-MAR-19	9.4	9.4
Chloroform	<0.050		0.050	ug/g	15-MAR-19	0.05	0.18
1,2-Dibromoethane	<0.050		0.050	ug/g	15-MAR-19	0.05	0.05
1,2-Dichlorobenzene	<0.050		0.050	ug/g	15-MAR-19	3.4	4.3
1,3-Dichlorobenzene	<0.050		0.050	ug/g	15-MAR-19	4.8	6
1,4-Dichlorobenzene	<0.050		0.050	ug/g	15-MAR-19	0.083	0.097
Dichlorodifluoromethane	<0.050		0.050	ug/g	15-MAR-19	16	25
1,1-Dichloroethane	<0.050		0.050	ug/g	15-MAR-19	3.5	11
1,2-Dichloroethane	<0.050		0.050	ug/g	15-MAR-19	0.05	0.05
1,1-Dichloroethylene	<0.050		0.050	ug/g	15-MAR-19	0.05	0.05
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	15-MAR-19	3.4	30

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T3-SOIL-RPI-C/F

#1: T3-Soil-Res/Park/Inst. Property Use (Coarse)

#2: T3-Soil-Res/Park/Inst. Property Use (Fine)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2240805-5 SS-11189766-030519-MP-013							
Sampled By: M.PLEY on 05-MAR-19 @ 14:00							
Matrix: SOIL							
Volatile Organic Compounds							
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	15-MAR-19	0.084	0.75
Methylene Chloride	<0.050		0.050	ug/g	15-MAR-19	0.1	0.96
1,2-Dichloropropane	<0.050		0.050	ug/g	15-MAR-19	0.05	0.085
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	15-MAR-19		
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	15-MAR-19		
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g	15-MAR-19	0.05	0.083
Ethylbenzene	<0.018		0.018	ug/g	15-MAR-19	2	15
n-Hexane	<0.050		0.050	ug/g	15-MAR-19	2.8	34
Methyl Ethyl Ketone	<0.50		0.50	ug/g	15-MAR-19	16	44
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	15-MAR-19	1.7	4.3
MTBE	<0.050		0.050	ug/g	15-MAR-19	0.75	1.4
Styrene	<0.050		0.050	ug/g	15-MAR-19	0.7	2.2
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	15-MAR-19	0.058	0.05
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	15-MAR-19	0.05	0.05
Tetrachloroethylene	<0.050		0.050	ug/g	15-MAR-19	0.28	2.3
Toluene	<0.080		0.080	ug/g	15-MAR-19	2.3	6
1,1,1-Trichloroethane	<0.050		0.050	ug/g	15-MAR-19	0.38	3.4
1,1,2-Trichloroethane	<0.050		0.050	ug/g	15-MAR-19	0.05	0.05
Trichloroethylene	<0.010		0.010	ug/g	15-MAR-19	0.061	0.52
Trichlorofluoromethane	<0.050		0.050	ug/g	15-MAR-19	4	5.8
Vinyl chloride	<0.020		0.020	ug/g	15-MAR-19	0.02	0.022
o-Xylene	<0.020		0.020	ug/g	15-MAR-19		
m+p-Xylenes	<0.030		0.030	ug/g	15-MAR-19		
Xylenes (Total)	<0.050		0.050	ug/g	15-MAR-19	3.1	25
Surrogate: 4-Bromofluorobenzene	81.8		50-140	%	15-MAR-19		
Surrogate: 1,4-Difluorobenzene	96.8		50-140	%	15-MAR-19		
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	11-MAR-19	55	65
F1-BTEX	<5.0		5.0	ug/g	15-MAR-19	55	65
F2 (C10-C16)	<10		10	ug/g	07-MAR-19	98	150
F2-Naphth	<10		10	ug/g	15-MAR-19		
F3 (C16-C34)	84		50	ug/g	07-MAR-19	300	1300
F3-PAH	82		50	ug/g	15-MAR-19		
F4 (C34-C50)	<50		50	ug/g	07-MAR-19	2800	5600
Total Hydrocarbons (C6-C50)	84		72	ug/g	15-MAR-19		
Chrom. to baseline at nC50	YES			No Unit	07-MAR-19		
Surrogate: 2-Bromobenzotrifluoride	99.6		60-140	%	07-MAR-19		
Surrogate: 3,4-Dichlorotoluene	89.8		60-140	%	11-MAR-19		
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	<0.050		0.050	ug/g	11-MAR-19	7.9	58
Acenaphthylene	<0.050		0.050	ug/g	11-MAR-19	0.15	0.17
Anthracene	<0.050		0.050	ug/g	11-MAR-19	0.67	0.74
Benzo(a)anthracene	0.186		0.050	ug/g	11-MAR-19	0.5	0.63
Benzo(a)pyrene	0.155		0.050	ug/g	11-MAR-19	0.3	0.3
Benzo(b)fluoranthene	0.153		0.050	ug/g	11-MAR-19	0.78	0.78
Benzo(g,h,i)perylene	0.115		0.050	ug/g	11-MAR-19	6.6	7.8

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T3-SOIL-RPI-C/F

#1: T3-Soil-Res/Park/Inst. Property Use (Coarse)

#2: T3-Soil-Res/Park/Inst. Property Use (Fine)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2240805-5 SS-11189766-030519-MP-013							
Sampled By: M.PLEY on 05-MAR-19 @ 14:00							
Matrix: SOIL							
Polycyclic Aromatic Hydrocarbons							
Benzo(k)fluoranthene	0.119		0.050	ug/g	11-MAR-19	0.78	0.78
Chrysene	0.174		0.050	ug/g	11-MAR-19	7	7.8
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	11-MAR-19	0.1	0.1
Fluoranthene	0.308		0.050	ug/g	11-MAR-19	0.69	0.69
Fluorene	<0.050		0.050	ug/g	11-MAR-19	62	69
Indeno(1,2,3-cd)pyrene	0.131		0.050	ug/g	11-MAR-19	0.38	0.48
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	11-MAR-19	0.99	3.4
1-Methylnaphthalene	<0.030		0.030	ug/g	11-MAR-19	0.99	3.4
2-Methylnaphthalene	<0.030		0.030	ug/g	11-MAR-19	0.99	3.4
Naphthalene	0.045		0.013	ug/g	11-MAR-19	0.6	0.75
Phenanthrene	0.213		0.046	ug/g	11-MAR-19	6.2	7.8
Pyrene	0.254		0.050	ug/g	11-MAR-19	78	78
Surrogate: 2-Fluorobiphenyl	103.4		50-140	%	11-MAR-19		
Surrogate: p-Terphenyl d14	97.5		50-140	%	11-MAR-19		
L2240805-6 SS-11189766-030519-MP-014							
Sampled By: M.PLEY on 05-MAR-19 @ 14:00							
Matrix: SOIL							
Physical Tests							
Conductivity	0.247		0.0040	mS/cm	08-MAR-19	0.7	0.7
% Moisture	16.6		0.10	%	08-MAR-19		
pH	7.67		0.10	pH units	12-MAR-19		
Cyanides							
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	08-MAR-19	0.051	0.051
Saturated Paste Extractables							
SAR	1.73		0.10	SAR	08-MAR-19	5	5
Calcium (Ca)	17.3		0.50	mg/L	08-MAR-19		
Magnesium (Mg)	2.84		0.50	mg/L	08-MAR-19		
Sodium (Na)	29.4		0.50	mg/L	08-MAR-19		
Metals							
Antimony (Sb)	1.1		1.0	ug/g	08-MAR-19	7.5	7.5
Arsenic (As)	12.1		1.0	ug/g	08-MAR-19	18	18
Barium (Ba)	114		1.0	ug/g	08-MAR-19	390	390
Beryllium (Be)	0.63		0.50	ug/g	08-MAR-19	4	5
Boron (B)	8.5		5.0	ug/g	08-MAR-19	120	120
Boron (B), Hot Water Ext.	0.33		0.10	ug/g	08-MAR-19	1.5	1.5
Cadmium (Cd)	<0.50		0.50	ug/g	08-MAR-19	1.2	1.2
Chromium (Cr)	16.8		1.0	ug/g	08-MAR-19	160	160
Cobalt (Co)	8.2		1.0	ug/g	08-MAR-19	22	22
Copper (Cu)	43.1		1.0	ug/g	08-MAR-19	140	180
Lead (Pb)	203		1.0	ug/g	08-MAR-19	*120	*120
Mercury (Hg)	0.240		0.0050	ug/g	08-MAR-19	0.27	1.8
Molybdenum (Mo)	1.0		1.0	ug/g	08-MAR-19	6.9	6.9
Nickel (Ni)	18.2		1.0	ug/g	08-MAR-19	100	130
Selenium (Se)	<1.0		1.0	ug/g	08-MAR-19	2.4	2.4

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T3-SOIL-RPI-C/F

#1: T3-Soil-Res/Park/Inst. Property Use (Coarse) **#2: T3-Soil-Res/Park/Inst. Property Use (Fine)**

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2		
L2240805-6 SS-11189766-030519-MP-014 Sampled By: M.PLEY on 05-MAR-19 @ 14:00 Matrix: SOIL									
Metals									
Silver (Ag)	<0.20		0.20	ug/g	08-MAR-19	20	25		
Thallium (Tl)	<0.50		0.50	ug/g	08-MAR-19	1	1		
Uranium (U)	<1.0		1.0	ug/g	08-MAR-19	23	23		
Vanadium (V)	26.3		1.0	ug/g	08-MAR-19	86	86		
Zinc (Zn)	102		5.0	ug/g	08-MAR-19	340	340		
Speciated Metals									
Chromium, Hexavalent	0.24		0.20	ug/g	11-MAR-19	8	10		
Hydrocarbons									
F1 (C6-C10)	<5.0		5.0	ug/g	11-MAR-19	55	65		
F2 (C10-C16)	<10		10	ug/g	08-MAR-19	98	150		
F2-Naphth	<10		10	ug/g	15-MAR-19				
F3 (C16-C34)	120		50	ug/g	08-MAR-19	300	1300		
F3-PAH	119		50	ug/g	15-MAR-19				
F4 (C34-C50)	72		50	ug/g	08-MAR-19	2800	5600		
Total Hydrocarbons (C6-C50)	192		72	ug/g	15-MAR-19				
Chrom. to baseline at nC50	YES			No Unit	08-MAR-19				
Surrogate: 2-Bromobenzotrifluoride	95.6		60-140	%	08-MAR-19				
Surrogate: 3,4-Dichlorotoluene	96.2		60-140	%	11-MAR-19				
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	<0.050		0.050	ug/g	11-MAR-19	7.9	58		
Acenaphthylene	<0.050		0.050	ug/g	11-MAR-19	0.15	0.17		
Anthracene	<0.050		0.050	ug/g	11-MAR-19	0.67	0.74		
Benzo(a)anthracene	0.205		0.050	ug/g	11-MAR-19	0.5	0.63		
Benzo(a)pyrene	0.172		0.050	ug/g	11-MAR-19	0.3	0.3		
Benzo(b)fluoranthene	0.161		0.050	ug/g	11-MAR-19	0.78	0.78		
Benzo(g,h,i)perylene	0.137		0.050	ug/g	11-MAR-19	6.6	7.8		
Benzo(k)fluoranthene	0.139		0.050	ug/g	11-MAR-19	0.78	0.78		
Chrysene	0.222		0.050	ug/g	11-MAR-19	7	7.8		
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	11-MAR-19	0.1	0.1		
Fluoranthene	0.295		0.050	ug/g	11-MAR-19	0.69	0.69		
Fluorene	<0.050		0.050	ug/g	11-MAR-19	62	69		
Indeno(1,2,3-cd)pyrene	0.145		0.050	ug/g	11-MAR-19	0.38	0.48		
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	13-MAR-19	0.99	3.4		
1-Methylnaphthalene	<0.030		0.030	ug/g	11-MAR-19	0.99	3.4		
2-Methylnaphthalene	<0.030		0.030	ug/g	11-MAR-19	0.99	3.4		
Naphthalene	<0.013		0.013	ug/g	11-MAR-19	0.6	0.75		
Phenanthrene	0.111		0.046	ug/g	11-MAR-19	6.2	7.8		
Pyrene	0.266		0.050	ug/g	11-MAR-19	78	78		
Surrogate: 2-Fluorobiphenyl	102.4		50-140	%	11-MAR-19				
Surrogate: p-Terphenyl d14	95.2		50-140	%	11-MAR-19				
L2240805-7 SS-11189766-030519-MP-015 Sampled By: M.PLEY on 05-MAR-19 @ 16:00 Matrix: SOIL						#1	#2		
Physical Tests									
Conductivity	0.299		0.0040	mS/cm	08-MAR-19				

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T3-SOIL-RPI-C/F

#1: T3-Soil-Res/Park/Inst. Property Use (Coarse) **#2: T3-Soil-Res/Park/Inst. Property Use (Fine)**

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2		
L2240805-7 SS-11189766-030519-MP-015									
Sampled By: M.PLEY on 05-MAR-19 @ 16:00									
Matrix: SOIL									
Physical Tests									
						0.7	0.7		
% Moisture	16.6		0.10	%	08-MAR-19				
pH	7.63		0.10	pH units	12-MAR-19				
Cyanides									
Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	11-MAR-19	0.051	0.051		
Saturated Paste Extractables									
SAR	0.20		0.10	SAR	08-MAR-19	5	5		
Calcium (Ca)	34.8		0.50	mg/L	08-MAR-19				
Magnesium (Mg)	5.21		0.50	mg/L	08-MAR-19				
Sodium (Na)	4.77		0.50	mg/L	08-MAR-19				
Metals									
Antimony (Sb)	<1.0		1.0	ug/g	08-MAR-19	7.5	7.5		
Arsenic (As)	3.3		1.0	ug/g	08-MAR-19	18	18		
Barium (Ba)	54.5		1.0	ug/g	08-MAR-19	390	390		
Beryllium (Be)	<0.50		0.50	ug/g	08-MAR-19	4	5		
Boron (B)	<5.0		5.0	ug/g	08-MAR-19	120	120		
Boron (B), Hot Water Ext.	0.13		0.10	ug/g	08-MAR-19	1.5	1.5		
Cadmium (Cd)	<0.50		0.50	ug/g	08-MAR-19	1.2	1.2		
Chromium (Cr)	13.1		1.0	ug/g	08-MAR-19	160	160		
Cobalt (Co)	7.0		1.0	ug/g	08-MAR-19	22	22		
Copper (Cu)	32.1		1.0	ug/g	08-MAR-19	140	180		
Lead (Pb)	7.9		1.0	ug/g	08-MAR-19	120	120		
Mercury (Hg)	0.0211		0.0050	ug/g	08-MAR-19	0.27	1.8		
Molybdenum (Mo)	<1.0		1.0	ug/g	08-MAR-19	6.9	6.9		
Nickel (Ni)	14.7		1.0	ug/g	08-MAR-19	100	130		
Selenium (Se)	<1.0		1.0	ug/g	08-MAR-19	2.4	2.4		
Silver (Ag)	<0.20		0.20	ug/g	08-MAR-19	20	25		
Thallium (Tl)	<0.50		0.50	ug/g	08-MAR-19	1	1		
Uranium (U)	<1.0		1.0	ug/g	08-MAR-19	23	23		
Vanadium (V)	21.1		1.0	ug/g	08-MAR-19	86	86		
Zinc (Zn)	45.4		5.0	ug/g	08-MAR-19	340	340		
Speciated Metals									
Chromium, Hexavalent	<0.20		0.20	ug/g	11-MAR-19	8	10		
Hydrocarbons									
F1 (C6-C10)	<5.0		5.0	ug/g	11-MAR-19	55	65		
F2 (C10-C16)	<10		10	ug/g	08-MAR-19	98	150		
F2-Naphth	<10		10	ug/g	15-MAR-19				
F3 (C16-C34)	<50		50	ug/g	08-MAR-19	300	1300		
F3-PAH	<50		50	ug/g	15-MAR-19				
F4 (C34-C50)	<50		50	ug/g	08-MAR-19	2800	5600		
Total Hydrocarbons (C6-C50)	<72		72	ug/g	15-MAR-19				
Chrom. to baseline at nC50	YES			No Unit	08-MAR-19				
Surrogate: 2-Bromobenzotrifluoride	92.3		60-140	%	08-MAR-19				
Surrogate: 3,4-Dichlorotoluene	94.8		60-140	%	11-MAR-19				
Polycyclic Aromatic Hydrocarbons									

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T3-SOIL-RPI-C/F

#1: T3-Soil-Res/Park/Inst. Property Use (Coarse) **#2: T3-Soil-Res/Park/Inst. Property Use (Fine)**

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2		
L2240805-7 SS-11189766-030519-MP-015									
Sampled By: M.PLEY on 05-MAR-19 @ 16:00									
Matrix: SOIL									
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	<0.050		0.050	ug/g	11-MAR-19	7.9	58		
Acenaphthylene	<0.050		0.050	ug/g	11-MAR-19	0.15	0.17		
Anthracene	<0.050		0.050	ug/g	11-MAR-19	0.67	0.74		
Benzo(a)anthracene	<0.050		0.050	ug/g	11-MAR-19	0.5	0.63		
Benzo(a)pyrene	<0.050		0.050	ug/g	11-MAR-19	0.3	0.3		
Benzo(b)fluoranthene	<0.050		0.050	ug/g	11-MAR-19	0.78	0.78		
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	11-MAR-19	6.6	7.8		
Benzo(k)fluoranthene	<0.050		0.050	ug/g	11-MAR-19	0.78	0.78		
Chrysene	<0.050		0.050	ug/g	11-MAR-19	7	7.8		
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	11-MAR-19	0.1	0.1		
Fluoranthene	<0.050		0.050	ug/g	11-MAR-19	0.69	0.69		
Fluorene	<0.050		0.050	ug/g	11-MAR-19	62	69		
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	11-MAR-19	0.38	0.48		
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	13-MAR-19	0.99	3.4		
1-Methylnaphthalene	<0.030		0.030	ug/g	11-MAR-19	0.99	3.4		
2-Methylnaphthalene	<0.030		0.030	ug/g	11-MAR-19	0.99	3.4		
Naphthalene	<0.013		0.013	ug/g	11-MAR-19	0.6	0.75		
Phenanthrene	<0.046		0.046	ug/g	11-MAR-19	6.2	7.8		
Pyrene	<0.050		0.050	ug/g	11-MAR-19	78	78		
Surrogate: 2-Fluorobiphenyl	101.4		50-140	%	11-MAR-19				
Surrogate: p-Terphenyl d14	89.9		50-140	%	11-MAR-19				
L2240805-8 SS-11189766-030519-MP-016									
Sampled By: M.PLEY on 05-MAR-19 @ 16:00									
Matrix: SOIL						#1	#2		
Particle Size									
% >75um	14.7		1.0	%	13-MAR-19				

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T3-SOIL-RPI-C/F

#1: T3-Soil-Res/Park/Inst. Property Use (Coarse) **#2: T3-Soil-Res/Park/Inst. Property Use (Fine)**

Reference Information

Sample Parameter Qualifier key listed:

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference***
B-HWS-R511-WT	Soil	Boron-HWE-O.Reg 153/04 (July 2011)	HW EXTR, EPA 6010B

A dried solid sample is extracted with calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

CN-WAD-R511-WT	Soil	Cyanide (WAD)-O.Reg 153/04 (July 2011)	MOE 3015/APHA 4500CN I-WAD

The sample is extracted with a strong base for 16 hours, and then filtered. The filtrate is then distilled where the cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

CR-CR6-IC-WT	Soil	Hexavalent Chromium in Soil	SW846 3060A/7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

EC-WT	Soil	Conductivity (EC)	MOEE E3138

A representative subsample is tumbled with de-ionized (DI) water. The ratio of water to soil is 2:1 v/w. After tumbling the sample is then analyzed by a conductivity meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

F1-F4-511-CALC-WT	Soil	F1-F4 Hydrocarbon Calculated Parameters	CCME CWS-PHC, Pub #1310, Dec 2001-S

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

Hydrocarbon results are expressed on a dry weight basis.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F1-HS-511-WT	Soil	F1-O.Reg 153/04 (July 2011)	E3398/CCME TIER 1-HS

Fraction F1 is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

Reference Information

F2-F4-511-WT	Soil	F2-F4-O.Reg 153/04 (July 2011)	CCME Tier 1

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from soil with 1:1 hexane:acetone using a rotary extractor. Extracts are treated with silica gel to remove polar organic interferences. F2, F3, & F4 are analyzed by GC-FID. F4G-sg is analyzed gravimetrically.

Notes:
1. F2 (C10-C16): Sum of all hydrocarbons that elute between nC10 and nC16.
2. F3 (C16-C34): Sum of all hydrocarbons that elute between nC16 and nC34.
3. F4 (C34-C50): Sum of all hydrocarbons that elute between nC34 and nC50.
4. F4G: Gravimetric Heavy Hydrocarbons
5. F4G-sg: Gravimetric Heavy Hydrocarbons (F4G) after silica gel treatment.
6. Where both F4 (C34-C50) and F4G-sg are reported for a sample, the larger of the two values is used for comparison against the relevant CCME guideline for F4.
7. F4G-sg cannot be added to the C6 to C50 hydrocarbon results to obtain an estimate of total extractable hydrocarbons.
8. This method is validated for use.
9. Data from analysis of validation and quality control samples is available upon request.
10. Reported results are expressed as milligrams per dry kilogram, unless otherwise indicated.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

F4G-ADD-511-WT	Soil	F4G SG-O.Reg 153/04 (July 2011)	MOE DECPH-E3398/CCME TIER 1

F4G, gravimetric analysis, is determined if the chromatogram does not return to baseline at or before C50. A soil sample is extracted with a solvent mix, the solvent is evaporated and the weight of the residue is determined.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

HG-200.2-CVAA-WT	Soil	Mercury in Soil by CVAAS	EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

MET-200.2-CCMS-WT	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

Soil/sediment is dried, disaggregated, and sieved (2 mm). For tests intended to support Ontario regulations, the <2mm fraction is ground to pass through a 0.355 mm sieve. Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

METHYLNAPS-CALC-WT	Soil	ABN-Calculated Parameters	SW846 8270
MOISTURE-WT	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)
PAH-511-WT	Soil	PAH-O.Reg 153/04 (July 2011)	SW846 3510/8270

A representative sub-sample of soil is fortified with deuterium-labelled surrogates and a mechanical shaking techniqueis used to extract the sample with a mixture of methanol and toluene. The extracts are concentrated and analyzed by GC/MS. Results for benzo(b) fluoranthene may include contributions from benzo(j)fluoranthene, if also present in the sample.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

PH-WT	Soil	pH	MOEE E3137A

A minimum 10g portion of the sample is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil and then analyzed using a pH meter and electrode.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

PSA-75UM-SIEVE-WT	Soil	% Particles>75um (Coarse/Fine)	CARTER CSSS 55.4 (modified)

An air-dried sample is reduced to < 2 mm size and mixed with a dispersing agent (sodium metaphosphate). The sample is washed through a 200 mesh (75 µm) sieve. The retained mass of sample is used to determine % sand fraction. If the percentage of sand is >50%, the soil is considered to be coarse textured soil. If the percentage of sand is <50%, the soil is considered to be fine textured.

Reference Information

SAR-R511-WT	Soil	SAR-O.Reg 153/04 (July 2011)	SW846 6010C

A dried, disaggregated solid sample is extracted with deionized water, the aqueous extract is separated from the solid, acidified and then analyzed using a ICP/OES. The concentrations of Na, Ca and Mg are reported as per CALA requirements for calculated parameters. These individual parameters are not for comparison to any guideline.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

VOC-1,3-DCP-CALC-WT	Soil	Regulation 153 VOCs	SW8260B/SW8270C
VOC-511-HS-WT	Soil	VOC-O.Reg 153/04 (July 2011)	SW846 8260 (511)

Soil and sediment samples are extracted in methanol and analyzed by headspace-GC/MS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

XYLENES-SUM-CALC-WT	Soil	Sum of Xylene Isomer Concentrations	CALCULATION

Total xylenes represents the sum of o-xylene and m&p-xylene.

*** ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody numbers:

11189766-02

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA		

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Quality Control Report

Workorder: L2240805 Report Date: 15-MAR-19

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
B-HWS-R511-WT	**Soil**							
Batch R4552147								
WG3002221-4 DUP		**L2240665-3**						
Boron (B), Hot Water Ext.		0.26	0.25		ug/g	3.5	30	08-MAR-19
WG3002221-2 IRM		**HOTB-SAL_SOIL5**						
Boron (B), Hot Water Ext.			90.6		%		70-130	08-MAR-19
WG3002221-3 LCS								
Boron (B), Hot Water Ext.			95.2		%		70-130	08-MAR-19
WG3002221-1 MB								
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	08-MAR-19
Batch R4552312								
WG3001954-4 DUP		**L2240566-8**						
Boron (B), Hot Water Ext.		0.14	0.11		ug/g	23	30	08-MAR-19
WG3001954-2 IRM		**HOTB-SAL_SOIL5**						
Boron (B), Hot Water Ext.			89.2		%		70-130	08-MAR-19
WG3001954-3 LCS								
Boron (B), Hot Water Ext.			96.3		%		70-130	08-MAR-19
WG3001954-1 MB								
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	08-MAR-19
CN-WAD-R511-WT	**Soil**							
Batch R4551911								
WG3001520-3 DUP		**L2240665-5**						
Cyanide, Weak Acid Diss		<0.050	<0.050	RPD-NA	ug/g	N/A	35	08-MAR-19
WG3001520-2 LCS								
Cyanide, Weak Acid Diss			91.8		%		80-120	08-MAR-19
WG3001520-1 MB								
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	08-MAR-19
WG3001520-4 MS		**L2240665-5**						
Cyanide, Weak Acid Diss			99.2		%		70-130	08-MAR-19
Batch R4555550								
WG3001615-3 DUP		**L2240922-5**						
Cyanide, Weak Acid Diss		<0.050	<0.050	RPD-NA	ug/g	N/A	35	11-MAR-19
WG3001615-2 LCS								
Cyanide, Weak Acid Diss			95.6		%		80-120	11-MAR-19
WG3001615-1 MB								
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	11-MAR-19
WG3001615-4 MS		**L2240922-5**						
Cyanide, Weak Acid Diss			100.2		%		70-130	11-MAR-19
CR-CR6-IC-WT	**Soil**							

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CR-CR6-IC-WT	**Soil**							
Batch R4555767								
WG3001454-4 CRM		**WT-SQC012**						
Chromium, Hexavalent			87.0		%		70-130	08-MAR-19
WG3001454-3 DUP		**L2240665-2**						
Chromium, Hexavalent		<0.20	<0.20	RPD-NA	ug/g	N/A	35	08-MAR-19
WG3001454-2 LCS								
Chromium, Hexavalent			90.3		%		80-120	08-MAR-19
WG3001454-1 MB								
Chromium, Hexavalent			<0.20		ug/g		0.2	08-MAR-19
Batch R4556047								
WG3001568-4 CRM		**WT-SQC012**						
Chromium, Hexavalent			92.1		%		70-130	11-MAR-19
WG3001568-3 DUP		**L2240809-1**						
Chromium, Hexavalent		0.22	<0.20	RPD-NA	ug/g	N/A	35	11-MAR-19
WG3001568-2 LCS								
Chromium, Hexavalent			93.8		%		80-120	11-MAR-19
WG3001568-1 MB								
Chromium, Hexavalent			<0.20		ug/g		0.2	11-MAR-19
EC-WT	**Soil**							
Batch R4551667								
WG3002224-4 DUP		**WG3002224-3**						
Conductivity		0.299	0.293		mS/cm	2.0	20	08-MAR-19
WG3002360-1 LCS								
Conductivity			97.6		%		90-110	08-MAR-19
WG3002224-1 MB								
Conductivity			<0.0040		mS/cm		0.004	08-MAR-19
Batch R4552274								
WG3001968-4 DUP		**WG3001968-3**						
Conductivity		0.122	0.121		mS/cm	0.6	20	08-MAR-19
WG3002705-1 LCS								
Conductivity			94.7		%		90-110	08-MAR-19
WG3001968-1 MB								
Conductivity			<0.0040		mS/cm		0.004	08-MAR-19
F1-HS-511-WT	**Soil**							
Batch R4551053								
WG3001855-4 DUP		**WG3001855-3**						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	08-MAR-19
WG3001855-2 LCS								

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT	**Soil**							
Batch R4551053								
WG3001855-2 LCS								
F1 (C6-C10)			107.5		%		80-120	08-MAR-19
WG3001855-1 MB								
F1 (C6-C10)			<5.0		ug/g		5	08-MAR-19
Surrogate: 3,4-Dichlorotoluene			114.1		%		60-140	08-MAR-19
WG3001855-6 MS		**L2240604-1**						
F1 (C6-C10)			107.8		%		60-140	08-MAR-19
Batch R4556069								
WG3002209-4 DUP		**WG3002209-3**						
F1 (C6-C10)		11.6	9.8		ug/g	18	30	11-MAR-19
WG3002209-2 LCS								
F1 (C6-C10)			108.7		%		80-120	11-MAR-19
WG3002209-1 MB								
F1 (C6-C10)			<5.0		ug/g		5	11-MAR-19
Surrogate: 3,4-Dichlorotoluene			108.6		%		60-140	11-MAR-19
WG3002209-6 MS		**L2240931-5**						
F1 (C6-C10)			101.3		%		60-140	11-MAR-19
F2-F4-511-WT	**Soil**							
Batch R4551307								
WG3001433-3 DUP		**WG3001433-5**						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	30	07-MAR-19
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	30	07-MAR-19
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	30	07-MAR-19
WG3001433-2 LCS								
F2 (C10-C16)			99.5		%		80-120	07-MAR-19
F3 (C16-C34)			102.0		%		80-120	07-MAR-19
F4 (C34-C50)			100.2		%		80-120	07-MAR-19
WG3001433-1 MB								
F2 (C10-C16)			<10		ug/g		10	07-MAR-19
F3 (C16-C34)			<50		ug/g		50	07-MAR-19
F4 (C34-C50)			<50		ug/g		50	07-MAR-19
Surrogate: 2-Bromobenzotrifluoride			90.6		%		60-140	07-MAR-19
WG3001433-4 MS		**WG3001433-5**						
F2 (C10-C16)			99.1		%		60-140	07-MAR-19
F3 (C16-C34)			98.8		%		60-140	07-MAR-19
F4 (C34-C50)			95.9		%		60-140	07-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-511-WT	**Soil**							
Batch R4555609								
WG3001518-3 DUP		**WG3001518-5**						
F2 (C10-C16)		<50	<50	RPD-NA	ug/g	N/A	30	08-MAR-19
F3 (C16-C34)		980	970		ug/g	0.9	30	08-MAR-19
F4 (C34-C50)		2290	2290		ug/g	0.3	30	08-MAR-19
WG3001518-2 LCS								
F2 (C10-C16)			101.6		%		80-120	08-MAR-19
F3 (C16-C34)			106.9		%		80-120	08-MAR-19
F4 (C34-C50)			105.3		%		80-120	08-MAR-19
WG3001518-1 MB								
F2 (C10-C16)			<10		ug/g		10	08-MAR-19
F3 (C16-C34)			<50		ug/g		50	08-MAR-19
F4 (C34-C50)			<50		ug/g		50	08-MAR-19
Surrogate: 2-Bromobenzotrifluoride			80.7		%		60-140	08-MAR-19
WG3001518-4 MS		**WG3001518-5**						
F2 (C10-C16)			105.3		%		60-140	08-MAR-19
F3 (C16-C34)			N/A	MS-B	%		-	08-MAR-19
F4 (C34-C50)			N/A	MS-B	%		-	08-MAR-19
F4G-ADD-511-WT	**Soil**							
Batch R4556348								
WG3003973-2 LCS								
F4G-SG (GHH-Silica)			84.6		%		60-140	07-MAR-19
WG3003973-1 MB								
F4G-SG (GHH-Silica)			<250		ug/g		250	07-MAR-19
HG-200.2-CVAA-WT	**Soil**							
Batch R4551707								
WG3002215-2 CRM		**WT-CANMET-TILL1**						
Mercury (Hg)			110.4		%		70-130	08-MAR-19
WG3002215-6 DUP		**WG3002215-5**						
Mercury (Hg)		0.0364	0.0363		ug/g	0.3	40	08-MAR-19
WG3002215-3 LCS								
Mercury (Hg)			119.0		%		80-120	08-MAR-19
WG3002215-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	08-MAR-19
Batch R4551712								
WG3001934-2 CRM		**WT-CANMET-TILL1**						
Mercury (Hg)			112.9		%		70-130	08-MAR-19
WG3001934-6 DUP		**WG3001934-5**						

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-200.2-CVAA-WT	**Soil**							
Batch R4551712								
WG3001934-6 DUP		**WG3001934-5**						
Mercury (Hg)		0.419	0.405		ug/g	3.5	40	08-MAR-19
WG3001934-3 LCS								
Mercury (Hg)			119.5		%		80-120	08-MAR-19
WG3001934-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	08-MAR-19
MET-200.2-CCMS-WT	**Soil**							
Batch R4552057								
WG3002215-2 CRM		**WT-CANMET-TILL1**						
Antimony (Sb)			109.6		%		70-130	08-MAR-19
Arsenic (As)			102.6		%		70-130	08-MAR-19
Barium (Ba)			101.5		%		70-130	08-MAR-19
Beryllium (Be)			103.9		%		70-130	08-MAR-19
Boron (B)			2.8		mg/kg		0-8.2	08-MAR-19
Cadmium (Cd)			106.6		%		70-130	08-MAR-19
Chromium (Cr)			104.3		%		70-130	08-MAR-19
Cobalt (Co)			103.1		%		70-130	08-MAR-19
Copper (Cu)			104.6		%		70-130	08-MAR-19
Lead (Pb)			108.1		%		70-130	08-MAR-19
Molybdenum (Mo)			106.0		%		70-130	08-MAR-19
Nickel (Ni)			105.0		%		70-130	08-MAR-19
Selenium (Se)			0.29		mg/kg		0.11-0.51	08-MAR-19
Silver (Ag)			0.24		mg/kg		0.13-0.33	08-MAR-19
Thallium (Tl)			0.131		mg/kg		0.077-0.18	08-MAR-19
Uranium (U)			103.5		%		70-130	08-MAR-19
Vanadium (V)			102.8		%		70-130	08-MAR-19
Zinc (Zn)			98.4		%		70-130	08-MAR-19
WG3002215-6 DUP		**WG3002215-5**						
Antimony (Sb)		0.17	0.15		ug/g	9.6	30	08-MAR-19
Arsenic (As)		4.41	3.79		ug/g	15	30	08-MAR-19
Barium (Ba)		68.1	57.8		ug/g	16	40	08-MAR-19
Beryllium (Be)		0.43	0.38		ug/g	12	30	08-MAR-19
Boron (B)		5.4	5.1		ug/g	5.3	30	08-MAR-19
Cadmium (Cd)		0.106	0.083		ug/g	25	30	08-MAR-19
Chromium (Cr)		17.0	14.2		ug/g	18	30	08-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R4552057								
WG3002215-6 DUP		**WG3002215-5**						
Cobalt (Co)		7.75	6.67		ug/g	15	30	08-MAR-19
Copper (Cu)		21.9	19.1		ug/g	13	30	08-MAR-19
Lead (Pb)		16.5	14.5		ug/g	13	40	08-MAR-19
Molybdenum (Mo)		0.81	0.75		ug/g	7.6	40	08-MAR-19
Nickel (Ni)		16.3	14.1		ug/g	15	30	08-MAR-19
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	08-MAR-19
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	08-MAR-19
Thallium (Tl)		0.080	0.069		ug/g	14	30	08-MAR-19
Uranium (U)		0.504	0.467		ug/g	7.6	30	08-MAR-19
Vanadium (V)		24.6	22.0		ug/g	11	30	08-MAR-19
Zinc (Zn)		44.8	42.1		ug/g	6.4	30	08-MAR-19
WG3002215-4 LCS								
Antimony (Sb)			101.0		%		80-120	08-MAR-19
Arsenic (As)			95.9		%		80-120	08-MAR-19
Barium (Ba)			97.9		%		80-120	08-MAR-19
Beryllium (Be)			94.4		%		80-120	08-MAR-19
Boron (B)			92.6		%		80-120	08-MAR-19
Cadmium (Cd)			97.3		%		80-120	08-MAR-19
Chromium (Cr)			99.6		%		80-120	08-MAR-19
Cobalt (Co)			97.0		%		80-120	08-MAR-19
Copper (Cu)			95.6		%		80-120	08-MAR-19
Lead (Pb)			97.8		%		80-120	08-MAR-19
Molybdenum (Mo)			100.1		%		80-120	08-MAR-19
Nickel (Ni)			98.4		%		80-120	08-MAR-19
Selenium (Se)			94.2		%		80-120	08-MAR-19
Silver (Ag)			101.4		%		80-120	08-MAR-19
Thallium (Tl)			96.6		%		80-120	08-MAR-19
Uranium (U)			100.9		%		80-120	08-MAR-19
Vanadium (V)			100.1		%		80-120	08-MAR-19
Zinc (Zn)			91.7		%		80-120	08-MAR-19
WG3002215-1 MB								
Antimony (Sb)			<0.10		mg/kg		0.1	08-MAR-19
Arsenic (As)			<0.10		mg/kg		0.1	08-MAR-19
Barium (Ba)			<0.50		mg/kg		0.5	

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R4552057								
WG3002215-1 MB								
Barium (Ba)			<0.50		mg/kg		0.5	08-MAR-19
Beryllium (Be)			<0.10		mg/kg		0.1	08-MAR-19
Boron (B)			<5.0		mg/kg		5	08-MAR-19
Cadmium (Cd)			<0.020		mg/kg		0.02	08-MAR-19
Chromium (Cr)			<0.50		mg/kg		0.5	08-MAR-19
Cobalt (Co)			<0.10		mg/kg		0.1	08-MAR-19
Copper (Cu)			<0.50		mg/kg		0.5	08-MAR-19
Lead (Pb)			<0.50		mg/kg		0.5	08-MAR-19
Molybdenum (Mo)			<0.10		mg/kg		0.1	08-MAR-19
Nickel (Ni)			<0.50		mg/kg		0.5	08-MAR-19
Selenium (Se)			<0.20		mg/kg		0.2	08-MAR-19
Silver (Ag)			<0.10		mg/kg		0.1	08-MAR-19
Thallium (Tl)			<0.050		mg/kg		0.05	08-MAR-19
Uranium (U)			<0.050		mg/kg		0.05	08-MAR-19
Vanadium (V)			<0.20		mg/kg		0.2	08-MAR-19
Zinc (Zn)			<2.0		mg/kg		2	08-MAR-19
Batch R4552630								
WG3001934-2 CRM		**WT-CANMET-TILL1**						
Antimony (Sb)			97.1		%		70-130	08-MAR-19
Arsenic (As)			94.4		%		70-130	08-MAR-19
Barium (Ba)			91.2		%		70-130	08-MAR-19
Beryllium (Be)			95.8		%		70-130	08-MAR-19
Boron (B)			2.3		mg/kg		0-8.2	08-MAR-19
Cadmium (Cd)			94.1		%		70-130	08-MAR-19
Chromium (Cr)			91.0		%		70-130	08-MAR-19
Cobalt (Co)			92.6		%		70-130	08-MAR-19
Copper (Cu)			95.4		%		70-130	08-MAR-19
Lead (Pb)			96.8		%		70-130	08-MAR-19
Molybdenum (Mo)			89.5		%		70-130	08-MAR-19
Nickel (Ni)			92.4		%		70-130	08-MAR-19
Selenium (Se)			0.25		mg/kg		0.11-0.51	08-MAR-19
Silver (Ag)			0.23		mg/kg		0.13-0.33	08-MAR-19
Thallium (Tl)			0.110		mg/kg		0.077-0.18	08-MAR-19
Uranium (U)			90.5		%		70-130	08-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R4552630								
WG3001934-2 CRM		**WT-CANMET-TILL1**						
Vanadium (V)			90.2		%		70-130	08-MAR-19
Zinc (Zn)			88.9		%		70-130	08-MAR-19
WG3001934-6 DUP		**WG3001934-5**						
Antimony (Sb)		1.02	0.80		ug/g	24	30	08-MAR-19
Arsenic (As)		7.27	6.72		ug/g	7.9	30	08-MAR-19
Barium (Ba)		131	125		ug/g	4.7	40	08-MAR-19
Beryllium (Be)		0.48	0.43		ug/g	11	30	08-MAR-19
Boron (B)		6.9	6.5		ug/g	6.0	30	08-MAR-19
Cadmium (Cd)		0.302	0.259		ug/g	15	30	08-MAR-19
Chromium (Cr)		16.6	16.3		ug/g	2.1	30	08-MAR-19
Cobalt (Co)		8.47	7.84		ug/g	7.7	30	08-MAR-19
Copper (Cu)		44.4	40.7		ug/g	8.5	30	08-MAR-19
Lead (Pb)		265	222		ug/g	17	40	08-MAR-19
Molybdenum (Mo)		0.57	0.53		ug/g	6.8	40	08-MAR-19
Nickel (Ni)		17.5	16.5		ug/g	5.4	30	08-MAR-19
Selenium (Se)		0.37	0.42		ug/g	13	30	08-MAR-19
Silver (Ag)		0.19	0.17		ug/g	9.8	40	08-MAR-19
Thallium (Tl)		0.117	0.105		ug/g	11	30	08-MAR-19
Uranium (U)		0.549	0.496		ug/g	10	30	08-MAR-19
Vanadium (V)		25.9	24.4		ug/g	6.1	30	08-MAR-19
Zinc (Zn)		246	222		ug/g	10	30	08-MAR-19
WG3001934-4 LCS								
Antimony (Sb)			103.1		%		80-120	08-MAR-19
Arsenic (As)			99.2		%		80-120	08-MAR-19
Barium (Ba)			100.6		%		80-120	08-MAR-19
Beryllium (Be)			100.1		%		80-120	08-MAR-19
Boron (B)			93.8		%		80-120	08-MAR-19
Cadmium (Cd)			98.0		%		80-120	08-MAR-19
Chromium (Cr)			99.1		%		80-120	08-MAR-19
Cobalt (Co)			99.8		%		80-120	08-MAR-19
Copper (Cu)			97.8		%		80-120	08-MAR-19
Lead (Pb)			97.2		%		80-120	08-MAR-19
Molybdenum (Mo)			100.6		%		80-120	08-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R4552630								
WG3001934-4 LCS								
Nickel (Ni)			98.3		%		80-120	08-MAR-19
Selenium (Se)			94.9		%		80-120	08-MAR-19
Silver (Ag)			102.9		%		80-120	08-MAR-19
Thallium (Tl)			96.9		%		80-120	08-MAR-19
Uranium (U)			97.2		%		80-120	08-MAR-19
Vanadium (V)			102.5		%		80-120	08-MAR-19
Zinc (Zn)			96.5		%		80-120	08-MAR-19
WG3001934-1 MB								
Antimony (Sb)			<0.10		mg/kg		0.1	08-MAR-19
Arsenic (As)			<0.10		mg/kg		0.1	08-MAR-19
Barium (Ba)			<0.50		mg/kg		0.5	08-MAR-19
Beryllium (Be)			<0.10		mg/kg		0.1	08-MAR-19
Boron (B)			<5.0		mg/kg		5	08-MAR-19
Cadmium (Cd)			<0.020		mg/kg		0.02	08-MAR-19
Chromium (Cr)			<0.50		mg/kg		0.5	08-MAR-19
Cobalt (Co)			<0.10		mg/kg		0.1	08-MAR-19
Copper (Cu)			<0.50		mg/kg		0.5	08-MAR-19
Lead (Pb)			<0.50		mg/kg		0.5	08-MAR-19
Molybdenum (Mo)			<0.10		mg/kg		0.1	08-MAR-19
Nickel (Ni)			<0.50		mg/kg		0.5	08-MAR-19
Selenium (Se)			<0.20		mg/kg		0.2	08-MAR-19
Silver (Ag)			<0.10		mg/kg		0.1	08-MAR-19
Thallium (Tl)			<0.050		mg/kg		0.05	08-MAR-19
Uranium (U)			<0.050		mg/kg		0.05	08-MAR-19
Vanadium (V)			<0.20		mg/kg		0.2	08-MAR-19
Zinc (Zn)			<2.0		mg/kg		2	08-MAR-19
MOISTURE-WT	**Soil**							
Batch R4547830								
WG3001419-6 DUP		**L2240805-2**						
% Moisture		13.1	12.9		%	1.2	20	07-MAR-19
WG3001419-5 LCS								
% Moisture			99.96		%		90-110	07-MAR-19
WG3001419-4 MB								
% Moisture			<0.10		%		0.1	07-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT	**Soil**							
Batch R4548829								
WG3001508-3 DUP		**L2240809-1**						
% Moisture		4.95	5.35		%	7.7	20	08-MAR-19
WG3001508-2 LCS								
% Moisture			100.1		%		90-110	08-MAR-19
WG3001508-1 MB								
% Moisture			<0.10		%		0.1	08-MAR-19
PAH-511-WT	**Soil**							
Batch R4555847								
WG3001426-3 DUP		**WG3001426-5**						
1-Methylnaphthalene		0.061	0.057		ug/g	5.4	40	11-MAR-19
2-Methylnaphthalene		0.085	0.080		ug/g	6.3	40	11-MAR-19
Acenaphthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
Acenaphthylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
Anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
Benzo(a)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
Benzo(a)pyrene		0.083	0.083		ug/g	1.0	40	11-MAR-19
Benzo(b)fluoranthene		0.086	0.095		ug/g	9.6	40	11-MAR-19
Benzo(g,h,i)perylene		0.320	0.326		ug/g	1.7	40	11-MAR-19
Benzo(k)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
Chrysene		0.184	0.186		ug/g	1.3	40	11-MAR-19
Dibenzo(ah)anthracene		0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
Fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
Fluorene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
Indeno(1,2,3-cd)pyrene		0.087	0.089		ug/g	2.5	40	11-MAR-19
Naphthalene		0.017	0.017		ug/g	2.4	40	11-MAR-19
Phenanthrene		0.077	0.077		ug/g	0.7	40	11-MAR-19
Pyrene		0.090	0.092		ug/g	2.1	40	11-MAR-19
WG3001426-2 LCS								
1-Methylnaphthalene			97.5		%		50-140	11-MAR-19
2-Methylnaphthalene			93.7		%		50-140	11-MAR-19
Acenaphthene			103.5		%		50-140	11-MAR-19
Acenaphthylene			101.0		%		50-140	11-MAR-19
Anthracene			100.2		%		50-140	11-MAR-19
Benzo(a)anthracene			97.2		%		50-140	11-MAR-19
Benzo(a)pyrene			95.7		%		50-140	11-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R4555847								
WG3001426-2 LCS								
Benzo(b)fluoranthene			80.0		%		50-140	11-MAR-19
Benzo(g,h,i)perylene			92.8		%		50-140	11-MAR-19
Benzo(k)fluoranthene			118.2		%		50-140	11-MAR-19
Chrysene			104.9		%		50-140	11-MAR-19
Dibenzo(ah)anthracene			94.0		%		50-140	11-MAR-19
Fluoranthene			89.6		%		50-140	11-MAR-19
Fluorene			98.6		%		50-140	11-MAR-19
Indeno(1,2,3-cd)pyrene			87.4		%		50-140	11-MAR-19
Naphthalene			95.8		%		50-140	11-MAR-19
Phenanthrene			98.2		%		50-140	11-MAR-19
Pyrene			88.0		%		50-140	11-MAR-19
WG3001426-1 MB								
1-Methylnaphthalene			<0.030		ug/g		0.03	11-MAR-19
2-Methylnaphthalene			<0.030		ug/g		0.03	11-MAR-19
Acenaphthene			<0.050		ug/g		0.05	11-MAR-19
Acenaphthylene			<0.050		ug/g		0.05	11-MAR-19
Anthracene			<0.050		ug/g		0.05	11-MAR-19
Benzo(a)anthracene			<0.050		ug/g		0.05	11-MAR-19
Benzo(a)pyrene			<0.050		ug/g		0.05	11-MAR-19
Benzo(b)fluoranthene			<0.050		ug/g		0.05	11-MAR-19
Benzo(g,h,i)perylene			<0.050		ug/g		0.05	11-MAR-19
Benzo(k)fluoranthene			<0.050		ug/g		0.05	11-MAR-19
Chrysene			<0.050		ug/g		0.05	11-MAR-19
Dibenzo(ah)anthracene			<0.050		ug/g		0.05	11-MAR-19
Fluoranthene			<0.050		ug/g		0.05	11-MAR-19
Fluorene			<0.050		ug/g		0.05	11-MAR-19
Indeno(1,2,3-cd)pyrene			<0.050		ug/g		0.05	11-MAR-19
Naphthalene			<0.013		ug/g		0.013	11-MAR-19
Phenanthrene			<0.046		ug/g		0.046	11-MAR-19
Pyrene			<0.050		ug/g		0.05	11-MAR-19
Surrogate: 2-Fluorobiphenyl			97.0		%		50-140	11-MAR-19
Surrogate: p-Terphenyl d14			87.6		%		50-140	11-MAR-19
WG3001426-4 MS		**WG3001426-5**						
1-Methylnaphthalene			85.1		%		50-140	11-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R4555847								
WG3001426-4 MS		**WG3001426-5**						
2-Methylnaphthalene			82.8		%		50-140	11-MAR-19
Acenaphthene			90.7		%		50-140	11-MAR-19
Acenaphthylene			90.7		%		50-140	11-MAR-19
Anthracene			100.1		%		50-140	11-MAR-19
Benzo(a)anthracene			101.0		%		50-140	11-MAR-19
Benzo(a)pyrene			91.2		%		50-140	11-MAR-19
Benzo(b)fluoranthene			88.1		%		50-140	11-MAR-19
Benzo(g,h,i)perylene			95.6		%		50-140	11-MAR-19
Benzo(k)fluoranthene			84.1		%		50-140	11-MAR-19
Chrysene			89.3		%		50-140	11-MAR-19
Dibenzo(ah)anthracene			125.8		%		50-140	11-MAR-19
Fluoranthene			96.5		%		50-140	11-MAR-19
Fluorene			87.6		%		50-140	11-MAR-19
Indeno(1,2,3-cd)pyrene			126.3		%		50-140	11-MAR-19
Naphthalene			90.0		%		50-140	11-MAR-19
Phenanthrene			95.0		%		50-140	11-MAR-19
Pyrene			96.8		%		50-140	11-MAR-19
PH-WT	**Soil**							
Batch R4558655								
WG3001467-1 DUP		**L2240665-5**						
pH		7.76	7.77	J	pH units	0.01	0.3	12-MAR-19
WG3004395-1 LCS								
pH			6.96		pH units		6.9-7.1	12-MAR-19
PSA-75UM-SIEVE-WT	**Soil**							
Batch R4561334								
WG3005637-2 DUP		**L2242268-19**						
% >75um		1.4	1.1	J	%	0.3	5	13-MAR-19
SAR-R511-WT	**Soil**							
Batch R4552049								
WG3002224-4 DUP		**WG3002224-3**						
Calcium (Ca)		35.1	34.8		mg/L	0.9	30	08-MAR-19
Sodium (Na)		4.74	4.77		mg/L	0.6	30	08-MAR-19
Magnesium (Mg)		5.24	5.21		mg/L	0.6	30	08-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SAR-R511-WT	**Soil**							
Batch R4552049								
WG3002224-2 IRM		**WT SAR2**						
Calcium (Ca)			101.8		%		70-130	08-MAR-19
Sodium (Na)			90.4		%		70-130	08-MAR-19
Magnesium (Mg)			98.8		%		70-130	08-MAR-19
WG3002224-5 LCS								
Calcium (Ca)			111.0		%		70-130	08-MAR-19
Sodium (Na)			107.4		%		70-130	08-MAR-19
Magnesium (Mg)			107.4		%		70-130	08-MAR-19
WG3002224-1 MB								
Calcium (Ca)			<0.50		mg/L		0.5	08-MAR-19
Sodium (Na)			<0.50		mg/L		0.5	08-MAR-19
Magnesium (Mg)			<0.50		mg/L		0.5	08-MAR-19
Batch R4552056								
WG3001968-4 DUP		**WG3001968-3**						
Calcium (Ca)		17.5	17.1		mg/L	2.3	30	08-MAR-19
Sodium (Na)		3.20	3.18		mg/L	0.6	30	08-MAR-19
Magnesium (Mg)		2.02	2.09		mg/L	3.4	30	08-MAR-19
WG3001968-2 IRM		**WT SAR2**						
Calcium (Ca)			115.6		%		70-130	08-MAR-19
Sodium (Na)			99.0		%		70-130	08-MAR-19
Magnesium (Mg)			111.5		%		70-130	08-MAR-19
WG3001968-5 LCS								
Calcium (Ca)			107.0		%		70-130	08-MAR-19
Sodium (Na)			101.6		%		70-130	08-MAR-19
Magnesium (Mg)			101.4		%		70-130	08-MAR-19
WG3001968-1 MB								
Calcium (Ca)			<0.50		mg/L		0.5	08-MAR-19
Sodium (Na)			<0.50		mg/L		0.5	08-MAR-19
Magnesium (Mg)			<0.50		mg/L		0.5	08-MAR-19
VOC-511-HS-WT	**Soil**							
Batch R4552050								
WG3002022-4 DUP		**WG3002022-3**						
1,1,1,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19
1,1,2,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19
1,1,1-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19
1,1,2-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4552050								
WG3002022-4 DUP		**WG3002022-3**						
1,1-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19
1,1-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19
1,2-Dibromoethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19
1,2-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19
1,2-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19
1,2-Dichloropropane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19
1,3-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19
1,4-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19
Acetone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	08-MAR-19
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	08-MAR-19
Bromodichloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19
Bromoform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19
Bromomethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19
Carbon tetrachloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19
Chlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19
Chloroform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19
cis-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19
cis-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	08-MAR-19
Dibromochloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19
Dichlorodifluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	08-MAR-19
n-Hexane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19
Methylene Chloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19
MTBE		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	08-MAR-19
Methyl Ethyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	08-MAR-19
Methyl Isobutyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	08-MAR-19
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	08-MAR-19
Styrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19
Tetrachloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	08-MAR-19
trans-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19
trans-1,3-Dichloropropene		<0.030	<0.030		ug/g			08-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4552050								
WG3002022-4 DUP		**WG3002022-3**						
trans-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	08-MAR-19
Trichloroethylene		<0.010	<0.010	RPD-NA	ug/g	N/A	40	08-MAR-19
Trichlorofluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	08-MAR-19
Vinyl chloride		<0.020	<0.020	RPD-NA	ug/g	N/A	40	08-MAR-19
WG3002022-2 LCS								
1,1,1,2-Tetrachloroethane			108.7		%		60-130	08-MAR-19
1,1,2,2-Tetrachloroethane			102.1		%		60-130	08-MAR-19
1,1,1-Trichloroethane			107.7		%		60-130	08-MAR-19
1,1,2-Trichloroethane			99.2		%		60-130	08-MAR-19
1,1-Dichloroethane			104.2		%		60-130	08-MAR-19
1,1-Dichloroethylene			101.7		%		60-130	08-MAR-19
1,2-Dibromoethane			99.2		%		70-130	08-MAR-19
1,2-Dichlorobenzene			109.4		%		70-130	08-MAR-19
1,2-Dichloroethane			99.5		%		60-130	08-MAR-19
1,2-Dichloropropane			107.8		%		70-130	08-MAR-19
1,3-Dichlorobenzene			112.5		%		70-130	08-MAR-19
1,4-Dichlorobenzene			112.1		%		70-130	08-MAR-19
Acetone			94.9		%		60-140	08-MAR-19
Benzene			108.3		%		70-130	08-MAR-19
Bromodichloromethane			101.6		%		50-140	08-MAR-19
Bromoform			97.3		%		70-130	08-MAR-19
Bromomethane			92.1		%		50-140	08-MAR-19
Carbon tetrachloride			104.6		%		70-130	08-MAR-19
Chlorobenzene			109.3		%		70-130	08-MAR-19
Chloroform			106.2		%		70-130	08-MAR-19
cis-1,2-Dichloroethylene			106.9		%		70-130	08-MAR-19
cis-1,3-Dichloropropene			100.9		%		70-130	08-MAR-19
Dibromochloromethane			100.9		%		60-130	08-MAR-19
Dichlorodifluoromethane			61.3		%		50-140	08-MAR-19
Ethylbenzene			107.5		%		70-130	08-MAR-19
n-Hexane			90.3		%		70-130	08-MAR-19
Methylene Chloride			97.7		%		70-130	08-MAR-19
MTBE			104.1		%		70-130	08-MAR-19
m+p-Xylenes			107.2				70-130	

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4552050								
WG3002022-2 LCS								
m+p-Xylenes			107.2		%		70-130	08-MAR-19
Methyl Ethyl Ketone			89.9		%		60-140	08-MAR-19
Methyl Isobutyl Ketone			91.7		%		60-140	08-MAR-19
o-Xylene			107.1		%		70-130	08-MAR-19
Styrene			111.1		%		70-130	08-MAR-19
Tetrachloroethylene			110.1		%		60-130	08-MAR-19
Toluene			107.4		%		70-130	08-MAR-19
trans-1,2-Dichloroethylene			107.6		%		60-130	08-MAR-19
trans-1,3-Dichloropropene			100.8		%		70-130	08-MAR-19
Trichloroethylene			111.2		%		60-130	08-MAR-19
Trichlorofluoromethane			97.5		%		50-140	08-MAR-19
Vinyl chloride			75.3		%		60-140	08-MAR-19
WG3002022-1 MB								
1,1,1,2-Tetrachloroethane			<0.050		ug/g		0.05	08-MAR-19
1,1,2,2-Tetrachloroethane			<0.050		ug/g		0.05	08-MAR-19
1,1,1-Trichloroethane			<0.050		ug/g		0.05	08-MAR-19
1,1,2-Trichloroethane			<0.050		ug/g		0.05	08-MAR-19
1,1-Dichloroethane			<0.050		ug/g		0.05	08-MAR-19
1,1-Dichloroethylene			<0.050		ug/g		0.05	08-MAR-19
1,2-Dibromoethane			<0.050		ug/g		0.05	08-MAR-19
1,2-Dichlorobenzene			<0.050		ug/g		0.05	08-MAR-19
1,2-Dichloroethane			<0.050		ug/g		0.05	08-MAR-19
1,2-Dichloropropane			<0.050		ug/g		0.05	08-MAR-19
1,3-Dichlorobenzene			<0.050		ug/g		0.05	08-MAR-19
1,4-Dichlorobenzene			<0.050		ug/g		0.05	08-MAR-19
Acetone			<0.50		ug/g		0.5	08-MAR-19
Benzene			<0.0068		ug/g		0.0068	08-MAR-19
Bromodichloromethane			<0.050		ug/g		0.05	08-MAR-19
Bromoform			<0.050		ug/g		0.05	08-MAR-19
Bromomethane			<0.050		ug/g		0.05	08-MAR-19
Carbon tetrachloride			<0.050		ug/g		0.05	08-MAR-19
Chlorobenzene			<0.050		ug/g		0.05	08-MAR-19
Chloroform			<0.050		ug/g		0.05	08-MAR-19
cis-1,2-Dichloroethylene			<0.050		ug/g		0.05	08-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4552050								
WG3002022-1 MB								
cis-1,3-Dichloropropene			<0.030		ug/g		0.03	08-MAR-19
Dibromochloromethane			<0.050		ug/g		0.05	08-MAR-19
Dichlorodifluoromethane			<0.050		ug/g		0.05	08-MAR-19
Ethylbenzene			<0.018		ug/g		0.018	08-MAR-19
n-Hexane			<0.050		ug/g		0.05	08-MAR-19
Methylene Chloride			<0.050		ug/g		0.05	08-MAR-19
MTBE			<0.050		ug/g		0.05	08-MAR-19
m+p-Xylenes			<0.030		ug/g		0.03	08-MAR-19
Methyl Ethyl Ketone			<0.50		ug/g		0.5	08-MAR-19
Methyl Isobutyl Ketone			<0.50		ug/g		0.5	08-MAR-19
o-Xylene			<0.020		ug/g		0.02	08-MAR-19
Styrene			<0.050		ug/g		0.05	08-MAR-19
Tetrachloroethylene			<0.050		ug/g		0.05	08-MAR-19
Toluene			<0.080		ug/g		0.08	08-MAR-19
trans-1,2-Dichloroethylene			<0.050		ug/g		0.05	08-MAR-19
trans-1,3-Dichloropropene			<0.030		ug/g		0.03	08-MAR-19
Trichloroethylene			<0.010		ug/g		0.01	08-MAR-19
Trichlorofluoromethane			<0.050		ug/g		0.05	08-MAR-19
Vinyl chloride			<0.020		ug/g		0.02	08-MAR-19
Surrogate: 1,4-Difluorobenzene			105.0		%		50-140	08-MAR-19
Surrogate: 4-Bromofluorobenzene			96.5		%		50-140	08-MAR-19
WG3002022-5 MS		**L2240665-4**						
1,1,1,2-Tetrachloroethane			106.1		%		50-140	08-MAR-19
1,1,2,2-Tetrachloroethane			99.9		%		50-140	08-MAR-19
1,1,1-Trichloroethane			105.3		%		50-140	08-MAR-19
1,1,2-Trichloroethane			96.2		%		50-140	08-MAR-19
1,1-Dichloroethane			102.3		%		50-140	08-MAR-19
1,1-Dichloroethylene			98.3		%		50-140	08-MAR-19
1,2-Dibromoethane			95.5		%		50-140	08-MAR-19
1,2-Dichlorobenzene			106.6		%		50-140	08-MAR-19
1,2-Dichloroethane			96.6		%		50-140	08-MAR-19
1,2-Dichloropropane			105.8		%		50-140	08-MAR-19
1,3-Dichlorobenzene			108.1		%		50-140	08-MAR-19
1,4-Dichlorobenzene			108.5		%		50-140	08-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4552050								
WG3002022-5 MS		**L2240665-4**						
Acetone			96.8		%		50-140	08-MAR-19
Benzene			106.3		%		50-140	08-MAR-19
Bromodichloromethane			99.6		%		50-140	08-MAR-19
Bromoform			94.4		%		50-140	08-MAR-19
Bromomethane			86.0		%		50-140	08-MAR-19
Carbon tetrachloride			102.6		%		50-140	08-MAR-19
Chlorobenzene			106.5		%		50-140	08-MAR-19
Chloroform			103.9		%		50-140	08-MAR-19
cis-1,2-Dichloroethylene			105.0		%		50-140	08-MAR-19
cis-1,3-Dichloropropene			94.4		%		50-140	08-MAR-19
Dibromochloromethane			98.2		%		50-140	08-MAR-19
Dichlorodifluoromethane			54.4		%		50-140	08-MAR-19
Ethylbenzene			104.7		%		50-140	08-MAR-19
n-Hexane			86.9		%		50-140	08-MAR-19
Methylene Chloride			94.7		%		50-140	08-MAR-19
MTBE			102.0		%		50-140	08-MAR-19
m+p-Xylenes			104.0		%		50-140	08-MAR-19
Methyl Ethyl Ketone			87.2		%		50-140	08-MAR-19
Methyl Isobutyl Ketone			90.2		%		50-140	08-MAR-19
o-Xylene			104.4		%		50-140	08-MAR-19
Styrene			106.7		%		50-140	08-MAR-19
Tetrachloroethylene			105.7		%		50-140	08-MAR-19
Toluene			105.0		%		50-140	08-MAR-19
trans-1,2-Dichloroethylene			104.2		%		50-140	08-MAR-19
trans-1,3-Dichloropropene			92.6		%		50-140	08-MAR-19
Trichloroethylene			108.5		%		50-140	08-MAR-19
Trichlorofluoromethane			93.8		%		50-140	08-MAR-19
Vinyl chloride			71.1		%		50-140	08-MAR-19
Batch R4555308								
WG3002854-4 DUP		**WG3002854-3**						
1,1,1,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
1,1,2,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
1,1,1-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
1,1,2-Trichloroethane		<0.050	<0.050					

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4555308								
WG3002854-4 DUP		**WG3002854-3**						
1,1,2-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
1,1-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
1,1-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
1,2-Dibromoethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
1,2-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
1,2-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
1,2-Dichloropropane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
1,3-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
1,4-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
Acetone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	11-MAR-19
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	11-MAR-19
Bromodichloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
Bromoform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
Bromomethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
Carbon tetrachloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
Chlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
Chloroform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
cis-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
cis-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	11-MAR-19
Dibromochloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
Dichlorodifluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	11-MAR-19
n-Hexane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
Methylene Chloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
MTBE		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	11-MAR-19
Methyl Ethyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	11-MAR-19
Methyl Isobutyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	11-MAR-19
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	11-MAR-19
Styrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
Tetrachloroethylene		0.058	0.057		ug/g	1.7	40	11-MAR-19
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	11-MAR-19
trans-1,2-Dichloroethylene		<0.050	<0.050		ug/g			11-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4555308								
WG3002854-4 DUP		**WG3002854-3**						
trans-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
trans-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	11-MAR-19
Trichloroethylene		0.046	0.046		ug/g	0.5	40	11-MAR-19
Trichlorofluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	11-MAR-19
Vinyl chloride		<0.020	<0.020	RPD-NA	ug/g	N/A	40	11-MAR-19
WG3002854-2 LCS								
1,1,1,2-Tetrachloroethane			102.2		%		60-130	11-MAR-19
1,1,2,2-Tetrachloroethane			89.1		%		60-130	11-MAR-19
1,1,1-Trichloroethane			100.9		%		60-130	11-MAR-19
1,1,2-Trichloroethane			96.3		%		60-130	11-MAR-19
1,1-Dichloroethane			99.9		%		60-130	11-MAR-19
1,1-Dichloroethylene			94.5		%		60-130	11-MAR-19
1,2-Dibromoethane			95.6		%		70-130	11-MAR-19
1,2-Dichlorobenzene			102.4		%		70-130	11-MAR-19
1,2-Dichloroethane			97.4		%		60-130	11-MAR-19
1,2-Dichloropropane			103.4		%		70-130	11-MAR-19
1,3-Dichlorobenzene			102.4		%		70-130	11-MAR-19
1,4-Dichlorobenzene			102.7		%		70-130	11-MAR-19
Acetone			96.1		%		60-140	11-MAR-19
Benzene			103.0		%		70-130	11-MAR-19
Bromodichloromethane			97.7		%		50-140	11-MAR-19
Bromoform			91.9		%		70-130	11-MAR-19
Bromomethane			85.8		%		50-140	11-MAR-19
Carbon tetrachloride			98.1		%		70-130	11-MAR-19
Chlorobenzene			102.6		%		70-130	11-MAR-19
Chloroform			101.9		%		70-130	11-MAR-19
cis-1,2-Dichloroethylene			101.7		%		70-130	11-MAR-19
cis-1,3-Dichloropropene			93.1		%		70-130	11-MAR-19
Dibromochloromethane			95.5		%		60-130	11-MAR-19
Dichlorodifluoromethane			53.8		%		50-140	11-MAR-19
Ethylbenzene			98.8		%		70-130	11-MAR-19
n-Hexane			82.2		%		70-130	11-MAR-19
Methylene Chloride			93.9		%		70-130	11-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4555308								
WG3002854-2 LCS								
MTBE			97.5		%		70-130	11-MAR-19
m+p-Xylenes			98.1		%		70-130	11-MAR-19
Methyl Ethyl Ketone			91.4		%		60-140	11-MAR-19
Methyl Isobutyl Ketone			89.6		%		60-140	11-MAR-19
o-Xylene			98.8		%		70-130	11-MAR-19
Styrene			102.6		%		70-130	11-MAR-19
Tetrachloroethylene			99.0		%		60-130	11-MAR-19
Toluene			99.9		%		70-130	11-MAR-19
trans-1,2-Dichloroethylene			99.6		%		60-130	11-MAR-19
trans-1,3-Dichloropropene			92.4		%		70-130	11-MAR-19
Trichloroethylene			104.8		%		60-130	11-MAR-19
Trichlorofluoromethane			90.6		%		50-140	11-MAR-19
Vinyl chloride			68.3		%		60-140	11-MAR-19
WG3002854-1 MB								
1,1,1,2-Tetrachloroethane			<0.050		ug/g		0.05	11-MAR-19
1,1,2,2-Tetrachloroethane			<0.050		ug/g		0.05	11-MAR-19
1,1,1-Trichloroethane			<0.050		ug/g		0.05	11-MAR-19
1,1,2-Trichloroethane			<0.050		ug/g		0.05	11-MAR-19
1,1-Dichloroethane			<0.050		ug/g		0.05	11-MAR-19
1,1-Dichloroethylene			<0.050		ug/g		0.05	11-MAR-19
1,2-Dibromoethane			<0.050		ug/g		0.05	11-MAR-19
1,2-Dichlorobenzene			<0.050		ug/g		0.05	11-MAR-19
1,2-Dichloroethane			<0.050		ug/g		0.05	11-MAR-19
1,2-Dichloropropane			<0.050		ug/g		0.05	11-MAR-19
1,3-Dichlorobenzene			<0.050		ug/g		0.05	11-MAR-19
1,4-Dichlorobenzene			<0.050		ug/g		0.05	11-MAR-19
Acetone			<0.50		ug/g		0.5	11-MAR-19
Benzene			<0.0068		ug/g		0.0068	11-MAR-19
Bromodichloromethane			<0.050		ug/g		0.05	11-MAR-19
Bromoform			<0.050		ug/g		0.05	11-MAR-19
Bromomethane			<0.050		ug/g		0.05	11-MAR-19
Carbon tetrachloride			<0.050		ug/g		0.05	11-MAR-19
Chlorobenzene			<0.050		ug/g		0.05	11-MAR-19
Chloroform			<0.050		ug/g		0.05	11-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4555308								
WG3002854-1 MB								
cis-1,2-Dichloroethylene			<0.050		ug/g		0.05	11-MAR-19
cis-1,3-Dichloropropene			<0.030		ug/g		0.03	11-MAR-19
Dibromochloromethane			<0.050		ug/g		0.05	11-MAR-19
Dichlorodifluoromethane			<0.050		ug/g		0.05	11-MAR-19
Ethylbenzene			<0.018		ug/g		0.018	11-MAR-19
n-Hexane			<0.050		ug/g		0.05	11-MAR-19
Methylene Chloride			<0.050		ug/g		0.05	11-MAR-19
MTBE			<0.050		ug/g		0.05	11-MAR-19
m+p-Xylenes			<0.030		ug/g		0.03	11-MAR-19
Methyl Ethyl Ketone			<0.50		ug/g		0.5	11-MAR-19
Methyl Isobutyl Ketone			<0.50		ug/g		0.5	11-MAR-19
o-Xylene			<0.020		ug/g		0.02	11-MAR-19
Styrene			<0.050		ug/g		0.05	11-MAR-19
Tetrachloroethylene			<0.050		ug/g		0.05	11-MAR-19
Toluene			<0.080		ug/g		0.08	11-MAR-19
trans-1,2-Dichloroethylene			<0.050		ug/g		0.05	11-MAR-19
trans-1,3-Dichloropropene			<0.030		ug/g		0.03	11-MAR-19
Trichloroethylene			<0.010		ug/g		0.01	11-MAR-19
Trichlorofluoromethane			<0.050		ug/g		0.05	11-MAR-19
Vinyl chloride			<0.020		ug/g		0.02	11-MAR-19
Surrogate: 1,4-Difluorobenzene			108.8		%		50-140	11-MAR-19
Surrogate: 4-Bromofluorobenzene			98.8		%		50-140	11-MAR-19

Quality Control Report

Workorder: L2240805 Report Date: 15-MAR-19

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

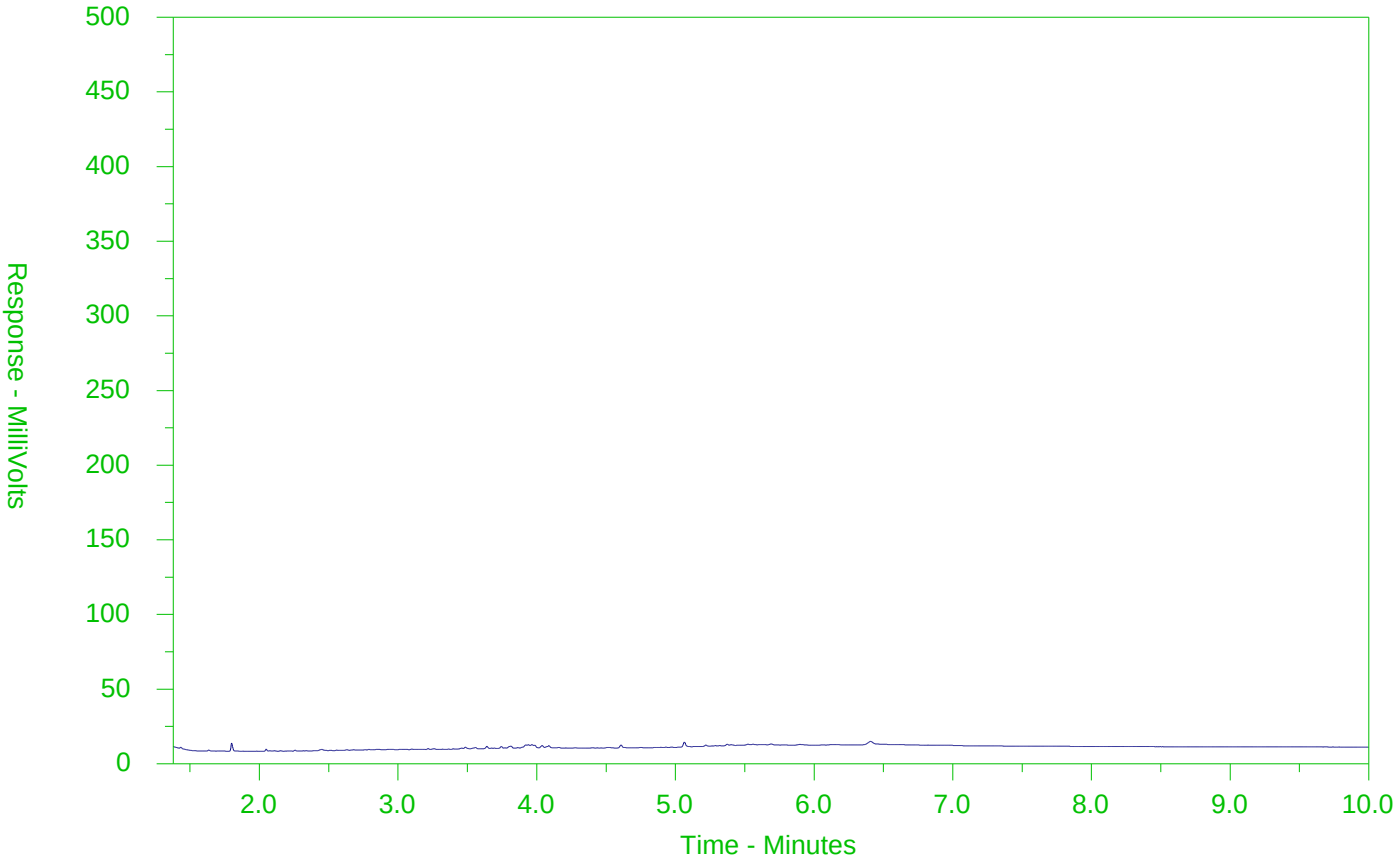
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2240805-1
Client Sample ID: SS-11189766-030419-MP-009



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →	← Motor Oils/Lube Oils/Grease →		
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

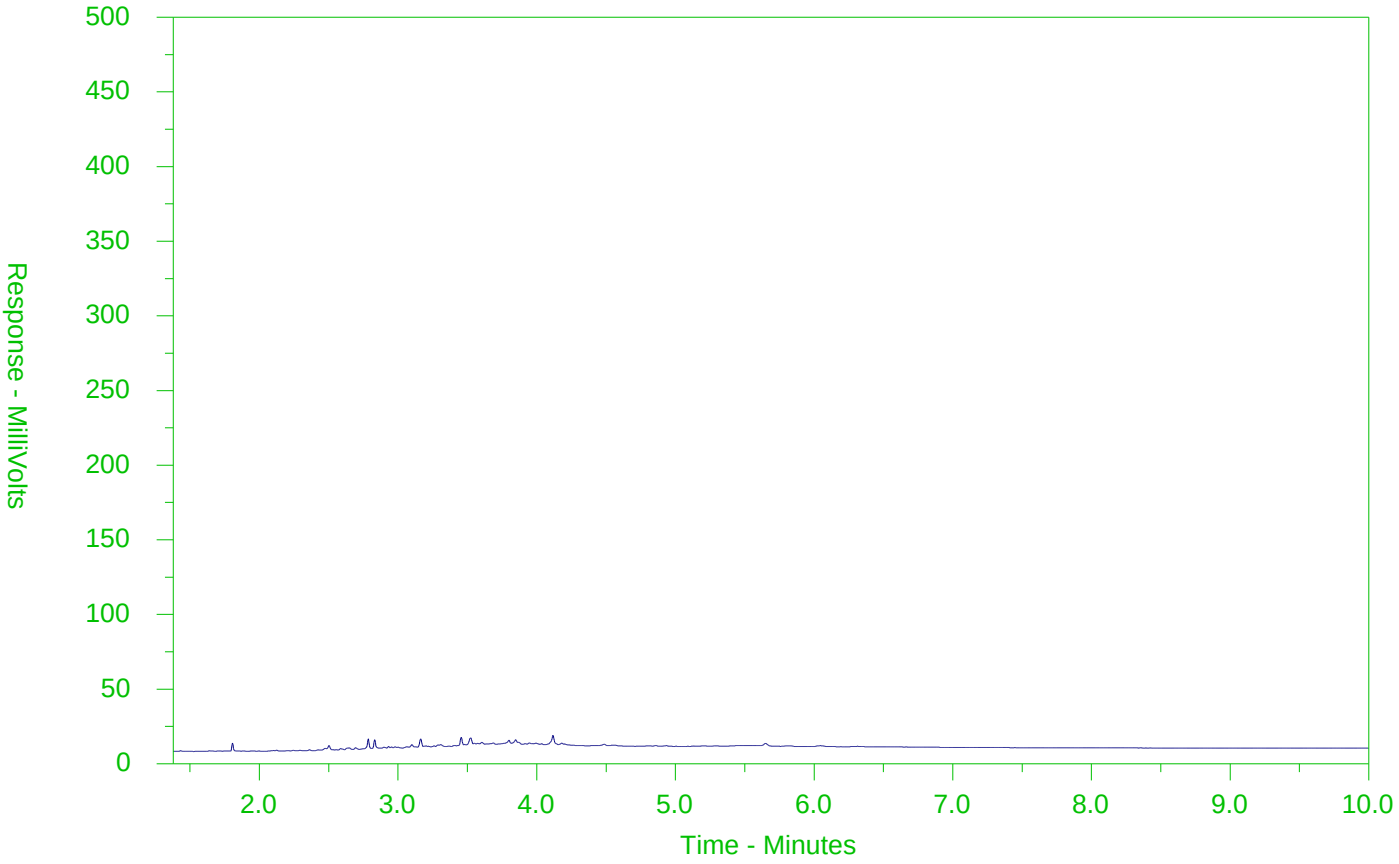
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2240805-2
Client Sample ID: SS-11189766-030419-MP-010



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →		← Motor Oils/Lube Oils/Grease →	
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

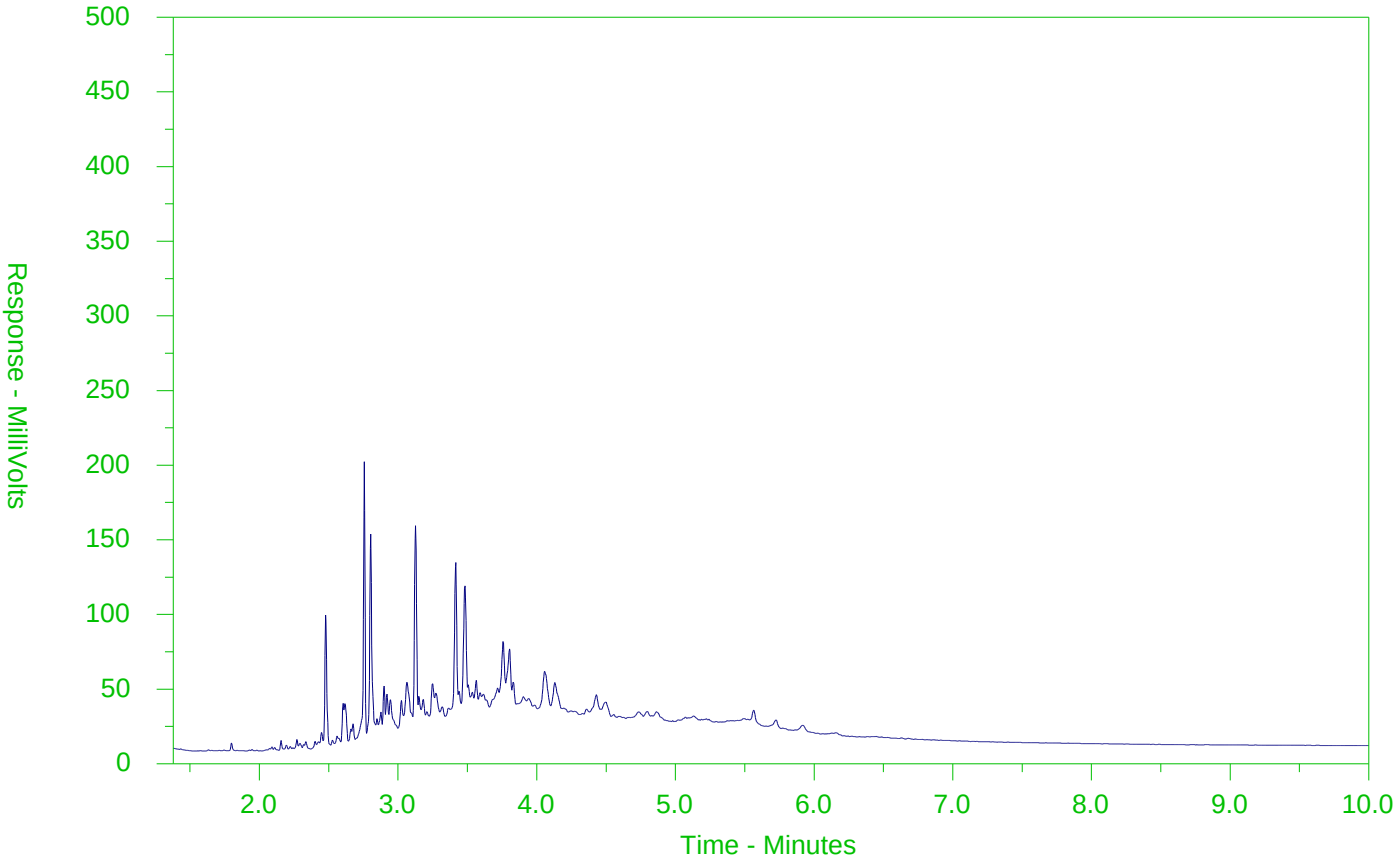
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2240805-4
Client Sample ID: SS-11189766-030419-MP-012



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →		← Motor Oils/Lube Oils/Grease →	
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

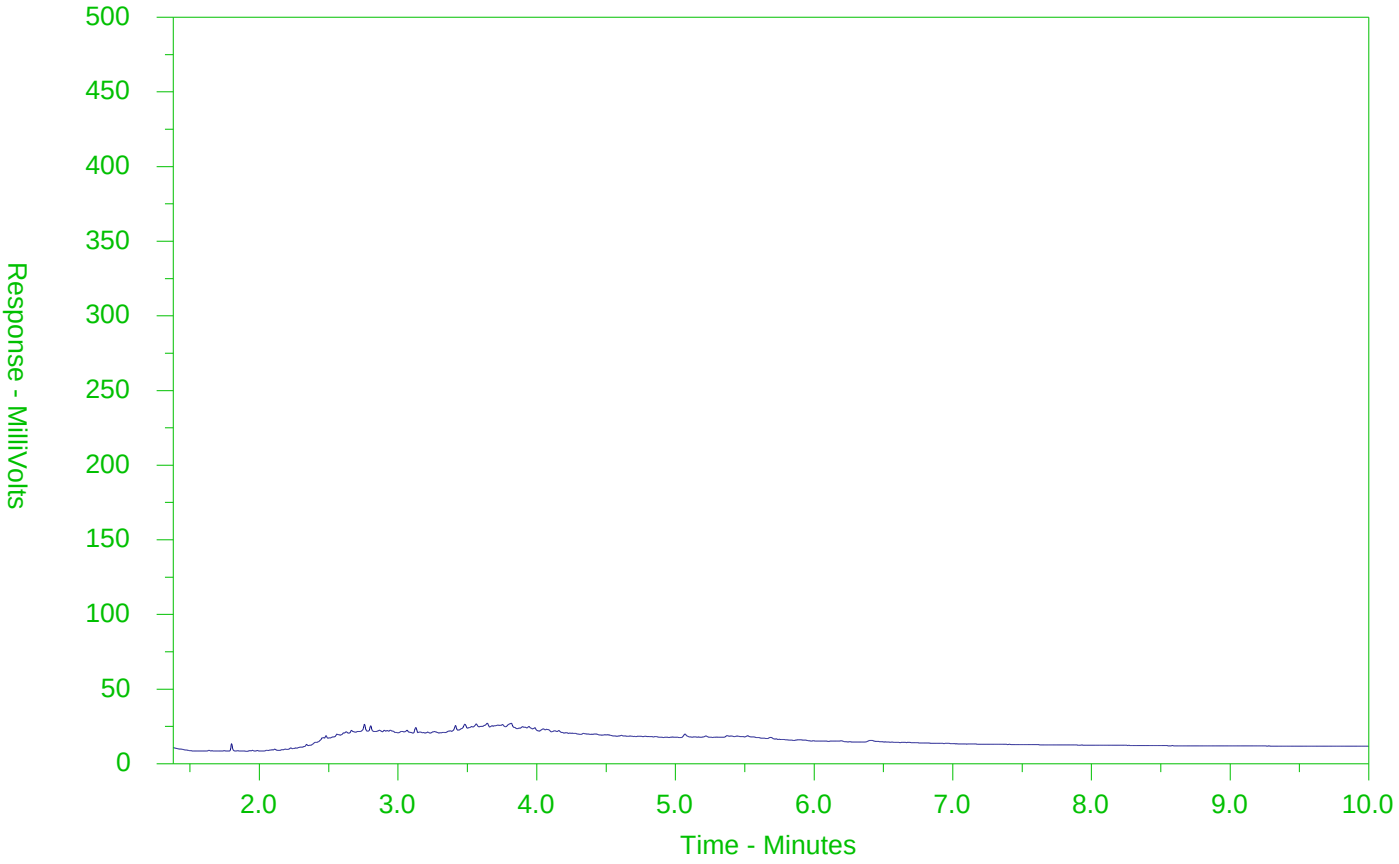
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2240805-5
Client Sample ID: SS-11189766-030419-MP-013



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →		← Motor Oils/Lube Oils/Grease →	
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

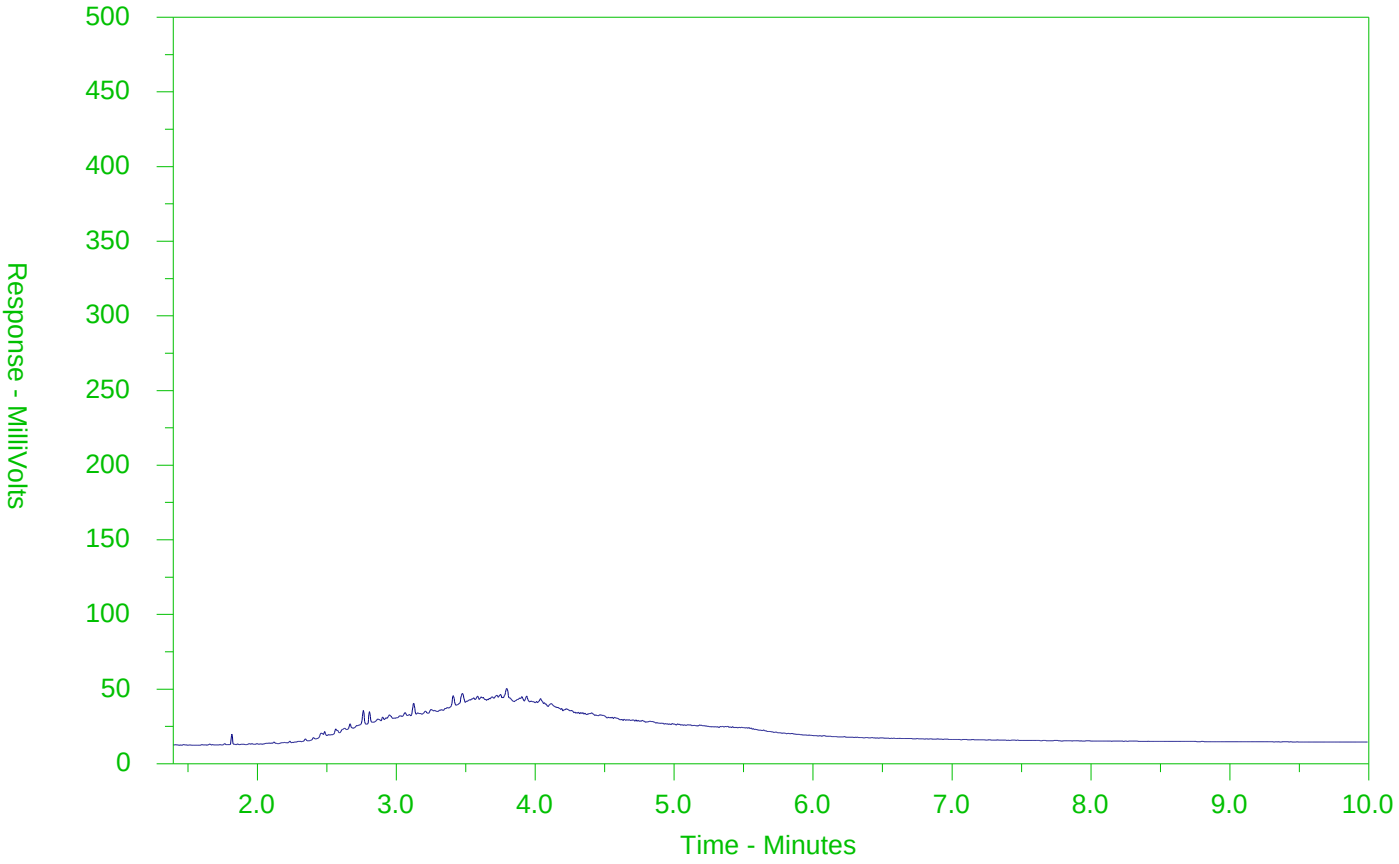
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2240805-6
Client Sample ID: SS-11189766-030519-MP-014



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →		← Motor Oils/Lube Oils/Grease →	
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

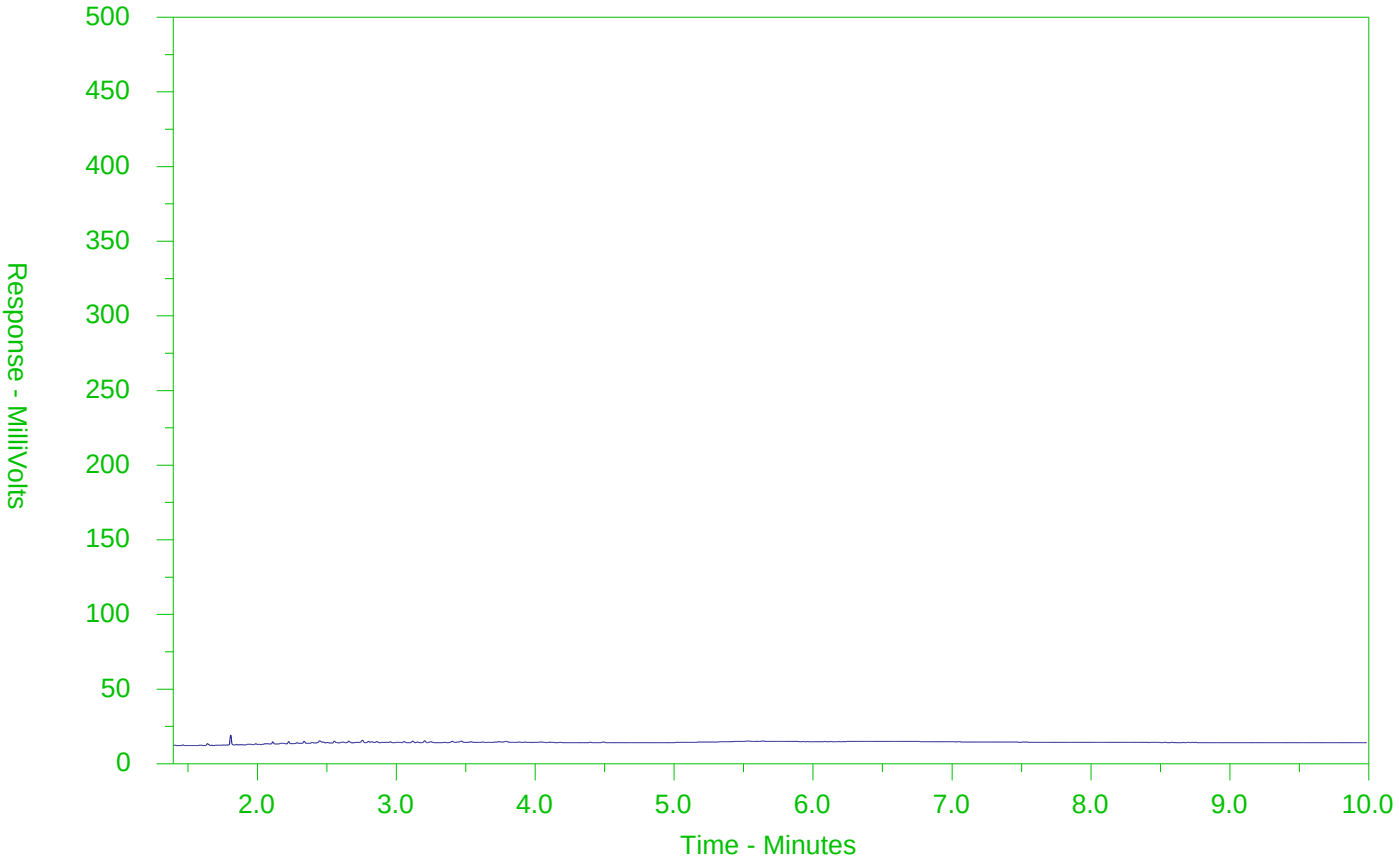
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2240805-7
Client Sample ID: SS-11189766-030519-MP-015



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →		← Motor Oils/Lube Oils/Grease →	
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L2240805-COFC

COC Number: 11189766 - 02

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	GHD Limited
Contact:	Melissa Pley
Phone:	1 905 682 0510 |
	Company address below will appear on the final report
Street:	261 Martindale Rd., Unit 3
City/Province:	St. Catharines / Ontario
Postal Code:	L2W 1A2
Invoice To	Same as Report To ☐ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☐ NO
Company:	GHD Limited
Contact:	Jennifer Balkwill

Report Format / Distribution

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)

Quality Control (QC) Report with Report ☑ YES ☐ NO

☑ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: Melissa.pley@ghd.com

Email 2: Marc.Gaudet@ghd.com

Email 3: Jennifer.Balkwill@ghd.com

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: jennifer.balkwill@ghd.com

Email 2:

Project Information

13791

Job #: 11189766, Union Waterfront Property - Port Dalhousie

PO / AFE: 79514923

LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#

Major/Minor Code: Routing Code:

Requisitioner:

Location:

ALS Lab Work Order # (lab use only): L2240805

ALS Contact: R.Hawthorne **Sampler:** M.Pley

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4] ☐ | 3 day [P3] ☐ | 2 day [P2] ☐

EMERGENCY: 1 Business day [E1] ☐ | Same Day, Weekend or Statutory holiday [E0] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Metals and Inorganics	PAH-511-WT	VOC-511-HS-WT	VOC, F1	PHCs (F1 to F4)	PSA (Coarse/Fine)	BTEX	Number of Containers
	SS-11189766-030419-MP-009	4-Mar-19	15:00	Soil	☑	☑	☐	☐	☑	☐	☐	4
	SS-11189766-030419-MP-010	5-Mar-19	10:30	Soil	☑	☑	☐	☐	☑	☐	☑	4
	SS-11189766-030419-MP-011	5-Mar-19	10:30	Soil	☐	☐	☐	☐	☐	☑	☐	1
	SS-11189766-030419-MP-012	5-Mar-19	12:30	Soil	☑	☑	☐	☐	☑	☐	☐	4
	SS-11189766-030419-MP-013	5-Mar-19	14:00	Soil	☑	☑	☐	☐	☑	☐	☐	4
	SS-11189766-030419-MP-014	5-Mar-19	14:00	Soil	☑	☑	☐	☐	☑	☐	☐	4
	SS-11189766-030419-MP-015	5-Mar-19	16:00	Soil	☑	☑	☐	☐	☑	☐	☐	4
	SS-11189766-030419-MP-016	5-Mar-19	16:00	Soil	☐	☐	☐	☐	☐	☑	☐	1
					☐	☐	☐	☐	☐	☐	☐	
					☐	☐	☐	☐	☐	☐	☐	
					☐	☐	☐	☐	☐	☐	☐	
					☐	☐	☐	☐	☐	☐	☐	

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human drinking water use? ☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Picked up by driver

Criteria: Coarse and Fine Grained Soils, Table 3 (RPI)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | SIF Observations Yes ☐ No ☐

Ice Packs ☐ | Ice Cubes ☒ | Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			2.4		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Matthew Harbin	Date: March 6, 2019	Time: (ca)	Received by:	Date:	Time:	Received by:	Date: Mar 6/19	Time: 14:00

3

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form.**

GHD Limited (Waterloo)
ATTN: JENNIFER BALKWILL
455 PHILLIP STREET
WATERLOO ON N2L 3X2

Date Received: 08-MAR-19
Report Date: 18-MAR-19 15:29 (MT)
Version: FINAL

Client Phone: 519-884-0510

Certificate of Analysis

Lab Work Order #: L2242379

Project P.O. #:	73514923
Job Reference:	11189766
C of C Numbers:	17-030819-1
Legal Site Desc:	St.Catherines 16 Lock St

Rick Hawthorne
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2242379-1 SS-11189766-030419-MP-022							
Sampled By: TM/MP on 04-MAR-19 @ 16:30							
Matrix: SOIL							
Physical Tests							
% Moisture	18.5		0.10	%	13-MAR-19		
Metals							
Antimony (Sb)	<1.0		1.0	ug/g	15-MAR-19	7.5	7.5
Arsenic (As)	5.2		1.0	ug/g	15-MAR-19	18	18
Barium (Ba)	155		1.0	ug/g	15-MAR-19	390	390
Beryllium (Be)	0.63		0.50	ug/g	15-MAR-19	4	5
Boron (B)	9.1		5.0	ug/g	15-MAR-19	120	120
Boron (B), Hot Water Ext.	0.24		0.10	ug/g	15-MAR-19	1.5	1.5
Cadmium (Cd)	<0.50		0.50	ug/g	15-MAR-19	1.2	1.2
Chromium (Cr)	22.6		1.0	ug/g	15-MAR-19	160	160
Cobalt (Co)	11.5		1.0	ug/g	15-MAR-19	22	22
Copper (Cu)	26.7		1.0	ug/g	15-MAR-19	140	180
Lead (Pb)	60.2		1.0	ug/g	15-MAR-19	120	120
Mercury (Hg)	0.0466		0.0050	ug/g	15-MAR-19	0.27	1.8
Molybdenum (Mo)	<1.0		1.0	ug/g	15-MAR-19	6.9	6.9
Nickel (Ni)	25.0		1.0	ug/g	15-MAR-19	100	130
Selenium (Se)	<1.0		1.0	ug/g	15-MAR-19	2.4	2.4
Silver (Ag)	<0.20		0.20	ug/g	15-MAR-19	20	25
Thallium (Tl)	<0.50		0.50	ug/g	15-MAR-19	1	1
Uranium (U)	<1.0		1.0	ug/g	15-MAR-19	23	23
Vanadium (V)	31.7		1.0	ug/g	15-MAR-19	86	86
Zinc (Zn)	60.9		5.0	ug/g	15-MAR-19	340	340
Speciated Metals							
Chromium, Hexavalent	0.68		0.20	ug/g	14-MAR-19	8	10
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	18-MAR-19	55	65
F2 (C10-C16)	<10		10	ug/g	13-MAR-19	98	150
F2-Naphth	<10		10	ug/g	18-MAR-19		
F3 (C16-C34)	<50		50	ug/g	13-MAR-19	300	1300
F3-PAH	<50		50	ug/g	18-MAR-19		
F4 (C34-C50)	<50		50	ug/g	13-MAR-19	2800	5600
Total Hydrocarbons (C6-C50)	<72		72	ug/g	18-MAR-19		
Chrom. to baseline at nC50	YES			No Unit	13-MAR-19		
Surrogate: 2-Bromobenzotrifluoride	89.8		60-140	%	13-MAR-19		
Surrogate: 3,4-Dichlorotoluene	92.5		60-140	%	18-MAR-19		
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	<0.050		0.050	ug/g	15-MAR-19	7.9	58
Acenaphthylene	<0.050		0.050	ug/g	15-MAR-19	0.15	0.17
Anthracene	<0.050		0.050	ug/g	15-MAR-19	0.67	0.74
Benzo(a)anthracene	<0.050		0.050	ug/g	15-MAR-19	0.5	0.63
Benzo(a)pyrene	<0.050		0.050	ug/g	15-MAR-19	0.3	0.3
Benzo(b)fluoranthene	<0.050		0.050	ug/g	15-MAR-19	0.78	0.78
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	15-MAR-19	6.6	7.8
Benzo(k)fluoranthene	<0.050		0.050	ug/g	15-MAR-19	0.78	0.78
Chrysene	<0.050		0.050	ug/g	15-MAR-19	7	7.8

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T3-SOIL-RPI-C/F

#1: T3-Soil-Res/Park/Inst. Property Use (Coarse)

#2: T3-Soil-Res/Park/Inst. Property Use (Fine)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2242379-1 SS-11189766-030419-MP-022 Sampled By: TM/MP on 04-MAR-19 @ 16:30 Matrix: SOIL							
Polycyclic Aromatic Hydrocarbons							
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	15-MAR-19	0.1	0.1
Fluoranthene	<0.050		0.050	ug/g	15-MAR-19	0.69	0.69
Fluorene	<0.050		0.050	ug/g	15-MAR-19	62	69
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	15-MAR-19	0.38	0.48
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	15-MAR-19	0.99	3.4
1-Methylnaphthalene	<0.030		0.030	ug/g	15-MAR-19	0.99	3.4
2-Methylnaphthalene	<0.030		0.030	ug/g	15-MAR-19	0.99	3.4
Naphthalene	<0.013		0.013	ug/g	15-MAR-19	0.6	0.75
Phenanthrene	<0.046		0.046	ug/g	15-MAR-19	6.2	7.8
Pyrene	<0.050		0.050	ug/g	15-MAR-19	78	78
Surrogate: 2-Fluorobiphenyl	100.0		50-140	%	15-MAR-19		
Surrogate: p-Terphenyl d14	102.6		50-140	%	15-MAR-19		
L2242379-2 SS-11189766-030519-MP-023 Sampled By: TM/MP on 05-MAR-19 @ 14:30 Matrix: SOIL						#1	#2
Physical Tests							
% Moisture	18.3		0.10	%	13-MAR-19		
Metals							
Antimony (Sb)	<1.0		1.0	ug/g	15-MAR-19	7.5	7.5
Arsenic (As)	4.8		1.0	ug/g	15-MAR-19	18	18
Barium (Ba)	82.1		1.0	ug/g	15-MAR-19	390	390
Beryllium (Be)	<0.50		0.50	ug/g	15-MAR-19	4	5
Boron (B)	<5.0		5.0	ug/g	15-MAR-19	120	120
Boron (B), Hot Water Ext.	0.57		0.10	ug/g	15-MAR-19	1.5	1.5
Cadmium (Cd)	<0.50		0.50	ug/g	15-MAR-19	1.2	1.2
Chromium (Cr)	12.8		1.0	ug/g	15-MAR-19	160	160
Cobalt (Co)	6.7		1.0	ug/g	15-MAR-19	22	22
Copper (Cu)	20.7		1.0	ug/g	15-MAR-19	140	180
Lead (Pb)	43.6		1.0	ug/g	15-MAR-19	120	120
Mercury (Hg)	0.122		0.0050	ug/g	15-MAR-19	0.27	1.8
Molybdenum (Mo)	<1.0		1.0	ug/g	15-MAR-19	6.9	6.9
Nickel (Ni)	13.1		1.0	ug/g	15-MAR-19	100	130
Selenium (Se)	<1.0		1.0	ug/g	15-MAR-19	2.4	2.4
Silver (Ag)	<0.20		0.20	ug/g	15-MAR-19	20	25
Thallium (Tl)	<0.50		0.50	ug/g	15-MAR-19	1	1
Uranium (U)	<1.0		1.0	ug/g	15-MAR-19	23	23
Vanadium (V)	20.0		1.0	ug/g	15-MAR-19	86	86
Zinc (Zn)	92.1		5.0	ug/g	15-MAR-19	340	340
Speciated Metals							
Chromium, Hexavalent	0.33		0.20	ug/g	14-MAR-19	8	10
Volatile Organic Compounds							
Acetone	<0.50		0.50	ug/g	18-MAR-19	16	28
Benzene	<0.0068		0.0068	ug/g	18-MAR-19	0.21	0.17
Bromodichloromethane	<0.050		0.050	ug/g	18-MAR-19	13	13

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T3-SOIL-RPI-C/F

#1: T3-Soil-Res/Park/Inst. Property Use (Coarse) **#2: T3-Soil-Res/Park/Inst. Property Use (Fine)**

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2242379-2 SS-11189766-030519-MP-023							
Sampled By: TM/MP on 05-MAR-19 @ 14:30							
Matrix: SOIL							
Volatile Organic Compounds							
Bromoform	<0.050		0.050	ug/g	18-MAR-19	0.27	0.26
Bromomethane	<0.050		0.050	ug/g	18-MAR-19	0.05	0.05
Carbon tetrachloride	<0.050		0.050	ug/g	18-MAR-19	0.05	0.12
Chlorobenzene	<0.050		0.050	ug/g	18-MAR-19	2.4	2.7
Dibromochloromethane	<0.050		0.050	ug/g	18-MAR-19	9.4	9.4
Chloroform	<0.050		0.050	ug/g	18-MAR-19	0.05	0.18
1,2-Dibromoethane	<0.050		0.050	ug/g	18-MAR-19	0.05	0.05
1,2-Dichlorobenzene	<0.050		0.050	ug/g	18-MAR-19	3.4	4.3
1,3-Dichlorobenzene	<0.050		0.050	ug/g	18-MAR-19	4.8	6
1,4-Dichlorobenzene	<0.050		0.050	ug/g	18-MAR-19	0.083	0.097
Dichlorodifluoromethane	<0.050		0.050	ug/g	18-MAR-19	16	25
1,1-Dichloroethane	<0.050		0.050	ug/g	18-MAR-19	3.5	11
1,2-Dichloroethane	<0.050		0.050	ug/g	18-MAR-19	0.05	0.05
1,1-Dichloroethylene	<0.050		0.050	ug/g	18-MAR-19	0.05	0.05
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	18-MAR-19	3.4	30
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	18-MAR-19	0.084	0.75
Methylene Chloride	<0.050		0.050	ug/g	18-MAR-19	0.1	0.96
1,2-Dichloropropane	<0.050		0.050	ug/g	18-MAR-19	0.05	0.085
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	18-MAR-19		
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	18-MAR-19		
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g	18-MAR-19	0.05	0.083
Ethylbenzene	<0.018		0.018	ug/g	18-MAR-19	2	15
n-Hexane	<0.050		0.050	ug/g	18-MAR-19	2.8	34
Methyl Ethyl Ketone	<0.50		0.50	ug/g	18-MAR-19	16	44
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	18-MAR-19	1.7	4.3
MTBE	<0.050		0.050	ug/g	18-MAR-19	0.75	1.4
Styrene	<0.050		0.050	ug/g	18-MAR-19	0.7	2.2
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	18-MAR-19	0.058	0.05
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	18-MAR-19	0.05	0.05
Tetrachloroethylene	<0.050		0.050	ug/g	18-MAR-19	0.28	2.3
Toluene	<0.080		0.080	ug/g	18-MAR-19	2.3	6
1,1,1-Trichloroethane	<0.050		0.050	ug/g	18-MAR-19	0.38	3.4
1,1,2-Trichloroethane	<0.050		0.050	ug/g	18-MAR-19	0.05	0.05
Trichloroethylene	<0.010		0.010	ug/g	18-MAR-19	0.061	0.52
Trichlorofluoromethane	<0.050		0.050	ug/g	18-MAR-19	4	5.8
Vinyl chloride	<0.020		0.020	ug/g	18-MAR-19	0.02	0.022
o-Xylene	<0.020		0.020	ug/g	18-MAR-19		
m+p-Xylenes	<0.030		0.030	ug/g	18-MAR-19		
Xylenes (Total)	<0.050		0.050	ug/g	18-MAR-19	3.1	25
Surrogate: 4-Bromofluorobenzene	90.4		50-140	%	18-MAR-19		
Surrogate: 1,4-Difluorobenzene	109.8		50-140	%	18-MAR-19		
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	18-MAR-19	55	65
F1-BTEX	<5.0		5.0	ug/g	18-MAR-19	55	65
F2 (C10-C16)	<10		10	ug/g	13-MAR-19	98	150
F2-Naphth	<10		10	ug/g	18-MAR-19		

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T3-SOIL-RPI-C/F

#1: T3-Soil-Res/Park/Inst. Property Use (Coarse) **#2: T3-Soil-Res/Park/Inst. Property Use (Fine)**

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	#2		
L2242379-2 SS-11189766-030519-MP-023 Sampled By: TM/MP on 05-MAR-19 @ 14:30 Matrix: SOIL									
Hydrocarbons									
F3 (C16-C34)	<50		50	ug/g	13-MAR-19	300	1300		
F3-PAH	<50		50	ug/g	18-MAR-19				
F4 (C34-C50)	<50		50	ug/g	13-MAR-19	2800	5600		
Total Hydrocarbons (C6-C50)	<72		72	ug/g	18-MAR-19				
Chrom. to baseline at nC50	YES			No Unit	13-MAR-19				
Surrogate: 2-Bromobenzotrifluoride	92.2		60-140	%	13-MAR-19				
Surrogate: 3,4-Dichlorotoluene	70.5		60-140	%	18-MAR-19				
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	<0.050		0.050	ug/g	15-MAR-19	7.9	58		
Acenaphthylene	<0.050		0.050	ug/g	15-MAR-19	0.15	0.17		
Anthracene	<0.050		0.050	ug/g	15-MAR-19	0.67	0.74		
Benzo(a)anthracene	<0.050		0.050	ug/g	15-MAR-19	0.5	0.63		
Benzo(a)pyrene	<0.050		0.050	ug/g	15-MAR-19	0.3	0.3		
Benzo(b)fluoranthene	<0.050		0.050	ug/g	15-MAR-19	0.78	0.78		
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	15-MAR-19	6.6	7.8		
Benzo(k)fluoranthene	<0.050		0.050	ug/g	15-MAR-19	0.78	0.78		
Chrysene	<0.050		0.050	ug/g	15-MAR-19	7	7.8		
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	15-MAR-19	0.1	0.1		
Fluoranthene	<0.050		0.050	ug/g	15-MAR-19	0.69	0.69		
Fluorene	<0.050		0.050	ug/g	15-MAR-19	62	69		
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	15-MAR-19	0.38	0.48		
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	15-MAR-19	0.99	3.4		
1-Methylnaphthalene	<0.030		0.030	ug/g	15-MAR-19	0.99	3.4		
2-Methylnaphthalene	<0.030		0.030	ug/g	15-MAR-19	0.99	3.4		
Naphthalene	<0.013		0.013	ug/g	15-MAR-19	0.6	0.75		
Phenanthrene	<0.046		0.046	ug/g	15-MAR-19	6.2	7.8		
Pyrene	<0.050		0.050	ug/g	15-MAR-19	78	78		
Surrogate: 2-Fluorobiphenyl	97.8		50-140	%	15-MAR-19				
Surrogate: p-Terphenyl d14	99.9		50-140	%	15-MAR-19				
L2242379-3 SS-11189766-030519-MP-024 Sampled By: TM/MP on 05-MAR-19 @ 14:30 Matrix: SOIL						#1	#2		
Physical Tests									
% Moisture	27.4		0.10	%	13-MAR-19				
Metals									
Antimony (Sb)	<1.0		1.0	ug/g	15-MAR-19	7.5	7.5		
Arsenic (As)	5.8		1.0	ug/g	15-MAR-19	18	18		
Barium (Ba)	97.2		1.0	ug/g	15-MAR-19	390	390		
Beryllium (Be)	<0.50		0.50	ug/g	15-MAR-19	4	5		
Boron (B)	<5.0		5.0	ug/g	15-MAR-19	120	120		
Boron (B), Hot Water Ext.	0.53		0.10	ug/g	15-MAR-19	1.5	1.5		
Cadmium (Cd)	<0.50		0.50	ug/g	15-MAR-19	1.2	1.2		
Chromium (Cr)	14.0		1.0	ug/g	15-MAR-19	160	160		
Cobalt (Co)	7.5		1.0	ug/g	15-MAR-19	22	22		
Copper (Cu)	23.5		1.0	ug/g	15-MAR-19	140	180		

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Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T3-SOIL-RPI-C/F

#1: T3-Soil-Res/Park/Inst. Property Use (Coarse) **#2: T3-Soil-Res/Park/Inst. Property Use (Fine)**

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2242379-3 SS-11189766-030519-MP-024 Sampled By: TM/MP on 05-MAR-19 @ 14:30 Matrix: SOIL							
Metals							
Lead (Pb)	49.5		1.0	ug/g	15-MAR-19	120	120
Mercury (Hg)	0.115		0.0050	ug/g	15-MAR-19	0.27	1.8
Molybdenum (Mo)	<1.0		1.0	ug/g	15-MAR-19	6.9	6.9
Nickel (Ni)	14.7		1.0	ug/g	15-MAR-19	100	130
Selenium (Se)	<1.0		1.0	ug/g	15-MAR-19	2.4	2.4
Silver (Ag)	<0.20		0.20	ug/g	15-MAR-19	20	25
Thallium (Tl)	<0.50		0.50	ug/g	15-MAR-19	1	1
Uranium (U)	<1.0		1.0	ug/g	15-MAR-19	23	23
Vanadium (V)	21.8		1.0	ug/g	15-MAR-19	86	86
Zinc (Zn)	102		5.0	ug/g	15-MAR-19	340	340
Speciated Metals							
Chromium, Hexavalent	0.25		0.20	ug/g	14-MAR-19	8	10
Volatile Organic Compounds							
Acetone	<0.50		0.50	ug/g	18-MAR-19	16	28
Benzene	<0.0068		0.0068	ug/g	18-MAR-19	0.21	0.17
Bromodichloromethane	<0.050		0.050	ug/g	18-MAR-19	13	13
Bromoform	<0.050		0.050	ug/g	18-MAR-19	0.27	0.26
Bromomethane	<0.050		0.050	ug/g	18-MAR-19	0.05	0.05
Carbon tetrachloride	<0.050		0.050	ug/g	18-MAR-19	0.05	0.12
Chlorobenzene	<0.050		0.050	ug/g	18-MAR-19	2.4	2.7
Dibromochloromethane	<0.050		0.050	ug/g	18-MAR-19	9.4	9.4
Chloroform	<0.050		0.050	ug/g	18-MAR-19	0.05	0.18
1,2-Dibromoethane	<0.050		0.050	ug/g	18-MAR-19	0.05	0.05
1,2-Dichlorobenzene	<0.050		0.050	ug/g	18-MAR-19	3.4	4.3
1,3-Dichlorobenzene	<0.050		0.050	ug/g	18-MAR-19	4.8	6
1,4-Dichlorobenzene	<0.050		0.050	ug/g	18-MAR-19	0.083	0.097
Dichlorodifluoromethane	<0.050		0.050	ug/g	18-MAR-19	16	25
1,1-Dichloroethane	<0.050		0.050	ug/g	18-MAR-19	3.5	11
1,2-Dichloroethane	<0.050		0.050	ug/g	18-MAR-19	0.05	0.05
1,1-Dichloroethylene	<0.050		0.050	ug/g	18-MAR-19	0.05	0.05
cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	18-MAR-19	3.4	30
trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	18-MAR-19	0.084	0.75
Methylene Chloride	<0.050		0.050	ug/g	18-MAR-19	0.1	0.96
1,2-Dichloropropane	<0.050		0.050	ug/g	18-MAR-19	0.05	0.085
cis-1,3-Dichloropropene	<0.030		0.030	ug/g	18-MAR-19		
trans-1,3-Dichloropropene	<0.030		0.030	ug/g	18-MAR-19		
1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g	18-MAR-19	0.05	0.083
Ethylbenzene	<0.018		0.018	ug/g	18-MAR-19	2	15
n-Hexane	<0.050		0.050	ug/g	18-MAR-19	2.8	34
Methyl Ethyl Ketone	<0.50		0.50	ug/g	18-MAR-19	16	44
Methyl Isobutyl Ketone	<0.50		0.50	ug/g	18-MAR-19	1.7	4.3
MTBE	<0.050		0.050	ug/g	18-MAR-19	0.75	1.4
Styrene	<0.050		0.050	ug/g	18-MAR-19	0.7	2.2
1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	18-MAR-19	0.058	0.05
1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	18-MAR-19	0.05	0.05

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
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Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T3-SOIL-RPI-C/F

#1: T3-Soil-Res/Park/Inst. Property Use (Coarse)

#2: T3-Soil-Res/Park/Inst. Property Use (Fine)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2242379-3 SS-11189766-030519-MP-024							
Sampled By: TM/MP on 05-MAR-19 @ 14:30							
Matrix: SOIL							
Volatile Organic Compounds							
Tetrachloroethylene	<0.050		0.050	ug/g	18-MAR-19	0.28	2.3
Toluene	<0.080		0.080	ug/g	18-MAR-19	2.3	6
1,1,1-Trichloroethane	<0.050		0.050	ug/g	18-MAR-19	0.38	3.4
1,1,2-Trichloroethane	<0.050		0.050	ug/g	18-MAR-19	0.05	0.05
Trichloroethylene	<0.010		0.010	ug/g	18-MAR-19	0.061	0.52
Trichlorofluoromethane	<0.050		0.050	ug/g	18-MAR-19	4	5.8
Vinyl chloride	<0.020		0.020	ug/g	18-MAR-19	0.02	0.022
o-Xylene	<0.020		0.020	ug/g	18-MAR-19		
m+p-Xylenes	<0.030		0.030	ug/g	18-MAR-19		
Xylenes (Total)	<0.050		0.050	ug/g	18-MAR-19	3.1	25
Surrogate: 4-Bromofluorobenzene	86.9		50-140	%	18-MAR-19		
Surrogate: 1,4-Difluorobenzene	105.7		50-140	%	18-MAR-19		
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	18-MAR-19	55	65
F1-BTEX	<5.0		5.0	ug/g	18-MAR-19	55	65
F2 (C10-C16)	<10		10	ug/g	13-MAR-19	98	150
F2-Naphth	<10		10	ug/g	18-MAR-19		
F3 (C16-C34)	<50		50	ug/g	13-MAR-19	300	1300
F3-PAH	<50		50	ug/g	18-MAR-19		
F4 (C34-C50)	<50		50	ug/g	13-MAR-19	2800	5600
Total Hydrocarbons (C6-C50)	<72		72	ug/g	18-MAR-19		
Chrom. to baseline at nC50	YES			No Unit	13-MAR-19		
Surrogate: 2-Bromobenzotrifluoride	90.4		60-140	%	13-MAR-19		
Surrogate: 3,4-Dichlorotoluene	78.6		60-140	%	18-MAR-19		
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	<0.050		0.050	ug/g	15-MAR-19	7.9	58
Acenaphthylene	<0.050		0.050	ug/g	15-MAR-19	0.15	0.17
Anthracene	<0.050		0.050	ug/g	15-MAR-19	0.67	0.74
Benzo(a)anthracene	<0.050		0.050	ug/g	15-MAR-19	0.5	0.63
Benzo(a)pyrene	<0.050		0.050	ug/g	15-MAR-19	0.3	0.3
Benzo(b)fluoranthene	<0.050		0.050	ug/g	15-MAR-19	0.78	0.78
Benzo(g,h,i)perylene	<0.050		0.050	ug/g	15-MAR-19	6.6	7.8
Benzo(k)fluoranthene	<0.050		0.050	ug/g	15-MAR-19	0.78	0.78
Chrysene	<0.050		0.050	ug/g	15-MAR-19	7	7.8
Dibenzo(ah)anthracene	<0.050		0.050	ug/g	15-MAR-19	0.1	0.1
Fluoranthene	<0.050		0.050	ug/g	15-MAR-19	0.69	0.69
Fluorene	<0.050		0.050	ug/g	15-MAR-19	62	69
Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	15-MAR-19	0.38	0.48
1+2-Methylnaphthalenes	<0.042		0.042	ug/g	15-MAR-19	0.99	3.4
1-Methylnaphthalene	<0.030		0.030	ug/g	15-MAR-19	0.99	3.4
2-Methylnaphthalene	<0.030		0.030	ug/g	15-MAR-19	0.99	3.4
Naphthalene	<0.013		0.013	ug/g	15-MAR-19	0.6	0.75
Phenanthrene	<0.046		0.046	ug/g	15-MAR-19	6.2	7.8
Pyrene	<0.050		0.050	ug/g	15-MAR-19	78	78
Surrogate: 2-Fluorobiphenyl	97.4		50-140	%	15-MAR-19		
Surrogate: p-Terphenyl d14	94.5		50-140	%	15-MAR-19		

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T3-SOIL-RPI-C/F

#1: T3-Soil-Res/Park/Inst. Property Use (Coarse) **#2: T3-Soil-Res/Park/Inst. Property Use (Fine)**

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2242379-4 SS-11189766-030519-MP-025							
Sampled By: TM/MP on 05-MAR-19 @ 16:15							
Matrix: SOIL							
Physical Tests							
% Moisture	24.7		0.10	%	13-MAR-19		
Metals							
Antimony (Sb)	<1.0		1.0	ug/g	15-MAR-19	7.5	7.5
Arsenic (As)	5.6		1.0	ug/g	15-MAR-19	18	18
Barium (Ba)	104		1.0	ug/g	15-MAR-19	390	390
Beryllium (Be)	<0.50		0.50	ug/g	15-MAR-19	4	5
Boron (B)	6.0		5.0	ug/g	15-MAR-19	120	120
Boron (B), Hot Water Ext.	0.32		0.10	ug/g	15-MAR-19	1.5	1.5
Cadmium (Cd)	<0.50		0.50	ug/g	15-MAR-19	1.2	1.2
Chromium (Cr)	16.6		1.0	ug/g	15-MAR-19	160	160
Cobalt (Co)	9.1		1.0	ug/g	15-MAR-19	22	22
Copper (Cu)	47.8		1.0	ug/g	15-MAR-19	140	180
Lead (Pb)	57.5		1.0	ug/g	15-MAR-19	120	120
Mercury (Hg)	0.0636		0.0050	ug/g	15-MAR-19	0.27	1.8
Molybdenum (Mo)	<1.0		1.0	ug/g	15-MAR-19	6.9	6.9
Nickel (Ni)	19.2		1.0	ug/g	15-MAR-19	100	130
Selenium (Se)	<1.0		1.0	ug/g	15-MAR-19	2.4	2.4
Silver (Ag)	<0.20		0.20	ug/g	15-MAR-19	20	25
Thallium (Tl)	<0.50		0.50	ug/g	15-MAR-19	1	1
Uranium (U)	<1.0		1.0	ug/g	15-MAR-19	23	23
Vanadium (V)	23.7		1.0	ug/g	15-MAR-19	86	86
Zinc (Zn)	94.0		5.0	ug/g	15-MAR-19	340	340
Speciated Metals							
Chromium, Hexavalent	<0.20		0.20	ug/g	14-MAR-19	8	10
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	18-MAR-19	55	65
F2 (C10-C16)	<10		10	ug/g	14-MAR-19	98	150
F2-Naphth	<10		10	ug/g	18-MAR-19		
F3 (C16-C34)	<50		50	ug/g	14-MAR-19	300	1300
F3-PAH	<50		50	ug/g	18-MAR-19		
F4 (C34-C50)	<50		50	ug/g	14-MAR-19	2800	5600
Total Hydrocarbons (C6-C50)	<72		72	ug/g	18-MAR-19		
Chrom. to baseline at nC50	YES			No Unit	14-MAR-19		
Surrogate: 2-Bromobenzotrifluoride	91.9		60-140	%	14-MAR-19		
Surrogate: 3,4-Dichlorotoluene	95.9		60-140	%	18-MAR-19		
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	0.198		0.050	ug/g	15-MAR-19	7.9	58
Acenaphthylene	0.089		0.050	ug/g	15-MAR-19	0.15	0.17
Anthracene	0.673		0.050	ug/g	15-MAR-19	*0.67	0.74
Benzo(a)anthracene	1.58		0.050	ug/g	15-MAR-19	*0.5	*0.63
Benzo(a)pyrene	1.55		0.050	ug/g	15-MAR-19	*0.3	*0.3
Benzo(b)fluoranthene	1.69		0.050	ug/g	15-MAR-19	*0.78	*0.78
Benzo(g,h,i)perylene	1.16		0.050	ug/g	15-MAR-19	6.6	7.8
Benzo(k)fluoranthene	0.637		0.050	ug/g	15-MAR-19	0.78	0.78
Chrysene	1.48		0.050	ug/g	15-MAR-19	7	7.8

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
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Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T3-SOIL-RPI-C/F

#1: T3-Soil-Res/Park/Inst. Property Use (Coarse)

#2: T3-Soil-Res/Park/Inst. Property Use (Fine)

Sample Details Grouping / Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits #1	Guideline Limits #2
L2242379-4 SS-11189766-030519-MP-025 Sampled By: TM/MP on 05-MAR-19 @ 16:15 Matrix: SOIL							
Polycyclic Aromatic Hydrocarbons							
Dibenzo(ah)anthracene	0.288		0.050	ug/g	15-MAR-19	*0.1	*0.1
Fluoranthene	3.53		0.050	ug/g	15-MAR-19	*0.69	*0.69
Fluorene	0.247		0.050	ug/g	15-MAR-19	62	69
Indeno(1,2,3-cd)pyrene	1.05		0.050	ug/g	15-MAR-19	*0.38	*0.48
1+2-Methylnaphthalenes	0.116		0.042	ug/g	15-MAR-19	0.99	3.4
1-Methylnaphthalene	0.070		0.030	ug/g	15-MAR-19	0.99	3.4
2-Methylnaphthalene	0.046		0.030	ug/g	15-MAR-19	0.99	3.4
Naphthalene	0.037		0.013	ug/g	15-MAR-19	0.6	0.75
Phenanthrene	2.69		0.046	ug/g	15-MAR-19	6.2	7.8
Pyrene	2.92		0.050	ug/g	15-MAR-19	78	78
Surrogate: 2-Fluorobiphenyl	99.0		50-140	%	15-MAR-19		
Surrogate: p-Terphenyl d14	100.0		50-140	%	15-MAR-19		

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Regulation 153/04 - April 15, 2011 Standards = [Suite] - ON-511-T3-SOIL-RPI-C/F

#1: T3-Soil-Res/Park/Inst. Property Use (Coarse)

#2: T3-Soil-Res/Park/Inst. Property Use (Fine)

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference***
B-HWS-R511-WT	Soil	Boron-HWE-O.Reg 153/04 (July 2011)	HW EXTR, EPA 6010B

A dried solid sample is extracted with calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

CR-CR6-IC-WT	Soil	Hexavalent Chromium in Soil	SW846 3060A/7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

F1-F4-511-CALC-WT	Soil	F1-F4 Hydrocarbon Calculated Parameters	CCME CWS-PHC, Pub #1310, Dec 2001-S

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

Hydrocarbon results are expressed on a dry weight basis.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F1-HS-511-WT	Soil	F1-O.Reg 153/04 (July 2011)	E3398/CCME TIER 1-HS

Fraction F1 is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

F2-F4-511-WT	Soil	F2-F4-O.Reg 153/04 (July 2011)	CCME Tier 1

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from soil with 1:1 hexane:acetone using a rotary extractor. Extracts are treated with silica gel to remove polar organic interferences. F2, F3, & F4 are analyzed by GC-FID. F4G-sg is analyzed gravimetrically.

Notes:
1. F2 (C10-C16): Sum of all hydrocarbons that elute between nC10 and nC16.
2. F3 (C16-C34): Sum of all hydrocarbons that elute between nC16 and nC34.
3. F4 (C34-C50): Sum of all hydrocarbons that elute between nC34 and nC50.
4. F4G: Gravimetric Heavy Hydrocarbons
5. F4G-sg: Gravimetric Heavy Hydrocarbons (F4G) after silica gel treatment.
6. Where both F4 (C34-C50) and F4G-sg are reported for a sample, the larger of the two values is used for comparison against the relevant CCME guideline for F4.
7. F4G-sg cannot be added to the C6 to C50 hydrocarbon results to obtain an estimate of total extractable hydrocarbons.
8. This method is validated for use.
9. Data from analysis of validation and quality control samples is available upon request.
10. Reported results are expressed as milligrams per dry kilogram, unless otherwise indicated.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

Reference Information

HG-200.2-CVAA-WT	Soil	Mercury in Soil by CVAAS	EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

MET-200.2-CCMS-WT	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

Soil/sediment is dried, disaggregated, and sieved (2 mm). For tests intended to support Ontario regulations, the <2mm fraction is ground to pass through a 0.355 mm sieve. Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

METHYLNAPS-CALC-WT	Soil	ABN-Calculated Parameters	SW846 8270
MOISTURE-WT	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)
PAH-511-WT	Soil	PAH-O.Reg 153/04 (July 2011)	SW846 3510/8270

A representative sub-sample of soil is fortified with deuterium-labelled surrogates and a mechanical shaking techniqueis used to extract the sample with a mixture of methanol and toluene. The extracts are concentrated and analyzed by GC/MS. Results for benzo(b) fluoranthene may include contributions from benzo(j)fluoranthene, if also present in the sample.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

VOC-1,3-DCP-CALC-WT	Soil	Regulation 153 VOCs	SW8260B/SW8270C
VOC-511-HS-WT	Soil	VOC-O.Reg 153/04 (July 2011)	SW846 8260 (511)

Soil and sediment samples are extracted in methanol and analyzed by headspace-GC/MS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

XYLENES-SUM-CALC-WT	Soil	Sum of Xylene Isomer Concentrations	CALCULATION

Total xylenes represents the sum of o-xylene and m&p-xylene.

*** ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody numbers:

17-030819-1

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA		

Reference Information

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Quality Control Report

Workorder: L2242379 Report Date: 18-MAR-19

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2

Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
B-HWS-R511-WT	**Soil**							
Batch R4567533								
WG3006865-4 DUP		**L2242391-1**						
Boron (B), Hot Water Ext.		0.47	0.48		ug/g	3.2	30	15-MAR-19
WG3006865-2 IRM		**HOTB-SAL_SOIL5**						
Boron (B), Hot Water Ext.			107.5		%		70-130	15-MAR-19
WG3006865-3 LCS								
Boron (B), Hot Water Ext.			88.9		%		70-130	15-MAR-19
WG3006865-1 MB								
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	15-MAR-19
Batch R4567672								
WG3006864-4 DUP		**L2241902-1**						
Boron (B), Hot Water Ext.		0.21	0.19		ug/g	9.8	30	15-MAR-19
WG3006864-2 IRM		**HOTB-SAL_SOIL5**						
Boron (B), Hot Water Ext.			84.2		%		70-130	15-MAR-19
WG3006864-3 LCS								
Boron (B), Hot Water Ext.			88.7		%		70-130	15-MAR-19
WG3006864-1 MB								
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	15-MAR-19
CR-CR6-IC-WT	**Soil**							
Batch R4563967								
WG3004576-4 CRM		**WT-SQC012**						
Chromium, Hexavalent			88.6		%		70-130	14-MAR-19
WG3004576-3 DUP		**L2242288-3**						
Chromium, Hexavalent		0.29	0.29		ug/g	0.4	35	14-MAR-19
WG3004576-2 LCS								
Chromium, Hexavalent			94.4		%		80-120	14-MAR-19
WG3004576-1 MB								
Chromium, Hexavalent			<0.20		ug/g		0.2	14-MAR-19
F1-HS-511-WT	**Soil**							
Batch R4568358								
WG3006442-4 DUP		**WG3006442-3**						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	18-MAR-19
WG3006442-2 LCS								
F1 (C6-C10)			97.5		%		80-120	18-MAR-19
WG3006442-1 MB								
F1 (C6-C10)			<5.0		ug/g		5	18-MAR-19
Surrogate: 3,4-Dichlorotoluene			89.9		%		60-140	18-MAR-19
WG3006442-6 MS		**L2242288-3**						

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT	**Soil**							
Batch R4568358								
WG3006442-6 MS		**L2242288-3**						
F1 (C6-C10)			93.5		%		60-140	18-MAR-19
Batch R4568932								
WG3007278-4 DUP		**WG3007278-3**						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	18-MAR-19
WG3007278-2 LCS								
F1 (C6-C10)			102.0		%		80-120	18-MAR-19
WG3007278-1 MB								
F1 (C6-C10)			<5.0		ug/g		5	18-MAR-19
Surrogate: 3,4-Dichlorotoluene			112.1		%		60-140	18-MAR-19
WG3007278-6 MS		**L2242379-4**						
F1 (C6-C10)			104.7		%		60-140	18-MAR-19
F2-F4-511-WT	**Soil**							
Batch R4563708								
WG3005057-3 DUP		**WG3005057-5**						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	30	13-MAR-19
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	30	13-MAR-19
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	30	13-MAR-19
WG3005057-2 LCS								
F2 (C10-C16)			107.3		%		80-120	13-MAR-19
F3 (C16-C34)			109.4		%		80-120	13-MAR-19
F4 (C34-C50)			109.3		%		80-120	13-MAR-19
WG3005057-1 MB								
F2 (C10-C16)			<10		ug/g		10	13-MAR-19
F3 (C16-C34)			<50		ug/g		50	13-MAR-19
F4 (C34-C50)			<50		ug/g		50	13-MAR-19
Surrogate: 2-Bromobenzotrifluoride			89.2		%		60-140	13-MAR-19
WG3005057-4 MS		**WG3005057-5**						
F2 (C10-C16)			98.7		%		60-140	13-MAR-19
F3 (C16-C34)			103.1		%		60-140	13-MAR-19
F4 (C34-C50)			104.8		%		60-140	13-MAR-19
Batch R4564647								
WG3005251-3 DUP		**WG3005251-5**						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	30	14-MAR-19
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	30	14-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-511-WT	**Soil**							
Batch R4564647								
WG3005251-3 DUP		**WG3005251-5**						
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	30	14-MAR-19
WG3005251-2 LCS								
F2 (C10-C16)			101.5		%		80-120	14-MAR-19
F3 (C16-C34)			101.3		%		80-120	14-MAR-19
F4 (C34-C50)			102.6		%		80-120	14-MAR-19
WG3005251-1 MB								
F2 (C10-C16)			<10		ug/g		10	14-MAR-19
F3 (C16-C34)			<50		ug/g		50	14-MAR-19
F4 (C34-C50)			<50		ug/g		50	14-MAR-19
Surrogate: 2-Bromobenzotrifluoride			85.9		%		60-140	14-MAR-19
WG3005251-4 MS		**WG3005251-5**						
F2 (C10-C16)			101.7		%		60-140	14-MAR-19
F3 (C16-C34)			99.8		%		60-140	14-MAR-19
F4 (C34-C50)			103.4		%		60-140	14-MAR-19
HG-200.2-CVAA-WT	**Soil**							
Batch R4567134								
WG3006855-2 CRM		**WT-CANMET-TILL1**						
Mercury (Hg)			108.3		%		70-130	15-MAR-19
WG3006855-6 DUP		**WG3006855-5**						
Mercury (Hg)		0.0111	0.0114		ug/g	2.5	40	15-MAR-19
WG3006855-3 LCS								
Mercury (Hg)			106.0		%		80-120	15-MAR-19
WG3006855-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	15-MAR-19
MET-200.2-CCMS-WT	**Soil**							
Batch R4568403								
WG3006855-2 CRM		**WT-CANMET-TILL1**						
Antimony (Sb)			102.3		%		70-130	15-MAR-19
Arsenic (As)			102.8		%		70-130	15-MAR-19
Barium (Ba)			109.0		%		70-130	15-MAR-19
Beryllium (Be)			95.2		%		70-130	15-MAR-19
Boron (B)			3.2		mg/kg		0-8.2	15-MAR-19
Cadmium (Cd)			100.3		%		70-130	15-MAR-19
Chromium (Cr)			101.2		%		70-130	15-MAR-19
Cobalt (Co)			99.6		%		70-130	15-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R4568403								
WG3006855-2 CRM		**WT-CANMET-TILL1**						
Copper (Cu)			101.8		%		70-130	15-MAR-19
Lead (Pb)			102.5		%		70-130	15-MAR-19
Molybdenum (Mo)			109.1		%		70-130	15-MAR-19
Nickel (Ni)			101.4		%		70-130	15-MAR-19
Selenium (Se)			0.32		mg/kg		0.11-0.51	15-MAR-19
Silver (Ag)			0.24		mg/kg		0.13-0.33	15-MAR-19
Thallium (Tl)			0.117		mg/kg		0.077-0.18	15-MAR-19
Uranium (U)			95.5		%		70-130	15-MAR-19
Vanadium (V)			98.2		%		70-130	15-MAR-19
Zinc (Zn)			94.8		%		70-130	15-MAR-19
WG3006855-6 DUP		**WG3006855-5**						
Antimony (Sb)		0.18	0.18		ug/g	2.9	30	15-MAR-19
Arsenic (As)		4.77	4.96		ug/g	3.8	30	15-MAR-19
Barium (Ba)		76.8	77.9		ug/g	1.4	40	15-MAR-19
Beryllium (Be)		0.51	0.52		ug/g	0.6	30	15-MAR-19
Boron (B)		10.8	10.8		ug/g	0.3	30	15-MAR-19
Cadmium (Cd)		0.050	0.056		ug/g	11	30	15-MAR-19
Chromium (Cr)		17.9	18.3		ug/g	2.4	30	15-MAR-19
Cobalt (Co)		10.4	10.7		ug/g	2.3	30	15-MAR-19
Copper (Cu)		21.5	22.2		ug/g	3.4	30	15-MAR-19
Lead (Pb)		7.35	7.48		ug/g	1.7	40	15-MAR-19
Molybdenum (Mo)		0.60	0.63		ug/g	4.6	40	15-MAR-19
Nickel (Ni)		21.6	22.2		ug/g	2.5	30	15-MAR-19
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	15-MAR-19
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	15-MAR-19
Thallium (Tl)		0.093	0.095		ug/g	2.9	30	15-MAR-19
Uranium (U)		0.693	0.694		ug/g	0.2	30	15-MAR-19
Vanadium (V)		25.0	25.7		ug/g	3.1	30	15-MAR-19
Zinc (Zn)		44.7	45.9		ug/g	2.6	30	15-MAR-19
WG3006855-4 LCS								
Antimony (Sb)			101.7		%		80-120	15-MAR-19
Arsenic (As)			94.6		%		80-120	15-MAR-19
Barium (Ba)			102.6		%		80-120	15-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R4568403								
WG3006855-4 LCS								
Beryllium (Be)			88.6		%		80-120	15-MAR-19
Boron (B)			83.8		%		80-120	15-MAR-19
Cadmium (Cd)			94.0		%		80-120	15-MAR-19
Chromium (Cr)			96.8		%		80-120	15-MAR-19
Cobalt (Co)			92.5		%		80-120	15-MAR-19
Copper (Cu)			91.8		%		80-120	15-MAR-19
Lead (Pb)			97.6		%		80-120	15-MAR-19
Molybdenum (Mo)			102.3		%		80-120	15-MAR-19
Nickel (Ni)			94.9		%		80-120	15-MAR-19
Selenium (Se)			92.6		%		80-120	15-MAR-19
Silver (Ag)			97.7		%		80-120	15-MAR-19
Thallium (Tl)			97.0		%		80-120	15-MAR-19
Uranium (U)			93.0		%		80-120	15-MAR-19
Vanadium (V)			97.0		%		80-120	15-MAR-19
Zinc (Zn)			90.4		%		80-120	15-MAR-19
WG3006855-1 MB								
Antimony (Sb)			<0.10		mg/kg		0.1	15-MAR-19
Arsenic (As)			<0.10		mg/kg		0.1	15-MAR-19
Barium (Ba)			<0.50		mg/kg		0.5	15-MAR-19
Beryllium (Be)			<0.10		mg/kg		0.1	15-MAR-19
Boron (B)			<5.0		mg/kg		5	15-MAR-19
Cadmium (Cd)			<0.020		mg/kg		0.02	15-MAR-19
Chromium (Cr)			<0.50		mg/kg		0.5	15-MAR-19
Cobalt (Co)			<0.10		mg/kg		0.1	15-MAR-19
Copper (Cu)			<0.50		mg/kg		0.5	15-MAR-19
Lead (Pb)			<0.50		mg/kg		0.5	15-MAR-19
Molybdenum (Mo)			<0.10		mg/kg		0.1	15-MAR-19
Nickel (Ni)			<0.50		mg/kg		0.5	15-MAR-19
Selenium (Se)			<0.20		mg/kg		0.2	15-MAR-19
Silver (Ag)			<0.10		mg/kg		0.1	15-MAR-19
Thallium (Tl)			<0.050		mg/kg		0.05	15-MAR-19
Uranium (U)			<0.050		mg/kg		0.05	15-MAR-19
Vanadium (V)			<0.20		mg/kg		0.2	15-MAR-19
Zinc (Zn)			<2.0		mg/kg		2	15-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT	**Soil**							
Batch R4559927								
WG3004813-1 MB								
% Moisture			<0.10		%		0.1	13-MAR-19
Batch R4559928								
WG3004881-3 DUP		**L2242993-1**						
% Moisture		7.93	7.96		%	0.4	20	13-MAR-19
WG3004881-2 LCS								
% Moisture			99.9		%		90-110	13-MAR-19
WG3004881-1 MB								
% Moisture			<0.10		%		0.1	13-MAR-19
PAH-511-WT	**Soil**							
Batch R4567330								
WG3004051-3 DUP		**WG3004051-5**						
1-Methylnaphthalene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	15-MAR-19
2-Methylnaphthalene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	15-MAR-19
Acenaphthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-MAR-19
Acenaphthylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-MAR-19
Anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-MAR-19
Benzo(a)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-MAR-19
Benzo(a)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-MAR-19
Benzo(b)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-MAR-19
Benzo(g,h,i)perylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-MAR-19
Benzo(k)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-MAR-19
Chrysene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-MAR-19
Dibenzo(ah)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-MAR-19
Fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-MAR-19
Fluorene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-MAR-19
Indeno(1,2,3-cd)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-MAR-19
Naphthalene		<0.013	<0.013	RPD-NA	ug/g	N/A	40	15-MAR-19
Phenanthrene		<0.046	<0.046	RPD-NA	ug/g	N/A	40	15-MAR-19
Pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-MAR-19
WG3004051-2 LCS								
1-Methylnaphthalene			97.3		%		50-140	15-MAR-19
2-Methylnaphthalene			94.2		%		50-140	15-MAR-19
Acenaphthene			100.4		%		50-140	15-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R4567330								
WG3004051-2 LCS								
Acenaphthylene			90.7		%		50-140	15-MAR-19
Anthracene			93.1		%		50-140	15-MAR-19
Benzo(a)anthracene			93.6		%		50-140	15-MAR-19
Benzo(a)pyrene			93.7		%		50-140	15-MAR-19
Benzo(b)fluoranthene			93.3		%		50-140	15-MAR-19
Benzo(g,h,i)perylene			100.2		%		50-140	15-MAR-19
Benzo(k)fluoranthene			98.1		%		50-140	15-MAR-19
Chrysene			95.6		%		50-140	15-MAR-19
Dibenzo(ah)anthracene			94.9		%		50-140	15-MAR-19
Fluoranthene			91.6		%		50-140	15-MAR-19
Fluorene			93.1		%		50-140	15-MAR-19
Indeno(1,2,3-cd)pyrene			93.8		%		50-140	15-MAR-19
Naphthalene			94.6		%		50-140	15-MAR-19
Phenanthrene			98.2		%		50-140	15-MAR-19
Pyrene			92.3		%		50-140	15-MAR-19
WG3004051-1 MB								
1-Methylnaphthalene			<0.030		ug/g		0.03	15-MAR-19
2-Methylnaphthalene			<0.030		ug/g		0.03	15-MAR-19
Acenaphthene			<0.050		ug/g		0.05	15-MAR-19
Acenaphthylene			<0.050		ug/g		0.05	15-MAR-19
Anthracene			<0.050		ug/g		0.05	15-MAR-19
Benzo(a)anthracene			<0.050		ug/g		0.05	15-MAR-19
Benzo(a)pyrene			<0.050		ug/g		0.05	15-MAR-19
Benzo(b)fluoranthene			<0.050		ug/g		0.05	15-MAR-19
Benzo(g,h,i)perylene			<0.050		ug/g		0.05	15-MAR-19
Benzo(k)fluoranthene			<0.050		ug/g		0.05	15-MAR-19
Chrysene			<0.050		ug/g		0.05	15-MAR-19
Dibenzo(ah)anthracene			<0.050		ug/g		0.05	15-MAR-19
Fluoranthene			<0.050		ug/g		0.05	15-MAR-19
Fluorene			<0.050		ug/g		0.05	15-MAR-19
Indeno(1,2,3-cd)pyrene			<0.050		ug/g		0.05	15-MAR-19
Naphthalene			<0.013		ug/g		0.013	15-MAR-19
Phenanthrene			<0.046		ug/g		0.046	15-MAR-19
Pyrene			<0.050		ug/g		0.05	15-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT	**Soil**							
Batch R4567330								
WG3004051-1 MB								
Surrogate: 2-Fluorobiphenyl			99.0		%		50-140	15-MAR-19
Surrogate: p-Terphenyl d14			97.2		%		50-140	15-MAR-19
WG3004051-4 MS		**WG3004051-5**						
1-Methylnaphthalene			95.9		%		50-140	15-MAR-19
2-Methylnaphthalene			92.8		%		50-140	15-MAR-19
Acenaphthene			99.4		%		50-140	15-MAR-19
Acenaphthylene			89.9		%		50-140	15-MAR-19
Anthracene			91.8		%		50-140	15-MAR-19
Benzo(a)anthracene			92.6		%		50-140	15-MAR-19
Benzo(a)pyrene			91.4		%		50-140	15-MAR-19
Benzo(b)fluoranthene			91.6		%		50-140	15-MAR-19
Benzo(g,h,i)perylene			96.4		%		50-140	15-MAR-19
Benzo(k)fluoranthene			94.9		%		50-140	15-MAR-19
Chrysene			91.7		%		50-140	15-MAR-19
Dibenzo(ah)anthracene			93.3		%		50-140	15-MAR-19
Fluoranthene			90.1		%		50-140	15-MAR-19
Fluorene			92.3		%		50-140	15-MAR-19
Indeno(1,2,3-cd)pyrene			96.2		%		50-140	15-MAR-19
Naphthalene			93.4		%		50-140	15-MAR-19
Phenanthrene			95.4		%		50-140	15-MAR-19
Pyrene			90.8		%		50-140	15-MAR-19
VOC-511-HS-WT	**Soil**							
Batch R4568358								
WG3006442-4 DUP		**WG3006442-3**						
1,1,1,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
1,1,2,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
1,1,1-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
1,1,2-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
1,1-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
1,1-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
1,2-Dibromoethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
1,2-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
1,2-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
1,2-Dichloropropane		<0.050	<0.050					

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4568358								
WG3006442-4 DUP		**WG3006442-3**						
1,2-Dichloropropane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
1,3-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
1,4-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
Acetone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	18-MAR-19
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	18-MAR-19
Bromodichloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
Bromoform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
Bromomethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
Carbon tetrachloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
Chlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
Chloroform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
cis-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
cis-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	18-MAR-19
Dibromochloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
Dichlorodifluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	18-MAR-19
n-Hexane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
Methylene Chloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
MTBE		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	18-MAR-19
Methyl Ethyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	18-MAR-19
Methyl Isobutyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	18-MAR-19
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-MAR-19
Styrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
Tetrachloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	18-MAR-19
trans-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
trans-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	18-MAR-19
Trichloroethylene		<0.010	<0.010	RPD-NA	ug/g	N/A	40	18-MAR-19
Trichlorofluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	18-MAR-19
Vinyl chloride		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-MAR-19
WG3006442-2 LCS								
1,1,1,2-Tetrachloroethane			112.0		%		60-130	18-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4568358								
WG3006442-2 LCS								
1,1,2,2-Tetrachloroethane			107.4		%		60-130	18-MAR-19
1,1,1-Trichloroethane			109.8		%		60-130	18-MAR-19
1,1,2-Trichloroethane			112.5		%		60-130	18-MAR-19
1,1-Dichloroethane			107.7		%		60-130	18-MAR-19
1,1-Dichloroethylene			108.6		%		60-130	18-MAR-19
1,2-Dibromoethane			111.7		%		70-130	18-MAR-19
1,2-Dichlorobenzene			110.7		%		70-130	18-MAR-19
1,2-Dichloroethane			102.5		%		60-130	18-MAR-19
1,2-Dichloropropane			113.7		%		70-130	18-MAR-19
1,3-Dichlorobenzene			115.0		%		70-130	18-MAR-19
1,4-Dichlorobenzene			107.2		%		70-130	18-MAR-19
Acetone			110.5		%		60-140	18-MAR-19
Benzene			110.9		%		70-130	18-MAR-19
Bromodichloromethane			113.3		%		50-140	18-MAR-19
Bromoform			109.1		%		70-130	18-MAR-19
Bromomethane			108.1		%		50-140	18-MAR-19
Carbon tetrachloride			108.3		%		70-130	18-MAR-19
Chlorobenzene			110.7		%		70-130	18-MAR-19
Chloroform			112.0		%		70-130	18-MAR-19
cis-1,2-Dichloroethylene			111.0		%		70-130	18-MAR-19
cis-1,3-Dichloropropene			108.5		%		70-130	18-MAR-19
Dibromochloromethane			112.1		%		60-130	18-MAR-19
Dichlorodifluoromethane			70.1		%		50-140	18-MAR-19
Ethylbenzene			107.5		%		70-130	18-MAR-19
n-Hexane			100.0		%		70-130	18-MAR-19
Methylene Chloride			109.1		%		70-130	18-MAR-19
MTBE			107.2		%		70-130	18-MAR-19
m+p-Xylenes			111.2		%		70-130	18-MAR-19
Methyl Ethyl Ketone			106.4		%		60-140	18-MAR-19
Methyl Isobutyl Ketone			94.6		%		60-140	18-MAR-19
o-Xylene			103.9		%		70-130	18-MAR-19
Styrene			109.4		%		70-130	18-MAR-19
Tetrachloroethylene			117.3		%		60-130	18-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4568358								
WG3006442-2 LCS								
Toluene			108.0		%		70-130	18-MAR-19
trans-1,2-Dichloroethylene			115.5		%		60-130	18-MAR-19
trans-1,3-Dichloropropene			115.7		%		70-130	18-MAR-19
Trichloroethylene			114.4		%		60-130	18-MAR-19
Trichlorofluoromethane			103.7		%		50-140	18-MAR-19
Vinyl chloride			82.3		%		60-140	18-MAR-19
WG3006442-1 MB								
1,1,1,2-Tetrachloroethane			<0.050		ug/g		0.05	18-MAR-19
1,1,2,2-Tetrachloroethane			<0.050		ug/g		0.05	18-MAR-19
1,1,1-Trichloroethane			<0.050		ug/g		0.05	18-MAR-19
1,1,2-Trichloroethane			<0.050		ug/g		0.05	18-MAR-19
1,1-Dichloroethane			<0.050		ug/g		0.05	18-MAR-19
1,1-Dichloroethylene			<0.050		ug/g		0.05	18-MAR-19
1,2-Dibromoethane			<0.050		ug/g		0.05	18-MAR-19
1,2-Dichlorobenzene			<0.050		ug/g		0.05	18-MAR-19
1,2-Dichloroethane			<0.050		ug/g		0.05	18-MAR-19
1,2-Dichloropropane			<0.050		ug/g		0.05	18-MAR-19
1,3-Dichlorobenzene			<0.050		ug/g		0.05	18-MAR-19
1,4-Dichlorobenzene			<0.050		ug/g		0.05	18-MAR-19
Acetone			<0.50		ug/g		0.5	18-MAR-19
Benzene			<0.0068		ug/g		0.0068	18-MAR-19
Bromodichloromethane			<0.050		ug/g		0.05	18-MAR-19
Bromoform			<0.050		ug/g		0.05	18-MAR-19
Bromomethane			<0.050		ug/g		0.05	18-MAR-19
Carbon tetrachloride			<0.050		ug/g		0.05	18-MAR-19
Chlorobenzene			<0.050		ug/g		0.05	18-MAR-19
Chloroform			<0.050		ug/g		0.05	18-MAR-19
cis-1,2-Dichloroethylene			<0.050		ug/g		0.05	18-MAR-19
cis-1,3-Dichloropropene			<0.030		ug/g		0.03	18-MAR-19
Dibromochloromethane			<0.050		ug/g		0.05	18-MAR-19
Dichlorodifluoromethane			<0.050		ug/g		0.05	18-MAR-19
Ethylbenzene			<0.018		ug/g		0.018	18-MAR-19
n-Hexane			<0.050		ug/g		0.05	18-MAR-19
Methylene Chloride			<0.050		ug/g		0.05	18-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4568358								
WG3006442-1 MB								
MTBE			<0.050		ug/g		0.05	18-MAR-19
m+p-Xylenes			<0.030		ug/g		0.03	18-MAR-19
Methyl Ethyl Ketone			<0.50		ug/g		0.5	18-MAR-19
Methyl Isobutyl Ketone			<0.50		ug/g		0.5	18-MAR-19
o-Xylene			<0.020		ug/g		0.02	18-MAR-19
Styrene			<0.050		ug/g		0.05	18-MAR-19
Tetrachloroethylene			<0.050		ug/g		0.05	18-MAR-19
Toluene			<0.080		ug/g		0.08	18-MAR-19
trans-1,2-Dichloroethylene			<0.050		ug/g		0.05	18-MAR-19
trans-1,3-Dichloropropene			<0.030		ug/g		0.03	18-MAR-19
Trichloroethylene			<0.010		ug/g		0.01	18-MAR-19
Trichlorofluoromethane			<0.050		ug/g		0.05	18-MAR-19
Vinyl chloride			<0.020		ug/g		0.02	18-MAR-19
Surrogate: 1,4-Difluorobenzene			123.3		%		50-140	18-MAR-19
Surrogate: 4-Bromofluorobenzene			103.5		%		50-140	18-MAR-19
WG3006442-5 MS		**L2242288-1**						
1,1,1,2-Tetrachloroethane			117.7		%		50-140	18-MAR-19
1,1,2,2-Tetrachloroethane			108.8		%		50-140	18-MAR-19
1,1,1-Trichloroethane			119.7		%		50-140	18-MAR-19
1,1,2-Trichloroethane			115.6		%		50-140	18-MAR-19
1,1-Dichloroethane			113.0		%		50-140	18-MAR-19
1,1-Dichloroethylene			114.5		%		50-140	18-MAR-19
1,2-Dibromoethane			113.5		%		50-140	18-MAR-19
1,2-Dichlorobenzene			115.4		%		50-140	18-MAR-19
1,2-Dichloroethane			103.4		%		50-140	18-MAR-19
1,2-Dichloropropane			117.1		%		50-140	18-MAR-19
1,3-Dichlorobenzene			120.1		%		50-140	18-MAR-19
1,4-Dichlorobenzene			112.2		%		50-140	18-MAR-19
Acetone			109.5		%		50-140	18-MAR-19
Benzene			115.5		%		50-140	18-MAR-19
Bromodichloromethane			116.8		%		50-140	18-MAR-19
Bromoform			111.6		%		50-140	18-MAR-19
Bromomethane			110.6		%		50-140	18-MAR-19
Carbon tetrachloride			115.4		%		50-140	18-MAR-19

Quality Control Report

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R4568358								
WG3006442-5 MS		**L2242288-1**						
Chlorobenzene			115.7		%		50-140	18-MAR-19
Chloroform			116.7		%		50-140	18-MAR-19
cis-1,2-Dichloroethylene			114.8		%		50-140	18-MAR-19
cis-1,3-Dichloropropene			109.5		%		50-140	18-MAR-19
Dibromochloromethane			115.4		%		50-140	18-MAR-19
Dichlorodifluoromethane			71.1		%		50-140	18-MAR-19
Ethylbenzene			113.7		%		50-140	18-MAR-19
n-Hexane			106.6		%		50-140	18-MAR-19
Methylene Chloride			112.0		%		50-140	18-MAR-19
MTBE			111.8		%		50-140	18-MAR-19
m+p-Xylenes			116.9		%		50-140	18-MAR-19
Methyl Ethyl Ketone			97.3		%		50-140	18-MAR-19
Methyl Isobutyl Ketone			92.0		%		50-140	18-MAR-19
o-Xylene			109.0		%		50-140	18-MAR-19
Styrene			112.7		%		50-140	18-MAR-19
Tetrachloroethylene			124.1		%		50-140	18-MAR-19
Toluene			114.1		%		50-140	18-MAR-19
trans-1,2-Dichloroethylene			119.5		%		50-140	18-MAR-19
trans-1,3-Dichloropropene			117.1		%		50-140	18-MAR-19
Trichloroethylene			119.7		%		50-140	18-MAR-19
Trichlorofluoromethane			110.4		%		50-140	18-MAR-19
Vinyl chloride			84.8		%		50-140	18-MAR-19

Quality Control Report

Workorder: L2242379 Report Date: 18-MAR-19

Client: GHD Limited (Waterloo)
455 PHILLIP STREET
WATERLOO ON N2L 3X2
Contact: JENNIFER BALKWILL

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

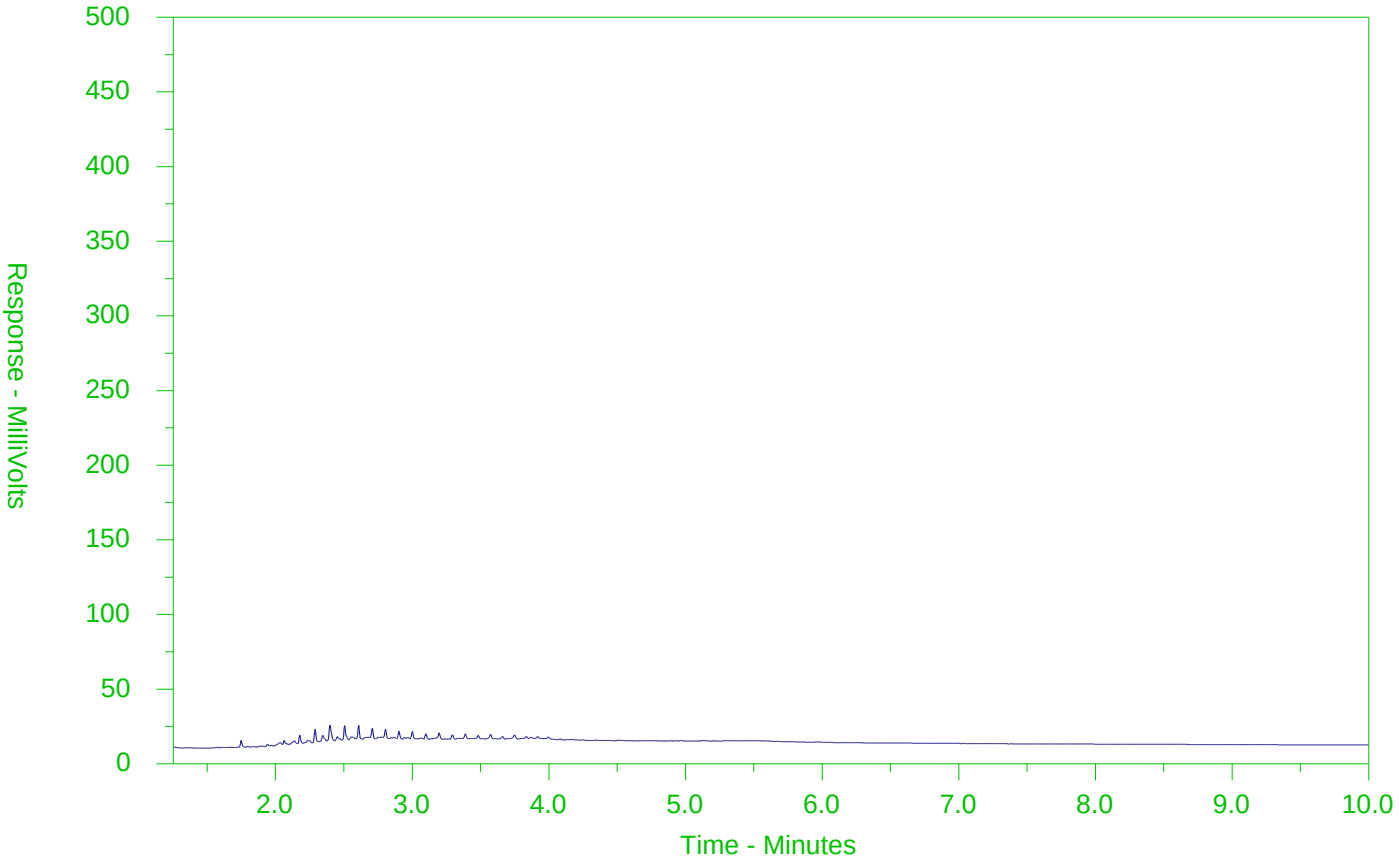
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2242379-1
Client Sample ID: SS-11189766-030419-MP-022



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →	← Motor Oils/Lube Oils/Grease →		
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

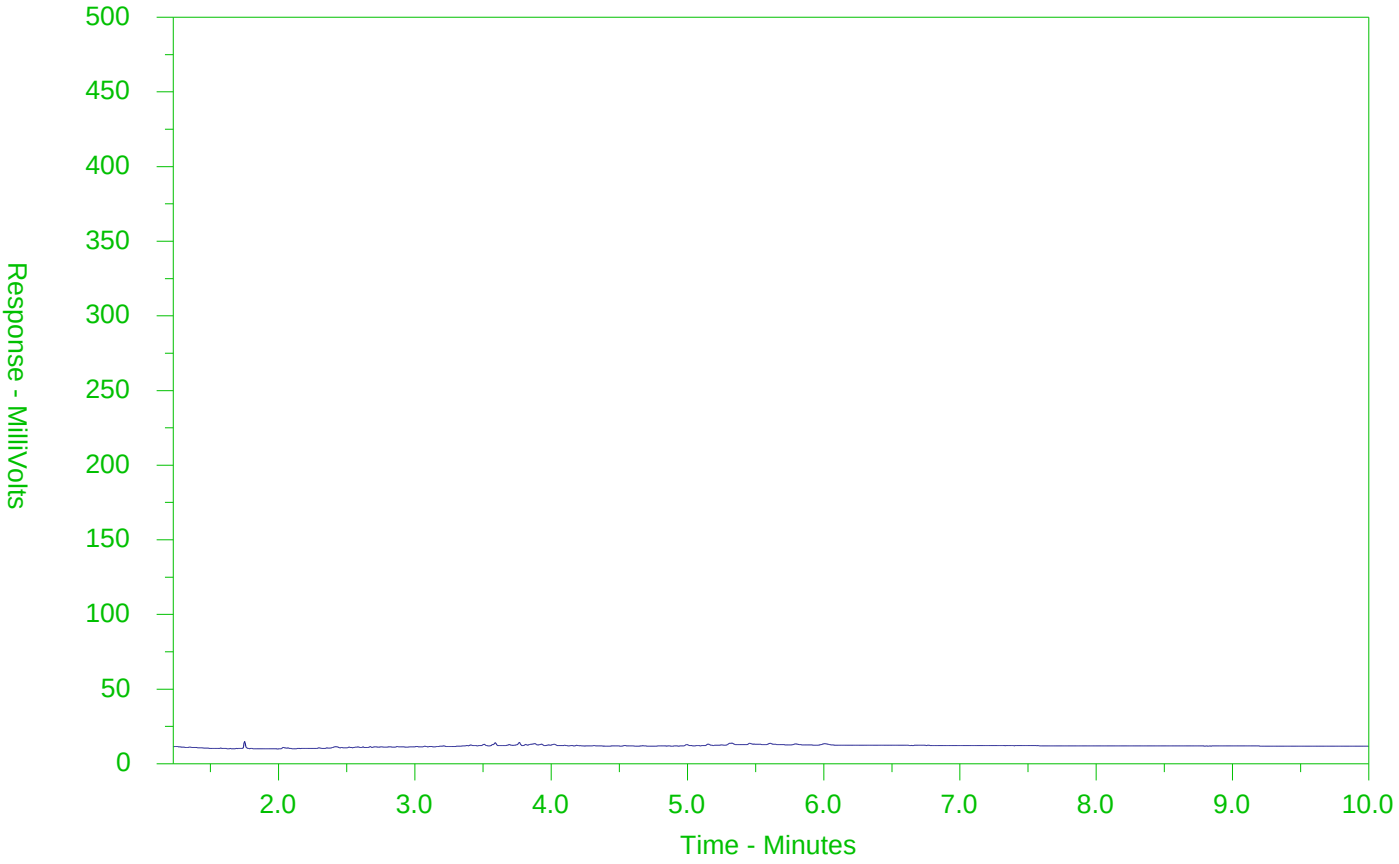
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2242379-2
Client Sample ID: SS-11189766-030519-MP-023



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →	← Motor Oils/Lube Oils/Grease →		
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

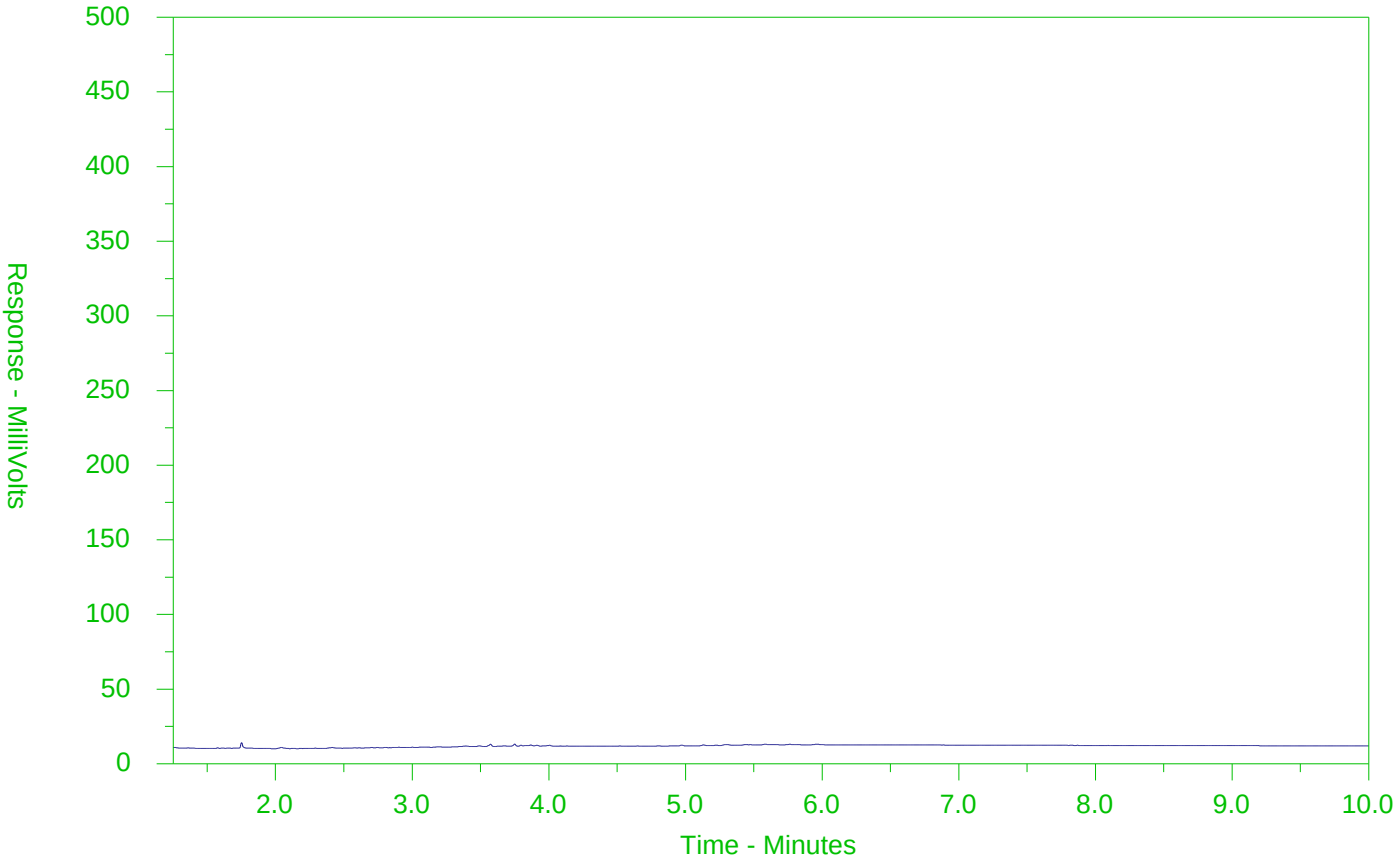
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2242379-3
Client Sample ID: SS-11189766-030519-MP-024



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →		← Motor Oils/Lube Oils/Grease →	
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

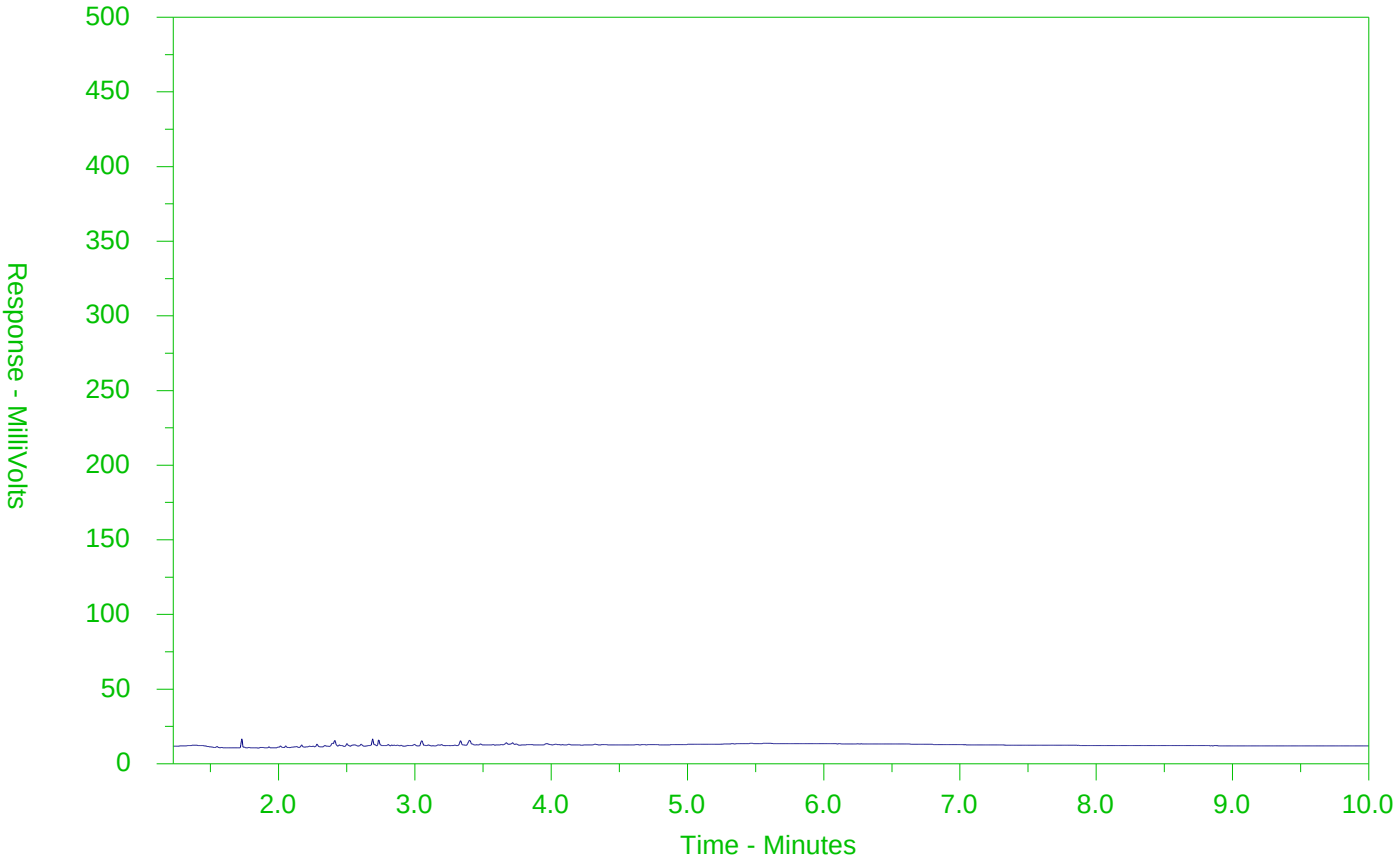
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2242379-4
Client Sample ID: SS-11189766-030519-MP-025



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →		← Motor Oils/Lube Oils/Grease →	
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsolobal.com

Canada Toll Free: 1 800 668 9878

L2242379-COFC

COC Number: 17 - 030819-1

Page 1 of 1

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Company:	GHD LIMITED - ACCT #13791		Quality Control (QC) Report with Report ☑ YES ☐ NO
Contact:	Jennifer Balkwill		☐ Compare Results to Criteria on Report - provide details below if box checked
Phone:	519-340-4286		Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
	Company address below will appear on the final report		Email 1 or Fax melissa.pley@ghd.com
Street:	455 Phillip Street		Email 2 jennifer.balkwill@ghd.com
City/Province:	Waterloo, Ontario		Email 3 marc.gaudet@ghd.com
Postal Code:	N2L 3X2		
Invoice To	Same as Report To ☑ YES ☐ NO	Invoice Distribution	
	Copy of Invoice with Report ☐ YES ☑ NO	Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX	
Company:	GHD Limited	Email 1 or Fax melissa.pley@ghd.com	
Contact:	Jennifer Balkwill	Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	13791	AFE/Cost Center:	PO#
Job #:	11189766 - ~~12 Lakeport Rd~~, St. Catharines 16 Lock St.	Major/Minor Code:	Routing Code:
PO / AFE:	73514923	Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (lab use only): L2242379-COFC

ALS Contact: Rick H Sampler: T.Mulhall and M.Pley

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ 3 day [P3-25%] ☐ 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E - 100%] ☐ Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	O.Reg 153 Metals	PAHs	PHCs	VOCs	VOCs/F1	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	GW-11189766-030719-TM-002	7-Mar-19	10:40	Water	7	R	R	R	R			
	GW-11189766-030719-TM-003	7-Mar-19	10:40	Water	7	R	R	R	R			
	GW-11189766-030719-TM-004	7-Mar-19	11:50	Water	7	R	R	R	R			
1	SS-11189766-030419-MP-022	4-Mar-19	16:30	Soil	4	R	R	R				
2	SS-11189766-030519-MP-023	5-Mar-19	14:30	Soil	4	R	R	R				
3	SS-11189766-030519-MP-024	6-Mar-19	14:30	Soil	5	R	R	R				
4	SS-11189766-030519-MP-025	7-Mar-19	16:15	Soil	5	R	R	R				
	Trip Blank	7-Mar-19	—	Water	2					R		

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	Please compare to Table 3 (RPI) Criteria
Are samples for human consumption/ use? ☐ YES ☑ NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☐ Custody seal intact ☑ Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				1.2			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Melissa Pley	Date: March 8, 2019	Time: 11:00	Received by:	Date:	Time:	Received by:	Date: Mar 8/19	Time: 16:45

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY JUNE 2018 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

SIF

about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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905.682.0510

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