March 2017

REPORT ON

Phase Two Environmental Site Assessment
933 Gladstone Avenue
Ottawa, ON

Submitted to:
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Ottawa Community Housing Corporation
39 Auriga Drive
Ottawa, Ontario
K2E 7Y8

REPORT

Report Number: 1670949 Rev.0

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Golder Associates

Executive Summary

The Executive Summary highlights key points from the report only; for complete information and findings, as well as the limitations, the reader should examine the complete report.

Golder Associates Ltd. ("Golder") was retained by Ottawa Community Housing Corporation ("OCHC") to carry out a Phase Two Environmental Site Assessment ("ESA") of the property located at 933 Gladstone Avenue, Ottawa, Ontario (herein after referred to as the "Site" or "Phase Two Property") as shown on Figure 1.

The Phase Two property consists of an approximately 3.23 hectares (7.98 acres) parcel of land that is currently vacant. It was the site of the Federal Government Central Ordnance Depot prior to 2015 when it was demolished. The proposed future use of the Phase Two Property is residential redevelopment.

Golder conducted a Phase One ESA entitled, "*Phase One Environmental Site Assessment 933 Gladstone Avenue Ottawa, Ontario*", dated December 2016, to assess the likelihood of soil and/or groundwater contamination resulting from historic or present activities at the Site and surrounding area. Based on the findings of the Phase One ESA, Golder completed this Phase Two ESA investigation for the Site to address the areas of potential environmental concern (APECs) identified in the Phase One ESA.

Given that the Site land use will change from less sensitive to more sensitive land use there is a mandatory requirement for filing of a Record of Site Condition (RSC) pursuant to *Ontario Regulation 153/04 – Records of Site Condition – Part XV.1 of the Act*, made under the *Environmental Protection Act.* As such, this Phase Two ESA was completed in accordance with the requirements of Schedule E of O.Reg. 153/04 (as amended) to support the filing of an RSC for the Site. The boundaries of the property for which the RSC will be filed (the "RSC Property) and the Phase Two Property are the same. As such, for easy reference throughout the report, the RSC Property will be referred as the Site.

A Phase Two ESA was carried out at the Site in accordance with O.Reg. 153/04 to address the following fifteen APECs identified in the 2016 Golder Phase One ESA recently completed for the Site:

APEC #	Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern on Phase One Property	Potentially Contaminating Activity	Location of PCA (on-Site or off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, soil and/or Sediment)
1	Current Dyed Diesel AST	Storage yard in the northwest corner of the Site	PCA 28: Gasoline and Associated Products in Fixed Tanks	On-Site	PHC and BTEX	Groundwater and Soil

APEC #	Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern on Phase One Property	Potentially Contaminating Activity	Location of PCA (on-Site or off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, soil and/or Sediment)
2	Former on-Site rail tracks as well as rail line adjacent to the west	Former on-Site rail spurs running in several locations across the entire property during lumberyard use. Rail spurs running to east side of boiler room and along the west side of the depot building	PCA 46: Rail Yards, Tracks, and Spurs	On-Site	Metals, PAHs, PHC	Soil
3	Footprint of old buildings was built up with fill following 2015 demolition. Layer of fill was also identified across Site prior to demolition, which included waste products. Fill origin unknown	Entire Site	PCA 30: Importation of Fill Material of Unknown Quality	On-Site	Metals, PAHs, PHC, VOC	Soil
4	Former lumber yard on-Site	Entire Site	PCA 59: Bulk Storage of Treated and Preserved Wood Products	On-Site	Metals, PAHs, VOCs	Soil
5	Site used as Central Ordnance Depot for 50 years including storage of paints, oils, munitions and assorted military stores	Entire Site	PCA: Other – Oil Drum Storage PCA 20: Explosives and Ammunition Bulk Storage PCA 39: Paints Manufacturing, Processing, and Bulk Storage	On-Site	Metals, PAHs, VOCs	Groundwater and Soil
6	Historical heating oil ASTs	West (2 tanks) and south (1 tank) of former boiler room	PCA 28: Gasoline and Associated Products in Fixed Tanks	On-Site	PAHs, PHC, BTEX, VOC	Groundwater and Soil

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7	Former printer operation on-Site	Unknown, assume entire building footprint area	PCA 31: Ink Manufacturing, Processing, and Bulk Storage	On-Site	VOCs, Metals	Groundwater and Soil
8	Former 2500 gallon sump noted in building plans for the flammables storage room	On-Site (NW corner, north of former boiler room)	PCA: Other – Chemical Storage Room Sump	On-Site	PHC, BTEX, VOCs	Groundwater and Soil
9	Historical vehicle maintenance	Unknown, assume entire Site	PCA: Other – Vehicle Maintenance	On-Site	PHC, VOC	Groundwater and Soil
10	Transformers on-Site within former warehouse	Site within former warehouse footprint	PCA 55: Transformer Use	On-Site	PCBs, PHC	Groundwater and Soil
11	Waste generator codes for Petroleum distillates, waste oils and lubricants, light fuels, chemicals, and pharmaceuticals	Entire Phase One Study Area	PCA : Other – Waste Generator	On/Off-Site	PHC, VOC	Groundwater and Soil
12	Several 205 L drums of waste oil were stored in the boiler room and minor staining was observed	West side in former boiler room	PCA : Other – Petroleum Product Drum Storage	On-Site	PHC, BTEX	Groundwater and Soil
13	Numerous fires in the 1950's burned down portions of the depot which may have released contaminants	On-Site (North and south ends of former warehouse, as well as well as two fires in unknown locations)	PCA : Other - Fires	On-Site	PHC, Metals, PAH, VOCs	Groundwater and Soil

APEC #	Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern on Phase One Property	Potentially Contaminating Activity	Location of PCA (on-Site or off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, soil and/or Sediment)
14	Parking area contains empty bulk liquid totes of unknown sources, 5 buckets (25 L each) marked "Hydraulic Fluid – Must be disposed of" on wooden pallet in paved area, soil piles, asphalt pile, empty drums. Several drums of unknown contents noted in 2001 in maintenance yard immediately adjacent to north	On-Site (NW corner of Site in storage area)	PCA : Debris and Chemical Waste	On-Site / Off-Site	Metals, PHC PAH, VOCs	Groundwater and Soil
15	Venice Iron Works and V Steel Works Limited.	17 Larch Street, adjacent to Site on east side	PCA 34: Metal Fabrication	Off-Site	Metals, PHC, VOC	Groundwater and Soil

Based on the completed scope of work and results of the Phase II ESA, the following conclusions are provided:

- Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act, Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition (Residential/Parkland/Institutional Property Use, coarse textured soil, April 15, 2011) are considered applicable and were used to assess the environmental quality of soil and groundwater at the Site.
- Vanadium exceedances of the MOECC Table 3 Standards were identified in 4 of the 23 soil samples collected and submitted for laboratory analysis of metals. These exceedances are considered to be related to the to the naturally occurring elevated background metal concentrations in the clay rather than associated with any of the APECs or any other sources of contamination. As such, the metal exceedances in the silty clay are not considered as exceedances for the purpose of the RSC and are not considered further.
- Groundwater sampling completed at the Site indicates that none of the groundwater samples submitted for laboratory analyses of PHC F1 to F4, VOCs, PCBs, and/or metals exceeded the MOE Table 3 Standards for the parameters analyzed. No odour, sheen or free product was observed or detected in any of the 16 wells during the investigation. Therefore, groundwater at the Site meets the site applicable standards at the time of the investigation.

- Based on the results of the soil and groundwater duplicate samples, trip spike, trip and field blanks and the implemented quality assurance and quality control measures during the Phase Two ESA, it is considered that the data obtained during the Phase Two ESA is reliable, reproducible and representative of the Site conditions.
- Based on the results obtained during the Phase II ESA, soil or groundwater impacts associated with the fifteen APECs on the Site were not identified and the soil and groundwater quality at the Site meets the applicable standards at the time of the investigation.
- The monitoring wells installed on the Site as part of the Phase Two ESA should be decommissioned in accordance with Ontario Regulation 903 if no longer required.

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1.0 INTRODUCTION

1.1 Site Description

Golder was retained by Ottawa Community Housing Corporation (the "Client" or "OCHC") to conduct a Phase Two ESA of the following property:

Municipal Address	**933 Gladstone Avenue**
Property Identification Number	Parcels 1 and 3 (part of PIN 04107-0039 and all of PIN 04107-0032) are currently owned by the federal government while three (3) parcels (part of PINs 04107-0035, 04107-0033 and 04107-0031) are closed rights-of-way that are owned by the City
Legal Description	Lots 1 to 7, inclusive, West Champagne Avenue, Block B, Lots 1, 2 & 3 & Parts of Lot 4, 5 & A, East Loretta Avenue, Block B, Plan 73 and various lot and streets in Block C, Plan 73, City of Ottawa.
Size of the Phase Two Property	3.23 hectares

The Site location is provided on Figure 1. A plan of survey for the Site is provided in Appendix A. The boundaries of the Phase Two Property, which are the same as the RSC property boundaries, are provided in Figure 2.

1.2 Property Ownership

Authorization to proceed with this investigation was received from Cliff Youdale of Ottawa Community Housing Corp. on January 10, 2017. The contact information for the Phase Two Property owner is as follows:

Address	Current Site Owner(s)	Contact Information
933 Gladstone Avenue. Ottawa, Ontario K1Y 3E5	City of Ottawa (Parcels 2,4, and 5) Canada Lands Company (Parcels 1 and 3)	**Owner** City of Ottawa Ms. Erin Tait, Specialist, Environmental Remediation Corporate Real Estate Office 5th Floor, 110 Laurier Avenue West Ottawa, Ontario K1P 1J1 Canada Lands Company Ms. Katherine Constantine, Development Manager 30 Metcalfe Street, Suite 601 Ottawa, Ontario K1P 5L4 **Prospective Buyer** Mr. Robert MacNeil Ottawa Community Housing Corporation 39 Auriga Drive Ottawa, Ontario K2E 7Y8

1.3 Current and Proposed Future Uses

The Phase Two Property is currently vacant land, and was the site of the Federal Government Central Ordnance Depot prior to 2015. The proposed future use of the Phase Two Property is mixture of residential, institutional (school), parkland and commercial redevelopment. This change in use constitutes a change from a less sensitive to a more sensitive land use, as such the submission of a Record of Site Condition ("RSC") will be required.

1.4 Applicable Site Condition Standard

The analytical results of the samples collected for this Phase Two ESA were compared to the Table 3 generic site condition standards (residential property use, coarse soil texture) presented in the MOECC regulation 153/04 "*Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*", dated April 15, 2011 (O. Reg. 153/04). The applicable site condition standards were selected based on the following rationale:

- The Site and all other properties located, in whole or in part, within 250 metres of the Site are supplied by the City of Ottawa municipal drinking water system. No wells were identified that are used or intended for use as a source of water
- The Site is not located in an area designated in a municipal official plan as a well-head protection area or other designation identified by the municipality for the protection of ground water
- Results of grain-size analysis show that at least one third of soil at the property may be considered coarse textured
- The closest water body is the Ottawa River, located 1 kilometre ("km") north of the Phase Two Property
- There are no features on the Phase Two Property that would meet the conditions of an environmentally sensitive site, as described in Section 41
- The average pH of surface soil is 5≤pH≤9 and the pH of sub-surface soil meets the requirement that 5≤pH≤11
- The intended land use for the Phase Two Property is a mixed use development that includes residential, parkland, institutional property use development
- The overburden thickness is greater than 2 metres over more than one-third of the Phase Two Property
- The average depth to the water table is 3.30 mbgs with the shallowest being 1.36 metres below ground surface (mbgs).

2.0 BACKGROUND INFORMATION

This section presents the background conditions of the Phase Two Property including a description of the physical setting and a summary of past investigations conducted.

The objectives of the Phase Two ESA were to obtain information about environmental conditions in the soil and groundwater on, in or under the Site, and to develop the information necessary to complete a Record of Site Condition for the property. The objectives of this Phase Two ESA were achieved by:

- Developing an understanding of the geological and hydrogeological conditions at the Site; and,
- Conducting field sampling for all contaminants of concern ("COCs") associated with each area of potential environmental concern ("APEC") identified in the Phase One ESA.

2.1 Physical Setting

The nearest surface water body is the Ottawa River, located 1 km north of the Phase Two Property. There are no areas of natural significance within the Phase One Study area. Land uses surrounding the Phase Two Property parkland, community, residential and commercial, as shown in Figure 2.

The topography of the Phase Two Property is approximately 2 m lower than the lands to the west, with the exception of the railway track which is in a manmade 5 m deep trench on the western edge of the Site. The site is at grade with the lands to the north, south, and east. The surface water drainage features on the Site include ditches along the perimeter of the Site which contain catch basins at junctions. These catch basins drain to the storm sewer. Otherwise infiltration is the primary method of water drainage.

2.2 Past Investigations

1) "2001 Phase I ESA" for portion of the Site north of Laurel Street, and adjacent property north of the Site. Aqua Terre Solutions Inc. March 2001. *Phase I Environmental Site Assessment Plouffe Park (1010 Somerset St. W.) Ottawa, Ontario.* Prepared for Public Works and Government Service Canada.

2) "2005 Phase I & II ESA" for the Site and adjacent property north of the Site. Trow Associates Inc. January 2005. *Phase I & II Environmental Site Assessment, Plouffe Park 1010 Somerset St. W., Ottawa, Ontario DRFP#08830.* Prepared for Public Works & Government Services Canada.

3) "2008 Environmental Review" Levac Robichaud Leclerc Associates Ltd. October 2008. *Environmental Review and Limited Investigation Plouffe Park, 1010 Somerset Street West, Ottawa, Ontario.* Prepared for SNC-Lavalin Profac Inc.

4) "2013 Soil and Groundwater Investigation" for the Site and adjacent property north of the Site. DST Consulting Engineers Inc. September 2013. *Subsurface Soil and Groundwater Investigation Sampling Plouffe Park – 1010 Somerset Street West, Ottawa, Ontario.* Prepared for Public Works and Government Services Canada.

5) "2015 Phase One ESA" for the Site: Pinchin Ltd. 2015. *Phase One Environmental Site Assessment: 933 Gladstone Avenue Ottawa, Ontario.* Prepared for Canada Lands Company CLC Limited.

Report	On/Off Site	Factual Information Summary
2001 Phase I ESA	On and Off Site – Refers to warehouse that spanned both properties listed as 1010 Somerset St. W.	Six (6) APECs were identified including: 1. Former Coal Storage Area and Diesel AST (boiler room area) 2. Equipment and drum storage in yard (NW maintenance yard) 3. Former underground storage tanks (USTs) (SE of Site) 4. Historical land use on surrounding properties 5. Bulk storage of explosive ordnance 6. Designated substance issues including lead, mercury, and asbestos

Report	On/Off Site	Factual Information Summary
2005 Phase I & II ESA	On and Off Site – Refers to warehouse that spanned both properties listed as 1010 Somerset St. W.	Nine (9) PCAs were identified, which included all six (6) APECs reported in "2001 Phase I ESA" as well as 1. The former rail line to the west of the building 2. The general fill quality at the Site 3. The fires at the northern portion of the property in 1950's Only two APECs, the fill and the coal storage yard, showed concentrations above applicable guidelines at the time when analysed during the Phase II investigation. The groundwater flow direction was inferred to be to the north-northeast.
2008 Environmental Review	On and Off Site – Refers to warehouse that spanned both properties listed as 1010 Somerset St. W.	This report noted that the general fill quality on the Site was an environmental concern, and any fill generated from redevelopment would need disposal. Asbestos materials were noted throughout the depot building, as well as lead based paints. Finally, mould was identified in the building.
2013 Soil and Groundwater Investigation	On and Off Site – Refers to warehouse that spanned both properties listed as 1010 Somerset St. W.	Based on groundwater and soil analysis, four areas of environmental concern (AEC) were identified on the northern portion of the former warehouse north of the Phase One Property (1010 Somerset St. W.). Additionally, based on fill quality assessment, three areas of impacts were identified; two in the northern portion of the Site, and one in the southwestern portion which showed PAHs and metals exceedances.
2015 Phase One ESA	On Site – same property limits as this Phase One ESA	Seventeen (17) PCAs were identified on Site as well as forty-two (42) PCAs in the Phase One study area outside the Phase One Property. Off Site PCAs which contributed to on-Site APECs included: the adjacent railway tracks, adjacent metal fabrication plant, and a hydro vault located north and adjacent to the Site. Groundwater flow was reportedly inferred to be northwest from topography maps. Typical on-Site PCAs included: ▪ Current diesel ASTs ▪ The former on-Site railway line ▪ Current and former fill ▪ Former on-Site lumber yard ▪ Storage and transportation of ammunition ▪ Several former on-Site ASTs ▪ Former on-Site printers ▪ Former on-Site retail fuel outlet (RFO) ▪ Historical on-Site vehicle maintenance ▪ Historical fires on the Site ▪ Former transformer in the warehouse ▪ Drums of unknown substance ▪ Waste generator codes for the Site. From these PCAs, twenty-one (21) APECs on the Site were identified. A Phase II ESA was recommended prior to filing a Record of Site Condition.

2001 Phase I ESA

Of the APECs noted in the 2001 Phase I ESA, only four (4) qualified as PCAs for the Phase One Property. The former coal storage area and diesel AST fall within the central-west portion of the Site, the former UST falls within southeast corner of the Site, the bulk storage of explosive ordnance and flammable materials, and the historical land use on surrounding properties. The maintenance yard mentioned in the drum storage APEC is located north of the Phase One Property which is hydraulically cross-gradient of the Site, and the designated substance issues no longer exist as the building has been demolished. This PCA data was applied to the Phase One ESA and was used to identify APECs which were targeted in this Phase Two.

2005 Phase I & II ESA

The 2005 Phase I and II ESA include figures showing the locations of the APECs identified. APECs 1, 3, 4, 5, 7, 8, 9 fall within the Phase One Property. Each of these APECs were already covered in the 2001 Phase I ESA with the exception of APEC #8 which was based on anecdotal information of a potential fuel station near Gladstone Avenue. A Phase II intrusive investigation was completed to assess the APECs on the Site, and only APECs 1 and 9, general fill quality and the coal storage area, had contaminant concentrations exceeding the Ontario background criteria (Table 1) but not federal criteria of the time. The former fuel station (APEC #8) was considered in the report to be false information, and was no longer considered to be an APEC. Boreholes were also advanced in the vicinity of the former UST (APEC #3), and no exceedances were detected so this issue is not considered an APEC. The available soil and groundwater quality data described in this report were reviewed and compared to currently applicable residential property use standards as described further below.

2008 Environmental Review

The 2008 Environmental review was meant to assess designated substances in the former depot building. Since the depot has been demolished, findings of this report do not affect the current report. The exception is the note that the general fill quality is of environmental concern to the Site. Three (3) areas of environmental impact were noted in this report, and of these only A3 fell within the current Phase One Property limits. A3, located beneath the former boiler room in the central-west portion of the current Phase One property, had exceedances for PAHs and metals found within the fill. This data assisted in the selection of testing parameters and locations for the Phase Two ESA. The other impact sites and areas of concern all occur north of the Site and down gradient, and are therefore are not considered to cause areas of potential environmental concern (APECs) on the Site.

2013 Soil and Groundwater Investigation

The 2013 Soil and Groundwater Investigation completed by DST identified four areas of environmental concern (AEC) on the property adjacent to the Phase One Property to the north (1010 Somerset St. W.). Three areas of impacted fill material were identified; two on the property to the north, and one location which is on the Phase One Property on the central-west side where the boiler room was formerly located. The available soil and groundwater quality data described in this report were reviewed and compared to currently applicable residential property use standards as described further below.

2015 Phase One ESA

The 2015 Phase One ESA completed by Pinchin provides data regarding PCAs and APECs on the Phase One Property and in the Phase One Study Area. Their final list of PCAs and APECs were compared against Golder's to ensure no PCAs were missed in the Phase One ESA and confirming known PCAs. Pinchin's on-Site APEC referencing the 2001 Aqua Terre Phase I ESA report of bulk drum storage with unknown contents is not considered an on-Site APEC as the yard where these were located is north (i.e., cross-gradient) of the current Phase One Property. Additionally, the APEC included based on the spill of 8 L of hydraulic fluid on-Site is not considered to be an APEC, as the spill was a small quantity, went to sewer, and any contaminated soil is likely to have been removed during the demolition of the depot. Two APECs were stated in reference to temporary fuel ASTs used for vehicles during the depot demolition, these APECs will not be considered due to the short time period the tanks were on-Site. The inferred groundwater flow seen in this Pinchin report (northwest) is approximately ninety degrees off of what the 2005 report by Trow stated (north-northeast). Given that Trow did intrusive testing and used a variety of actual groundwater elevation measurements to interpret their flow, the north-northeast flow direction is considered appropriate as it correlates with topographic information.

Historical Analytical Data Review and Comparison to Current Standards

The available soil and groundwater quality data described in historic reports prepared for the 933 Gladstone Ave property was reviewed and the data compared to currently applicable residential property use standards as described in MOECC Table 3 generic site condition standards in a non-potable groundwater condition for residential/parkland/institutional property use, coarse textured soil.

Historical data is primarily described in the 2005 Trow Phase II ESA and the 2013 DST Phase II ESA reports. It appears that investigations completed on the 933 Gladstone portion of the former warehouse were primarily located in the vicinity of the former boiler room in the southwest portion of the Phase One property. A review of available results shows that concentrations of PAHs and metals were detected in the fill at several locations in the vicinity of the former boiler room at concentrations above the Table 3 residential standards. The samples with elevated concentrations are from the fill material that was present to depths of approximately 1 to 1.8 metres. Similar results and concentrations above standards were noted in sample locations north of the Phase One property as well, suggesting that fill impacts were present across the site. No information is available documenting building demolition activities that were carried out in 2015 so it is not clear how much, if any, fill material may have been removed as part of the demolition activities.

Groundwater impacts were not noted during previous assessments, however, a limited number of monitoring wells were installed so they may not provide an adequate level of assessment of potential groundwater quality impacts at the site.

2.2.1 Phase One ESA

Golder conducted a Phase One ESA entitled, "*Phase One Environmental Site Assessment 933 Gladstone Avenue Ottawa, Ontario*", dated December 2016, to assess the likelihood of soil and/or groundwater contamination resulting from historic or present activities at the Site and surrounding area. This included a review of available historical information on the Site and surrounding area, interviews with persons familiar with the Site and a Site reconnaissance. The APECs identified in the 2016 Phase One ESA are summarized in the following table:

APEC #	Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern on Phase One Property	Potentially Contaminating Activity	Location of PCA (on-Site or off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, soil and/or Sediment)
1	Current Dyed Diesel AST	Storage yard in the northwest corner of the Site	PCA 28: Gasoline and Associated Products in Fixed Tanks	On-Site	PHC and BTEX	Groundwater and Soil
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3	Footprint of old buildings was built up with fill following 2015 demolition. Layer of fill was also identified across Site prior to demolition, which included waste products. Fill origin unknown	Entire Site	PCA 30: Importation of Fill Material of Unknown Quality	On-Site	Metals, PAHs, PHC, VOC	Soil
4	Former lumber yard on-Site	Entire Site	PCA 59: Bulk Storage of Treated and Preserved Wood Products	On-Site	Metals, PAHs, VOCs	Soil
5	Site used as Central Ordnance Depot for 50 years including storage of paints, oils, munitions and assorted military stores	Entire Site	PCA: Other – Oil Drum Storage PCA 20: Explosives and Ammunition Bulk Storage PCA 39: Paints Manufacturing, Processing, and Bulk Storage	On-Site	Metals, PAHs, VOCs	Groundwater and Soil

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8	Former 2500 gallon sump noted in building plans for the flammables storage room	On-Site (NW corner, north of former boiler room)	PCA: Other – Chemical Storage Room Sump	On-Site	PHC, BTEX, VOCs	Groundwater and Soil
9	Historical vehicle maintenance	Unknown, assume entire Site	PCA: Other – Vehicle Maintenance	On-Site	PHC, VOC	Groundwater and Soil
10	Transformers on-Site within former warehouse	Site within former warehouse footprint	PCA 55: Transformer Use	On-Site	PCBs, PHC	Groundwater and Soil
11	Waste generator codes for Petroleum distillates, waste oils and lubricants, light fuels, chemicals, and pharmaceuticals	Entire Phase One Study Area	PCA : Other – Waste Generator	On/Off-Site	PHC, VOC	Groundwater and Soil
12	Several 205 L drums of waste oil were stored in the boiler room and minor staining was observed	West side in former boiler room	PCA : Other – Petroleum Product Drum Storage	On-Site	PHC, BTEX	Groundwater and Soil
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14	Parking area contains empty bulk liquid totes of unknown sources, 5 buckets (25 L each) marked "Hydraulic Fluid – Must be disposed of" on wooden pallet in paved area, soil piles, asphalt pile, empty drums. Several drums of unknown contents noted in 2001 in maintenance yard immediately adjacent to north	On-Site (NW corner of Site in storage area)	PCA : Debris and Chemical Waste	On-Site / Off-Site	Metals, PHC PAH, VOCs	Groundwater and Soil
15	Venice Iron Works and V Steel Works Limited.	17 Larch Street, adjacent to Site on east side	PCA 34: Metal Fabrication	Off-Site	Metals, PHC, VOC	Groundwater and Soil

Notes
PCA Potentially contaminating activity as listed O.Reg. 153/04, Schedule D, Table 2
PHC petroleum hydrocarbon compound fractions
PAH polycyclic aromatic hydrocarbon
VOC volatile organic compound
BTEX benzene, toluene, ethylbenzene, xylenes

This report was prepared by the Qualified Person and will be relied upon for the Phase Two investigation.

3.0 SCOPE OF THE INVESTIGATION

3.1 Overview of Site Investigation

The Phase Two ESA investigation activities were completed between January 24, 2017 and February 13, 2017 and included the following tasks:

- **Health and Safety Plan**: Preparation of a Health and Safety Plan for internal and subcontractor use prior to initiating any field work at the Site.
- **Utility Clearances**: Coordination of utility clearances with local utility companies along with retaining the services of a private locator to assess for possible services in the areas of the proposed test locations.

- **Borehole Advancement and Monitoring Well Installation**: The borehole drilling and monitoring well installation program included drilling of 23 boreholes; 16 were completed as groundwater monitoring wells which were used for groundwater sampling at the Site. The rationale for the selected location of the boreholes is provided in the Sampling and Analysis Plan provided in Appendix B. The location of the boreholes and monitoring wells are shown on Figure 2. The monitoring well construction details are presented in Table 1.
- **Soil Sampling**: Selected soil samples were collected between January 24, 2017 and January 31, 2017 from the boreholes. Soil samples were submitted for chemical analysis of one or more of the following: petroleum hydrocarbons ("PHCs"), volatile organic compounds ("VOCs"), polycyclic aromatic hydrocarbons ("PAHs"), metals, hydride-forming metals, and/or other regulated parameters.
- **Groundwater Monitoring and Sampling**: Groundwater samples were collected on February 6, 2017 and February 7, 2017. Groundwater samples were submitted for analysis of one or more of the following: PHCs, PAHs, PCBs, VOCs, metals, and/or other regulated parameters. Hydraulic conductivity testing was completed on February 13, 2017.
- **Surveying**: A geodetic survey for the boreholes and monitoring wells advanced as part of the Phase Two ESA investigation was completed on February 1, 2017. An elevation survey for the monitoring wells advanced as part of the Phase Two ESA was completed on February 13, 2017.
- **Reporting**: Golder compiled and assessed the field and laboratory results from the above noted activities into this report.

The Phase Two investigation was carried out in general accordance with Golder's standard operating procedures, which conform to the requirements of O. Reg. 153/04. The data from the Phase Two ESA investigation completed by Golder at the Site were incorporated into a single Phase Two ESA report following the Phase Two ESA report format required by O. Reg. 153/04.

There were no impediments or access limitations that would affect the conclusions of this Phase Two ESA report.

3.2 Media Investigated

To address the potential environmental issues identified in the Phase One ESA, the Phase Two ESA field program included sampling of subsurface soil and of groundwater from wells screened within the overburden at the Site. No sediment was present at the Site and therefore no sediment sampling was completed. A summary of media investigated and the applicable contaminants of potential concern are provided in Tables 2 and 3. The sampling and analysis plan outlines the rationale for the field investigation activities carried out at the Site and the associated methodologies used to meet the objectives of this Phase Two ESA.

3.3 Phase One Conceptual Site Model

The following key Site features (as required by O.Reg. 153/04) are presented in Figures 1 and 2:

- The former warehouse building footprint
- Existing buildings and structures
- Water bodies and areas of natural significance located in the Phase One Study Area
- Roads (including names) and railways within the Phase One Study Area

- Uses of properties adjacent to the Phase One Property
- Location of identified PCAs in the Phase One Study Area (including any storage tanks)

The following describes the Phase One ESA CSM for the Site based on the information obtained and reviewed as part of the Phase One ESA:

- At the time of the Site reconnaissance, conducted on October 5, 2016, the Site consisted of an 7.98 acre (3.23 hectare) parcel of undeveloped land. No buildings or structures were noted on the Phase One Property.
- An OC Transpo light rail line is in a trench along the west perimeter of the Site. No areas of natural significance were identified on or within the Phase One Study Area.
- No active water source is reportedly available at the Site. Potable water is provided to the Study Area by the City of Ottawa.
- At the time of the Phase One ESA, the Site was undeveloped land. Historically, the Site was part of a larger property that included the immediately adjacent lands to the north that was occupied by a large government owned warehouse structure referred to as the Central Ordnance Depot or Central Supply Depot. Prior to that the Site was used as a lumberyard. There are no indications that the Phase One Property was used for any of the following commercial uses: vehicle garage, bulk liquid dispensing facility, or dry cleaning facility.
- At the time of the Phase One ESA, the neighbouring properties within the Phase One Study Area included residential, commercial, and light industrial land uses. Many of the neighbouring properties in the Phase One Study Area were used for industrial purposes as well as the following commercial uses: vehicle garage, fuel dispensing facility, or dry cleaning facility.
- Fifty-one (51) PCAs were identified in the Phase One Study Area, fifteen (15) of which were on the Phase One Property, as shown on Figure 2. Based on site characteristics and the locations of the off-Site PCA, a total of 15 Areas of Potential Environmental Concern were identified for the Phase One Property.
- Utility connections to the former building were abandoned during demolition, including water, sewer, electrical, natural gas, cable and telephone. Utility mains, including storm sewers observed during the site reconnaissance continue to be present.
- Soil at the Site consists primarily of till plain deposits of silt and clay; and limestone bedrock. The physiography of the soils is till plains. Borehole records for the Site and Study Area from previous environmental studies indicate the presence of wide-spread fill material and silty sand underlain by silty clay, clay, and grey limestone at a depth of approximately 1 - 5 m on Site.
- Local groundwater is anticipated to flow towards the north-northeast based on topography and previously completed subsurface investigations that evaluated groundwater flow direction based on water levels measured in groundwater monitoring wells. Regional groundwater is anticipated to flow in a northern direction towards the Ottawa River, which is approximately 1 km north of the Site.

3.4 Deviations from Sampling and Analysis Plan

A sampling and analysis plan is provided in Appendix B which incorporates the 2016 Phase Two ESA investigation program. The sampling and analysis plan outlines the rationale for the field investigation activities carried out at the Site and the associated methodologies used to meet the objectives of this Phase Two ESA. This plan covers the activities undertaken during the Phase Two ESA. The procedures described in the Sampling and Analysis Plan were generally followed with no material deviations.

3.5 Impediments

No physical impediments to the Phase Two ESA investigation were encountered. Access to the Phase Two Property was not denied or restricted.

4.0 INVESTIGATION METHOD

4.1 General

The following sections describe the field investigation methodology employed during the Phase Two ESA. The field work was conducted between January 24, 2017 and February 13, 2017.

Prior to initiating the field work, Golder developed and implemented Site-specific protocols to protect the health and safety of its employees and subcontractors through the preparation of a Site-specific Health and Safety Plan. An assessment of potential health and safety hazards at the Phase Two Property and those associated with the proposed work was completed each day of the field program. A health and safety tail gate meeting was held with Golder's subcontractors each day prior to completion of the field work. The document was reviewed and signed on-Site by field personnel prior to commencing work. Additionally, prior to any intrusive investigations, including drilling, Golder completed public and private utility clearances.

4.2 Drilling

Between January 25, 2016 and January 30, 2016, 23 boreholes were advanced to depths of 2.4 to 5.18 metres below ground surface ("mbgs"). Borehole locations are provided in Figure 2 and record of borehole logs can be found in Appendix C. A description of the quality assurance/quality control measures taken to minimize the potential for cross-contamination between sampling locations is provided in Section 5.12.

Boreholes were advanced by Strata Soil Sampling ("Strata") using a 7822DT Geoprobe rig. During borehole drilling activities, overburden soil samples were collected using dual tube soil sampling equipment.

Soil samples were collected at 0.76 m intervals using the following method:

- Dual-tube sampler: 3 foot long, 1.85 inch diameter disposable PVC liner inside a 3.25 inch OD direct push rod.

4.3 Soil: Sampling

Soil samples were collected from undisturbed locations and split in the field into two components. One component was placed into laboratory-prepared containers with minimal headspace and stored in a cooler for potential laboratory analysis. The second component was placed inside a plastic bag for field screening, consisting of the soil description, and noting the presence of any staining, odour and/or debris. A photoionization detector calibrated to 100 parts per million ("ppm") isobutylene (MiniRae 3000) was used to measure the total organic vapour in the headspace in the sealed plastic bag.

As per the sampling and analysis plan, provided in Appendix B, at least one soil sample was submitted from each test location. Where the results of field screening indicated the presence of potentially impacted soil.

One soil sample representing "worst-case" conditions at each sampling location was selected for laboratory analysis based on the field headspace screening measurements, visual observations (e.g., staining, discoloration and/or free product, if any), and olfactory observations (if any). Soil samples were submitted to the analytical laboratory under chain-of-custody procedures. A summary of the soil samples submitted for analysis is provided in Table 2.

Geologic descriptions, visual and olfactory observations, and results of field headspace measurements are presented on the Record of Borehole sheets in Appendix C.

4.4 Field Screening Measurements

Field measurements of sample headspace concentration were made using the following equipment:

Equipment	Make and Model	Parameters Detected	Detection Limits	Precision	Accuracy	Calibration Standard	Calibration Procedure
Photo-ionization detector (PID) MiniRae 3000 10.6 EV bulb	MiniRae 3000	Organic vapours	0 - 15,000 ppm	N/A	+/- 3%	100 ppm Isobutylene	By Golder Associates field staff prior to and during fieldwork

One soil sample representing "worst-case" conditions at each sampling location was selected for laboratory analysis based on the soil headspace screening measurements, visual observations (e.g., staining, discoloration and/or free product, if any), and olfactory observations (if any). The results of soil headspace screening measurements are provided in the Record of Boreholes in Appendix C.

4.5 Groundwater: Monitoring Well Installation

Groundwater monitoring wells were installed by Strata using threaded 50 mm diameter, schedule 40, polyvinyl chloride ("PVC") well screens and riser pipe, which were brought to the Site in sealed plastic bags. The annular space was filled with silica filter sand to at least 0.3 m above the well screen. The monitoring well was sealed with bentonite from the top of the sand pack and completed with a flush mount protective well casing set in concrete. Monitoring well construction details are provided in Table 1. The riser pipes were sealed with a J-plug. A description of the quality assurance/quality control measures taken to minimize the potential for cross-contamination between sampling locations is provided in Section 5.12.

Following drilling, the monitoring wells were developed on January 31, 2017 and February 1, 2017 by removing up to ten well volumes, or by removing one well volume if the well was considered a “low yield” monitoring well, using dedicated Waterra® pumps (tubing with foot valves). During monitoring well development, qualitative observations were made of water colour, clarity, and the presence or absence of any hydrocarbon sheen or odours.

4.6 Groundwater: Field Measurements for Water Quality Parameters

Groundwater indicator parameters including temperature, pH, conductivity, oxidation-reduction potential (“ORP”) and dissolved oxygen were measured prior to sampling to ensure adequate well development and purging. A Horiba U-22 water quality meter was used to measure groundwater quality during monitoring well development and groundwater sampling. The instrument was calibrated using factory supplied solutions for electrical conductivity (1413 micro Siemens per centimetre (µS/cm)) and pH (4.01 pH and 7.01 pH) parameters. Specifications for the water quality metre are summarized in the following table:

Parameter	Measurement Range	Precision	Accuracy
pH	0.00 to 14.00 pH	0.01 pH	±0.1 pH
Conductivity	0.00 to 9.99 S/m	0.1% of full scale	± 3%
Temperature	0 to 55 ºC	0.01 ºC	± 1.0 ºC
Dissolved Oxygen	0 to 19.99 mg/L	0.01 mg/L	± 0.2%

4.7 Groundwater: Sampling

Each monitoring well was purged prior to sample collection. During purging, qualitative observations were made of water colour, clarity, and the presence of hydrocarbon sheen or odour. Purging was completed by pumping at least three well volumes or, where the well was considered a “low-yield” monitoring well, by purging at least one half of the well volume. Groundwater sampling was carried out on February 2, 6, and 7, 2017.

Groundwater samples were placed in laboratory-prepared containers and stored in a cooler until delivery to the analytical laboratory under chain-of-custody procedures. A summary of the groundwater samples submitted for analysis is presented in Table 3.

4.8 Sediment: Sampling

No sediment samples were collected as part of this investigation.

4.9 Analytical Testing

The contact information for the analytical laboratory is included below.

Maxxam Analytics
1000 – 32 Colonnade Rd N
Nepean, ON K2E 7J6
Laboratory Contact: Madison Bingley
613 274 3549

The analytical laboratory is accredited in accordance with the International Standard ISO/IEC 17025 (CALA) (General Requirement for the Competence of Testing and Calibration Laboratories, May 5, 2005, as amended) and the standards for proficiency testing developed by the Standards Council of Canada, the Canadian Association for Laboratory Accreditation or another accreditation body accepted by the MOECC.

4.10 Residue Management Procedures

All residues produced during the investigation (e.g., soil cuttings from drilling, groundwater from well development purging, wash water from equipment decontamination) were placed in sealed drums which Golder retained Veolia to dispose of.

4.11 Elevation Surveying

Elevations were determined relative to the following benchmark:

- Orange paint on end of concrete barrier in the parking area to the northeast of the Site with an assumed elevation of 100.00 masl.

4.12 Quality Assurance and Quality Control Measures

Golder's quality assurance program for environmental investigations was implemented to ensure that analytical data obtained by the investigation were valid and representative. The quality assurance program included the following measures:

- The use of standard operating procedures for all field investigation activities;
- All monitoring wells were developed following installation to remove fine particles from the filter pack and any fluids introduced during drilling;
- Monitoring wells were appropriately purged prior to groundwater sample collection to remove stagnant water from the well bore and improve sample representativeness, minimizing sample agitation and aeration to the extent practicable;
- The collection of field duplicate samples at a minimum frequency of one duplicate for every ten samples;
- The collection of at least one trip blank for sampling events that include the analysis of volatile organic compounds in groundwater;
- Initial calibration of field equipment was performed at the start of each field day, with a daily checks of calibration, as needed, using a standard of known concentration;
- Soil and groundwater samples were handled and stored in accordance with the sample collection and preservation requirement of the Ministry of the Environment (MOE) *Protocol for Analytical Methods Used in the Assessment of Properties Under Part XV.I of the Environmental Protection Act*, July 1, 2011. Samples were collected directly into pre-cleaned, laboratory-supplied sample containers with the appropriate preservative for the analyte group. Upon collection, samples were placed in insulated coolers with ice for storage and transport to the analytical laboratory under chain-of-custody;

- Dedicated sampling equipment (tubing and footvalves) and clean disposable Nitrile™ gloves were used at each sampling location to prevent cross-contamination. All non-dedicated sampling equipment (e.g., water level meters, split spoons) was decontaminated between sampling locations. Sampling equipment in contact with soil, groundwater, or sediment was: cleaned by mechanical means; washed with a phosphate-free, laboratory-grade detergent (e.g., LiquiNox) and, if necessary, an appropriate desorbing wash solution; and thoroughly rinsed with analyte-free water;
- Detailed field records documenting the methods and circumstances of collection for each field sample were prepared at the time of sample collection. Each sample was assigned a unique sample identification number recorded in the field notes, along with the date and time of sample collection, the sample matrix, and the requested analyses; and
- The submission of samples to the analytical laboratory in accordance with standard chain of custody procedures.

Below is a summary of the primary and duplicate samples collected between January and February 2017.

Date	Soil Samples ID	Duplicate ID	Duplicate Parent	Trip Blanks
January 25, 2017	17-01 SA4, 17-14 SA1, 17-16 SA1, 17-22 SA3 **(4)**	N/A	N/A	N/A
January 26, 2017	17-09 SA3, 17-11 SA1 , 17-12 SA3, 17-13 SA4, 17-15 SA2, 17-17 SA3 **(6)**	DUP 1 &17-11 SA1 DUP	17-12 SA3 & 17-11 SA1	N/A
January 27, 2017	17-03 SA3, 17-06 SA3, 17-08 SA4, 17-10 SA6, 17-19 SA2, 17-20 SA1, 17-21 SA2 **(7)**	DUP 2	17-21 SA2	N/A
January 30, 2017	17-02 SA1, 17-04 SA4, 17-05 SA5, 17-07 SA3, 17-18 SA2 **(6)**	DUP 3	17-04 SA4	N/A
Date	**Groundwater Samples Collected**	**Duplicate ID**	**Duplicate Parent**	**Trip Blanks**
February 2, 2017	17-17, 17-19 **(2)**	N/A	N/A	-
February 6, 2017	17-01, 17-10, 17-13, 17-14, 17-20, 17-22 **(6)**	DUP A	17-22	-
February 7, 2017	17-04, 17-05, 17-18, 17-21, 17-23, Equip. Blank, F Blank **(7)**	N/A	N/A	Trip blank

5.0 REVIEW AND EVALUATION

This section of the report presents a review and evaluation of the results of the drilling, monitoring and sampling activities conducted as part of the Phase Two ESA.

5.1 Geology

The soil conditions encountered during the borehole drilling are presented in the Record of Borehole sheets and provided in Appendix C, as well as in the cross sections presented in Figure 5 and 6. The following presents a summary of the subsurface soil conditions encountered during the investigation.

Boreholes were advanced to a maximum depth of 5.18 mbgs. Fill covered most of the Site, but a layer of asphalt up to 5 cm in thickness was present at surface at the following borehole locations: BH17-01, BH17-14, and BH17-22. In general, the subsurface soil conditions consisted of a layer of fill overlying native overburden. The fill consists of brown sandy clay and/or silty sand with trace brick and wood encountered in some boreholes, this layer extends 2 - 3 mbgs and is underlain by grey silty clay or silty fine sand glacial till extending to the maximum depth of drilling in several locations. Native clay was encountered in five of the boreholes, typically at a depth of 3 m. Bedrock was encountered during drilling on the central west side near the former boiler room at depths of 3 – 4 mbgs.

Based on the soil conditions encountered in the boreholes, the clayey silt to silty clay is considered a water bearing formation at the Phase Two Property.

5.2 Groundwater: Elevations and Flow Direction

All monitoring wells were used in the interpretation of shallow groundwater contours and shallow groundwater flow direction. Any temporary fluctuation in water levels on the Phase Two Property is not anticipated to effect the conclusions of the Phase Two ESA.

The base of shallow groundwater monitoring well screen intervals were installed at elevations ranging from approximately 98.02 to 94.50 masl (3.35 to 5.18 mbgs). The location and depth of the screens were selected based on the issues being investigated, and were installed to straddle the water table. A summary of the monitoring well construction details are presented in Table 1. No evidence of petroleum hydrocarbon free product or sheen in groundwater was observed.

The elevations of the potentiometric surface at each monitoring well are summarized in Table 1. Groundwater elevations at the Site ranged from 95.71 to 98.96 masl (4.58 to 1.36 mbgs) between February 2, 2017 and February 7, 2017. Based on the interpreted groundwater elevation contours presented in Figure 3, the inferred direction of groundwater flow is to the northeast, towards the Ottawa River. The exception being the northwest corner of the Site which flows southwest.

Based on the soil conditions encountered in the boreholes and the water level measurements, the silty clay to clayey silt unit was inferred to act as an aquifer.

Seasonal fluctuation in water levels on the Site should be expected. Given the limited number of monitoring events seasonal trends could not be identified, however shallow groundwater water levels are typically highest following the spring recharge and decline throughout the summer and fall months into the winter.

Underground utility drawings available for the Phase Two Property indicated utility connections to the former building were abandoned during demolition, including water, sewer, electrical, natural gas, cable and telephone. Utility mains, including storm sewers observed during the site reconnaissance continue to be present. The presence of subsurface utilities and structures at the Site could act as preferential pathways promoting the migration of COCs as the water table is inferred to intercept buried utilities and subsurface structures at the Phase Two Property.

5.3 Groundwater: Hydraulic Gradients

The average horizontal hydraulic gradient was estimated for shallow groundwater conditions based on water levels collected between February 2, 2017 and February 7, 2017, and the inferred groundwater contours are presented on Figure 3. The average horizontal hydraulic gradient for shallow groundwater conditions was calculated to be 1.4E -5 meters per second (m/s). The maximum horizontal hydraulic gradient for shallow groundwater conditions was calculated to be 4.2E-5 m/s and the minimum horizontal hydraulic gradient for shallow groundwater conditions was calculated to be 1.5E-7 m/s. Variability in hydraulic gradients calculated at the Phase Two property may be related to the presence of foundations/buried structure, bedding materials, and buried services at the Site.

Vertical hydraulic gradients were not calculated as no COCs were identified in groundwater exceeding the site condition standards and as such, no nested monitoring wells were installed at the Site.

5.4 Fine-Medium Soil Texture

Two representative soil samples (BH17-4 SA4 and BH17-10 SA6) were collected from fill and native overburden materials and submitted to Golder's geotechnical laboratory in Ottawa, Ontario for a 75 µm sieve wash test. The two samples were considered to be sufficient, given that native soil encountered during the Phase Two ESA was homogeneous across the Site. The results of the sieve analysis show that 50% or more of soil particles were greater than 0.075 mm in size in each of the samples, so the soil is considered to be coarse textured. Grain-size distribution results are included in Appendix D.

5.5 Soil: Field Screening

Headspace vapour measurements were conducted on a soil samples collected with the exception of BH17-9, BH17-11, BH17-12, BH17-13, BH17-15, BH17-17, and BH17-19). Organic vapour measurements ranged from non-detect to 16.5 ppm (highest reading measured at BH17-22 between 2.3 to 3.1 mbgs).

The results of headspace vapour measurements are presented on the Record of Borehole sheets in Appendix C.

5.6 Soil: Quality

Table 2 provides a summary of the soil samples submitted for analysis and the associated test parameters. The analytical results of soil samples are presented in Tables 4A to 4C. Laboratory Certificates of Analysis for the soil samples are included in Appendix D.

Golder completed soil sampling at the Site during borehole advancement from January 25, 2017 to January 30, 2017. The soil samples were submitted to Maxxam for analysis of one or more of the following parameters; metals (including Hg and Cr VI), VOCs, PCBs, PAHs and/or PHCs.

A summary of the number of soil samples analysed and the number of soil samples exceeding the MOE Table 3 Standards is provided below:

Parameter	Number of soil samples analysed	Number of soil samples exceeding the Table 3 Standards
VOCs	19	0
PAHs	21	0
Metals (Inc. Hg and Cr VI)	20	4
PHC F1/BTEX	26	0
PHC F2-F4	26	0
PCBs	16	0
pH	16	0

The above summary is based on the following interpretation:

- The reported concentration of pH in soil in one location (BH17-11 SA1 0.00 – 0.63 m) exceeded the MOE Table 3 Standard for shallow soil (between 5 and 9) the logarithmic average of this sample and its duplicate (17-11 SA1 DUP) was calculated to be 8.01 which is within the pH range requirement for surface soils. The pH values for the soil are within the acceptable range using the allowance that samples collected within a two metre radius are permitted to be averaged when compared to the Site Condition Standards provided they are within the same soil horizon.
- The reported concentration of Vanadium in soil exceeded the MOE Table 3 Standard of 86 µg/g at four locations, with concentrations ranging from 87 µg/g to 94 µg/g. Exceedances of V were identified in soil samples 17-07 SA3 (1.52 - 2.44 m), 17-08 SA4 (3.05 - 3.81 m), 17-13 SA4 (3.05 -3.18 m), and 17-18 SA2 (1.52 - 2.33 m).

While the vanadium exceedances were detected, Golder is not of the opinion that they are evidence of environmental impacts associated with APECs identified in the Phase One ESA. Based on Golder's experience in eastern Ontario and western Quebec where the clay is of marine origin, the presence of vanadium, along with barium, chromium, and cobalt, at levels which exceed MOECC Table 3 Standards is common. Golder has observed these naturally occurring metals in Ottawa area clay samples over the years, and vanadium levels of up to 150 µg/g have been observed as background values. Given this information and the low levels of exceedance (<10 µg/g), these exceedances are not considered to indicate a contaminant of concern.

5.7 Groundwater: Quality

Monitoring well construction details are summarized in Table 1 and a list of groundwater samples submitted for laboratory analysis is provided in Table 3. The analytical results for groundwater samples are summarized in Tables 5A through 5C, along with the applicable MOE Table 3 Standards. Laboratory Certificates of Analysis for groundwater are provided in Appendix D.

Golder completed sampling of monitoring wells at the Site between February 2, 2017 and February 7, 2017. Groundwater samples were submitted to Maxxam for analysis for one or more of the following parameters; metals, VOCs, PCBs, PAHs, and/or PHCs.

A summary of the number of groundwater samples analysed and number of samples exceeding the MOE Table 3 Standards is provided below:

Parameter	Number of groundwater samples analysed	Number of groundwater samples exceeding the 2011 Table 3 Standards
VOCs	10	0
PAHs	9	0
Metals (Inc. Hg and Cr VI)	8	0
PHC F1/BTEX	14	0
PHC F2-F4	14	0
PCBs	6	0

All groundwater samples submitted for analysis met the applicable Site condition standards, for the parameters tested.

In addition to numerical standards, the MOE Table 3 Standard sets out non-numerical (aesthetic) standards relating to the presence of free phase product and hydrocarbon sheen. Specifically, a property does not meet the site condition standards if there is evidence of free product, including but not limited to, visible petroleum hydrocarbon film or sheen present on groundwater, surface water or in any groundwater or surface water samples. No evidence of free product or sheen in groundwater was observed.

5.8 Sediment: Quality

No sediment samples were collected as part of this investigation as sediment is not present on the property.

5.9 Quality Assurance and Quality Control Results

The quality assurance assessment of the field duplicate sample results was conducted according to the document entitled Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act, March 9, 2004 (amended in July 2009 and effective as of July 1, 2011) (“Analytical Protocol”).

To determine the precision of the analytical methods and field sampling procedures, blind duplicate samples were collected during soil and groundwater sampling. Precision is determined by the relative percent difference (“RPD”) between the duplicate and original samples and was calculated as follows:

$$RPD = \frac{|x_1 - x_2|}{x_m}$$

Where
x_1 initial sample results
x_2 duplicate sample results
x_m mean of x_1, x_2

The analytical results of the primary and duplicate soil and groundwater samples indicated a satisfactory correlation between the primary and duplicate samples, and were within the 30% recommended control limit in the Analytical Protocol.

It is noted that the trip blank samples were found to have no detectable concentrations. The quality of the analytical results is further supported by Maxxam's internal quality assurance program that includes laboratory blanks, spikes, surrogates and duplicate samples.

All certificates of analysis or analytical reports received pursuant to clause 47 (2) (b) of the regulation comply with subsection 47(3). A certificate of analysis or analytical report has been received for each sample submitted for analysis and is provided in Appendix D. The analytical laboratory did not qualify any of the analytical results.

Accordingly, the analytical data generated during the investigation are valid and representative and may be used in this Phase Two ESA without further qualification.

5.10 Phase Two Conceptual Site Model

The Phase Two Conceptual Site Model (CSM) consists of a narrative description of the current condition of the Site and accompanying diagrams, cross-sections and Figures. The Phase Two conceptual site model is presented in the following sections and the Figures that comprise the Phase Two CSM include:

Figure 1 – Key Plan

Figure 2 – Site Plan

Figure 3 – Groundwater Elevations and Interpreted Groundwater Flow Direction

Figure 4 – Soil Exceedances

Figure 5 – Cross Section A – A'

Figure 6 – Cross Section B – B'

5.10.1 Current and Historical Site Use and Surrounding Land Use

The following summarizes the current and past uses of the Phase Two Property:

Year(s)	Owner's Name	Description of Property Use	Property Use	Other Observations from Aerial Photographs, Fire Insurance Plans, Etc.
Prior to February 25, 1809	Crown	Undeveloped	Agricultural or Other use	No Aerial photos prior to 1928. Fire Insurance plans show the Site as undeveloped (i.e., no buildings) prior to 1948 but was occupied by a lumber yard starting in 1894 until sometime prior
February 25, 1809 to May 23, 1837	Robert Randall	Undeveloped	Agricultural or Other use	
May 23, 1837 to August 18, 1837	Peter Ayler Vallely	Undeveloped	Agricultural or Other use	

Year(s)	Owner's Name	Description of Property Use	Property Use	Other Observations from Aerial Photographs, Fire Insurance Plans, Etc.
August 18, 1837 to May 2, 1844	William Price, Peter Mcbill, Nathaniel Gould & James Daries	Undeveloped	Agricultural or Other use	to 1928 where it appeared vacant. The surrounding area is entirely residential until commercial and light industrial businesses begin to build up along Gladstone Avenue, Loretta Avenue North and Preston Street subsequent to 1930.
May 2, 1844 to December 16, 1875	Nicholas Sparks	Undeveloped	Agricultural or Other use	
December 16, 1875 to Nov 10, 1894	Esther Slater	Undeveloped	Agricultural or Other use	
Nov 10, 1894 to May 27, 1921	John R. Booth	Lumberyard with rail spurs but no buildings.	Commercial / industrial use	
May 27, 1921 to August 17, 1942	J.R. Booth Ltd.	Lumberyard with rail spurs but no buildings.	Commercial / industrial use	
August 17, 1942 to March 2015	His Majesty the King (Crown) (current owner)	Warehouse (Central Ordnance Depot). Also used as a Commercial Printer.	Commercial / industrial use	Warehouse covers most of the Site. Parking lot is built in the south of the Site. A boiler room with ASTs outside can be seen along the western edge of the warehouse.
March 2015 to Present	His Majesty the King (Crown) (current owner)	Vacant land with small area used for storage.	Commercial / industrial use	The parking lot and northwest corners of the Site are still used for storage.

The Site was privately owned from 1809 to 1942. It is assumed that the Site was vacant and undeveloped prior to 1894. Subsequent to 1894 the Site was used as a lumberyard and vacant land until it was bought by the crown in 1942. By 1946 the land was developed with the Central Ordnance Depot, a warehouse complex that covered the majority of the Site including adjacent lands to the north. In 2015 the warehouse was demolished and the land has remained vacant since that time.

5.10.2 Potential Sources of contamination

5.10.2.1 Potentially Contaminating Activities

Based on the information obtained as part of the Phase One ESA, the following potentially contaminating activities ("PCAs") were identified.

Location	Potentially Contaminating Activities as per Table 2 of Reg.153/04	Information Sources	Rationale for the PCA to Contribute to an APEC on the Site
Phase One Property	**PCA 28: Gasoline and Associated Products in Fixed Tanks** (Current Dyed Diesel AST)	Site observations	As per OReg. 153/04. All PCAs found on the Phase One Property are considered APECs.
	PCA 46: Rail Yards, Tracks, and Spurs (Former on-Site rail spurs running in several locations across the entire property during lumberyard use. Rail spurs running to east side of boiler room and along the west side of the depot building)	Aerial photos, FIP, Site Visit, Pinchin 2015 Phase One ESA	
Phase One Property	**PCA 30: Importation of Fill Material of Unknown Quality** (Footprint of old building was built up with fill following 2015 demolition. Layer of fill was also identified across Site prior to demolition, which included waste products. Fill origin unknown)	Site observations, Pinchin 2015 Phase One ESA Trow 2005 Phase I & II ESA	
	PCA 59: Bulk Storage of Treated and Preserved Wood Products (Former lumber yard on-Site)	FIP, Chain of Title, Pinchin 2015 Phase One ESA	As per OReg. 153/04. All PCAs found on the Phase One Property are considered APECs.
	PCA 20: Explosives and Ammunition Bulk Storage **PCA 39: Paints Manufacturing, Processing, and Bulk Storage** **PCA: Other – Oil Drum Storage** (Site used as Central Ordnance Depot for 50 years including reported storage of paint, oils, ammunition/ordnance and assorted military stores)	FIP, HLUI, Pinchin 2015 Phase One ESA	
	PCA 28: Gasoline and Associated Products in Fixed Tanks (Historical heating oil ASTs)	1958 – 2014 Aerial photos, Pinchin 2015 Phase One ESA	
	PCA 31: Ink Manufacturing, Processing, and Bulk Storage (Former printer operation on-Site)	2001/02 Street Directory, Pinchin 2015 Phase One ESA	
	PCA: Other – Flammable Chemical Storage Room Sump (2500 gallon sump was noted in building plans for the flammables storage room)	1970/71 Building Plans	

Location	Potentially Contaminating Activities as per Table 2 of Reg.153/04	Information Sources	Rationale for the PCA to Contribute to an APEC on the Site
Phase One Property	**PCA: Other – Vehicle Maintenance** (Reported historical vehicle maintenance)	Pinchin 2015 Phase One ESA	
	PCA 55: Transformer Use (Transformers on-Site within former warehouse)	Pinchin 2015 Phase One ESA	
	PCA : Other – Waste Generator (Waste generator codes for Petroleum distillates, waste oils and lubricants, light fuels, chemicals, and pharmaceuticals)	EcoLog ERIS, Pinchin 2015 Phase One ESA	As per OReg. 153/04. All PCAs found on the Phase One Property are considered APECs.
	PCA : Other – Petroleum Product Drum Storage "Several 205 L drums of waste oil were stored in the boiler room and minor staining was observed"	Pinchin 2015 Phase One ESA	
	PCA : Other - Fires (Numerous fires in the 1950's burned down portions of the depot which may have released contaminants including oil and paint)	1900 Ottawa-Hull Fire Map, 1950's Depot Fire Articles, Trow 2005 Phase I & II ESA	
	PCA : Other – Storage of Debris and Chemical Waste (Parking/storage area contains empty bulk liquid totes of unknown sources, 5 buckets (25 L each) marked "Hydraulic Fluid – Must be disposed of" on wooden pallet in paved area, soil piles, asphalt pile, empty drums.	Site observations	
Phase One Study Area (excluding the Site)	**PCA 10: Commercial Autobody Shop** (Paradise Auto Repair)	HLUI	This PCA is not considered likely to contribute to an APEC on Site. This is due the PCA being down-gradient of the Site according to the local inferred groundwater flow.
	PCA: Other – Drums of Unknown Contents (Several drums of unknown contents noted in 2001 in maintenance yard)	Aqua Terre 2001 Phase I ESA, Pinchin 2015 Phase One ESA	This PCA is considered likely to contribute to an APEC on Site. This is due to the PCA being directly adjacent to the north portion of the Site.

Location	Potentially Contaminating Activities as per Table 2 of Reg.153/04	Information Sources	Rationale for the PCA to Contribute to an APEC on the Site
Phase One Study Area (excluding the Site)	**PCA 31: Ink Manufacturing, Processing, and Bulk Storage** (Genesove press Limited – Printers)	HLUI	These PCAs North of the Phase One Property are not considered likely to contribute to an APEC on Site. This is due these PCAs being down-gradient of the Site according to the local inferred groundwater flow.
	PCA 37: Operation of Dry Cleaning Equipment (Expert Cleaner and Dyer) **PCA 17: Dye Manufacturing, Processing, and Bulk Storage** (Expert Cleaner and Dyer)	HLUI	
	PCA 10: Commercial Autobody Shop (Johnny Closs – Auto repair) **PCA 28: Gasoline and Associated Products Storage in Fixed Tanks** (Johnny Closs – Auto repair)	HLUI	
	PCA 31: Ink Manufacturing, Processing, and Bulk Storage (Acadian Printing – Printers)	HLUI	
	PCA 10: Commercial Autobody Shop (Jim Frisby Holdings Limited – Auto repair)	HLUI	
	PCA 10: Commercial Autobody Shop (Breezehill Auto Body) (Japan Auto SVC Inc. – Auto repair) **PCA 49: Salvage Yard including Automobile Wrecking** (A & T Autoparts)	HLUI, EcoLog ERIS	
	PCA – Other: Bulk Storage of Coal (Bruce Coal Co.)	HLUI	
	PCA 28: Gasoline and Associated Products Storage in Fixed Tanks (Preston Auto Centre, Mazzocato Service Station, Pannuccio BP Service Station, Petro Canada Service Station – one UST) **PCA 10: Commercial Autobody Shop** (Preston Auto Centre, Jason Auto Centre, Preston Garage)	EcoLog ERIS, Street Directory, HLUI	These PCAs east of the Phase One Property are not considered likely to contribute to an APEC on Site. This is due to their distance from the Site (>100 m) and their position cross-gradient of the Site according to the local inferred groundwater flow.
	PCA 28: Gasoline and Associated Products Storage in Fixed Tanks (Malmberg Auto Service – two USTs) **PCA 10: Commercial Autobody Shop** (United Garage, Malmberg Auto Service, Carm's Auto Repair)	EcoLog ERIS, Street Directory, HLUI	

Location	Potentially Contaminating Activities as per Table 2 of Reg.153/04	Information Sources	Rationale for the PCA to Contribute to an APEC on the Site
Phase One Study Area (excluding the Site)	**PCA 28: Gasoline and Associated Products Storage in Fixed Tanks** (Esso Home Comfort)		
	PCA 28: Gasoline and Associated Products Storage in Fixed Tanks (Aircon Fuels)	HLUI	
	PCA 53: Tannery (Farmer and Garrett – Tannery)	HLUI, 1988 Intera Report	
	PCA 10: Commercial Autobody Shop (Ana Transportation Inc. – Auto Repair)	HLUI	
	PCA 59: Bulk Storage of Treated and Preserved Wood Products (Preston & Lieff Glass – Lumber Wholesale)	HLUI	
	PCA 34: Metal Fabrication (Venice Iron Works, V Steel Works Limited.)	EcoLog ERIS, Street Directory, HLUI	This PCA has a high likelihood of contributing to an APEC on-Site due to its position directly adjacent to the Site, despite being cross-gradient of the inferred groundwater flow. This Site has been confirmed across multiple sources. The likely contaminants would be metals, PHC and VOCs.
	PCA 28: Gasoline and Associated Products Storage in Fixed Tanks (C Corp (Ontario) – one UST) (Top Value Gasmart, Mac's Convenience Stores Inc.)	EcoLog ERIS, Street Directory, HLUI	These PCAs southeast of the Phase One Property on Preston Street are not considered likely to contribute to an APEC on Site. This is due to their distance from the Site (>100 m) and their position cross-gradient of the Site according to the local inferred groundwater flow.
	PCA 37: Operation of Dry Cleaning Equipment (Superior Cleaners – Dry cleaning)	Street Directory, HLUI	
	PCA 10: Commercial Autobody Shop (R+M Automotive Finishes, Aberousal Body Repair) (Khera Auto Repair, A V I Auto Centre, P B Auto Centre, Dragon Auto Service)	Street Directory, HLUI	These PCAs all are slightly southeast of the Phase One Property, and because

Location	Potentially Contaminating Activities as per Table 2 of Reg.153/04	Information Sources	Rationale for the PCA to Contribute to an APEC on the Site
Phase One Study Area (excluding the Site)	**PCA 10: Commercial Autobody Shop** (Sal Auto & Truck Service Centre.)	Street Directory, HLUI	of this, are not considered likely to contribute to an APEC on Site. While these PCAs are within 100 m of the Site, their positions place them cross-gradient of the Site rather than up-gradient, according to the local inferred groundwater flow.
	PCA 31: Ink Manufacturing, Processing, and Bulk Storage (L'Ora Di Ottawa – Newspaper Printer)	EcoLog ERIS, HLUI	
	PCA 10: Commercial Autobody Shop (Motorworks – Auto Repair)	Street Directory	
	PCA 41: Petroleum-derived Gas Manufacturing, Processing, and Bulk Storage (British American Oil Co. Limited)	1988 Intera Report	
	PCA 46: Rail Yards, Tracks, and Spurs (Multiple rail lines historically running in north-south direction immediately west of Site)	Aerial photos, FIP, Site Visit, Pinchin 2015 Phase One ESA	This PCA is considered likely to contribute to an APEC on Site. This is due to the PCA being directly adjacent to the Site.
	PCA 31: Ink Manufacturing, Processing, and Bulk Storage (British American Bank Note Co. Limited, BA Banknote Inc.)	EcoLog ERIS, Street Directory, HLUI, 1988 Intera Report, FIPs (1948, 1956)	PCAs west of the Phase One Property are not considered likely to contribute to an APEC on Site. This is due to their positions cross-gradient of the Site rather than up-gradient, according to the local inferred groundwater flow and their distance from the Site >100 m away.
	PCA 28: Gasoline and Associated Products Storage in Fixed Tanks (Mr Gas Limited – one UST)	EcoLog ERIS	
	PCA 28: Gasoline and Associated Products Storage in Fixed Tanks (Lyle Blackwell Limited – one gasoline UST) **PCA 37: Operation of Dry Cleaning Equipment** (Lyle Blackwell Limited Cleaners & Dyers) **PCA 17: Dye Manufacturing, Processing, and Bulk Storage** (Lyle Blackwell Limited Cleaners & Dyers)	FIPs (1948), HLUI	These PCAs are up gradient of the Site, but are considered unlikely to contribute to an APEC due to their distance from the Site >100 m away.
	PCA 31: Ink Manufacturing, Processing, and Bulk Storage (Love Printing Service Limited)	HLUI	

Location	Potentially Contaminating Activities as per Table 2 of Reg.153/04	Information Sources	Rationale for the PCA to Contribute to an APEC on the Site
Phase One Study Area (excluding the Site)	**PCA 34: Metal Fabrication** (Vesuvio Iron Works) **PCA 10: Commercial Autobody Shop** (Mario Garage, Orville's Auto Electric)	EcoLog ERIS, Street Directory, HLUI	
	PCA 34: Metal Fabrication (Hodgins Bros. Limited – Heating equipment manufacturing)	HLUI	
	PCA 28: Gasoline and Associated Products Storage in Fixed Tanks (General Supply Co. of Canada Limited – One gasoline UST, City of Ottawa – Two historic USTs) **PCA 39: Paints Manufacturing, Processing, and Bulk Storage** (General Supply Co. Of Canada Limited) **PCA 57: Vehicles and Associated Parts Manufacturing** (General Supply Co. Of Canada Limited, City of Ottawa)	EcoLog ERIS, Street Directory, HLUI, TSSA, 2016 175 Loretta Ave. N. Monitoring Report	This PCA is not considered likely to contribute to an APEC on the Site since available documents indicate that remediation activities had been carried out and that there is reportedly little to no mobilization of contaminants off the 175 Loretta Ave. N. property.
	PCA 52: Storage, Maintenance, Fuelling and Repair of Vehicles (City Queensway Taxi – Auto fleet repair and storage)	Street Directory	These PCAs southwest of the Phase One Property are up gradient of the Site, but are considered unlikely to contribute to an APEC due to their distance from the Site >50 m away.
	PCA 31: Ink Manufacturing, Processing, and Bulk Storage (Canada Printing Ink, Canadian Toners, Popular Printing) **PCA 54: Textile Manufacturing and Processing** (Regional Textiles)	Street Directory, HLUI,	
	PCA 28: Gasoline and Associated Products Storage in Fixed Tanks (Bell Telephone Co. Of Canada Limited – One gasoline UST)	HLUI, FIP (1956)	
	PCA 28: Gasoline and Associated Products Storage in Fixed Tanks (Hall Fuel Limited – One gasoline UST)	HLUI, FIP (1956)	
	PCA 10: Commercial Autobody Shop (907462 Ontario Limited, Grandtech Auto – Auto repair)	HLUI	

5.10.2.2 Areas of Potential Environmental Concern

The following APECs were identified, their locations can be seen in Figure 2:

APEC #	Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern on Phase One Property	Potentially Contaminating Activity	Location of PCA (on-Site or off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, soil and/or Sediment)
1	Current Dyed Diesel AST	Storage yard in the northwest corner of the Site	PCA 28: Gasoline and Associated Products in Fixed Tanks	On-Site	PHC and BTEX	Groundwater and Soil
2	Former on-Site rail tracks as well as rail line adjacent to the west	Former on-Site rail spurs running in several locations across the entire property during lumberyard use. Rail spurs running to east side of boiler room and along the west side of the depot building	PCA 46: Rail Yards, Tracks, and Spurs	On-Site	Metals, PAHs, PHC	Soil
3	Footprint of old buildings was built up with fill following 2015 demolition. Layer of fill was also identified across Site prior to demolition, which included waste products. Fill origin unknown	Entire Site	PCA 30: Importation of Fill Material of Unknown Quality	On-Site	Metals, PAHs, PHC, VOC	Soil
4	Former lumber yard on-Site	Entire Site	PCA 59: Bulk Storage of Treated and Preserved Wood Products	On-Site	Metals, PAHs, VOCs	Soil

APEC #	Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern on Phase One Property	Potentially Contaminating Activity	Location of PCA (on-Site or off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, soil and/or Sediment)
5	Site used as Central Ordnance Depot for 50 years including storage of paints, oils, munitions and assorted military stores	Entire Site	PCA: Other – Oil Drum Storage PCA 20: Explosives and Ammunition Bulk Storage PCA 39: Paints Manufacturing, Processing, and Bulk Storage	On-Site	Metals, PAHs, VOCs	Groundwater and Soil
6	Historical heating oil ASTs	West (2 tanks) and south (1 tank) of former boiler room	PCA 28: Gasoline and Associated Products in Fixed Tanks	On-Site	PAHs, PHC, BTEX, VOC	Groundwater and Soil
7	Former printer operation on-Site	Unknown, assume entire building footprint area	PCA 31: Ink Manufacturing, Processing, and Bulk Storage	On-Site	VOCs	Groundwater and Soil
8	Former 2500 gallon sump noted in building plans for the flammables storage room	On-Site (NW corner, north of former boiler room)	PCA: Other – Chemical Storage Room Sump	On-Site	PHC, BTEX, VOCs	Groundwater and Soil
9	Historical vehicle maintenance	Unknown, assume entire Site	PCA: Other – Vehicle Maintenance	On-Site	PHC, VOC	Groundwater and Soil
10	Transformers on-Site within former warehouse	Site within former warehouse footprint	PCA 55: Transformer Use	On-Site	PCBs, PHC	Groundwater and Soil
11	Waste generator codes for Petroleum distillates, waste oils and lubricants, light fuels, chemicals, and pharmaceuticals	Entire Phase One Study Area	PCA : Other – Waste Generator	On/Off-Site	PHC, VOC	Groundwater and Soil
12	Several 205 L drums of waste oil were stored in the boiler room and minor staining was observed	West side in former boiler room	PCA : Other – Petroleum Product Drum Storage	On-Site	PHC, BTEX	Groundwater and Soil

APEC #	Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern on Phase One Property	Potentially Contaminating Activity	Location of PCA (on-Site or off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, soil and/or Sediment)
13	Numerous fires in the 1950's burned down portions of the depot which may have released contaminants	On-Site (North and south ends of former warehouse, as well as well as two fires in unknown locations)	PCA : Other - Fires	On-Site	PHC, Metals, PAH, VOCs	Groundwater and Soil
14	Parking area contains empty bulk liquid totes of unknown sources, 5 buckets (25 L each) marked "Hydraulic Fluid – Must be disposed of" on wooden pallet in paved area, soil piles, asphalt pile, empty drums. Several drums of unknown contents noted in 2001 in maintenance yard immediately adjacent to north	On-Site (NW corner of Site in storage area)	PCA : Debris and Chemical Waste	On-Site / Off-Site	Metals, PHC PAH, VOCs	Groundwater and Soil
15	Venice Iron Works and V Steel Works Limited.	17 Larch Street, adjacent to Site on east side	PCA 34: Metal Fabrication	Off-Site	Metals, PHC, VOC	Groundwater and Soil

5.10.3 Subsurface Structures and Utilities and Potential Migration of COCs

Underground utility drawings available for the Phase Two Property indicated utility connections to the former building were abandoned during demolition, including water, sewer, electrical, natural gas, cable and telephone. Utility mains, including storm sewers observed during the site reconnaissance continue to be present. The presence of subsurface utilities and structures at the Site could act as preferential pathways promoting the migration of COCs as the water table is inferred to intercept buried utilities and subsurface structures at the Phase Two Property; however, no COCs are present in groundwater exceeding the Site condition standards.

5.10.4 Physical Setting

5.10.4.1 Stratigraphy

Boreholes were advanced to a maximum depth of 5.18 mbgs. Fill covered most of the Site, but a layer of asphalt up to 5 cm in thickness was present at surface at the following borehole locations: BH17-01, BH17-14, and BH17-22. In general, the subsurface soil conditions consisted of a layer of fill overlying native overburden. The fill consists of sandy clay with trace brick and wood encountered in some boreholes, this layer extends 2 - 3 mbgs and is underlain by native silty clay or silty fine sand extending to the maximum depth of drilling. Bedrock was encountered during drilling on some boreholes (BH17-04, BH17-18, BH17-20, and BH17-23) along the central west side near the former boiler room at depths of 3 – 4 mbgs. Bedrock was not encountered at the remaining boreholes, which ranged in depth from 3.35 – 5.18 mbgs.

Given that the average thickness of overburden at the Site is greater than 2 m, the Site is not considered to be a shallow soil property as defined by O. Reg 153/04 (as amended).

5.10.4.2 Hydrogeological Characteristics

The regional groundwater flow direction is expected to be towards the Ottawa River, located approximately 1 km to the north of the Site. Based on the interpreted groundwater elevation contours presented in Figure 3, the inferred direction of the local groundwater flow is to the northeast, towards the Ottawa River. The exception being the northwest corner of the Site which flows southwest.

Groundwater Levels and Flow Directions

Static groundwater levels were measured in the monitoring wells located across the Site during water sampling between February 2, 2017 and February 7, 2017. Figure 3 shows February 2, 2017 and February 7, 2017 groundwater elevations and the interpreted groundwater flow direction. Groundwater elevations at the Site ranged from 95.71 to 98.96 masl and we encountered at depths of 1.36 to 4.58 mbgs.

Based on the soil conditions encountered in the boreholes and the water level measurements, the silty clay to clayey silt unit was inferred to act as an aquifer.

Horizontal Hydraulic Gradients

The average horizontal hydraulic gradient was estimated for shallow groundwater conditions based on water levels collected between February 2, 2017 and February 7, 2017, and the inferred groundwater contours are presented on Figure 3. The average horizontal hydraulic gradient for shallow groundwater conditions was calculated to be 1.4E -5 meters per second (m/s). The maximum horizontal hydraulic gradient for shallow groundwater conditions was calculated to be 4.2E-5 m/s and the minimum horizontal hydraulic gradient for shallow groundwater conditions was calculated to be 1.5E-7 m/s. Variability in hydraulic gradients calculated at the Phase Two property may be related to the presence of foundations/buried structure, bedding materials, and buried services at the Site.

Vertical Hydraulic Gradient

Vertical hydraulic gradients were not calculated as no COCs were identified in groundwater exceeding the site condition standards and as such, no nested monitoring wells were installed at the Site.

5.10.5 Shallow Soil Property or Water Body (as per section 43.1 of O.Reg. 153/04)

Bedrock was encountered during drilling on some boreholes (BH17-04, BH17-18, BH17-20, and BH17-23) along the central west side near the former boiler room at depths of 3 – 4 mbgs. Bedrock was not encountered at the remaining boreholes, which ranged in depth from 3.35 – 5.18 mbgs. Therefore, including findings from the Phase One, the approximate depth to bedrock is assumed to be between 3 and 10 mbgs. As such, based on the depth to bedrock encountered at the Site, the Site is not considered a shallow soil property.

5.10.6 Potable Water Wells

No potable water wells are located on the Site or within 250 m of the Site, based on the results of the Phase One ESA. As such, the Site is not considered to be a potable water site.

5.10.7 Environmentally Sensitive Areas (as per section 41 of O.Reg. 153/04)

There is no habitat for potential species of risk at the Site. In addition, based on the information provided in the Ministry of Natural Resource and Forestry, no areas of natural significance are present on the Site or within 30 m of the Site. Additionally the average pH of surface soil is 5≤pH≤9 and the pH of sub-surface soil meets the requirement that 5≤pH≤11. The exception is the surface soil sample BH17-11 SA1 with a pH of 10.8. , however this was not considered to be indicative of the average soil condition based on the average calculated with the duplicate sample submitted from the same soil horizon. O.Reg. 153/04 permits the averaging of soil samples within a two-metre radius when determining applicable site condition standards. In this case sample 17-11 SA1 had pH value of 10.8 and duplicate sample 17-11 SA1 DUP had a pH value of 7.71. The average of these logarithmic values was calculated to be 8.01 which is within the pH range requirement for surface soils.

As such, the Site is not considered to be environmentally sensitive.

5.10.8 Applicable Site Condition Standard

The analytical results of the samples collected for this Phase Two ESA were compared to the Table 3 Full Depth The analytical results of the samples collected for this Phase Two ESA were compared to the Table 3 generic site condition standards (residential property use, coarse soil texture) presented in the MOECC "*Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*", dated April 15, 2011. The applicable site condition standards were selected based on the following rationale:

- The Site and all other properties located, in whole or in part, within 250 metres of the Site are supplied by the City of Ottawa municipal drinking water system. No wells were identified that are used or intended for use as a source of water
- The Site is not located in an area designated in a municipal official plan as a well-head protection area or other designation identified by the municipality for the protection of ground water
- Results of grain-size analysis show that at least one third of soil at the property may be considered coarse textured
- The closest water body is the Ottawa River, located 1 kilometre ("km") north of the Phase Two Property
- There are no features on the Phase Two Property that would meet the conditions of an environmentally sensitive site, as described in Section 41
- The average pH of surface soil is 5≤pH≤9 and the pH of sub-surface soil meets the requirement that 5≤pH≤11

- The intended land use for the Phase Two Property is a mixed use development that includes residential, parkland, institutional property use development
- The overburden thickness is greater than 2 metres over more than one-third of the Phase Two Property
- The average depth to the water table is 3.30 mbgs with the shallowest being 1.36 metres below ground surface (mbgs).

5.10.9 Findings of the Phase Two ESA (Golder, 2017) with respect to APECs

To address the APECs identified at the Site, soil and groundwater sampling and analysis of potential COCs was completed as part of this Phase Two ESA. MOE Table 3 Standards (April 15, 2011) were used for comparison of the soil and groundwater results. A summary of the findings of the Phase Two ESA with respect to the APECs identified by the Phase One ESA (Golder, 2016) is provided in the table below:

APEC #	Area of Potential Environmental Concern	Potentially Contaminating Activity	Contaminants of Potential Concern	Soil and/or Groundwater Exceedances of 2011 MOE Table 3 Standards
1	Current Dyed Diesel AST	PCA 28: Gasoline and Associated Products in Fixed Tanks	PHC and BTEX	None
2	Former on-Site rail tracks as well as rail line adjacent to the west	PCA 46: Rail Yards, Tracks, and Spurs	Metals, PAHs, PHC	None
3	Footprint of old buildings was built up with fill following 2015 demolition. Layer of fill was also identified across Site prior to demolition, which included waste products. Fill origin unknown	PCA 30: Importation of Fill Material of Unknown Quality	Metals, PAHs, PHC, VOC	None
4	Former lumber yard on-Site	PCA 59: Bulk Storage of Treated and Preserved Wood Products	Metals, PAHs, VOCs	None
5	Site used as Central Ordnance Depot for 50 years including storage of paints, oils, munitions and assorted military stores	PCA: Other – Oil Drum Storage PCA 20: Explosives and Ammunition Bulk Storage PCA 39: Paints Manufacturing, Processing, and Bulk Storage	Metals, PAHs, VOCs	None
6	Historical heating oil ASTs	PCA 28: Gasoline and Associated Products in Fixed Tanks	PAHs, PHC, BTEX, VOC	None

APEC #	Area of Potential Environmental Concern	Potentially Contaminating Activity	Contaminants of Potential Concern	Soil and/or Groundwater Exceedances of 2011 MOE Table 3 Standards
7	Former printer operation on-Site	PCA 31: Ink Manufacturing, Processing, and Bulk Storage	VOCs	None
8	Former 2500 gallon sump noted in building plans for the flammables storage room	PCA: Other – Chemical Storage Room Sump	PHC, BTEX, VOCs	None
9	Historical vehicle maintenance	PCA: Other – Vehicle Maintenance	PHC, VOC	None
10	Transformers on-Site within former warehouse	PCA 55: Transformer Use	PCBs, PHC	None
11	Waste generator codes for Petroleum distillates, waste oils and lubricants, light fuels, chemicals, and pharmaceuticals	PCA : Other – Waste Generator	PHC, VOC	None
12	Several 205 L drums of waste oil were stored in the boiler room and minor staining was observed	PCA : Other – Petroleum Product Drum Storage	PHC, BTEX	None
13	Numerous fires in the 1950's burned down portions of the depot which may have released contaminants	PCA : Other - Fires	PHC, Metals, PAH, VOCs	None
14	Parking area contains empty bulk liquid totes of unknown sources, 5 buckets (25 L each) marked "Hydraulic Fluid – Must be disposed of" on wooden pallet in paved area, soil piles, asphalt pile, empty drums. Several drums of unknown contents noted in 2001 in maintenance yard immediately adjacent to north	PCA : Debris and Chemical Waste	Metals, PHC PAH, VOCs	None
15	Venice Iron Works and V Steel Works Limited.	PCA 34: Metal Fabrication	Metals, PHC, VOC	None

As summarized in the above table, the results of this Phase Two ESA indicate that no soil or groundwater impacts associated with the fifteen APECs were identified in any of the analyzed soil and groundwater samples collected from the boreholes and the monitoring wells completed within the fifteen APECs at the Site. The concentrations of the COCs (PHCs F1 to F4, VOCs, PAHs, Metals (incl. Hg and Cr VI), and PCBs) in soil and groundwater associated with the fifteen APECs were all below the MOE Table 3 Standards. The pH values for the soil are within the acceptable range using the allowance that samples collected within a two metre radius are permitted to be averaged provided they are within the same soil horizon.

However, the soil result identified metal exceedances (vanadium) of the MOECC Table 3 Standards in 4 of the 23 soil samples (including the 3 duplicate soil samples) submitted for metal analysis. Vanadium exceedances were found at depths varying from 1.52 to 3.81 mbgs across the Site. The vanadium exceedances are considered to be related to the naturally occurring elevated background metal concentrations in the silty clay rather than associated with any of the APECs or any other sources of contamination due to the following rationale:

- There is no historical or current source of metals contamination on the Site or on adjacent lands that may have contributed to vanadium exceedances
- Based on Golder's experience from a number of other projects in Ottawa, the presence of elevated background metal (barium, vanadium and cobalt) concentrations in silty clay is common for the Ottawa area.

Based on the above considerations, the vanadium exceedances in the silty clay at the Site are considered to be associated with the naturally occurring elevated background concentrations in the silty clay and as such are not considered as exceedances for the purpose of the RSC and are not considered further.

5.10.10 Meteorological and Climatic Considerations

Seasonal fluctuation in water levels on the Site should be expected. Given the limited number of monitoring events, seasonal trends could not be identified, however shallow groundwater water levels are typically highest following the spring recharge and decline throughout the summer and fall months into the winter.

5.10.11 Soil Vapour Intrusion Pathways

No volatile compounds exceeding MOECC Table 3 Standards were identified in soil or groundwater at the Site. As such, vapour intrusion was not investigated as part of this Phase Two ESA as it is not considered to be a concern for the Site.

5.10.12 Cross-Sections

Lateral and Vertical Distribution of Contaminants

No COCs were identified in soil or groundwater at the Site, except metal exceedances in the silty clay that are associated with the naturally occurring elevated levels of metals in the silty clay, which are present across the site and region.

Representative cross-sections of the Site are presented in Figures 5 and 6.

5.10.13 Potential exposure pathways and receptors

Given that the concentrations of the COCs in soil and groundwater were below the applicable MOECC Table 3 Standards and no impacts in soil or groundwater were identified there is no potential for contaminant release and migration at the Site.

As such, no description of the potential contaminant release and transport mechanisms, exposure pathways and human and ecological receptors located on-Site in relation to COCs is provided as part of the report.

6.0 CONCLUSIONS

The Phase Two ESA investigated the APECs identified in the 2016 Phase One ESA. The reported concentrations of the contaminants of potential concern in all soil and groundwater samples were below the applicable site condition standards as of the certification date (February 7, 2017). This is with the exception of elevated levels of vanadium found in the soil, however this was considered by Golder to be due to elevated background levels of metals in Ottawa marine clays and not due to any APEC associated with the Site. Therefore this exceedance of the applicable site condition standard is not a considered a contaminant of potential concern.

No completion of a risk assessment or remediation is required prior to the submission of a RSC.

The data presented in this report follows the O. Reg. 153/04 Phase Two ESA report format.

7.0 REFERENCES

Source	**Date**
Final Report On Phase One Environmental Site Assessment, 933 Gladstone Avenue Ottawa, Ontario. Golder Associates.	2016
Generalized Bedrock Geology, Ottawa, Ontario, Belanger J. R., Urban Geology of the National Capital Area, Geological Survey of Canada, Open file D3256.	2001
Urban Geology of the National Capital Area, Geological Survey of Canada, Open file 5311.	2008
Aerial Photographs (Golder in-house library and GeoOttawa)	1928, 1932, 1938, 1952, 1958, 1965, 1969, 1976, 1979, 1986, 1991, 1995, 1999, 2005, and 2011
Fire Insurance Plans – Golder in-house library	1888 (Revised 1901), 1902 (Revised 1912), 1925 (Revised 1948), and 1956
City Directories, obtained by ERIS on behalf of Golder	1885/86, 1890/91, 1895/96, 1900, 1905, 1910, 1916, 1921, 1926, 1931, 1936, 1941, 1946, 1951, 1956, 1962, 1966, 1971, 1976, 1981/82, 1987, 1992, 1996/97, 2001/02, 2006/07 and 2011
ERIS Report	August 2016
Plan Showing Extent of Ottawa-Hull Conflagration. Chas. E. Goad.	April 1900
Army Probing Ordnance Depot Blaze. Ottawa Journal.	March 1950
MP Demands Fire Probe. Ottawa Journal.	June 1951

Source	**Date**
Fireman Hurt Battling Ordnance Depot Blaze. Ottawa Journal.	January 1952
Fire Destroys Plouffe Park Army Stores. Ottawa Journal.	October 1952
General Alterations to No. 1 Supply Centre, Plouffe Park, Ottawa, Ontario. Selected plans from City of Ottawa Building Code Services historic records.	1970/71
Building plans for No. 1 Supply Centre Warehouse, Plouffe Park, 1010 Somerset St. W. Ottawa, Ontario – Fire Protection Improvements. Selected plans from City of Ottawa Building Code Services historic records.	1989
Phase I Environmental Site Assessment Plouffe Park (1010 Somerset St. W.) Ottawa, Ontario. Aqua Terre Solutions Inc.	March 2001
Phase I & II Environmental Site Assessment, Plouffe Park 1010 Somerset St. W., Ottawa, Ontario DRFP#08830. Trow Associates Inc.	January 2005
Environmental Review and Limited Investigation Plouffe Park, 1010 Somerset Street West, Ottawa, Ontario. Levac Robichaud Leclerc Associates Ltd.	October 2008
Subsurface Soil and Groundwater Investigation Sampling Plouffe Park – 1010 Somerset Street West, Ottawa, Ontario. DST Consulting Engineers Inc.	September 2013
Phase One Environmental Site Assessment: 933 Gladstone Avenue Ottawa, Ontario-Draft. Pinchin Ltd.	March 26, 2015
2016 Groundwater Monitoring Program Private Fuel Outlet 175 Loretta Avenue North Ottawa, Ontario. Amec Foster Wheeler.	December 2016

8.0 LIMITATIONS

This report was prepared for the exclusive use of Ottawa Community Housing Corporation. The report, which specifically includes all tables, figures and appendices, is based on data and information, collected during conducting the Phase Two ESA, and is based solely on the conditions of the property at the time of conducting investigations, supplemented by historical information and data obtained by Golder Associates Ltd. as described in this report.

The assessment of environmental conditions at this Site has been made using the results of field screening techniques and chemical analysis of soil and groundwater samples at a limited number of locations. The Site conditions between sampling locations have been inferred based on conditions observed at the sampling locations. Conditions may vary from these sample locations. Additional study, including further investigation, can reduce the inherent uncertainties associated with this type of study. However, it is never possible, even with exhaustive sampling and testing, to dismiss the possibility that part of a Site may be contaminated and remain undetected.

The services performed as described in this report were conducted in a manner consistent with that level of care and skill normally exercised by other members of the engineering and science professions currently practicing under similar conditions, subject to the time limits and financial and physical constraints applicable to the services.

Any use which a third party makes of this report, or any reliance on, or decisions to be made based on it, are the responsibilities of such third parties. Golder Associates Ltd. accepts no responsibility for damages, if any, suffered by any third party (other than as noted above) as a result of decisions made or actions based on this report.

The content of this report is based on information collected during the drilling, soil and groundwater sampling activities, our present understanding of the Site conditions, and our professional judgement in light of such information at the time of this report. This report provides a professional opinion and therefore no warranty is expressed, implied, or made as to the conclusions, advice and recommendations offered in this report. This report does not provide a legal opinion regarding compliance with applicable laws. With respect to regulatory compliance issues, it should be noted that regulatory statutes and the interpretation of regulatory statutes are subject to change.

The findings and conclusions of this report are valid only as of the date of this report. If new information is discovered in future work, including excavations, borings or other studies, Golder Associates Ltd. should be requested to re-evaluate the conclusions of this report, and to provide amendments as required.

The monitoring wells installed as part of this project have been constructed using licensed drilling/well contractors employing licensed well technicians. It is owner's responsibility to have a licensed well technician properly abandon all monitoring wells, if required.

Report Signature Page

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Table 1
Monitoring Well Construction and Groundwater Elevation Details

Monitoring Well ID	Location (UTM 18)		Installation Date	End of Borehole (mbgs)	Screen (mbgs)	Ground Surface Elevation (masl)	Water Level Depth (mbgs)	Water Level Elevation (masl)
	Northing	Easting						
MW17-01	5028292	0443935	25/01/2017	5.18	2.13 - 5.18	100.44	3.18	97.26
MW17-04	5028150	0444139	30/01/2017	3.81	2.13 - 3.66	101.48	3.04	98.44
MW17-05	5028207	0444119	30/01/2017	5.03	1.68 - 4.72	101.28	3.9	97.38
MW17-08	5028302	0444074	27/01/2017	5.18	1.98 - 5.03	100.69	4.69	96
MW17-10	5028267	0443999	27/01/2017	5.18	1.98 - 5.03	100.75	3.83	96.92
MW17-11	5028323	0444066	26/01/2017	5.18	1.98 - 5.03	100.5	4.72	95.78
MW17-13	5028297	0443998	26/01/2017	5.18	1.98 - 5.03	100.53	2.62	97.91
MW17-14	5028273	0443958	25/01/2017	5.18	1.98 - 5.03	100.2	4.19	96.01
MW17-15	5028356	0444050	26/01/2017	5.18	1.52 - 4.57	100.29	4.58	95.71
MW17-17	5028326	0443979	26/01/2017	5.18	1.98 - 5.03	100.32	1.36	98.96
MW17-18	5028171	0444061	30/01/2017	3.35	1.83 - 3.35	101.37	2.2	99.17
MW17-19	5028213	0444019	27/01/2017	3.81	2.29 - 3.81	100.87	2.1	98.77
MW17-20	5028218	0444019	27/01/2017	3.96	2.29 - 3.81	100.96	3.35	97.61
MW17-21	5028217	0444052	27/01/2017	3.96	2.44 - 3.96	101.05	3.31	97.74
MW17-22	5028312	0443955	25/01/2017	5.18	2.13 - 5.18	99.68	2	97.68
MW17-23	5028232	0444121	30/01/2017	4.27	1.83 - 4.27	100.22	3.8	96.42

Table 2
Summary of Soil Samples Submitted for Laboratory Analysis

Borehole ID	Soil Samples Submitted for Analysis	Sample Depths (mbgs)	Sample Collection Date	Analytical Paramaters	MOECC Table 3 Exceedances (1)
BH17-01	17-01 SA4	3.05 - 3.81	25/01/2017	PHCs and BTEX	None
BH17-02	17-02 SA1	0 - 0.63	30/01/2017	pH, Metals, PAHs, and PHCs.	None
BH17-03	17-03 SA3	1.52 - 2.44	27/01/2017	Metals, PAHs, and PHCs.	None
BH17-04	17-04 SA4	3.05 - 3.81	30/01/2017	pH, Metals, PAHs, PCB, VOCs, and PHCs.	None
	DUP 3	3.05 - 3.81	30/01/2017	pH, Metals, PAHs, PCB, VOCs, and PHCs.	None
BH17-05	17-05 SA5	3.81 - 4.57	30/01/2017	Metals, PAHs, PCB, VOCs, and PHCs.	None
BH17-06	17-06 SA3	1.52 - 2.44	27/01/2017	Metals, PAHs, PCB, VOCs, and PHCs.	None
BH17-07	17-07 SA3	1.52 - 2.44	30/01/2017	pH, Metals, PAHs, PCB, VOCs, and PHCs.	Vanadium (93µg/g)*
BH17-08	17-08 SA1	0 - 0.69	27/01/2017	pH	None
	17-08 SA2	1.52 - 2.29	27/01/2017	pH	None
	17-08 SA4	3.05 - 3.81	27/01/2017	Metals, PAHs, PCB, VOCs, and PHCs.	Vanadium (87µg/g)*
BH17-09	17-09 SA1	0 - 0.76	26/01/2017	pH	None
	17-09 SA2	0.76 - 1.22	26/01/2017	pH	None
	17-09 SA3	1.52 - 2.44	26/01/2017	Metals, PAHs, PCB, VOCs, and PHCs.	None
BH17-10	17-10 SA6	4.57 - 5.18	27/01/2017	Metals, PAHs, PCB, VOCs, and PHCs.	None
BH17-11	17-11 SA1	0 - 0.63	26/01/2017	pH, Metals, PAHs, PCB, VOCs, and PHCs.	None
	17-11 SA1-DUP	0 - 0.63	26/01/2017	pH	None
	17-11 SA2	1.52 - 2.29	26/01/2017	pH	None
BH17-12	17-12 SA1	0 - 0.3	26/01/2017	pH	None
	17-12 SA2	0.3 - 0.61	26/01/2017	pH	None
	17-12 SA3	1.52 - 2.44	26/01/2017	Metals, PAHs, PCB, VOCs, and PHCs.	None
	17-101	1.52 - 2.44	26/01/2017	Metals, PAHs, PCB, VOCs, and PHCs.	None
BH17-13	17-13 SA4	3.05 - 3.18	26/01/2017	pH, Metals, PAHs, PCB, VOCs, and PHCs.	Vanadium (94µg/g)*
BH17-14	17-14 SA1	0 - 0.76	25/01/2017	Metals, PAHs, PCB, VOCs, and PHCs.	None
BH17-15	17-15 SA1	0 - 0.79	26/01/2017	pH	None
	17-15 SA2	1.52 - 2.29	26/01/2017	pH, Metals, PAHs, PCB, VOCs, and PHCs.	None
BH17-16	17-16 SA1	0 - 0.61	25/01/2017	pH, Metals, PAHs, PCB, VOCs, and PHCs.	None
	17-16 SA2	0.61 - 1.22	25/01/2017	pH	None
BH17-17	17-17 SA3	2.29 - 3.05	26/01/2017	Metals, PAHs, PCB, VOCs, and PHCs.	None
BH17-18	17-18 SA2	1.52 - 2.33	30/01/2017	PAHs, PHCs, and BTEX.	Vanadium (92µg/g)*
BH17-19	17-19 SA2	1.52 - 1.83	27/01/2017	PAHs, PHCs, and BTEX.	None
BH17-20	17-20 SA1	0 - 0.91	27/01/2017	VOCs, PHCs, and BTEX.	None
BH17-21	17-21 SA2	1.52 - 2.29	27/01/2017	pH, PHC and BTEX.	None
	DUP 2	1.52 - 2.29		pH, PHC and BTEX.	None
BH17-22	17-22 SA3	2.29 - 3.05	25/01/2017	Metals, PAHs, VOCs, and PHCs.	None
BH17-23	17-23 SA2	1.52 - 2.29	30/01/2017	Metals, VOCs, and PHCs.	None

(1) Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, Residential/Parkland/Institutional Property Use, coarse-textured soil, April 15, 2011 (MOECC Table 3 Standards).

None = Not detected above method detection limit and/ or does not exceed MOE Table 3 Standards
N/A - Not applicable

* Vanadium exceedances are considered to be related to the naturally occurring elevated background metal concentrations in the silty clay rather than associated with any of the APECs or any other sources of contamination

Table 3
Summary of Groundwater Samples Submitted for Laboratory Analysis

Monitoring Well ID	Groundwater Samples Submitted for Analysis	Date Sampled	Analytical Paramaters	MOECC Table 3 Exceedances (1)
MW17-01	17-01	06/02/2017	PHCs and BTEX	None
MW17-04	17-04	07/02/2017	PHCs, VOCs, PCBs, PAHs, and Metals (inc. Hg & Cr VI)	None
MW17-05	17-05	07/02/2017	PHCs, VOCs, PCBs, PAHs, and Metals (inc. Hg & Cr VI)	None
MW17-10	17-10	06/02/2017	PHCs, VOCs, PCBs, PAHs, and Metals (inc. Hg & Cr VI)	None
MW17-13	17-13	06/02/2017	PHCs, VOCs, PCBs, PAHs, and Metals (inc. Hg & Cr VI)	None
MW17-14	17-14	06/02/2017	PHCs, VOCs, PCBs, PAHs, and Metals (inc. Hg & Cr VI)	None
MW17-17	17-17	02/02/2017	PHCs, VOCs, PCBs, PAHs, and Metals (inc. Hg & Cr VI)	None
MW17-18	17-18	07/02/2017	PHCs, PAHs and BTEX	None
MW17-19	17-19	02/02/2017	PHCs, PAHs, and BTEX	None
MW17-20	17-20	06/02/2017	PHCs, BTEX, and VOCs	None
MW17-21	17-21	07/02/2017	PHCs and BTEX	None
MW17-22	17-22	06/02/2017	PHCs, VOCs, PAHs and Metals (inc. Hg & Cr VI)	None
Dup A (17-22)	DUP A	06/02/2017	PHCs, VOCs, PAHs and Metals (inc. Hg & Cr VI)	None
MW17-23	17-23	07/02/2017	PHCs, VOCs, and Metals (inc. Hg & Cr VI)	None
Equipment Blank	Equip. Blank	07/02/2017	VOCs	None
Field Blank	F Blank	07/02/2017	PHCs, VOCs, PCBs, PAHs, and Metals (inc. Hg & Cr VI)	None
Trip Blank	Trip Blank	07/02/2017	VOCs	None

(1) Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, All Property Use, coarse-textured soil, April 15, 2011 (MOECC Table 3 Standards).

None = Not detected above method detection limit and/ or does not exceed MOE Table 3 Standards
N/A - Not applicable

Table 4A
Soil Analytical Results for Metals

Sample ID	MDL	MOE Table 3 (µg/g)	17-2 SA1	17-3 SA3	17-4 SA4	DUP-3 (Field Duplicate of 17-4 SA4)	17-5 SA5	17-6 SA3	17-7 SA3	17-8 SA4	17-9 SA3
Sample Date (m/d/y)			1/30/2017	1/30/2017	1/30/2017	1/30/2017	1/30/2017	07/05/2016	1/30/2017	1/30/2017	1/26/2017
Sample Depths (mbgs)			0 - 0.63	1.52 - 2.44	3.05 - 3.81	3.05 - 3.81	3.81 - 4.57	1.52 - 2.44	1.52 - 2.44	3.05 - 3.81	1.52 - 2.44
Metals											
Antimony	0.2	7.5	0.2	0.26	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	1	18	2.1	2.3	<1.0	<1.0	<1.0	<1.0	1.4	<1.0	1.3
Barium	0.5	390	85	230	28	36	34	190	310	290	120
Beryllium	0.2	4	0.23	0.69	<0.20	<0.20	<0.20	0.62	0.85	0.74	0.34
Boron (Hot Water Soluble)	0.05	1.5	0.27	0.43	<0.050	0.051	0.067	0.051	0.065	0.22	0.059
Cadmium	0.1	1.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.1	0.11	<0.10
Chromium	1	160	11	68	8.3	8.1	9.4	42	70	72	24
Chromium VI	0.2	8	<0.2	0.4	<0.2	<0.2	<0.2	0.4	0.5	<0.2	0.3
Cobalt	0.1	22	5.5	16	3.6	3.6	4	12	19	19	7.1
Copper	0.5	140	13	41	8.1	7.6	7.5	25	38	36	13
Lead	1	120	13	22	2.2	2.3	2.8	5.4	6.9	6.1	3.4
Mercury	0.05	0.27	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Molybdenum	0.5	6.9	1.7	0.66	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	<0.50
Nickel	0.5	100	11	40	5.5	6.3	6	24	43	42	13
Selenium	0.5	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	0.2	20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	0.05	1	0.12	0.32	0.052	0.057	0.058	0.27	0.4	0.39	0.14
Vanadium	5	86	28	75	17	17	20	68	**93**	**87**	41
Zinc	5	340	35	96	10	20	11	69	120	110	38
Boron (Total)	5	120	6	7.5	<5.0	<5.0	<5.0	5.4	5.7	6.6	<5.0
Uranium	0.05	23	0.72	3.7	1.1	0.73	0.91	0.68	0.7	1.5	0.67

Table 4A
Soil Analytical Results for Metals

Sample ID	MDL	MOE Table 3 (µg/g)	17-10 SA6	17-11 SA1	17-12 SA3	DUP-1 (Field duplicate of 17-12 SA2)	17-13 SA4	17-14 SA1	17-15 SA2	17-16 SA1
Sample Date (m/d/y)			1/30/2017	1/26/2017	1/26/2017	1/26/2017	1/26/2017	1/26/2017	1/26/2017	1/26/2017
Sample Depths (mbgs)			4.57 - 5.18	0 - 0.63	1.52 - 2.44	1.52 - 2.44	3.05 - 3.18	0 - 0.76	1.52 - 2.29	0 - 0.61
Metals										
Antimony	0.2	7.5	<0.20	0.32	<0.20	<0.20	<0.20	<0.20	<0.20	0.69
Arsenic	1	18	<1.0	2.4	1.8	1.4	1.1	<1.0	1.1	3.1
Barium	0.5	390	190	180	140	130	310	24	300	160
Beryllium	0.2	4	0.52	0.58	0.37	0.37	0.72	<0.20	0.72	0.42
Boron (Hot Water Soluble)	0.05	1.5	0.21	0.25	0.13	0.085	0.26	<0.050	0.17	0.52
Cadmium	0.1	1.2	<0.10	0.14	<0.10	<0.10	<0.10	<0.10	<0.10	0.14
Chromium	1	160	37	51	26	27	72	7.3	70	32
Chromium VI	0.2	8	<0.2	<0.2	0.6	<0.2	0.2	<0.2	0.2	<0.2
Cobalt	0.1	22	11	13	7.3	7.8	18	4	18	9.8
Copper	0.5	140	23	35	16	16	35	8.5	35	27
Lead	1	120	5	23	5.3	3.9	5.7	2.6	6.6	33
Mercury	0.05	0.27	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Molybdenum	0.5	6.9	0.88	0.65	1.1	<0.50	1.2	<0.50	<0.50	0.99
Nickel	0.5	100	22	30	14	15	40	6.9	41	19
Selenium	0.5	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	0.2	20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	0.05	1	0.2	0.27	0.16	0.14	0.41	0.064	0.37	0.21
Vanadium	5	86	58	56	37	43	**94**	17	85	45
Zinc	5	340	65	79	37	44	110	14	110	54
Boron (Total)	5	120	5.8	8.9	<5.0	<5.0	6.8	<5.0	<5.0	5.9
Uranium	0.05	23	0.85	0.6	0.6	0.88	1.4	0.37	0.6	0.55

Table 4A
Soil Analytical Results for Metals

Sample ID	MDL	MOE Table 3 (µg/g)	17-17 SA3	17-22 SA3	17-23 SA2
Sample Date (m/d/y)			1/26/2017	1/26/2017	1/30/2017
Sample Depths (mbgs)			2.29 - 3.05	2.29 - 3.05	1.52 - 2.29
Metals					
Antimony	0.2	7.5	<0.20	<0.20	<0.20
Arsenic	1	18	<1.0	1.9	<1.0
Barium	0.5	390	310	180	160
Beryllium	0.2	4	0.77	0.55	0.51
Boron (Hot Water Soluble)	0.05	1.5	0.19	0.24	0.057
Cadmium	0.1	1.2	<0.10	<0.10	<0.10
Chromium	1	160	72	37	38
Chromium VI	0.2	8	0.2	<0.2	0.3
Cobalt	0.1	22	19	12	12
Copper	0.5	140	34	22	24
Lead	1	120	6	5.1	5.2
Mercury	0.05	0.27	<0.050	<0.050	<0.050
Molybdenum	0.5	6.9	1.2	1.3	<0.50
Nickel	0.5	100	43	23	24
Selenium	0.5	2.4	<0.50	<0.50	<0.50
Silver	0.2	20	<0.20	<0.20	<0.20
Thallium	0.05	1	0.4	0.22	0.25
Vanadium	5	86	**92**	56	63
Zinc	5	340	110	64	62
Boron (Total)	5	120	7.4	6.9	<5.0
Uranium	0.05	23	1.3	0.87	0.58

Table 4B
Soil Analytical Results for VOCs

Sample ID Sample Date (m/d/y) Sample Depths (mbgs)	MDL	MOE Table 3 (µg/g)	17-4 SA4 1/30/2017 3.05 - 3.81	DUP-3 (Field Duplicate of 17-4 SA4) 1/30/2017 3.05 - 3.81	17-5 SA5 1/30/2017 3.81 - 4.57	17-6 SA3 1/30/2017 1.52 - 2.44	17-7 SA3 1/30/2017 1.52 - 2.44	17-8 SA4 1/30/2017 3.05 - 3.81	17-9 SA3 1/26/2017 1.52 - 2.44	17-10 SA6 1/30/2017 4.57 - 5.18	17-11 SA1 1/26/2017 0 - 0.63	17-12 SA3 1/26/2017 1.52 - 2.44
Volatile Organic Compounds												
Acetone	0.5	16	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Benzene	0.02	0.21	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Bromodichloromethane	0.05	13	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Bromoform	0.05	0.27	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Bromomethane	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Carbon Tetrachloride	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chlorobenzene	0.05	2.4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloroform	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dibromochloromethane	0.05	9.4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichlorobenzene	0.05	3.4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,3-Dichlorobenzene	0.05	4.8	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,4-Dichlorobenzene	0.05	0.083	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethane	0.05	3.5	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichloroethane	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethylene	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Cis-1,2-Dichloroethylene	0.05	3.4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Trans-1,2-Dichloroethylene	0.05	0.084	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichloropropane	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Cis-1,3-Dichloropropylene	0.03	NV	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Trans-1,3-Dichloropropylene	0.04	NV	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Ethylbenzene	0.02	2	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylene Dibromide	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Methyl Ethyl Ketone	0.5	16	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methylene Chloride	0.05	0.1	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Methyl Isobutyl Ketone	0.5	1.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl-t-Butyl Ether	0.05	0.75	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Styrene	0.05	0.7	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,1,2-Tetrachloroethane	0.05	0.058	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2,2-Tetrachloroethane	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Toluene	0.02	2.3	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Tetrachloroethylene	0.05	0.28	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,1-Trichloroethane	0.05	0.38	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2-Trichloroethane	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Trichloroethylene	0.05	0.061	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Vinyl Chloride	0.02	0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
m-Xylene & p-Xylene	0.02	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
o-Xylene	0.02	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total Xylenes	0.02	3.1	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Dichlorodifluoromethane	0.05	16	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Hexane(n)	0.05	2.8	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Trichlorofluoromethane	0.05	4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,3-Dichloropropene (cis + trans)	0.05	0.05	-	-	-	-	-	-	<0.050	-	<0.050	<0.050

Table 4B
Soil Analytical Results for VOCs

Sample ID Sample Date (m/d/y) Sample Depths (mbgs)	MDL	MOE Table 3 (µg/g)	DUP 1 (Field duplicate of 17-12 SA3) 1/26/2017 1.52 - 2.44	17-13 SA4 1/26/2017 3.05 - 3.18	17-14 SA1 1/26/2017 0 - 0.76	17-15 SA2 1/26/2017 1.52 - 2.29	17-16 SA1 1/26/2017 0 - 0.61	17-17 SA3 1/26/2017 2.29 - 3.05	17-20 SA1 1/30/2017 0 - 0.91	17-22 SA3 1/26/2017 2.29 - 3.05	17-23 SA2 1/30/2017 1.52 - 2.29
Volatile Organic Compounds											
Acetone	0.5	16	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Benzene	0.02	0.21	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Bromodichloromethane	0.05	13	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Bromoform	0.05	0.27	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Bromomethane	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Carbon Tetrachloride	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chlorobenzene	0.05	2.4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloroform	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dibromochloromethane	0.05	9.4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichlorobenzene	0.05	3.4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,3-Dichlorobenzene	0.05	4.8	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,4-Dichlorobenzene	0.05	0.083	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethane	0.05	3.5	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichloroethane	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethylene	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Cis-1,2-Dichloroethylene	0.05	3.4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Trans-1,2-Dichloroethylene	0.05	0.084	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichloropropane	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Cis-1,3-Dichloropropylene	0.03	NV	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Trans-1,3-Dichloropropylene	0.04	NV	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Ethylbenzene	0.02	2	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylene Dibromide	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Methyl Ethyl Ketone	0.5	16	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methylene Chloride	0.05	0.1	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Methyl Isobutyl Ketone	0.5	1.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl-t-Butyl Ether	0.05	0.75	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Styrene	0.05	0.7	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,1,2-Tetrachloroethane	0.05	0.058	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2,2-Tetrachloroethane	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Toluene	0.02	2.3	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Tetrachloroethylene	0.05	0.28	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,1-Trichloroethane	0.05	0.38	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2-Trichloroethane	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Trichloroethylene	0.05	0.061	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Vinyl Chloride	0.02	0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
m-Xylene & p-Xylene	0.02	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
o-Xylene	0.02	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total Xylenes	0.02	3.1	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Dichlorodifluoromethane	0.05	16	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Hexane(n)	0.05	2.8	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Trichlorofluoromethane	0.05	4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,3-Dichloropropene (cis + trans)	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	-

Table 4C
Soil Analytical Results for PHCs, PAHs and PCBs

Sample ID Sample Date (m/d/y) Sample Depths (mbgs)	MDL	MOE Table 3 (µg/g)	17-1 SA4 01/27/2017 3.05 - 3.81	17-2 SA1 01/27/2017 0 - 0.63	17-3 SA3 01/27/2017 1.52 - 2.44	17-4 SA4 01/27/2017 3.05 - 3.81	DUP-3 (Field Duplicate of 17-4 SA4) 01/27/2017 3.05 - 3.81	17-5 SA5 01/27/2017 3.81 - 4.57	17-6 SA3 01/27/2017 4.57 - 5.18	17-7 SA3 01/27/2017 1.52 - 2.44	17-8 SA4 01/27/2017 3.05 - 3.81	17-9 SA3 01/27/2017 1.52 - 2.44
PHC and BTEX												
Benzene	0.02	0.21	<0.020	<0.02	<0.02	-	-	-	-	-	-	-
Toluene	0.02	2.3	<0.020	<0.02	<0.02	-	-	-	-	-	-	-
Ethylbenzene	0.02	2	<0.020	<0.02	<0.02	-	-	-	-	-	-	-
m/p xylenes	0.04	NV	<0.040	<0.04	<0.04	-	-	-	-	-	-	-
o xylene	0.02	NV	<0.020	<0.02	<0.02	-	-	-	-	-	-	-
Total Xylenes	0.04	3.1	<0.040	<0.04	<0.04	-	-	-	-	-	-	-
F1 (C6-C10)	10	55	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F1 (C6-C10) - BTEX	10	55	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10-C16)	10	98	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F3 (C16-C34)	50	300	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
F4 (C34-C50)	50	2800	<50	280	<50	<50	<50	<50	<50	<50	<50	<50
Reached Baseline at C50		NV	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES
F4 Gravimetric	-	2800	-	2200	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons												
Acenaphthene	0.005	7.9	-	<0.0050	0.0078	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	0.005	0.15	-	<0.0050	0.0054	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	0.005	0.67	-	<0.0050	0.019	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo(a)anthracene	0.005	0.5	-	0.014	0.062	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo(a)pyrene	0.005	0.3	-	0.013	0.049	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo(b/j)fluoranthene	0.005	0.78	-	0.024	0.086	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo(ghi)perylene	0.005	6.6	-	0.0094	0.035	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benzo(k)fluoranthene	0.005	0.78	-	0.0075	0.032	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chrysene	0.005	7	-	0.014	0.06	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Dibenzo(a,h)anthracene	0.005	0.1	-	<0.0050	0.0096	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	0.005	0.69	-	0.028	0.15	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluorene	0.005	62	-	<0.0050	0.0078	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno(1,2,3-cd)pyrene	0.005	0.38	-	0.0084	0.035	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
1-Methylnaphthalene (SEE FOOTNOTE 4)	0.005	0.99	-	0.017	0.009	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2-Methylnaphthalene (SEE FOOTNOTE 4)	0.005	0.99	-	0.021	0.011	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Naphthalene	0.005	0.6	-	0.012	0.011	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	0.005	6.2	-	0.022	0.11	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Pyrene	0.005	78	-	0.022	0.11	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Methylnaphthalene, 2-(1-)	0.014	0.99	-	0.038	0.02	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.0071
PCBs												
Total PCB	0.02	0.35	-	-	-	<0.010	<0.010	<0.010	<0.020	<0.010	<0.020	<0.010

Table 4C
Soil Analytical Results for PHCs, PAHs and PCBs

Sample ID	MDL	MOE Table 3 (µg/g)	17-10 SA6	17-11 SA1	17-12 SA3	DUP 1 (Field duplicate of 17-12 SA3)	17-13 SA4	17-14 SA1	17-15 SA2	17-16 SA1	17-17 SA3	17-18 SA2
Sample Date (m/d/y)			01/27/2017	01/28/2017	01/27/2017	01/27/2017	01/27/2017	01/27/2017	01/28/2017	01/27/2017	01/27/2017	01/27/2017
Sample Depths (mbgs)			4.57 - 5.18	0 - 0.63	1.52 - 2.44	1.52 - 2.44	3.05 - 3.18	0 - 0.76	1.52 - 2.29	0 - 0.61	2.29 - 3.05	1.52 - 2.33
PHC and BTEX												
Benzene	0.02	0.21	-	-	-	-	-	-	-	-	-	0.17
Toluene	0.02	2.3	-	-	-	-	-	-	-	-	-	0.82
Ethylbenzene	0.02	2	-	-	-	-	-	-	-	-	-	0.19
m/p xylenes	0.04	NV	-	-	-	-	-	-	-	-	-	0.8
o xylene	0.02	NV	-	-	-	-	-	-	-	-	-	0.66
Total Xylenes	0.04	3.1	-	-	-	-	-	-	-	-	-	1.5
F1 (C6-C10)	10	55	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20
F1 (C6-C10) - BTEX	10	55	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20
F2 (C10-C16)	10	98	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20
F3 (C16-C34)	50	300	<50	<50	<50	<50	<50	<50	<50	<50	<50	110
F4 (C34-C50)	50	2800	<50	<50	<50	<50	<50	<50	<50	<50	<50	210
Reached Baseline at C50		NV	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
F4 Gravimetric	-	2800	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons												
Acenaphthene	0.005	7.9	<0.0050	0.0093	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.01	<0.010	0.03
Acenaphthylene	0.005	0.15	<0.0050	0.012	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010
Anthracene	0.005	0.67	<0.0050	0.019	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.026	<0.010	0.064
Benzo(a)anthracene	0.005	0.5	<0.0050	0.069	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.077	<0.010	0.19
Benzo(a)pyrene	0.005	0.3	<0.0050	0.062	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.07	<0.010	0.097
Benzo(b/j)fluoranthene	0.005	0.78	<0.0050	0.091	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.092	<0.010	0.17
Benzo(ghi)perylene	0.005	6.6	<0.0050	0.046	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.049	<0.010	0.04
Benzo(k)fluoranthene	0.005	0.78	<0.0050	0.034	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.031	<0.010	0.062
Chrysene	0.005	7	<0.0050	0.061	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.06	<0.010	0.13
Dibenzo(a,h)anthracene	0.005	0.1	<0.0050	0.01	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0097	<0.010	0.013
Fluoranthene	0.005	0.69	<0.0050	0.14	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.18	<0.010	0.44
Fluorene	0.005	62	<0.0050	0.0078	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0088	<0.010	0.027
Indeno(1,2,3-cd)pyrene	0.005	0.38	<0.0050	0.05	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.053	<0.010	0.047
1-Methylnaphthalene (SEE FOOTNOTE 4)	0.005	0.99	<0.0050	0.22	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.11	<0.010	0.089
2-Methylnaphthalene (SEE FOOTNOTE 4)	0.005	0.99	<0.0050	0.35	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.17	<0.010	0.1
Naphthalene	0.005	0.6	<0.0050	0.069	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.041	<0.010	0.066
Phenanthrene	0.005	6.2	<0.0050	0.081	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.12	<0.010	0.32
Pyrene	0.005	78	<0.0050	0.12	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.14	<0.010	0.31
Methylnaphthalene, 2-(1-)	0.014	0.99	<0.014	0.57	<0.0071	<0.0071	<0.0071	-	<0.0071	0.28	<0.014	0.19
PCBs												
Total PCB	0.02	0.35	<0.010	0.1	<0.010	<0.010	<0.020	<0.010	<0.010	0.11	<0.020	-

Table 4C
Soil Analytical Results for PHCs, PAHs and PCBs

Sample ID Sample Date (m/d/y) Sample Depths (mbgs)	MDL	MOE Table 3 (µg/g)	17-19 SA2 01/27/2017 1.52 - 1.83	17-20 SA1 01/27/2017 17-20 SA1	17-21 SA2 01/27/2017 1.52 - 2.29	DUP-2 (Field Duplicate of 17-21 SA2) 01/27/2017 1.52 - 2.29	17-22 SA3 01/27/2017 1.52 - 2.44	17-23 SA2 01/27/2017 1.52 - 2.29
PHC and BTEX								
Benzene	0.02	0.21	<0.02	-	<0.02	<0.02	-	-
Toluene	0.02	2.3	<0.02	-	<0.02	<0.02	-	-
Ethylbenzene	0.02	2	<0.02	-	<0.02	<0.02	-	-
m/p xylenes	0.04	NV	<0.04	-	<0.04	<0.04	-	-
o xylene	0.02	NV	<0.02	-	<0.02	<0.02	-	-
Total Xylenes	0.04	3.1	<0.04	-	<0.04	<0.04	-	-
F1 (C6-C10)	10	55	<10	<10	<10	<10	<10	<10
F1 (C6-C10) - BTEX	10	55	<10	<10	<10	<10	<10	<10
F2 (C10-C16)	10	98	<10	<10	<10	<10	<10	<10
F3 (C16-C34)	50	300	90	<50	<50	<50	<50	<50
F4 (C34-C50)	50	2800	240	<50	<50	<50	<50	<50
Reached Baseline at C50		NV	NO	YES	YES	YES	YES	YES
F4 Gravimetric	-	2800	1600	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	0.005	7.9	0.027	-	-	-	<0.0050	-
Acenaphthylene	0.005	0.15	0.023	-	-	-	<0.0050	-
Anthracene	0.005	0.67	0.089	-	-	-	<0.0050	-
Benzo(a)anthracene	0.005	0.5	0.32	-	-	-	<0.0050	-
Benzo(a)pyrene	0.005	0.3	0.23	-	-	-	<0.0050	-
Benzo(b/j)fluoranthene	0.005	0.78	0.34	-	-	-	<0.0050	-
Benzo(ghi)perylene	0.005	6.6	0.11	-	-	-	<0.0050	-
Benzo(k)fluoranthene	0.005	0.78	0.13	-	-	-	<0.0050	-
Chrysene	0.005	7	0.26	-	-	-	<0.0050	-
Dibenzo(a,h)anthracene	0.005	0.1	0.028	-	-	-	<0.0050	-
Fluoranthene	0.005	0.69	0.66	-	-	-	<0.0050	-
Fluorene	0.005	62	0.03	-	-	-	<0.0050	-
Indeno(1,2,3-cd)pyrene	0.005	0.38	0.12	-	-	-	<0.0050	-
1-Methylnaphthalene (SEE FOOTNOTE 4)	0.005	0.99	0.017	-	-	-	<0.0050	-
2-Methylnaphthalene (SEE FOOTNOTE 4)	0.005	0.99	0.019	-	-	-	<0.0050	-
Naphthalene	0.005	0.6	0.024	-	-	-	<0.0050	-
Phenanthrene	0.005	6.2	0.39	-	-	-	<0.0050	-
Pyrene	0.005	78	0.47	-	-	-	<0.0050	-
Methylnaphthalene, 2-(1-)	0.014	0.99	0.036	-	-	-	<0.0071	-
PCBs								
Total PCB	0.02	0.35	<0.020	-	-	-	-	-

Table 4D
Soil Analytical Results for General Chemistry

Sample ID	MDL	MOE Table 3 (µg/g)	17-2 SA1	17-4 SA4	17-7 SA3	17-8 SA1	17-8 SA2	17-9 SA1	17-9 SA2	17-11 SA1	17-11 SA1-DUP	17-11 SA2	17-12 SA1	17-12 SA2	17-13 SA4	17-15 SA1	17-15 SA2	17-16 SA1	17-16 SA2
Sample Date (m/d/y)			1/30/2017	1/30/2017	1/30/2017	1/27/17	1/27/17	1/26/17	1/26/17	1/26/2017	1/26/17	1/26/17	1/26/17	1/26/17	1/26/2017	1/26/17	1/26/2017	1/26/2017	1/25/17
Sample Depths (mbgs)			0 - 0.63	3.05 - 3.81	1.52 - 2.44	0 - 0.69	1.52 - 2.29	0 - 0.76	0.76 - 1.22	0 - 0.63	0 - 0.63	1.52 - 2.29	0 - 0.3	0.3 - 0.61	3.05 - 3.18	0 - 0.79	1.52 - 2.29	0 - 0.61	0.61 - 1.22
General Chemistry																			
pH (pH Units)	-	5 - 9	8.26	7.78	7.29	7.59	7.7	7.49	7.55	8.01 (see note 5)		7.66	7.55	7.62	7.94	7.49	7.44	8.11	7.61

Soil Analytical Results - Notes

Footnotes:

All values in ug/g unless otherwise noted.

Tables should be read in conjunction with the accompanying document.

< = Indicates parameter not detected above laboratory method detection limit.

NV = no value

-- Chemical not analyzed or criteria not defined.

mbgs = metres below ground surface

Grey background indicates exceedances.

Italic font indicates a detection limit higher than the applicable criteria.

NOTES:

1. Criteria refers to Ministry of Environment "Soil, Ground Water and and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" March 9, 2004, amended as of July 1, 2011

purposes only

3. This summary is to be use in conjuction with, not as a replacement of the Laboratory Ceriticate of Analysis which contains all QA/QC information

4. The methylnaphthalene standards are appliable to both 1-Methylnaphthelene and 2-Methylnapthalene, with the provision that if both are detected the sum of the two must not exceed the standard.

5. Value was derived by taking the average of the pH values 7.71 and 10.8 as permitted by O.Reg. 153/04.

Vanadium exceedances show in bold are considered to be related to the naturally occurring elevated background metal concentrations in the silty clay rather than associated with any of the APECs or any other sources of contamination so are not highlighted as exceedances.

Table 5A
Groundwater Analytical Results for Metals

Sample ID Sample Date (m/d/y)	MDL	MOE Table 3 (µg/L)[1]	17-4 02/02/17	17-5 02/02/17	17-10 02/02/17	17-13 02/02/17	17-14 02/02/17	17-17 02/02/17	17-22 02/02/17	DUP A 02/02/17	17-23 02/02/17	F BLANK 01/30/17
Metals												
Antimony	0.5	20000	<0.50	<0.50	0.76	0.78	0.53	<0.50	0.81	0.78	0.75	<0.50
Arsenic	1	1900	<1.0	<1.0	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	1.5	<1.0
Barium	2	29000	150	51	82	120	220	39	180	160	27	<2.0
Beryllium	0.5	67	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Boron	10	45000	110	82	78	84	97	68	62	55	59	<10
Cadmium	0.1	2.7	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	5	810	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium VI	0.5	140	<0.50	<0.50	<0.50	<0.50	<0.50	3.8	<0.50	<0.50	<0.50	<0.50
Cobalt	0.5	66	3	<0.50	0.51	<0.50	1.1	<0.50	<0.50	<0.50	<0.50	<0.50
Copper	1	87	<1.0	1	1.5	1.1	1.5	1.2	1.5	1.4	1.7	<1.0
Lead	0.5	25	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Mercury	0.1	0.29	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	0.5	9200	25	63	44	42	24	31	50	50	33	<0.50
Nickel	1	490	5.7	1.5	3	2.2	5	1.9	3.6	3.7	2.2	<1.0
Sodium	100	2300000	130000	16000	12000	19000	65000	54000	95000	110000	310000	370
Selenium	2	63	<2.0	<2.0	<2.0	<2.0	<2.0	2.7	<2.0	<2.0	<2.0	<2.0
Silver	0.1	1.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Thallium	0.05	510	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Vanadium	0.5	250	<0.50	0.75	2.7	2.2	0.82	<0.50	0.96	1.4	5.5	<0.50
Zinc	5	1100	<5.0	<5.0	23	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Uranium	0.1	420	11	10	9.5	12	9.1	15	6.9	7.8	25	<0.10

Table 5B
Groundwater Analytical Results for VOCs

Sample ID Sample Date (m/d/y)	MDL	MOE Table 3 (µg/L)[1]	17-4 02/07/17	17-5 02/07/17	17-10 02/06/17	17-13 02/06/17	17-14 02/06/17	17-17 02/02/17	17-20 02/06/17	17-22 02/06/17	DUP A 02/06/17	17-23 02/07/17	EQUIP-BLANK 02/07/17	F BLANK 01/30/17	TRIP BLANK 01/30/17
Volatile Organic Compounds															
Acetone	10	130000	11	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Benzene	0.2	44	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bromodichloromethane	0.5	85000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromoform	1	380	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	0.5	5.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon Tetrachloride	0.2	0.79	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorobenzene	0.2	630	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroform	0.2	2.4	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dibromochloromethane	0.5	82000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichlorobenzene	0.5	4600	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,3-Dichlorobenzene	0.5	9600	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,4-Dichlorobenzene	0.5	8	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethane	0.2	320	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichloroethane	0.5	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethylene	0.2	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Cis-1,2-Dichloroethylene	0.5	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Trans-1,2-Dichloroethylene	0.5	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloropropane	0.2	16	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Cis-1,3-Dichloropropylene	0.3	NV	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Trans-1,3-Dichloropropylene	0.4	NV	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Ethylbenzene	0.2	2300	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Ethylene Dibromide	0.2	0.25	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Methyl Ethyl Ketone	10	470000	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Methylene Chloride	2	610	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Methyl Isobutyl Ketone	5	140000	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl-t-Butyl Ether	0.5	190	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Styrene	0.5	1300	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,1,2-Tetrachloroethane	0.5	3.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethane	0.5	3.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Toluene	0.2	18000	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Tetrachloroethylene	0.2	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	0.2	640	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,2-Trichloroethane	0.5	4.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethylene	0.2	1.6	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl Chloride	0.2	0.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
m-Xylene & p-Xylene	0.2	NV	0.22	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
o-Xylene	0.2	NV	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Total Xylenes	0.2	4200	0.22	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dichlorodifluoromethane	1	4400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Hexane(n)	1	51	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane	0.5	2500	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,3-Dichloropropene (cis + trans)	0.5	5.2	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	-	<0.50	-	<0.50

Table 5C
Groundwater Analytical Results for PHCs, BTEX, PAHs, and PCBs

Sample ID Sample Date (m/d/y)	MDL	MOE Table 3 (µg/L)[1]	17-1 02/06/17	17-4 02/06/17	17-5 02/07/16	17-10 02/06/17	17-13 02/06/17	17-14 02/06/17	17-17 02/02/17	17-18 01/30/17	17-19 02/02/17	17-20 02/06/17	17-21 01/30/17	17-22 02/06/17	DUP A 02/06/17	17-23 01/30/17	F BLANK 01/30/17
PHC and BTEX																	
Benzene	0.2	44	<0.20	-	-	-	-	-	-	<0.20	<0.20	-	<0.20	-	-	-	-
Toluene	0.2	18000	<0.20	-	-	-	-	-	-	<0.20	<0.20	-	<0.20	-	-	-	-
Ethylbenzene	0.2	2300	<0.20	-	-	-	-	-	-	<0.20	<0.20	-	<0.20	-	-	-	-
m/p xylenes	0.4	NV	<0.40	-	-	-	-	-	-	<0.40	<0.40	-	<0.40	-	-	-	-
o xylene	0.2	NV	<0.20	-	-	-	-	-	-	<0.20	<0.20	-	<0.20	-	-	-	-
Total Xylenes	0.4	4200	<0.40	-	-	-	-	-	-	<0.40	<0.40	-	<0.40	-	-	-	-
F1 (C6-C10)	25	750	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
F1 (C6-C10) - BTEX	25	750	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
F2 (C10-C16)	100	150	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
F3 (C16-C34)	200	500	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
F4 (C34-C50)	200	500	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	220	<200
Reached Baseline at C50		-	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
F4 Gravimetric	-	500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																	
Acenaphthene	0.05	600	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-	-	<0.050	<0.050	-	<0.050
Acenaphthylene	0.05	1.8	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-	-	<0.050	<0.050	-	<0.050
Anthracene	0.05	2.4	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-	-	<0.050	<0.050	-	<0.050
Benzo(a)anthracene	0.05	4.7	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-	-	<0.050	<0.050	-	<0.050
Benzo(a)pyrene	0.01	0.81	-	<0.010	<0.010	<0.050	<0.050	<0.010	<0.010	<0.010	0.033	-	-	<0.010	<0.010	-	<0.010
Benzo(b/j)fluoranthene	0.05	0.75	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-	-	<0.050	<0.050	-	<0.050
Benzo(ghi)perylene	0.05	0.2	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-	-	<0.050	<0.050	-	<0.050
Benzo(k)fluoranthene	0.05	0.4	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-	-	<0.050	<0.050	-	<0.050
Chrysene	0.05	1	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-	-	<0.050	<0.050	-	<0.050
Dibenzo(a,h)anthracene	0.05	0.52	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-	-	<0.050	<0.050	-	<0.050
Fluoranthene	0.05	130	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.09	-	-	<0.050	<0.050	-	<0.050
Fluorene	0.05	400	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-	-	<0.050	<0.050	-	<0.050
Indeno(1,2,3-cd)pyrene	0.05	0.2	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-	-	<0.050	<0.050	-	<0.050
1-Methylnaphthalene	0.05	1800	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-	-	<0.050	<0.050	-	<0.050
2-Methylnaphthalene	0.05	1800	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-	-	<0.050	<0.050	-	<0.050
Naphthalene	0.05	1400	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-	-	<0.050	<0.050	-	<0.050
Phenanthrene	0.03	580	-	<0.030	<0.030	<0.050	<0.050	<0.030	<0.030	<0.030	0.082	-	-	<0.030	<0.030	-	<0.030
Pyrene	0.05	68	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.067	-	-	<0.050	<0.050	-	<0.050
Methylnaphthalene, 2-(1-)	0.071	1800	-	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	-	-	<0.071	<0.071	-	<0.071
PCBs																	
Total PCB	0.05	7.8	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	-	-	-	-	<0.05

Groundwater Analytical Results - Notes

Footnotes:

All values in ug/L unless otherwise noted.

Tables should be read in conjunction with the accompanying document.

MDL = Minimum Dection Limit Indicates. Also known as laboratory method detection limit.

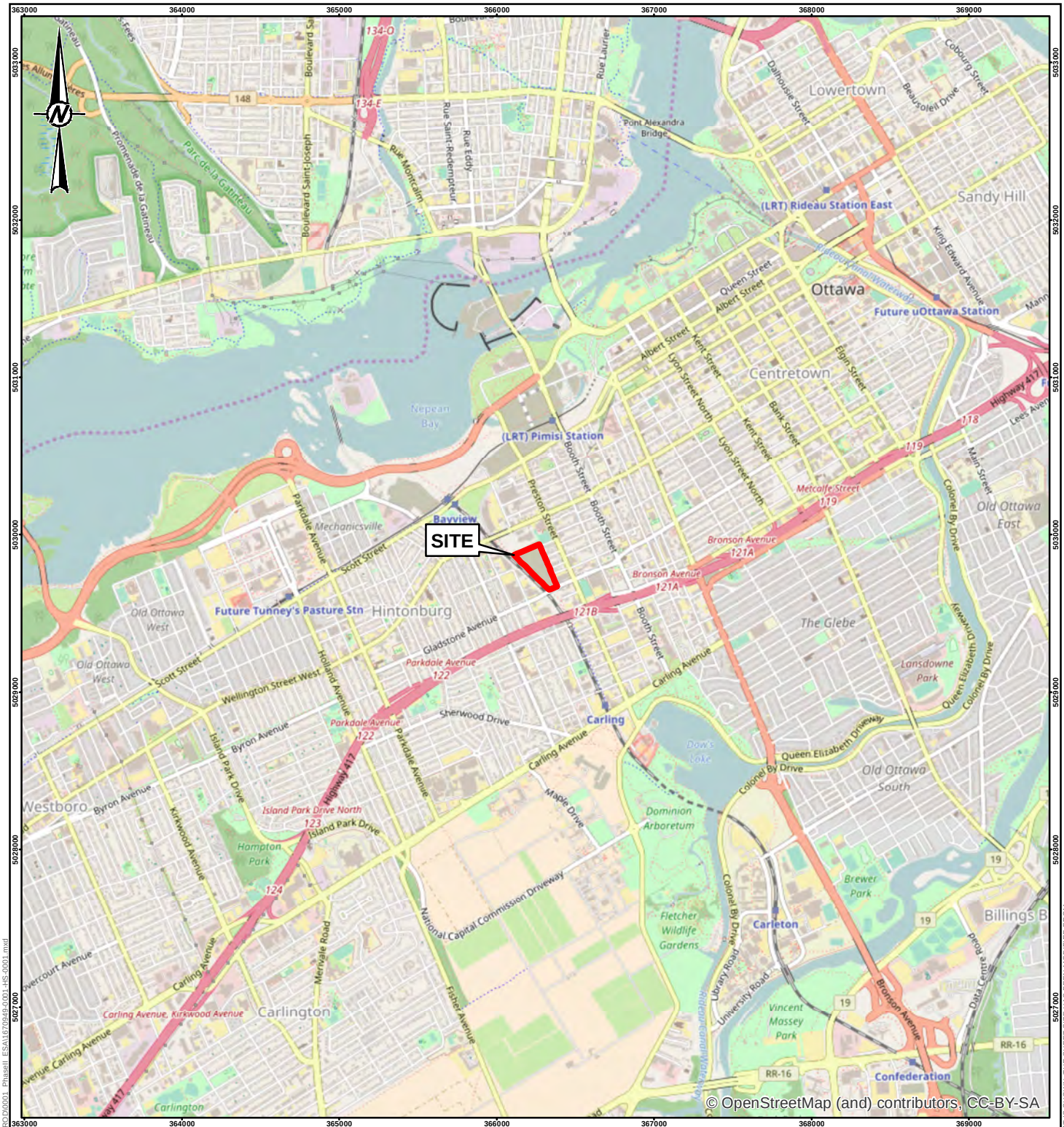
- Chemical not analyzed or criteria not defined.

NOTES:

(1) Soil, Ground Water 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 Ground Water Condition, All Types of Property Use, Coarse grained soil

(2) Bold and underlined font indicates an exceedence of MOE Table 3 Standards

(3) The methyl naphthalene standards are applicable to both 1-methyl naphthalene and 2-methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the standard.



0 350 700 1,400

1:35,000 METRES

NOTE(S)

1. THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1670949.

REFERENCE(S)

1. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83
COORDINATE SYSTEM: MTM ZONE 9 VERTICAL DATUM: CGVD28

CLIENT
CITY OF OTTAWA

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
933 GLADSTONE AVENUE, OTTAWA, ONTARIO

TITLE
KEY PLAN

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-02-14
DESIGNED	----
PREPARED	JEM
REVIEWED	AW
APPROVED	EDW

PROJECT NO.	CONTROL	REV.	FIGURE
1670949	0001	0	1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm 0

Path: N:\Active\Spatial \MO\CH\933 Gladstone Ave\9 PRO\1\1670949 OCH PH\IESA\40 PRO\0001 Phase\I ESA\1670949-0001-HS-0001.mxd

LEGEND

- APPROXIMATE BOREHOLE LOCATION
- APPROXIMATE MONITORING WELL LOCATION
- AREA OF POTENTIAL ENVIRONMENTAL CONCERN (APEC)
- PCA #2 (FORMER RAILWAY)
- ROADWAY
- RAILWAY
- APPROXIMATE SITE BOUNDARY

NOTE(S)

1. THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1670949

REFERENCE(S)

1. LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2014
2. BING IMAGERY SUPPLIED BY ESRI AND MICROSOFT © 2010 MICROSOFT CORPORATION AND ITS DATA SUPPLIERS
3. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83
COORDINATE SYSTEM: MTM ZONE 9 VERTICAL DATUM: CGVD28

0 15 30 60
1:1,500 METRES

CLIENT
OTTAWA COMMUNITY HOUSING CORPORATION

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
933 GLADSTONE AVENUE, OTTAWA, ONTARIO

TITLE
SITE PLAN

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-02-14
DESIGNED	----
PREPARED	BR/JEM
REVIEWED	AW
APPROVED	EDW

PROJECT NO.	CONTROL	REV.	FIGURE
1670949	0001	0	2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 0 25mm

Path: N:\Active\Spatial_IM\OCH\933_Gladstone_Ave\99_PRO\1670949_OCH_PhIIESA\40_PRO\D\0001_Phase II_ESA\1670949-0001-HS-0002.mxd

366100 366200 366300 366400

5029900 5029800 5029700

N

A A'

B B'

17-15 95.71
17-16
17-17 98.96
17-11 95.78
17-12
17-22 97.68
17-13 97.91
17-08 96.00
17-01 97.26
17-14 96.01
17-09
17-10 96.92
17-07
17-23 96.42
17-20 97.61
17-21 97.74
17-19 98.77
17-05 97.38
17-06
17-03
17-18 99.17
17-04 98.44
17-02

96.00 96.50 97.00 97.50 98.00 98.50

FORMER BUILDING (DEMOLISHED 2015)

OAK ST
POPLAR ST
LAUREL ST
PRESTON ST
WILLOW ST
LARCH ST
BALSAM ST
LORETTA AVE N
BREEZEHILL AVE N
GLADSTONE AVE
LOUISA ST

LEGEND

- APPROXIMATE BOREHOLE LOCATION
- APPROXIMATE MONITORING WELL LOCATION
- PCA #2 (FORMER RAILWAY)
- ROADWAY
- RAILWAY
- APPROXIMATE SITE BOUNDARY
- 9999 GROUNDWATER ELEVATION, mASL
- GROUNDWATER ELEVATION CONTOUR, mASL
- INTERPRETED GROUNDWATER FLOW DIRECTION
- A A' CROSS-SECTION LOCATION

NOTE(S)

1. THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1670949

REFERENCE(S)

1. LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2014
2. BING IMAGERY SUPPLIED BY ESRI AND MICROSOFT © 2010 MICROSOFT CORPORATION AND ITS DATA SUPPLIERS
3. PROJECT: TRANSVERSE MERCATOR DATUM: NAD 83
COORDINATE SYSTEM: MTM ZONE 9 VERTICAL DATUM: CGVD28

0 15 30 60
1:1,500 METRES

CLIENT
OTTAWA COMMUNITY HOUSING CORPORATION

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
933 GLADSTONE AVENUE, OTTAWA, ONTARIO

TITLE
GROUNDWATER ELEVATIONS AND INTERPRETED GROUNDWATER FLOW DIRECTION

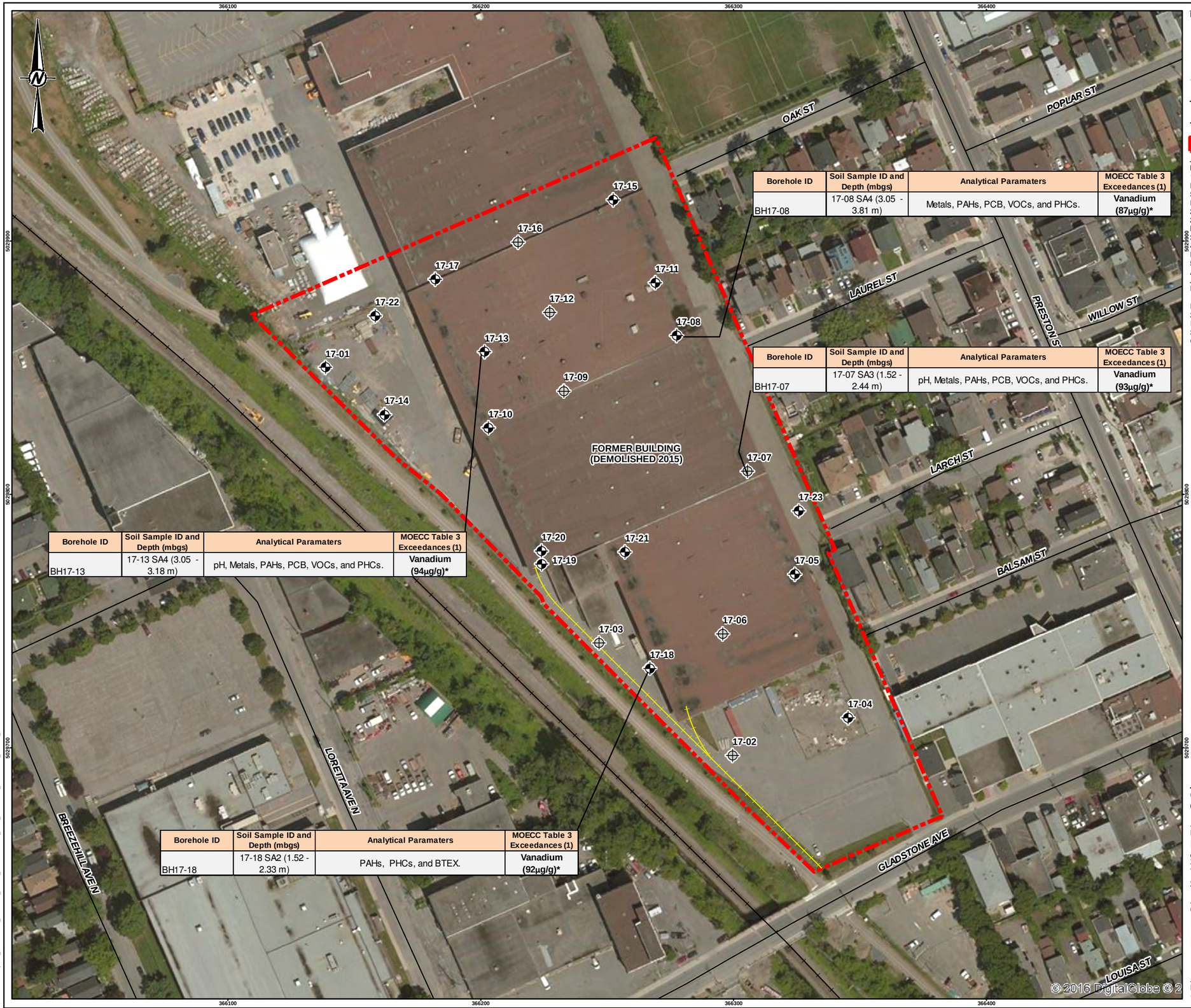
CONSULTANT
Golder Associates

YYYY-MM-DD	2017-02-14
DESIGNED	----
PREPARED	BR/JEM
REVIEWED	AW
APPROVED	EDW

PROJECT NO.	CONTROL	REV.	FIGURE
1670949	0001	0	3

Path: N:\Active\Spatial_IM\OCH\933_Gladstone_Ave\9_PROJ\1670949_OCH_PhIIESA\40_PROD\0001_PhaseII_ESA\1670949-0001-HS-0003.mxd

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm



Borehole ID	Soil Sample ID and Depth (mbgs)	Analytical Paramaters	MOECC Table 3 Exceedances (1)
BH17-08	17-08 SA4 (3.05 - 3.81 m)	Metals, PAHs, PCB, VOCs, and PHCs.	**Vanadium (87µg/g)***

Borehole ID	Soil Sample ID and Depth (mbgs)	Analytical Paramaters	MOECC Table 3 Exceedances (1)
BH17-07	17-07 SA3 (1.52 - 2.44 m)	pH, Metals, PAHs, PCB, VOCs, and PHCs.	**Vanadium (93µg/g)***

Borehole ID	Soil Sample ID and Depth (mbgs)	Analytical Paramaters	MOECC Table 3 Exceedances (1)
BH17-13	17-13 SA4 (3.05 - 3.18 m)	pH, Metals, PAHs, PCB, VOCs, and PHCs.	**Vanadium (94µg/g)***

Borehole ID	Soil Sample ID and Depth (mbgs)	Analytical Paramaters	MOECC Table 3 Exceedances (1)
BH17-18	17-18 SA2 (1.52 - 2.33 m)	PAHs, PHCs, and BTEX.	**Vanadium (92µg/g)***

LEGEND

- APPROXIMATE BOREHOLE LOCATION
- APPROXIMATE MONITORING WELL LOCATION
- PCA #2 (FORMER RAILWAY)
- ROADWAY
- RAILWAY
- APPROXIMATE SITE BOUNDARY

NOTE(S)

1. (1) SOIL, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE ENVIRONMENTAL PROTECTION ACT, TABLE 3 FULL DEPTH GENERIC SITE CONDITION STANDARDS IN A NON-POTABLE GROUND WATER CONDITION, RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE, COARSE-TEXTURED SOIL, APRIL 15, 2011 (MOECC TABLE 3 STANDARDS).
2. NONE = NOT DETECTED ABOVE METHOD DETECTION LIMIT AND/ OR DOES NOT EXCEED MOE TABLE 3 STANDARDS
3. N/A - NOT APPLICABLE
4. * VANADIUM EXCEEDANCES ARE CONSIDERED TO BE RELATED TO NATURALLY OCCURING ELEVATED BACKGROUND CONCENTRATIONS IN THE SOIL
5. THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT NO. 1670949

REFERENCE(S)

1. LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2014
2. BING IMAGERY SUPPLIED BY ESRI AND MICROSOFT © 2010 MICROSOFT CORPORATION AND ITS DATA SUPPLIERS
3. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: MTM ZONE 9 VERTICAL DATUM: CGVD28

0 15 30 60
1:1,500 METRES

CLIENT
OTTAWA COMMUNITY HOUSING CORPORATION

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
933 GLADSTONE AVENUE, OTTAWA, ONTARIO

TITLE
SOIL EXCEEDANCES

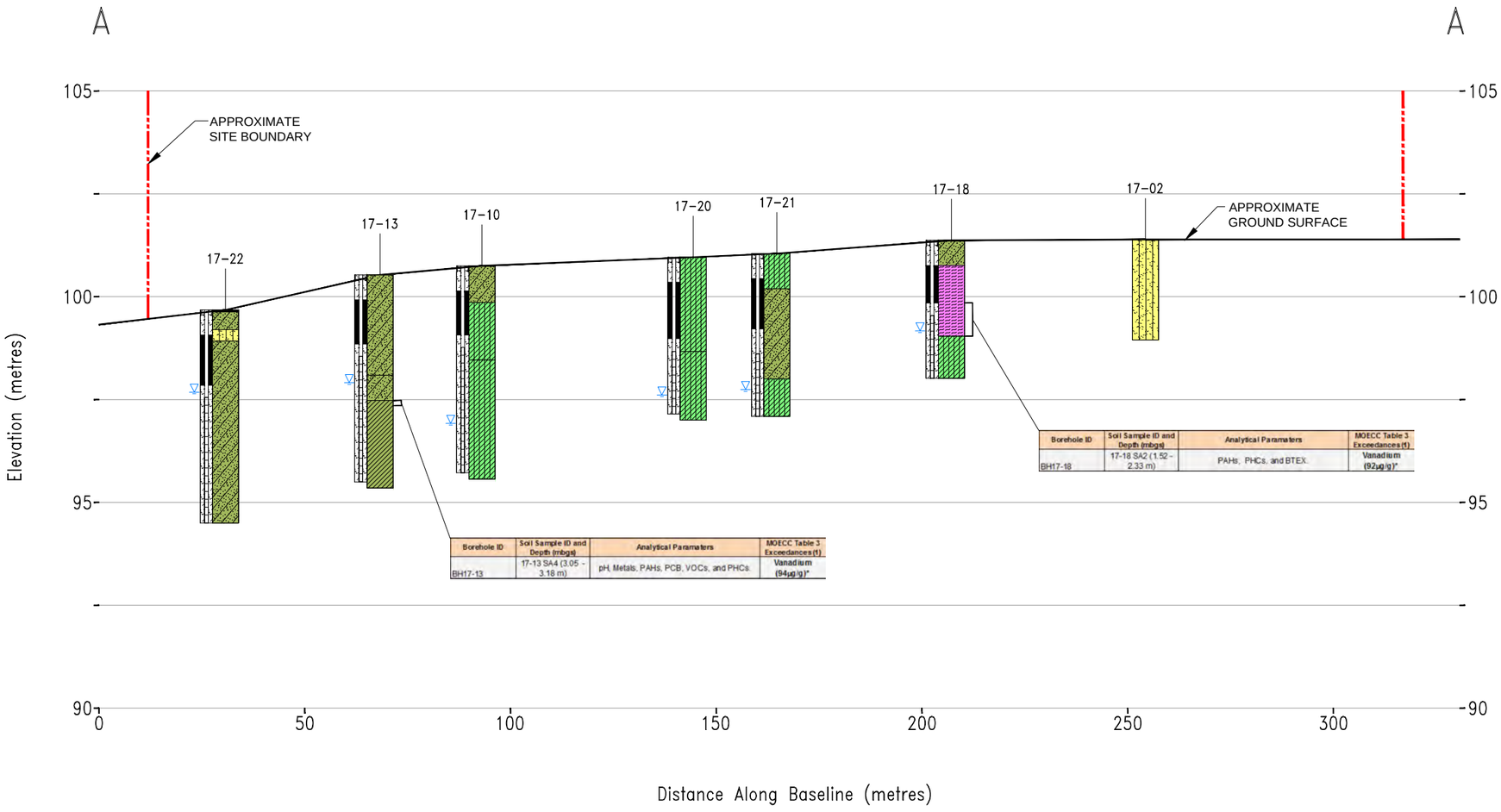
CONSULTANT
Golder Associates

YYYY-MM-DD	2017-02-14
DESIGNED	----
PREPARED	BR/JEM
REVIEWED	AW
APPROVED	EDW

PROJECT NO.	CONTROL	REV.	FIGURE
1670949	0001	0	**4**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

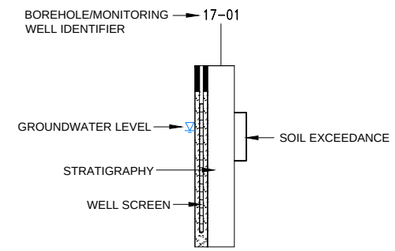
Path: N:\Active\Spatial_IM\OCH\933_Gladstone_Ave\99_PROJ\1670949_OCH_PhIIESA\40_PROD\0001_PhaseII_ESA\1670949-0001-HS-0004.mxd



Borehole ID	Soil Sample ID and Depth (mbgs)	Analytical Parameters	MOECC Table 3 Exceedances (1)
BH17-18	17-18 SA2 (1.52 - 2.33 m)	PAHs, PHCs, and BTEX.	Vanadium (92µg/g)*

Borehole ID	Soil Sample ID and Depth (mbgs)	Analytical Parameters	MOECC Table 3 Exceedances (1)
BH17-13	17-13 SA4 (3.05 - 3.18 m)	pH, Metals, PAHs, PCB, VOCs, and PHCs.	Vanadium (94µg/g)*

LEGEND



STRATIGRAPHY LEGEND

- ASPHALTIC CONCRETE
- CLAYEY SAND/SANDY CLAY (FILL)
- SILTY CLAY (FILL)
- TOPSOIL/ORGANICS (FILL)
- SILTY SAND (FILL)
- CLAY

0 2.5 5
1:125 VERTICAL METRES

0 25 50
1:1,250 HORIZONTAL METRES

NOTE(S)

1. THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT No. 1670949.
2. * VANADIUM EXCEEDANCES ARE CONSIDERED TO BE RELATED TO NATURALLY OCCURING ELEVATED BACKGROUND CONCENTRATIONS IN THE SOIL

CLIENT
OTTAWA COMMUNITY HOUSING CORPORATION

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
933 GLADSTONE AVENUE, OTTAWA, ONTARIO

TITLE
CROSS-SECTION A-A'

CONSULTANT

Golder Associates

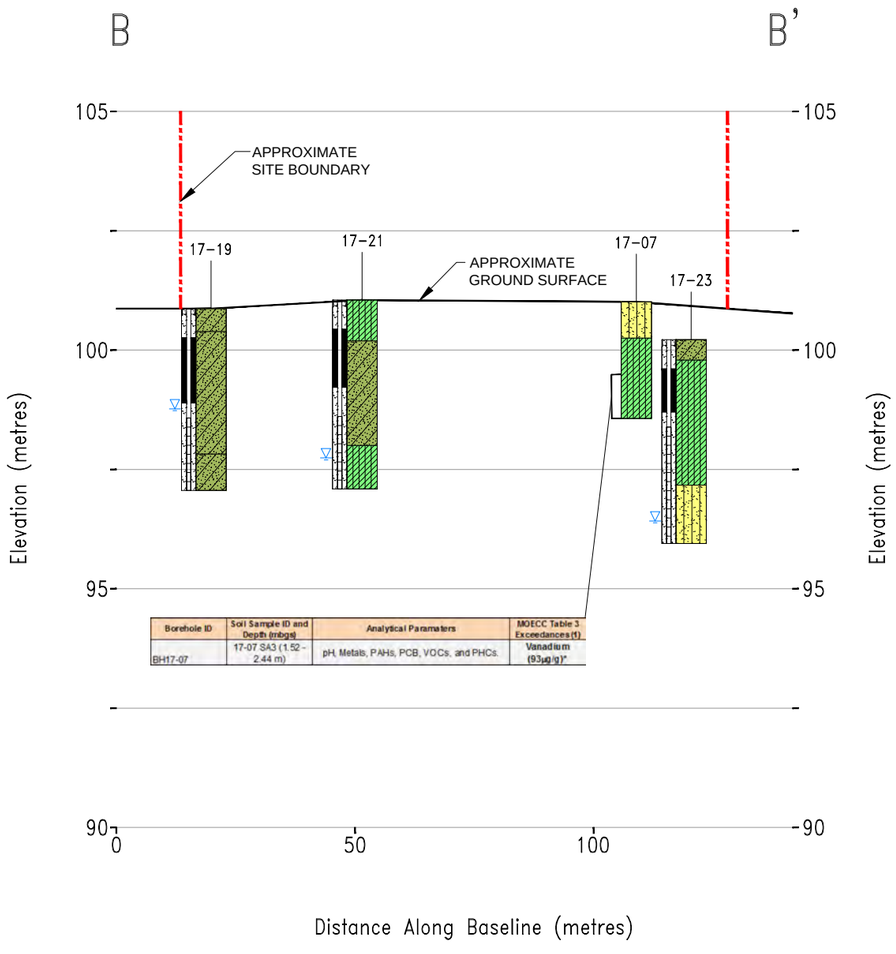
YYYY-MM-DD	2017-02-16
DESIGNED	----
PREPARED	JEM
REVIEWED	AW
APPROVED	EDW

PROJECT NO.	CONTROL	REV.	FIGURE
1670949	0001	0	5

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

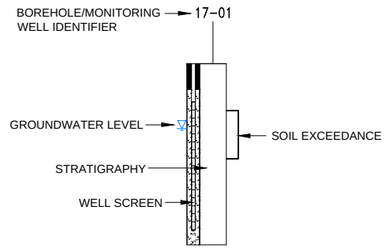
25 mm

0



Borehole ID	Soil Sample ID and Depth (mbgs)	Analytical Parameters	MOECC Table 3 Exceedances (1)
BH17-07	17-07 SA3 (1.52 - 2.44 m)	pH, Metals, PAHs, PCB, VOCs, and PHCs.	Vanadium (93µg/g)*

LEGEND



STRATIGRAPHY LEGEND

- ASPHALTIC CONCRETE
- CLAYEY SAND/SANDY CLAY (FILL)
- SILTY CLAY (FILL)
- TOPSOIL/ORGANICS (FILL)
- SILTY SAND (FILL)
- CLAY

0 2.5 5
1:125 VERTICAL METRES

0 25 50
1:1,250 HORIZONTAL METRES

NOTE(S)

1. THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING GOLDER ASSOCIATES LTD. REPORT No. 1670949.
2. * VANADIUM EXCEEDANCES ARE CONSIDERED TO BE RELATED TO NATURALLY OCCURING ELEVATED BACKGROUND CONCENTRATIONS IN THE SOIL

CLIENT
OTTAWA COMMUNITY HOUSING CORPORATION

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
933 GLADSTONE AVENUE, OTTAWA, ONTARIO

TITLE
CROSS-SECTION B-B'

CONSULTANT

Golder Associates

YYYY-MM-DD	2017-02-16
DESIGNED	----
PREPARED	JEM
REVIEWED	AW
APPROVED	EDW

PROJECT NO.	CONTROL	REV.	FIGURE
1670949	0001	0	6

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25 mm

0

Path: \\golder.gds\gal\ottawa\Active\Spatial_IM\OCH\933_Gladstone_Ave\99_PRO\1670949_OCH_PhIIESA\40_PROD\0001_Phase\I_ESA\ | File Name: 1670949-0001-HS-0005.dwg

APPENDIX A

Plan of Survey

APPENDIX B

Sampling and Analysis Plan

Area of Potential Environmental Concern	Rationale	Location	Borehole Location ID	Well Installed (Y/N)	Depth & Screen Length	Soil Samples[1]	Groundwater Samples[2]
APEC 1 - Current dyed diesel AST	Borehole completed with a monitoring well to assess potential soil and groundwater impacts related to the presence of the on-Site dyed diesel AST.	Northwest corner of the Site within a few meters of the tank.	BH17-01	Y	5.03 m – 3.05 m long screen	One soil sample selected based on field screening measurements and/or estimated depth of contamination. Submitted for: PHC and BTEX.	Groundwater sample will be analyzed for PHC/BTEX.
APEC 2 - Former on-Site and adjacent rail tracks	Borehole completed to assess potential soil impacts related to the presence of former on-Site rail tracks.	Located in the central west portion of the Site on the location of the former on-Site railway, just west of the former boiler room.	BH17-02	N	2.44 m – no well	One soil sample selected based on field screening measurements and/or estimated depth of contamination. Submitted for: pH, Metals, PAHs, and PHCs.	Groundwater sample will be analyzed for PHC/BTEX, metals, VOC, and PAH.
		Located in the southwestern portion of the Site on the former location of the on-Site railway.	BH17-03	N	2.44 m – no well	One soil sample selected based on field screening measurements and/or estimated depth of contamination. Submitted for: Metals, PAHs, and PHCs.	Groundwater sample will be analyzed for PHC/BTEX, metals, VOC, and PAH. One (1) duplicate groundwater sample from one of the wells will be submitted for quality assurance purposes of all parameters and a VOC spike and trip blank will also be analysed.
APEC 3 - Footprint of demolished warehouse built up with unknown fill after demolition. Layers of fill identified across Site prior to demolition as well which contained waste products. APEC 4 - Former lumber yard on-Site APEC 5 - Former paint, oil, munitions, and assorted military bulk storage. APEC 7 - Former on-Site printing operation. APEC 9 - Historical vehicle maintenance. APEC 10 - Transformers on-Site within former warehouse building. APEC 11 - Waste generator codes for petroleum distillates, waste oils and lubricants, light fuels, chemicals, and pharmaceuticals. APEC 13 - Numerous fires in the 1950s bunred portions of warehouse building which may have release contamination.	BH16-04 to BH16-17 (inclusive) are meant to geosptially span and represent the entire Site. The boreholes and monitoring wells are to assess potential soil and groundwater impacts related the APECs whose location is either unknown or non-specific and span the entire Site.	Southeast portion of Site in the gated storage yard.	BH17-04	Y	3.81 m – 1.52 m long screen	One soil sample selected based on field screening measurements and/or estimated depth of contamination. Submitted for: pH, Metals, PAHs, PCB, VOCs, and PHCs.	Groundwater sample will be analyzed for Metals, PAHs, PCB, VOCs, and PHCs.
		Southeast corner of the portion of the demolished warehouse complex footprint which is on the Site.	BH17-05	Y	5.03 m – 3.05 m long screen	One soil sample selected from each borehole based on field screening measurements and/or estimated depth of contamination. Submitted for: Metals, PAHs, PCB, VOCs, and PHCs.	
		South corner of the footprint of the portion of the demolished warehouse complex footprint which is on the Site.	BH17-06	N	2.44 m – no well		N/A
		South of center of the east side of the portion of the demolished warehouse complex footprint which is on the Site.	BH17-07	N	2.44 m – no well	One soil sample selected based on field screening measurements and/or estimated depth of contamination. Submitted for: pH, Metals, PAHs, PCB, VOCs, and PHCs.	N/A
		Center of the east side of the portion of the demolished warehouse complex footprint which is on the Site.	BH17-08	Y	5.03 m – 3.05 m long screen	One soil sample selected from each borehole based on field screening measurements and/or estimated depth of contamination. Submitted for: Metals, PAHs, PCB, VOCs, and PHCs.	Groundwater sample will be analyzed for Metals, PAHs, PCB, VOCs, and PHCs.
		Center of the portion of the demolished warehouse complex footprint which is on the Site.	BH17-09	N	2.44 m – no well		N/A
		Center of the west side of the portion of the demolished warehouse complex footprint which is on the Site.	BH17-10	Y	5.03 m – 3.05 m long screen		Groundwater sample will be analyzed for Metals, PAHs, PCB, VOCs, and PHCs.
		North of center of the east side of the portion of the demolished warehouse complex footprint which is on the Site.	BH17-11	Y	5.03 m – 3.05 m long screen	One soil sample selected based on field screening measurements and/or estimated depth of contamination. Submitted for: pH, Metals, PAHs, PCB, VOCs, and PHCs.	
		North of the Center of the portion of the demolished warehouse complex footprint which is on the Site.	BH17-12	N	2.44 m – no well	One soil sample selected from each borehole based on field screening measurements and/or estimated depth of contamination. Submitted for: Metals, PAHs, PCB, VOCs, and PHCs.	N/A
		North of center of the west side of the portion of the demolished warehouse complex footprint which is on the Site.	BH17-13	Y	5.03 m – 3.05 m long screen	One soil sample selected based on field screening measurements and/or estimated depth of contamination. Submitted for: pH, Metals, PAHs, PCB, VOCs, and PHCs.	Groundwater sample will be analyzed for Metals, PAHs, PCB, VOCs, and PHCs.
		About 45 m southeast of the northwest corner of the Site.	BH17-14	Y	5.03 m – 3.05 m long screen	One soil sample selected from each of the eight boreholes based on field screening measurements and/or estimated depth of contamination. Submitted for: Metals, PAHs, PCB, VOCs, and PHCs.	
		Northeast corner of the Site and the portion of the demolished warehouse complex footprint which is on the Site.	BH17-15	Y	5.03 m – 3.05 m long screen		
		North edge of the Site and center of the north edge of the portion of the demolished warehouse complex footprint which is on the Site.	BH17-16	N	2.44 m – no well		N/A
		Northwest corner of the portion of the demolished warehouse complex footprint which is on the Site.	BH17-17	Y	5.03 m – 3.05 m long screen		Groundwater sample will be analyzed for Metals, PAHs, PCB, VOCs, and PHCs.

Area of Potential Environmental Concern	Rationale	Location	Borehole Location ID	Well Installed (Y/N)	Depth & Screen Length	Soil Samples[1]	Groundwater Samples[2]
APEC 6 - Historical heating oil ASTs	Borehole comepleted with monitoring well to assess potential soil or groundwater impacts related to the presence the former on-Site heating oil ASTs.	Located in the central west portion of the Site just south of the former boiler room.	BH17-18	Y	3.35 m – 1.52 m long screen	One soil sample selected based on field screening measurements and/or estimated depth of contamination. Submitted for: PAHs, PHCs, and BTEX.	Groundwater sample will be analyzed for PAHs, PHCs, and BTEX.
		Located in the central west portion of the Site northwest of the former boiler room.	BH17-19	Y	3.81 m – 1.52 m long screen	One soil sample selected based on field screening measurements and/or estimated depth of contamination. Submitted for: PAHs, PHCs, and BTEX.	Groundwater sample will be analyzed for PAHs, PHCs, and BTEX.
APEC 8 - Former 200 Gal sump under flammables storage room	Borehole comepleted with monitoring well to assess potential soil or groundwater impacts related to the presence of the former chemical sump beneath the historical warehouse flammables storage room.	Located in the central west portion of the Site north of the former boiler room within the footprint of the former warehouse.	BH17-20	Y	3.96 m – 1.52 m long screen	One soil sample selected based on field screening measurements and/or estimated depth of contamination. Submitted for: VOCs, PHCs, and BTEX.	Groundwater sample will be analyzed for VOCs, PHCs, and BTEX.
APEC 12 - 205 L drums of waste oil stored in the boiler room with staining observed.	Borehole comepleted with monitoring well to assess potential soil or groundwater impacts related to the presence of the former on-Site waste oil barrels held within the boiler room.	Located in the central west portion of the Site in the northeast corner of the former warehouse boiler room.	BH17-21	Y	3.96 m – 1.52 m long screen	One soil sample selected based on field screening measurements and/or estimated depth of contamination. Submitted for: pH, PHC and BTEX.	Groundwater sample will be analyzed for PHC/BTEX.
APEC 14 - Bulk liquid totes of unknown origin along with five 25 L hydraulic fluid buckets. Soil piles, asphalt piles, empty drums, and several drums of unknown contents.	Borehole comepleted with monitoring well to assess potential soil or groundwater impacts related to the presence of the miscellaneous potential envonironmentally contaminants being stored in the on-Site yard.	Located in the northwest corner of the Site within the storage yard containing the contaminants of concern.	BH17-22	Y	5.18 m – 3.05 m long screen	One soil sample selected from each of the 13 boreholes based on field screening measurements and/or estimated depth of contamination. Submitted for: Metals, PAHs, VOCs, and PHCs.	Groundwater sample will be analyzed for Metals, PAHs, VOCs, and PHCs.
APEC 15- Venice Iron Works and V Steel Works Limited.	Borehole comepleted with monitoring well to assess potential soil or groundwater impacts related to the presence of the off-Site source.	Located on the central east boundary of the Site closest to the off-Site Venice Iron Works building.	BH17-23	Y	4.27 m – 2.44 m long screen	One soil sample selected from each of the 13 boreholes based on field screening measurements and/or estimated depth of contamination. Submitted for: Metals, VOCs, and PHCs.	Groundwater sample will be analyzed for Metals, VOCs, and PHCs.

1: Three (3)duplicate soil samples from three different boreholes will be submitted for quality assurance purposes of all parameters.
2: One (1) duplicate groundwater sample from one of the wells will be submitted for quality assurance purposes of all parameters.

APPENDIX C

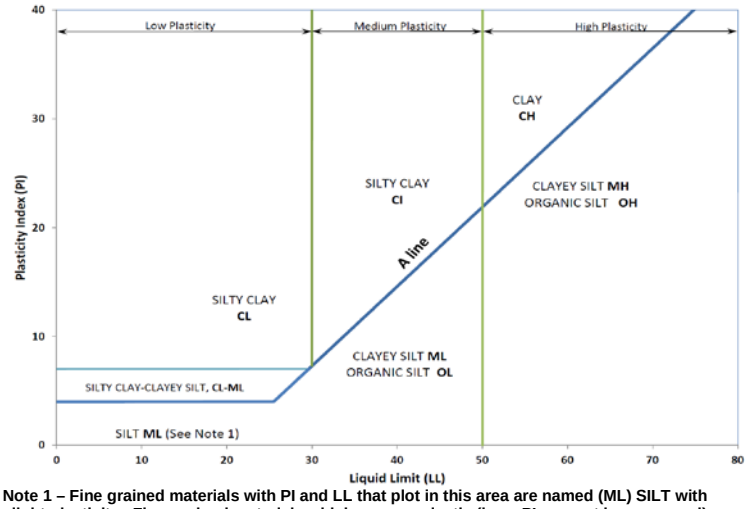
Record of Borehole

METHOD OF SOIL CLASSIFICATION

The Golder Associates Ltd. Soil Classification System is based on the Unified Soil Classification System (USCS)

Organic or Inorganic	Soil Group	Type of Soil		Gradation or Plasticity	$Cu = \frac{D_{60}}{D_{10}}$	$Cc = \frac{(D_{30})^2}{D_{10} x D_{60}}$	Organic Content	USCS Group Symbol	Group Name
INORGANIC (Organic Content ≤30% by mass)	COARSE-GRAINED SOILS (>50% by mass is larger than 0.075 mm)	GRAVELS (>50% by mass of coarse fraction is larger than 4.75 mm)	Gravels with ≤12% fines (by mass)	Poorly Graded	<4	≤1 or ≥3	≤30%	GP	GRAVEL
				Well Graded	≥4	1 to 3		GW	GRAVEL
			Gravels with >12% fines (by mass)	Below A Line	n/a			GM	SILTY GRAVEL
				Above A Line	n/a			GC	CLAYEY GRAVEL
		SANDS (≥50% by mass of coarse fraction is smaller than 4.75 mm)	Sands with ≤12% fines (by mass)	Poorly Graded	<6	≤1 or ≥3		SP	SAND
				Well Graded	≥6	1 to 3		SW	SAND
			Sands with >12% fines (by mass)	Below A Line	n/a			SM	SILTY SAND
				Above A Line	n/a			SC	CLAYEY SAND

Organic or Inorganic	Soil Group	Type of Soil		Laboratory Tests	Field Indicators					Organic Content	USCS Group Symbol	Primary Name
					Dilatancy	Dry Strength	Shine Test	Thread Diameter	Toughness (of 3 mm thread)			
INORGANIC (Organic Content ≤30% by mass)	FINE-GRAINED SOILS (≥50% by mass is smaller than 0.075 mm)	SILTS (Non-Plastic or PI and LL plot below A-Line on Plasticity Chart below)		Liquid Limit <50	Rapid	None	None	>6 mm	N/A (can't roll 3 mm thread)	<5%	ML	SILT
					Slow	None to Low	Dull	3mm to 6 mm	None to low	<5%	ML	CLAYEY SILT
					Slow to very slow	Low to medium	Dull to slight	3mm to 6 mm	Low	5% to 30%	OL	ORGANIC SILT
				Liquid Limit ≥50	Slow to very slow	Low to medium	Slight	3mm to 6 mm	Low to medium	<5%	MH	CLAYEY SILT
					None	Medium to high	Dull to slight	1 mm to 3 mm	Medium to high	5% to 30%	OH	ORGANIC SILT
		CLAYS (PI and LL plot above A-Line on Plasticity Chart below)		Liquid Limit <30	None	Low to medium	Slight to shiny	~ 3 mm	Low to medium	0% to 30% (see Note 2)	CL	SILTY CLAY
				Liquid Limit 30 to 50	None	Medium to high	Slight to shiny	1 mm to 3 mm	Medium		CI	SILTY CLAY
				Liquid Limit ≥50	None	High	Shiny	<1 mm	High		CH	CLAY
HIGHLY ORGANIC SOILS (Organic Content >30% by mass)		Peat and mineral soil mixtures								30% to 75%	PT	SILTY PEAT, SANDY PEAT
		Predominantly peat, may contain some mineral soil, fibrous or amorphous peat								75% to 100%		PEAT



Note 1 – Fine grained materials with PI and LL that plot in this area are named (ML) SILT with slight plasticity. Fine-grained materials which are non-plastic (i.e. a PL cannot be measured) are named SILT.
Note 2 – For soils with <5% organic content, include the descriptor "trace organics" for soils with between 5% and 30% organic content include the prefix "organic" before the Primary name.

Dual Symbol — A dual symbol is two symbols separated by a hyphen, for example, GP-GM, SW-SC and CL-ML.
For non-cohesive soils, the dual symbols must be used when the soil has between 5% and 12% fines (i.e. to identify transitional material between "clean" and "dirty" sand or gravel.
For cohesive soils, the dual symbol must be used when the liquid limit and plasticity index values plot in the CL-ML area of the plasticity chart (see Plasticity Chart at left).

Borderline Symbol — A borderline symbol is two symbols separated by a slash, for example, CL/CI, GM/SM, CL/ML.
A borderline symbol should be used to indicate that the soil has been identified as having properties that are on the transition between similar materials. In addition, a borderline symbol may be used to ~~or~~ indicate~~s~~ a range of similar soil types within a stratum.

ABBREVIATIONS AND TERMS USED ON RECORDS OF BOREHOLES AND TEST PITS

PARTICLE SIZES OF CONSTITUENTS

Soil Constituent	Particle Size Description	Millimetres	Inches (US Std. Sieve Size)
BOULDERS	Not Applicable	>300	>12
COBBLES	Not Applicable	75 to 300	3 to 12
GRAVEL	Coarse Fine	19 to 75 4.75 to 19	0.75 to 3 (4) to 0.75
SAND	Coarse Medium Fine	2.00 to 4.75 0.425 to 2.00 0.075 to 0.425	(10) to (4) (40) to (10) (200) to (40)
SILT/CLAY	Classified by plasticity	<0.075	< (200)

MODIFIERS FOR SECONDARY AND MINOR CONSTITUENTS

Percentage by Mass	Modifier
>35	Use 'and' to combine major constituents (*i.e.,* SAND and GRAVEL, SAND and CLAY)
> 12 to 35	Primary soil name prefixed with "gravelly, sandy, SILTY, CLAYEY" as applicable
> 5 to 12	some
≤ 5	trace

PENETRATION RESISTANCE

Standard Penetration Resistance (SPT), N:

The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in.) required to drive a 50 mm (2 in.) split-spoon sampler for a distance of 300 mm (12 in.).

Cone Penetration Test (CPT)

An electronic cone penetrometer with a 60° conical tip and a project end area of 10 cm^2 pushed through ground at a penetration rate of 2 cm/s. Measurements of tip resistance (q_t), porewater pressure (u) and sleeve frictions are recorded electronically at 25 mm penetration intervals.

Dynamic Cone Penetration Resistance (DCPT); N_d:

The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in.) to drive uncased a 50 mm (2 in.) diameter, 60° cone attached to "A" size drill rods for a distance of 300 mm (12 in.).

PH: Sampler advanced by hydraulic pressure
PM: Sampler advanced by manual pressure
WH: Sampler advanced by static weight of hammer
WR: Sampler advanced by weight of sampler and rod

SAMPLES

AS	Auger sample
BS	Block sample
CS	Chunk sample
DO or DP	Seamless open ended, driven or pushed tube sampler – note size
DS	Denison type sample
FS	Foil sample
RC	Rock core
SC	Soil core
SS	Split spoon sampler – note size
ST	Slotted tube
TO	Thin-walled, open – note size
TP	Thin-walled, piston – note size
WS	Wash sample

SOIL TESTS

w	water content
PL , w_p	plastic limit
LL , w_L	liquid limit
C	consolidation (oedometer) test
CHEM	chemical analysis (refer to text)
CID	consolidated isotropically drained triaxial test[1]
CIU	consolidated isotropically undrained triaxial test with porewater pressure measurement[1]
D_R	relative density (specific gravity, Gs)
DS	direct shear test
GS	specific gravity
M	sieve analysis for particle size
MH	combined sieve and hydrometer (H) analysis
MPC	Modified Proctor compaction test
SPC	Standard Proctor compaction test
OC	organic content test
SO_4	concentration of water-soluble sulphates
UC	unconfined compression test
UU	unconsolidated undrained triaxial test
V (FV)	field vane (LV-laboratory vane test)
γ	unit weight

1. Tests which are anisotropically consolidated prior to shear are shown as CAD, CAU.

NON-COHESIVE (COHESIONLESS) SOILS

Compactness[2]

Term	SPT 'N' (blows/0.3m)[1]
Very Loose	0 - 4
Loose	4 to 10
Compact	10 to 30
Dense	30 to 50
Very Dense	>50

1. SPT 'N' in accordance with ASTM D1586, uncorrected for overburden pressure effects.
2. Definition of compactness descriptions based on SPT 'N' ranges from Terzaghi and Peck (1967) and correspond to typical average N_{60} values.

Field Moisture Condition

Term	Description
Dry	Soil flows freely through fingers.
Moist	Soils are darker than in the dry condition and may feel cool.
Wet	As moist, but with free water forming on hands when handled.

COHESIVE SOILS

Consistency

Term	Undrained Shear Strength (kPa)	SPT 'N'[1] (blows/0.3m)
Very Soft	<12	0 to 2
Soft	12 to 25	2 to 4
Firm	25 to 50	4 to 8
Stiff	50 to 100	8 to 15
Very Stiff	100 to 200	15 to 30
Hard	>200	>30

1. SPT 'N' in accordance with ASTM D1586, uncorrected for overburden pressure effects; approximate only.

Water Content

Term	Description
w < PL	Material is estimated to be drier than the Plastic Limit.
w ~ PL	Material is estimated to be close to the Plastic Limit.
w > PL	Material is estimated to be wetter than the Plastic Limit.

LIST OF SYMBOLS

Unless otherwise stated, the symbols employed in the report are as follows:

I. GENERAL

π	3.1416
ln x	natural logarithm of x
$\log_{10}$	x or log x, logarithm of x to base 10
g	acceleration due to gravity
t	time

II. STRESS AND STRAIN

γ	shear strain
Δ	change in, e.g. in stress: $\Delta\sigma$
ε	linear strain
ε_v	volumetric strain
η	coefficient of viscosity
υ	Poisson's ratio
σ	total stress
σ'	effective stress ($\sigma' = \sigma - u$)
σ'_{vo}	initial effective overburden stress
σ_1, σ_2, σ_3	principal stress (major, intermediate, minor)
σ_{oct}	mean stress or octahedral stress $= (\sigma_1 + \sigma_2 + \sigma_3)/3$
τ	shear stress
u	porewater pressure
E	modulus of deformation
G	shear modulus of deformation
K	bulk modulus of compressibility

III. SOIL PROPERTIES

(a) Index Properties

$\rho(\gamma)$	bulk density (bulk unit weight)*
$\rho_d(\gamma_d)$	dry density (dry unit weight)
$\rho_w(\gamma_w)$	density (unit weight) of water
$\rho_s(\gamma_s)$	density (unit weight) of solid particles
γ'	unit weight of submerged soil ($\gamma' = \gamma - \gamma_w$)
D_R	relative density (specific gravity) of solid particles ($D_R = \rho_s / \rho_w$) (formerly G_s)
e	void ratio
n	porosity
S	degree of saturation

* Density symbol is ρ. Unit weight symbol is γ where $\gamma = \rho g$ (i.e. mass density multiplied by acceleration due to gravity)

(a) Index Properties (continued)

w	water content
w_l or LL	liquid limit
w_p or PL	plastic limit
I_p or PI	plasticity index = $(w_l - w_p)$
w_s	shrinkage limit
I_L	liquidity index = $(w - w_p) / I_p$
I_C	consistency index = $(w_l - w) / I_p$
e_{max}	void ratio in loosest state
e_{min}	void ratio in densest state
I_D	density index = $(e_{max} - e) / (e_{max} - e_{min})$ (formerly relative density)

(b) Hydraulic Properties

h	hydraulic head or potential
q	rate of flow
v	velocity of flow
i	hydraulic gradient
k	hydraulic conductivity (coefficient of permeability)
j	seepage force per unit volume

(c) Consolidation (one-dimensional)

C_c	compression index (normally consolidated range)
C_r	recompression index (over-consolidated range)
C_s	swelling index
C_α	secondary compression index
m_v	coefficient of volume change
c_v	coefficient of consolidation (vertical direction)
c_h	coefficient of consolidation (horizontal direction)
T_v	time factor (vertical direction)
U	degree of consolidation
σ'_p	pre-consolidation stress
OCR	over-consolidation ratio = σ'_p / σ'_{vo}

(d) Shear Strength

τ_p, τ_r	peak and residual shear strength
ϕ'	effective angle of internal friction
δ	angle of interface friction
μ	coefficient of friction = tan δ
c′	effective cohesion
c_u, s_u	undrained shear strength ($\phi = 0$ analysis)
p	mean total stress $(\sigma_1 + \sigma_3)/2$
p′	mean effective stress $(\sigma'_1 + \sigma'_3)/2$
q	$(\sigma_1 - \sigma_3)/2$ or $(\sigma'_1 - \sigma'_3)/2$
q_u	compressive strength $(\sigma_1 - \sigma_3)$
S_t	sensitivity

Notes: 1 $\tau = c' + \sigma' \tan \phi'$

2 shear strength = (compressive strength)/2

PROJECT: 1670949

RECORD OF BOREHOLE: 17-01

SHEET 1 OF 1

LOCATION: N 5028292.0 ;E 443935.0

BORING DATE: January 30, 2017

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ⊕ *ND = Not Detected* (2 4 6 8) / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] □ *ND = Not Detected* (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT Wp — W — Wl (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		100.44						
0		ASPHALTIC CONCRETE		0.05						
		Grey SILTY CLAY			1	DP	-	⊕		Flush Mount Casing; Silica Sand
				99.45						
1		Grey SANDY CLAY		0.99						Bentonite Seal
					2	DP	-	⊕		
2	Geoprobe Direct Push									Silica Sand
					3	DP	-	⊕		
3				97.39						
		Grey CLAY		3.05						
					4	DP	-	⊕		51 mm Diam. PVC #10 Slot Screen
4					5	DP	-	⊕		
					6	DP	-	⊕		
5				95.26						
		End of Borehole		5.18						W.L. in Screen at Elev. 97.26 m on February 6, 2017
6										
7										
8										
9										
10										

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: ALB

CHECKED: EDW

MIS-BHS 001 1670949.GPJ GAL-MIS.GDT 03/21/17 JEM

PROJECT: 1670949

RECORD OF BOREHOLE: 17-02

SHEET 1 OF 1

LOCATION: N 5028136.0 ;E 444093.0

BORING DATE: January 30, 2017

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ⊕ *ND = Not Detected* (2, 4, 6, 8) / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] □ *ND = Not Detected* (20, 40, 60, 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6}, 10^{-5}, 10^{-4}, 10^{-3}) / WATER CONTENT PERCENT Wp — W — Wl (20, 40, 60, 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		101.39							
0	Geoprobe Direct Push	Brown SILTY SAND, with gravel (FILL)		0.00	1	DP	-	⊕			
1											
2					3	DP	-				
				98.95							
		End of Borehole		2.44							
3											
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

LOGGED: ALB

CHECKED: EDW

Golder Associates

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PROJECT: 1670949

RECORD OF BOREHOLE: 17-03

SHEET 1 OF 1

LOCATION: N 5028181.0 ;E 444041.0

BORING DATE: January 27, 2017

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ⊕ *ND = Not Detected* (2, 4, 6, 8) / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] □ *ND = Not Detected* (20, 40, 60, 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6}, 10^{-5}, 10^{-4}, 10^{-3}) / WATER CONTENT PERCENT Wp — W — Wl (20, 40, 60, 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		101.21							
0	Geoprobe Direct Push	Brown SILTY CLAY, trace gravel and brick (FILL)		0.00	1	DP	-	⊕			
1					2	DP	-	⊕			
2				98.77	3	DP	-	⊕			
		End of Borehole		2.44							
3											
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: ALB

CHECKED: EDW

MIS-BHS 001 1670949.GPJ GAL-MIS.GDT 03/21/17 JEM

PROJECT: 1670949

RECORD OF BOREHOLE: 17-04

SHEET 1 OF 1

LOCATION: N 5028150.0 ;E 444139.0

BORING DATE: January 30, 2017

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ⊕ *ND = Not Detected* (2, 4, 6, 8) / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] □ *ND = Not Detected* (20, 40, 60, 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6}, 10^{-5}, 10^{-4}, 10^{-3}) / WATER CONTENT PERCENT Wp — W — Wl (20, 40, 60, 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		101.48						
0	Geoprobe Direct Push	Brown SANDY CLAY (FILL)		0.00	1	DP	-	⊕		Flush Mount Casing; Silica Sand
				101.02						
		Grey SILTY fine SAND		0.46						
1										Bentonite Seal
2					2	DP	-	⊕ ND		Silica Sand
3										51 mm Diam. PVC #10 Slot Screen
					4	DP	-	⊕		
				97.67						
4		End of Borehole Refusal		3.81						W.L. in Screen at Elev. 98.44 m on February 7, 2017
5										
6										
7										
8										
9										
10										

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: ALB

CHECKED: EDW

MIS-BHS 001 1670949.GPJ GAL-MIS.GDT 03/21/17 JEM

PROJECT: 1670949

RECORD OF BOREHOLE: 17-05

SHEET 1 OF 1

LOCATION: N 5028207.0 ;E 444119.0

BORING DATE: January 30, 2017

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (2 4 6 8) / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT Wp W Wl (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		101.28							
0	Geoprobe Direct Push	Brown SILTY CLAY (FILL)		0.00	1	DP	-	⊕			Flush Mount Casing
				100.65							Silica Sand
		Grey SILTY CLAY		0.63							
1											Bentonite Seal
					2	DP	-	⊕			Silica Sand
2											
					3	DP	-	⊕			
3											51 mm Diam. PVC #10 Slot Screen
					4	DP	-	⊕			
		Grey SILTY fine SAND		97.47 3.81							
4					5	DP	-	⊕			
					6	DP	-	⊕			
5				96.25							W.L. in Screen at Elev. 97.38 m on February 7, 2017
		End of Borehole		5.03							
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: ALB

CHECKED: EDW

MIS-BHS 001 1670949.GPJ GAL-MIS.GDT 03/21/17 JEM

PROJECT: 1670949

RECORD OF BOREHOLE: 17-06

SHEET 1 OF 1

LOCATION: N 5028184.0 ;E 444090.0

BORING DATE: January 27, 2017

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ⊕ *ND = Not Detected* (2, 4, 6, 8) / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] □ *ND = Not Detected* (20, 40, 60, 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6}, 10^{-5}, 10^{-4}, 10^{-3}) / WATER CONTENT PERCENT Wp — W — Wl (20, 40, 60, 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		101.40							
0	Geoprobe Direct Push	Brown SANDY CLAY, trace gravel (FILL)		0.00	1	DP	-	⊕			
1				100.33							
		Brown SILTY CLAY		1.07							
2					2	DP	-	⊕			
				98.96							
		End of Borehole		2.44							
3											
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: ALB

CHECKED: EDW

MIS-BHS 001 1670949.GPJ GAL-MIS.GDT 03/21/17 JEM

PROJECT: 1670949

RECORD OF BOREHOLE: 17-07

SHEET 1 OF 1

LOCATION: N 5028248.0 ;E 444101.0

BORING DATE: January 30, 2017

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ⊕ *ND = Not Detected* (2 4 6 8) / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] □ *ND = Not Detected* (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT Wp — W — Wl (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		101.01							
0	Geoprobe Direct Push	Brown SILTY SAND (FILL)		0.00	1	DP	-	⊕			
				100.25							
1		Brown SILTY CLAY		0.76	2	DP	-	⊕			
2					3	DP	-	⊕			
				98.57							
		End of Borehole		2.44							
3											
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: ALB

CHECKED: EDW

MIS-BHS 001 1670949.GPJ GAL-MIS.GDT 03/21/17 JEM

PROJECT: 1670949

RECORD OF BOREHOLE: 17-08

SHEET 1 OF 1

LOCATION: N 5028302.0 ;E 444074.0

BORING DATE: January 27, 2017

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ⊕ *ND = Not Detected* (2, 4, 6, 8) / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] □ *ND = Not Detected* (20, 40, 60, 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6}, 10^{-5}, 10^{-4}, 10^{-3}) / WATER CONTENT PERCENT Wp — W — Wl (20, 40, 60, 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		100.69						
0	Geoprobe Direct Push	Brown SANDY CLAY (FILL)		0.00	1	DP	-	⊕		Flush Mount Casing; Silica Sand
				100.00						
		Brown SILTY CLAY		0.69						
1										Bentonite Seal
					2	DP	-	⊕		Silica Sand
2										
					3	DP	-	⊕		
3				97.64						
		Grey CLAY		3.05						
					4	DP	-	⊕		51 mm Diam. PVC #10 Slot Screen
4										
					5	DP	-	⊕		
					6	DP	-	⊕		
5				95.51						
		End of Borehole		5.18						W.L. in Screen at Elev. 96.00 m on February 6, 2017
6										
7										
8										
9										
10										

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: ALB

CHECKED: EDW

MIS-BHS 001 1670949.GPJ GAL-MIS.GDT 03/21/17 JEM

PROJECT: 1670949

RECORD OF BOREHOLE: 17-09

SHEET 1 OF 1

LOCATION: N 5028281.0 ;E 444029.0

BORING DATE: January 26, 2017

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		100.67							
0	Geoprobe Direct Push	Brown SANDY CLAY (FILL)		0.00	1	DP	-				
1					2	DP	-				
				99.15							
		Brown SILTY fine SAND (FILL)		1.52							
2					3	DP	-				
				98.23							
		End of Borehole		2.44							
3											
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: ALB

CHECKED: EDW

MIS-BHS 001 1670949.GPJ GAL-MIS.GDT 03/21/17 JEM

PROJECT: 1670949

RECORD OF BOREHOLE: 17-10

SHEET 1 OF 1

LOCATION: N 5028267.0 ;E 443999.0

BORING DATE: January 27, 2017

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ⊕ *ND = Not Detected* (2, 4, 6, 8) / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] □ *ND = Not Detected* (20, 40, 60, 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6}, 10^{-5}, 10^{-4}, 10^{-3}) / WATER CONTENT PERCENT Wp — W — Wl (20, 40, 60, 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		100.75						
0	Geoprobe Direct Push	Brown SANDY CLAY (FILL)		0.00	1	DP	- ⊕			Flush Mount Casing; Silica Sand
1				99.86						
		Brown SILTY CLAY		0.89						Bentonite Seal
2					2	DP	- ⊕			Silica Sand
				98.46						
		Grey SILTY CLAY		2.29	3	DP	- ⊕			
3					4	DP	- ⊕			51 mm Diam. PVC #10 Slot Screen
4					5	DP	- ⊕			
					6	DP	- ⊕			
5				95.57						
		End of Borehole		5.18						W.L. in Screen at Elev. 96.92 m on February 6, 2017
6										
7										
8										
9										
10										

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: ALB

CHECKED: EDW

MIS-BHS 001 1670949.GPJ GAL-MIS.GDT 03/21/17 JEM

PROJECT: 1670949

RECORD OF BOREHOLE: 17-11

SHEET 1 OF 1

LOCATION: N 5028323.0 ;E 444066.0

BORING DATE: January 26, 2017

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. +, rem V. ⊕, Q - ●, U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp, W, Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		100.50									
0	Geoprobe Direct Push	Brown SANDY CLAY, trace wood (FILL)		0.00	1	DP	-						Flush Mount Casing; Silica Sand
1													Bentonite Seal
2					2	DP	-						Silica Sand
3					3	DP	-						
					4	DP	-						51 mm Diam. PVC #10 Slot Screen
				96.69									
4		Grey SILTY fine SAND		3.81	5	DP	-						
					6	DP	-						
5				95.32									
		End of Borehole		5.18									W.L. in Screen at Elev. 95.78 m on February 6, 2017
6													
7													
8													
9													
10													

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: ALB

CHECKED: EDW

MIS-BHS 001 1670949.GPJ GAL-MIS.GDT 03/21/17 JEM

PROJECT: 1670949

RECORD OF BOREHOLE: 17-12

SHEET 1 OF 1

LOCATION: N 5028312.0 ;E 444024.0

BORING DATE: January 26, 2017

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. +, rem V. ⊕; Q - ●, U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp, W, Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		100.51									
0	Geoprobe Direct Push	Brown SANDY CLAY (FILL)		0.00 / 100.21	1	DP	-						
		Brown SILTY fine SAND (FILL)		0.30	2	DP	-						
1													
2				98.07	3	DP	-						
		End of Borehole		2.44									
3													
4													
5													
6													
7													
8													
9													
10													

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: ALB

CHECKED: EDW

MIS-BHS 001 1670949.GPJ GAL-MIS.GDT 03/21/17 JEM

PROJECT: 1670949

RECORD OF BOREHOLE: 17-13

SHEET 1 OF 1

LOCATION: N 5028297.0 ;E 443998.0

BORING DATE: January 26, 2017

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp W Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		100.53							
0	Geoprobe Direct Push	Brown SANDY CLAY (FILL)		0.00	1	DP	-				Flush Mount Casing; Silica Sand
1											Bentonite Seal
2					2	DP	-				Silica Sand
				98.09							
		Grey SANDY CLAY		2.44	3	DP	-				
3				97.48							
		Grey CLAY		3.05	4	DP	-				
4					5	DP	-				51 mm Diam. PVC #10 Slot Screen
					6	DP	-				
5				95.35							
		End of Borehole		5.18							W.L. in Screen at Elev. 97.91 m on February 6, 2017
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: ALB

CHECKED: EDW

MIS-BHS 001 1670949.GPJ GAL-MIS.GDT 03/21/17 JEM

PROJECT: 1670949

RECORD OF BOREHOLE: 17-14

SHEET 1 OF 1

LOCATION: N 5028273.0 ;E 443958.0

BORING DATE: January 25, 2017

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (2 4 6 8) ⊕ / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80) □	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT Wp — W — Wl (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		100.20						
0	Geoprobe Direct Push	ASPHALTIC CONCRETE		0.05						Flush Mount Casing
		Brown SILTY SAND (FILL)			1	DP	-	⊕		Silica Sand
				99.44						
1		Grey SANDY CLAY		0.76						Bentonite Seal
					2	DP	-	⊕		Silica Sand
2				97.91						
		Grey CLAY		2.29	3	DP	-	⊕		
3					4	DP	-	⊕		51 mm Diam. PVC #10 Slot Screen
4					5	DP	-	⊕		▽
					6	DP	-	⊕		
5				95.02						
		End of Borehole		5.18						W.L. in Screen at Elev. 96.01 m on February 6, 2017
6										
7										
8										
9										
10										

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: ALB

CHECKED: EDW

MIS-BHS 001 1670949.GPJ GAL-MIS.GDT 03/21/17 JEM

PROJECT: 1670949

RECORD OF BOREHOLE: 17-15

SHEET 1 OF 1

LOCATION: N 5028356.0 ;E 444050.0

BORING DATE: January 26, 2017

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp W Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		100.29							
0	Geoprobe Direct Push	Brown SANDY CLAY (FILL)		0.00	1	DP	-				Flush Mount Casing; Silica Sand
1											Bentonite Seal; Silica Sand
2					2	DP	-				
					3	DP	-				
3					4	DP	-				51 mm Diam. PVC #10 Slot Screen
4					5	DP	-				
		Grey SILTY fine SAND		95.72 4.57	6	DP	-				W.L. in Screen at Elev. 95.71 m on February 6, 2017
5				95.11							
		End of Borehole		5.18							
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

LOGGED: ALB

CHECKED: EDW

Golder Associates

MIS-BHS 001 1670949.GPJ GAL-MIS.GDT 03/21/17 JEM

PROJECT: 1670949

RECORD OF BOREHOLE: 17-16

SHEET 1 OF 1

LOCATION: N 5028340.0 ;E 444012.0

BORING DATE: January 25, 2017

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ⊕ *ND = Not Detected* (2, 4, 6, 8) / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] □ *ND = Not Detected* (20, 40, 60, 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6}, 10^{-5}, 10^{-4}, 10^{-3}) / WATER CONTENT PERCENT Wp — W — Wl (20, 40, 60, 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		100.29							
0	Geoprobe Direct Push	Grey brown SILTY SAND, trace gravel (FILL)		0.00	1	DP	-	⊕			
				99.68							
1		Brown SANDY CLAY (FILL)		0.61	2	DP	-	⊕			
2					3	DP	-	⊕			
				97.85							
		End of Borehole		2.44							
3											
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: ALB

CHECKED: EDW

MIS-BHS 001 1670949.GPJ GAL-MIS.GDT 03/21/17 JEM

PROJECT: 1670949

RECORD OF BOREHOLE: 17-17

SHEET 1 OF 1

LOCATION: N 5028326.0 ;E 443979.0

BORING DATE: January 26, 2017

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		100.32							
0	Geoprobe Direct Push	Brown SILTY fine SAND (FILL)		0.00	1	DP	-				Flush Mount Casing; Silica Sand
				99.56							
1		Brown SANDY CLAY (FILL)		0.76							Bentonite Seal
2				98.03	2	DP	-				Silica Sand
		Grey CLAY		2.29	3	DP	-				
3					4	DP	-				51 mm Diam. PVC #10 Slot Screen
4					5	DP	-				
					6	DP	-				
5				95.14							
		End of Borehole		5.18							W.L. in Screen at Elev. 98.96 m on February 2, 2017
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: ALB

CHECKED: EDW

MIS-BHS 001 1670949.GPJ GAL-MIS.GDT 03/21/17 JEM

PROJECT: 1670949

RECORD OF BOREHOLE: 17-18

SHEET 1 OF 1

LOCATION: N 5028171.0 ;E 444061.0

BORING DATE: January 30, 2017

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected (2 4 6 8) / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		101.37							
0	Geoprobe Direct Push	Brown SANDY CLAY (FILL)		0.00	1	DP	-	⊕			Flush Mount Casing; Silica Sand
				100.76							
1		Dark brown PEAT (FILL)		0.61							Bentonite Seal
2					2	DP	-	⊕			Silica Sand
				99.04							
		Grey SILTY CLAY		2.33							51 mm Diam. PVC #10 Slot Screen
3					4	DP	-				
				98.02							
		End of Borehole Refusal		3.35							W.L. in Screen at Elev. 99.17 m on February 7, 2017
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: ALB

CHECKED: EDW

MIS-BHS 001 1670949.GPJ GAL-MIS.GDT 03/21/17 JEM

PROJECT: 1670949

RECORD OF BOREHOLE: 17-19

SHEET 1 OF 1

LOCATION: N 5028213.0 ;E 444019.0

BORING DATE: January 27, 2017

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ⊕ *ND = Not Detected* (2, 4, 6, 8) / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] □ *ND = Not Detected* (20, 40, 60, 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6}, 10^{-5}, 10^{-4}, 10^{-3}) / WATER CONTENT PERCENT Wp — W — Wl (20, 40, 60, 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		100.87						
0	Geoprobe Direct Push	Brown SANDY CLAY (FILL)		0.00	1	DP	-			Flush Mount Casing
				100.39						Silica Sand
		Grey brown SANDY CLAY, trace brick at 1.52 m depth (FILL)		0.48						
1										Bentonite Seal
					2	DP	-			
2										Silica Sand
3				97.82						51 mm Diam. PVC #10 Slot Screen
		Grey SANDY CLAY		3.05						
					4	DP	-	⊕		
				97.06						
4		End of Borehole		3.81						W.L. in Screen at Elev. 98.77 m on February 2, 2017
5										
6										
7										
8										
9										
10										

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: ALB

CHECKED: EDW

MIS-BHS 001 1670949.GPJ GAL-MIS.GDT 03/21/17 JEM

PROJECT: 1670949

RECORD OF BOREHOLE: 17-20

SHEET 1 OF 1

LOCATION: N 5028218.0 ;E 444019.0

BORING DATE: January 27, 2017

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ⊕ *ND = Not Detected* (2, 4, 6, 8) / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] □ *ND = Not Detected* (20, 40, 60, 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6}, 10^{-5}, 10^{-4}, 10^{-3}) / WATER CONTENT PERCENT Wp — W — Wl (20, 40, 60, 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		100.96						
0	Geoprobe / Direct Push	Brown SILTY CLAY (FILL)		0.00	1	DP	-	ND		Flush Mount Casing; Silica Sand
1										
2					2	DP	-	ND		Bentonite Seal; Silica Sand
				98.67						
		Grey SILTY CLAY		2.29						
3					3	DP	-	ND		51 mm Diam. PVC #10 Slot Screen
					4	DP	-	ND		
				97.00						
4		End of Borehole Refusal		3.96						W.L. in Screen at Elev. 97.61 m on February 6, 2017
5										
6										
7										
8										
9										
10										

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: ALB

CHECKED: EDW

MIS-BHS 001 1670949.GPJ GAL-MIS.GDT 03/21/17 JEM

PROJECT: 1670949

RECORD OF BOREHOLE: 17-21

SHEET 1 OF 1

LOCATION: N 5028217.0 ;E 444052.0

BORING DATE: January 27, 2017

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ⊕ *ND = Not Detected* (2, 4, 6, 8) / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] □ *ND = Not Detected* (20, 40, 60, 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6}, 10^{-5}, 10^{-4}, 10^{-3}) / WATER CONTENT PERCENT Wp — W — Wl (20, 40, 60, 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		101.05						
0	Geoprobe / Direct Push	Brown SILTY CLAY (FILL)		0.00	1	DP	-	⊕		Flush Mount Casing; Silica Sand
				100.19						
1		Brown SANDY CLAY (FILL)		0.86						Bentonite Seal
2					2	DP	-	⊕		Silica Sand
3					3	DP	-	⊕		
				98.00						
		Grey SILTY CLAY		3.05	4	DP	-	⊕		51 mm Diam. PVC #10 Slot Screen
				97.09						
4		End of Borehole		3.96						W.L. in Screen at Elev. 97.74 m on February 7, 2017
5										
6										
7										
8										
9										
10										

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: ALB

CHECKED: EDW

MIS-BHS 001 1670949.GPJ GAL-MIS.GDT 03/21/17 JEM

PROJECT: 1670949

RECORD OF BOREHOLE: 17-22

SHEET 1 OF 1

LOCATION: N 5028312.0 ;E 443955.0

BORING DATE: January 25, 2017

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected ⊕	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected □	HYDRAULIC CONDUCTIVITY, k, cm/s / WATER CONTENT PERCENT	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		99.68								
0	Geoprobe Direct Push	ASPHALTIC CONCRETE		0.05								Flush Mount Casing
		Brown SANDY CLAY (FILL)		99.20	1	DP	-	⊕				Silica Sand
		Brown SILTY SAND (FILL)		0.48 98.92								
1		Grey SANDY CLAY		0.76								Bentonite Seal
					2	DP	-	⊕				Silica Sand
2					3	DP	-		16.5 ⊕			
3					4	DP	-		⊕			
												51 mm Diam. PVC #10 Slot Screen
4												
					5	DP	-	⊕				
5				94.50								
		End of Borehole		5.18								W.L. in Screen at Elev. 97.68 m on February 6, 2017
6												
7												
8												
9												
10												

HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ND = Not Detected: 2, 4, 6, 8

HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] ND = Not Detected: 20, 40, 60, 80

HYDRAULIC CONDUCTIVITY, k, cm/s: 10^{-6}, 10^{-5}, 10^{-4}, 10^{-3}

WATER CONTENT PERCENT: Wp — W — Wl; 20, 40, 60, 80

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: ALB

CHECKED: EDW

MIS-BHS 001 1670949.GPJ GAL-MIS.GDT 03/21/17 JEM

PROJECT: 1670949

RECORD OF BOREHOLE: 17-23

SHEET 1 OF 1

LOCATION: N 5028232.0 ;E 444121.0

BORING DATE: January 30, 2017

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] ⊕ *ND = Not Detected* (2 4 6 8) / HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [%LEL] □ *ND = Not Detected* (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT Wp — W — Wl (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		100.22							
0	Geoprobe Direct Push	Brown SANDY CLAY (FILL)		0.00 / 99.79	1	DP	-				Flush Mount Casing; Silica Sand
1		Brown SILTY CLAY (FILL)		0.43							Bentonite Seal
2					2	DP	-	⊕			Silica Sand
					3	DP	-	⊕			
3				97.17							51 mm Diam. PVC #10 Slot Screen
		Grey SILTY fine SAND		3.05	4	DP	-	⊕			
4					5	DP	-	⊕			
				95.95							
		End of Borehole Refusal		4.27							W.L. in Screen at Elev. 96.42 m on February 7, 2017
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: ALB

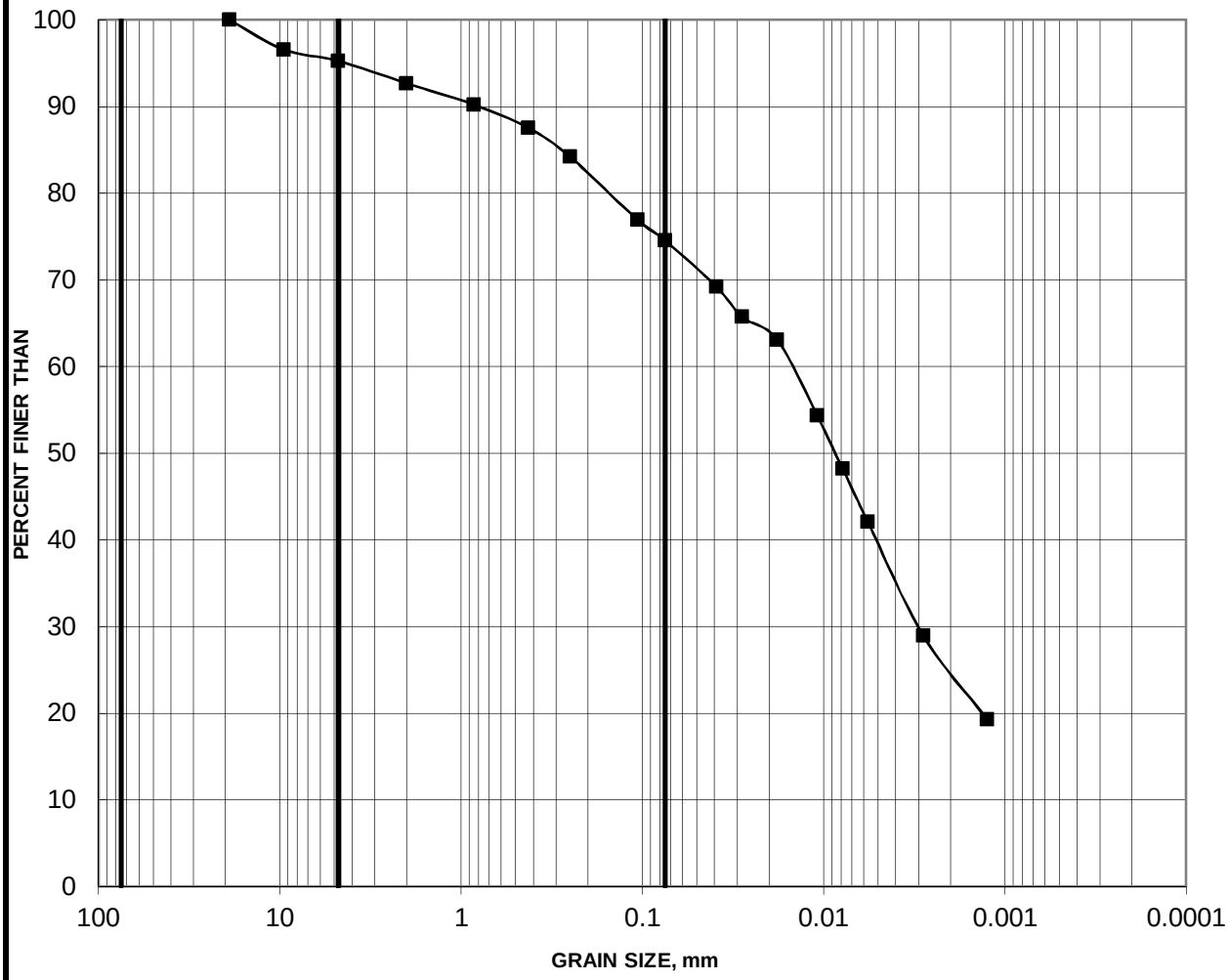
CHECKED: EDW

MIS-BHS 001 1670949.GPJ GAL-MIS.GDT 03/21/17 JEM

APPENDIX D

Certificates of Analysis

GRAIN SIZE DISTRIBUTION



Cobble	coarse	fine	coarse	medium	fine	SILT AND CLAY
Size	GRAVEL SIZE		SAND SIZE			

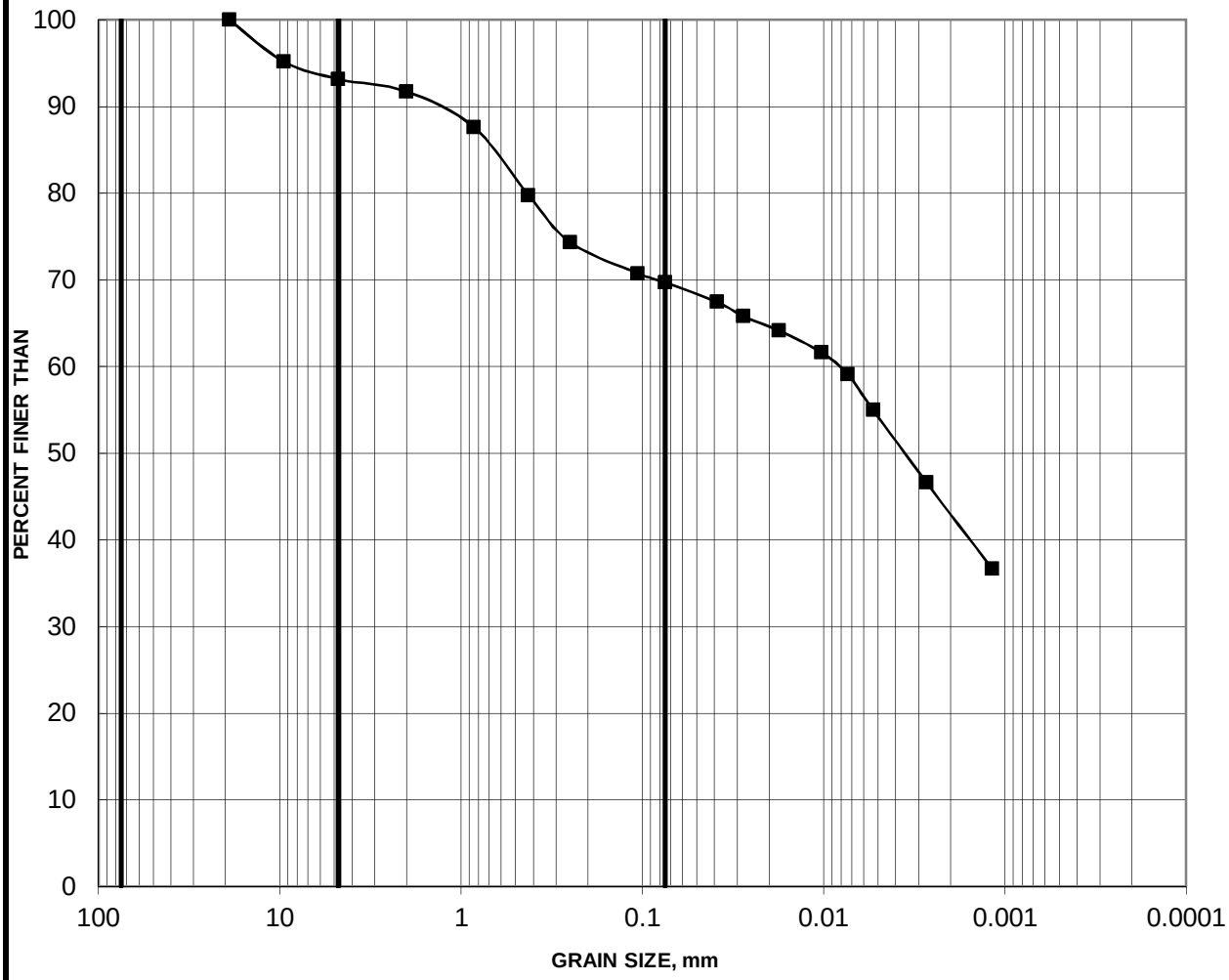
Borehole	Sample	Depth (m)
17-10	6	4.57-5.18

Project: 1670949

Golder Associates

Created by: AC
Checked by: CNM

GRAIN SIZE DISTRIBUTION



Cobble	coarse	fine	coarse	medium	fine	SILT AND CLAY
Size	GRAVEL SIZE		SAND SIZE			

Borehole	Sample	Depth (m)
17-11	1	0.00-0.63

Project: 1670949

Golder Associates

Created by: AC
Checked by: CNM

Your Project #: 1670949
Your C.O.C. #: 595611-01-01

Attention:Joanne Woodhouse

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/02/06
Report #: R4351094
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B718928
Received: 2017/01/27, 14:50

Sample Matrix: Soil
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	9	N/A	2017/02/06	CAM SOP-00301	EPA 8270D m
Hot Water Extractable Boron (1)	9	2017/02/01	2017/02/02	CAM SOP-00408	R153 Ana. Prot. 2011
1,3-Dichloropropene Sum (1)	9	N/A	2017/02/02		EPA 8260C m
Hexavalent Chromium in Soil by IC (1, 2)	9	2017/02/01	2017/02/02	CAM SOP-00436	EPA 3060/7199 m
Petroleum Hydro. CCME F1 & BTEX in Soil (1, 3)	1	N/A	2017/01/31	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (1, 4)	10	2017/02/01	2017/02/01	CAM SOP-00316	CCME CWS m
Strong Acid Leachable Metals by ICPMS (1)	9	2017/02/01	2017/02/01	CAM SOP-00447	EPA 6020B m
Moisture (1)	10	N/A	2017/02/01	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM) (1)	9	2017/02/01	2017/02/03	CAM SOP-00318	EPA 8270D m
Polychlorinated Biphenyl in Soil (1)	1	2017/01/31	2017/01/31	CAM SOP-00309	EPA 8082A m
Polychlorinated Biphenyl in Soil (1)	7	2017/01/31	2017/02/01	CAM SOP-00309	EPA 8082A m
Volatile Organic Compounds and F1 PHCs (1)	9	N/A	2017/02/01	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.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

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

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.

Your Project #: 1670949
Your C.O.C. #: 595611-01-01

Attention:Joanne Woodhouse

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/02/06
Report #: R4351094
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B718928

Received: 2017/01/27, 14:50

(1) This test was performed by Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.
(3) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is the date sampled unless otherwise stated.
(4) 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.
Madison Bingley, Project Manager
Email: MBingley@maxxam.ca
Phone# (613)274-3549

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B718928
Report Date: 2017/02/06

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: JW

O.REG 153 METALS PACKAGE (SOIL)

Maxxam ID		DVD670	DVD671	DVD672	DVD673	DVD673		
Sampling Date		2017/01/26	2017/01/26	2017/01/26	2017/01/26	2017/01/26		
COC Number		595611-01-01	595611-01-01	595611-01-01	595611-01-01	595611-01-01		
	UNITS	17-17 SA3	17-15 SA2	17-11 SA1	17-13 SA4	17-13 SA4 Lab-Dup	RDL	QC Batch
Inorganics								
Moisture	%	34	26	17	34	34	1.0	4847243
Chromium (VI)	ug/g	0.2	0.2	<0.2	0.2		0.2	4846943
Metals								
Hot Water Ext. Boron (B)	ug/g	0.19	0.17	0.25	0.26		0.050	4846958
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	0.32	<0.20		0.20	4846991
Acid Extractable Arsenic (As)	ug/g	<1.0	1.1	2.4	1.1		1.0	4846991
Acid Extractable Barium (Ba)	ug/g	310	300	180	310		0.50	4846991
Acid Extractable Beryllium (Be)	ug/g	0.77	0.72	0.58	0.72		0.20	4846991
Acid Extractable Boron (B)	ug/g	7.4	<5.0	8.9	6.8		5.0	4846991
Acid Extractable Cadmium (Cd)	ug/g	<0.10	<0.10	0.14	<0.10		0.10	4846991
Acid Extractable Chromium (Cr)	ug/g	72	70	51	72		1.0	4846991
Acid Extractable Cobalt (Co)	ug/g	19	18	13	18		0.10	4846991
Acid Extractable Copper (Cu)	ug/g	34	35	35	35		0.50	4846991
Acid Extractable Lead (Pb)	ug/g	6.0	6.6	23	5.7		1.0	4846991
Acid Extractable Molybdenum (Mo)	ug/g	1.2	<0.50	0.65	1.2		0.50	4846991
Acid Extractable Nickel (Ni)	ug/g	43	41	30	40		0.50	4846991
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50		0.50	4846991
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	<0.20		0.20	4846991
Acid Extractable Thallium (Tl)	ug/g	0.40	0.37	0.27	0.41		0.050	4846991
Acid Extractable Uranium (U)	ug/g	1.3	0.60	0.60	1.4		0.050	4846991
Acid Extractable Vanadium (V)	ug/g	92	85	56	94		5.0	4846991
Acid Extractable Zinc (Zn)	ug/g	110	110	79	110		5.0	4846991
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4846991

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B718928
Report Date: 2017/02/06

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: JW

O.REG 153 METALS PACKAGE (SOIL)

Maxxam ID		DVD674		DVD675		DVD676		
Sampling Date		2017/01/26		2017/01/26		2017/01/26		
COC Number		595611-01-01		595611-01-01		595611-01-01		
	UNITS	17-12 SA3	QC Batch	17-9 SA3	QC Batch	17-22 SA3	RDL	QC Batch
Inorganics								
Moisture	%	19	4847243	21	4847243	25	1.0	4847243
Chromium (VI)	ug/g	0.6	4846943	0.3	4846943	<0.2	0.2	4846943
Metals								
Hot Water Ext. Boron (B)	ug/g	0.13	4847143	0.059	4846958	0.24	0.050	4847143
Acid Extractable Antimony (Sb)	ug/g	<0.20	4846991	<0.20	4846991	<0.20	0.20	4846991
Acid Extractable Arsenic (As)	ug/g	1.8	4846991	1.3	4846991	1.9	1.0	4846991
Acid Extractable Barium (Ba)	ug/g	140	4846991	120	4846991	180	0.50	4846991
Acid Extractable Beryllium (Be)	ug/g	0.37	4846991	0.34	4846991	0.55	0.20	4846991
Acid Extractable Boron (B)	ug/g	<5.0	4846991	<5.0	4846991	6.9	5.0	4846991
Acid Extractable Cadmium (Cd)	ug/g	<0.10	4846991	<0.10	4846991	<0.10	0.10	4846991
Acid Extractable Chromium (Cr)	ug/g	26	4846991	24	4846991	37	1.0	4846991
Acid Extractable Cobalt (Co)	ug/g	7.3	4846991	7.1	4846991	12	0.10	4846991
Acid Extractable Copper (Cu)	ug/g	16	4846991	13	4846991	22	0.50	4846991
Acid Extractable Lead (Pb)	ug/g	5.3	4846991	3.4	4846991	5.1	1.0	4846991
Acid Extractable Molybdenum (Mo)	ug/g	1.1	4846991	<0.50	4846991	1.3	0.50	4846991
Acid Extractable Nickel (Ni)	ug/g	14	4846991	13	4846991	23	0.50	4846991
Acid Extractable Selenium (Se)	ug/g	<0.50	4846991	<0.50	4846991	<0.50	0.50	4846991
Acid Extractable Silver (Ag)	ug/g	<0.20	4846991	<0.20	4846991	<0.20	0.20	4846991
Acid Extractable Thallium (Tl)	ug/g	0.16	4846991	0.14	4846991	0.22	0.050	4846991
Acid Extractable Uranium (U)	ug/g	0.60	4846991	0.67	4846991	0.87	0.050	4846991
Acid Extractable Vanadium (V)	ug/g	37	4846991	41	4846991	56	5.0	4846991
Acid Extractable Zinc (Zn)	ug/g	37	4846991	38	4846991	64	5.0	4846991
Acid Extractable Mercury (Hg)	ug/g	<0.050	4846991	<0.050	4846991	<0.050	0.050	4846991

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B718928
Report Date: 2017/02/06

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: JW

O.REG 153 METALS PACKAGE (SOIL)

Maxxam ID		DVD678		DVD679		
Sampling Date		2017/01/26		2017/01/26		
COC Number		595611-01-01		595611-01-01		
	UNITS	17-14 SA1	QC Batch	17-16 SA1	RDL	QC Batch
Inorganics						
Moisture	%	7.8	4847243	14	1.0	4847243
Chromium (VI)	ug/g	<0.2	4846943	<0.2	0.2	4846943
Metals						
Hot Water Ext. Boron (B)	ug/g	<0.050	4846958	0.52	0.050	4847143
Acid Extractable Antimony (Sb)	ug/g	<0.20	4846991	0.69	0.20	4846991
Acid Extractable Arsenic (As)	ug/g	<1.0	4846991	3.1	1.0	4846991
Acid Extractable Barium (Ba)	ug/g	24	4846991	160	0.50	4846991
Acid Extractable Beryllium (Be)	ug/g	<0.20	4846991	0.42	0.20	4846991
Acid Extractable Boron (B)	ug/g	<5.0	4846991	5.9	5.0	4846991
Acid Extractable Cadmium (Cd)	ug/g	<0.10	4846991	0.14	0.10	4846991
Acid Extractable Chromium (Cr)	ug/g	7.3	4846991	32	1.0	4846991
Acid Extractable Cobalt (Co)	ug/g	4.0	4846991	9.8	0.10	4846991
Acid Extractable Copper (Cu)	ug/g	8.5	4846991	27	0.50	4846991
Acid Extractable Lead (Pb)	ug/g	2.6	4846991	33	1.0	4846991
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	4846991	0.99	0.50	4846991
Acid Extractable Nickel (Ni)	ug/g	6.9	4846991	19	0.50	4846991
Acid Extractable Selenium (Se)	ug/g	<0.50	4846991	<0.50	0.50	4846991
Acid Extractable Silver (Ag)	ug/g	<0.20	4846991	<0.20	0.20	4846991
Acid Extractable Thallium (Tl)	ug/g	0.064	4846991	0.21	0.050	4846991
Acid Extractable Uranium (U)	ug/g	0.37	4846991	0.55	0.050	4846991
Acid Extractable Vanadium (V)	ug/g	17	4846991	45	5.0	4846991
Acid Extractable Zinc (Zn)	ug/g	14	4846991	54	5.0	4846991
Acid Extractable Mercury (Hg)	ug/g	<0.050	4846991	<0.050	0.050	4846991

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B718928
Report Date: 2017/02/06

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: JW

O.REG 153 PAHS (SOIL)

Maxxam ID		DVD670		DVD671	DVD672	DVD673	DVD674		
Sampling Date		2017/01/26		2017/01/26	2017/01/26	2017/01/26	2017/01/26		
COC Number		595611-01-01		595611-01-01	595611-01-01	595611-01-01	595611-01-01		
	UNITS	17-17 SA3	RDL	17-15 SA2	17-11 SA1	17-13 SA4	17-12 SA3	RDL	QC Batch
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	<0.014	0.014	<0.0071	0.57	<0.0071	<0.0071	0.0071	4844192
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	<0.010	0.010	<0.0050	0.0093	<0.0050	<0.0050	0.0050	4846846
Acenaphthylene	ug/g	<0.010	0.010	<0.0050	0.012	<0.0050	<0.0050	0.0050	4846846
Anthracene	ug/g	<0.010	0.010	<0.0050	0.019	<0.0050	<0.0050	0.0050	4846846
Benzo(a)anthracene	ug/g	<0.010	0.010	<0.0050	0.069	<0.0050	<0.0050	0.0050	4846846
Benzo(a)pyrene	ug/g	<0.010	0.010	<0.0050	0.062	<0.0050	<0.0050	0.0050	4846846
Benzo(b/j)fluoranthene	ug/g	<0.010	0.010	<0.0050	0.091	<0.0050	<0.0050	0.0050	4846846
Benzo(g,h,i)perylene	ug/g	<0.010	0.010	<0.0050	0.046	<0.0050	<0.0050	0.0050	4846846
Benzo(k)fluoranthene	ug/g	<0.010	0.010	<0.0050	0.034	<0.0050	<0.0050	0.0050	4846846
Chrysene	ug/g	<0.010	0.010	<0.0050	0.061	<0.0050	<0.0050	0.0050	4846846
Dibenz(a,h)anthracene	ug/g	<0.010	0.010	<0.0050	0.010	<0.0050	<0.0050	0.0050	4846846
Fluoranthene	ug/g	<0.010	0.010	<0.0050	0.14	<0.0050	<0.0050	0.0050	4846846
Fluorene	ug/g	<0.010	0.010	<0.0050	0.0078	<0.0050	<0.0050	0.0050	4846846
Indeno(1,2,3-cd)pyrene	ug/g	<0.010	0.010	<0.0050	0.050	<0.0050	<0.0050	0.0050	4846846
1-Methylnaphthalene	ug/g	<0.010	0.010	<0.0050	0.22	<0.0050	<0.0050	0.0050	4846846
2-Methylnaphthalene	ug/g	<0.010	0.010	<0.0050	0.35	<0.0050	<0.0050	0.0050	4846846
Naphthalene	ug/g	<0.010	0.010	<0.0050	0.069	<0.0050	<0.0050	0.0050	4846846
Phenanthrene	ug/g	<0.010	0.010	<0.0050	0.081	<0.0050	<0.0050	0.0050	4846846
Pyrene	ug/g	<0.010	0.010	<0.0050	0.12	<0.0050	<0.0050	0.0050	4846846
Surrogate Recovery (%)									
D10-Anthracene	%	98		87	85	91	91		4846846
D14-Terphenyl (FS)	%	99		79	82	88	97		4846846
D8-Acenaphthylene	%	101		83	86	89	86		4846846

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B718928
Report Date: 2017/02/06

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: JW

O.REG 153 PAHS (SOIL)

Maxxam ID		DVD675	DVD676	DVD678	DVD679		
Sampling Date		2017/01/26	2017/01/26	2017/01/26	2017/01/26		
COC Number		595611-01-01	595611-01-01	595611-01-01	595611-01-01		
	UNITS	17-9 SA3	17-22 SA3	17-14 SA1	17-16 SA1	RDL	QC Batch
Calculated Parameters							
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	<0.0071	<0.0071	0.28	0.0071	4844192
Polyaromatic Hydrocarbons							
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	0.010	0.0050	4846846
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4846846
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	0.026	0.0050	4846846
Benzo(a)anthracene	ug/g	<0.0050	<0.0050	<0.0050	0.077	0.0050	4846846
Benzo(a)pyrene	ug/g	<0.0050	<0.0050	<0.0050	0.070	0.0050	4846846
Benzo(b/j)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	0.092	0.0050	4846846
Benzo(g,h,i)perylene	ug/g	<0.0050	<0.0050	<0.0050	0.049	0.0050	4846846
Benzo(k)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	0.031	0.0050	4846846
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	0.060	0.0050	4846846
Dibenz(a,h)anthracene	ug/g	<0.0050	<0.0050	<0.0050	0.0097	0.0050	4846846
Fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	0.18	0.0050	4846846
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	0.0088	0.0050	4846846
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	<0.0050	<0.0050	0.053	0.0050	4846846
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	0.11	0.0050	4846846
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	0.17	0.0050	4846846
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	0.041	0.0050	4846846
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	0.12	0.0050	4846846
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	0.14	0.0050	4846846
Surrogate Recovery (%)							
D10-Anthracene	%	90	92	93	93		4846846
D14-Terphenyl (FS)	%	94	95	93	92		4846846
D8-Acenaphthylene	%	83	91	95	96		4846846

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Report Date: 2017/02/06

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: JW

O.REG 153 PCBS (SOIL)

Maxxam ID		DVD670		DVD671	DVD672		DVD673		DVD674		
Sampling Date		2017/01/26		2017/01/26	2017/01/26		2017/01/26		2017/01/26		
COC Number		595611-01-01		595611-01-01	595611-01-01		595611-01-01		595611-01-01		
	UNITS	17-17 SA3	RDL	17-15 SA2	17-11 SA1	RDL	17-13 SA4	RDL	17-12 SA3	RDL	QC Batch
PCBs											
Aroclor 1242	ug/g	<0.020	0.020	<0.010	<0.010	0.010	<0.020	0.020	<0.010	0.010	4845828
Aroclor 1248	ug/g	<0.020	0.020	<0.010	<0.010	0.010	<0.020	0.020	<0.010	0.010	4845828
Aroclor 1254	ug/g	<0.020	0.020	<0.010	0.10	0.010	<0.020	0.020	<0.010	0.010	4845828
Aroclor 1260	ug/g	<0.020	0.020	<0.010	<0.010	0.010	<0.020	0.020	<0.010	0.010	4845828
Total PCB	ug/g	<0.020	0.020	<0.010	0.10	0.010	<0.020	0.020	<0.010	0.010	4845828
Surrogate Recovery (%)											
Decachlorobiphenyl	%	80		80	84		92		86		4845828

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		DVD675	DVD678	DVD678	DVD679		
Sampling Date		2017/01/26	2017/01/26	2017/01/26	2017/01/26		
COC Number		595611-01-01	595611-01-01	595611-01-01	595611-01-01		
	UNITS	17-9 SA3	17-14 SA1	17-14 SA1 Lab-Dup	17-16 SA1	RDL	QC Batch
PCBs							
Aroclor 1242	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4845828
Aroclor 1248	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4845828
Aroclor 1254	ug/g	<0.010	<0.010	<0.010	0.11	0.010	4845828
Aroclor 1260	ug/g	<0.010	<0.010	<0.010	<0.010	0.010	4845828
Total PCB	ug/g	<0.010	<0.010	<0.010	0.11	0.010	4845828
Surrogate Recovery (%)							
Decachlorobiphenyl	%	86	95	92	82		4845828

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QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Report Date: 2017/02/06

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: JW

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID		DVD677		
Sampling Date		2017/01/26		
COC Number		595611-01-01		
	UNITS	17-1 SA4	RDL	QC Batch
Inorganics				
Moisture	%	27	1.0	4847752
BTEX & F1 Hydrocarbons				
Benzene	ug/g	<0.020	0.020	4845339
Toluene	ug/g	<0.020	0.020	4845339
Ethylbenzene	ug/g	<0.020	0.020	4845339
o-Xylene	ug/g	<0.020	0.020	4845339
p+m-Xylene	ug/g	<0.040	0.040	4845339
Total Xylenes	ug/g	<0.040	0.040	4845339
F1 (C6-C10)	ug/g	<10	10	4845339
F1 (C6-C10) - BTEX	ug/g	<10	10	4845339
F2-F4 Hydrocarbons				
F2 (C10-C16 Hydrocarbons)	ug/g	<10	10	4846906
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	4846906
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	4846906
Reached Baseline at C50	ug/g	Yes		4846906
Surrogate Recovery (%)				
1,4-Difluorobenzene	%	99		4845339
4-Bromofluorobenzene	%	114		4845339
D10-Ethylbenzene	%	90		4845339
D4-1,2-Dichloroethane	%	78		4845339
o-Terphenyl	%	95		4846906

RDL = Reportable Detection Limit
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O.REG 153 VOCS & F1-F4 (SOIL)

Maxxam ID		DVD670	DVD671	DVD672	DVD673	DVD674		
Sampling Date		2017/01/26	2017/01/26	2017/01/26	2017/01/26	2017/01/26		
COC Number		595611-01-01	595611-01-01	595611-01-01	595611-01-01	595611-01-01		
	UNITS	17-17 SA3	17-15 SA2	17-11 SA1	17-13 SA4	17-12 SA3	RDL	QC Batch
Calculated Parameters								
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4844241
Volatile Organics								
Acetone (2-Propanone)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4845281
Benzene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4845281
Bromodichloromethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
Bromoform	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
Bromomethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
Carbon Tetrachloride	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
Chlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
Chloroform	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
Dibromochloromethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
1,2-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
1,3-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
1,4-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
1,1-Dichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
1,2-Dichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
1,1-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
cis-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
trans-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
1,2-Dichloropropane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
cis-1,3-Dichloropropene	ug/g	<0.030	<0.030	<0.030	<0.030	<0.030	0.030	4845281
trans-1,3-Dichloropropene	ug/g	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	4845281
Ethylbenzene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4845281
Ethylene Dibromide	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
Hexane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
Methylene Chloride(Dichloromethane)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4845281
Methyl Isobutyl Ketone	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4845281
Methyl t-butyl ether (MTBE)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
Styrene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
1,1,1,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
1,1,2,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
Tetrachloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
Toluene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4845281

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: JW

O.REG 153 VOCS & F1-F4 (SOIL)

Maxxam ID		DVD670	DVD671	DVD672	DVD673	DVD674		
Sampling Date		2017/01/26	2017/01/26	2017/01/26	2017/01/26	2017/01/26		
COC Number		595611-01-01	595611-01-01	595611-01-01	595611-01-01	595611-01-01		
	UNITS	17-17 SA3	17-15 SA2	17-11 SA1	17-13 SA4	17-12 SA3	RDL	QC Batch
1,1,1-Trichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
1,1,2-Trichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
Trichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4845281
Vinyl Chloride	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4845281
p+m-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4845281
o-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4845281
Total Xylenes	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4845281
F1 (C6-C10)	ug/g	<10	<10	<10	<10	<10	10	4845281
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	<10	<10	10	4845281
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	<10	<10	<10	10	4846906
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	<50	<50	<50	50	4846906
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	<50	<50	<50	50	4846906
Reached Baseline at C50	ug/g	Yes	Yes	Yes	Yes	Yes		4846906
Surrogate Recovery (%)								
o-Terphenyl	%	91	93	89	90	94		4846906
4-Bromofluorobenzene	%	95	95	95	94	94		4845281
D10-o-Xylene	%	102	96	91	96	96		4845281
D4-1,2-Dichloroethane	%	100	100	101	101	101		4845281
D8-Toluene	%	95	95	96	95	95		4845281

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O.REG 153 VOCS & F1-F4 (SOIL)

Maxxam ID		DVD674	DVD675	DVD676	DVD678	DVD678		
Sampling Date		2017/01/26	2017/01/26	2017/01/26	2017/01/26	2017/01/26		
COC Number		595611-01-01	595611-01-01	595611-01-01	595611-01-01	595611-01-01		
	UNITS	17-12 SA3 Lab-Dup	17-9 SA3	17-22 SA3	17-14 SA1	17-14 SA1 Lab-Dup	RDL	QC Batch
Calculated Parameters								
1,3-Dichloropropene (cis+trans)	ug/g		<0.050	<0.050	<0.050		0.050	4844241
Volatile Organics								
Acetone (2-Propanone)	ug/g	<0.50	<0.50	<0.50	<0.50		0.50	4845281
Benzene	ug/g	<0.020	<0.020	<0.020	<0.020		0.020	4845281
Bromodichloromethane	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
Bromoform	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
Bromomethane	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
Carbon Tetrachloride	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
Chlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
Chloroform	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
Dibromochloromethane	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
1,2-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
1,3-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
1,4-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
1,1-Dichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
1,2-Dichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
1,1-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
cis-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
trans-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
1,2-Dichloropropane	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
cis-1,3-Dichloropropene	ug/g	<0.030	<0.030	<0.030	<0.030		0.030	4845281
trans-1,3-Dichloropropene	ug/g	<0.040	<0.040	<0.040	<0.040		0.040	4845281
Ethylbenzene	ug/g	<0.020	<0.020	<0.020	<0.020		0.020	4845281
Ethylene Dibromide	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
Hexane	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
Methylene Chloride(Dichloromethane)	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	<0.50	<0.50	<0.50		0.50	4845281
Methyl Isobutyl Ketone	ug/g	<0.50	<0.50	<0.50	<0.50		0.50	4845281
Methyl t-butyl ether (MTBE)	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
Styrene	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
1,1,1,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
1,1,2,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
Tetrachloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281

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QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Sampler Initials: JW

O.REG 153 VOCS & F1-F4 (SOIL)

Maxxam ID		DVD674	DVD675	DVD676	DVD678	DVD678		
Sampling Date		2017/01/26	2017/01/26	2017/01/26	2017/01/26	2017/01/26		
COC Number		595611-01-01	595611-01-01	595611-01-01	595611-01-01	595611-01-01		
	UNITS	17-12 SA3 Lab-Dup	17-9 SA3	17-22 SA3	17-14 SA1	17-14 SA1 Lab-Dup	RDL	QC Batch
Toluene	ug/g	<0.020	<0.020	<0.020	<0.020		0.020	4845281
1,1,1-Trichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
1,1,2-Trichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
Trichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	<0.050	<0.050	<0.050		0.050	4845281
Vinyl Chloride	ug/g	<0.020	<0.020	<0.020	<0.020		0.020	4845281
p+m-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020		0.020	4845281
o-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020		0.020	4845281
Total Xylenes	ug/g	<0.020	<0.020	<0.020	<0.020		0.020	4845281
F1 (C6-C10)	ug/g	<10	<10	<10	<10		10	4845281
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	<10		10	4845281
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/g		<10	<10	<10	<10	10	4846906
F3 (C16-C34 Hydrocarbons)	ug/g		<50	<50	<50	<50	50	4846906
F4 (C34-C50 Hydrocarbons)	ug/g		<50	<50	<50	<50	50	4846906
Reached Baseline at C50	ug/g		Yes	Yes	Yes	Yes		4846906
Surrogate Recovery (%)								
o-Terphenyl	%		96	92	94	92		4846906
4-Bromofluorobenzene	%	95	94	94	94			4845281
D10-o-Xylene	%	94	93	92	97			4845281
D4-1,2-Dichloroethane	%	102	101	101	103			4845281
D8-Toluene	%	95	95	94	96			4845281

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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O.REG 153 VOCS & F1-F4 (SOIL)

Maxxam ID		DVD679		
Sampling Date		2017/01/26		
COC Number		595611-01-01		
	UNITS	17-16 SA1	RDL	QC Batch
Calculated Parameters				
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	0.050	4844241
Volatile Organics				
Acetone (2-Propanone)	ug/g	<0.50	0.50	4845281
Benzene	ug/g	<0.020	0.020	4845281
Bromodichloromethane	ug/g	<0.050	0.050	4845281
Bromoform	ug/g	<0.050	0.050	4845281
Bromomethane	ug/g	<0.050	0.050	4845281
Carbon Tetrachloride	ug/g	<0.050	0.050	4845281
Chlorobenzene	ug/g	<0.050	0.050	4845281
Chloroform	ug/g	<0.050	0.050	4845281
Dibromochloromethane	ug/g	<0.050	0.050	4845281
1,2-Dichlorobenzene	ug/g	<0.050	0.050	4845281
1,3-Dichlorobenzene	ug/g	<0.050	0.050	4845281
1,4-Dichlorobenzene	ug/g	<0.050	0.050	4845281
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	0.050	4845281
1,1-Dichloroethane	ug/g	<0.050	0.050	4845281
1,2-Dichloroethane	ug/g	<0.050	0.050	4845281
1,1-Dichloroethylene	ug/g	<0.050	0.050	4845281
cis-1,2-Dichloroethylene	ug/g	<0.050	0.050	4845281
trans-1,2-Dichloroethylene	ug/g	<0.050	0.050	4845281
1,2-Dichloropropane	ug/g	<0.050	0.050	4845281
cis-1,3-Dichloropropene	ug/g	<0.030	0.030	4845281
trans-1,3-Dichloropropene	ug/g	<0.040	0.040	4845281
Ethylbenzene	ug/g	<0.020	0.020	4845281
Ethylene Dibromide	ug/g	<0.050	0.050	4845281
Hexane	ug/g	<0.050	0.050	4845281
Methylene Chloride(Dichloromethane)	ug/g	<0.050	0.050	4845281
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	0.50	4845281
Methyl Isobutyl Ketone	ug/g	<0.50	0.50	4845281
Methyl t-butyl ether (MTBE)	ug/g	<0.050	0.050	4845281
Styrene	ug/g	<0.050	0.050	4845281
1,1,1,2-Tetrachloroethane	ug/g	<0.050	0.050	4845281
1,1,2,2-Tetrachloroethane	ug/g	<0.050	0.050	4845281
Tetrachloroethylene	ug/g	<0.050	0.050	4845281
Toluene	ug/g	<0.020	0.020	4845281

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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O.REG 153 VOCS & F1-F4 (SOIL)

Maxxam ID		DVD679		
Sampling Date		2017/01/26		
COC Number		595611-01-01		
	UNITS	17-16 SA1	RDL	QC Batch
1,1,1-Trichloroethane	ug/g	<0.050	0.050	4845281
1,1,2-Trichloroethane	ug/g	<0.050	0.050	4845281
Trichloroethylene	ug/g	<0.050	0.050	4845281
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	0.050	4845281
Vinyl Chloride	ug/g	<0.020	0.020	4845281
p+m-Xylene	ug/g	<0.020	0.020	4845281
o-Xylene	ug/g	<0.020	0.020	4845281
Total Xylenes	ug/g	<0.020	0.020	4845281
F1 (C6-C10)	ug/g	<10	10	4845281
F1 (C6-C10) - BTEX	ug/g	<10	10	4845281
F2-F4 Hydrocarbons				
F2 (C10-C16 Hydrocarbons)	ug/g	<10	10	4846906
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	4846906
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	4846906
Reached Baseline at C50	ug/g	Yes		4846906
Surrogate Recovery (%)				
o-Terphenyl	%	89		4846906
4-Bromofluorobenzene	%	94		4845281
D10-o-Xylene	%	91		4845281
D4-1,2-Dichloroethane	%	102		4845281
D8-Toluene	%	96		4845281

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B718928
Report Date: 2017/02/06

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: JW

TEST SUMMARY

Maxxam ID: DVD670
Sample ID: 17-17 SA3
Matrix: Soil

Collected: 2017/01/26
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4844192	N/A	2017/02/06	Automated Statchk
Hot Water Extractable Boron	ICP	4846958	2017/02/01	2017/02/02	Suban Kanapathippllai
1,3-Dichloropropene Sum	CALC	4844241	N/A	2017/02/02	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4846943	2017/02/01	2017/02/02	Sally Coughlin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4846906	2017/02/01	2017/02/01	Margaret Kulczyk-Stanko
Strong Acid Leachable Metals by ICPMS	ICP/MS	4846991	2017/02/01	2017/02/01	Daniel Teclu
Moisture	BAL	4847243	N/A	2017/02/01	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4846846	2017/02/01	2017/02/03	Lingyun Feng
Polychlorinated Biphenyl in Soil	GC/ECD	4845828	2017/01/31	2017/02/01	Li Peng
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4845281	N/A	2017/02/01	Yang (Philip) Yu

Maxxam ID: DVD671
Sample ID: 17-15 SA2
Matrix: Soil

Collected: 2017/01/26
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4844192	N/A	2017/02/06	Automated Statchk
Hot Water Extractable Boron	ICP	4846958	2017/02/01	2017/02/02	Suban Kanapathippllai
1,3-Dichloropropene Sum	CALC	4844241	N/A	2017/02/02	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4846943	2017/02/01	2017/02/02	Sally Coughlin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4846906	2017/02/01	2017/02/01	Margaret Kulczyk-Stanko
Strong Acid Leachable Metals by ICPMS	ICP/MS	4846991	2017/02/01	2017/02/01	Daniel Teclu
Moisture	BAL	4847243	N/A	2017/02/01	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4846846	2017/02/01	2017/02/03	Lingyun Feng
Polychlorinated Biphenyl in Soil	GC/ECD	4845828	2017/01/31	2017/02/01	Li Peng
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4845281	N/A	2017/02/01	Yang (Philip) Yu

Maxxam ID: DVD672
Sample ID: 17-11 SA1
Matrix: Soil

Collected: 2017/01/26
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4844192	N/A	2017/02/06	Automated Statchk
Hot Water Extractable Boron	ICP	4846958	2017/02/01	2017/02/02	Suban Kanapathippllai
1,3-Dichloropropene Sum	CALC	4844241	N/A	2017/02/02	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4846943	2017/02/01	2017/02/02	Sally Coughlin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4846906	2017/02/01	2017/02/01	Margaret Kulczyk-Stanko
Strong Acid Leachable Metals by ICPMS	ICP/MS	4846991	2017/02/01	2017/02/01	Daniel Teclu
Moisture	BAL	4847243	N/A	2017/02/01	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4846846	2017/02/01	2017/02/03	Lingyun Feng
Polychlorinated Biphenyl in Soil	GC/ECD	4845828	2017/01/31	2017/02/01	Li Peng
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4845281	N/A	2017/02/01	Yang (Philip) Yu

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Maxxam Job #: B718928
Report Date: 2017/02/06

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: JW

TEST SUMMARY

Maxxam ID: DVD673
Sample ID: 17-13 SA4
Matrix: Soil

Collected: 2017/01/26
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4844192	N/A	2017/02/06	Automated Statchk
Hot Water Extractable Boron	ICP	4846958	2017/02/01	2017/02/02	Suban Kanapathippllai
1,3-Dichloropropene Sum	CALC	4844241	N/A	2017/02/02	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4846943	2017/02/01	2017/02/02	Sally Coughlin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4846906	2017/02/01	2017/02/01	Margaret Kulczyk-Stanko
Strong Acid Leachable Metals by ICPMS	ICP/MS	4846991	2017/02/01	2017/02/01	Daniel Teclu
Moisture	BAL	4847243	N/A	2017/02/01	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4846846	2017/02/01	2017/02/03	Lingyun Feng
Polychlorinated Biphenyl in Soil	GC/ECD	4845828	2017/01/31	2017/02/01	Li Peng
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4845281	N/A	2017/02/01	Yang (Philip) Yu

Maxxam ID: DVD673 Dup
Sample ID: 17-13 SA4
Matrix: Soil

Collected: 2017/01/26
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4847243	N/A	2017/02/01	Valentina Kaftani

Maxxam ID: DVD674
Sample ID: 17-12 SA3
Matrix: Soil

Collected: 2017/01/26
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4844192	N/A	2017/02/06	Automated Statchk
Hot Water Extractable Boron	ICP	4847143	2017/02/01	2017/02/02	Suban Kanapathippllai
1,3-Dichloropropene Sum	CALC	4844241	N/A	2017/02/02	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4846943	2017/02/01	2017/02/02	Sally Coughlin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4846906	2017/02/01	2017/02/01	Margaret Kulczyk-Stanko
Strong Acid Leachable Metals by ICPMS	ICP/MS	4846991	2017/02/01	2017/02/01	Daniel Teclu
Moisture	BAL	4847243	N/A	2017/02/01	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4846846	2017/02/01	2017/02/03	Lingyun Feng
Polychlorinated Biphenyl in Soil	GC/ECD	4845828	2017/01/31	2017/02/01	Li Peng
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4845281	N/A	2017/02/01	Yang (Philip) Yu

Maxxam ID: DVD674 Dup
Sample ID: 17-12 SA3
Matrix: Soil

Collected: 2017/01/26
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4845281	N/A	2017/02/01	Yang (Philip) Yu

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Maxxam Job #: B718928
Report Date: 2017/02/06

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: JW

TEST SUMMARY

Maxxam ID: DVD675
Sample ID: 17-9 SA3
Matrix: Soil

Collected: 2017/01/26
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4844192	N/A	2017/02/06	Automated Statchk
Hot Water Extractable Boron	ICP	4846958	2017/02/01	2017/02/02	Suban Kanapathippllai
1,3-Dichloropropene Sum	CALC	4844241	N/A	2017/02/02	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4846943	2017/02/01	2017/02/02	Sally Coughlin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4846906	2017/02/01	2017/02/01	Margaret Kulczyk-Stanko
Strong Acid Leachable Metals by ICPMS	ICP/MS	4846991	2017/02/01	2017/02/01	Daniel Teclu
Moisture	BAL	4847243	N/A	2017/02/01	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4846846	2017/02/01	2017/02/03	Lingyun Feng
Polychlorinated Biphenyl in Soil	GC/ECD	4845828	2017/01/31	2017/02/01	Li Peng
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4845281	N/A	2017/02/01	Yang (Philip) Yu

Maxxam ID: DVD676
Sample ID: 17-22 SA3
Matrix: Soil

Collected: 2017/01/26
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4844192	N/A	2017/02/06	Automated Statchk
Hot Water Extractable Boron	ICP	4847143	2017/02/01	2017/02/02	Suban Kanapathippllai
1,3-Dichloropropene Sum	CALC	4844241	N/A	2017/02/02	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4846943	2017/02/01	2017/02/02	Sally Coughlin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4846906	2017/02/01	2017/02/01	Margaret Kulczyk-Stanko
Strong Acid Leachable Metals by ICPMS	ICP/MS	4846991	2017/02/01	2017/02/01	Daniel Teclu
Moisture	BAL	4847243	N/A	2017/02/01	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4846846	2017/02/01	2017/02/03	Lingyun Feng
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4845281	N/A	2017/02/01	Yang (Philip) Yu

Maxxam ID: DVD677
Sample ID: 17-1 SA4
Matrix: Soil

Collected: 2017/01/26
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4845339	N/A	2017/01/31	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4846906	2017/02/01	2017/02/01	Margaret Kulczyk-Stanko
Moisture	BAL	4847752	N/A	2017/02/01	Valentina Kaftani

Maxxam ID: DVD678
Sample ID: 17-14 SA1
Matrix: Soil

Collected: 2017/01/26
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4844192	N/A	2017/02/06	Automated Statchk
Hot Water Extractable Boron	ICP	4846958	2017/02/01	2017/02/02	Suban Kanapathippllai
1,3-Dichloropropene Sum	CALC	4844241	N/A	2017/02/02	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4846943	2017/02/01	2017/02/02	Sally Coughlin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4846906	2017/02/01	2017/02/01	Margaret Kulczyk-Stanko
Strong Acid Leachable Metals by ICPMS	ICP/MS	4846991	2017/02/01	2017/02/01	Daniel Teclu

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Maxxam Job #: B718928
Report Date: 2017/02/06

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: JW

TEST SUMMARY

Maxxam ID: DVD678
Sample ID: 17-14 SA1
Matrix: Soil

Collected: 2017/01/26
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4847243	N/A	2017/02/01	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4846846	2017/02/01	2017/02/03	Lingyun Feng
Polychlorinated Biphenyl in Soil	GC/ECD	4845828	2017/01/31	2017/01/31	Li Peng
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4845281	N/A	2017/02/01	Yang (Philip) Yu

Maxxam ID: DVD678 Dup
Sample ID: 17-14 SA1
Matrix: Soil

Collected: 2017/01/26
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4846906	2017/02/01	2017/02/01	Margaret Kulczyk-Stanko
Polychlorinated Biphenyl in Soil	GC/ECD	4845828	2017/01/31	2017/01/31	Li Peng

Maxxam ID: DVD679
Sample ID: 17-16 SA1
Matrix: Soil

Collected: 2017/01/26
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4844192	N/A	2017/02/06	Automated Statchk
Hot Water Extractable Boron	ICP	4847143	2017/02/01	2017/02/02	Suban Kanapathippllai
1,3-Dichloropropene Sum	CALC	4844241	N/A	2017/02/02	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4846943	2017/02/01	2017/02/02	Sally Coughlin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4846906	2017/02/01	2017/02/01	Margaret Kulczyk-Stanko
Strong Acid Leachable Metals by ICPMS	ICP/MS	4846991	2017/02/01	2017/02/01	Daniel Teclu
Moisture	BAL	4847243	N/A	2017/02/01	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4846846	2017/02/01	2017/02/03	Lingyun Feng
Polychlorinated Biphenyl in Soil	GC/ECD	4845828	2017/01/31	2017/02/01	Li Peng
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4845281	N/A	2017/02/01	Yang (Philip) Yu

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Maxxam Job #: B718928
Report Date: 2017/02/06

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: JW

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	12.0°C

Cooler custody seal was present and intact.
The samples were received at the laboratory a day after sampling date without ice with average temperature of 12 degrees C.

Sample DVD670 [17-17 SA3] : PCB Analysis: Detection limits were adjusted for high moisture content

PAH analysis: Detection limits were adjusted for high moisture content.

Sample DVD673 [17-13 SA4] : PCB Analysis: Detection limits were adjusted for high moisture content

Results relate only to the items tested.

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Maxxam Job #: B718928
Report Date: 2017/02/06

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: JW

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4845281	4-Bromofluorobenzene	2017/02/01	102	60 - 140	102	60 - 140	97	%		
4845281	D10-o-Xylene	2017/02/01	104	60 - 130	121	60 - 130	104	%		
4845281	D4-1,2-Dichloroethane	2017/02/01	95	60 - 140	96	60 - 140	98	%		
4845281	D8-Toluene	2017/02/01	104	60 - 140	104	60 - 140	97	%		
4845339	1,4-Difluorobenzene	2017/01/31	95	60 - 140	97	60 - 140	98	%		
4845339	4-Bromofluorobenzene	2017/01/31	114	60 - 140	115	60 - 140	113	%		
4845339	D10-Ethylbenzene	2017/01/31	78	60 - 140	94	60 - 140	88	%		
4845339	D4-1,2-Dichloroethane	2017/01/31	75	60 - 140	78	60 - 140	76	%		
4845828	Decachlorobiphenyl	2017/01/31	97	60 - 130	94	60 - 130	96	%		
4846846	D10-Anthracene	2017/02/03	91	50 - 130	84	50 - 130	83	%		
4846846	D14-Terphenyl (FS)	2017/02/03	101	50 - 130	105	50 - 130	92	%		
4846846	D8-Acenaphthylene	2017/02/03	91	50 - 130	80	50 - 130	81	%		
4846906	o-Terphenyl	2017/02/01	95	60 - 130	96	60 - 130	93	%		
4845281	1,1,1,2-Tetrachloroethane	2017/02/01	101	60 - 140	98	60 - 130	<0.050	ug/g	NC	50
4845281	1,1,1-Trichloroethane	2017/02/01	100	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
4845281	1,1,2,2-Tetrachloroethane	2017/02/01	96	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
4845281	1,1,2-Trichloroethane	2017/02/01	98	60 - 140	97	60 - 130	<0.050	ug/g	NC	50
4845281	1,1-Dichloroethane	2017/02/01	101	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
4845281	1,1-Dichloroethylene	2017/02/01	108	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
4845281	1,2-Dichlorobenzene	2017/02/01	100	60 - 140	98	60 - 130	<0.050	ug/g	NC	50
4845281	1,2-Dichloroethane	2017/02/01	93	60 - 140	90	60 - 130	<0.050	ug/g	NC	50
4845281	1,2-Dichloropropane	2017/02/01	99	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
4845281	1,3-Dichlorobenzene	2017/02/01	102	60 - 140	99	60 - 130	<0.050	ug/g	NC	50
4845281	1,4-Dichlorobenzene	2017/02/01	103	60 - 140	100	60 - 130	<0.050	ug/g	NC	50
4845281	Acetone (2-Propanone)	2017/02/01	95	60 - 140	99	60 - 140	<0.50	ug/g	NC	50
4845281	Benzene	2017/02/01	101	60 - 140	96	60 - 130	<0.020	ug/g	NC	50
4845281	Bromodichloromethane	2017/02/01	99	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
4845281	Bromoform	2017/02/01	94	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
4845281	Bromomethane	2017/02/01	105	60 - 140	96	60 - 140	<0.050	ug/g	NC	50
4845281	Carbon Tetrachloride	2017/02/01	103	60 - 140	97	60 - 130	<0.050	ug/g	NC	50
4845281	Chlorobenzene	2017/02/01	104	60 - 140	100	60 - 130	<0.050	ug/g	NC	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
4845281	Chloroform	2017/02/01	98	60 - 140	94	60 - 130	<0.050	ug/g	NC	50
4845281	cis-1,2-Dichloroethylene	2017/02/01	104	60 - 140	98	60 - 130	<0.050	ug/g	NC	50
4845281	cis-1,3-Dichloropropene	2017/02/01	99	60 - 140	94	60 - 130	<0.030	ug/g	NC	50
4845281	Dibromochloromethane	2017/02/01	102	60 - 140	100	60 - 130	<0.050	ug/g	NC	50
4845281	Dichlorodifluoromethane (FREON 12)	2017/02/01	96	60 - 140	85	60 - 140	<0.050	ug/g	NC	50
4845281	Ethylbenzene	2017/02/01	107	60 - 140	102	60 - 130	<0.020	ug/g	NC	50
4845281	Ethylene Dibromide	2017/02/01	97	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
4845281	F1 (C6-C10) - BTEX	2017/02/01					<10	ug/g	NC	30
4845281	F1 (C6-C10)	2017/02/01	82	60 - 140	85	80 - 120	<10	ug/g	NC	30
4845281	Hexane	2017/02/01	115	60 - 140	108	60 - 130	<0.050	ug/g	NC	50
4845281	Methyl Ethyl Ketone (2-Butanone)	2017/02/01	100	60 - 140	102	60 - 140	<0.50	ug/g	NC	50
4845281	Methyl Isobutyl Ketone	2017/02/01	101	60 - 140	101	60 - 130	<0.50	ug/g	NC	50
4845281	Methyl t-butyl ether (MTBE)	2017/02/01	102	60 - 140	99	60 - 130	<0.050	ug/g	NC	50
4845281	Methylene Chloride(Dichloromethane)	2017/02/01	105	60 - 140	99	60 - 130	<0.050	ug/g	NC	50
4845281	o-Xylene	2017/02/01	104	60 - 140	100	60 - 130	<0.020	ug/g	NC	50
4845281	p+m-Xylene	2017/02/01	105	60 - 140	99	60 - 130	<0.020	ug/g	NC	50
4845281	Styrene	2017/02/01	106	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
4845281	Tetrachloroethylene	2017/02/01	103	60 - 140	98	60 - 130	<0.050	ug/g	NC	50
4845281	Toluene	2017/02/01	103	60 - 140	97	60 - 130	<0.020	ug/g	NC	50
4845281	Total Xylenes	2017/02/01					<0.020	ug/g	NC	50
4845281	trans-1,2-Dichloroethylene	2017/02/01	101	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
4845281	trans-1,3-Dichloropropene	2017/02/01	100	60 - 140	96	60 - 130	<0.040	ug/g	NC	50
4845281	Trichloroethylene	2017/02/01	102	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
4845281	Trichlorofluoromethane (FREON 11)	2017/02/01	109	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
4845281	Vinyl Chloride	2017/02/01	116	60 - 140	104	60 - 130	<0.020	ug/g	NC	50
4845339	Benzene	2017/01/31	68	60 - 140	92	60 - 140	<0.020	ug/g	NC	50
4845339	Ethylbenzene	2017/01/31	86	60 - 140	109	60 - 140	<0.020	ug/g	NC	50
4845339	F1 (C6-C10) - BTEX	2017/01/31					<10	ug/g	NC	30
4845339	F1 (C6-C10)	2017/01/31	90	60 - 140	104	80 - 120	<10	ug/g	NC	30
4845339	o-Xylene	2017/01/31	89	60 - 140	113	60 - 140	<0.020	ug/g	NC	50
4845339	p+m-Xylene	2017/01/31	81	60 - 140	101	60 - 140	<0.040	ug/g	NC	50

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
4845339	Toluene	2017/01/31	78	60 - 140	100	60 - 140	<0.020	ug/g	NC	50
4845339	Total Xylenes	2017/01/31					<0.040	ug/g	NC	50
4845828	Aroclor 1242	2017/01/31					<0.010	ug/g	NC	50
4845828	Aroclor 1248	2017/01/31					<0.010	ug/g	NC	50
4845828	Aroclor 1254	2017/01/31					<0.010	ug/g	NC	50
4845828	Aroclor 1260	2017/01/31	105	60 - 130	103	60 - 130	<0.010	ug/g	NC	50
4845828	Total PCB	2017/01/31	105	60 - 130	103	60 - 130	<0.010	ug/g	NC	50
4846846	1-Methylnaphthalene	2017/02/03	93	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
4846846	2-Methylnaphthalene	2017/02/03	87	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
4846846	Acenaphthene	2017/02/03	97	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
4846846	Acenaphthylene	2017/02/03	89	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
4846846	Anthracene	2017/02/03	87	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
4846846	Benzo(a)anthracene	2017/02/03	93	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
4846846	Benzo(a)pyrene	2017/02/03	97	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
4846846	Benzo(b/j)fluoranthene	2017/02/03	100	50 - 130	105	50 - 130	<0.0050	ug/g	NC	40
4846846	Benzo(g,h,i)perylene	2017/02/03	85	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
4846846	Benzo(k)fluoranthene	2017/02/03	107	50 - 130	113	50 - 130	<0.0050	ug/g	NC	40
4846846	Chrysene	2017/02/03	105	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40
4846846	Dibenz(a,h)anthracene	2017/02/03	90	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
4846846	Fluoranthene	2017/02/03	106	50 - 130	108	50 - 130	<0.0050	ug/g	NC	40
4846846	Fluorene	2017/02/03	97	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
4846846	Indeno(1,2,3-cd)pyrene	2017/02/03	89	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
4846846	Naphthalene	2017/02/03	82	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
4846846	Phenanthrene	2017/02/03	102	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
4846846	Pyrene	2017/02/03	109	50 - 130	112	50 - 130	<0.0050	ug/g	NC	40
4846906	F2 (C10-C16 Hydrocarbons)	2017/02/01	101	50 - 130	103	80 - 120	<10	ug/g	NC	30
4846906	F3 (C16-C34 Hydrocarbons)	2017/02/01	97	50 - 130	99	80 - 120	<50	ug/g	NC	30
4846906	F4 (C34-C50 Hydrocarbons)	2017/02/01	96	50 - 130	99	80 - 120	<50	ug/g	NC	30
4846943	Chromium (VI)	2017/02/02	76	75 - 125	86	80 - 120	<0.2	ug/g	NC	35
4846958	Hot Water Ext. Boron (B)	2017/02/02	96	75 - 125	96	75 - 125	<0.050	ug/g	NC	40
4846991	Acid Extractable Antimony (Sb)	2017/02/01	95	75 - 125	99	80 - 120	<0.20	ug/g	NC	30

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
4846991	Acid Extractable Arsenic (As)	2017/02/01	99	75 - 125	102	80 - 120	<1.0	ug/g	NC	30
4846991	Acid Extractable Barium (Ba)	2017/02/01	NC	75 - 125	99	80 - 120	<0.50	ug/g	1.7	30
4846991	Acid Extractable Beryllium (Be)	2017/02/01	99	75 - 125	97	80 - 120	<0.20	ug/g	NC	30
4846991	Acid Extractable Boron (B)	2017/02/01	93	75 - 125	96	80 - 120	<5.0	ug/g	NC	30
4846991	Acid Extractable Cadmium (Cd)	2017/02/01	95	75 - 125	98	80 - 120	<0.10	ug/g	NC	30
4846991	Acid Extractable Chromium (Cr)	2017/02/01	97	75 - 125	100	80 - 120	<1.0	ug/g	7.1	30
4846991	Acid Extractable Cobalt (Co)	2017/02/01	98	75 - 125	98	80 - 120	<0.10	ug/g	3.0	30
4846991	Acid Extractable Copper (Cu)	2017/02/01	94	75 - 125	97	80 - 120	<0.50	ug/g	1.3	30
4846991	Acid Extractable Lead (Pb)	2017/02/01	100	75 - 125	96	80 - 120	<1.0	ug/g	NC	30
4846991	Acid Extractable Mercury (Hg)	2017/02/01	100	75 - 125	96	80 - 120	<0.050	ug/g	NC	30
4846991	Acid Extractable Molybdenum (Mo)	2017/02/01	99	75 - 125	100	80 - 120	<0.50	ug/g	NC	30
4846991	Acid Extractable Nickel (Ni)	2017/02/01	95	75 - 125	99	80 - 120	<0.50	ug/g	4.6	30
4846991	Acid Extractable Selenium (Se)	2017/02/01	100	75 - 125	100	80 - 120	<0.50	ug/g	NC	30
4846991	Acid Extractable Silver (Ag)	2017/02/01	101	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
4846991	Acid Extractable Thallium (Tl)	2017/02/01	98	75 - 125	95	80 - 120	<0.050	ug/g	NC	30
4846991	Acid Extractable Uranium (U)	2017/02/01	97	75 - 125	94	80 - 120	<0.050	ug/g	0.51	30
4846991	Acid Extractable Vanadium (V)	2017/02/01	NC	75 - 125	99	80 - 120	<5.0	ug/g	NC	30
4846991	Acid Extractable Zinc (Zn)	2017/02/01	93	75 - 125	102	80 - 120	<5.0	ug/g	NC	30
4847143	Hot Water Ext. Boron (B)	2017/02/01	95	75 - 125	95	75 - 125	<0.050	ug/g	NC	40
4847243	Moisture	2017/02/01							0.58	20
4847752	Moisture	2017/02/01							0	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 spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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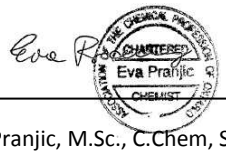
Maxxam Job #: B718928
Report Date: 2017/02/06

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: JW

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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Maxxam Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel (905) 817-5700 Toll-free 800-

27-Jan-17 14:50
Madison Bingley
B718928
PS4 ENV-856

CHAIN OF CUSTODY RECORD

Page of

INVOICE TO:		REPOR	
Company Name:	#14090 Golder Associates Ltd	Company Name:	
Attention:	Central Accounting	Attention:	Joanne Woodhouse
Address:	1931 Robertson Rd Ottawa ON K2H 5B7	Address:	
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:
Email:	AP-CustomerService@golder.com	Email:	jwoodhouse@golder.com

PROJECT INFORMATION:	Laboratory Use Only:	
B63104	Maxxam Job #:	Bottle Order #: 595611
1670949	COC #: C#595611-01-01	Project Manager: Madison Bingley
	Site #:	
	Sampled By:	

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)? ___

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 #)*

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 (Cr, Hg, Metals)	O.Reg 153 VOCs & F1-F4 (Water)	O.Reg 153 PAHs (Water)	O.Reg 153 PAHs (Soil)	O.Reg 153 PHC (F1-F4)	PCB	PHC + BTEX	# of Bottles	Comments
1		17-17 SA3	Jan 26		S		X	X	X	X	X				
2		17-15 SA2	"		S		X	X	X	X	X				
3		17-11 SA1	"		"		X	X	X	X	X				
4		17-13 SA4	"		"		X	X	X	X	X				
5		17-12 SA3	"		"		X	X	X	X	X				RECEIVED IN OTTAWA
6		17-9 SA3	"		"		X	X	X	X	X				
7		17-22 SA3	"		"		X	X	X	X					
8		17-1 SA4	"		"							X			
9		17-14 SA1	"		"		X	X	X	X	X				NO ice
10		17-16 SA1	"		"		X	X	X	X	X				

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time
			Mariana Dascan / Dascan	2017/01/27	14:50
			Parmjeet PARAMJEET SINGH	2017/01/23	10:06

jars used and not submitted

Laboratory Use Only

Time Sensitive	Temperature (°C) on Recei	Custody Seal Present	Yes	No
	12, 12, 12	Intact	Y	

* 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

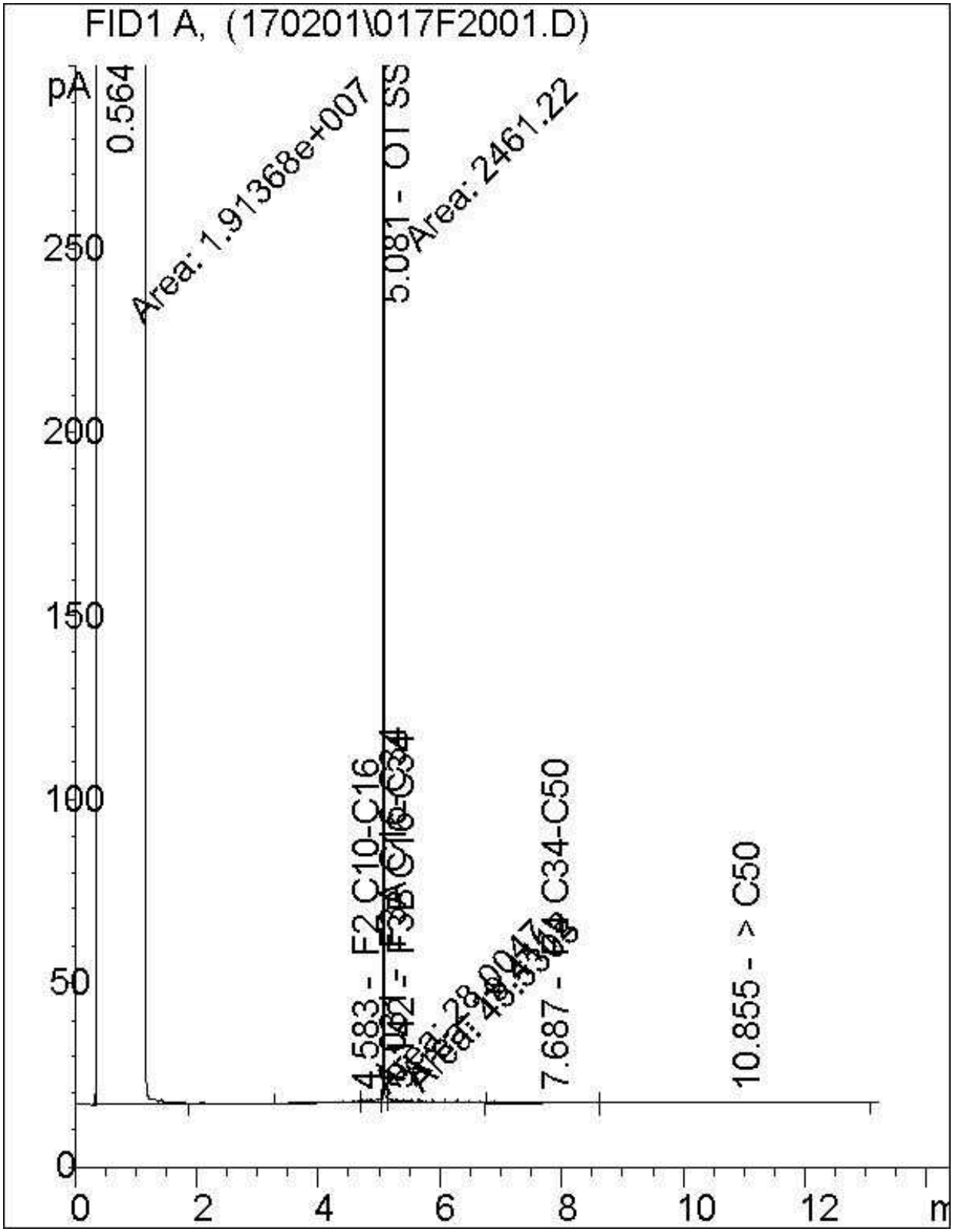
White: Maxxa Yellow: Client

9/6/5

Pwo # 3309616350 34

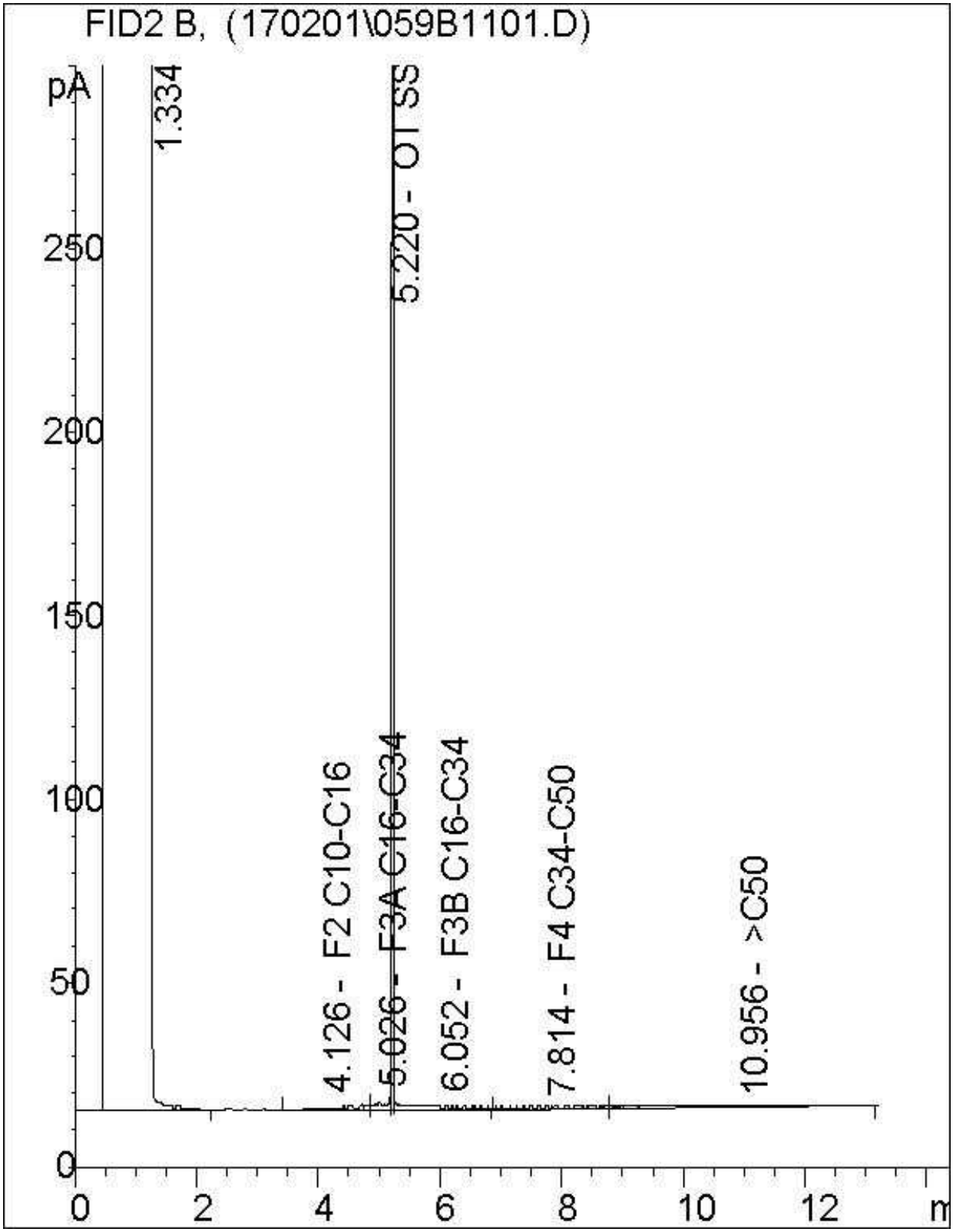
Maxxam Analytics International Corporation o/a Maxxam Analytics

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



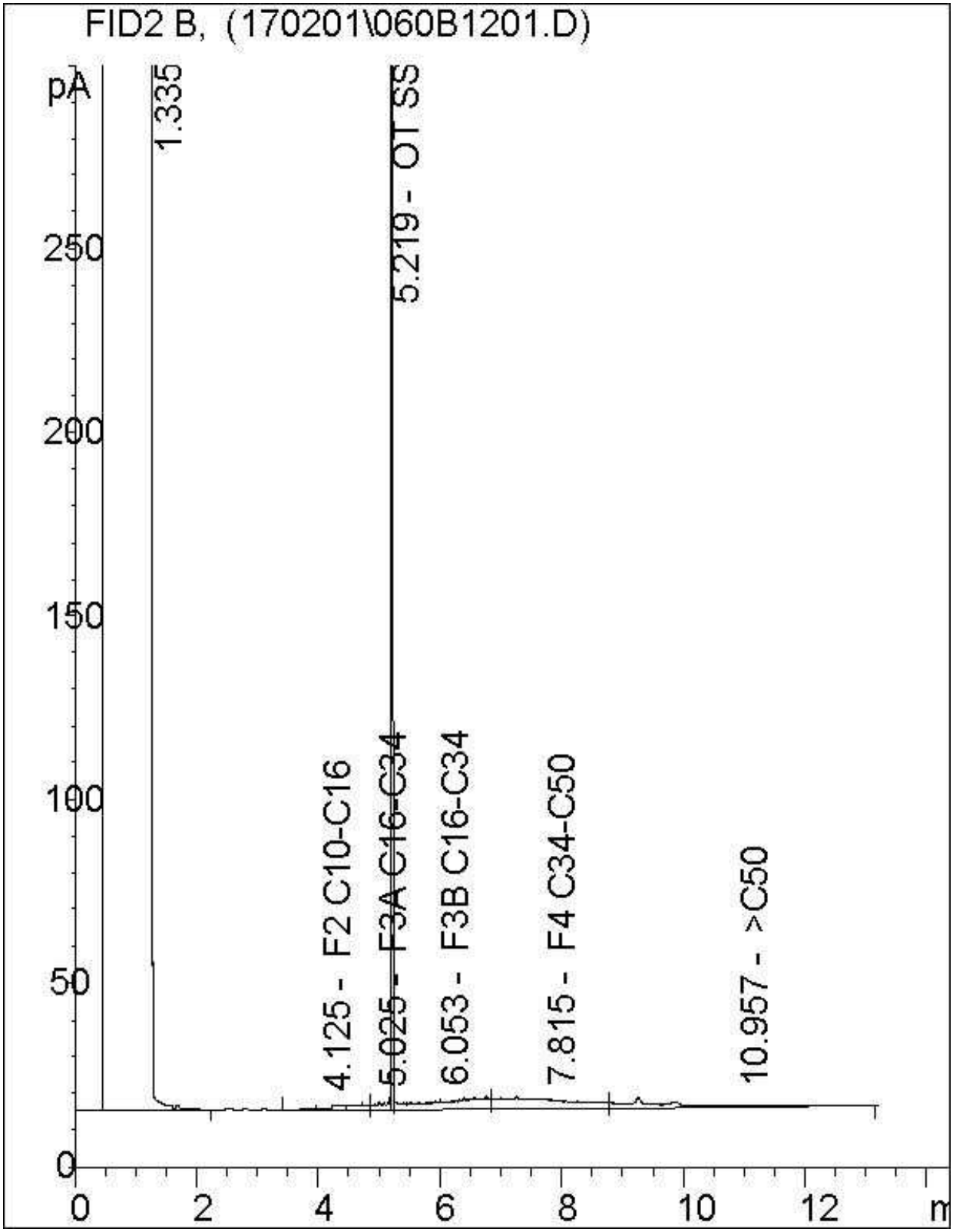
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

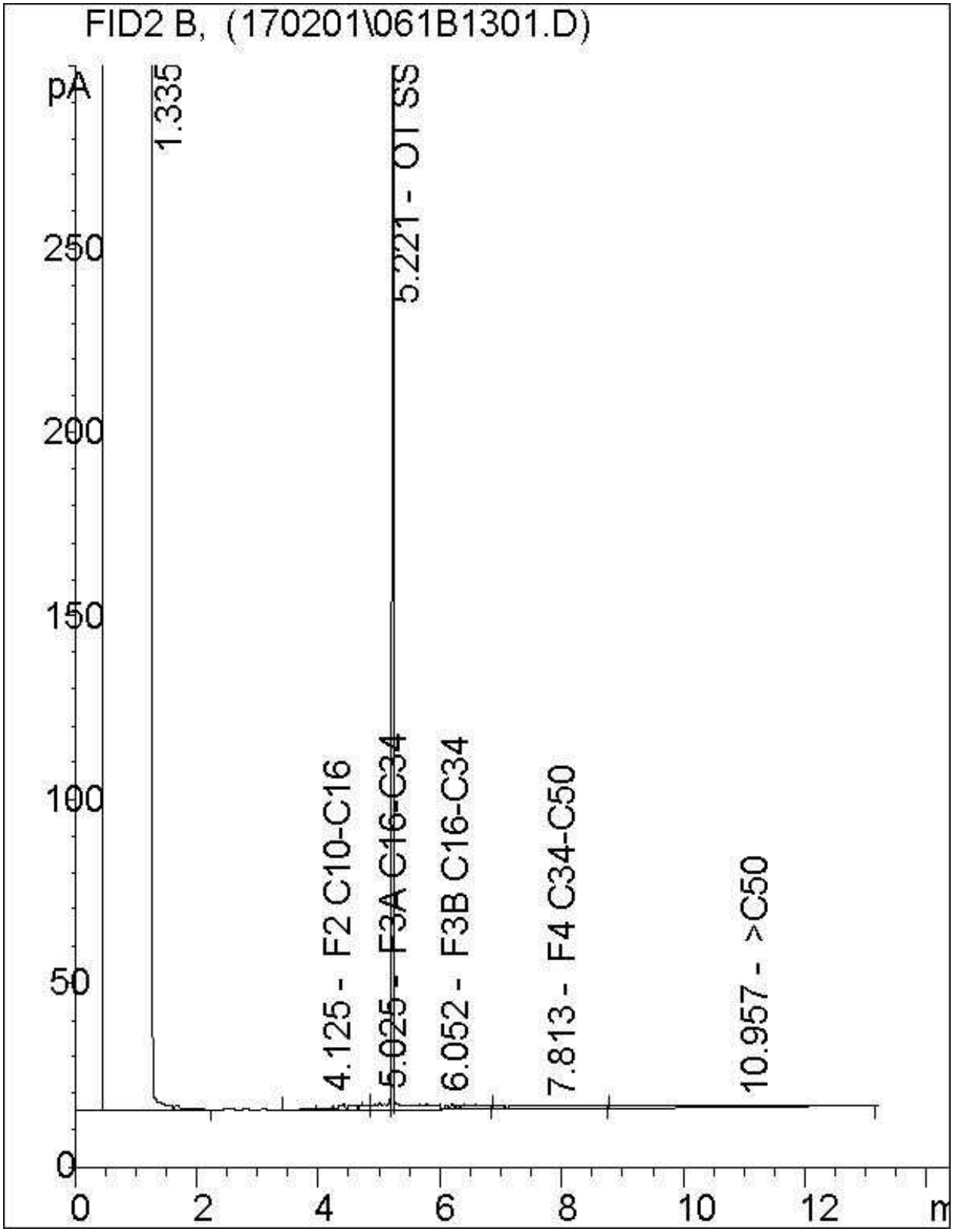


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B718928
Report Date: 2017/02/06
Maxxam Sample: DVD673

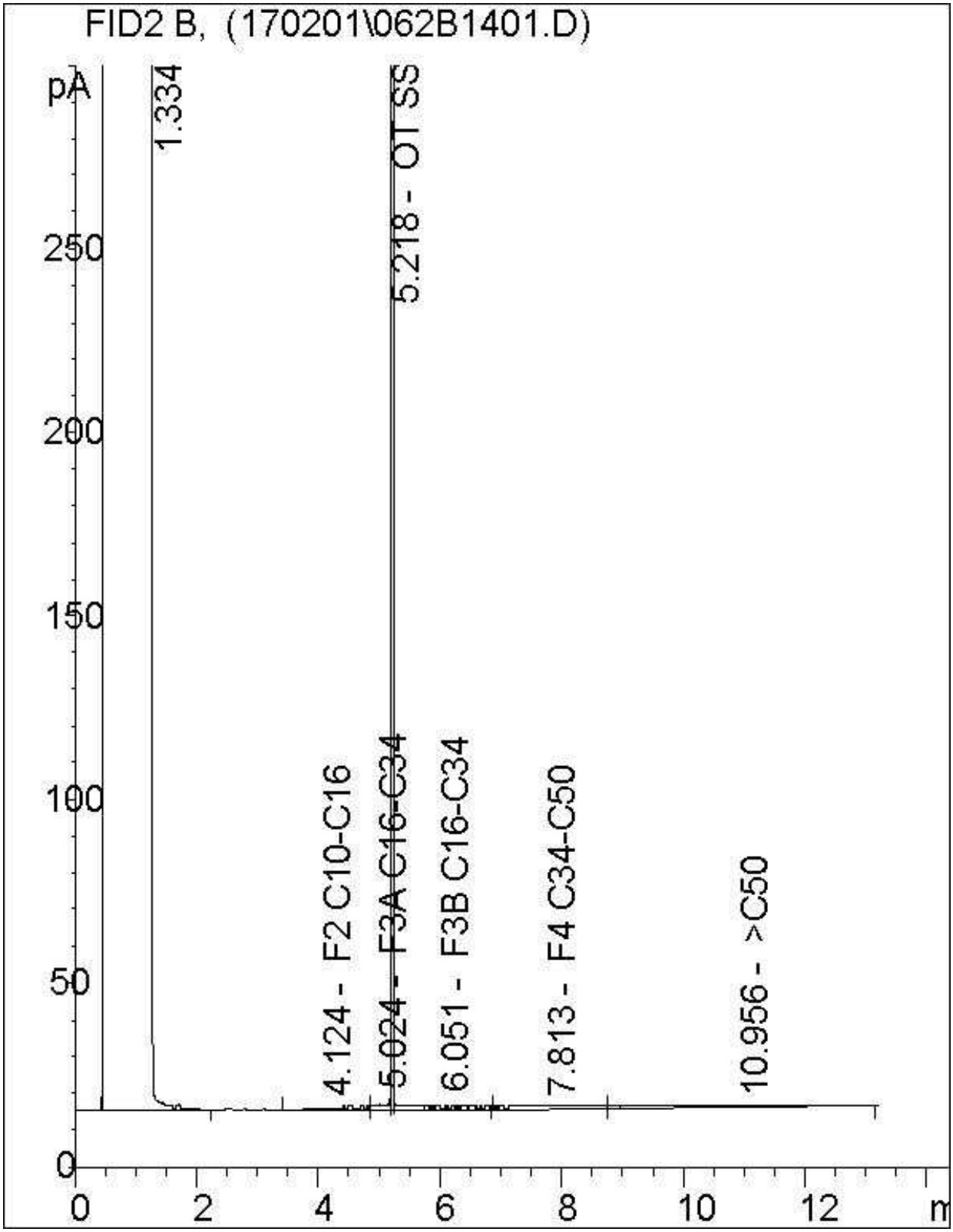
Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-13 SA4

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

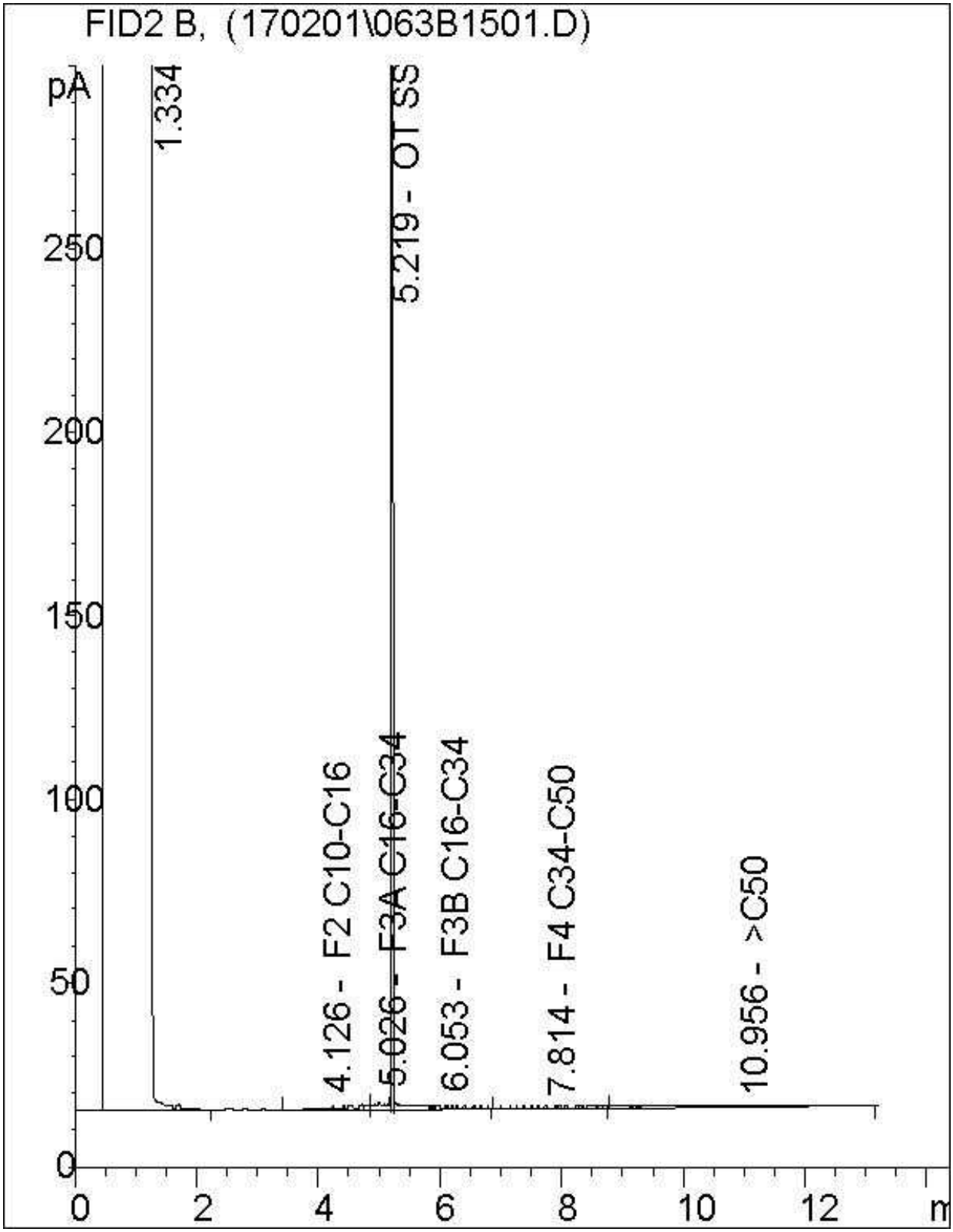


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B718928
Report Date: 2017/02/06
Maxxam Sample: DVD675

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-9 SA3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

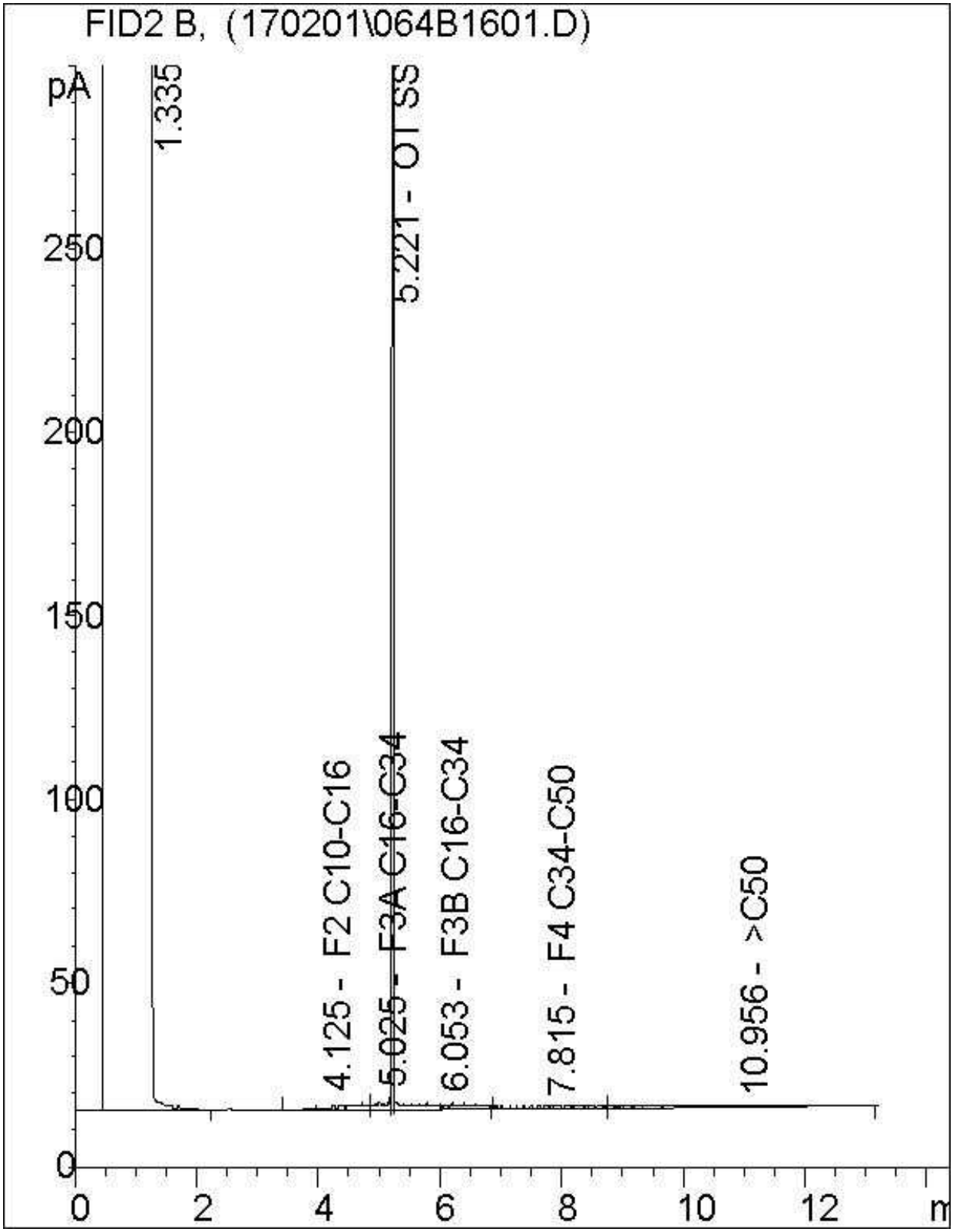


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B718928
Report Date: 2017/02/06
Maxxam Sample: DVD676

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-22 SA3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

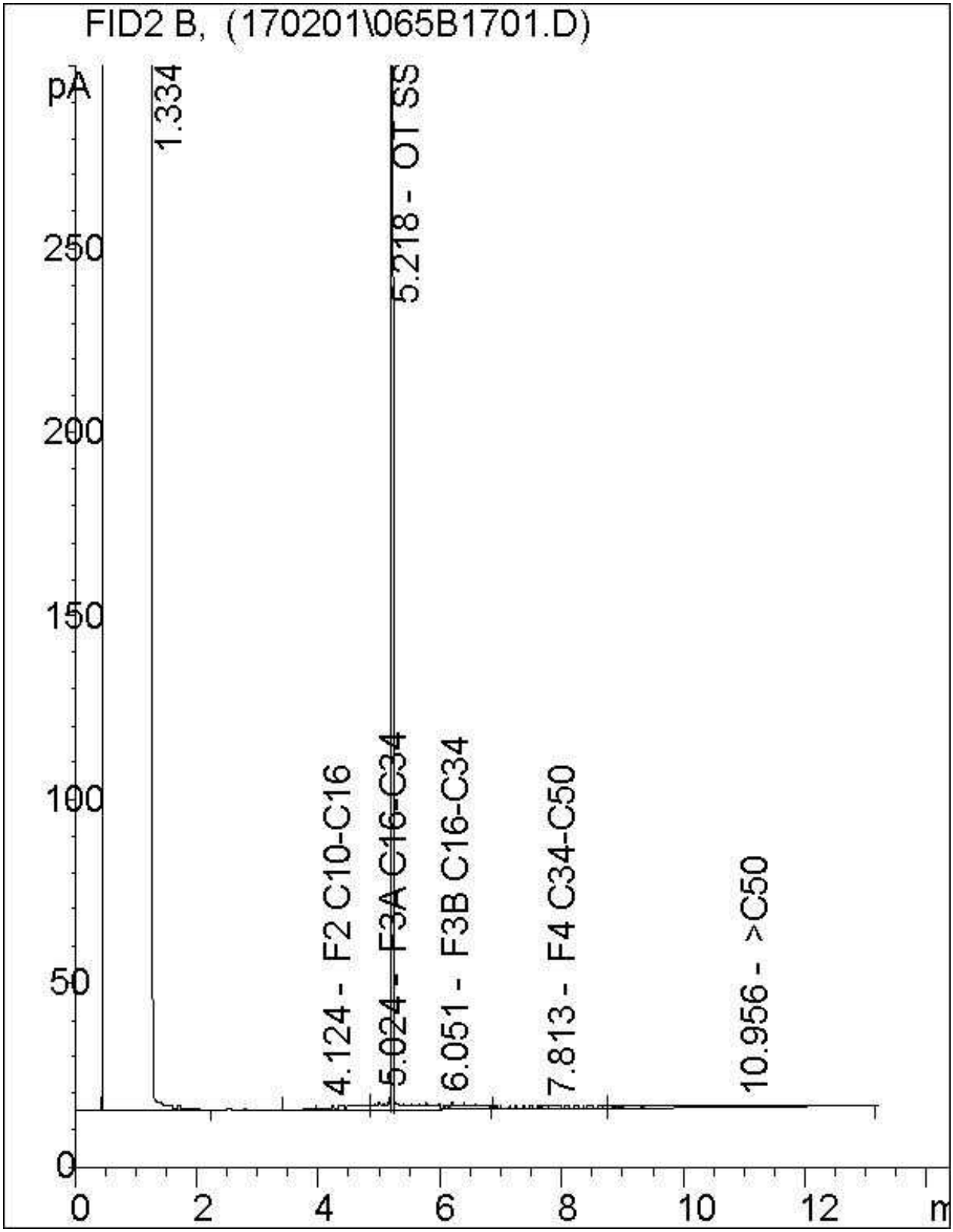


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B718928
Report Date: 2017/02/06
Maxxam Sample: DVD677

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-1 SA4

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

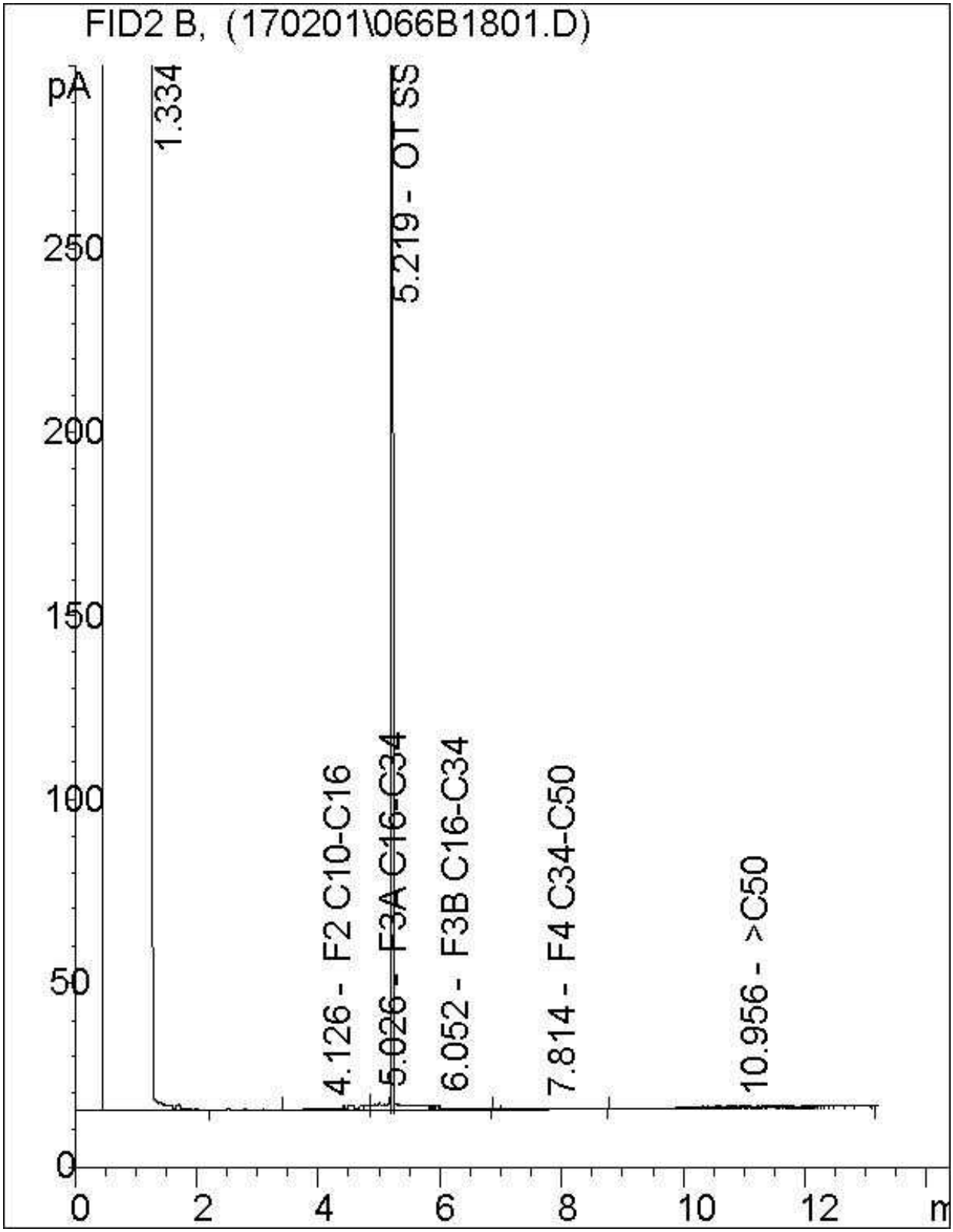


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B718928
Report Date: 2017/02/06
Maxxam Sample: DVD678

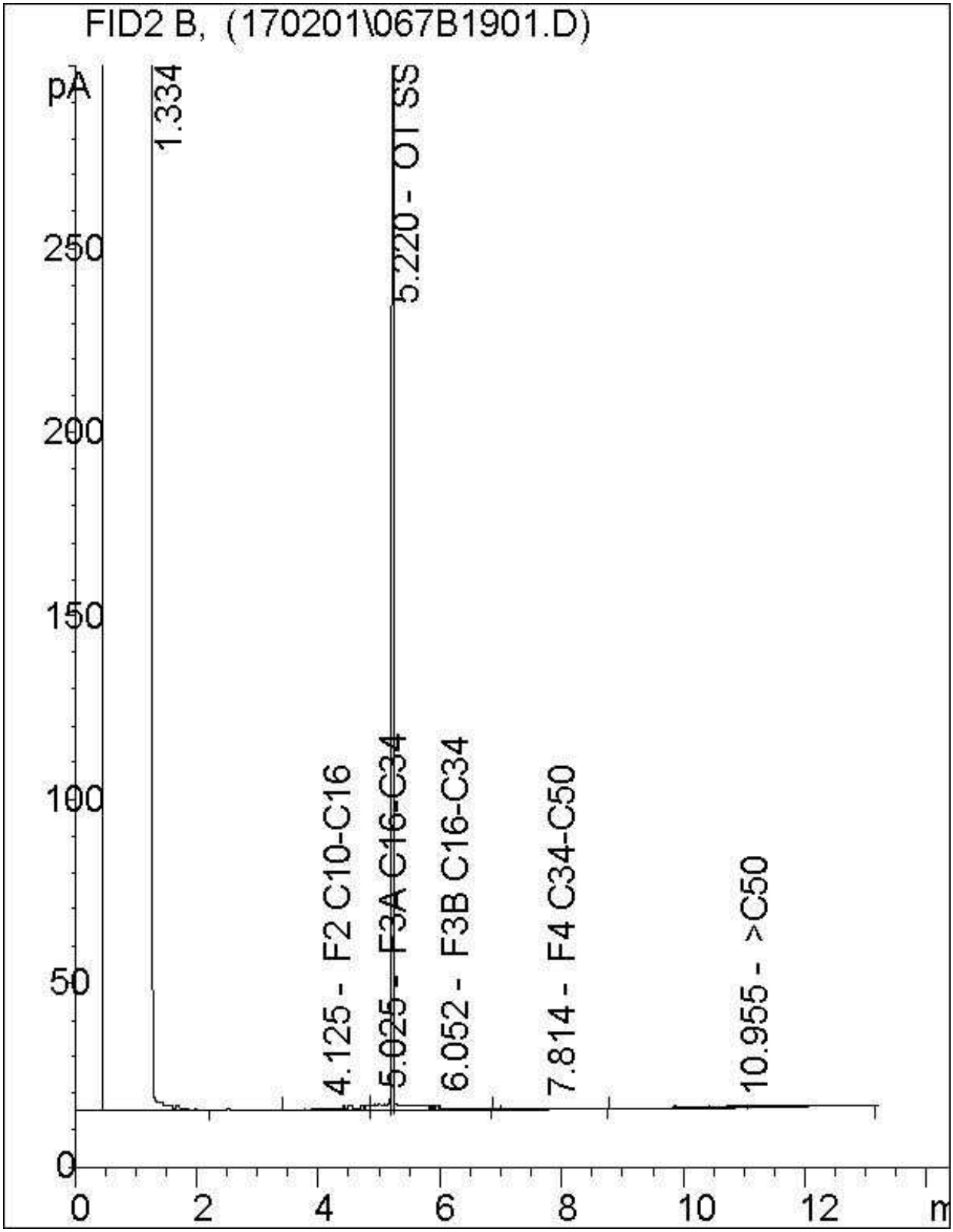
Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-14 SA1

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



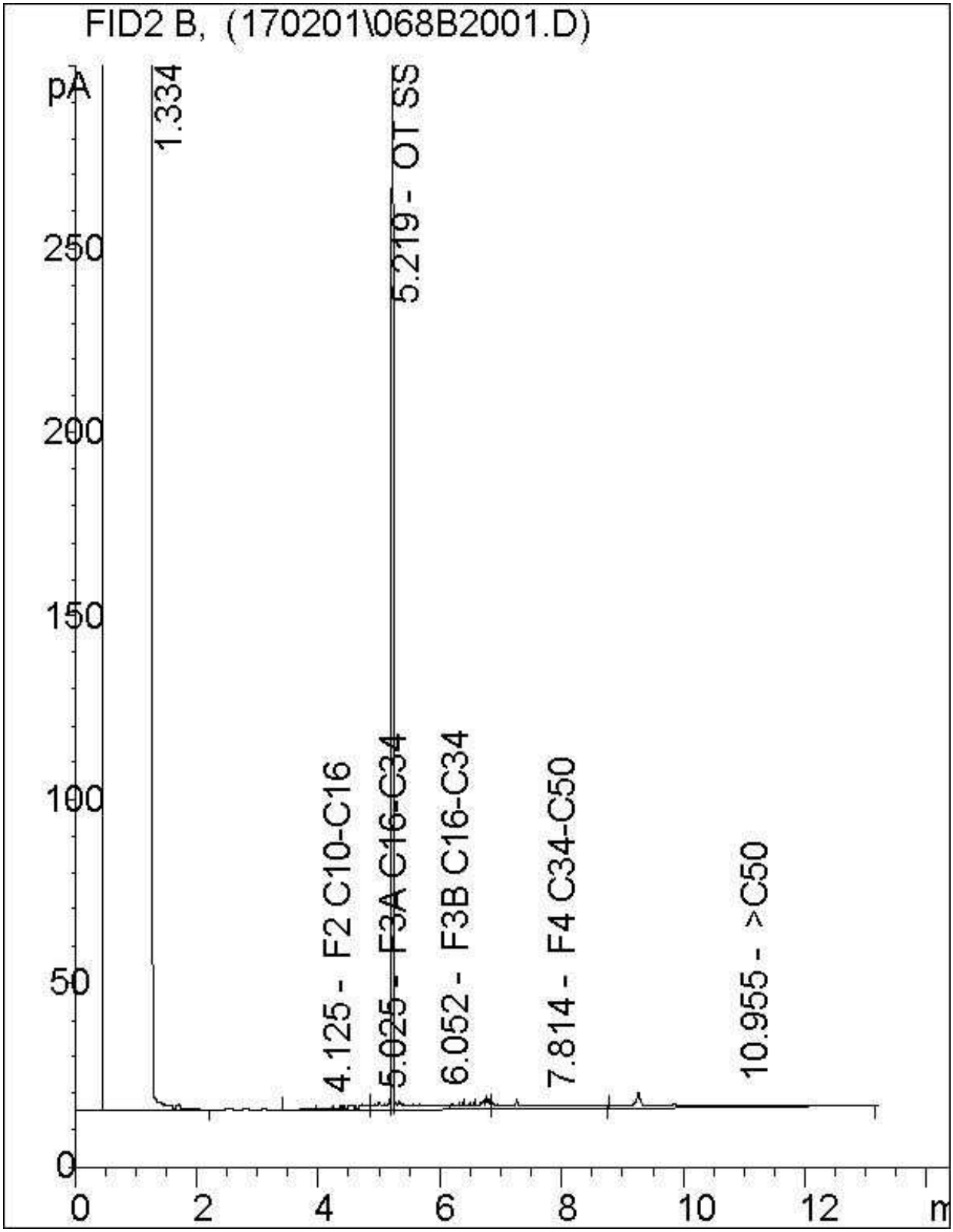
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam
A Bureau Veritas Group Company

Your Project #: 1670949
Your C.O.C. #: 595611-02-01

Attention:Joanne Woodhouse

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/02/07
Report #: R4352283
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B718940
Received: 2017/01/27, 14:50

Sample Matrix: Soil
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	1	N/A	2017/02/07	CAM SOP-00301	EPA 8270D m
Hot Water Extractable Boron (1)	1	2017/02/06	2017/02/06	CAM SOP-00408	R153 Ana. Prot. 2011
1,3-Dichloropropene Sum (1)	1	N/A	2017/02/07		EPA 8260C m
Hexavalent Chromium in Soil by IC (1, 2)	1	2017/02/03	2017/02/06	CAM SOP-00436	EPA 3060/7199 m
Petroleum Hydrocarbons F2-F4 in Soil (1, 3)	1	2017/02/03	2017/02/06	CAM SOP-00316	CCME CWS m
Strong Acid Leachable Metals by ICPMS (1)	1	2017/02/06	2017/02/06	CAM SOP-00447	EPA 6020B m
Moisture (1)	1	N/A	2017/02/06	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM) (1)	1	2017/02/03	2017/02/04	CAM SOP-00318	EPA 8270D m
Polychlorinated Biphenyl in Soil (1)	1	2017/02/06	2017/02/07	CAM SOP-00309	EPA 8082A m
Volatile Organic Compounds and F1 PHCs (1)	1	N/A	2017/02/03	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.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

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

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.

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Your Project #: 1670949
Your C.O.C. #: 595611-02-01

Attention:Joanne Woodhouse

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/02/07
Report #: R4352283
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B718940

Received: 2017/01/27, 14:50

(1) This test was performed by Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.
(3) 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.
Madison Bingley, Project Manager
Email: MBingley@maxxam.ca
Phone# (613)274-3549

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B718940
Report Date: 2017/02/07

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: JW

O.REG 153 METALS PACKAGE (SOIL)

Maxxam ID		DVD744	DVD744		
Sampling Date		2017/01/26	2017/01/26		
COC Number		595611-02-01	595611-02-01		
	UNITS	DUP -1	DUP -1 Lab-Dup	RDL	QC Batch
Inorganics					
Moisture	%	20		1.0	4852559
Chromium (VI)	ug/g	<0.2	<0.2	0.2	4850875
Metals					
Hot Water Ext. Boron (B)	ug/g	0.085		0.050	4852801
Acid Extractable Antimony (Sb)	ug/g	<0.20		0.20	4852883
Acid Extractable Arsenic (As)	ug/g	1.4		1.0	4852883
Acid Extractable Barium (Ba)	ug/g	130		0.50	4852883
Acid Extractable Beryllium (Be)	ug/g	0.37		0.20	4852883
Acid Extractable Boron (B)	ug/g	<5.0		5.0	4852883
Acid Extractable Cadmium (Cd)	ug/g	<0.10		0.10	4852883
Acid Extractable Chromium (Cr)	ug/g	27		1.0	4852883
Acid Extractable Cobalt (Co)	ug/g	7.8		0.10	4852883
Acid Extractable Copper (Cu)	ug/g	16		0.50	4852883
Acid Extractable Lead (Pb)	ug/g	3.9		1.0	4852883
Acid Extractable Molybdenum (Mo)	ug/g	<0.50		0.50	4852883
Acid Extractable Nickel (Ni)	ug/g	15		0.50	4852883
Acid Extractable Selenium (Se)	ug/g	<0.50		0.50	4852883
Acid Extractable Silver (Ag)	ug/g	<0.20		0.20	4852883
Acid Extractable Thallium (Tl)	ug/g	0.14		0.050	4852883
Acid Extractable Uranium (U)	ug/g	0.88		0.050	4852883
Acid Extractable Vanadium (V)	ug/g	43		5.0	4852883
Acid Extractable Zinc (Zn)	ug/g	44		5.0	4852883
Acid Extractable Mercury (Hg)	ug/g	<0.050		0.050	4852883

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B718940
Report Date: 2017/02/07

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: JW

O.REG 153 PAHS (SOIL)

Maxxam ID		DVD744		
Sampling Date		2017/01/26		
COC Number		595611-02-01		
	UNITS	DUP -1	RDL	QC Batch
Calculated Parameters				
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	0.0071	4847239
Polyaromatic Hydrocarbons				
Acenaphthene	ug/g	<0.0050	0.0050	4851831
Acenaphthylene	ug/g	<0.0050	0.0050	4851831
Anthracene	ug/g	<0.0050	0.0050	4851831
Benzo(a)anthracene	ug/g	<0.0050	0.0050	4851831
Benzo(a)pyrene	ug/g	<0.0050	0.0050	4851831
Benzo(b/j)fluoranthene	ug/g	<0.0050	0.0050	4851831
Benzo(g,h,i)perylene	ug/g	<0.0050	0.0050	4851831
Benzo(k)fluoranthene	ug/g	<0.0050	0.0050	4851831
Chrysene	ug/g	<0.0050	0.0050	4851831
Dibenz(a,h)anthracene	ug/g	<0.0050	0.0050	4851831
Fluoranthene	ug/g	<0.0050	0.0050	4851831
Fluorene	ug/g	<0.0050	0.0050	4851831
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	0.0050	4851831
1-Methylnaphthalene	ug/g	<0.0050	0.0050	4851831
2-Methylnaphthalene	ug/g	<0.0050	0.0050	4851831
Naphthalene	ug/g	<0.0050	0.0050	4851831
Phenanthrene	ug/g	<0.0050	0.0050	4851831
Pyrene	ug/g	<0.0050	0.0050	4851831
Surrogate Recovery (%)				
D10-Anthracene	%	115		4851831
D14-Terphenyl (FS)	%	118		4851831
D8-Acenaphthylene	%	97		4851831

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B718940
Report Date: 2017/02/07

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: JW

O.REG 153 PCBS (SOIL)

Maxxam ID		DVD744	DVD744		
Sampling Date		2017/01/26	2017/01/26		
COC Number		595611-02-01	595611-02-01		
	UNITS	DUP -1	DUP -1 Lab-Dup	RDL	QC Batch
PCBs					
Aroclor 1242	ug/g	<0.010	<0.010	0.010	4853938
Aroclor 1248	ug/g	<0.010	<0.010	0.010	4853938
Aroclor 1254	ug/g	<0.010	<0.010	0.010	4853938
Aroclor 1260	ug/g	<0.010	<0.010	0.010	4853938
Total PCB	ug/g	<0.010	<0.010	0.010	4853938
Surrogate Recovery (%)					
Decachlorobiphenyl	%	97	94		4853938

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B718940
Report Date: 2017/02/07

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: JW

O.REG 153 VOCS & F1-F4 (SOIL)

Maxxam ID		DVD744		
Sampling Date		2017/01/26		
COC Number		595611-02-01		
	UNITS	DUP -1	RDL	QC Batch
Calculated Parameters				
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	0.050	4847253
Volatile Organics				
Acetone (2-Propanone)	ug/g	<0.50	0.50	4850409
Benzene	ug/g	<0.020	0.020	4850409
Bromodichloromethane	ug/g	<0.050	0.050	4850409
Bromoform	ug/g	<0.050	0.050	4850409
Bromomethane	ug/g	<0.050	0.050	4850409
Carbon Tetrachloride	ug/g	<0.050	0.050	4850409
Chlorobenzene	ug/g	<0.050	0.050	4850409
Chloroform	ug/g	<0.050	0.050	4850409
Dibromochloromethane	ug/g	<0.050	0.050	4850409
1,2-Dichlorobenzene	ug/g	<0.050	0.050	4850409
1,3-Dichlorobenzene	ug/g	<0.050	0.050	4850409
1,4-Dichlorobenzene	ug/g	<0.050	0.050	4850409
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	0.050	4850409
1,1-Dichloroethane	ug/g	<0.050	0.050	4850409
1,2-Dichloroethane	ug/g	<0.050	0.050	4850409
1,1-Dichloroethylene	ug/g	<0.050	0.050	4850409
cis-1,2-Dichloroethylene	ug/g	<0.050	0.050	4850409
trans-1,2-Dichloroethylene	ug/g	<0.050	0.050	4850409
1,2-Dichloropropane	ug/g	<0.050	0.050	4850409
cis-1,3-Dichloropropene	ug/g	<0.030	0.030	4850409
trans-1,3-Dichloropropene	ug/g	<0.040	0.040	4850409
Ethylbenzene	ug/g	<0.020	0.020	4850409
Ethylene Dibromide	ug/g	<0.050	0.050	4850409
Hexane	ug/g	<0.050	0.050	4850409
Methylene Chloride(Dichloromethane)	ug/g	<0.050	0.050	4850409
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	0.50	4850409
Methyl Isobutyl Ketone	ug/g	<0.50	0.50	4850409
Methyl t-butyl ether (MTBE)	ug/g	<0.050	0.050	4850409
Styrene	ug/g	<0.050	0.050	4850409
1,1,1,2-Tetrachloroethane	ug/g	<0.050	0.050	4850409
1,1,2,2-Tetrachloroethane	ug/g	<0.050	0.050	4850409
Tetrachloroethylene	ug/g	<0.050	0.050	4850409
Toluene	ug/g	<0.020	0.020	4850409
1,1,1-Trichloroethane	ug/g	<0.050	0.050	4850409

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B718940
Report Date: 2017/02/07

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: JW

O.REG 153 VOCS & F1-F4 (SOIL)

Maxxam ID		DVD744		
Sampling Date		2017/01/26		
COC Number		595611-02-01		
	UNITS	**DUP -1**	**RDL**	**QC Batch**
1,1,2-Trichloroethane	ug/g	<0.050	0.050	4850409
Trichloroethylene	ug/g	<0.050	0.050	4850409
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	0.050	4850409
Vinyl Chloride	ug/g	<0.020	0.020	4850409
p+m-Xylene	ug/g	<0.020	0.020	4850409
o-Xylene	ug/g	<0.020	0.020	4850409
Total Xylenes	ug/g	<0.020	0.020	4850409
F1 (C6-C10)	ug/g	<10	10	4850409
F1 (C6-C10) - BTEX	ug/g	<10	10	4850409
F2-F4 Hydrocarbons				
F2 (C10-C16 Hydrocarbons)	ug/g	<10	10	4851571
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	4851571
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	4851571
Reached Baseline at C50	ug/g	Yes		4851571
Surrogate Recovery (%)				
o-Terphenyl	%	103		4851571
4-Bromofluorobenzene	%	95		4850409
D10-o-Xylene	%	85		4850409
D4-1,2-Dichloroethane	%	108		4850409
D8-Toluene	%	94		4850409

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B718940
Report Date: 2017/02/07

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: JW

TEST SUMMARY

Maxxam ID: DVD744
Sample ID: DUP -1
Matrix: Soil

Collected: 2017/01/26
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4847239	N/A	2017/02/07	Automated Statchk
Hot Water Extractable Boron	ICP	4852801	2017/02/06	2017/02/06	Suban Kanapathippllai
1,3-Dichloropropene Sum	CALC	4847253	N/A	2017/02/07	Automated Statchk
Hexavalent Chromium in Soil by IC	IC/SPEC	4850875	2017/02/03	2017/02/06	Sally Coughlin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4851571	2017/02/03	2017/02/06	Margaret Kulczyk-Stanko
Strong Acid Leachable Metals by ICPMS	ICP/MS	4852883	2017/02/06	2017/02/06	Daniel Teclu
Moisture	BAL	4852559	N/A	2017/02/06	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4851831	2017/02/03	2017/02/04	Mitesh Raj
Polychlorinated Biphenyl in Soil	GC/ECD	4853938	2017/02/06	2017/02/07	Li Peng
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4850409	N/A	2017/02/03	Xueming Jiang

Maxxam ID: DVD744 Dup
Sample ID: DUP -1
Matrix: Soil

Collected: 2017/01/26
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4850875	2017/02/03	2017/02/06	Sally Coughlin
Polychlorinated Biphenyl in Soil	GC/ECD	4853938	2017/02/06	2017/02/07	Li Peng

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Maxxam Job #: B718940
Report Date: 2017/02/07

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: JW

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	12.0°C

The samples were received at the laboratory a day after the sampling date with no ice in the cooler with average temerature of 12 degrees C.
Cooler custody seal was present and intact.

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B718940
Report Date: 2017/02/07

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: JW

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4850409	4-Bromofluorobenzene	2017/02/03	98	60 - 140	105	60 - 140	90	%		
4850409	D10-o-Xylene	2017/02/03	96	60 - 130	93	60 - 130	79	%		
4850409	D4-1,2-Dichloroethane	2017/02/03	103	60 - 140	99	60 - 140	108	%		
4850409	D8-Toluene	2017/02/03	109	60 - 140	129	60 - 140	96	%		
4851571	o-Terphenyl	2017/02/06	109	60 - 130	102	60 - 130	106	%		
4851831	D10-Anthracene	2017/02/04	99	50 - 130	106	50 - 130	112	%		
4851831	D14-Terphenyl (FS)	2017/02/04	104	50 - 130	113	50 - 130	112	%		
4851831	D8-Acenaphthylene	2017/02/04	87	50 - 130	94	50 - 130	93	%		
4853938	Decachlorobiphenyl	2017/02/07	114	60 - 130	92	60 - 130	98	%		
4850409	1,1,1,2-Tetrachloroethane	2017/02/03	101	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
4850409	1,1,1-Trichloroethane	2017/02/03	97	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
4850409	1,1,2,2-Tetrachloroethane	2017/02/03	98	60 - 140	92	60 - 130	<0.050	ug/g	NC	50
4850409	1,1,2-Trichloroethane	2017/02/03	100	60 - 140	118	60 - 130	<0.050	ug/g	NC	50
4850409	1,1-Dichloroethane	2017/02/03	96	60 - 140	100	60 - 130	<0.050	ug/g	NC	50
4850409	1,1-Dichloroethylene	2017/02/03	101	60 - 140	105	60 - 130	<0.050	ug/g	NC	50
4850409	1,2-Dichlorobenzene	2017/02/03	92	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
4850409	1,2-Dichloroethane	2017/02/03	93	60 - 140	89	60 - 130	<0.050	ug/g	NC	50
4850409	1,2-Dichloropropane	2017/02/03	93	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
4850409	1,3-Dichlorobenzene	2017/02/03	91	60 - 140	91	60 - 130	<0.050	ug/g	NC	50
4850409	1,4-Dichlorobenzene	2017/02/03	93	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
4850409	Acetone (2-Propanone)	2017/02/03	97	60 - 140	106	60 - 140	<0.50	ug/g	NC	50
4850409	Benzene	2017/02/03	93	60 - 140	92	60 - 130	<0.020	ug/g	NC	50
4850409	Bromodichloromethane	2017/02/03	98	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
4850409	Bromoform	2017/02/03	95	60 - 140	100	60 - 130	<0.050	ug/g	NC	50
4850409	Bromomethane	2017/02/03	100	60 - 140	104	60 - 140	<0.050	ug/g	NC	50
4850409	Carbon Tetrachloride	2017/02/03	104	60 - 140	102	60 - 130	<0.050	ug/g	NC	50
4850409	Chlorobenzene	2017/02/03	96	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
4850409	Chloroform	2017/02/03	97	60 - 140	99	60 - 130	<0.050	ug/g	NC	50
4850409	cis-1,2-Dichloroethylene	2017/02/03	97	60 - 140	100	60 - 130	<0.050	ug/g	NC	50
4850409	cis-1,3-Dichloropropene	2017/02/03	86	60 - 140	89	60 - 130	<0.030	ug/g	NC	50
4850409	Dibromochloromethane	2017/02/03	98	60 - 140	113	60 - 130	<0.050	ug/g	NC	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
4850409	Dichlorodifluoromethane (FREON 12)	2017/02/03	87	60 - 140	93	60 - 140	<0.050	ug/g	NC	50
4850409	Ethylbenzene	2017/02/03	91	60 - 140	87	60 - 130	<0.020	ug/g	NC	50
4850409	Ethylene Dibromide	2017/02/03	94	60 - 140	110	60 - 130	<0.050	ug/g	NC	50
4850409	F1 (C6-C10) - BTEX	2017/02/03					<10	ug/g	NC	30
4850409	F1 (C6-C10)	2017/02/03	92	60 - 140	95	80 - 120	<10	ug/g	NC	30
4850409	Hexane	2017/02/03	101	60 - 140	106	60 - 130	<0.050	ug/g	NC	50
4850409	Methyl Ethyl Ketone (2-Butanone)	2017/02/03	93	60 - 140	99	60 - 140	<0.50	ug/g	NC	50
4850409	Methyl Isobutyl Ketone	2017/02/03	87	60 - 140	91	60 - 130	<0.50	ug/g	NC	50
4850409	Methyl t-butyl ether (MTBE)	2017/02/03	86	60 - 140	90	60 - 130	<0.050	ug/g	NC	50
4850409	Methylene Chloride(Dichloromethane)	2017/02/03	89	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
4850409	o-Xylene	2017/02/03	92	60 - 140	88	60 - 130	<0.020	ug/g	NC	50
4850409	p+m-Xylene	2017/02/03	90	60 - 140	86	60 - 130	<0.020	ug/g	NC	50
4850409	Styrene	2017/02/03	94	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
4850409	Tetrachloroethylene	2017/02/03	100	60 - 140	118	60 - 130	<0.050	ug/g	NC	50
4850409	Toluene	2017/02/03	98	60 - 140	115	60 - 130	<0.020	ug/g	NC	50
4850409	Total Xylenes	2017/02/03					<0.020	ug/g	NC	50
4850409	trans-1,2-Dichloroethylene	2017/02/03	98	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
4850409	trans-1,3-Dichloropropene	2017/02/03	94	60 - 140	112	60 - 130	<0.040	ug/g	NC	50
4850409	Trichloroethylene	2017/02/03	95	60 - 140	97	60 - 130	<0.050	ug/g	NC	50
4850409	Trichlorofluoromethane (FREON 11)	2017/02/03	105	60 - 140	110	60 - 130	<0.050	ug/g	NC	50
4850409	Vinyl Chloride	2017/02/03	99	60 - 140	101	60 - 130	<0.020	ug/g	NC	50
4850875	Chromium (VI)	2017/02/06	70 (1)	75 - 125	86	80 - 120	<0.2	ug/g	NC	35
4851571	F2 (C10-C16 Hydrocarbons)	2017/02/06	117	50 - 130	111	80 - 120	<10	ug/g	NC	30
4851571	F3 (C16-C34 Hydrocarbons)	2017/02/06	110	50 - 130	106	80 - 120	<50	ug/g	NC	30
4851571	F4 (C34-C50 Hydrocarbons)	2017/02/06	112	50 - 130	103	80 - 120	<50	ug/g	NC	30
4851831	1-Methylnaphthalene	2017/02/04	92	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
4851831	2-Methylnaphthalene	2017/02/04	89	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
4851831	Acenaphthene	2017/02/04	94	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
4851831	Acenaphthylene	2017/02/04	90	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
4851831	Anthracene	2017/02/04	93	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
4851831	Benzo(a)anthracene	2017/02/04	91	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40

Maxxam Job #: B718940
Report Date: 2017/02/07

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: JW

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4851831	Benzo(a)pyrene	2017/02/04	93	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
4851831	Benzo(b/j)fluoranthene	2017/02/04	92	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40
4851831	Benzo(g,h,i)perylene	2017/02/04	91	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
4851831	Benzo(k)fluoranthene	2017/02/04	90	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
4851831	Chrysene	2017/02/04	92	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
4851831	Dibenz(a,h)anthracene	2017/02/04	91	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4851831	Fluoranthene	2017/02/04	99	50 - 130	104	50 - 130	<0.0050	ug/g	NC	40
4851831	Fluorene	2017/02/04	92	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
4851831	Indeno(1,2,3-cd)pyrene	2017/02/04	105	50 - 130	116	50 - 130	<0.0050	ug/g	NC	40
4851831	Naphthalene	2017/02/04	91	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
4851831	Phenanthrene	2017/02/04	88	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
4851831	Pyrene	2017/02/04	100	50 - 130	106	50 - 130	<0.0050	ug/g	NC	40
4852559	Moisture	2017/02/06							3.6	20
4852801	Hot Water Ext. Boron (B)	2017/02/06	92	75 - 125	96	75 - 125	<0.050	ug/g	NC	40
4852883	Acid Extractable Antimony (Sb)	2017/02/06	107	75 - 125	106	80 - 120	<0.20	ug/g	NC	30
4852883	Acid Extractable Arsenic (As)	2017/02/06	97	75 - 125	97	80 - 120	<1.0	ug/g	NC	30
4852883	Acid Extractable Barium (Ba)	2017/02/06	NC	75 - 125	96	80 - 120	<0.50	ug/g	11	30
4852883	Acid Extractable Beryllium (Be)	2017/02/06	99	75 - 125	99	80 - 120	<0.20	ug/g	NC	30
4852883	Acid Extractable Boron (B)	2017/02/06	95	75 - 125	100	80 - 120	<5.0	ug/g	NC	30
4852883	Acid Extractable Cadmium (Cd)	2017/02/06	100	75 - 125	98	80 - 120	<0.10	ug/g	2.4	30
4852883	Acid Extractable Chromium (Cr)	2017/02/06	100	75 - 125	97	80 - 120	<1.0	ug/g	6.4	30
4852883	Acid Extractable Cobalt (Co)	2017/02/06	96	75 - 125	98	80 - 120	<0.10	ug/g	0.48	30
4852883	Acid Extractable Copper (Cu)	2017/02/06	NC	75 - 125	101	80 - 120	<0.50	ug/g	3.6	30
4852883	Acid Extractable Lead (Pb)	2017/02/06	NC	75 - 125	101	80 - 120	<1.0	ug/g	2.1	30
4852883	Acid Extractable Mercury (Hg)	2017/02/06	103	75 - 125	102	80 - 120	<0.050	ug/g	NC	30
4852883	Acid Extractable Molybdenum (Mo)	2017/02/06	104	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
4852883	Acid Extractable Nickel (Ni)	2017/02/06	95	75 - 125	95	80 - 120	<0.50	ug/g	0.55	30
4852883	Acid Extractable Selenium (Se)	2017/02/06	99	75 - 125	100	80 - 120	<0.50	ug/g	NC	30
4852883	Acid Extractable Silver (Ag)	2017/02/06	99	75 - 125	104	80 - 120	<0.20	ug/g	NC	30
4852883	Acid Extractable Thallium (Tl)	2017/02/06	97	75 - 125	101	80 - 120	<0.050	ug/g	NC	30
4852883	Acid Extractable Uranium (U)	2017/02/06	99	75 - 125	101	80 - 120	<0.050	ug/g	10	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
4852883	Acid Extractable Vanadium (V)	2017/02/06	NC	75 - 125	96	80 - 120	<5.0	ug/g	NC	30
4852883	Acid Extractable Zinc (Zn)	2017/02/06	NC	75 - 125	101	80 - 120	<5.0	ug/g	4.6	30
4853938	Aroclor 1242	2017/02/07					<0.010	ug/g	NC	50
4853938	Aroclor 1248	2017/02/07					<0.010	ug/g	NC	50
4853938	Aroclor 1254	2017/02/07					<0.010	ug/g	NC	50
4853938	Aroclor 1260	2017/02/07	134 (2)	60 - 130	113	60 - 130	<0.010	ug/g	NC	50
4853938	Total PCB	2017/02/07	134 (3)	60 - 130	113	60 - 130	<0.010	ug/g	NC	50

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 spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

(2) The recovery was above the upper control limit. This may represent a high bias in some results for flagged analytes. For results that were not detected (ND), this potential bias has no impact.

(3) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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Maxxam Job #: B718940
Report Date: 2017/02/07

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: JW

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

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 Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B63104	Maxxam Job #:	Bottle Order #:
Attention:	Central Accounting	Attention:	Joanne Woodhouse	P.O. #:			595611
Address:	1931 Robertson Rd Ottawa ON K2H 5B7	Address:		Project:	1670949	COC #:	Project Manager:
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Project Name:		C#595611-02-01	Madison Bingley
Email:	AP-CustomerService@golder.com	Email:	jwoodhouse@golder.com	Site #:			
				Sampled By:			

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 Metals Package (Cr, Hg, Metals)	O Reg 153 VOCs & F1-F4 (Water)	O Reg 153 PAHs (Water)	PCB	# of Bottles	Comments
1		17-101	Jan26		S		X	X	X	X		
2												
3												
4												
5												
6												RECEIVED IN OTTAWA
7												
8												
9												No ice
10												

27-Jan-17 14:50
Madison Bingley
B718940
PS4 ENV-856

* 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				
			Mariana Toscon Toscon	2017/01/27	14:50		Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
			Paraject PARAMJEET SINGH	2017/01/28	10:06			12, 12, 12	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

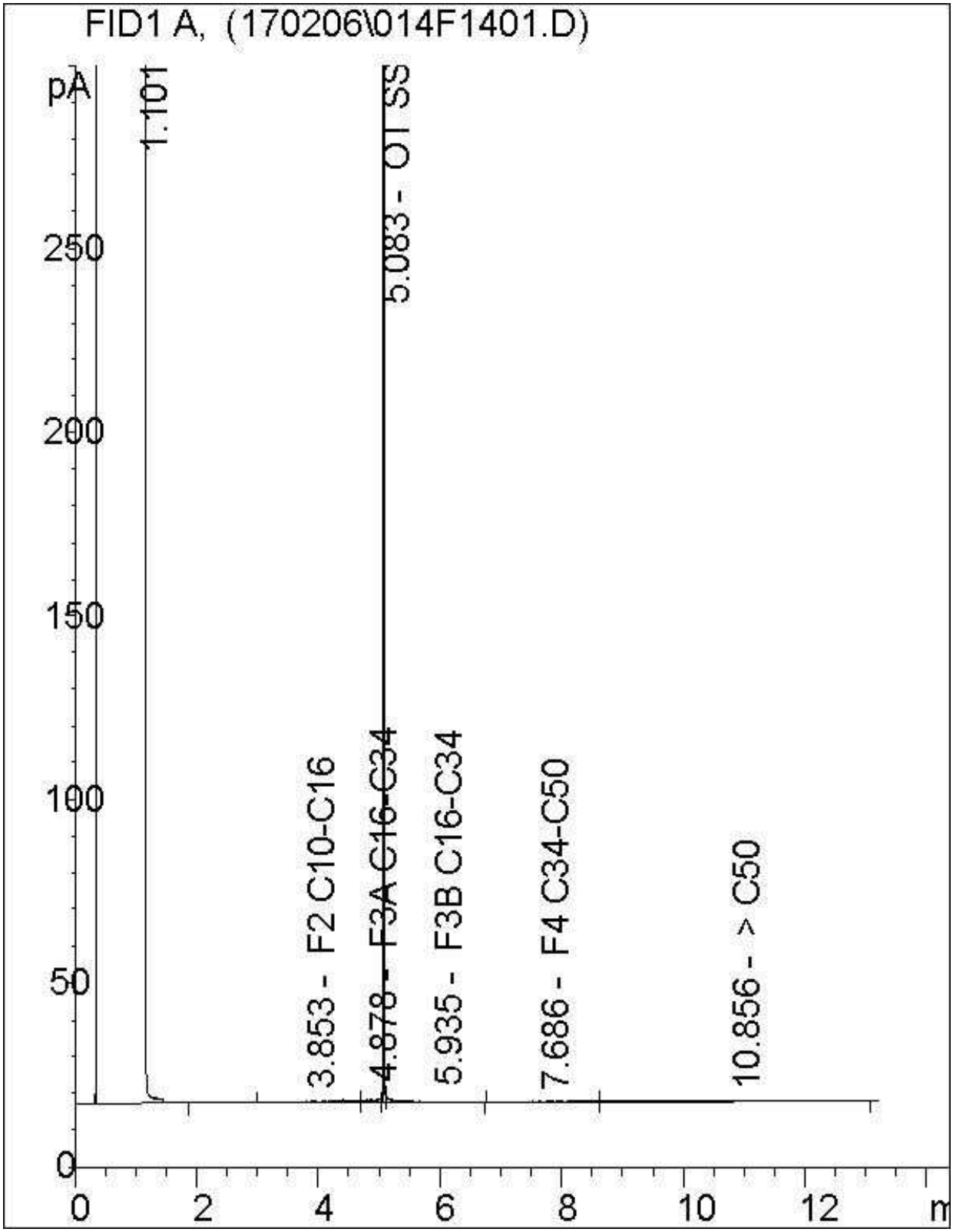
4|6|5

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B718940
Report Date: 2017/02/07
Maxxam Sample: DVD744

Golder Associates Ltd
Client Project #: 1670949
Client ID: DUP -1

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam
A Bureau Veritas Group Company

Your Project #: 1670949
Your C.O.C. #: 596564-03-01, 596564-01-01

Attention:Joanne Woodhouse

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/02/08
Report #: R4353603
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B720504
Received: 2017/01/31, 15:30

Sample Matrix: Soil
Samples Received: 15

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	11	N/A	2017/02/07	CAM SOP-00301	EPA 8270D m
Hot Water Extractable Boron (1)	10	2017/02/06	2017/02/06	CAM SOP-00408	R153 Ana. Prot. 2011
Hexavalent Chromium in Soil by IC (1, 2)	10	2017/02/02	2017/02/05	CAM SOP-00436	EPA 3060/7199 m
Petroleum Hydro. CCME F1 & BTEX in Soil (3)	6	N/A	2017/02/02	OTT SOP-00002	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (4)	6	2017/02/01	2017/02/03	OTT SOP-00001	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (4)	9	2017/02/01	2017/02/06	OTT SOP-00001	CCME CWS
F4G (CCME Hydrocarbons Gravimetric)	2	2017/02/07	2017/02/08	OTT SOP-00001	CCME CWS
Strong Acid Leachable Metals by ICPMS (1)	10	2017/02/06	2017/02/06	CAM SOP-00447	EPA 6020B m
Moisture	15	N/A	2017/02/06	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	11	2017/02/02	2017/02/06	OTT SOP-00011	EPA 8270D m
Polychlorinated Biphenyl in Soil (1)	7	2017/02/02	2017/02/03	CAM SOP-00309	EPA 8082A m
Volatile Organic Compounds and F1 PHCs (1)	9	N/A	2017/02/03	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.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

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

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.

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Your Project #: 1670949
Your C.O.C. #: 596564-03-01, 596564-01-01

Attention:Joanne Woodhouse

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/02/08
Report #: R4353603
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B720504

Received: 2017/01/31, 15:30

(1) This test was performed by Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.
(3) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is the date sampled unless otherwise stated.
(4) 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.
Madison Bingley, Project Manager
Email: MBingley@maxxam.ca
Phone# (613)274-3549

==========

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 #: B720504
Report Date: 2017/02/08

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

O.REG 153 METALS PACKAGE (SOIL)

Maxxam ID		DVK832	DVK833	DVK834	DVK835		DVK836		
Sampling Date		2017/01/30	2017/01/30	2017/01/30	2017/01/30		2017/01/30		
COC Number		596564-03-01	596564-03-01	596564-03-01	596564-03-01		596564-03-01		
	UNITS	17-7	17-23	17-5	17-4	QC Batch	DUP-3	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	0.5	0.3	<0.2	<0.2	4849580	<0.2	0.2	4849580
Metals									
Hot Water Ext. Boron (B)	ug/g	0.065	0.057	0.067	<0.050	4852556	0.051	0.050	4852556
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	<0.20	<0.20	4852518	<0.20	0.20	4852552
Acid Extractable Arsenic (As)	ug/g	1.4	<1.0	<1.0	<1.0	4852518	<1.0	1.0	4852552
Acid Extractable Barium (Ba)	ug/g	310	160	34	28	4852518	36	0.50	4852552
Acid Extractable Beryllium (Be)	ug/g	0.85	0.51	<0.20	<0.20	4852518	<0.20	0.20	4852552
Acid Extractable Boron (B)	ug/g	5.7	<5.0	<5.0	<5.0	4852518	<5.0	5.0	4852552
Acid Extractable Cadmium (Cd)	ug/g	0.10	<0.10	<0.10	<0.10	4852518	<0.10	0.10	4852552
Acid Extractable Chromium (Cr)	ug/g	70	38	9.4	8.3	4852518	8.1	1.0	4852552
Acid Extractable Cobalt (Co)	ug/g	19	12	4.0	3.6	4852518	3.6	0.10	4852552
Acid Extractable Copper (Cu)	ug/g	38	24	7.5	8.1	4852518	7.6	0.50	4852552
Acid Extractable Lead (Pb)	ug/g	6.9	5.2	2.8	2.2	4852518	2.3	1.0	4852552
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	<0.50	<0.50	<0.50	4852518	<0.50	0.50	4852552
Acid Extractable Nickel (Ni)	ug/g	43	24	6.0	5.5	4852518	6.3	0.50	4852552
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	4852518	<0.50	0.50	4852552
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	<0.20	4852518	<0.20	0.20	4852552
Acid Extractable Thallium (Tl)	ug/g	0.40	0.25	0.058	0.052	4852518	0.057	0.050	4852552
Acid Extractable Uranium (U)	ug/g	0.70	0.58	0.91	1.1	4852518	0.73	0.050	4852552
Acid Extractable Vanadium (V)	ug/g	93	63	20	17	4852518	17	5.0	4852552
Acid Extractable Zinc (Zn)	ug/g	120	62	11	10	4852518	20	5.0	4852552
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050	<0.050	<0.050	4852518	<0.050	0.050	4852552

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B720504
Report Date: 2017/02/08

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

O.REG 153 METALS PACKAGE (SOIL)

Maxxam ID		DVK837	DVK839		DVK840	DVK841		
Sampling Date		2017/01/30	2017/01/30		2017/01/30	2017/01/30		
COC Number		596564-03-01	596564-03-01		596564-03-01	596564-03-01		
	UNITS	17-2	17-3	QC Batch	17-8	17-10	RDL	QC Batch
Inorganics								
Chromium (VI)	ug/g	<0.2	0.4	4849580	<0.2	<0.2	0.2	4849580
Metals								
Hot Water Ext. Boron (B)	ug/g	0.27	0.43	4852556	0.22	0.21	0.050	4852556
Acid Extractable Antimony (Sb)	ug/g	0.20	0.26	4852518	<0.20	<0.20	0.20	4852552
Acid Extractable Arsenic (As)	ug/g	2.1	2.3	4852518	<1.0	<1.0	1.0	4852552
Acid Extractable Barium (Ba)	ug/g	85	230	4852518	290	190	0.50	4852552
Acid Extractable Beryllium (Be)	ug/g	0.23	0.69	4852518	0.74	0.52	0.20	4852552
Acid Extractable Boron (B)	ug/g	6.0	7.5	4852518	6.6	5.8	5.0	4852552
Acid Extractable Cadmium (Cd)	ug/g	<0.10	<0.10	4852518	0.11	<0.10	0.10	4852552
Acid Extractable Chromium (Cr)	ug/g	11	68	4852518	72	37	1.0	4852552
Acid Extractable Cobalt (Co)	ug/g	5.5	16	4852518	19	11	0.10	4852552
Acid Extractable Copper (Cu)	ug/g	13	41	4852518	36	23	0.50	4852552
Acid Extractable Lead (Pb)	ug/g	13	22	4852518	6.1	5.0	1.0	4852552
Acid Extractable Molybdenum (Mo)	ug/g	1.7	0.66	4852518	1.1	0.88	0.50	4852552
Acid Extractable Nickel (Ni)	ug/g	11	40	4852518	42	22	0.50	4852552
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	4852518	<0.50	<0.50	0.50	4852552
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	4852518	<0.20	<0.20	0.20	4852552
Acid Extractable Thallium (Tl)	ug/g	0.12	0.32	4852518	0.39	0.20	0.050	4852552
Acid Extractable Uranium (U)	ug/g	0.72	3.7	4852518	1.5	0.85	0.050	4852552
Acid Extractable Vanadium (V)	ug/g	28	75	4852518	87	58	5.0	4852552
Acid Extractable Zinc (Zn)	ug/g	35	96	4852518	110	65	5.0	4852552
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050	4852518	<0.050	<0.050	0.050	4852552

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Report Date: 2017/02/08

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

O.REG 153 METALS PACKAGE (SOIL)

Maxxam ID		DVK876		
Sampling Date		2017/01/30		
COC Number		596564-01-01		
	UNITS	17-6	RDL	QC Batch
Inorganics				
Chromium (VI)	ug/g	0.4	0.2	4849580
Metals				
Hot Water Ext. Boron (B)	ug/g	0.051	0.050	4852556
Acid Extractable Antimony (Sb)	ug/g	<0.20	0.20	4852518
Acid Extractable Arsenic (As)	ug/g	<1.0	1.0	4852518
Acid Extractable Barium (Ba)	ug/g	190	0.50	4852518
Acid Extractable Beryllium (Be)	ug/g	0.62	0.20	4852518
Acid Extractable Boron (B)	ug/g	5.4	5.0	4852518
Acid Extractable Cadmium (Cd)	ug/g	<0.10	0.10	4852518
Acid Extractable Chromium (Cr)	ug/g	42	1.0	4852518
Acid Extractable Cobalt (Co)	ug/g	12	0.10	4852518
Acid Extractable Copper (Cu)	ug/g	25	0.50	4852518
Acid Extractable Lead (Pb)	ug/g	5.4	1.0	4852518
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	0.50	4852518
Acid Extractable Nickel (Ni)	ug/g	24	0.50	4852518
Acid Extractable Selenium (Se)	ug/g	<0.50	0.50	4852518
Acid Extractable Silver (Ag)	ug/g	<0.20	0.20	4852518
Acid Extractable Thallium (Tl)	ug/g	0.27	0.050	4852518
Acid Extractable Uranium (U)	ug/g	0.68	0.050	4852518
Acid Extractable Vanadium (V)	ug/g	68	5.0	4852518
Acid Extractable Zinc (Zn)	ug/g	69	5.0	4852518
Acid Extractable Mercury (Hg)	ug/g	<0.050	0.050	4852518

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Report Date: 2017/02/08

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Sampler Initials: AW

O.REG 153 PAHS (SOIL)

Maxxam ID		DVK832	DVK832	DVK834	DVK835	DVK836	DVK837		
Sampling Date		2017/01/30	2017/01/30	2017/01/30	2017/01/30	2017/01/30	2017/01/30		
COC Number		596564-03-01	596564-03-01	596564-03-01	596564-03-01	596564-03-01	596564-03-01		
	UNITS	17-7	17-7 Lab-Dup	17-5	17-4	DUP-3	17-2	RDL	QC Batch
Inorganics									
Moisture	%	30	30	8.0	8.1	8.2	3.6	0.2	4847269
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	<0.014		<0.014	<0.014	<0.014	0.038	0.014	4846294
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4849346
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4849346
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4849346
Benzo(a)anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.014	0.0050	4849346
Benzo(a)pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.013	0.0050	4849346
Benzo(b/j)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.024	0.0050	4849346
Benzo(g,h,i)perylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0094	0.0050	4849346
Benzo(k)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0075	0.0050	4849346
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.014	0.0050	4849346
Dibenz(a,h)anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4849346
Fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.028	0.0050	4849346
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4849346
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0084	0.0050	4849346
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.017	0.0050	4849346
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.021	0.0050	4849346
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.012	0.0050	4849346
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.022	0.0050	4849346
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.022	0.0050	4849346
Surrogate Recovery (%)									
D10-Anthracene	%	90	88	90	84	87	81		4849346
D14-Terphenyl (FS)	%	85	82	85	81	86	83		4849346
D8-Acenaphthylene	%	60	61	65	61	64	54		4849346

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Report Date: 2017/02/08

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

O.REG 153 PAHS (SOIL)

Maxxam ID		DVK838		DVK839	DVK840	DVK841	DVK875		
Sampling Date		2017/01/30		2017/01/30	2017/01/30	2017/01/30	2017/01/30		
COC Number		596564-03-01		596564-03-01	596564-03-01	596564-03-01	596564-01-01		
	UNITS	17-18	RDL	17-3	17-8	17-10	17-19	RDL	QC Batch
Inorganics									
Moisture	%	51	0.2	24	32	25	19	0.2	4847269
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	0.19	0.014	0.020	<0.014	<0.014	0.036	0.014	4846294
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	0.030	0.010	0.0078	<0.0050	<0.0050	0.027	0.0050	4849346
Acenaphthylene	ug/g	<0.010	0.010	0.0054	<0.0050	<0.0050	0.023	0.0050	4849346
Anthracene	ug/g	0.064	0.010	0.019	<0.0050	<0.0050	0.089	0.0050	4849346
Benzo(a)anthracene	ug/g	0.19	0.010	0.062	<0.0050	<0.0050	0.32	0.0050	4849346
Benzo(a)pyrene	ug/g	0.097	0.010	0.049	<0.0050	<0.0050	0.23	0.0050	4849346
Benzo(b/j)fluoranthene	ug/g	0.17	0.010	0.086	<0.0050	<0.0050	0.34	0.0050	4849346
Benzo(g,h,i)perylene	ug/g	0.040	0.010	0.035	<0.0050	<0.0050	0.11	0.0050	4849346
Benzo(k)fluoranthene	ug/g	0.062	0.010	0.032	<0.0050	<0.0050	0.13	0.0050	4849346
Chrysene	ug/g	0.13	0.010	0.060	<0.0050	<0.0050	0.26	0.0050	4849346
Dibenz(a,h)anthracene	ug/g	0.013	0.010	0.0096	<0.0050	<0.0050	0.028	0.0050	4849346
Fluoranthene	ug/g	0.44	0.010	0.15	<0.0050	<0.0050	0.66	0.0050	4849346
Fluorene	ug/g	0.027	0.010	0.0078	<0.0050	<0.0050	0.030	0.0050	4849346
Indeno(1,2,3-cd)pyrene	ug/g	0.047	0.010	0.035	<0.0050	<0.0050	0.12	0.0050	4849346
1-Methylnaphthalene	ug/g	0.089	0.010	0.0090	<0.0050	<0.0050	0.017	0.0050	4849346
2-Methylnaphthalene	ug/g	0.10	0.010	0.011	<0.0050	<0.0050	0.019	0.0050	4849346
Naphthalene	ug/g	0.066	0.010	0.011	<0.0050	<0.0050	0.024	0.0050	4849346
Phenanthrene	ug/g	0.32	0.010	0.11	<0.0050	<0.0050	0.39	0.0050	4849346
Pyrene	ug/g	0.31	0.010	0.11	<0.0050	<0.0050	0.47	0.0050	4849346
Surrogate Recovery (%)									
D10-Anthracene	%	96		85	82	87	88		4849346
D14-Terphenyl (FS)	%	97		82	80	85	87		4849346
D8-Acenaphthylene	%	69		59	59	61	59		4849346

RDL = Reportable Detection Limit
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Report Date: 2017/02/08

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

O.REG 153 PAHS (SOIL)

Maxxam ID		DVK876		
Sampling Date		2017/01/30		
COC Number		596564-01-01		
	UNITS	17-6	RDL	QC Batch
Inorganics				
Moisture	%	30	0.2	4847269
Calculated Parameters				
Methylnaphthalene, 2-(1-)	ug/g	<0.014	0.014	4846294
Polyaromatic Hydrocarbons				
Acenaphthene	ug/g	<0.0050	0.0050	4849346
Acenaphthylene	ug/g	<0.0050	0.0050	4849346
Anthracene	ug/g	<0.0050	0.0050	4849346
Benzo(a)anthracene	ug/g	<0.0050	0.0050	4849346
Benzo(a)pyrene	ug/g	<0.0050	0.0050	4849346
Benzo(b/j)fluoranthene	ug/g	<0.0050	0.0050	4849346
Benzo(g,h,i)perylene	ug/g	<0.0050	0.0050	4849346
Benzo(k)fluoranthene	ug/g	<0.0050	0.0050	4849346
Chrysene	ug/g	<0.0050	0.0050	4849346
Dibenz(a,h)anthracene	ug/g	<0.0050	0.0050	4849346
Fluoranthene	ug/g	<0.0050	0.0050	4849346
Fluorene	ug/g	<0.0050	0.0050	4849346
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	0.0050	4849346
1-Methylnaphthalene	ug/g	<0.0050	0.0050	4849346
2-Methylnaphthalene	ug/g	<0.0050	0.0050	4849346
Naphthalene	ug/g	<0.0050	0.0050	4849346
Phenanthrene	ug/g	<0.0050	0.0050	4849346
Pyrene	ug/g	<0.0050	0.0050	4849346
Surrogate Recovery (%)				
D10-Anthracene	%	87		4849346
D14-Terphenyl (FS)	%	82		4849346
D8-Acenaphthylene	%	60		4849346

RDL = Reportable Detection Limit
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O.REG 153 PCBS (SOIL)

Maxxam ID		DVK832	DVK834	DVK835	DVK835	DVK836		
Sampling Date		2017/01/30	2017/01/30	2017/01/30	2017/01/30	2017/01/30		
COC Number		596564-03-01	596564-03-01	596564-03-01	596564-03-01	596564-03-01		
	UNITS	17-7	17-5	17-4	17-4 Lab-Dup	DUP-3	RDL	QC Batch
PCBs								
Aroclor 1242	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4850055
Aroclor 1248	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4850055
Aroclor 1254	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4850055
Aroclor 1260	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4850055
Total PCB	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4850055
Surrogate Recovery (%)								
Decachlorobiphenyl	%	93	92	94	90	87		4850055

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

Maxxam ID		DVK840		DVK841		DVK876		
Sampling Date		2017/01/30		2017/01/30		2017/01/30		
COC Number		596564-03-01		596564-03-01		596564-01-01		
	UNITS	17-8	RDL	17-10	RDL	17-6	RDL	QC Batch
PCBs								
Aroclor 1242	ug/g	<0.020	0.020	<0.010	0.010	<0.020	0.020	4850055
Aroclor 1248	ug/g	<0.020	0.020	<0.010	0.010	<0.020	0.020	4850055
Aroclor 1254	ug/g	<0.020	0.020	<0.010	0.010	<0.020	0.020	4850055
Aroclor 1260	ug/g	<0.020	0.020	<0.010	0.010	<0.020	0.020	4850055
Total PCB	ug/g	<0.020	0.020	<0.010	0.010	<0.020	0.020	4850055
Surrogate Recovery (%)								
Decachlorobiphenyl	%	81		90		94		4850055

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B720504
Report Date: 2017/02/08

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

RESULTS OF ANALYSES OF SOIL

Maxxam ID		DVK833	DVK877	DVK878	DVK879		
Sampling Date		2017/01/30	2017/01/30	2017/01/30	2017/01/30		
COC Number		596564-03-01	596564-01-01	596564-01-01	596564-01-01		
	UNITS	17-23	17-20	17-21	DUP-2	RDL	QC Batch
Inorganics							
Moisture	%	27	29	25	28	0.2	4847269

RDL = Reportable Detection Limit
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VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		DVK832	DVK833	DVK834	DVK834	DVK835		
Sampling Date		2017/01/30	2017/01/30	2017/01/30	2017/01/30	2017/01/30		
COC Number		596564-03-01	596564-03-01	596564-03-01	596564-03-01	596564-03-01		
	UNITS	17-7	17-23	17-5	17-5 Lab-Dup	17-4	RDL	QC Batch
Volatile Organics								
Acetone (2-Propanone)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4849386
Benzene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4849386
Bromodichloromethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Bromoform	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Bromomethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Carbon Tetrachloride	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Chlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Chloroform	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Dibromochloromethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
1,2-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
1,3-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
1,4-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
1,1-Dichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
1,2-Dichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
1,1-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
cis-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
trans-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
1,2-Dichloropropane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
cis-1,3-Dichloropropene	ug/g	<0.030	<0.030	<0.030	<0.030	<0.030	0.030	4849386
trans-1,3-Dichloropropene	ug/g	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	4849386
Ethylbenzene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4849386
Ethylene Dibromide	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Hexane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Methylene Chloride(Dichloromethane)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4849386
Methyl Isobutyl Ketone	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4849386
Methyl t-butyl ether (MTBE)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Styrene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
1,1,1,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
1,1,2,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Tetrachloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Toluene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4849386
1,1,1-Trichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
1,1,2-Trichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386

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Maxxam Job #: B720504
Report Date: 2017/02/08

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		DVK832	DVK833	DVK834	DVK834	DVK835		
Sampling Date		2017/01/30	2017/01/30	2017/01/30	2017/01/30	2017/01/30		
COC Number		596564-03-01	596564-03-01	596564-03-01	596564-03-01	596564-03-01		
	UNITS	17-7	17-23	17-5	17-5 Lab-Dup	17-4	RDL	QC Batch
Trichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Vinyl Chloride	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4849386
p+m-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4849386
o-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4849386
Total Xylenes	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4849386
F1 (C6-C10)	ug/g	<10	<10	<10	<10	<10	10	4849386
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	<10	<10	10	4849386
Surrogate Recovery (%)								
4-Bromofluorobenzene	%	97	98	99	97	98		4849386
D10-o-Xylene	%	107	100	98	98	97		4849386
D4-1,2-Dichloroethane	%	98	99	99	99	99		4849386
D8-Toluene	%	96	96	95	96	96		4849386

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Maxxam Job #: B720504
Report Date: 2017/02/08

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		DVK836		DVK840	DVK840		DVK841		
Sampling Date		2017/01/30		2017/01/30	2017/01/30		2017/01/30		
COC Number		596564-03-01		596564-03-01	596564-03-01		596564-03-01		
	UNITS	DUP-3	QC Batch	17-8	17-8 Lab-Dup	QC Batch	17-10	RDL	QC Batch
Volatile Organics									
Acetone (2-Propanone)	ug/g	<0.50	4849386	<0.50	<0.50	4850763	<0.50	0.50	4849386
Benzene	ug/g	<0.020	4849386	<0.020	<0.020	4850763	<0.020	0.020	4849386
Bromodichloromethane	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Bromoform	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Bromomethane	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Carbon Tetrachloride	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Chlorobenzene	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Chloroform	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Dibromochloromethane	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
1,2-Dichlorobenzene	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
1,3-Dichlorobenzene	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
1,4-Dichlorobenzene	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
1,1-Dichloroethane	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
1,2-Dichloroethane	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
1,1-Dichloroethylene	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
cis-1,2-Dichloroethylene	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
trans-1,2-Dichloroethylene	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
1,2-Dichloropropane	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
cis-1,3-Dichloropropene	ug/g	<0.030	4849386	<0.030	<0.030	4850763	<0.030	0.030	4849386
trans-1,3-Dichloropropene	ug/g	<0.040	4849386	<0.040	<0.040	4850763	<0.040	0.040	4849386
Ethylbenzene	ug/g	<0.020	4849386	<0.020	<0.020	4850763	<0.020	0.020	4849386
Ethylene Dibromide	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Hexane	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Methylene Chloride(Dichloromethane)	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	4849386	<0.50	<0.50	4850763	<0.50	0.50	4849386
Methyl Isobutyl Ketone	ug/g	<0.50	4849386	<0.50	<0.50	4850763	<0.50	0.50	4849386
Methyl t-butyl ether (MTBE)	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Styrene	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
1,1,1,2-Tetrachloroethane	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
1,1,2,2-Tetrachloroethane	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Tetrachloroethylene	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Toluene	ug/g	<0.020	4849386	<0.020	<0.020	4850763	<0.020	0.020	4849386
1,1,1-Trichloroethane	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
1,1,2-Trichloroethane	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386

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Lab-Dup = Laboratory Initiated Duplicate

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VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		DVK836		DVK840	DVK840		DVK841		
Sampling Date		2017/01/30		2017/01/30	2017/01/30		2017/01/30		
COC Number		596564-03-01		596564-03-01	596564-03-01		596564-03-01		
	UNITS	DUP-3	QC Batch	17-8	17-8 Lab-Dup	QC Batch	17-10	RDL	QC Batch
Trichloroethylene	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Vinyl Chloride	ug/g	<0.020	4849386	<0.020	<0.020	4850763	<0.020	0.020	4849386
p+m-Xylene	ug/g	<0.020	4849386	<0.020	<0.020	4850763	<0.020	0.020	4849386
o-Xylene	ug/g	<0.020	4849386	<0.020	<0.020	4850763	<0.020	0.020	4849386
Total Xylenes	ug/g	<0.020	4849386	<0.020	<0.020	4850763	<0.020	0.020	4849386
F1 (C6-C10)	ug/g	<10	4849386	<10	<10	4850763	<10	10	4849386
F1 (C6-C10) - BTEX	ug/g	<10	4849386	<10	<10	4850763	<10	10	4849386
Surrogate Recovery (%)									
4-Bromofluorobenzene	%	98	4849386	98	99	4850763	97		4849386
D10-o-Xylene	%	99	4849386	99	103	4850763	100		4849386
D4-1,2-Dichloroethane	%	99	4849386	99	98	4850763	99		4849386
D8-Toluene	%	94	4849386	95	94	4850763	95		4849386

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Lab-Dup = Laboratory Initiated Duplicate

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VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		DVK876		DVK877		
Sampling Date		2017/01/30		2017/01/30		
COC Number		596564-01-01		596564-01-01		
	UNITS	17-6	QC Batch	17-20	RDL	QC Batch
Volatile Organics						
Acetone (2-Propanone)	ug/g	<0.50	4849386	<0.50	0.50	4850763
Benzene	ug/g	<0.020	4849386	<0.020	0.020	4850763
Bromodichloromethane	ug/g	<0.050	4849386	<0.050	0.050	4850763
Bromoform	ug/g	<0.050	4849386	<0.050	0.050	4850763
Bromomethane	ug/g	<0.050	4849386	<0.050	0.050	4850763
Carbon Tetrachloride	ug/g	<0.050	4849386	<0.050	0.050	4850763
Chlorobenzene	ug/g	<0.050	4849386	<0.050	0.050	4850763
Chloroform	ug/g	<0.050	4849386	<0.050	0.050	4850763
Dibromochloromethane	ug/g	<0.050	4849386	<0.050	0.050	4850763
1,2-Dichlorobenzene	ug/g	<0.050	4849386	<0.050	0.050	4850763
1,3-Dichlorobenzene	ug/g	<0.050	4849386	<0.050	0.050	4850763
1,4-Dichlorobenzene	ug/g	<0.050	4849386	<0.050	0.050	4850763
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	4849386	<0.050	0.050	4850763
1,1-Dichloroethane	ug/g	<0.050	4849386	<0.050	0.050	4850763
1,2-Dichloroethane	ug/g	<0.050	4849386	<0.050	0.050	4850763
1,1-Dichloroethylene	ug/g	<0.050	4849386	<0.050	0.050	4850763
cis-1,2-Dichloroethylene	ug/g	<0.050	4849386	<0.050	0.050	4850763
trans-1,2-Dichloroethylene	ug/g	<0.050	4849386	<0.050	0.050	4850763
1,2-Dichloropropane	ug/g	<0.050	4849386	<0.050	0.050	4850763
cis-1,3-Dichloropropene	ug/g	<0.030	4849386	<0.030	0.030	4850763
trans-1,3-Dichloropropene	ug/g	<0.040	4849386	<0.040	0.040	4850763
Ethylbenzene	ug/g	<0.020	4849386	<0.020	0.020	4850763
Ethylene Dibromide	ug/g	<0.050	4849386	<0.050	0.050	4850763
Hexane	ug/g	<0.050	4849386	<0.050	0.050	4850763
Methylene Chloride(Dichloromethane)	ug/g	<0.050	4849386	<0.050	0.050	4850763
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	4849386	<0.50	0.50	4850763
Methyl Isobutyl Ketone	ug/g	<0.50	4849386	<0.50	0.50	4850763
Methyl t-butyl ether (MTBE)	ug/g	<0.050	4849386	<0.050	0.050	4850763
Styrene	ug/g	<0.050	4849386	<0.050	0.050	4850763
1,1,1,2-Tetrachloroethane	ug/g	<0.050	4849386	<0.050	0.050	4850763
1,1,2,2-Tetrachloroethane	ug/g	<0.050	4849386	<0.050	0.050	4850763
Tetrachloroethylene	ug/g	<0.050	4849386	<0.050	0.050	4850763
Toluene	ug/g	<0.020	4849386	<0.020	0.020	4850763
1,1,1-Trichloroethane	ug/g	<0.050	4849386	<0.050	0.050	4850763
1,1,2-Trichloroethane	ug/g	<0.050	4849386	<0.050	0.050	4850763
Trichloroethylene	ug/g	<0.050	4849386	<0.050	0.050	4850763

RDL = Reportable Detection Limit
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VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		DVK876		DVK877		
Sampling Date		2017/01/30		2017/01/30		
COC Number		596564-01-01		596564-01-01		
	UNITS	17-6	QC Batch	17-20	RDL	QC Batch
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	4849386	<0.050	0.050	4850763
Vinyl Chloride	ug/g	<0.020	4849386	<0.020	0.020	4850763
p+m-Xylene	ug/g	<0.020	4849386	<0.020	0.020	4850763
o-Xylene	ug/g	<0.020	4849386	<0.020	0.020	4850763
Total Xylenes	ug/g	<0.020	4849386	<0.020	0.020	4850763
F1 (C6-C10)	ug/g	<10	4849386	<10	10	4850763
F1 (C6-C10) - BTEX	ug/g	<10	4849386	<10	10	4850763
Surrogate Recovery (%)						
4-Bromofluorobenzene	%	98	4849386	97		4850763
D10-o-Xylene	%	101	4849386	107		4850763
D4-1,2-Dichloroethane	%	100	4849386	98		4850763
D8-Toluene	%	93	4849386	96		4850763

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		DVK832	DVK832	DVK833	DVK834	DVK835		
Sampling Date		2017/01/30	2017/01/30	2017/01/30	2017/01/30	2017/01/30		
COC Number		596564-03-01	596564-03-01	596564-03-01	596564-03-01	596564-03-01		
	UNITS	17-7	17-7 Lab-Dup	17-23	17-5	17-4	RDL	QC Batch
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	<10	<10	<10	10	4847275
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	<50	<50	<50	50	4847275
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	<50	<50	<50	50	4847275
Reached Baseline at C50	ug/g	Yes	Yes	Yes	Yes	Yes		4847275
Surrogate Recovery (%)								
o-Terphenyl	%	111	112	117	109	116		4847275

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

Maxxam ID		DVK836	DVK837		DVK838		DVK839	DVK840		
Sampling Date		2017/01/30	2017/01/30		2017/01/30		2017/01/30	2017/01/30		
COC Number		596564-03-01	596564-03-01		596564-03-01		596564-03-01	596564-03-01		
	UNITS	DUP-3	17-2	RDL	17-18	RDL	17-3	17-8	RDL	QC Batch
BTEX & F1 Hydrocarbons										
Benzene	ug/g		<0.02	0.02	0.17	0.04	<0.02		0.02	4847620
Toluene	ug/g		<0.02	0.02	0.82	0.04	<0.02		0.02	4847620
Ethylbenzene	ug/g		<0.02	0.02	0.19	0.04	<0.02		0.02	4847620
o-Xylene	ug/g		<0.02	0.02	0.66	0.04	<0.02		0.02	4847620
p+m-Xylene	ug/g		<0.04	0.04	0.80	0.08	<0.04		0.04	4847620
Total Xylenes	ug/g		<0.04	0.04	1.5	0.08	<0.04		0.04	4847620
F1 (C6-C10)	ug/g		<10	10	<20	20	<10		10	4847620
F1 (C6-C10) - BTEX	ug/g		<10	10	<20	20	<10		10	4847620
F2-F4 Hydrocarbons										
F4G-sg (Grav. Heavy Hydrocarbons)	ug/g		2200	100						4854973
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	10	<20	20	<10	<10	10	4847275
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	50	110	100	<50	<50	50	4847275
F4 (C34-C50 Hydrocarbons)	ug/g	<50	280	50	210	100	<50	<50	50	4847275
Reached Baseline at C50	ug/g	Yes	No		Yes		Yes	Yes		4847275
Surrogate Recovery (%)										
1,4-Difluorobenzene	%		113		111		110			4847620
4-Bromofluorobenzene	%		100		98		101			4847620
D10-Ethylbenzene	%		118		108		108			4847620
D4-1,2-Dichloroethane	%		109		108		106			4847620
o-Terphenyl	%	110	92		124		108	104		4847275

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B720504
Report Date: 2017/02/08

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		DVK841	DVK875	DVK876	DVK877	DVK878		
Sampling Date		2017/01/30	2017/01/30	2017/01/30	2017/01/30	2017/01/30		
COC Number		596564-03-01	596564-01-01	596564-01-01	596564-01-01	596564-01-01		
	UNITS	17-10	17-19	17-6	17-20	17-21	RDL	QC Batch
BTEX & F1 Hydrocarbons								
Benzene	ug/g		<0.02			<0.02	0.02	4847620
Toluene	ug/g		<0.02			<0.02	0.02	4847620
Ethylbenzene	ug/g		<0.02			<0.02	0.02	4847620
o-Xylene	ug/g		<0.02			<0.02	0.02	4847620
p+m-Xylene	ug/g		<0.04			<0.04	0.04	4847620
Total Xylenes	ug/g		<0.04			<0.04	0.04	4847620
F1 (C6-C10)	ug/g		<10			<10	10	4847620
F1 (C6-C10) - BTEX	ug/g		<10			<10	10	4847620
F2-F4 Hydrocarbons								
F4G-sg (Grav. Heavy Hydrocarbons)	ug/g		1600				100	4854973
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	<10	<10	<10	10	4847275
F3 (C16-C34 Hydrocarbons)	ug/g	<50	90	<50	<50	<50	50	4847275
F4 (C34-C50 Hydrocarbons)	ug/g	<50	240	<50	<50	<50	50	4847275
Reached Baseline at C50	ug/g	Yes	No	Yes	Yes	Yes		4847275
Surrogate Recovery (%)								
1,4-Difluorobenzene	%		110			109		4847620
4-Bromofluorobenzene	%		99			100		4847620
D10-Ethylbenzene	%		104			119		4847620
D4-1,2-Dichloroethane	%		104			106		4847620
o-Terphenyl	%	106	108	99	108	117		4847275

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		DVK879		
Sampling Date		2017/01/30		
COC Number		596564-01-01		
	UNITS	DUP-2	RDL	QC Batch
BTEX & F1 Hydrocarbons				
Benzene	ug/g	<0.02	0.02	4847620
Toluene	ug/g	<0.02	0.02	4847620
Ethylbenzene	ug/g	<0.02	0.02	4847620
o-Xylene	ug/g	<0.02	0.02	4847620
p+m-Xylene	ug/g	<0.04	0.04	4847620
Total Xylenes	ug/g	<0.04	0.04	4847620
F1 (C6-C10)	ug/g	<10	10	4847620
F1 (C6-C10) - BTEX	ug/g	<10	10	4847620
F2-F4 Hydrocarbons				
F2 (C10-C16 Hydrocarbons)	ug/g	<10	10	4847275
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	4847275
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	4847275
Reached Baseline at C50	ug/g	Yes		4847275
Surrogate Recovery (%)				
1,4-Difluorobenzene	%	110		4847620
4-Bromofluorobenzene	%	106		4847620
D10-Ethylbenzene	%	110		4847620
D4-1,2-Dichloroethane	%	106		4847620
o-Terphenyl	%	111		4847275

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B720504
Report Date: 2017/02/08

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

TEST SUMMARY

Maxxam ID: DVK832
Sample ID: 17-7
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4846294	N/A	2017/02/07	Steve Roberts
Hot Water Extractable Boron	ICP	4852556	2017/02/06	2017/02/06	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4849580	2017/02/02	2017/02/05	Sally Coughlin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/03	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4852518	2017/02/06	2017/02/06	Daniel Teclu
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4849346	2017/02/02	2017/02/06	Arezoo Habibagahi
Polychlorinated Biphenyl in Soil	GC/ECD	4850055	2017/02/02	2017/02/03	Li Peng
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4849386	N/A	2017/02/03	Karen Hughes

Maxxam ID: DVK832 Dup
Sample ID: 17-7
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/03	Liliana Gaburici
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4849346	2017/02/02	2017/02/06	Arezoo Habibagahi

Maxxam ID: DVK833
Sample ID: 17-23
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	4852556	2017/02/06	2017/02/06	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4849580	2017/02/02	2017/02/05	Sally Coughlin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/03	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4852518	2017/02/06	2017/02/06	Daniel Teclu
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4849386	N/A	2017/02/03	Karen Hughes

Maxxam ID: DVK834
Sample ID: 17-5
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4846294	N/A	2017/02/07	Steve Roberts
Hot Water Extractable Boron	ICP	4852556	2017/02/06	2017/02/06	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4849580	2017/02/02	2017/02/05	Sally Coughlin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/03	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4852518	2017/02/06	2017/02/06	Daniel Teclu
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4849346	2017/02/02	2017/02/06	Arezoo Habibagahi
Polychlorinated Biphenyl in Soil	GC/ECD	4850055	2017/02/02	2017/02/03	Li Peng
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4849386	N/A	2017/02/03	Karen Hughes

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TEST SUMMARY

Maxxam ID: DVK834 Dup
Sample ID: 17-5
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4849386	N/A	2017/02/03	Karen Hughes

Maxxam ID: DVK835
Sample ID: 17-4
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4846294	N/A	2017/02/07	Steve Roberts
Hot Water Extractable Boron	ICP	4852556	2017/02/06	2017/02/06	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4849580	2017/02/02	2017/02/05	Sally Coughlin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/03	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4852518	2017/02/06	2017/02/06	Daniel Teclu
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4849346	2017/02/02	2017/02/06	Arezoo Habibagahi
Polychlorinated Biphenyl in Soil	GC/ECD	4850055	2017/02/02	2017/02/03	Li Peng
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4849386	N/A	2017/02/03	Karen Hughes

Maxxam ID: DVK835 Dup
Sample ID: 17-4
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Polychlorinated Biphenyl in Soil	GC/ECD	4850055	2017/02/02	2017/02/03	Li Peng

Maxxam ID: DVK836
Sample ID: DUP-3
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4846294	N/A	2017/02/07	Steve Roberts
Hot Water Extractable Boron	ICP	4852556	2017/02/06	2017/02/06	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4849580	2017/02/02	2017/02/05	Sally Coughlin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/03	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4852552	2017/02/06	2017/02/06	Viviana Canzonieri
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4849346	2017/02/02	2017/02/06	Arezoo Habibagahi
Polychlorinated Biphenyl in Soil	GC/ECD	4850055	2017/02/02	2017/02/03	Li Peng
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4849386	N/A	2017/02/03	Karen Hughes

Maxxam ID: DVK837
Sample ID: 17-2
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4846294	N/A	2017/02/07	Steve Roberts
Hot Water Extractable Boron	ICP	4852556	2017/02/06	2017/02/06	Jolly John

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Maxxam Job #: B720504
Report Date: 2017/02/08

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

TEST SUMMARY

Maxxam ID: DVK837
Sample ID: 17-2
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4849580	2017/02/02	2017/02/05	Sally Coughlin
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4847620	N/A	2017/02/02	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/03	Liliana Gaburici
F4G (CCME Hydrocarbons Gravimetric)	BAL	4854973	2017/02/07	2017/02/08	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4852518	2017/02/06	2017/02/06	Daniel Teclu
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4849346	2017/02/02	2017/02/06	Arezoo Habibagahi

Maxxam ID: DVK838
Sample ID: 17-18
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4846294	N/A	2017/02/07	Steve Roberts
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4847620	N/A	2017/02/02	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/06	Liliana Gaburici
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4849346	2017/02/02	2017/02/06	Arezoo Habibagahi

Maxxam ID: DVK839
Sample ID: 17-3
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4846294	N/A	2017/02/07	Steve Roberts
Hot Water Extractable Boron	ICP	4852556	2017/02/06	2017/02/06	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4849580	2017/02/02	2017/02/05	Sally Coughlin
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4847620	N/A	2017/02/02	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/06	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4852518	2017/02/06	2017/02/06	Daniel Teclu
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4849346	2017/02/02	2017/02/06	Arezoo Habibagahi

Maxxam ID: DVK840
Sample ID: 17-8
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4846294	N/A	2017/02/07	Steve Roberts
Hot Water Extractable Boron	ICP	4852556	2017/02/06	2017/02/06	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4849580	2017/02/02	2017/02/05	Sally Coughlin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/06	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4852552	2017/02/06	2017/02/06	Viviana Canzonieri
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4849346	2017/02/02	2017/02/06	Arezoo Habibagahi
Polychlorinated Biphenyl in Soil	GC/ECD	4850055	2017/02/02	2017/02/03	Li Peng

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Maxxam Job #: B720504
Report Date: 2017/02/08

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

TEST SUMMARY

Maxxam ID: DVK840
Sample ID: 17-8
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4850763	N/A	2017/02/03	Karen Hughes

Maxxam ID: DVK840 Dup
Sample ID: 17-8
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4850763	N/A	2017/02/03	Karen Hughes

Maxxam ID: DVK841
Sample ID: 17-10
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4846294	N/A	2017/02/07	Steve Roberts
Hot Water Extractable Boron	ICP	4852556	2017/02/06	2017/02/06	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4849580	2017/02/02	2017/02/05	Sally Coughlin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/06	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4852552	2017/02/06	2017/02/06	Viviana Canzonieri
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4849346	2017/02/02	2017/02/06	Arezoo Habibagahi
Polychlorinated Biphenyl in Soil	GC/ECD	4850055	2017/02/02	2017/02/03	Li Peng
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4849386	N/A	2017/02/03	Karen Hughes

Maxxam ID: DVK875
Sample ID: 17-19
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4846294	N/A	2017/02/07	Steve Roberts
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4847620	N/A	2017/02/02	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/06	Liliana Gaburici
F4G (CCME Hydrocarbons Gravimetric)	BAL	4854973	2017/02/07	2017/02/08	Liliana Gaburici
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4849346	2017/02/02	2017/02/06	Arezoo Habibagahi

Maxxam ID: DVK876
Sample ID: 17-6
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4846294	N/A	2017/02/07	Steve Roberts
Hot Water Extractable Boron	ICP	4852556	2017/02/06	2017/02/06	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4849580	2017/02/02	2017/02/05	Sally Coughlin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/06	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4852518	2017/02/06	2017/02/06	Daniel Teclu

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Maxxam Job #: B720504
Report Date: 2017/02/08

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

TEST SUMMARY

Maxxam ID: DVK876
Sample ID: 17-6
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4849346	2017/02/02	2017/02/06	Arezoo Habibagahi
Polychlorinated Biphenyl in Soil	GC/ECD	4850055	2017/02/02	2017/02/03	Li Peng
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4849386	N/A	2017/02/03	Karen Hughes

Maxxam ID: DVK877
Sample ID: 17-20
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/06	Liliana Gaburici
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4850763	N/A	2017/02/03	Karen Hughes

Maxxam ID: DVK878
Sample ID: 17-21
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4847620	N/A	2017/02/02	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/06	Liliana Gaburici
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici

Maxxam ID: DVK879
Sample ID: DUP-2
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4847620	N/A	2017/02/02	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/06	Liliana Gaburici
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	3.7°C
Package 2	3.7°C

Sample DVK838 [17-18] : PAH and F1/BTEX and F24 Analysis: Sample has a high percent of moisture. Reporting limits were adjusted for the dry weight of the sample.

Sample DVK840 [17-8] : PCB Analysis: Detection limits were adjusted due to high moisture content.

Sample DVK876 [17-6] : PCB Analysis: Detection limits were adjusted due to high moisture content.

Results relate only to the items tested.

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Maxxam Job #: B720504
Report Date: 2017/02/08

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4847275	o-Terphenyl	2017/02/03	99	30 - 130	102	30 - 130	108	%		
4847620	1,4-Difluorobenzene	2017/02/02	94	60 - 140	89	60 - 140	110	%		
4847620	4-Bromofluorobenzene	2017/02/02	117	60 - 140	106	60 - 140	94	%		
4847620	D10-Ethylbenzene	2017/02/02	102	30 - 130	114	30 - 130	116	%		
4847620	D4-1,2-Dichloroethane	2017/02/02	100	60 - 140	98	60 - 140	114	%		
4849346	D10-Anthracene	2017/02/07	90	50 - 130	95	50 - 130	87	%		
4849346	D14-Terphenyl (FS)	2017/02/07	91	50 - 130	93	50 - 130	86	%		
4849346	D8-Acenaphthylene	2017/02/07	64	50 - 130	67	50 - 130	60	%		
4849386	4-Bromofluorobenzene	2017/02/03	103	60 - 140	103	60 - 140	127	%		
4849386	D10-o-Xylene	2017/02/03	105	60 - 130	102	60 - 130	96	%		
4849386	D4-1,2-Dichloroethane	2017/02/03	98	60 - 140	97	60 - 140	98	%		
4849386	D8-Toluene	2017/02/03	101	60 - 140	100	60 - 140	96	%		
4850055	Decachlorobiphenyl	2017/02/03	97	60 - 130	94	60 - 130	90	%		
4850763	4-Bromofluorobenzene	2017/02/03	104	60 - 140	104	60 - 140	98	%		
4850763	D10-o-Xylene	2017/02/03	110	60 - 130	96	60 - 130	107	%		
4850763	D4-1,2-Dichloroethane	2017/02/03	96	60 - 140	96	60 - 140	98	%		
4850763	D8-Toluene	2017/02/03	100	60 - 140	99	60 - 140	96	%		
4847269	Moisture	2017/02/06							0	50
4847275	F2 (C10-C16 Hydrocarbons)	2017/02/03	113	50 - 130	85	80 - 120	<10	ug/g	NC	50
4847275	F3 (C16-C34 Hydrocarbons)	2017/02/03	113	50 - 130	85	80 - 120	<50	ug/g	NC	50
4847275	F4 (C34-C50 Hydrocarbons)	2017/02/03	113	50 - 130	85	80 - 120	<50	ug/g	NC	50
4847620	Benzene	2017/02/02	99	60 - 140	101	60 - 140	<0.02	ug/g	NC	50
4847620	Ethylbenzene	2017/02/02	95	60 - 140	97	60 - 140	<0.02	ug/g	NC	50
4847620	F1 (C6-C10) - BTEX	2017/02/02					<10	ug/g	NC	50
4847620	F1 (C6-C10)	2017/02/02	96	60 - 140	101	80 - 120	<10	ug/g	NC	50
4847620	o-Xylene	2017/02/02	110	60 - 140	105	60 - 140	<0.02	ug/g	NC	50
4847620	p+m-Xylene	2017/02/02	94	60 - 140	97	60 - 140	<0.04	ug/g	NC	50
4847620	Toluene	2017/02/02	98	60 - 140	97	60 - 140	<0.02	ug/g	NC	50
4847620	Total Xylenes	2017/02/02					<0.04	ug/g	NC	50
4849346	1-Methylnaphthalene	2017/02/06	84	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
4849346	2-Methylnaphthalene	2017/02/06	83	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40

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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
4849346	Acenaphthene	2017/02/06	93	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
4849346	Acenaphthylene	2017/02/06	79	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
4849346	Anthracene	2017/02/06	83	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
4849346	Benzo(a)anthracene	2017/02/06	85	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4849346	Benzo(a)pyrene	2017/02/06	81	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
4849346	Benzo(b/j)fluoranthene	2017/02/06	90	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
4849346	Benzo(g,h,i)perylene	2017/02/06	76	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40
4849346	Benzo(k)fluoranthene	2017/02/06	92	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
4849346	Chrysene	2017/02/06	88	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
4849346	Dibenz(a,h)anthracene	2017/02/06	77	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
4849346	Fluoranthene	2017/02/06	88	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
4849346	Fluorene	2017/02/06	90	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
4849346	Indeno(1,2,3-cd)pyrene	2017/02/06	88	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
4849346	Naphthalene	2017/02/06	83	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
4849346	Phenanthrene	2017/02/06	86	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
4849346	Pyrene	2017/02/06	86	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
4849386	1,1,1,2-Tetrachloroethane	2017/02/03	99	60 - 140	104	60 - 130	<0.050	ug/g	NC	50
4849386	1,1,1-Trichloroethane	2017/02/03	96	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
4849386	1,1,2,2-Tetrachloroethane	2017/02/03	100	60 - 140	103	60 - 130	<0.050	ug/g	NC	50
4849386	1,1,2-Trichloroethane	2017/02/03	94	60 - 140	98	60 - 130	<0.050	ug/g	NC	50
4849386	1,1-Dichloroethane	2017/02/03	94	60 - 140	99	60 - 130	<0.050	ug/g	NC	50
4849386	1,1-Dichloroethylene	2017/02/03	97	60 - 140	102	60 - 130	<0.050	ug/g	NC	50
4849386	1,2-Dichlorobenzene	2017/02/03	100	60 - 140	106	60 - 130	<0.050	ug/g	NC	50
4849386	1,2-Dichloroethane	2017/02/03	91	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
4849386	1,2-Dichloropropane	2017/02/03	95	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
4849386	1,3-Dichlorobenzene	2017/02/03	100	60 - 140	106	60 - 130	<0.050	ug/g	NC	50
4849386	1,4-Dichlorobenzene	2017/02/03	103	60 - 140	109	60 - 130	<0.050	ug/g	NC	50
4849386	Acetone (2-Propanone)	2017/02/03	99	60 - 140	92	60 - 140	<0.50	ug/g	NC	50
4849386	Benzene	2017/02/03	97	60 - 140	102	60 - 130	<0.020	ug/g	NC	50
4849386	Bromodichloromethane	2017/02/03	97	60 - 140	102	60 - 130	<0.050	ug/g	NC	50
4849386	Bromoform	2017/02/03	100	60 - 140	105	60 - 130	<0.050	ug/g	NC	50

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
4849386	Bromomethane	2017/02/03	103	60 - 140	109	60 - 140	<0.050	ug/g	NC	50
4849386	Carbon Tetrachloride	2017/02/03	99	60 - 140	104	60 - 130	<0.050	ug/g	NC	50
4849386	Chlorobenzene	2017/02/03	102	60 - 140	108	60 - 130	<0.050	ug/g	NC	50
4849386	Chloroform	2017/02/03	94	60 - 140	100	60 - 130	<0.050	ug/g	NC	50
4849386	cis-1,2-Dichloroethylene	2017/02/03	101	60 - 140	107	60 - 130	<0.050	ug/g	NC	50
4849386	cis-1,3-Dichloropropene	2017/02/03	103	60 - 140	108	60 - 130	<0.030	ug/g	NC	50
4849386	Dibromochloromethane	2017/02/03	100	60 - 140	104	60 - 130	<0.050	ug/g	NC	50
4849386	Dichlorodifluoromethane (FREON 12)	2017/02/03	79	60 - 140	85	60 - 140	<0.050	ug/g	NC	50
4849386	Ethylbenzene	2017/02/03	100	60 - 140	104	60 - 130	<0.020	ug/g	NC	50
4849386	Ethylene Dibromide	2017/02/03	100	60 - 140	104	60 - 130	<0.050	ug/g	NC	50
4849386	F1 (C6-C10) - BTEX	2017/02/03					<10	ug/g	NC	30
4849386	F1 (C6-C10)	2017/02/03	87	60 - 140	97	80 - 120	<10	ug/g	NC	30
4849386	Hexane	2017/02/03	100	60 - 140	105	60 - 130	<0.050	ug/g	NC	50
4849386	Methyl Ethyl Ketone (2-Butanone)	2017/02/03	103	60 - 140	99	60 - 140	<0.50	ug/g	NC	50
4849386	Methyl Isobutyl Ketone	2017/02/03	107	60 - 140	108	60 - 130	<0.50	ug/g	NC	50
4849386	Methyl t-butyl ether (MTBE)	2017/02/03	99	60 - 140	104	60 - 130	<0.050	ug/g	NC	50
4849386	Methylene Chloride(Dichloromethane)	2017/02/03	101	60 - 140	107	60 - 130	<0.050	ug/g	NC	50
4849386	o-Xylene	2017/02/03	99	60 - 140	103	60 - 130	<0.020	ug/g	NC	50
4849386	p+m-Xylene	2017/02/03	99	60 - 140	103	60 - 130	<0.020	ug/g	NC	50
4849386	Styrene	2017/02/03	102	60 - 140	107	60 - 130	<0.050	ug/g	NC	50
4849386	Tetrachloroethylene	2017/02/03	99	60 - 140	103	60 - 130	<0.050	ug/g	NC	50
4849386	Toluene	2017/02/03	97	60 - 140	101	60 - 130	<0.020	ug/g	NC	50
4849386	Total Xylenes	2017/02/03					<0.020	ug/g	NC	50
4849386	trans-1,2-Dichloroethylene	2017/02/03	97	60 - 140	102	60 - 130	<0.050	ug/g	NC	50
4849386	trans-1,3-Dichloropropene	2017/02/03	105	60 - 140	110	60 - 130	<0.040	ug/g	NC	50
4849386	Trichloroethylene	2017/02/03	98	60 - 140	104	60 - 130	<0.050	ug/g	NC	50
4849386	Trichlorofluoromethane (FREON 11)	2017/02/03	101	60 - 140	106	60 - 130	<0.050	ug/g	NC	50
4849386	Vinyl Chloride	2017/02/03	97	60 - 140	103	60 - 130	<0.020	ug/g	NC	50
4849580	Chromium (VI)	2017/02/05	0 (1)	75 - 125	90	80 - 120	<0.2	ug/g	NC	35
4850055	Aroclor 1242	2017/02/03					<0.010	ug/g	NC	50
4850055	Aroclor 1248	2017/02/03					<0.010	ug/g	NC	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
4850055	Aroclor 1254	2017/02/03					<0.010	ug/g	NC	50
4850055	Aroclor 1260	2017/02/03	107	60 - 130	109	60 - 130	<0.010	ug/g	NC	50
4850055	Total PCB	2017/02/03	107	60 - 130	109	60 - 130	<0.010	ug/g	NC	50
4850763	1,1,1,2-Tetrachloroethane	2017/02/03	97	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
4850763	1,1,1-Trichloroethane	2017/02/03	93	60 - 140	92	60 - 130	<0.050	ug/g	NC	50
4850763	1,1,2,2-Tetrachloroethane	2017/02/03	98	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
4850763	1,1,2-Trichloroethane	2017/02/03	92	60 - 140	89	60 - 130	<0.050	ug/g	NC	50
4850763	1,1-Dichloroethane	2017/02/03	90	60 - 140	89	60 - 130	<0.050	ug/g	NC	50
4850763	1,1-Dichloroethylene	2017/02/03	92	60 - 140	91	60 - 130	<0.050	ug/g	NC	50
4850763	1,2-Dichlorobenzene	2017/02/03	98	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
4850763	1,2-Dichloroethane	2017/02/03	88	60 - 140	87	60 - 130	<0.050	ug/g	NC	50
4850763	1,2-Dichloropropane	2017/02/03	92	60 - 140	91	60 - 130	<0.050	ug/g	NC	50
4850763	1,3-Dichlorobenzene	2017/02/03	98	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
4850763	1,4-Dichlorobenzene	2017/02/03	100	60 - 140	98	60 - 130	<0.050	ug/g	NC	50
4850763	Acetone (2-Propanone)	2017/02/03	84	60 - 140	83	60 - 140	<0.50	ug/g	NC	50
4850763	Benzene	2017/02/03	93	60 - 140	92	60 - 130	<0.020	ug/g	NC	50
4850763	Bromodichloromethane	2017/02/03	95	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
4850763	Bromoform	2017/02/03	98	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
4850763	Bromomethane	2017/02/03	94	60 - 140	92	60 - 140	<0.050	ug/g	NC	50
4850763	Carbon Tetrachloride	2017/02/03	95	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
4850763	Chlorobenzene	2017/02/03	100	60 - 140	97	60 - 130	<0.050	ug/g	NC	50
4850763	Chloroform	2017/02/03	92	60 - 140	90	60 - 130	<0.050	ug/g	NC	50
4850763	cis-1,2-Dichloroethylene	2017/02/03	98	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
4850763	cis-1,3-Dichloropropene	2017/02/03	92	60 - 140	90	60 - 130	<0.030	ug/g	NC	50
4850763	Dibromochloromethane	2017/02/03	98	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
4850763	Dichlorodifluoromethane (FREON 12)	2017/02/03	72	60 - 140	72	60 - 140	<0.050	ug/g	NC	50
4850763	Ethylbenzene	2017/02/03	96	60 - 140	95	60 - 130	<0.020	ug/g	NC	50
4850763	Ethylene Dibromide	2017/02/03	97	60 - 140	94	60 - 130	<0.050	ug/g	NC	50
4850763	F1 (C6-C10) - BTEX	2017/02/03					<10	ug/g	NC	30
4850763	F1 (C6-C10)	2017/02/03	94	60 - 140	93	80 - 120	<10	ug/g	NC	30
4850763	Hexane	2017/02/03	94	60 - 140	94	60 - 130	<0.050	ug/g	NC	50

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
4850763	Methyl Ethyl Ketone (2-Butanone)	2017/02/03	91	60 - 140	88	60 - 140	<0.50	ug/g	NC	50
4850763	Methyl Isobutyl Ketone	2017/02/03	99	60 - 140	96	60 - 130	<0.50	ug/g	NC	50
4850763	Methyl t-butyl ether (MTBE)	2017/02/03	95	60 - 140	94	60 - 130	<0.050	ug/g	NC	50
4850763	Methylene Chloride(Dichloromethane)	2017/02/03	98	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
4850763	o-Xylene	2017/02/03	95	60 - 140	93	60 - 130	<0.020	ug/g	NC	50
4850763	p+m-Xylene	2017/02/03	95	60 - 140	93	60 - 130	<0.020	ug/g	NC	50
4850763	Styrene	2017/02/03	98	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
4850763	Tetrachloroethylene	2017/02/03	95	60 - 140	94	60 - 130	<0.050	ug/g	NC	50
4850763	Toluene	2017/02/03	94	60 - 140	92	60 - 130	<0.020	ug/g	NC	50
4850763	Total Xylenes	2017/02/03					<0.020	ug/g	NC	50
4850763	trans-1,2-Dichloroethylene	2017/02/03	93	60 - 140	91	60 - 130	<0.050	ug/g	NC	50
4850763	trans-1,3-Dichloropropene	2017/02/03	91	60 - 140	88	60 - 130	<0.040	ug/g	NC	50
4850763	Trichloroethylene	2017/02/03	96	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
4850763	Trichlorofluoromethane (FREON 11)	2017/02/03	96	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
4850763	Vinyl Chloride	2017/02/03	92	60 - 140	90	60 - 130	<0.020	ug/g	NC	50
4852518	Acid Extractable Antimony (Sb)	2017/02/06	91	75 - 125	102	80 - 120	<0.20	ug/g	3.6	30
4852518	Acid Extractable Arsenic (As)	2017/02/06	NC	75 - 125	98	80 - 120	<1.0	ug/g		
4852518	Acid Extractable Barium (Ba)	2017/02/06	NC	75 - 125	94	80 - 120	<0.50	ug/g	0.95	30
4852518	Acid Extractable Beryllium (Be)	2017/02/06	94	75 - 125	98	80 - 120	<0.20	ug/g	NC	30
4852518	Acid Extractable Boron (B)	2017/02/06	91	75 - 125	96	80 - 120	<5.0	ug/g	NC	30
4852518	Acid Extractable Cadmium (Cd)	2017/02/06	93	75 - 125	98	80 - 120	<0.10	ug/g	NC	30
4852518	Acid Extractable Chromium (Cr)	2017/02/06	91	75 - 125	98	80 - 120	<1.0	ug/g		
4852518	Acid Extractable Cobalt (Co)	2017/02/06	91	75 - 125	98	80 - 120	<0.10	ug/g	2.7	30
4852518	Acid Extractable Copper (Cu)	2017/02/06	92	75 - 125	98	80 - 120	<0.50	ug/g	3.3	30
4852518	Acid Extractable Lead (Pb)	2017/02/06	NC	75 - 125	101	80 - 120	<1.0	ug/g	3.4	30
4852518	Acid Extractable Mercury (Hg)	2017/02/06	96	75 - 125	106	80 - 120	<0.050	ug/g	NC	30
4852518	Acid Extractable Molybdenum (Mo)	2017/02/06	96	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
4852518	Acid Extractable Nickel (Ni)	2017/02/06	89	75 - 125	100	80 - 120	<0.50	ug/g	16	30
4852518	Acid Extractable Selenium (Se)	2017/02/06	96	75 - 125	100	80 - 120	<0.50	ug/g	NC	30
4852518	Acid Extractable Silver (Ag)	2017/02/06	99	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
4852518	Acid Extractable Thallium (Tl)	2017/02/06	93	75 - 125	99	80 - 120	<0.050	ug/g		

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
4852518	Acid Extractable Uranium (U)	2017/02/06	NC	75 - 125	99	80 - 120	<0.050	ug/g		
4852518	Acid Extractable Vanadium (V)	2017/02/06	NC	75 - 125	100	80 - 120	<5.0	ug/g	NC	30
4852518	Acid Extractable Zinc (Zn)	2017/02/06	NC	75 - 125	97	80 - 120	<5.0	ug/g	5.2	30
4852552	Acid Extractable Antimony (Sb)	2017/02/06	91	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
4852552	Acid Extractable Arsenic (As)	2017/02/06	98	75 - 125	104	80 - 120	<1.0	ug/g	NC	30
4852552	Acid Extractable Barium (Ba)	2017/02/06	NC	75 - 125	88	80 - 120	<0.50	ug/g	2.7	30
4852552	Acid Extractable Beryllium (Be)	2017/02/06	101	75 - 125	97	80 - 120	<0.20	ug/g	NC	30
4852552	Acid Extractable Boron (B)	2017/02/06	97	75 - 125	95	80 - 120	<5.0	ug/g	NC	30
4852552	Acid Extractable Cadmium (Cd)	2017/02/06	100	75 - 125	97	80 - 120	<0.10	ug/g	NC	30
4852552	Acid Extractable Chromium (Cr)	2017/02/06	NC	75 - 125	100	80 - 120	<1.0	ug/g	1.6	30
4852552	Acid Extractable Cobalt (Co)	2017/02/06	100	75 - 125	102	80 - 120	<0.10	ug/g	0.94	30
4852552	Acid Extractable Copper (Cu)	2017/02/06	98	75 - 125	98	80 - 120	<0.50	ug/g	0.55	30
4852552	Acid Extractable Lead (Pb)	2017/02/06	NC	75 - 125	102	80 - 120	<1.0	ug/g	3.4	30
4852552	Acid Extractable Mercury (Hg)	2017/02/06	102	75 - 125	103	80 - 120	<0.050	ug/g	NC	30
4852552	Acid Extractable Molybdenum (Mo)	2017/02/06	101	75 - 125	99	80 - 120	<0.50	ug/g	NC	30
4852552	Acid Extractable Nickel (Ni)	2017/02/06	96	75 - 125	105	80 - 120	<0.50	ug/g	0.27	30
4852552	Acid Extractable Selenium (Se)	2017/02/06	100	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
4852552	Acid Extractable Silver (Ag)	2017/02/06	102	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
4852552	Acid Extractable Thallium (Tl)	2017/02/06	99	75 - 125	100	80 - 120	<0.050	ug/g	NC	30
4852552	Acid Extractable Uranium (U)	2017/02/06	101	75 - 125	101	80 - 120	<0.050	ug/g	11	30
4852552	Acid Extractable Vanadium (V)	2017/02/06	NC	75 - 125	99	80 - 120	<5.0	ug/g	NC	30
4852552	Acid Extractable Zinc (Zn)	2017/02/06	NC	75 - 125	103	80 - 120	<5.0	ug/g	5.5	30
4852556	Hot Water Ext. Boron (B)	2017/02/06	94	75 - 125	100	75 - 125	<0.050	ug/g	4.7	40

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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
4854973	F4G-sg (Grav. Heavy Hydrocarbons)	2017/02/08			107	65 - 135	<100	ug/g	2.8	50

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 spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B720504
Report Date: 2017/02/08

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

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

Paul Rubinato, Analyst, Maxxam Analytics

Steve Roberts, Ottawa Lab Manager

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 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

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Maxxam Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B63104	Maxxam Job #:	Bottle Order #: 596564
Attention:	Central Accounting	Attention:	Joanne Woodhouse	P.O. #:			
Address:	1931 Robertson Rd, Ottawa ON K2H 5B7	Address:		Project:	1670949	COC #: C#596564-03-01	Project Manager: Madison Bingley
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Project Name:			
Email:	AP-CustomerService@golder.com	Email:	jwoodhouse@golder.com	Site #:			
				Sampled By:			

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 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other ___

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)? ___

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 #)*

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	Reg 153 Metals	VOC	PCB	PHC (F1-F4)	BTEX	PAH	# of Bottles	Comments
1		17-7	Jan 30	S			X	X	X	X		✓		
2		17-23	"		"		X	X		X				
3		17-5	"		"		X	X	X	X		X		
4		17-4	"		"		X	X	X	X		X		
5		Dup 3	"		"		X	X	X	X		X		
6		17-2	"		"		X			X		X		
7		17-18	"		"					X	X	X		
8		17-3	"		"		X			X		X		
9		17-8	"		"		X	X	X	X		X		
10		17-10	"		"		X	X	X	X		X		ON File

31-Jan-17 15:30
Madison Bingley
B720504
KJY OTT-001

RECEIVED IN OTTAWA

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
Alex Wood AWood	17/01/31	2:15pm	[illegible signature]	2017/01/31	15:30			4, 4, 3	Present / Intact		X

* 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

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CHAIN OF CUSTODY RECORD

Page of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B63104	Maxxam Job #:	Bottle Order #: 596564
Attention:	Central Accounting	Attention:	Joanne Woodhouse	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1670949	COC #:	Project Manager:
	Ottawa ON K2H 5B7			Project Name:		C#596564-01-01	Madison Bingley
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:			
Email:	AP-CustomerService@golder.com	Email:	jwoodhouse@golder.com	Sampled By:			

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 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other ___

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

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 #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	Reg 153 Metals	VOC	PCB	PHC (F1-F4)	BTEX	PAH					# of Bottles	Comments
1		17-19	Jan 30		S					X	X	X						
2		17-6	"		"		X	X	X	X		X						
3		17-20	"		"			X		X	X							
4		17-21	"		"					X	X							
5		Dup 2	"		"					X	X							
6																		
7																		
8																		
9																		
10																		ON ICE

RECEIVED IN OTTAWA
31-Jan-17 15:30
Madison Bingley
B720504
KJY OTT-001

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Alex Wood AWood	17/01/31	2:15 pm	[illegible signature]	2017/01/31	15:30	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	4, 4, 3	Present		X
		Intact		X

* 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

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Sent to: Maxxam Mississauga
6740 Campobello Rd
Mississauga, ON, L5N 2L8
Tel: (905) 817-5700

MAXXAM INTERLAB CHAIN OF CUSTODY RECORD

COC # B720504-NONT-01-01

REPORT INFORMATION	
Company:	Maxxam
Address:	32 Colonnade Unit 1000, Nepean, Ontario, K2E 7J6
Contact Name:	Madison Bingley
Email:	MBingley@maxxam.ca, scontractor@maxxam.ca
Phone:	(613) 274-3549
Maxxam Project #:	B720504
Client Invoice To:	Golder Associates Ltd (14090)
Client Report To:	Golder Associates Ltd (14090) Incl. on Report? Yes / No

ANALYSIS REQUESTED

Job Barcode Label

B720504

#	SAMPLE ID	MATRIX	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	SAMPLER INITIALS	# CONT.	O.Reg 153 Metals Package (Soil)	Additional Container - Archive	Volatile Organic Compounds and F1 PHCs	Soil jar for moisture analysis	Polychlorinated Biphenyl in Soil					ADDITIONAL SAMPLE INFORMATION
1	DVK832-17-7	SOIL	2017/01/30		AW	3	X		X	X	X					(P: 01, 03)
2	DVK833-17-23	SOIL	2017/01/30		AW	3	X		X	X						(P: 01, 03)
3	DVK834-17-5	SOIL	2017/01/30		AW	3	X		X	X	X					(P: 01, 03)
4	DVK835-17-4	SOIL	2017/01/30		AW	3	X		X	X	X					(P: 01, 03)
5	DVK836-DUP-3	SOIL	2017/01/30		AW	3	X		X	X	X					(P: 01, 03)
6	DVK837-17-2	SOIL	2017/01/30		AW	1	X									(P: 01)
7	DVK838-17-18	SOIL	2017/01/30		AW	1		X								(P: 01)
8	DVK839-17-3	SOIL	2017/01/30		AW	1	X									(P: 01)
9	DVK840-17-8	SOIL	2017/01/30		AW	3	X		X	X	X					(P: 01, 03)
10	DVK841-17-10	SOIL	2017/01/30		AW	3	X		X	X	X					(P: 01, 03)

SITE LOCATION:	REGULATORY CRITERIA	SPECIAL INSTRUCTIONS	REQUIRED EDDs	TURNAROUND TIME
SITE #:		Please inform Maxxam immediately if you are not accredited for the requested test(s). **Please return a copy of this form with the report.**	National Excel (N001) Golder Ottawa Excel (O028) OEC Excel (O036) Golder EQUIS (N014)	☐ Rush Required 2017/02/06 Date Required *Please inform us if rush charges will be incurred.*
PROJECT #: 1670949				
PO/AFE, TASK ORDER/SERVICE ORDER, LINE ITEM:				

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present	✓			5	5	5
Custody Seal Intact	✓					
Cooling Media Present	✓					

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

RECEIVING LAB USE ONLY

Maxxam Job #: B720504

RELINQUISHED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	Samples Labelled By:	Labels Verified By:
1. Kim Jayaweera for	2017/02/02	11:40	1. Ashitha Sukumar ASHITHA SUKUMAR	2017/02/03	08:35		
2.			2.				

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Sent to: Maxxam Mississauga
6740 Campobello Rd
Mississauga, ON, L5N 2L8
Tel: (905) 817-5700

MAXXAM INTERLAB CHAIN OF CUSTODY RECORD

Page 02 of 02

COC # B720504-NONT-02-01

REPORT INFORMATION	
Company:	Maxxam
Address:	32 Colonnade Unit 1000, Nepean, Ontario, K2E 7J6
Contact Name:	Madison Bingley
Email:	MBingley@maxxam.ca, scontractor@maxxam.ca
Phone:	(613) 274-3549
Maxxam Project #:	B720504
Client Invoice To:	Golder Associates Ltd (14090)
Client Report To:	Golder Associates Ltd (14090) — Incl. on Report? Yes / No

Job Barcode Label: B720504

ANALYSIS REQUESTED

#	SAMPLE ID	MATRIX	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	SAMPLER INITIALS	# CONT.	O.Reg 153 Metals Package (Soil)	Additional Container - Archive	Volatile Organic Compounds and F1 PHCs	Soil jar for moisture analysis	Polychlorinated Biphenyl in Soil						ADDITIONAL SAMPLE INFORMATION
1	DVK875-17-19	SOIL	2017/01/30		AW	1		X									(P: 01)
2	DVK876-17-6	SOIL	2017/01/30		AW	3	X		X	X	X						(P: 01, 03)
3	DVK877-17-20	SOIL	2017/01/30		AW	3		X	X	X							(P: 01, 03)
4	DVK878-17-21	SOIL	2017/01/30		AW	1		X									(P: 01)
5	DVK879-DUP-2	SOIL	2017/01/30		AW	1		X									(P: 01)
6																	
7																	
8																	
9																	
10																	

SITE LOCATION:

SITE #:

PROJECT #: 1670949

PO/AFE, TASK ORDER/SERVICE ORDER, LINE ITEM:

REGULATORY CRITERIA

SPECIAL INSTRUCTIONS
Please inform Maxxam immediately if you are not accredited for the requested test(s).
Please return a copy of this form with the report.

REQUIRED EDDs
National Excel (N001)
Golder Ottawa Excel (O028)
OEC Excel (O036)
Golder EQUIS (N014)

TURNAROUND TIME
☐ Rush Required
2017/02/06
Date Required
Please inform us if rush charges will be incurred.

COOLER ID: /	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present	✓			5	5	5
Custody Seal Intact	✓					
Cooling Media Present	✓					

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

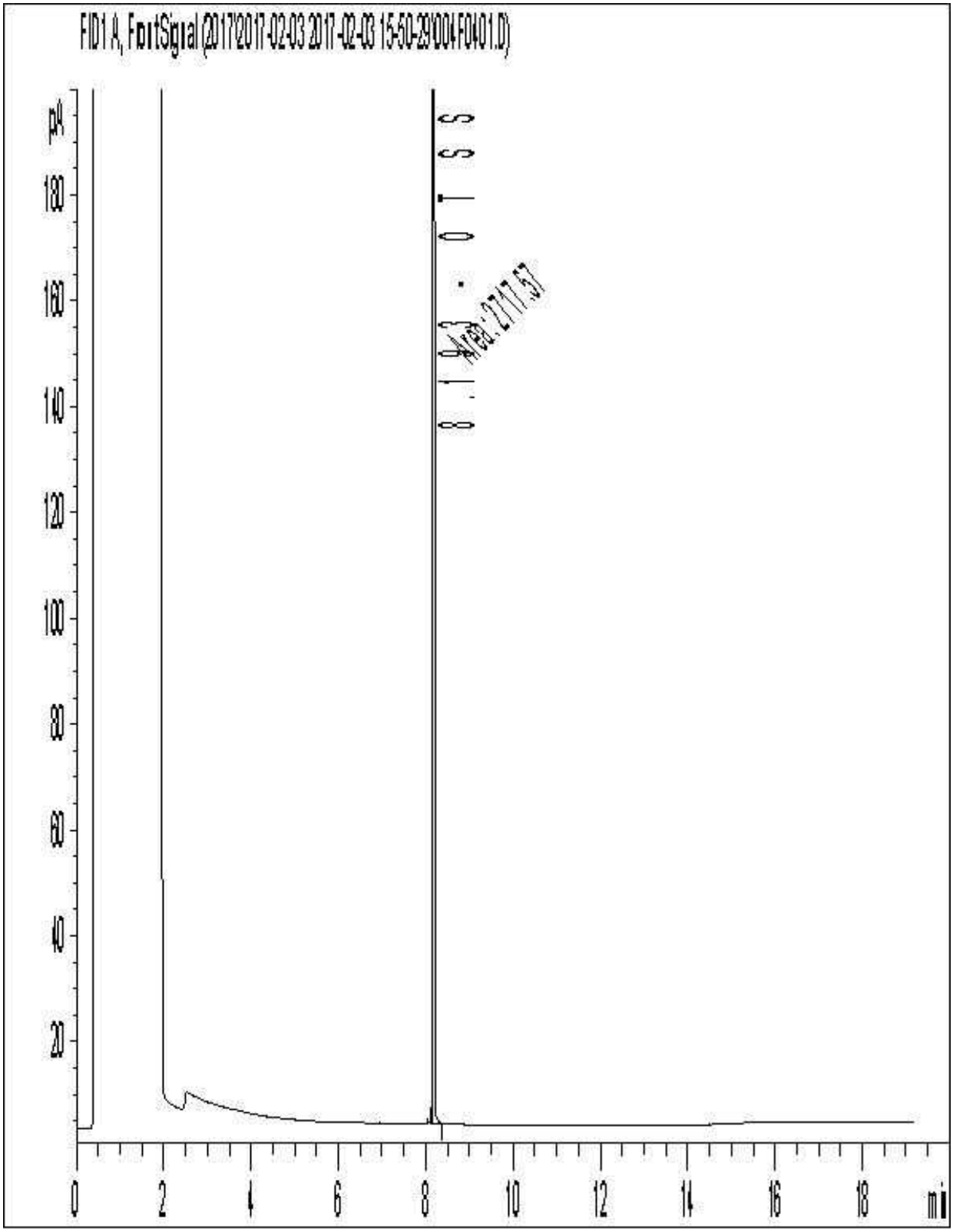
RECEIVING LAB USE ONLY
Maxxam Job #: B720504

RELINQUISHED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	Samples Labelled By:	Labels Verified By:
1.			1. [signature] ASHMITA SUKUMAR	2017/02/03	08:35		
2.			2.				

Maxxam Job #: B720504
Report Date: 2017/02/08
Maxxam Sample: DVK832

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-7

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

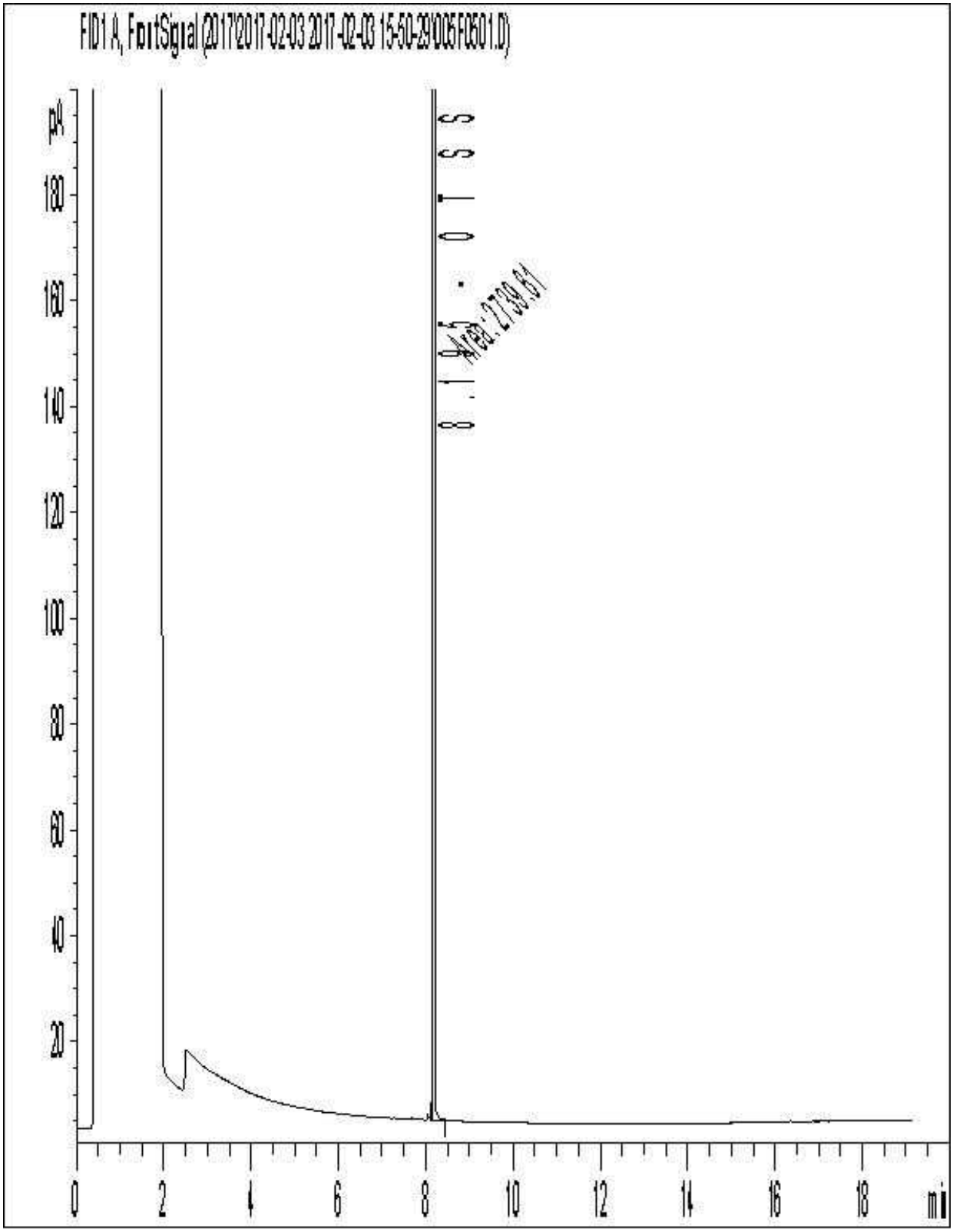


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/08
Maxxam Sample: DVK832 Lab-Dup

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-7

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

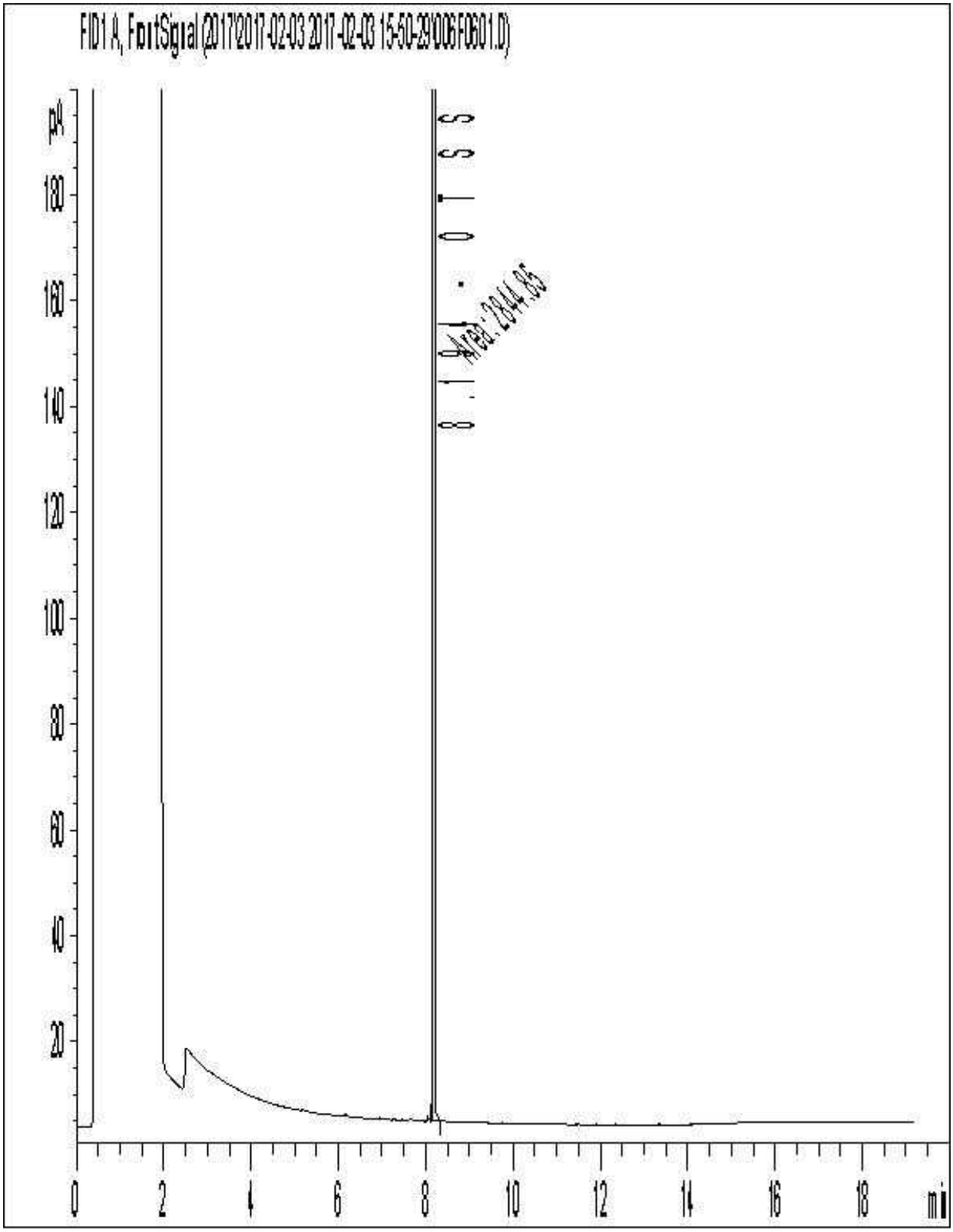


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/08
Maxxam Sample: DVK833

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-23

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

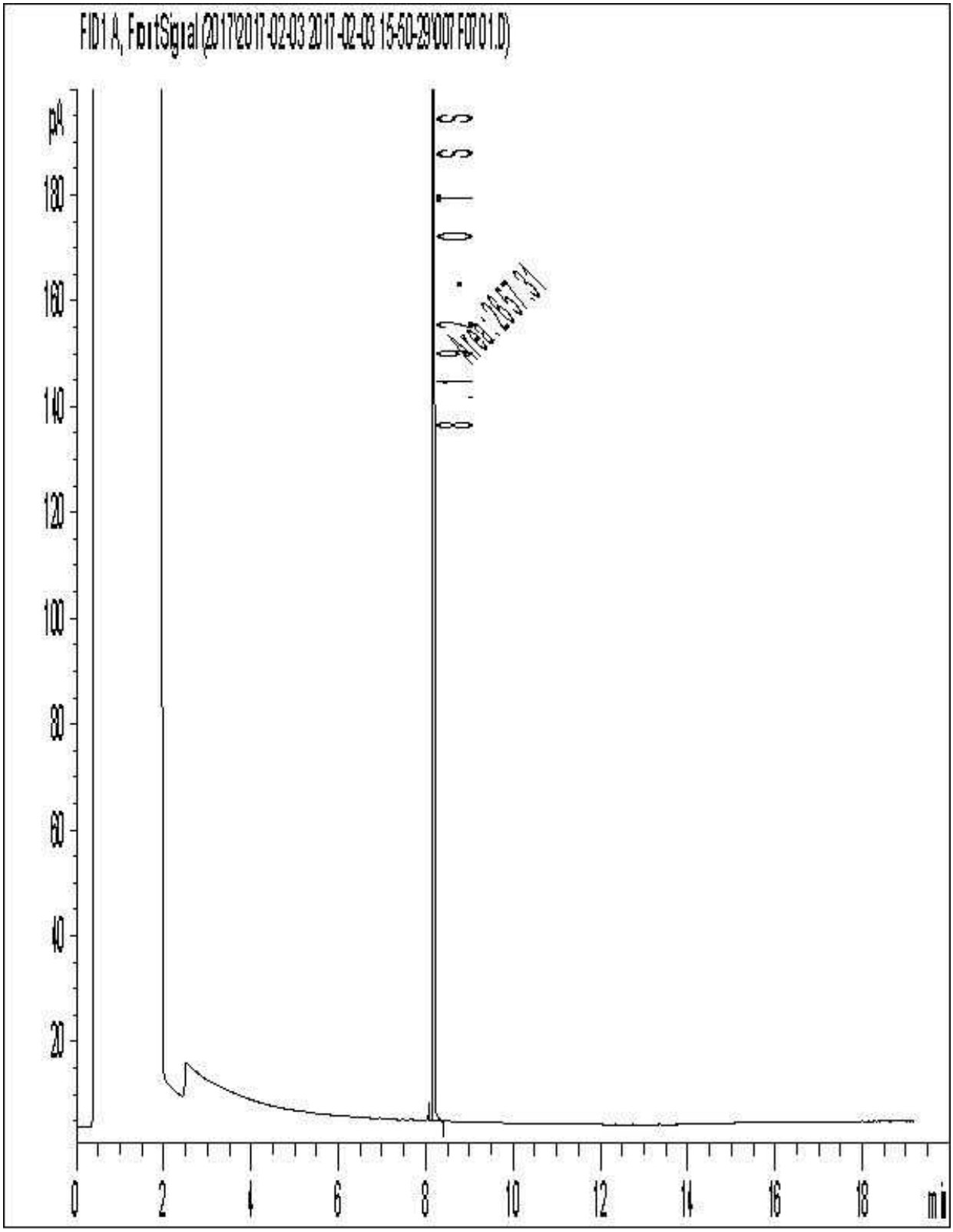


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/08
Maxxam Sample: DVK834

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-5

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

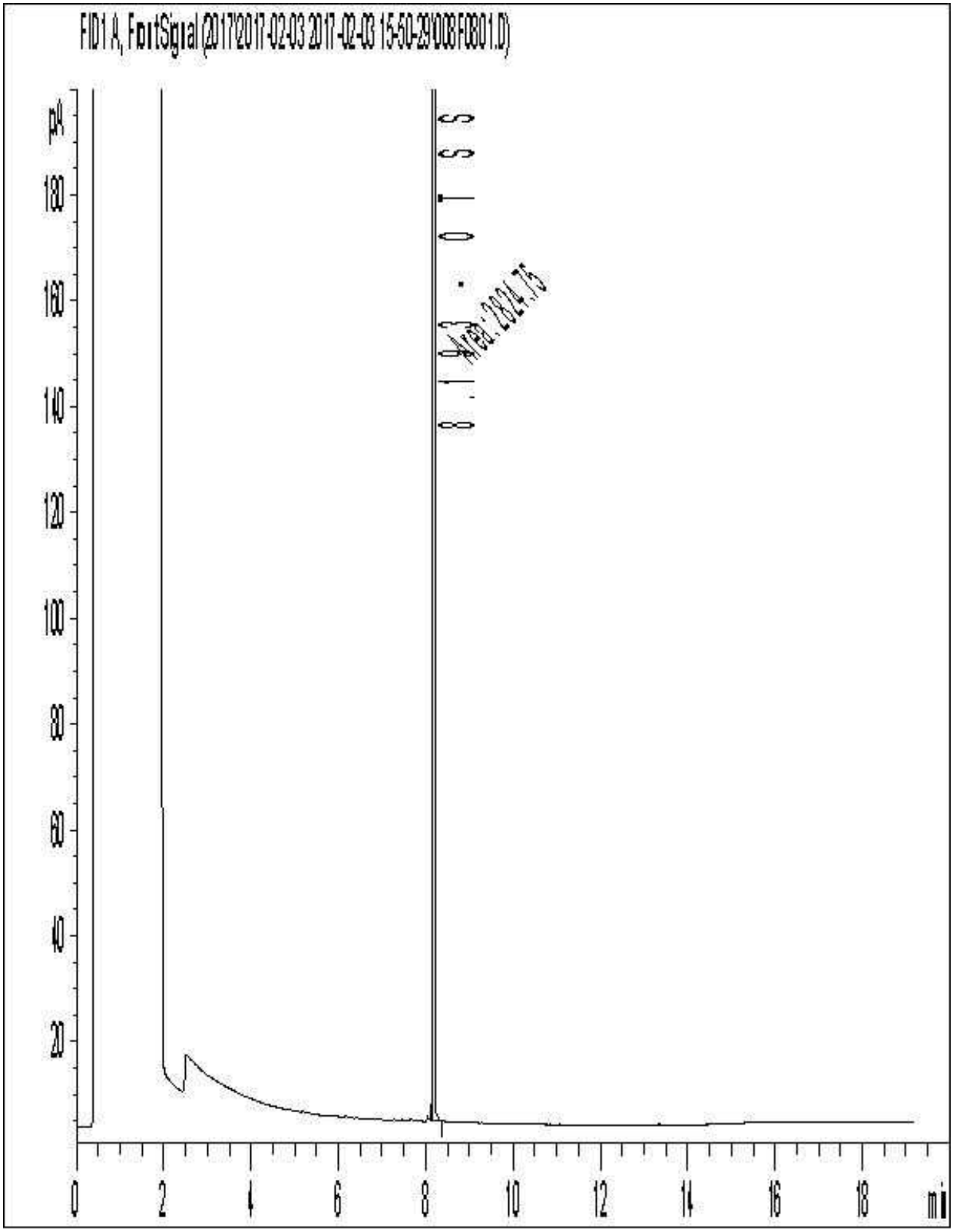


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/08
Maxxam Sample: DVK835

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-4

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

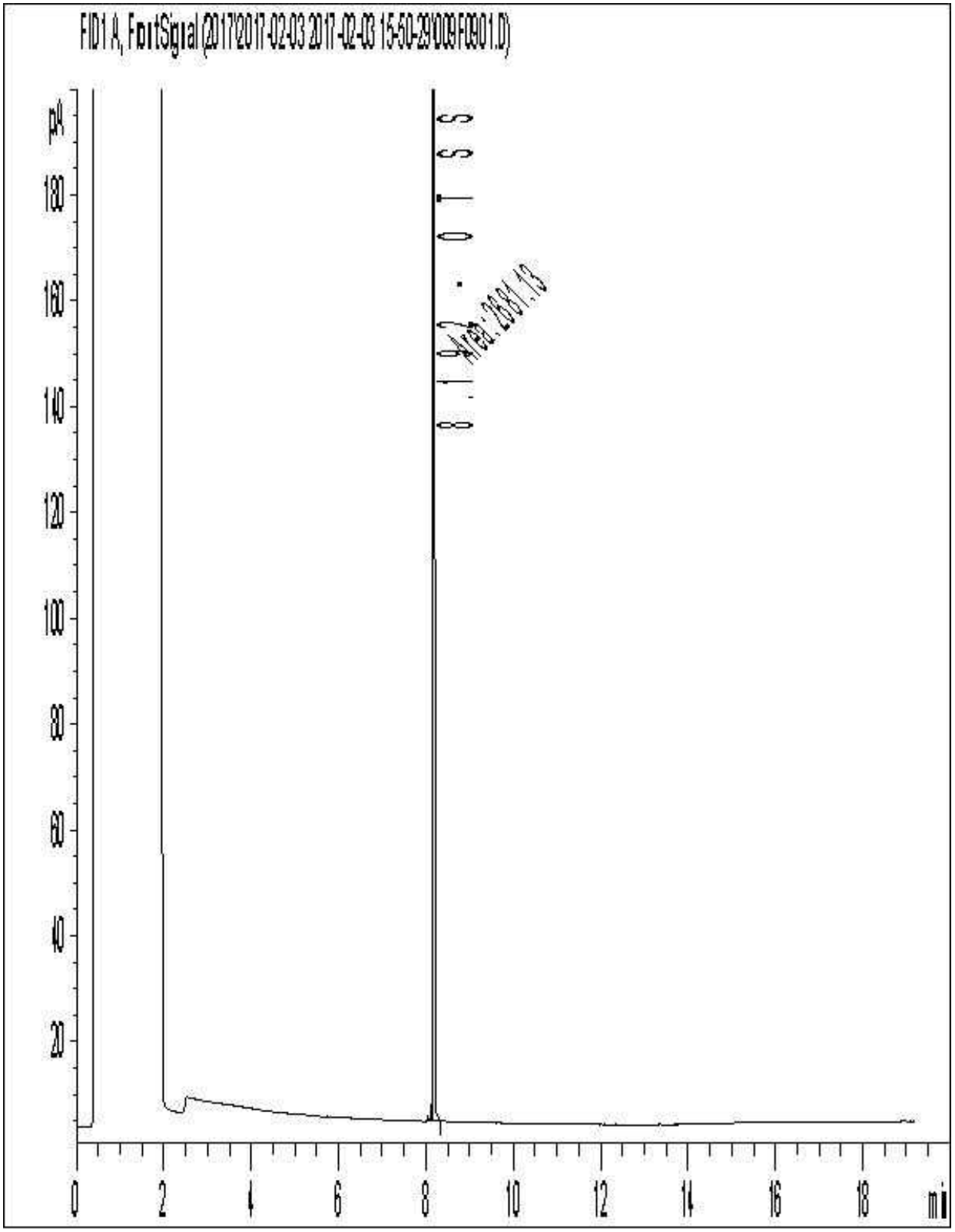


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/08
Maxxam Sample: DVK836

Golder Associates Ltd
Client Project #: 1670949
Client ID: DUP-3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

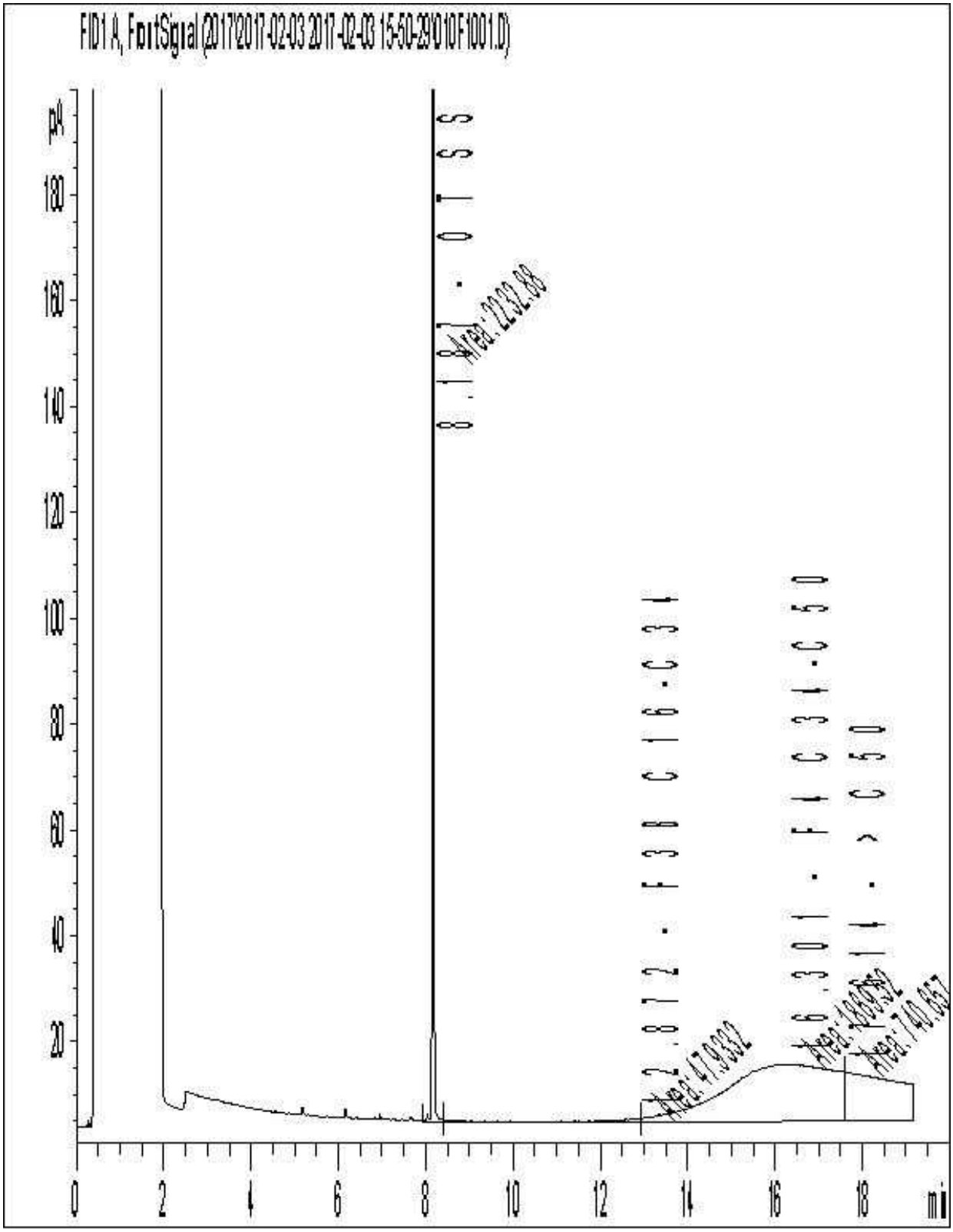


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/08
Maxxam Sample: DVK837

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-2

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

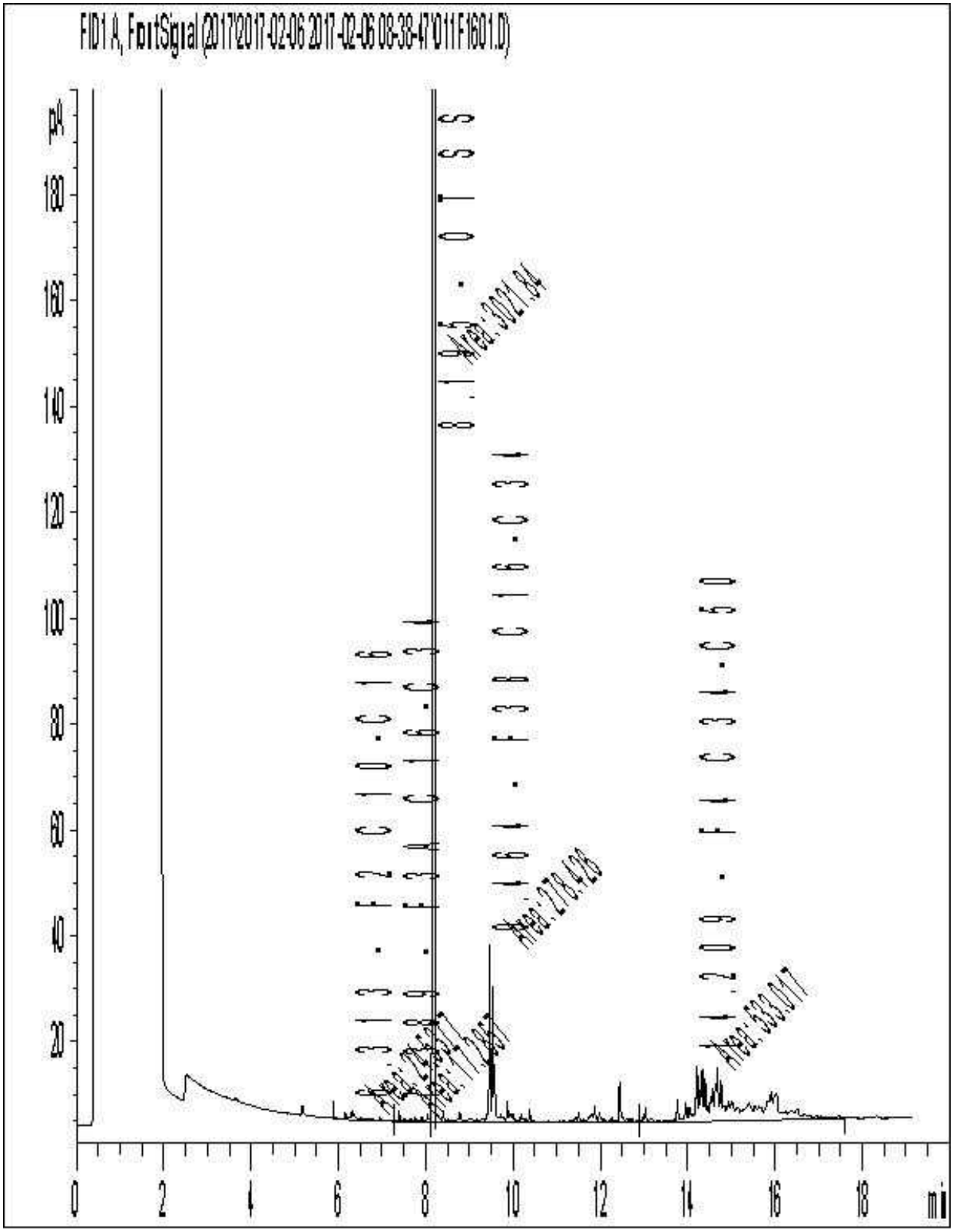


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/08
Maxxam Sample: DVK838

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-18

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

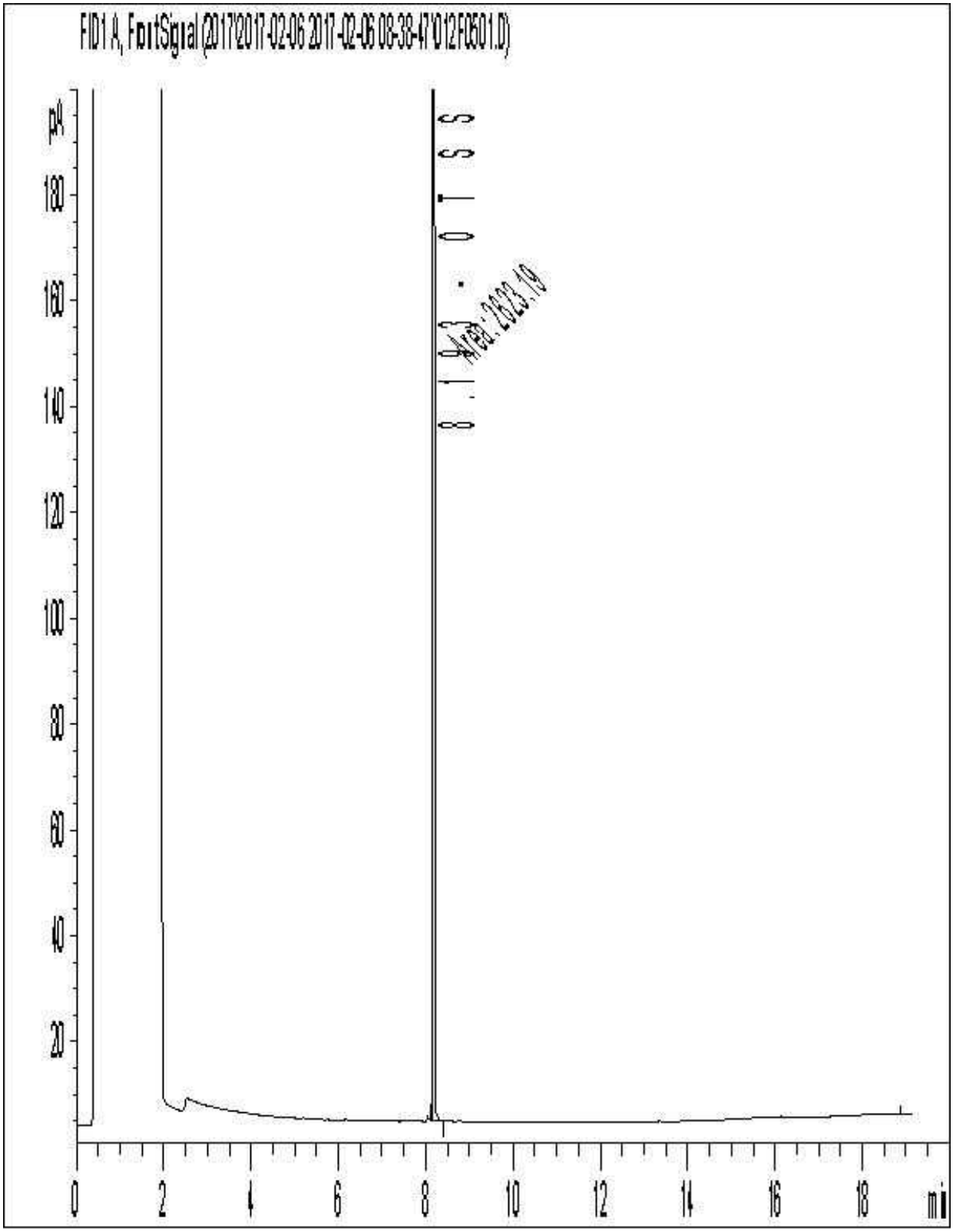


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/08
Maxxam Sample: DVK839

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

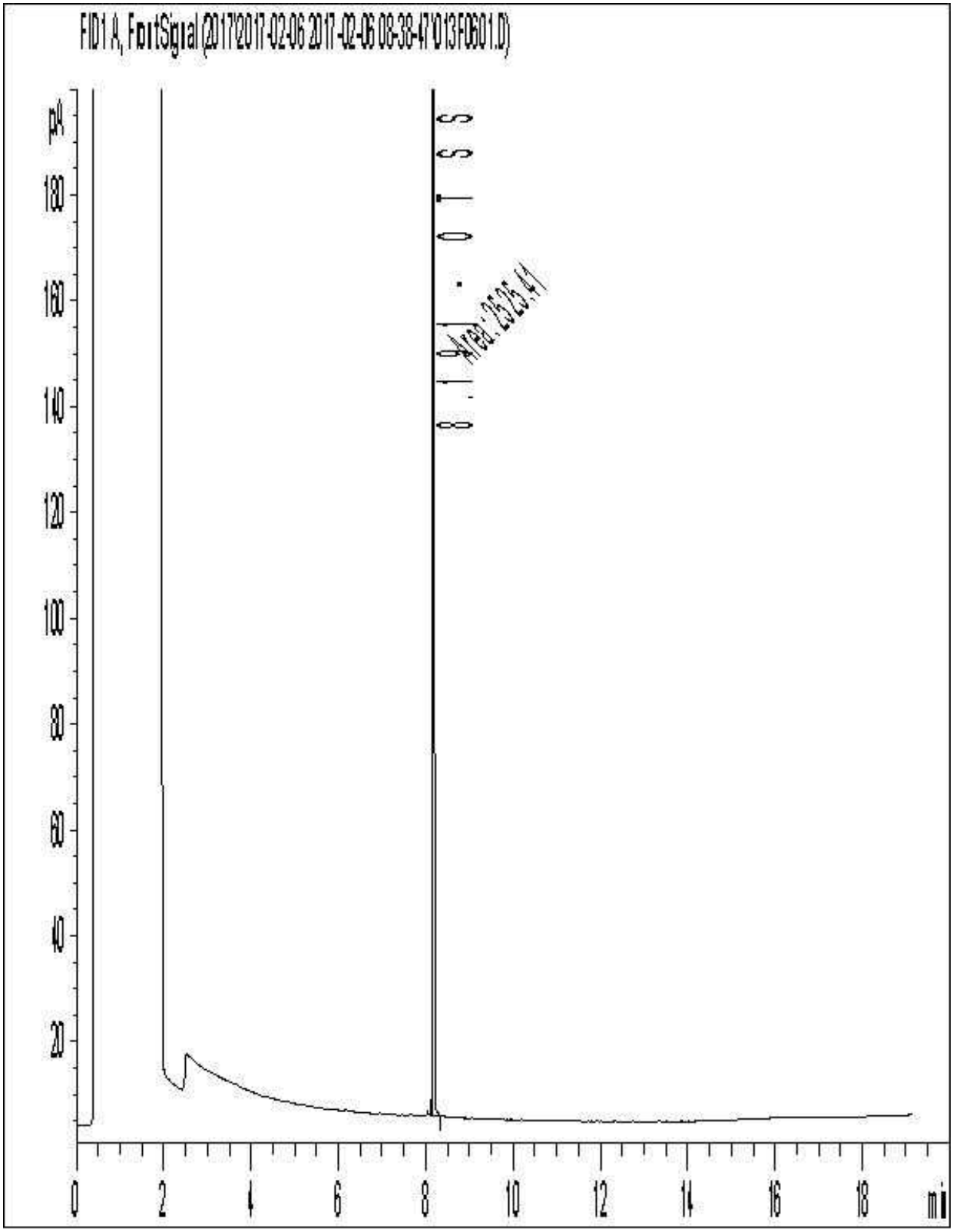


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/08
Maxxam Sample: DVK840

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-8

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

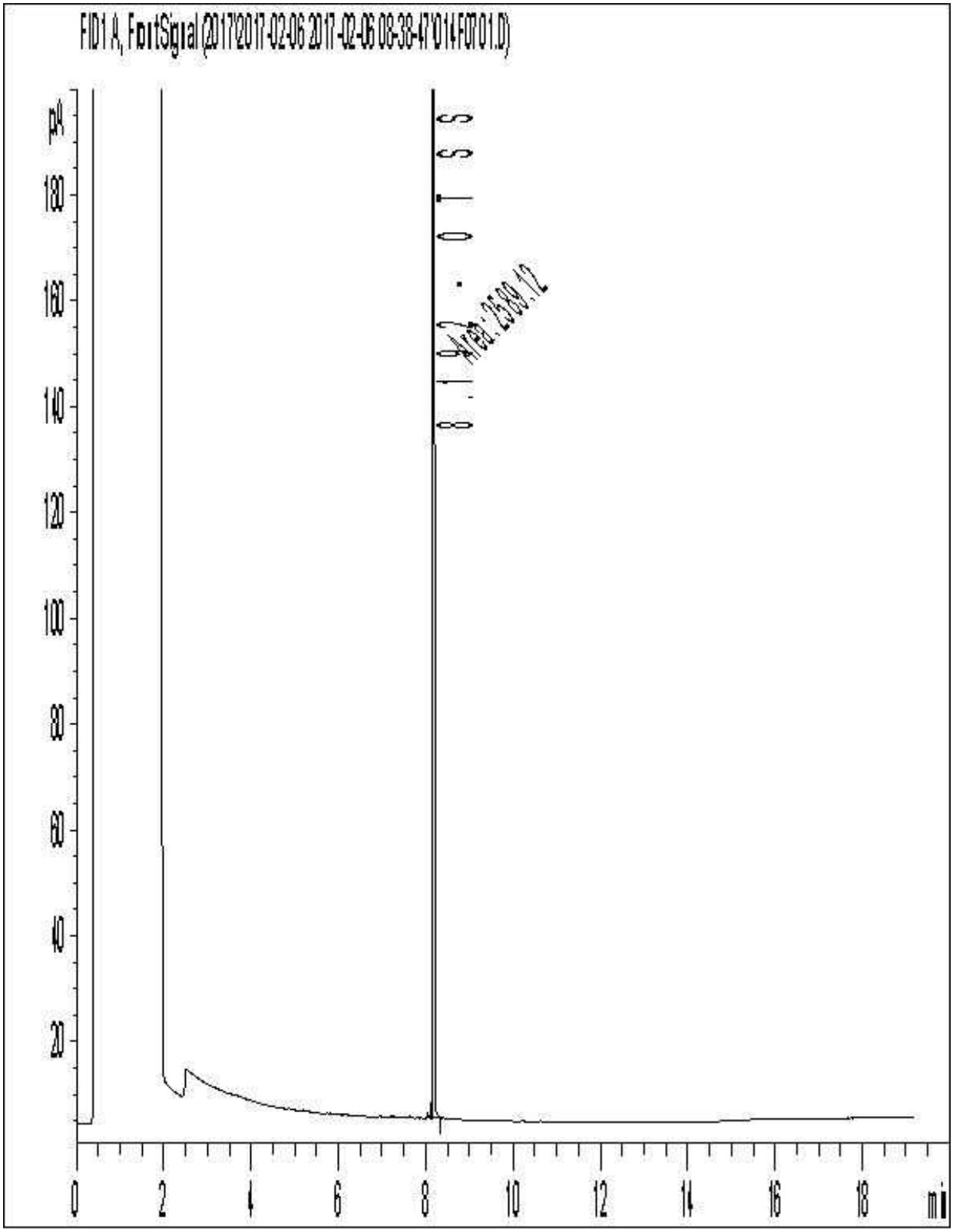


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/08
Maxxam Sample: DVK841

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-10

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

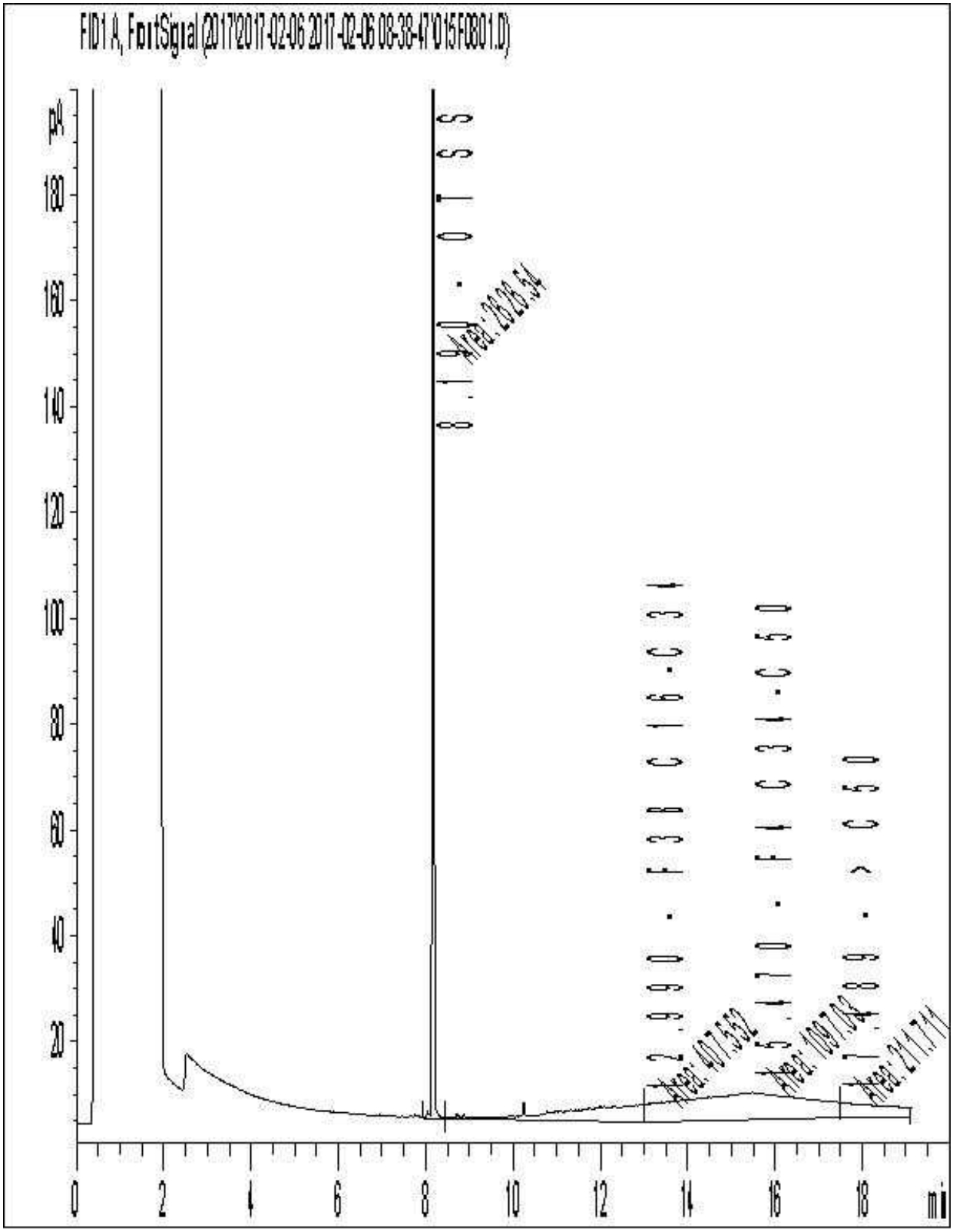


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/08
Maxxam Sample: DVK875

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-19

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

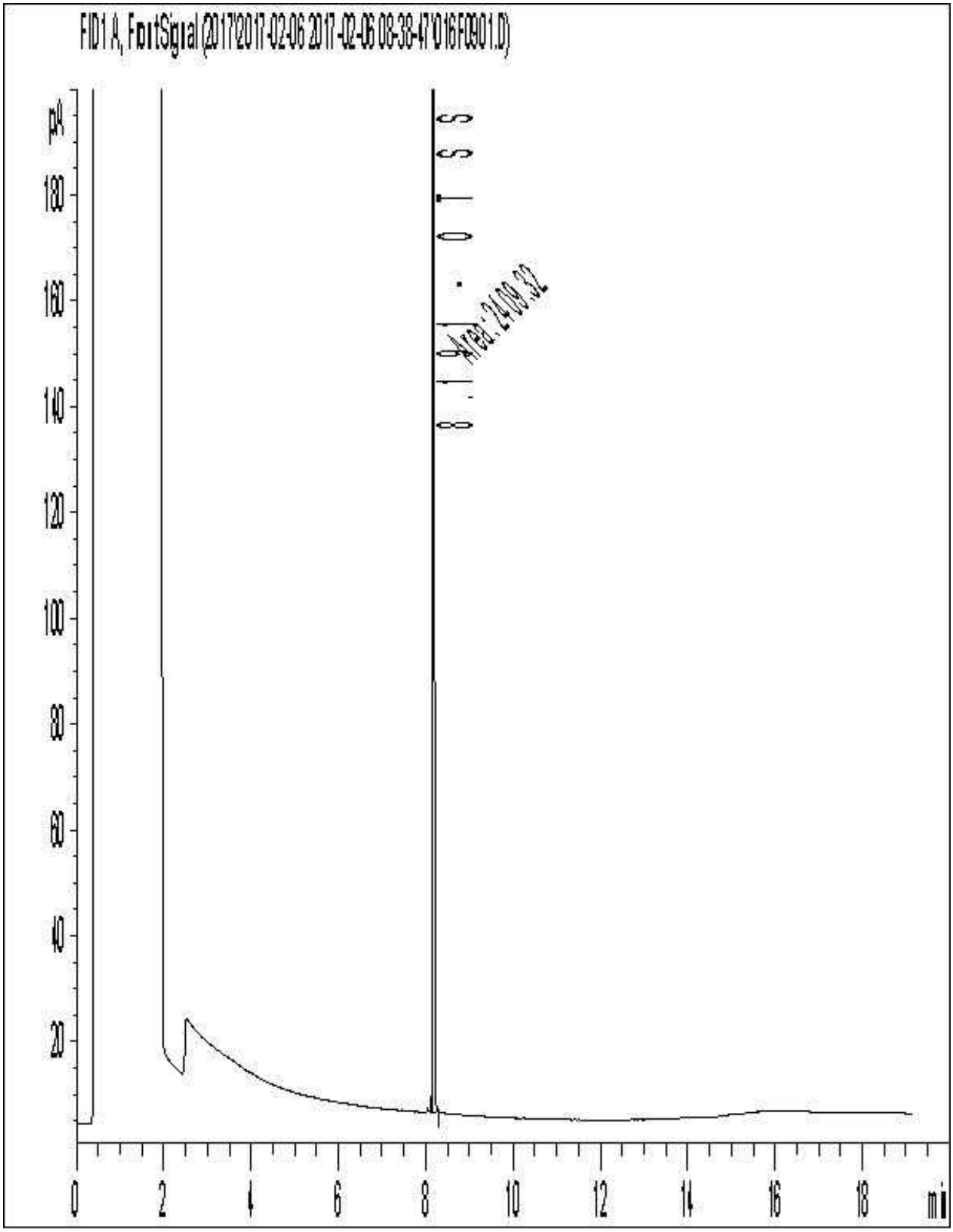


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/08
Maxxam Sample: DVK876

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-6

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

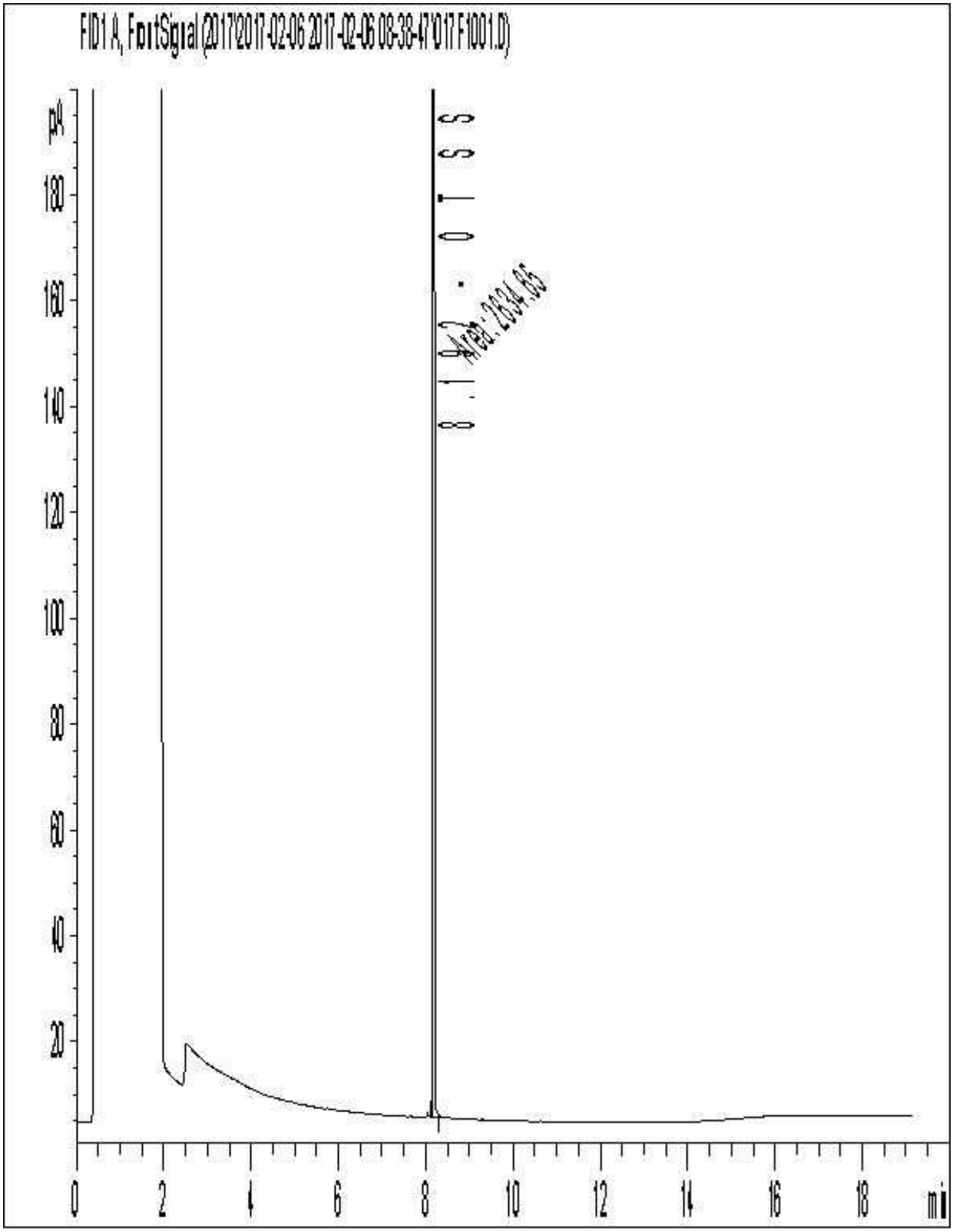


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/08
Maxxam Sample: DVK877

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-20

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

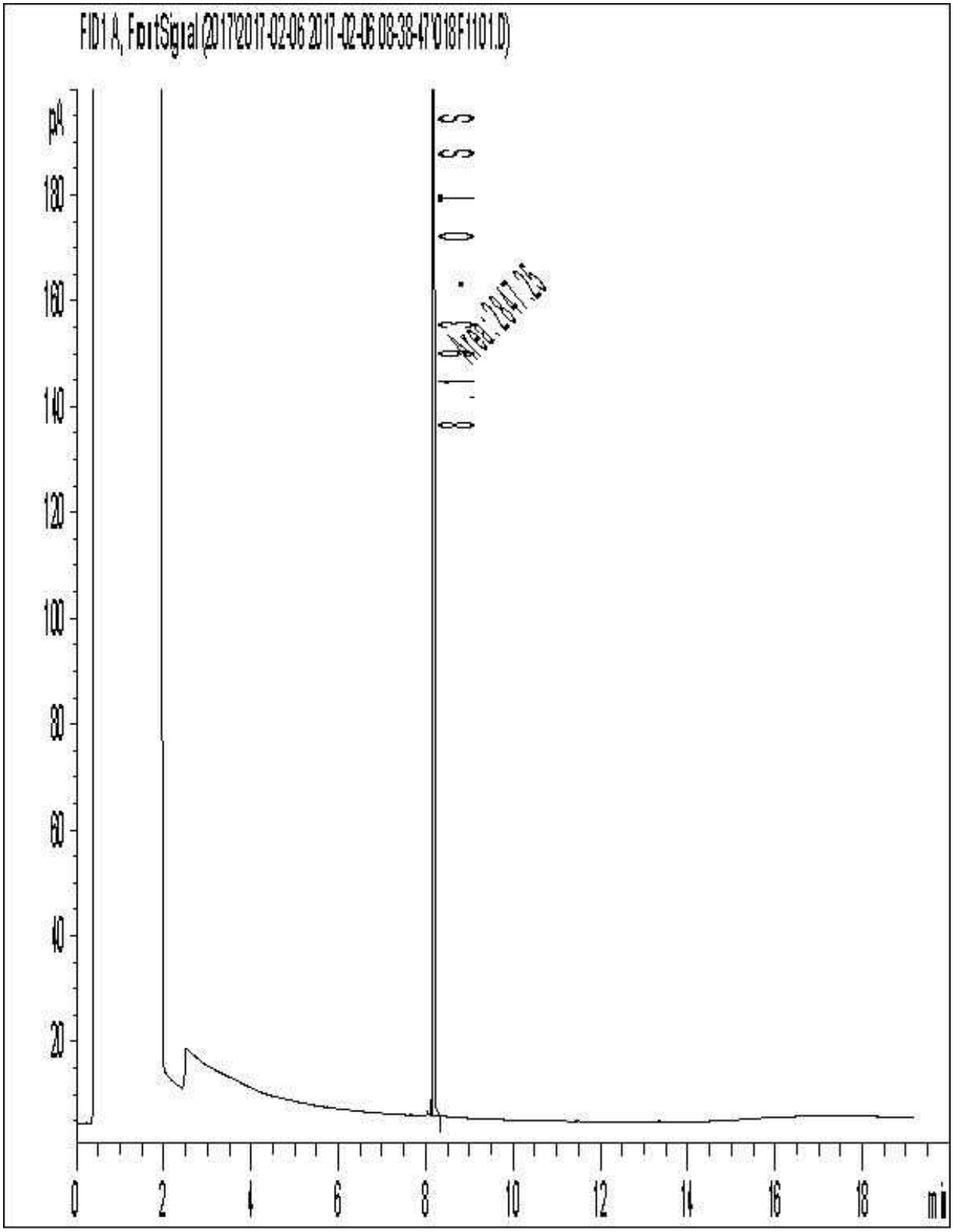


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/08
Maxxam Sample: DVK878

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-21

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

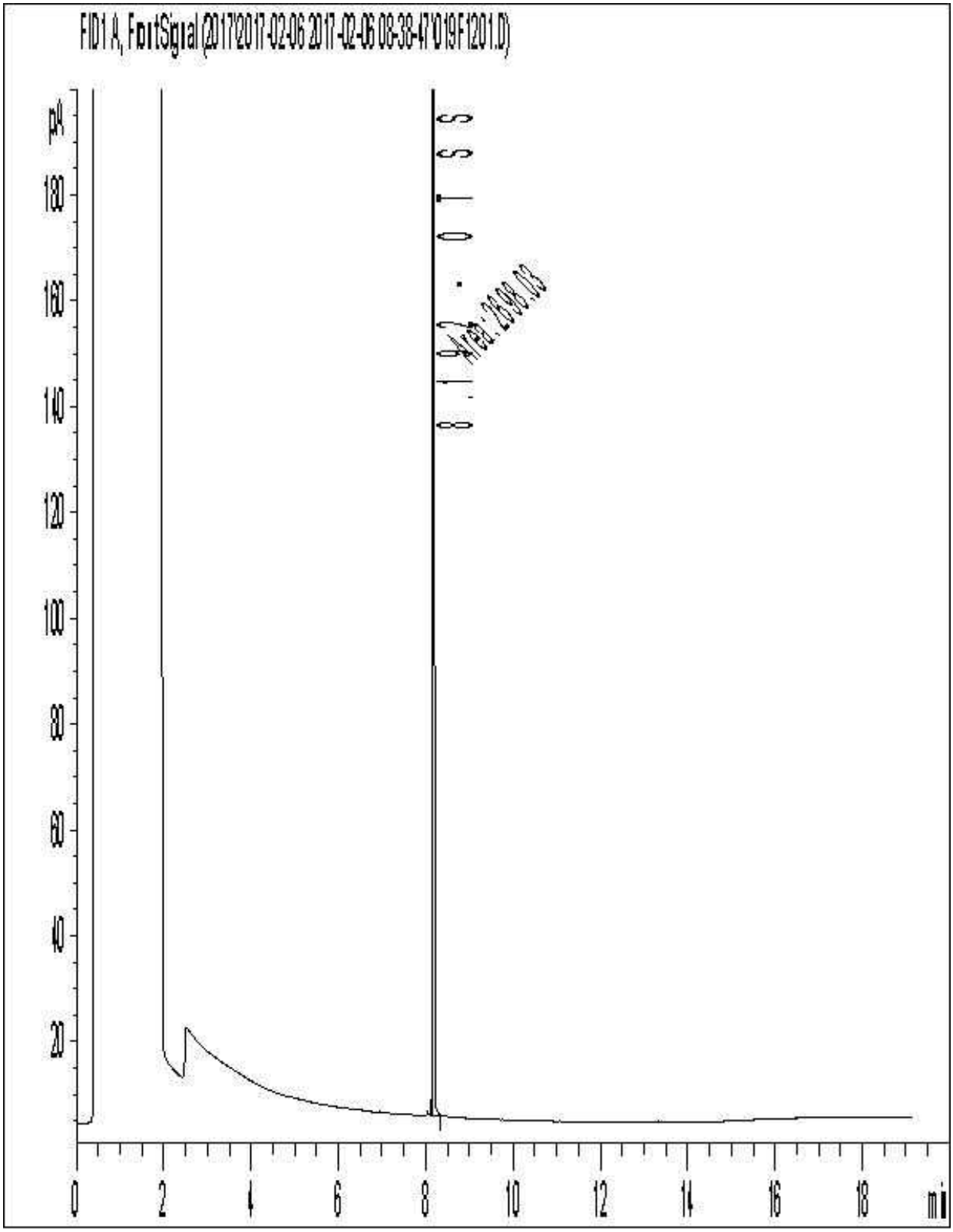


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/08
Maxxam Sample: DVK879

Golder Associates Ltd
Client Project #: 1670949
Client ID: DUP-2

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: 1670949
Your C.O.C. #: 596564-03-01, 596564-01-01

Attention:Joanne Woodhouse

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/02/15
Report #: R4360340
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B720504
Received: 2017/01/31, 15:30

Sample Matrix: Soil
Samples Received: 15

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	11	N/A	2017/02/07	CAM SOP-00301	EPA 8270D m
Hot Water Extractable Boron (1)	10	2017/02/06	2017/02/06	CAM SOP-00408	R153 Ana. Prot. 2011
Hexavalent Chromium in Soil by IC (1, 2)	10	2017/02/02	2017/02/05	CAM SOP-00436	EPA 3060/7199 m
Petroleum Hydro. CCME F1 & BTEX in Soil (3)	6	N/A	2017/02/02	OTT SOP-00002	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (4)	6	2017/02/01	2017/02/03	OTT SOP-00001	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (4)	9	2017/02/01	2017/02/06	OTT SOP-00001	CCME CWS
F4G (CCME Hydrocarbons Gravimetric)	2	2017/02/07	2017/02/08	OTT SOP-00001	CCME CWS
Strong Acid Leachable Metals by ICPMS (1)	10	2017/02/06	2017/02/06	CAM SOP-00447	EPA 6020B m
Moisture	15	N/A	2017/02/06	CAM SOP-00445	McKeague 2nd ed 1978
PAH Compounds in Soil by GC/MS (SIM)	11	2017/02/02	2017/02/06	OTT SOP-00011	EPA 8270D m
Polychlorinated Biphenyl in Soil (1)	7	2017/02/02	2017/02/03	CAM SOP-00309	EPA 8082A m
pH CaCl2 EXTRACT (1)	4	2017/02/15	2017/02/15	CAM SOP-00413	EPA 9045 D m
Volatile Organic Compounds and F1 PHCs (1)	9	N/A	2017/02/03	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.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

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

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.

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Your Project #: 1670949
Your C.O.C. #: 596564-03-01, 596564-01-01

Attention:Joanne Woodhouse

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/02/15
Report #: R4360340
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B720504

Received: 2017/01/31, 15:30

(1) This test was performed by Maxxam Analytics Mississauga
(2) Soils are reported on a dry weight basis unless otherwise specified.
(3) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is the date sampled unless otherwise stated.
(4) 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.
Madison Bingley, Project Manager
Email: MBingley@maxxam.ca
Phone# (613)274-3549

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B720504
Report Date: 2017/02/15

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

O.REG 153 METALS PACKAGE (SOIL)

Maxxam ID		DVK832	DVK833	DVK834	DVK835		DVK836		
Sampling Date		2017/01/30	2017/01/30	2017/01/30	2017/01/30		2017/01/30		
COC Number		596564-03-01	596564-03-01	596564-03-01	596564-03-01		596564-03-01		
	UNITS	17-7	17-23	17-5	17-4	QC Batch	DUP-3	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	0.5	0.3	<0.2	<0.2	4849580	<0.2	0.2	4849580
Metals									
Hot Water Ext. Boron (B)	ug/g	0.065	0.057	0.067	<0.050	4852556	0.051	0.050	4852556
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	<0.20	<0.20	4852518	<0.20	0.20	4852552
Acid Extractable Arsenic (As)	ug/g	1.4	<1.0	<1.0	<1.0	4852518	<1.0	1.0	4852552
Acid Extractable Barium (Ba)	ug/g	310	160	34	28	4852518	36	0.50	4852552
Acid Extractable Beryllium (Be)	ug/g	0.85	0.51	<0.20	<0.20	4852518	<0.20	0.20	4852552
Acid Extractable Boron (B)	ug/g	5.7	<5.0	<5.0	<5.0	4852518	<5.0	5.0	4852552
Acid Extractable Cadmium (Cd)	ug/g	0.10	<0.10	<0.10	<0.10	4852518	<0.10	0.10	4852552
Acid Extractable Chromium (Cr)	ug/g	70	38	9.4	8.3	4852518	8.1	1.0	4852552
Acid Extractable Cobalt (Co)	ug/g	19	12	4.0	3.6	4852518	3.6	0.10	4852552
Acid Extractable Copper (Cu)	ug/g	38	24	7.5	8.1	4852518	7.6	0.50	4852552
Acid Extractable Lead (Pb)	ug/g	6.9	5.2	2.8	2.2	4852518	2.3	1.0	4852552
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	<0.50	<0.50	<0.50	4852518	<0.50	0.50	4852552
Acid Extractable Nickel (Ni)	ug/g	43	24	6.0	5.5	4852518	6.3	0.50	4852552
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	4852518	<0.50	0.50	4852552
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	<0.20	4852518	<0.20	0.20	4852552
Acid Extractable Thallium (Tl)	ug/g	0.40	0.25	0.058	0.052	4852518	0.057	0.050	4852552
Acid Extractable Uranium (U)	ug/g	0.70	0.58	0.91	1.1	4852518	0.73	0.050	4852552
Acid Extractable Vanadium (V)	ug/g	93	63	20	17	4852518	17	5.0	4852552
Acid Extractable Zinc (Zn)	ug/g	120	62	11	10	4852518	20	5.0	4852552
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050	<0.050	<0.050	4852518	<0.050	0.050	4852552

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B720504
Report Date: 2017/02/15

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

O.REG 153 METALS PACKAGE (SOIL)

Maxxam ID		DVK837	DVK839		DVK840	DVK841		
Sampling Date		2017/01/30	2017/01/30		2017/01/30	2017/01/30		
COC Number		596564-03-01	596564-03-01		596564-03-01	596564-03-01		
	UNITS	17-2	17-3	QC Batch	17-8	17-10	RDL	QC Batch
Inorganics								
Chromium (VI)	ug/g	<0.2	0.4	4849580	<0.2	<0.2	0.2	4849580
Metals								
Hot Water Ext. Boron (B)	ug/g	0.27	0.43	4852556	0.22	0.21	0.050	4852556
Acid Extractable Antimony (Sb)	ug/g	0.20	0.26	4852518	<0.20	<0.20	0.20	4852552
Acid Extractable Arsenic (As)	ug/g	2.1	2.3	4852518	<1.0	<1.0	1.0	4852552
Acid Extractable Barium (Ba)	ug/g	85	230	4852518	290	190	0.50	4852552
Acid Extractable Beryllium (Be)	ug/g	0.23	0.69	4852518	0.74	0.52	0.20	4852552
Acid Extractable Boron (B)	ug/g	6.0	7.5	4852518	6.6	5.8	5.0	4852552
Acid Extractable Cadmium (Cd)	ug/g	<0.10	<0.10	4852518	0.11	<0.10	0.10	4852552
Acid Extractable Chromium (Cr)	ug/g	11	68	4852518	72	37	1.0	4852552
Acid Extractable Cobalt (Co)	ug/g	5.5	16	4852518	19	11	0.10	4852552
Acid Extractable Copper (Cu)	ug/g	13	41	4852518	36	23	0.50	4852552
Acid Extractable Lead (Pb)	ug/g	13	22	4852518	6.1	5.0	1.0	4852552
Acid Extractable Molybdenum (Mo)	ug/g	1.7	0.66	4852518	1.1	0.88	0.50	4852552
Acid Extractable Nickel (Ni)	ug/g	11	40	4852518	42	22	0.50	4852552
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	4852518	<0.50	<0.50	0.50	4852552
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	4852518	<0.20	<0.20	0.20	4852552
Acid Extractable Thallium (Tl)	ug/g	0.12	0.32	4852518	0.39	0.20	0.050	4852552
Acid Extractable Uranium (U)	ug/g	0.72	3.7	4852518	1.5	0.85	0.050	4852552
Acid Extractable Vanadium (V)	ug/g	28	75	4852518	87	58	5.0	4852552
Acid Extractable Zinc (Zn)	ug/g	35	96	4852518	110	65	5.0	4852552
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050	4852518	<0.050	<0.050	0.050	4852552

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B720504
Report Date: 2017/02/15

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

O.REG 153 METALS PACKAGE (SOIL)

Maxxam ID		DVK876		
Sampling Date		2017/01/30		
COC Number		596564-01-01		
	UNITS	17-6	RDL	QC Batch
Inorganics				
Chromium (VI)	ug/g	0.4	0.2	4849580
Metals				
Hot Water Ext. Boron (B)	ug/g	0.051	0.050	4852556
Acid Extractable Antimony (Sb)	ug/g	<0.20	0.20	4852518
Acid Extractable Arsenic (As)	ug/g	<1.0	1.0	4852518
Acid Extractable Barium (Ba)	ug/g	190	0.50	4852518
Acid Extractable Beryllium (Be)	ug/g	0.62	0.20	4852518
Acid Extractable Boron (B)	ug/g	5.4	5.0	4852518
Acid Extractable Cadmium (Cd)	ug/g	<0.10	0.10	4852518
Acid Extractable Chromium (Cr)	ug/g	42	1.0	4852518
Acid Extractable Cobalt (Co)	ug/g	12	0.10	4852518
Acid Extractable Copper (Cu)	ug/g	25	0.50	4852518
Acid Extractable Lead (Pb)	ug/g	5.4	1.0	4852518
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	0.50	4852518
Acid Extractable Nickel (Ni)	ug/g	24	0.50	4852518
Acid Extractable Selenium (Se)	ug/g	<0.50	0.50	4852518
Acid Extractable Silver (Ag)	ug/g	<0.20	0.20	4852518
Acid Extractable Thallium (Tl)	ug/g	0.27	0.050	4852518
Acid Extractable Uranium (U)	ug/g	0.68	0.050	4852518
Acid Extractable Vanadium (V)	ug/g	68	5.0	4852518
Acid Extractable Zinc (Zn)	ug/g	69	5.0	4852518
Acid Extractable Mercury (Hg)	ug/g	<0.050	0.050	4852518

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B720504
Report Date: 2017/02/15

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

O.REG 153 PAHS (SOIL)

Maxxam ID		DVK832	DVK832	DVK834	DVK835	DVK836	DVK837		
Sampling Date		2017/01/30	2017/01/30	2017/01/30	2017/01/30	2017/01/30	2017/01/30		
COC Number		596564-03-01	596564-03-01	596564-03-01	596564-03-01	596564-03-01	596564-03-01		
	UNITS	17-7	17-7 Lab-Dup	17-5	17-4	DUP-3	17-2	RDL	QC Batch
Inorganics									
Moisture	%	30	30	8.0	8.1	8.2	3.6	0.2	4847269
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	<0.014		<0.014	<0.014	<0.014	0.038	0.014	4846294
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4849346
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4849346
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4849346
Benzo(a)anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.014	0.0050	4849346
Benzo(a)pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.013	0.0050	4849346
Benzo(b/j)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.024	0.0050	4849346
Benzo(g,h,i)perylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0094	0.0050	4849346
Benzo(k)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0075	0.0050	4849346
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.014	0.0050	4849346
Dibenz(a,h)anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4849346
Fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.028	0.0050	4849346
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4849346
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0084	0.0050	4849346
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.017	0.0050	4849346
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.021	0.0050	4849346
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.012	0.0050	4849346
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.022	0.0050	4849346
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.022	0.0050	4849346
Surrogate Recovery (%)									
D10-Anthracene	%	90	88	90	84	87	81		4849346
D14-Terphenyl (FS)	%	85	82	85	81	86	83		4849346
D8-Acenaphthylene	%	60	61	65	61	64	54		4849346

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B720504
Report Date: 2017/02/15

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

O.REG 153 PAHS (SOIL)

Maxxam ID		DVK838		DVK839	DVK840	DVK841	DVK875		
Sampling Date		2017/01/30		2017/01/30	2017/01/30	2017/01/30	2017/01/30		
COC Number		596564-03-01		596564-03-01	596564-03-01	596564-03-01	596564-01-01		
	UNITS	17-18	RDL	17-3	17-8	17-10	17-19	RDL	QC Batch
Inorganics									
Moisture	%	51	0.2	24	32	25	19	0.2	4847269
Calculated Parameters									
Methylnaphthalene, 2-(1-)	ug/g	0.19	0.014	0.020	<0.014	<0.014	0.036	0.014	4846294
Polyaromatic Hydrocarbons									
Acenaphthene	ug/g	0.030	0.010	0.0078	<0.0050	<0.0050	0.027	0.0050	4849346
Acenaphthylene	ug/g	<0.010	0.010	0.0054	<0.0050	<0.0050	0.023	0.0050	4849346
Anthracene	ug/g	0.064	0.010	0.019	<0.0050	<0.0050	0.089	0.0050	4849346
Benzo(a)anthracene	ug/g	0.19	0.010	0.062	<0.0050	<0.0050	0.32	0.0050	4849346
Benzo(a)pyrene	ug/g	0.097	0.010	0.049	<0.0050	<0.0050	0.23	0.0050	4849346
Benzo(b/j)fluoranthene	ug/g	0.17	0.010	0.086	<0.0050	<0.0050	0.34	0.0050	4849346
Benzo(g,h,i)perylene	ug/g	0.040	0.010	0.035	<0.0050	<0.0050	0.11	0.0050	4849346
Benzo(k)fluoranthene	ug/g	0.062	0.010	0.032	<0.0050	<0.0050	0.13	0.0050	4849346
Chrysene	ug/g	0.13	0.010	0.060	<0.0050	<0.0050	0.26	0.0050	4849346
Dibenz(a,h)anthracene	ug/g	0.013	0.010	0.0096	<0.0050	<0.0050	0.028	0.0050	4849346
Fluoranthene	ug/g	0.44	0.010	0.15	<0.0050	<0.0050	0.66	0.0050	4849346
Fluorene	ug/g	0.027	0.010	0.0078	<0.0050	<0.0050	0.030	0.0050	4849346
Indeno(1,2,3-cd)pyrene	ug/g	0.047	0.010	0.035	<0.0050	<0.0050	0.12	0.0050	4849346
1-Methylnaphthalene	ug/g	0.089	0.010	0.0090	<0.0050	<0.0050	0.017	0.0050	4849346
2-Methylnaphthalene	ug/g	0.10	0.010	0.011	<0.0050	<0.0050	0.019	0.0050	4849346
Naphthalene	ug/g	0.066	0.010	0.011	<0.0050	<0.0050	0.024	0.0050	4849346
Phenanthrene	ug/g	0.32	0.010	0.11	<0.0050	<0.0050	0.39	0.0050	4849346
Pyrene	ug/g	0.31	0.010	0.11	<0.0050	<0.0050	0.47	0.0050	4849346
Surrogate Recovery (%)									
D10-Anthracene	%	96		85	82	87	88		4849346
D14-Terphenyl (FS)	%	97		82	80	85	87		4849346
D8-Acenaphthylene	%	69		59	59	61	59		4849346

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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O.REG 153 PAHS (SOIL)

Maxxam ID		DVK876		
Sampling Date		2017/01/30		
COC Number		596564-01-01		
	UNITS	17-6	RDL	QC Batch
Inorganics				
Moisture	%	30	0.2	4847269
Calculated Parameters				
Methylnaphthalene, 2-(1-)	ug/g	<0.014	0.014	4846294
Polyaromatic Hydrocarbons				
Acenaphthene	ug/g	<0.0050	0.0050	4849346
Acenaphthylene	ug/g	<0.0050	0.0050	4849346
Anthracene	ug/g	<0.0050	0.0050	4849346
Benzo(a)anthracene	ug/g	<0.0050	0.0050	4849346
Benzo(a)pyrene	ug/g	<0.0050	0.0050	4849346
Benzo(b/j)fluoranthene	ug/g	<0.0050	0.0050	4849346
Benzo(g,h,i)perylene	ug/g	<0.0050	0.0050	4849346
Benzo(k)fluoranthene	ug/g	<0.0050	0.0050	4849346
Chrysene	ug/g	<0.0050	0.0050	4849346
Dibenz(a,h)anthracene	ug/g	<0.0050	0.0050	4849346
Fluoranthene	ug/g	<0.0050	0.0050	4849346
Fluorene	ug/g	<0.0050	0.0050	4849346
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	0.0050	4849346
1-Methylnaphthalene	ug/g	<0.0050	0.0050	4849346
2-Methylnaphthalene	ug/g	<0.0050	0.0050	4849346
Naphthalene	ug/g	<0.0050	0.0050	4849346
Phenanthrene	ug/g	<0.0050	0.0050	4849346
Pyrene	ug/g	<0.0050	0.0050	4849346
Surrogate Recovery (%)				
D10-Anthracene	%	87		4849346
D14-Terphenyl (FS)	%	82		4849346
D8-Acenaphthylene	%	60		4849346

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B720504
Report Date: 2017/02/15

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

O.REG 153 PCBS (SOIL)

Maxxam ID		DVK832	DVK834	DVK835	DVK835	DVK836		
Sampling Date		2017/01/30	2017/01/30	2017/01/30	2017/01/30	2017/01/30		
COC Number		596564-03-01	596564-03-01	596564-03-01	596564-03-01	596564-03-01		
	UNITS	17-7	17-5	17-4	17-4 Lab-Dup	DUP-3	RDL	QC Batch
PCBs								
Aroclor 1242	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4850055
Aroclor 1248	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4850055
Aroclor 1254	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4850055
Aroclor 1260	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4850055
Total PCB	ug/g	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4850055
Surrogate Recovery (%)								
Decachlorobiphenyl	%	93	92	94	90	87		4850055

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

Maxxam ID		DVK840		DVK841		DVK876		
Sampling Date		2017/01/30		2017/01/30		2017/01/30		
COC Number		596564-03-01		596564-03-01		596564-01-01		
	UNITS	17-8	RDL	17-10	RDL	17-6	RDL	QC Batch
PCBs								
Aroclor 1242	ug/g	<0.020	0.020	<0.010	0.010	<0.020	0.020	4850055
Aroclor 1248	ug/g	<0.020	0.020	<0.010	0.010	<0.020	0.020	4850055
Aroclor 1254	ug/g	<0.020	0.020	<0.010	0.010	<0.020	0.020	4850055
Aroclor 1260	ug/g	<0.020	0.020	<0.010	0.010	<0.020	0.020	4850055
Total PCB	ug/g	<0.020	0.020	<0.010	0.010	<0.020	0.020	4850055
Surrogate Recovery (%)								
Decachlorobiphenyl	%	81		90		94		4850055

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B720504
Report Date: 2017/02/15

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

RESULTS OF ANALYSES OF SOIL

Maxxam ID		DVK832	DVK833		DVK835		DVK837	DVK877		
Sampling Date		2017/01/30	2017/01/30		2017/01/30		2017/01/30	2017/01/30		
COC Number		596564-03-01	596564-03-01		596564-03-01		596564-03-01	596564-01-01		
	UNITS	17-7	17-23	RDL	17-4	QC Batch	17-2	17-20	RDL	QC Batch
Inorganics										
Moisture	%		27	0.2		4847269		29	0.2	4847269
Available (CaCl2) pH	pH	7.29			7.78	4864185	8.26			4864203

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		DVK878	DVK879		
Sampling Date		2017/01/30	2017/01/30		
COC Number		596564-01-01	596564-01-01		
	UNITS	17-21	DUP-2	RDL	QC Batch
Inorganics					
Moisture	%	25	28	0.2	4847269
Available (CaCl2) pH	pH	7.54			4864192

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B720504
Report Date: 2017/02/15

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		DVK832	DVK833	DVK834	DVK834	DVK835		
Sampling Date		2017/01/30	2017/01/30	2017/01/30	2017/01/30	2017/01/30		
COC Number		596564-03-01	596564-03-01	596564-03-01	596564-03-01	596564-03-01		
	UNITS	17-7	17-23	17-5	17-5 Lab-Dup	17-4	RDL	QC Batch
Volatile Organics								
Acetone (2-Propanone)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4849386
Benzene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4849386
Bromodichloromethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Bromoform	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Bromomethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Carbon Tetrachloride	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Chlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Chloroform	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Dibromochloromethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
1,2-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
1,3-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
1,4-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
1,1-Dichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
1,2-Dichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
1,1-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
cis-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
trans-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
1,2-Dichloropropane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
cis-1,3-Dichloropropene	ug/g	<0.030	<0.030	<0.030	<0.030	<0.030	0.030	4849386
trans-1,3-Dichloropropene	ug/g	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	4849386
Ethylbenzene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4849386
Ethylene Dibromide	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Hexane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Methylene Chloride(Dichloromethane)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4849386
Methyl Isobutyl Ketone	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4849386
Methyl t-butyl ether (MTBE)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Styrene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
1,1,1,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
1,1,2,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Tetrachloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Toluene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4849386
1,1,1-Trichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
1,1,2-Trichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B720504
Report Date: 2017/02/15

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		DVK832	DVK833	DVK834	DVK834	DVK835		
Sampling Date		2017/01/30	2017/01/30	2017/01/30	2017/01/30	2017/01/30		
COC Number		596564-03-01	596564-03-01	596564-03-01	596564-03-01	596564-03-01		
	UNITS	17-7	17-23	17-5	17-5 Lab-Dup	17-4	RDL	QC Batch
Trichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4849386
Vinyl Chloride	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4849386
p+m-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4849386
o-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4849386
Total Xylenes	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4849386
F1 (C6-C10)	ug/g	<10	<10	<10	<10	<10	10	4849386
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	<10	<10	10	4849386
Surrogate Recovery (%)								
4-Bromofluorobenzene	%	97	98	99	97	98		4849386
D10-o-Xylene	%	107	100	98	98	97		4849386
D4-1,2-Dichloroethane	%	98	99	99	99	99		4849386
D8-Toluene	%	96	96	95	96	96		4849386

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Maxxam Job #: B720504
Report Date: 2017/02/15

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		DVK836		DVK840	DVK840		DVK841		
Sampling Date		2017/01/30		2017/01/30	2017/01/30		2017/01/30		
COC Number		596564-03-01		596564-03-01	596564-03-01		596564-03-01		
	UNITS	DUP-3	QC Batch	17-8	17-8 Lab-Dup	QC Batch	17-10	RDL	QC Batch
Volatile Organics									
Acetone (2-Propanone)	ug/g	<0.50	4849386	<0.50	<0.50	4850763	<0.50	0.50	4849386
Benzene	ug/g	<0.020	4849386	<0.020	<0.020	4850763	<0.020	0.020	4849386
Bromodichloromethane	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Bromoform	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Bromomethane	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Carbon Tetrachloride	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Chlorobenzene	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Chloroform	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Dibromochloromethane	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
1,2-Dichlorobenzene	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
1,3-Dichlorobenzene	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
1,4-Dichlorobenzene	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
1,1-Dichloroethane	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
1,2-Dichloroethane	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
1,1-Dichloroethylene	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
cis-1,2-Dichloroethylene	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
trans-1,2-Dichloroethylene	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
1,2-Dichloropropane	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
cis-1,3-Dichloropropene	ug/g	<0.030	4849386	<0.030	<0.030	4850763	<0.030	0.030	4849386
trans-1,3-Dichloropropene	ug/g	<0.040	4849386	<0.040	<0.040	4850763	<0.040	0.040	4849386
Ethylbenzene	ug/g	<0.020	4849386	<0.020	<0.020	4850763	<0.020	0.020	4849386
Ethylene Dibromide	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Hexane	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Methylene Chloride(Dichloromethane)	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	4849386	<0.50	<0.50	4850763	<0.50	0.50	4849386
Methyl Isobutyl Ketone	ug/g	<0.50	4849386	<0.50	<0.50	4850763	<0.50	0.50	4849386
Methyl t-butyl ether (MTBE)	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Styrene	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
1,1,1,2-Tetrachloroethane	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
1,1,2,2-Tetrachloroethane	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Tetrachloroethylene	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Toluene	ug/g	<0.020	4849386	<0.020	<0.020	4850763	<0.020	0.020	4849386
1,1,1-Trichloroethane	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
1,1,2-Trichloroethane	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		DVK836		DVK840	DVK840		DVK841		
Sampling Date		2017/01/30		2017/01/30	2017/01/30		2017/01/30		
COC Number		596564-03-01		596564-03-01	596564-03-01		596564-03-01		
	UNITS	DUP-3	QC Batch	17-8	17-8 Lab-Dup	QC Batch	17-10	RDL	QC Batch
Trichloroethylene	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	4849386	<0.050	<0.050	4850763	<0.050	0.050	4849386
Vinyl Chloride	ug/g	<0.020	4849386	<0.020	<0.020	4850763	<0.020	0.020	4849386
p+m-Xylene	ug/g	<0.020	4849386	<0.020	<0.020	4850763	<0.020	0.020	4849386
o-Xylene	ug/g	<0.020	4849386	<0.020	<0.020	4850763	<0.020	0.020	4849386
Total Xylenes	ug/g	<0.020	4849386	<0.020	<0.020	4850763	<0.020	0.020	4849386
F1 (C6-C10)	ug/g	<10	4849386	<10	<10	4850763	<10	10	4849386
F1 (C6-C10) - BTEX	ug/g	<10	4849386	<10	<10	4850763	<10	10	4849386
Surrogate Recovery (%)									
4-Bromofluorobenzene	%	98	4849386	98	99	4850763	97		4849386
D10-o-Xylene	%	99	4849386	99	103	4850763	100		4849386
D4-1,2-Dichloroethane	%	99	4849386	99	98	4850763	99		4849386
D8-Toluene	%	94	4849386	95	94	4850763	95		4849386

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		DVK876		DVK877		
Sampling Date		2017/01/30		2017/01/30		
COC Number		596564-01-01		596564-01-01		
	UNITS	17-6	QC Batch	17-20	RDL	QC Batch
Volatile Organics						
Acetone (2-Propanone)	ug/g	<0.50	4849386	<0.50	0.50	4850763
Benzene	ug/g	<0.020	4849386	<0.020	0.020	4850763
Bromodichloromethane	ug/g	<0.050	4849386	<0.050	0.050	4850763
Bromoform	ug/g	<0.050	4849386	<0.050	0.050	4850763
Bromomethane	ug/g	<0.050	4849386	<0.050	0.050	4850763
Carbon Tetrachloride	ug/g	<0.050	4849386	<0.050	0.050	4850763
Chlorobenzene	ug/g	<0.050	4849386	<0.050	0.050	4850763
Chloroform	ug/g	<0.050	4849386	<0.050	0.050	4850763
Dibromochloromethane	ug/g	<0.050	4849386	<0.050	0.050	4850763
1,2-Dichlorobenzene	ug/g	<0.050	4849386	<0.050	0.050	4850763
1,3-Dichlorobenzene	ug/g	<0.050	4849386	<0.050	0.050	4850763
1,4-Dichlorobenzene	ug/g	<0.050	4849386	<0.050	0.050	4850763
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	4849386	<0.050	0.050	4850763
1,1-Dichloroethane	ug/g	<0.050	4849386	<0.050	0.050	4850763
1,2-Dichloroethane	ug/g	<0.050	4849386	<0.050	0.050	4850763
1,1-Dichloroethylene	ug/g	<0.050	4849386	<0.050	0.050	4850763
cis-1,2-Dichloroethylene	ug/g	<0.050	4849386	<0.050	0.050	4850763
trans-1,2-Dichloroethylene	ug/g	<0.050	4849386	<0.050	0.050	4850763
1,2-Dichloropropane	ug/g	<0.050	4849386	<0.050	0.050	4850763
cis-1,3-Dichloropropene	ug/g	<0.030	4849386	<0.030	0.030	4850763
trans-1,3-Dichloropropene	ug/g	<0.040	4849386	<0.040	0.040	4850763
Ethylbenzene	ug/g	<0.020	4849386	<0.020	0.020	4850763
Ethylene Dibromide	ug/g	<0.050	4849386	<0.050	0.050	4850763
Hexane	ug/g	<0.050	4849386	<0.050	0.050	4850763
Methylene Chloride(Dichloromethane)	ug/g	<0.050	4849386	<0.050	0.050	4850763
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	4849386	<0.50	0.50	4850763
Methyl Isobutyl Ketone	ug/g	<0.50	4849386	<0.50	0.50	4850763
Methyl t-butyl ether (MTBE)	ug/g	<0.050	4849386	<0.050	0.050	4850763
Styrene	ug/g	<0.050	4849386	<0.050	0.050	4850763
1,1,1,2-Tetrachloroethane	ug/g	<0.050	4849386	<0.050	0.050	4850763
1,1,2,2-Tetrachloroethane	ug/g	<0.050	4849386	<0.050	0.050	4850763
Tetrachloroethylene	ug/g	<0.050	4849386	<0.050	0.050	4850763
Toluene	ug/g	<0.020	4849386	<0.020	0.020	4850763
1,1,1-Trichloroethane	ug/g	<0.050	4849386	<0.050	0.050	4850763
1,1,2-Trichloroethane	ug/g	<0.050	4849386	<0.050	0.050	4850763
Trichloroethylene	ug/g	<0.050	4849386	<0.050	0.050	4850763

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B720504
Report Date: 2017/02/15

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		DVK876		DVK877		
Sampling Date		2017/01/30		2017/01/30		
COC Number		596564-01-01		596564-01-01		
	UNITS	17-6	QC Batch	17-20	RDL	QC Batch
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	4849386	<0.050	0.050	4850763
Vinyl Chloride	ug/g	<0.020	4849386	<0.020	0.020	4850763
p+m-Xylene	ug/g	<0.020	4849386	<0.020	0.020	4850763
o-Xylene	ug/g	<0.020	4849386	<0.020	0.020	4850763
Total Xylenes	ug/g	<0.020	4849386	<0.020	0.020	4850763
F1 (C6-C10)	ug/g	<10	4849386	<10	10	4850763
F1 (C6-C10) - BTEX	ug/g	<10	4849386	<10	10	4850763
Surrogate Recovery (%)						
4-Bromofluorobenzene	%	98	4849386	97		4850763
D10-o-Xylene	%	101	4849386	107		4850763
D4-1,2-Dichloroethane	%	100	4849386	98		4850763
D8-Toluene	%	93	4849386	96		4850763

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		DVK832	DVK832	DVK833	DVK834	DVK835		
Sampling Date		2017/01/30	2017/01/30	2017/01/30	2017/01/30	2017/01/30		
COC Number		596564-03-01	596564-03-01	596564-03-01	596564-03-01	596564-03-01		
	UNITS	17-7	17-7 Lab-Dup	17-23	17-5	17-4	RDL	QC Batch
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	<10	<10	<10	10	4847275
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	<50	<50	<50	50	4847275
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	<50	<50	<50	50	4847275
Reached Baseline at C50	ug/g	Yes	Yes	Yes	Yes	Yes		4847275
Surrogate Recovery (%)								
o-Terphenyl	%	111	112	117	109	116		4847275

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

Maxxam ID		DVK836	DVK837		DVK838		DVK839	DVK840		
Sampling Date		2017/01/30	2017/01/30		2017/01/30		2017/01/30	2017/01/30		
COC Number		596564-03-01	596564-03-01		596564-03-01		596564-03-01	596564-03-01		
	UNITS	DUP-3	17-2	RDL	17-18	RDL	17-3	17-8	RDL	QC Batch
BTEX & F1 Hydrocarbons										
Benzene	ug/g		<0.02	0.02	0.17	0.04	<0.02		0.02	4847620
Toluene	ug/g		<0.02	0.02	0.82	0.04	<0.02		0.02	4847620
Ethylbenzene	ug/g		<0.02	0.02	0.19	0.04	<0.02		0.02	4847620
o-Xylene	ug/g		<0.02	0.02	0.66	0.04	<0.02		0.02	4847620
p+m-Xylene	ug/g		<0.04	0.04	0.80	0.08	<0.04		0.04	4847620
Total Xylenes	ug/g		<0.04	0.04	1.5	0.08	<0.04		0.04	4847620
F1 (C6-C10)	ug/g		<10	10	<20	20	<10		10	4847620
F1 (C6-C10) - BTEX	ug/g		<10	10	<20	20	<10		10	4847620
F2-F4 Hydrocarbons										
F4G-sg (Grav. Heavy Hydrocarbons)	ug/g		2200	100						4854973
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	10	<20	20	<10	<10	10	4847275
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	50	110	100	<50	<50	50	4847275
F4 (C34-C50 Hydrocarbons)	ug/g	<50	280	50	210	100	<50	<50	50	4847275
Reached Baseline at C50	ug/g	Yes	No		Yes		Yes	Yes		4847275
Surrogate Recovery (%)										
1,4-Difluorobenzene	%		113		111		110			4847620
4-Bromofluorobenzene	%		100		98		101			4847620
D10-Ethylbenzene	%		118		108		108			4847620
D4-1,2-Dichloroethane	%		109		108		106			4847620
o-Terphenyl	%	110	92		124		108	104		4847275

RDL = Reportable Detection Limit
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Report Date: 2017/02/15

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		DVK841	DVK875	DVK876	DVK877	DVK878		
Sampling Date		2017/01/30	2017/01/30	2017/01/30	2017/01/30	2017/01/30		
COC Number		596564-03-01	596564-01-01	596564-01-01	596564-01-01	596564-01-01		
	UNITS	17-10	17-19	17-6	17-20	17-21	RDL	QC Batch
BTEX & F1 Hydrocarbons								
Benzene	ug/g		<0.02			<0.02	0.02	4847620
Toluene	ug/g		<0.02			<0.02	0.02	4847620
Ethylbenzene	ug/g		<0.02			<0.02	0.02	4847620
o-Xylene	ug/g		<0.02			<0.02	0.02	4847620
p+m-Xylene	ug/g		<0.04			<0.04	0.04	4847620
Total Xylenes	ug/g		<0.04			<0.04	0.04	4847620
F1 (C6-C10)	ug/g		<10			<10	10	4847620
F1 (C6-C10) - BTEX	ug/g		<10			<10	10	4847620
F2-F4 Hydrocarbons								
F4G-sg (Grav. Heavy Hydrocarbons)	ug/g		1600				100	4854973
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	<10	<10	<10	10	4847275
F3 (C16-C34 Hydrocarbons)	ug/g	<50	90	<50	<50	<50	50	4847275
F4 (C34-C50 Hydrocarbons)	ug/g	<50	240	<50	<50	<50	50	4847275
Reached Baseline at C50	ug/g	Yes	No	Yes	Yes	Yes		4847275
Surrogate Recovery (%)								
1,4-Difluorobenzene	%		110			109		4847620
4-Bromofluorobenzene	%		99			100		4847620
D10-Ethylbenzene	%		104			119		4847620
D4-1,2-Dichloroethane	%		104			106		4847620
o-Terphenyl	%	106	108	99	108	117		4847275

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		DVK879		
Sampling Date		2017/01/30		
COC Number		596564-01-01		
	UNITS	DUP-2	RDL	QC Batch
BTEX & F1 Hydrocarbons				
Benzene	ug/g	<0.02	0.02	4847620
Toluene	ug/g	<0.02	0.02	4847620
Ethylbenzene	ug/g	<0.02	0.02	4847620
o-Xylene	ug/g	<0.02	0.02	4847620
p+m-Xylene	ug/g	<0.04	0.04	4847620
Total Xylenes	ug/g	<0.04	0.04	4847620
F1 (C6-C10)	ug/g	<10	10	4847620
F1 (C6-C10) - BTEX	ug/g	<10	10	4847620
F2-F4 Hydrocarbons				
F2 (C10-C16 Hydrocarbons)	ug/g	<10	10	4847275
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	4847275
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	4847275
Reached Baseline at C50	ug/g	Yes		4847275
Surrogate Recovery (%)				
1,4-Difluorobenzene	%	110		4847620
4-Bromofluorobenzene	%	106		4847620
D10-Ethylbenzene	%	110		4847620
D4-1,2-Dichloroethane	%	106		4847620
o-Terphenyl	%	111		4847275

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B720504
Report Date: 2017/02/15

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

TEST SUMMARY

Maxxam ID: DVK832
Sample ID: 17-7
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4846294	N/A	2017/02/07	Steve Roberts
Hot Water Extractable Boron	ICP	4852556	2017/02/06	2017/02/06	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4849580	2017/02/02	2017/02/05	Sally Coughlin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/03	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4852518	2017/02/06	2017/02/06	Daniel Teclu
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4849346	2017/02/02	2017/02/06	Arezoo Habibagahi
Polychlorinated Biphenyl in Soil	GC/ECD	4850055	2017/02/02	2017/02/03	Li Peng
pH CaCl2 EXTRACT	AT	4864185	2017/02/15	2017/02/15	Neil Dassanayake
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4849386	N/A	2017/02/03	Karen Hughes

Maxxam ID: DVK832 Dup
Sample ID: 17-7
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/03	Liliana Gaburici
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4849346	2017/02/02	2017/02/06	Arezoo Habibagahi

Maxxam ID: DVK833
Sample ID: 17-23
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	4852556	2017/02/06	2017/02/06	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4849580	2017/02/02	2017/02/05	Sally Coughlin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/03	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4852518	2017/02/06	2017/02/06	Daniel Teclu
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4849386	N/A	2017/02/03	Karen Hughes

Maxxam ID: DVK834
Sample ID: 17-5
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4846294	N/A	2017/02/07	Steve Roberts
Hot Water Extractable Boron	ICP	4852556	2017/02/06	2017/02/06	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4849580	2017/02/02	2017/02/05	Sally Coughlin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/03	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4852518	2017/02/06	2017/02/06	Daniel Teclu
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4849346	2017/02/02	2017/02/06	Arezoo Habibagahi
Polychlorinated Biphenyl in Soil	GC/ECD	4850055	2017/02/02	2017/02/03	Li Peng
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4849386	N/A	2017/02/03	Karen Hughes

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Report Date: 2017/02/15

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

TEST SUMMARY

Maxxam ID: DVK834 Dup
Sample ID: 17-5
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4849386	N/A	2017/02/03	Karen Hughes

Maxxam ID: DVK835
Sample ID: 17-4
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4846294	N/A	2017/02/07	Steve Roberts
Hot Water Extractable Boron	ICP	4852556	2017/02/06	2017/02/06	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4849580	2017/02/02	2017/02/05	Sally Coughlin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/03	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4852518	2017/02/06	2017/02/06	Daniel Teclu
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4849346	2017/02/02	2017/02/06	Arezoo Habibagahi
Polychlorinated Biphenyl in Soil	GC/ECD	4850055	2017/02/02	2017/02/03	Li Peng
pH CaCl2 EXTRACT	AT	4864185	2017/02/15	2017/02/15	Neil Dassanayake
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4849386	N/A	2017/02/03	Karen Hughes

Maxxam ID: DVK835 Dup
Sample ID: 17-4
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Polychlorinated Biphenyl in Soil	GC/ECD	4850055	2017/02/02	2017/02/03	Li Peng

Maxxam ID: DVK836
Sample ID: DUP-3
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4846294	N/A	2017/02/07	Steve Roberts
Hot Water Extractable Boron	ICP	4852556	2017/02/06	2017/02/06	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4849580	2017/02/02	2017/02/05	Sally Coughlin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/03	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4852552	2017/02/06	2017/02/06	Viviana Canzonieri
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4849346	2017/02/02	2017/02/06	Arezoo Habibagahi
Polychlorinated Biphenyl in Soil	GC/ECD	4850055	2017/02/02	2017/02/03	Li Peng
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4849386	N/A	2017/02/03	Karen Hughes

Maxxam ID: DVK837
Sample ID: 17-2
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4846294	N/A	2017/02/07	Steve Roberts

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Maxxam Job #: B720504
Report Date: 2017/02/15

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

TEST SUMMARY

Maxxam ID: DVK837
Sample ID: 17-2
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	4852556	2017/02/06	2017/02/06	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4849580	2017/02/02	2017/02/05	Sally Coughlin
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4847620	N/A	2017/02/02	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/03	Liliana Gaburici
F4G (CCME Hydrocarbons Gravimetric)	BAL	4854973	2017/02/07	2017/02/08	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4852518	2017/02/06	2017/02/06	Daniel Teclu
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4849346	2017/02/02	2017/02/06	Arezoo Habibagahi
pH CaCl2 EXTRACT	AT	4864203	2017/02/15	2017/02/15	Neil Dassanayake

Maxxam ID: DVK838
Sample ID: 17-18
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4846294	N/A	2017/02/07	Steve Roberts
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4847620	N/A	2017/02/02	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/06	Liliana Gaburici
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4849346	2017/02/02	2017/02/06	Arezoo Habibagahi

Maxxam ID: DVK839
Sample ID: 17-3
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4846294	N/A	2017/02/07	Steve Roberts
Hot Water Extractable Boron	ICP	4852556	2017/02/06	2017/02/06	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4849580	2017/02/02	2017/02/05	Sally Coughlin
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4847620	N/A	2017/02/02	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/06	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4852518	2017/02/06	2017/02/06	Daniel Teclu
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4849346	2017/02/02	2017/02/06	Arezoo Habibagahi

Maxxam ID: DVK840
Sample ID: 17-8
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4846294	N/A	2017/02/07	Steve Roberts
Hot Water Extractable Boron	ICP	4852556	2017/02/06	2017/02/06	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4849580	2017/02/02	2017/02/05	Sally Coughlin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/06	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4852552	2017/02/06	2017/02/06	Viviana Canzonieri
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici

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Maxxam Job #: B720504
Report Date: 2017/02/15

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

TEST SUMMARY

Maxxam ID: DVK840
Sample ID: 17-8
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4849346	2017/02/02	2017/02/06	Arezoo Habibagahi
Polychlorinated Biphenyl in Soil	GC/ECD	4850055	2017/02/02	2017/02/03	Li Peng
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4850763	N/A	2017/02/03	Karen Hughes

Maxxam ID: DVK840 Dup
Sample ID: 17-8
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4850763	N/A	2017/02/03	Karen Hughes

Maxxam ID: DVK841
Sample ID: 17-10
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4846294	N/A	2017/02/07	Steve Roberts
Hot Water Extractable Boron	ICP	4852556	2017/02/06	2017/02/06	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4849580	2017/02/02	2017/02/05	Sally Coughlin
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/06	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4852552	2017/02/06	2017/02/06	Viviana Canzonieri
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4849346	2017/02/02	2017/02/06	Arezoo Habibagahi
Polychlorinated Biphenyl in Soil	GC/ECD	4850055	2017/02/02	2017/02/03	Li Peng
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4849386	N/A	2017/02/03	Karen Hughes

Maxxam ID: DVK875
Sample ID: 17-19
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4846294	N/A	2017/02/07	Steve Roberts
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4847620	N/A	2017/02/02	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/06	Liliana Gaburici
F4G (CCME Hydrocarbons Gravimetric)	BAL	4854973	2017/02/07	2017/02/08	Liliana Gaburici
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4849346	2017/02/02	2017/02/06	Arezoo Habibagahi

Maxxam ID: DVK876
Sample ID: 17-6
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4846294	N/A	2017/02/07	Steve Roberts
Hot Water Extractable Boron	ICP	4852556	2017/02/06	2017/02/06	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4849580	2017/02/02	2017/02/05	Sally Coughlin

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Maxxam Job #: B720504
Report Date: 2017/02/15

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

TEST SUMMARY

Maxxam ID: DVK876
Sample ID: 17-6
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/06	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4852518	2017/02/06	2017/02/06	Daniel Teclu
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4849346	2017/02/02	2017/02/06	Arezoo Habibagahi
Polychlorinated Biphenyl in Soil	GC/ECD	4850055	2017/02/02	2017/02/03	Li Peng
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4849386	N/A	2017/02/03	Karen Hughes

Maxxam ID: DVK877
Sample ID: 17-20
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/06	Liliana Gaburici
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4850763	N/A	2017/02/03	Karen Hughes

Maxxam ID: DVK878
Sample ID: 17-21
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4847620	N/A	2017/02/02	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/06	Liliana Gaburici
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici
pH CaCl2 EXTRACT	AT	4864192	2017/02/15	2017/02/15	Neil Dassanayake

Maxxam ID: DVK879
Sample ID: DUP-2
Matrix: Soil

Collected: 2017/01/30
Shipped:
Received: 2017/01/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4847620	N/A	2017/02/02	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4847275	2017/02/01	2017/02/06	Liliana Gaburici
Moisture	BAL	4847269	N/A	2017/02/06	Liliana Gaburici

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	3.7°C
Package 2	3.7°C

Custody seal was not present on the cooler.
The samples were received at the laboratory with ice in the cooler.

Revised Report (2017/02/13): pH analysis has been included in this report.

Sample DVK838 [17-18] : PAH and F1/BTEX and F24 Analysis: Sample has a high percent of moisture. Reporting limits were adjusted for the dry weight of the sample.

Sample DVK840 [17-8] : PCB Analysis: Detection limits were adjusted due to high moisture content.

Sample DVK876 [17-6] : PCB Analysis: Detection limits were adjusted due to high moisture content.

Results relate only to the items tested.

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Maxxam Job #: B720504
Report Date: 2017/02/15

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4847275	o-Terphenyl	2017/02/03	99	30 - 130	102	30 - 130	108	%		
4847620	1,4-Difluorobenzene	2017/02/02	94	60 - 140	89	60 - 140	110	%		
4847620	4-Bromofluorobenzene	2017/02/02	117	60 - 140	106	60 - 140	94	%		
4847620	D10-Ethylbenzene	2017/02/02	102	30 - 130	114	30 - 130	116	%		
4847620	D4-1,2-Dichloroethane	2017/02/02	100	60 - 140	98	60 - 140	114	%		
4849346	D10-Anthracene	2017/02/07	90	50 - 130	95	50 - 130	87	%		
4849346	D14-Terphenyl (FS)	2017/02/07	91	50 - 130	93	50 - 130	86	%		
4849346	D8-Acenaphthylene	2017/02/07	64	50 - 130	67	50 - 130	60	%		
4849386	4-Bromofluorobenzene	2017/02/03	103	60 - 140	103	60 - 140	127	%		
4849386	D10-o-Xylene	2017/02/03	105	60 - 130	102	60 - 130	96	%		
4849386	D4-1,2-Dichloroethane	2017/02/03	98	60 - 140	97	60 - 140	98	%		
4849386	D8-Toluene	2017/02/03	101	60 - 140	100	60 - 140	96	%		
4850055	Decachlorobiphenyl	2017/02/03	97	60 - 130	94	60 - 130	90	%		
4850763	4-Bromofluorobenzene	2017/02/03	104	60 - 140	104	60 - 140	98	%		
4850763	D10-o-Xylene	2017/02/03	110	60 - 130	96	60 - 130	107	%		
4850763	D4-1,2-Dichloroethane	2017/02/03	96	60 - 140	96	60 - 140	98	%		
4850763	D8-Toluene	2017/02/03	100	60 - 140	99	60 - 140	96	%		
4847269	Moisture	2017/02/06							0	50
4847275	F2 (C10-C16 Hydrocarbons)	2017/02/03	113	50 - 130	85	80 - 120	<10	ug/g	NC	50
4847275	F3 (C16-C34 Hydrocarbons)	2017/02/03	113	50 - 130	85	80 - 120	<50	ug/g	NC	50
4847275	F4 (C34-C50 Hydrocarbons)	2017/02/03	113	50 - 130	85	80 - 120	<50	ug/g	NC	50
4847620	Benzene	2017/02/02	99	60 - 140	101	60 - 140	<0.02	ug/g	NC	50
4847620	Ethylbenzene	2017/02/02	95	60 - 140	97	60 - 140	<0.02	ug/g	NC	50
4847620	F1 (C6-C10) - BTEX	2017/02/02					<10	ug/g	NC	50
4847620	F1 (C6-C10)	2017/02/02	96	60 - 140	101	80 - 120	<10	ug/g	NC	50
4847620	o-Xylene	2017/02/02	110	60 - 140	105	60 - 140	<0.02	ug/g	NC	50
4847620	p+m-Xylene	2017/02/02	94	60 - 140	97	60 - 140	<0.04	ug/g	NC	50
4847620	Toluene	2017/02/02	98	60 - 140	97	60 - 140	<0.02	ug/g	NC	50
4847620	Total Xylenes	2017/02/02					<0.04	ug/g	NC	50
4849346	1-Methylnaphthalene	2017/02/06	84	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
4849346	2-Methylnaphthalene	2017/02/06	83	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40

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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
4849346	Acenaphthene	2017/02/06	93	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
4849346	Acenaphthylene	2017/02/06	79	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
4849346	Anthracene	2017/02/06	83	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
4849346	Benzo(a)anthracene	2017/02/06	85	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4849346	Benzo(a)pyrene	2017/02/06	81	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
4849346	Benzo(b/j)fluoranthene	2017/02/06	90	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
4849346	Benzo(g,h,i)perylene	2017/02/06	76	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40
4849346	Benzo(k)fluoranthene	2017/02/06	92	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
4849346	Chrysene	2017/02/06	88	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
4849346	Dibenz(a,h)anthracene	2017/02/06	77	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
4849346	Fluoranthene	2017/02/06	88	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
4849346	Fluorene	2017/02/06	90	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
4849346	Indeno(1,2,3-cd)pyrene	2017/02/06	88	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
4849346	Naphthalene	2017/02/06	83	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
4849346	Phenanthrene	2017/02/06	86	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
4849346	Pyrene	2017/02/06	86	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
4849386	1,1,1,2-Tetrachloroethane	2017/02/03	99	60 - 140	104	60 - 130	<0.050	ug/g	NC	50
4849386	1,1,1-Trichloroethane	2017/02/03	96	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
4849386	1,1,2,2-Tetrachloroethane	2017/02/03	100	60 - 140	103	60 - 130	<0.050	ug/g	NC	50
4849386	1,1,2-Trichloroethane	2017/02/03	94	60 - 140	98	60 - 130	<0.050	ug/g	NC	50
4849386	1,1-Dichloroethane	2017/02/03	94	60 - 140	99	60 - 130	<0.050	ug/g	NC	50
4849386	1,1-Dichloroethylene	2017/02/03	97	60 - 140	102	60 - 130	<0.050	ug/g	NC	50
4849386	1,2-Dichlorobenzene	2017/02/03	100	60 - 140	106	60 - 130	<0.050	ug/g	NC	50
4849386	1,2-Dichloroethane	2017/02/03	91	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
4849386	1,2-Dichloropropane	2017/02/03	95	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
4849386	1,3-Dichlorobenzene	2017/02/03	100	60 - 140	106	60 - 130	<0.050	ug/g	NC	50
4849386	1,4-Dichlorobenzene	2017/02/03	103	60 - 140	109	60 - 130	<0.050	ug/g	NC	50
4849386	Acetone (2-Propanone)	2017/02/03	99	60 - 140	92	60 - 140	<0.50	ug/g	NC	50
4849386	Benzene	2017/02/03	97	60 - 140	102	60 - 130	<0.020	ug/g	NC	50
4849386	Bromodichloromethane	2017/02/03	97	60 - 140	102	60 - 130	<0.050	ug/g	NC	50
4849386	Bromoform	2017/02/03	100	60 - 140	105	60 - 130	<0.050	ug/g	NC	50

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
4849386	Bromomethane	2017/02/03	103	60 - 140	109	60 - 140	<0.050	ug/g	NC	50
4849386	Carbon Tetrachloride	2017/02/03	99	60 - 140	104	60 - 130	<0.050	ug/g	NC	50
4849386	Chlorobenzene	2017/02/03	102	60 - 140	108	60 - 130	<0.050	ug/g	NC	50
4849386	Chloroform	2017/02/03	94	60 - 140	100	60 - 130	<0.050	ug/g	NC	50
4849386	cis-1,2-Dichloroethylene	2017/02/03	101	60 - 140	107	60 - 130	<0.050	ug/g	NC	50
4849386	cis-1,3-Dichloropropene	2017/02/03	103	60 - 140	108	60 - 130	<0.030	ug/g	NC	50
4849386	Dibromochloromethane	2017/02/03	100	60 - 140	104	60 - 130	<0.050	ug/g	NC	50
4849386	Dichlorodifluoromethane (FREON 12)	2017/02/03	79	60 - 140	85	60 - 140	<0.050	ug/g	NC	50
4849386	Ethylbenzene	2017/02/03	100	60 - 140	104	60 - 130	<0.020	ug/g	NC	50
4849386	Ethylene Dibromide	2017/02/03	100	60 - 140	104	60 - 130	<0.050	ug/g	NC	50
4849386	F1 (C6-C10) - BTEX	2017/02/03					<10	ug/g	NC	30
4849386	F1 (C6-C10)	2017/02/03	87	60 - 140	97	80 - 120	<10	ug/g	NC	30
4849386	Hexane	2017/02/03	100	60 - 140	105	60 - 130	<0.050	ug/g	NC	50
4849386	Methyl Ethyl Ketone (2-Butanone)	2017/02/03	103	60 - 140	99	60 - 140	<0.50	ug/g	NC	50
4849386	Methyl Isobutyl Ketone	2017/02/03	107	60 - 140	108	60 - 130	<0.50	ug/g	NC	50
4849386	Methyl t-butyl ether (MTBE)	2017/02/03	99	60 - 140	104	60 - 130	<0.050	ug/g	NC	50
4849386	Methylene Chloride(Dichloromethane)	2017/02/03	101	60 - 140	107	60 - 130	<0.050	ug/g	NC	50
4849386	o-Xylene	2017/02/03	99	60 - 140	103	60 - 130	<0.020	ug/g	NC	50
4849386	p+m-Xylene	2017/02/03	99	60 - 140	103	60 - 130	<0.020	ug/g	NC	50
4849386	Styrene	2017/02/03	102	60 - 140	107	60 - 130	<0.050	ug/g	NC	50
4849386	Tetrachloroethylene	2017/02/03	99	60 - 140	103	60 - 130	<0.050	ug/g	NC	50
4849386	Toluene	2017/02/03	97	60 - 140	101	60 - 130	<0.020	ug/g	NC	50
4849386	Total Xylenes	2017/02/03					<0.020	ug/g	NC	50
4849386	trans-1,2-Dichloroethylene	2017/02/03	97	60 - 140	102	60 - 130	<0.050	ug/g	NC	50
4849386	trans-1,3-Dichloropropene	2017/02/03	105	60 - 140	110	60 - 130	<0.040	ug/g	NC	50
4849386	Trichloroethylene	2017/02/03	98	60 - 140	104	60 - 130	<0.050	ug/g	NC	50
4849386	Trichlorofluoromethane (FREON 11)	2017/02/03	101	60 - 140	106	60 - 130	<0.050	ug/g	NC	50
4849386	Vinyl Chloride	2017/02/03	97	60 - 140	103	60 - 130	<0.020	ug/g	NC	50
4849580	Chromium (VI)	2017/02/05	0 (1)	75 - 125	90	80 - 120	<0.2	ug/g	NC	35
4850055	Aroclor 1242	2017/02/03					<0.010	ug/g	NC	50
4850055	Aroclor 1248	2017/02/03					<0.010	ug/g	NC	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
4850055	Aroclor 1254	2017/02/03					<0.010	ug/g	NC	50
4850055	Aroclor 1260	2017/02/03	107	60 - 130	109	60 - 130	<0.010	ug/g	NC	50
4850055	Total PCB	2017/02/03	107	60 - 130	109	60 - 130	<0.010	ug/g	NC	50
4850763	1,1,1,2-Tetrachloroethane	2017/02/03	97	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
4850763	1,1,1-Trichloroethane	2017/02/03	93	60 - 140	92	60 - 130	<0.050	ug/g	NC	50
4850763	1,1,2,2-Tetrachloroethane	2017/02/03	98	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
4850763	1,1,2-Trichloroethane	2017/02/03	92	60 - 140	89	60 - 130	<0.050	ug/g	NC	50
4850763	1,1-Dichloroethane	2017/02/03	90	60 - 140	89	60 - 130	<0.050	ug/g	NC	50
4850763	1,1-Dichloroethylene	2017/02/03	92	60 - 140	91	60 - 130	<0.050	ug/g	NC	50
4850763	1,2-Dichlorobenzene	2017/02/03	98	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
4850763	1,2-Dichloroethane	2017/02/03	88	60 - 140	87	60 - 130	<0.050	ug/g	NC	50
4850763	1,2-Dichloropropane	2017/02/03	92	60 - 140	91	60 - 130	<0.050	ug/g	NC	50
4850763	1,3-Dichlorobenzene	2017/02/03	98	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
4850763	1,4-Dichlorobenzene	2017/02/03	100	60 - 140	98	60 - 130	<0.050	ug/g	NC	50
4850763	Acetone (2-Propanone)	2017/02/03	84	60 - 140	83	60 - 140	<0.50	ug/g	NC	50
4850763	Benzene	2017/02/03	93	60 - 140	92	60 - 130	<0.020	ug/g	NC	50
4850763	Bromodichloromethane	2017/02/03	95	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
4850763	Bromoform	2017/02/03	98	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
4850763	Bromomethane	2017/02/03	94	60 - 140	92	60 - 140	<0.050	ug/g	NC	50
4850763	Carbon Tetrachloride	2017/02/03	95	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
4850763	Chlorobenzene	2017/02/03	100	60 - 140	97	60 - 130	<0.050	ug/g	NC	50
4850763	Chloroform	2017/02/03	92	60 - 140	90	60 - 130	<0.050	ug/g	NC	50
4850763	cis-1,2-Dichloroethylene	2017/02/03	98	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
4850763	cis-1,3-Dichloropropene	2017/02/03	92	60 - 140	90	60 - 130	<0.030	ug/g	NC	50
4850763	Dibromochloromethane	2017/02/03	98	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
4850763	Dichlorodifluoromethane (FREON 12)	2017/02/03	72	60 - 140	72	60 - 140	<0.050	ug/g	NC	50
4850763	Ethylbenzene	2017/02/03	96	60 - 140	95	60 - 130	<0.020	ug/g	NC	50
4850763	Ethylene Dibromide	2017/02/03	97	60 - 140	94	60 - 130	<0.050	ug/g	NC	50
4850763	F1 (C6-C10) - BTEX	2017/02/03					<10	ug/g	NC	30
4850763	F1 (C6-C10)	2017/02/03	94	60 - 140	93	80 - 120	<10	ug/g	NC	30
4850763	Hexane	2017/02/03	94	60 - 140	94	60 - 130	<0.050	ug/g	NC	50

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
4850763	Methyl Ethyl Ketone (2-Butanone)	2017/02/03	91	60 - 140	88	60 - 140	<0.50	ug/g	NC	50
4850763	Methyl Isobutyl Ketone	2017/02/03	99	60 - 140	96	60 - 130	<0.50	ug/g	NC	50
4850763	Methyl t-butyl ether (MTBE)	2017/02/03	95	60 - 140	94	60 - 130	<0.050	ug/g	NC	50
4850763	Methylene Chloride(Dichloromethane)	2017/02/03	98	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
4850763	o-Xylene	2017/02/03	95	60 - 140	93	60 - 130	<0.020	ug/g	NC	50
4850763	p+m-Xylene	2017/02/03	95	60 - 140	93	60 - 130	<0.020	ug/g	NC	50
4850763	Styrene	2017/02/03	98	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
4850763	Tetrachloroethylene	2017/02/03	95	60 - 140	94	60 - 130	<0.050	ug/g	NC	50
4850763	Toluene	2017/02/03	94	60 - 140	92	60 - 130	<0.020	ug/g	NC	50
4850763	Total Xylenes	2017/02/03					<0.020	ug/g	NC	50
4850763	trans-1,2-Dichloroethylene	2017/02/03	93	60 - 140	91	60 - 130	<0.050	ug/g	NC	50
4850763	trans-1,3-Dichloropropene	2017/02/03	91	60 - 140	88	60 - 130	<0.040	ug/g	NC	50
4850763	Trichloroethylene	2017/02/03	96	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
4850763	Trichlorofluoromethane (FREON 11)	2017/02/03	96	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
4850763	Vinyl Chloride	2017/02/03	92	60 - 140	90	60 - 130	<0.020	ug/g	NC	50
4852518	Acid Extractable Antimony (Sb)	2017/02/06	91	75 - 125	102	80 - 120	<0.20	ug/g	3.6	30
4852518	Acid Extractable Arsenic (As)	2017/02/06	NC	75 - 125	98	80 - 120	<1.0	ug/g		
4852518	Acid Extractable Barium (Ba)	2017/02/06	NC	75 - 125	94	80 - 120	<0.50	ug/g	0.95	30
4852518	Acid Extractable Beryllium (Be)	2017/02/06	94	75 - 125	98	80 - 120	<0.20	ug/g	NC	30
4852518	Acid Extractable Boron (B)	2017/02/06	91	75 - 125	96	80 - 120	<5.0	ug/g	NC	30
4852518	Acid Extractable Cadmium (Cd)	2017/02/06	93	75 - 125	98	80 - 120	<0.10	ug/g	NC	30
4852518	Acid Extractable Chromium (Cr)	2017/02/06	91	75 - 125	98	80 - 120	<1.0	ug/g		
4852518	Acid Extractable Cobalt (Co)	2017/02/06	91	75 - 125	98	80 - 120	<0.10	ug/g	2.7	30
4852518	Acid Extractable Copper (Cu)	2017/02/06	92	75 - 125	98	80 - 120	<0.50	ug/g	3.3	30
4852518	Acid Extractable Lead (Pb)	2017/02/06	NC	75 - 125	101	80 - 120	<1.0	ug/g	3.4	30
4852518	Acid Extractable Mercury (Hg)	2017/02/06	96	75 - 125	106	80 - 120	<0.050	ug/g	NC	30
4852518	Acid Extractable Molybdenum (Mo)	2017/02/06	96	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
4852518	Acid Extractable Nickel (Ni)	2017/02/06	89	75 - 125	100	80 - 120	<0.50	ug/g	16	30
4852518	Acid Extractable Selenium (Se)	2017/02/06	96	75 - 125	100	80 - 120	<0.50	ug/g	NC	30
4852518	Acid Extractable Silver (Ag)	2017/02/06	99	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
4852518	Acid Extractable Thallium (Tl)	2017/02/06	93	75 - 125	99	80 - 120	<0.050	ug/g		

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
4852518	Acid Extractable Uranium (U)	2017/02/06	NC	75 - 125	99	80 - 120	<0.050	ug/g		
4852518	Acid Extractable Vanadium (V)	2017/02/06	NC	75 - 125	100	80 - 120	<5.0	ug/g	NC	30
4852518	Acid Extractable Zinc (Zn)	2017/02/06	NC	75 - 125	97	80 - 120	<5.0	ug/g	5.2	30
4852552	Acid Extractable Antimony (Sb)	2017/02/06	91	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
4852552	Acid Extractable Arsenic (As)	2017/02/06	98	75 - 125	104	80 - 120	<1.0	ug/g	NC	30
4852552	Acid Extractable Barium (Ba)	2017/02/06	NC	75 - 125	88	80 - 120	<0.50	ug/g	2.7	30
4852552	Acid Extractable Beryllium (Be)	2017/02/06	101	75 - 125	97	80 - 120	<0.20	ug/g	NC	30
4852552	Acid Extractable Boron (B)	2017/02/06	97	75 - 125	95	80 - 120	<5.0	ug/g	NC	30
4852552	Acid Extractable Cadmium (Cd)	2017/02/06	100	75 - 125	97	80 - 120	<0.10	ug/g	NC	30
4852552	Acid Extractable Chromium (Cr)	2017/02/06	NC	75 - 125	100	80 - 120	<1.0	ug/g	1.6	30
4852552	Acid Extractable Cobalt (Co)	2017/02/06	100	75 - 125	102	80 - 120	<0.10	ug/g	0.94	30
4852552	Acid Extractable Copper (Cu)	2017/02/06	98	75 - 125	98	80 - 120	<0.50	ug/g	0.55	30
4852552	Acid Extractable Lead (Pb)	2017/02/06	NC	75 - 125	102	80 - 120	<1.0	ug/g	3.4	30
4852552	Acid Extractable Mercury (Hg)	2017/02/06	102	75 - 125	103	80 - 120	<0.050	ug/g	NC	30
4852552	Acid Extractable Molybdenum (Mo)	2017/02/06	101	75 - 125	99	80 - 120	<0.50	ug/g	NC	30
4852552	Acid Extractable Nickel (Ni)	2017/02/06	96	75 - 125	105	80 - 120	<0.50	ug/g	0.27	30
4852552	Acid Extractable Selenium (Se)	2017/02/06	100	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
4852552	Acid Extractable Silver (Ag)	2017/02/06	102	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
4852552	Acid Extractable Thallium (Tl)	2017/02/06	99	75 - 125	100	80 - 120	<0.050	ug/g	NC	30
4852552	Acid Extractable Uranium (U)	2017/02/06	101	75 - 125	101	80 - 120	<0.050	ug/g	11	30
4852552	Acid Extractable Vanadium (V)	2017/02/06	NC	75 - 125	99	80 - 120	<5.0	ug/g	NC	30
4852552	Acid Extractable Zinc (Zn)	2017/02/06	NC	75 - 125	103	80 - 120	<5.0	ug/g	5.5	30
4852556	Hot Water Ext. Boron (B)	2017/02/06	94	75 - 125	100	75 - 125	<0.050	ug/g	4.7	40
4854973	F4G-sg (Grav. Heavy Hydrocarbons)	2017/02/08			107	65 - 135	<100	ug/g	2.8	50
4864185	Available (CaCl2) pH	2017/02/15			99	97 - 103			1.2	N/A
4864192	Available (CaCl2) pH	2017/02/15			99	97 - 103			0.62	N/A

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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
4864203	Available (CaCl2) pH	2017/02/15			99	97 - 103			0.36	N/A

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 spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

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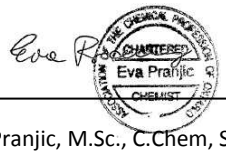
Maxxam Job #: B720504
Report Date: 2017/02/15

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AW

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

Paul Rubinato, Analyst, Maxxam Analytics

Steve Roberts, Ottawa Lab Manager

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 Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B63104	Maxxam Job #:	Bottle Order #: 596564
Attention:	Central Accounting	Attention:	Joanne Woodhouse	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1670949	COC #:	Project Manager:
	Ottawa ON K2H 5B7			Project Name:			
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:		C#596564-03-01	Madison Bingley
Email:	AP-CustomerService@golder.com	Email:	jwoodhouse@golder.com	Sampled By:			

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 ☐ Agri/Other ☐ For RSC
- ☐ Table ___

Other Regulations

- ☐ CCME ☐ Sanitary Sewer Bylaw
- ☐ Reg 558 ☐ Storm Sewer Bylaw
- ☐ MISA Municipality ______
- ☐ PWQO
- ☐ Other ______

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ____

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
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	Reg 153 Metals	VOC	PCB	PHC (F1-F4)	BTEX	PAH				# of Bottles	Comments
1		17-7	Jan 30	S		X	X	X	X		✓					
2		17-23	"	"		X	X		X							
3		17-5	"	"		X	X	X	X		X					
4		17-4	"	"		X	X	X	X		X					
5		~~[illegible]~~ Dup 3	"	"		X	X	X	X		X					
6		17-2	"	"		X			X		X					
7		17-18	"	"					X	X	X					
8		17-3	"	"		X			X		X					
9		17-8	"	"		X	X	X	X		X					
10		17-10	"	"		X	X	X	X		X					ON File

31-Jan-17 15:30
Madison Bingley
B720504
KJY OTT-001

RECEIVED IN OTTAWA

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Alex Wood AWood	17/01/31	2:15pm	[signature]	2017/01/31	15:30	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	4, 4, 3	Present		X
		Intact		X

White: Maxxa Yellow: Client

* 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

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CHAIN OF CUSTODY RECORD

Page of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B63104	Maxxam Job #:	Bottle Order #: 596564
Attention:	Central Accounting	Attention:	Joanne Woodhouse	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1670949	COC #:	Project Manager:
	Ottawa ON K2H 5B7			Project Name:		C#596564-01-01	Madison Bingley
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:			
Email:	AP-CustomerService@golder.com	Email:	jwoodhouse@golder.com	Sampled By:			

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 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other ___

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	Reg 153 Metals	VOC	PCB	PHC (F1-F4)	BTEX	PAH	# of Bottles	Comments
1		17-19	Jan 30		S					X	X	X		
2		17-6	"		"		X	X	X	X		X		
3		17-20	"		"			X		X	X			
4		17-21	"		"					X	X			
5		Dup 2	"		"					X	X			
6														
7														
8														
9														
10														ON ICE

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 #)*

RECEIVED IN OTTAWA
31-Jan-17 15:30
Madison Bingley
B720504
KJY OTT-001

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Alex Wood AWood	17/01/31	2:15 pm	[illegible]	2017/01/31	15:30	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	4, 4, 3	Present		X
		Intact		X

* 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.

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** 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

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Sent to: Maxxam Mississauga
6740 Campobello Rd
Mississauga, ON, L5N 2L8
Tel: (905) 817-5700

MAXXAM INTERLAB CHAIN OF CUSTODY RECORD

COC # B720504-NONT-01-01

REPORT INFORMATION	
Company:	Maxxam
Address:	32 Colonnade Unit 1000, Nepean, Ontario, K2E 7J6
Contact Name:	Madison Bingley
Email:	MBingley@maxxam.ca, scontractor@maxxam.ca
Phone:	(613) 274-3549
Maxxam Project #:	B720504
Client Invoice To:	Golder Associates Ltd (14090)
Client Report To:	Golder Associates Ltd (14090) Incl. on Report? Yes / No

ANALYSIS REQUESTED

Job Barcode Label

B720504

#	SAMPLE ID	MATRIX	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	SAMPLER INITIALS	# CONT.	O.Reg 153 Metals Package (Soil)	Additional Container - Archive	Volatile Organic Compounds and F1 PHCs	Soil jar for moisture analysis	Polychlorinated Biphenyl in Soil					ADDITIONAL SAMPLE INFORMATION
1	DVK832-17-7	SOIL	2017/01/30		AW	3	X		X	X	X					(P: 01, 03)
2	DVK833-17-23	SOIL	2017/01/30		AW	3	X		X	X						(P: 01, 03)
3	DVK834-17-5	SOIL	2017/01/30		AW	3	X		X	X	X					(P: 01, 03)
4	DVK835-17-4	SOIL	2017/01/30		AW	3	X		X	X	X					(P: 01, 03)
5	DVK836-DUP-3	SOIL	2017/01/30		AW	3	X		X	X	X					(P: 01, 03)
6	DVK837-17-2	SOIL	2017/01/30		AW	1	X									(P: 01)
7	DVK838-17-18	SOIL	2017/01/30		AW	1		X								(P: 01)
8	DVK839-17-3	SOIL	2017/01/30		AW	1	X									(P: 01)
9	DVK840-17-8	SOIL	2017/01/30		AW	3	X		X	X	X					(P: 01, 03)
10	DVK841-17-10	SOIL	2017/01/30		AW	3	X		X	X	X					(P: 01, 03)

SITE LOCATION:	REGULATORY CRITERIA	SPECIAL INSTRUCTIONS	REQUIRED EDDs	TURNAROUND TIME
SITE #:		Please inform Maxxam immediately if you are not accredited for the requested test(s). **Please return a copy of this form with the report.**	National Excel (N001) Golder Ottawa Excel (O028) OEC Excel (O036) Golder EQUIS (N014)	☐ Rush Required 2017/02/06 Date Required *Please inform us if rush charges will be incurred.*
PROJECT #: 1670949				
PO/AFE, TASK ORDER/SERVICE ORDER, LINE ITEM:				

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present	✓			5	5	5
Custody Seal Intact	✓					
Cooling Media Present	✓					

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

RECEIVING LAB USE ONLY

Maxxam Job #: B720504

RELINQUISHED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	Samples Labelled By:	Labels Verified By:
1. Kim Jayaweera for	2017/02/02	11:40	1. Ashitha Sukumar ASHITHA SUKUMAR	2017/02/03	08:35		
2.			2.				

Maxxam
A Bureau Veritas Group Company

Sent to: Maxxam Mississauga
6740 Campobello Rd
Mississauga, ON, L5N 2L8
Tel: (905) 817-5700

MAXXAM INTERLAB CHAIN OF CUSTODY RECORD

Page 02 of 02

COC # B720504-NONT-02-01

REPORT INFORMATION	
Company:	Maxxam
Address:	32 Colonnade Unit 1000, Nepean, Ontario, K2E 7J6
Contact Name:	Madison Bingley
Email:	MBingley@maxxam.ca, scontractor@maxxam.ca
Phone:	(613) 274-3549
Maxxam Project #:	B720504
Client Invoice To:	Golder Associates Ltd (14090)
Client Report To:	Golder Associates Ltd (14090) — Incl. on Report? Yes / No

Job Barcode Label: B720504

ANALYSIS REQUESTED

#	SAMPLE ID	MATRIX	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	SAMPLER INITIALS	# CONT.	O.Reg 153 Metals Package (Soil)	Additional Container - Archive	Volatile Organic Compounds and F1 PHCs	Soil jar for moisture analysis	Polychlorinated Biphenyl in Soil						ADDITIONAL SAMPLE INFORMATION
1	DVK875-17-19	SOIL	2017/01/30		AW	1		X									(P: 01)
2	DVK876-17-6	SOIL	2017/01/30		AW	3	X		X	X	X						(P: 01, 03)
3	DVK877-17-20	SOIL	2017/01/30		AW	3		X	X	X							(P: 01, 03)
4	DVK878-17-21	SOIL	2017/01/30		AW	1		X									(P: 01)
5	DVK879-DUP-2	SOIL	2017/01/30		AW	1		X									(P: 01)
6																	
7																	
8																	
9																	
10																	

SITE LOCATION:

SITE #:

PROJECT #:
1670949

PO/AFE, TASK ORDER/SERVICE ORDER, LINE ITEM:

REGULATORY CRITERIA

SPECIAL INSTRUCTIONS
Please inform Maxxam immediately if you are not accredited for the requested test(s).
Please return a copy of this form with the report.

REQUIRED EDDs
National Excel (N001)
Golder Ottawa Excel (O028)
OEC Excel (O036)
Golder EQUIS (N014)

TURNAROUND TIME
☐ Rush Required
2017/02/06
Date Required
Please inform us if rush charges will be incurred.

COOLER ID: /	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present	✓			5	5	5
Custody Seal Intact	✓					
Cooling Media Present	✓					

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

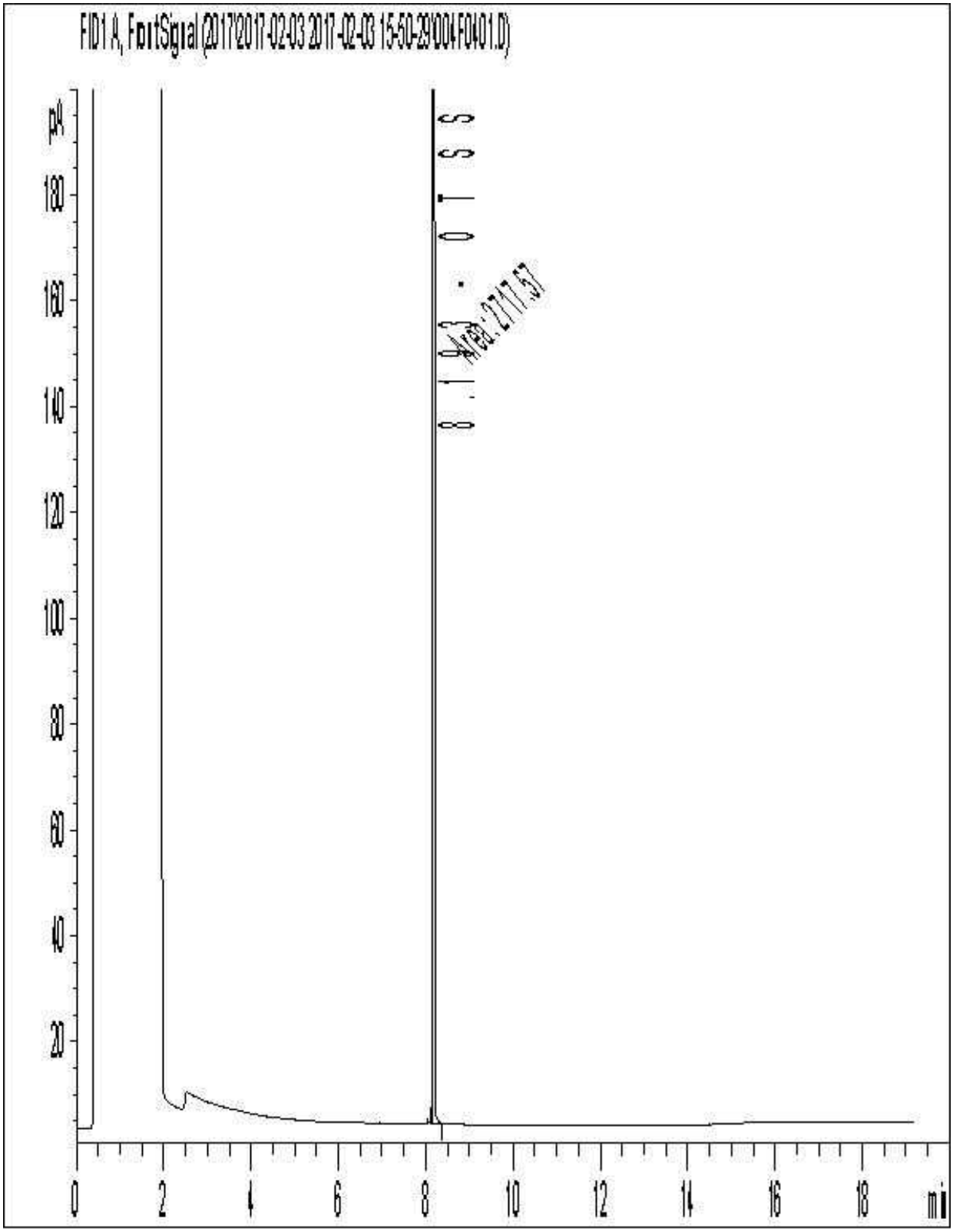
RECEIVING LAB USE ONLY
Maxxam Job #
B720504

RELINQUISHED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	Samples Labelled By:	Labels Verified By:
1.			1. [signature] ASHITHA SUKUMAR	2017/02/03	08:35		
2.			2.				

Maxxam Job #: B720504
Report Date: 2017/02/15
Maxxam Sample: DVK832

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-7

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

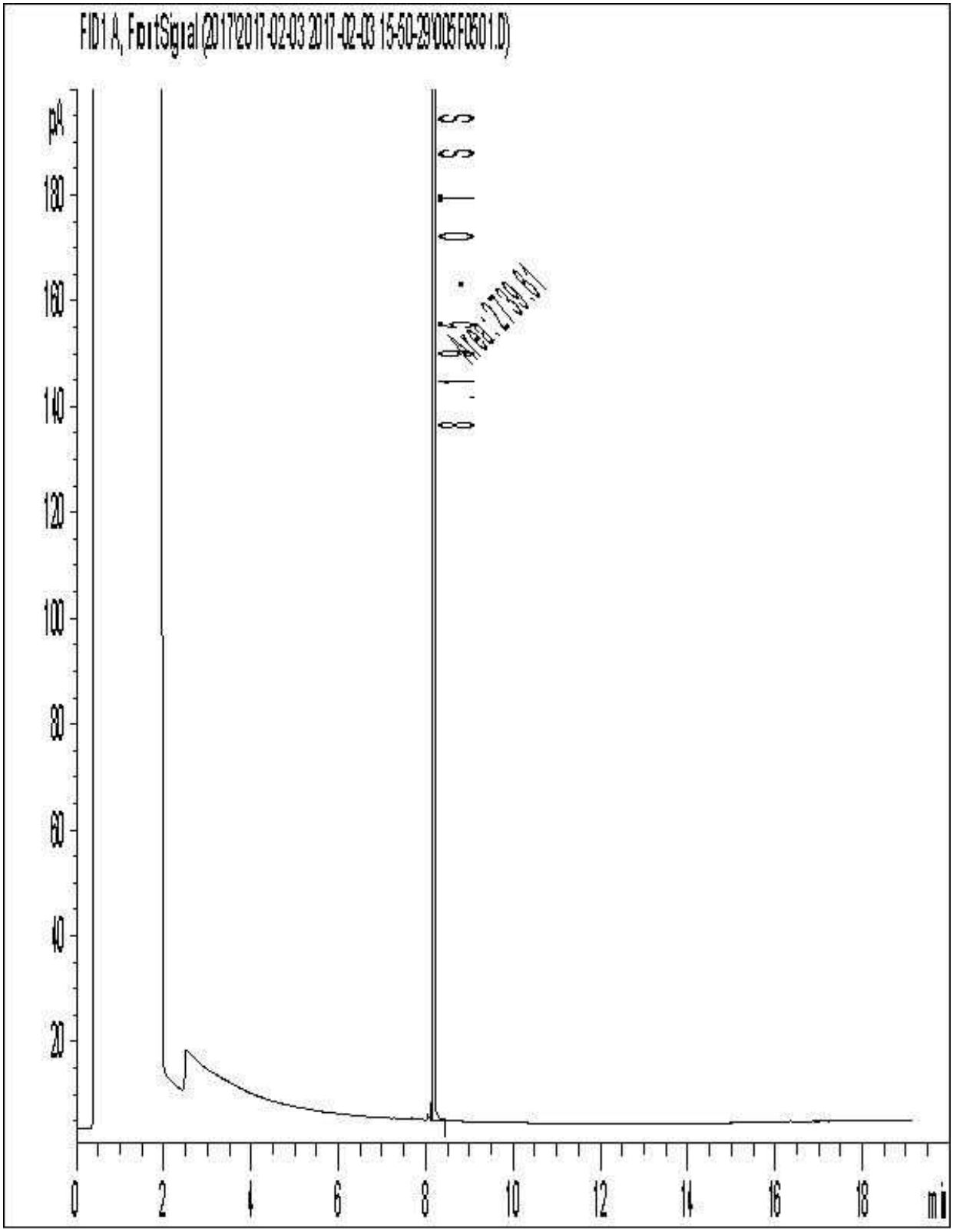


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/15
Maxxam Sample: DVK832 Lab-Dup

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-7

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

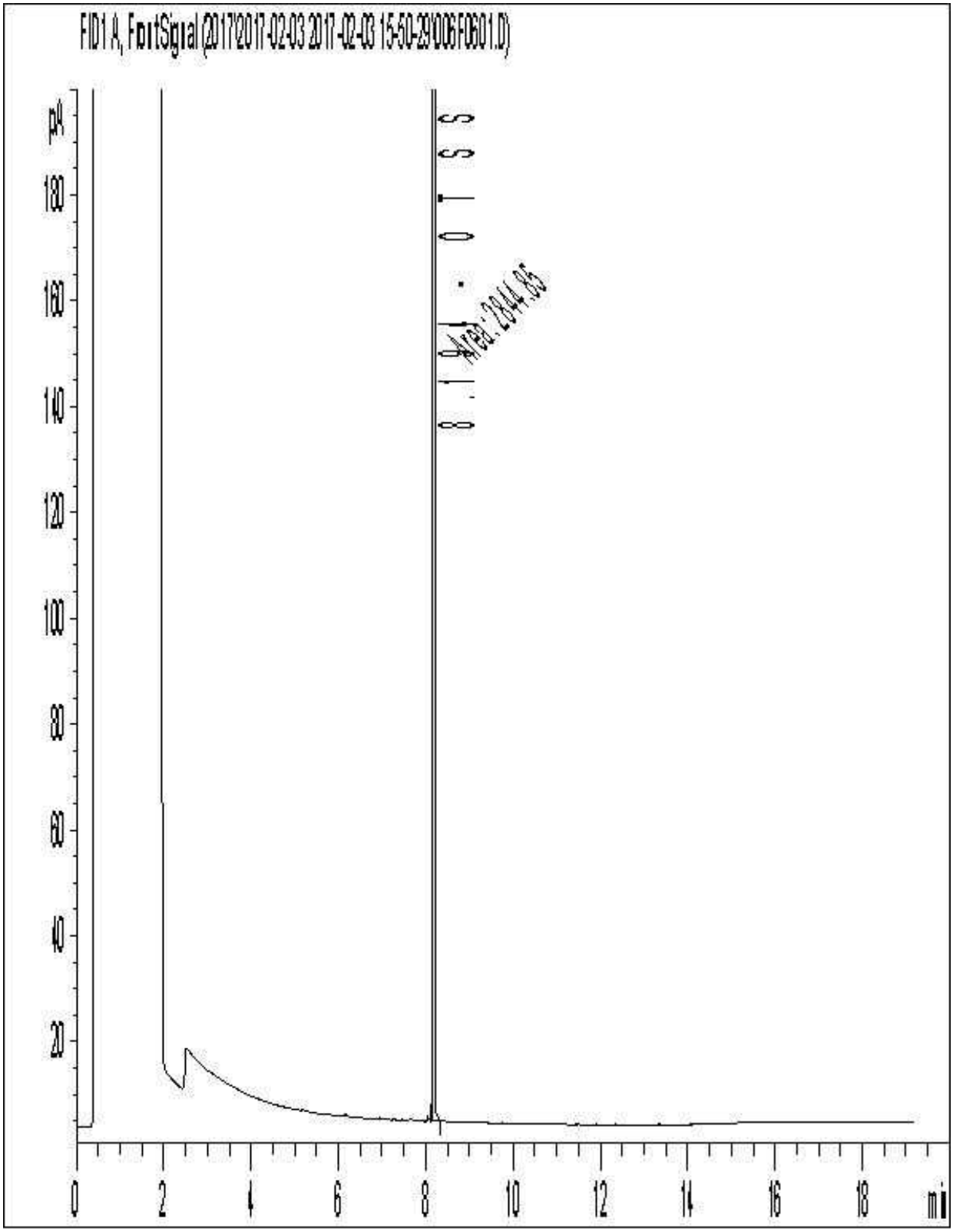


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/15
Maxxam Sample: DVK833

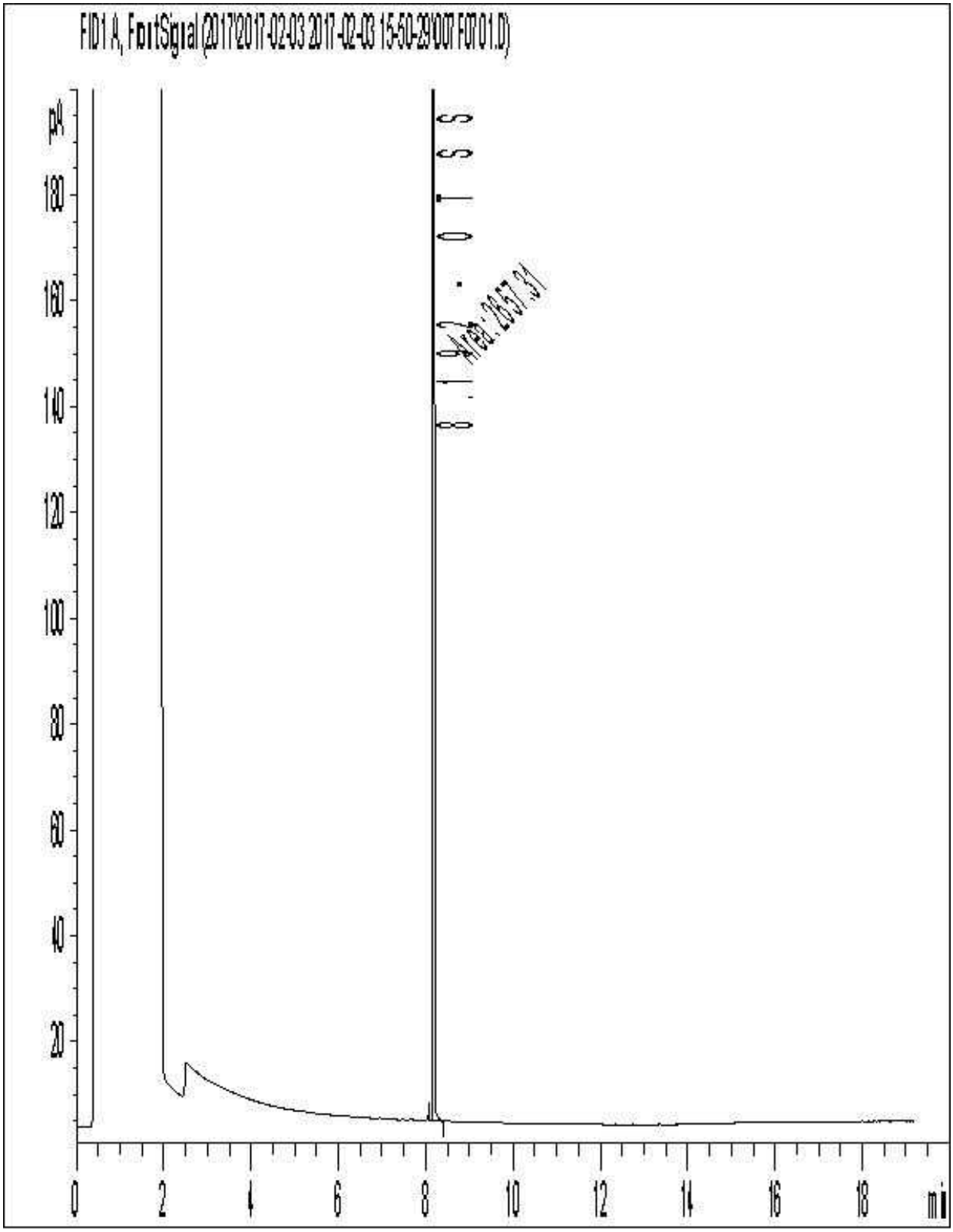
Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-23

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

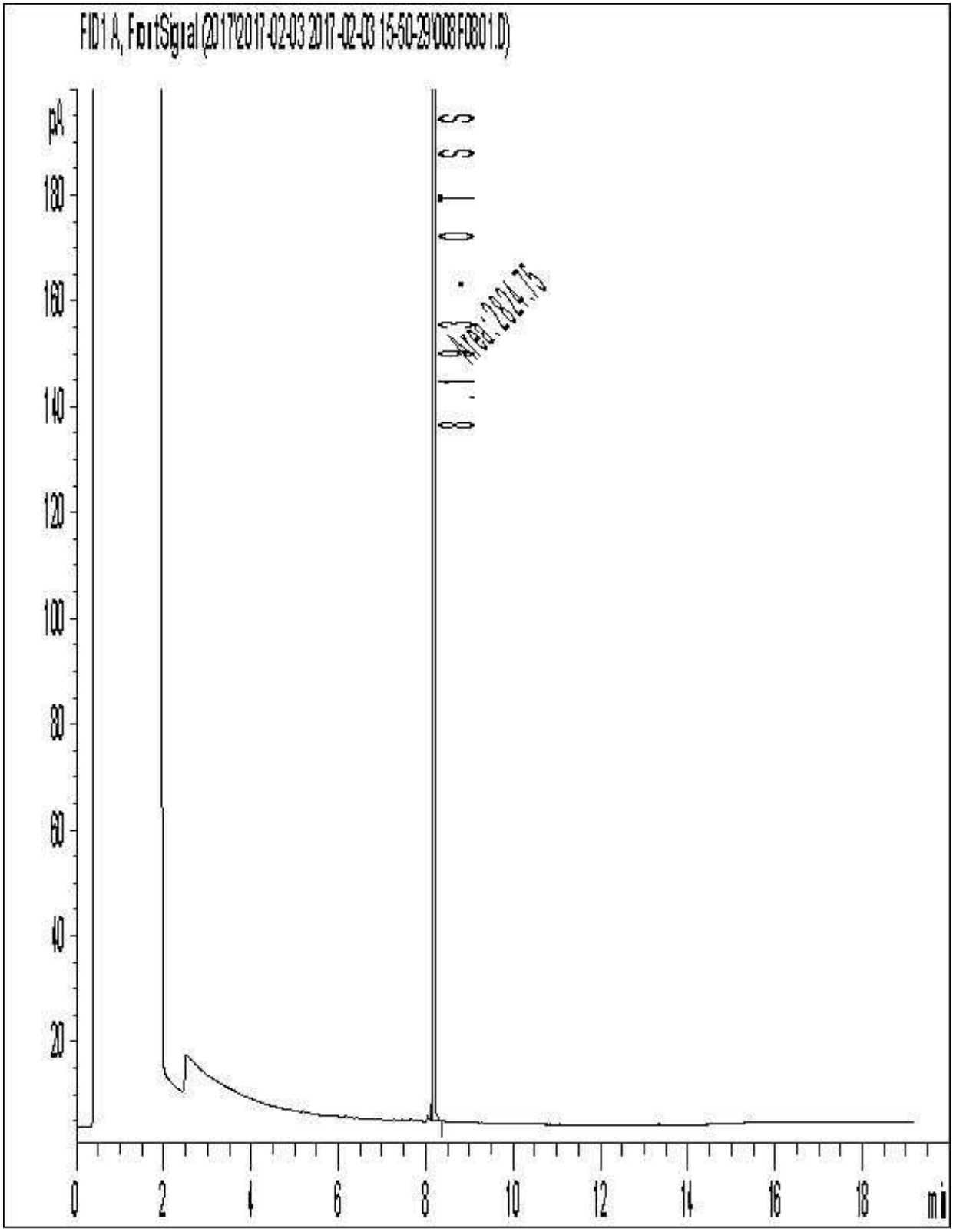


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/15
Maxxam Sample: DVK835

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-4

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

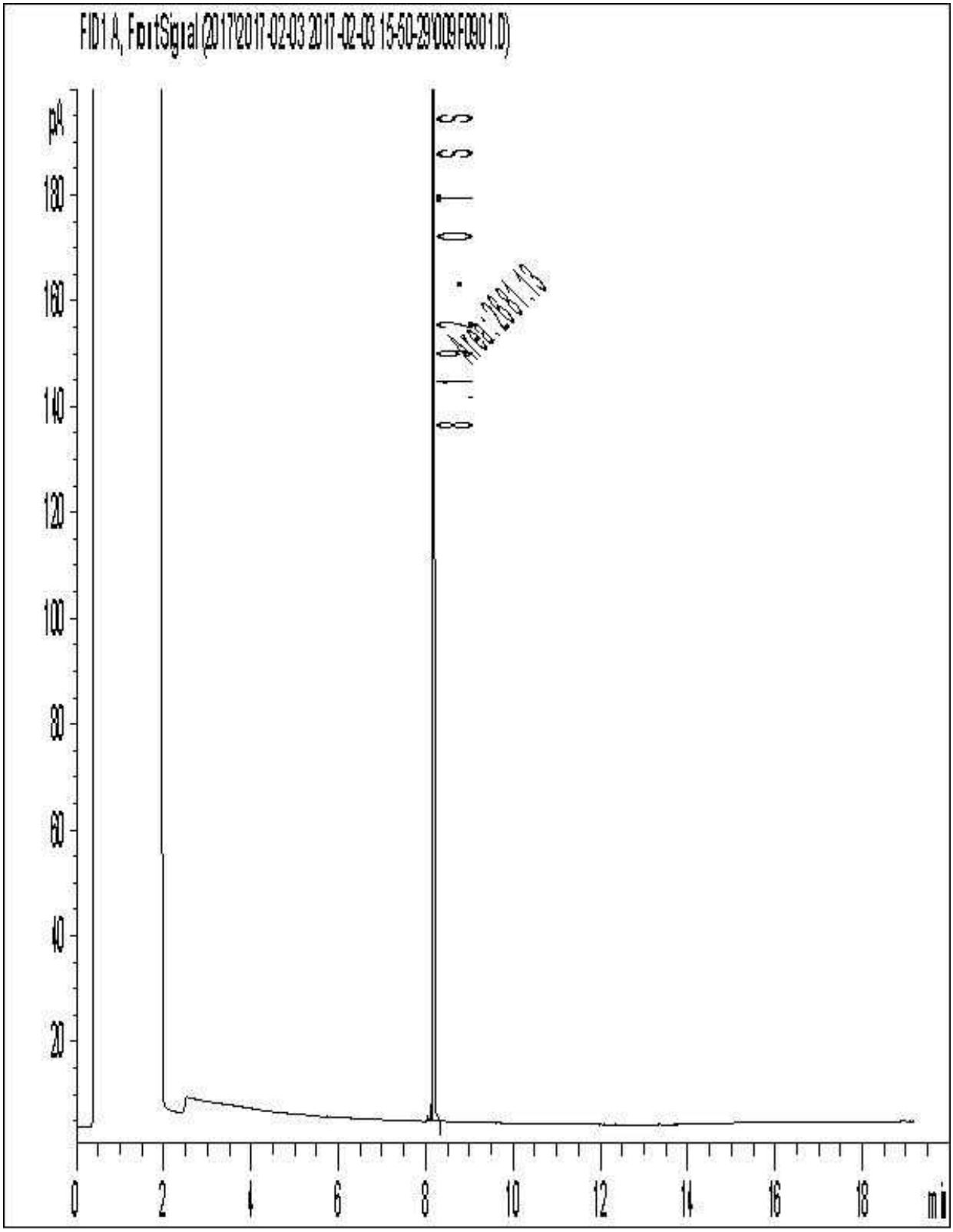


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/15
Maxxam Sample: DVK836

Golder Associates Ltd
Client Project #: 1670949
Client ID: DUP-3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

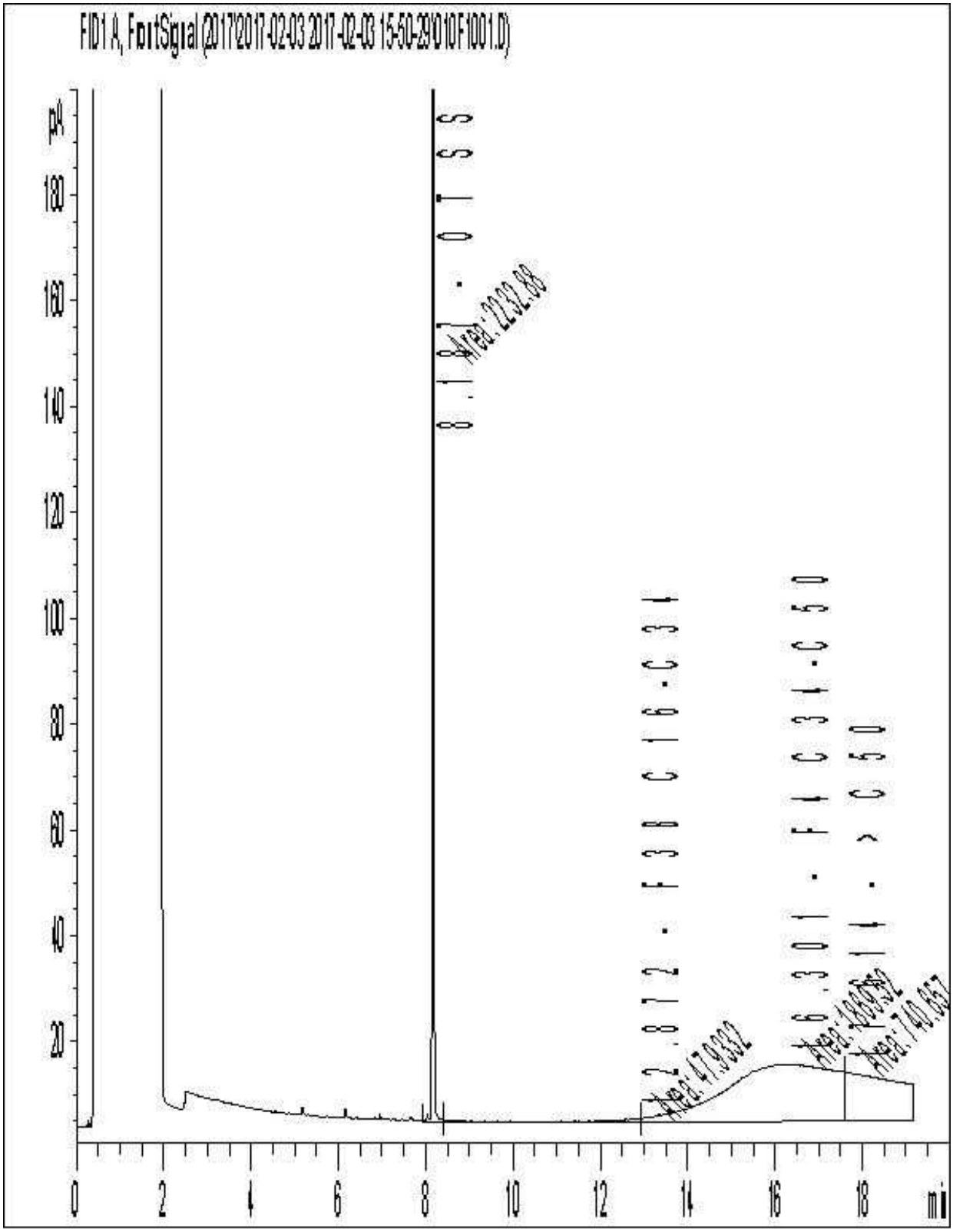


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/15
Maxxam Sample: DVK837

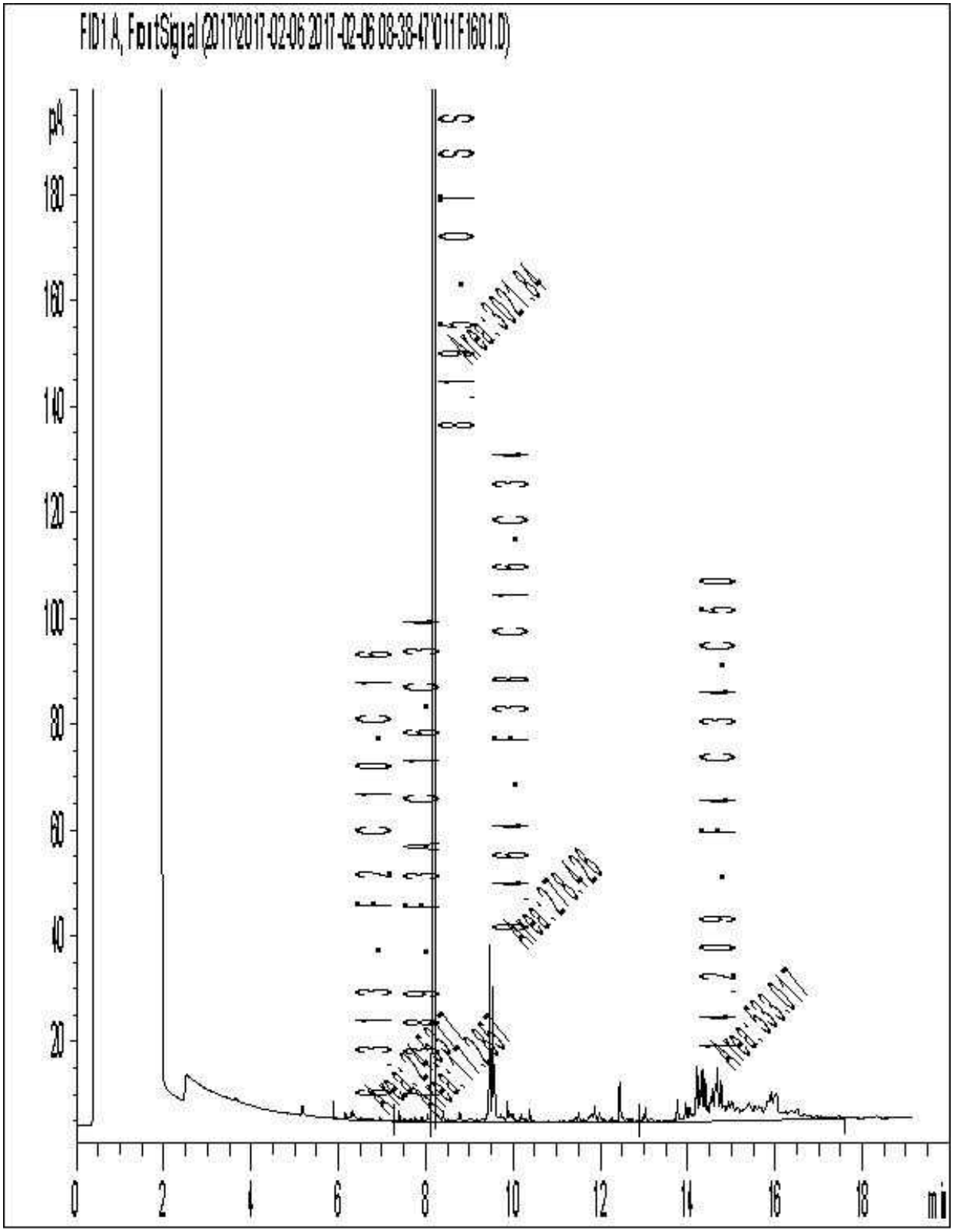
Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-2

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

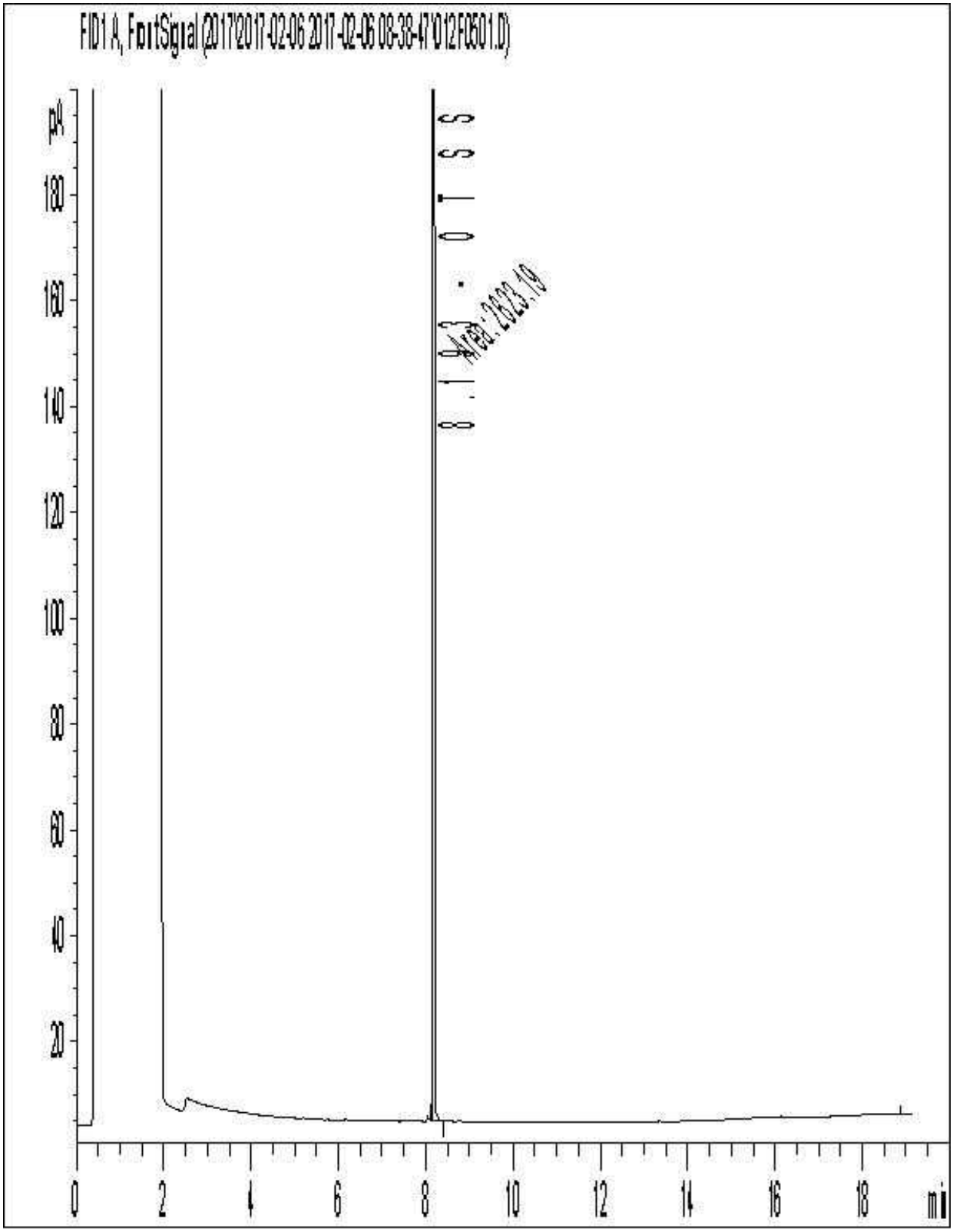


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/15
Maxxam Sample: DVK839

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

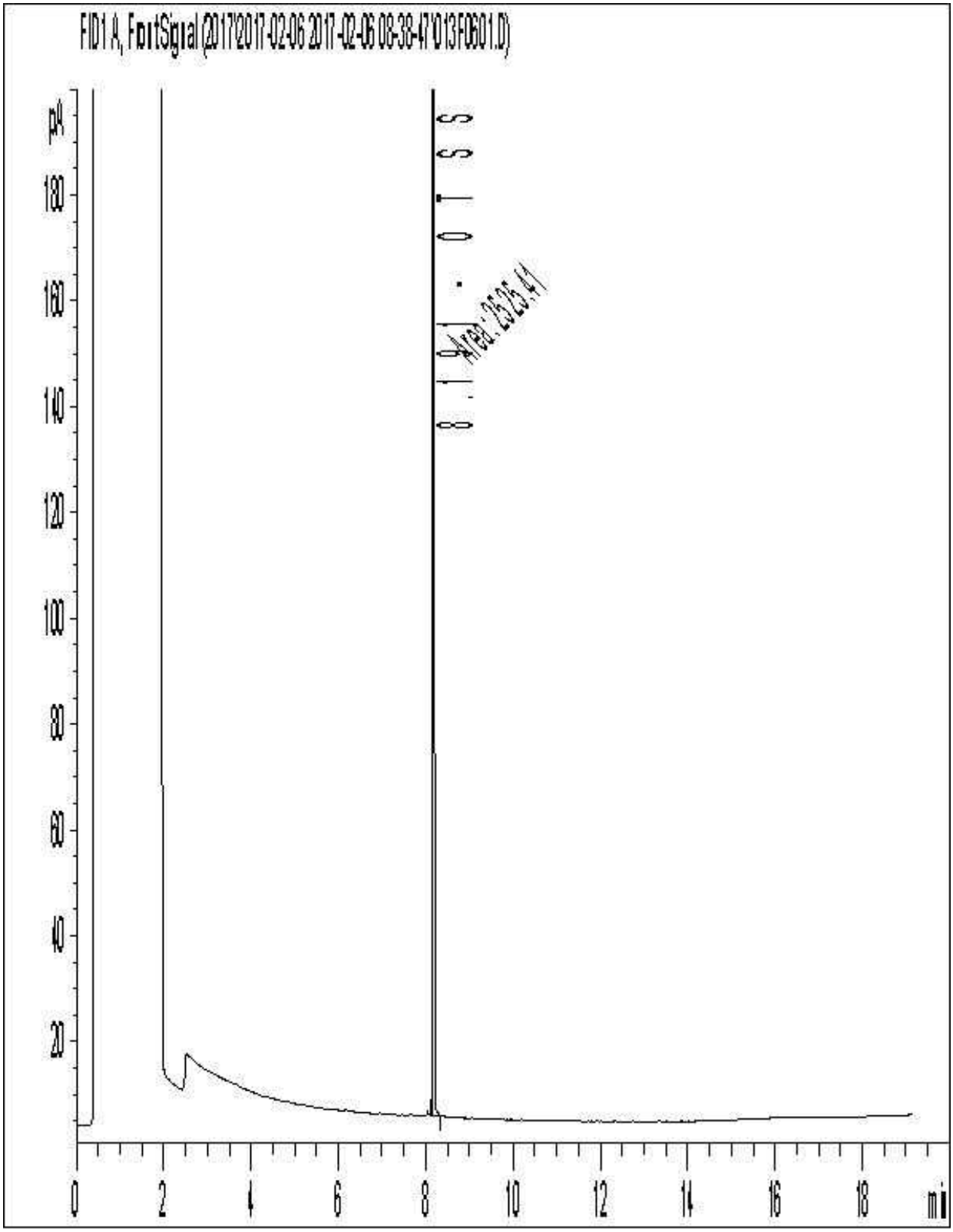


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/15
Maxxam Sample: DVK840

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-8

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

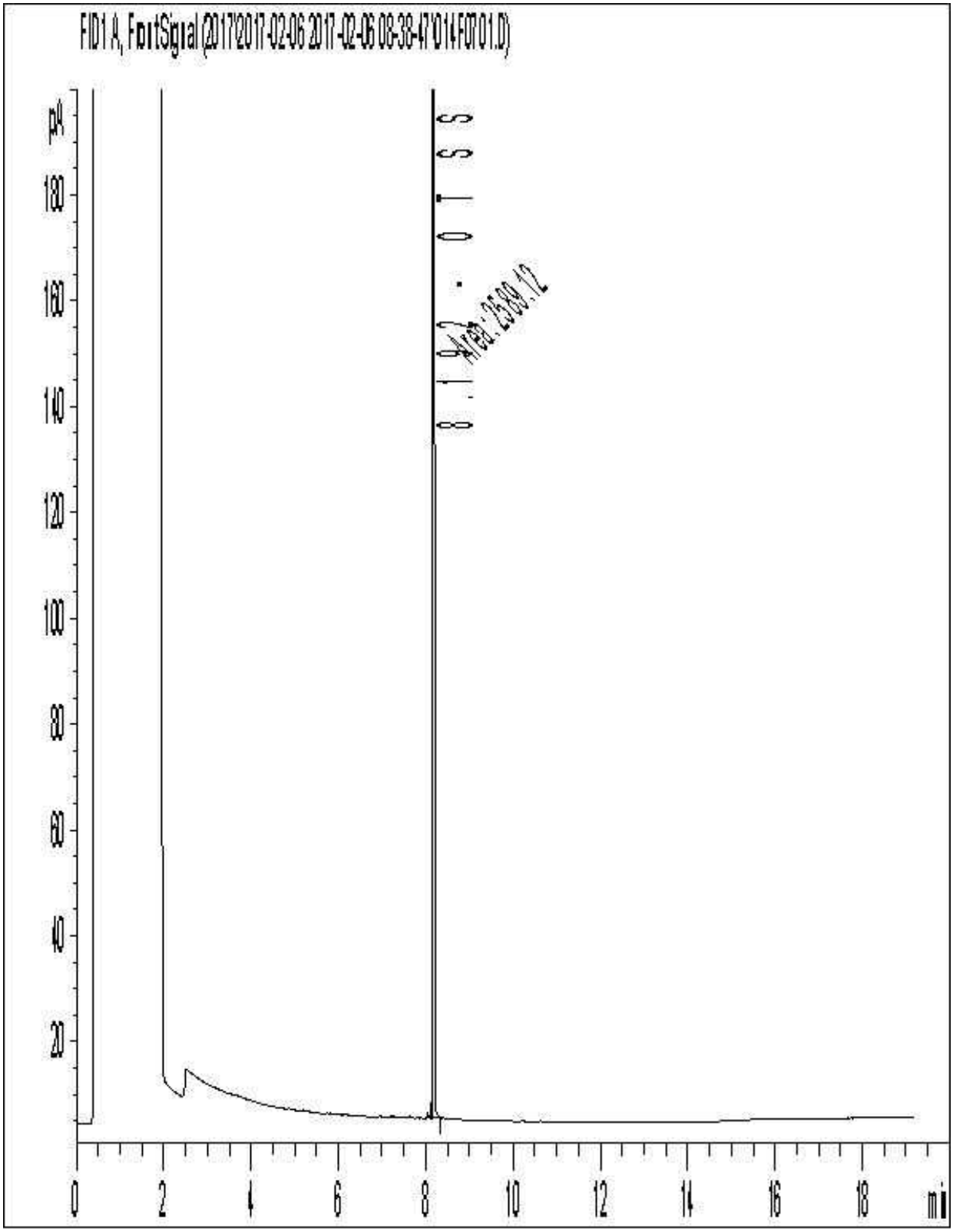


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/15
Maxxam Sample: DVK841

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-10

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

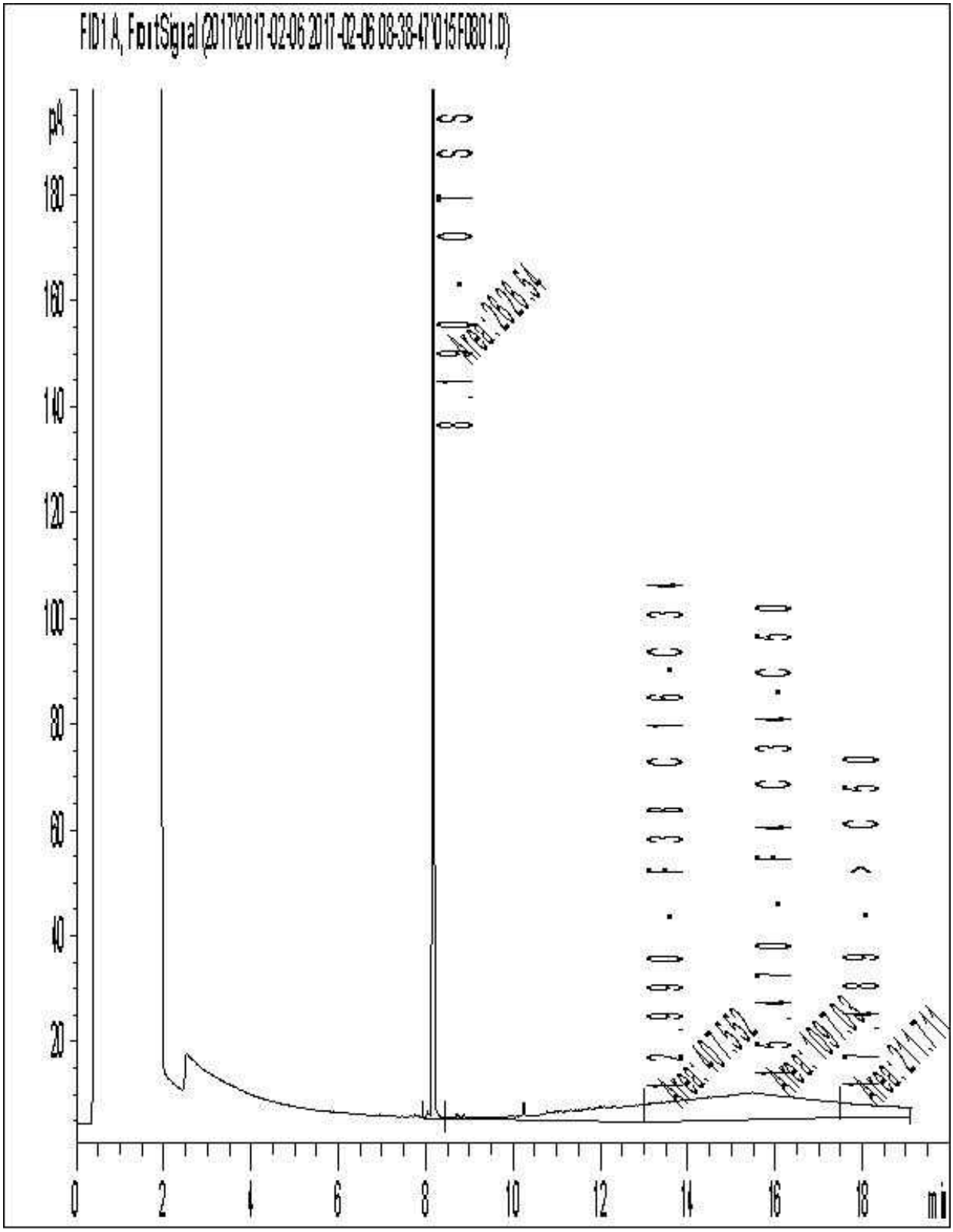


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/15
Maxxam Sample: DVK875

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-19

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

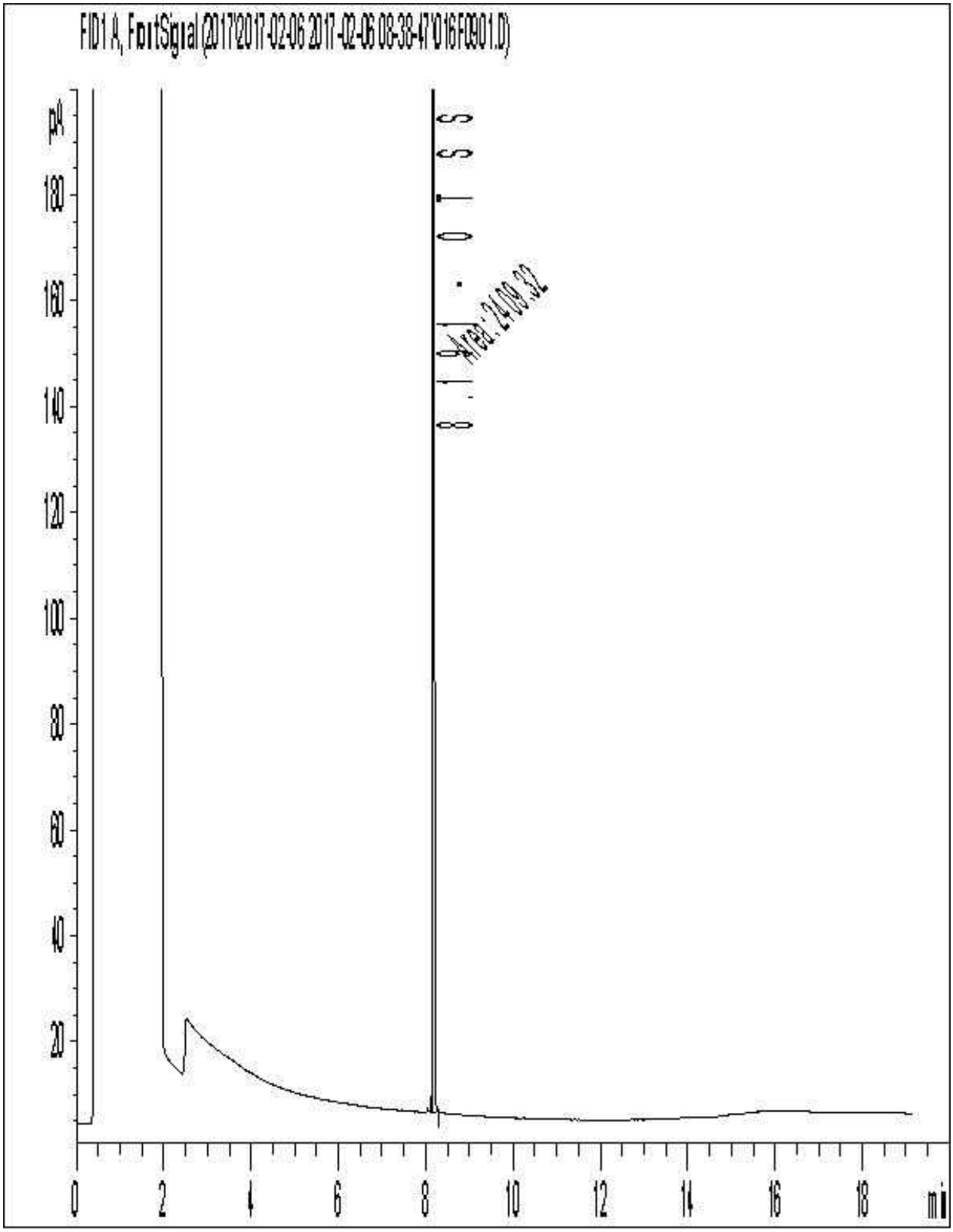


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/15
Maxxam Sample: DVK876

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-6

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

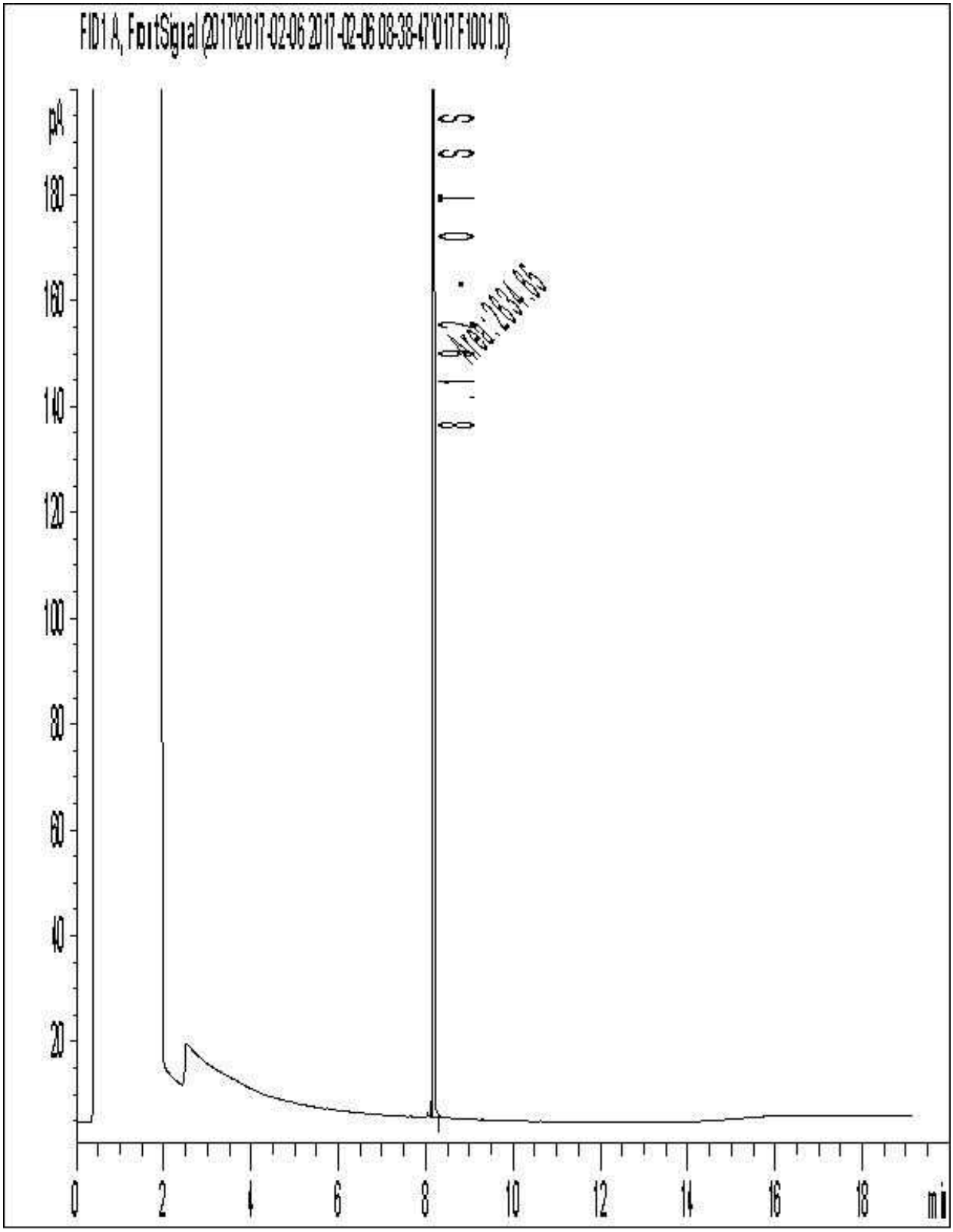


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/15
Maxxam Sample: DVK877

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-20

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

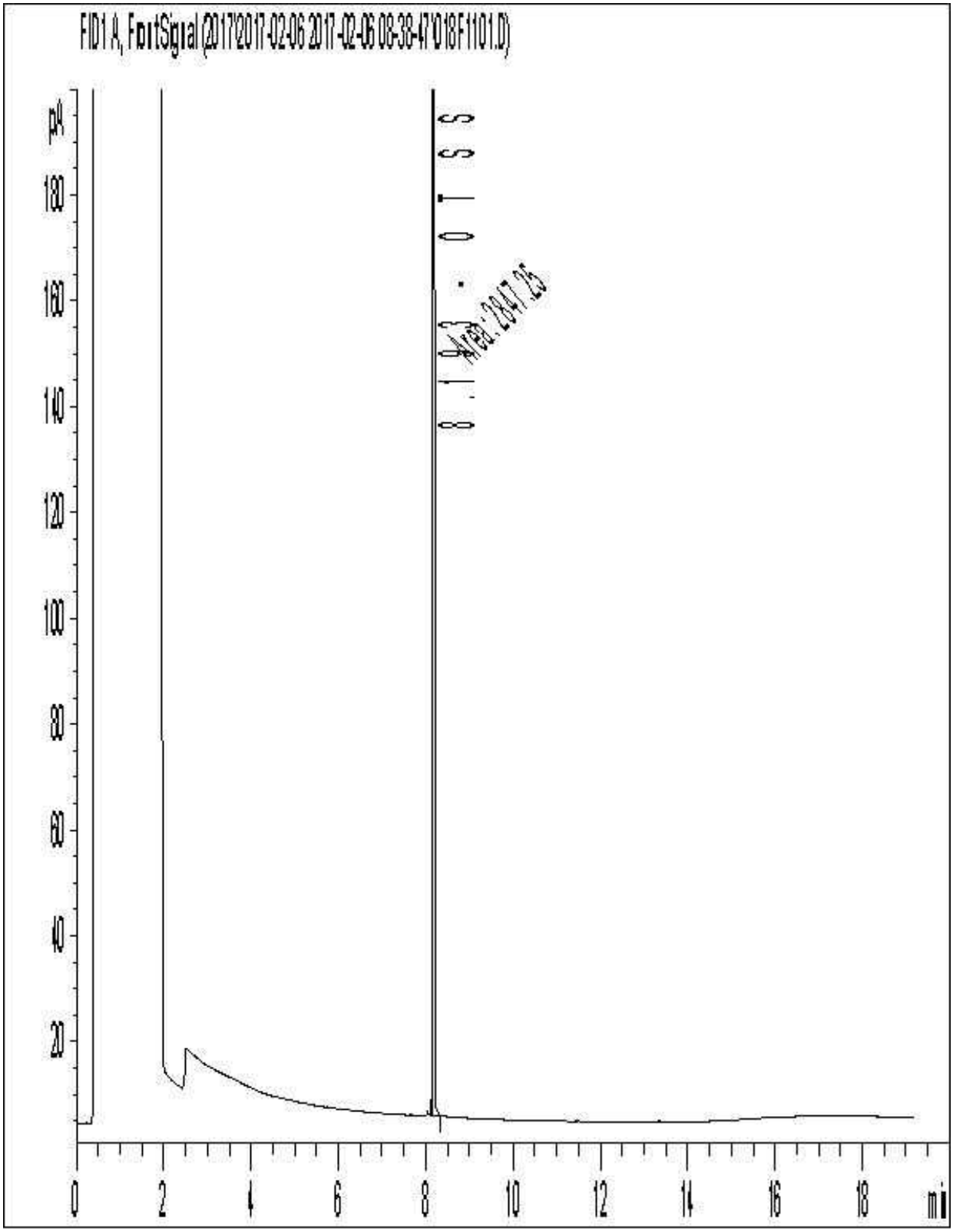


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/15
Maxxam Sample: DVK878

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-21

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

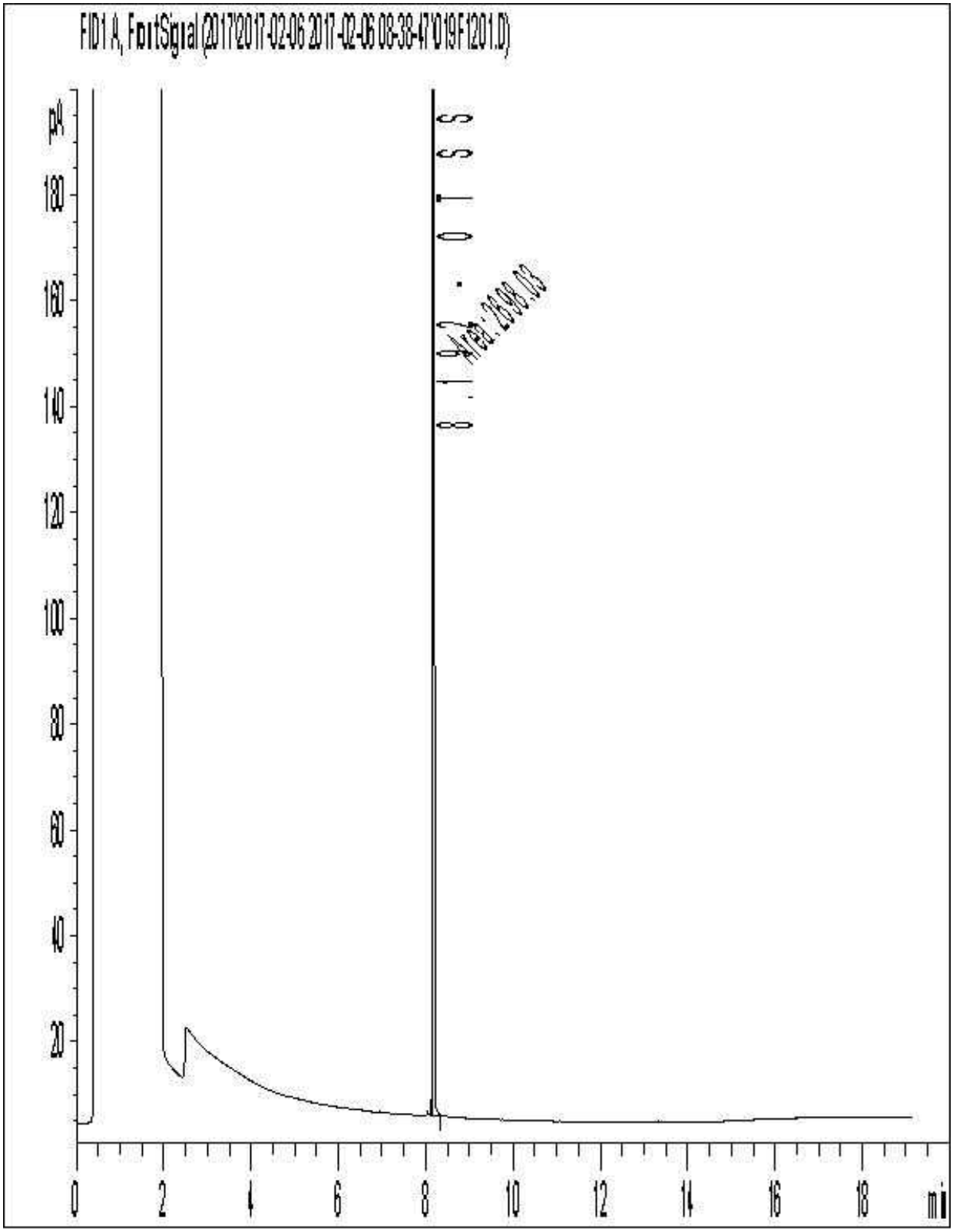


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B720504
Report Date: 2017/02/15
Maxxam Sample: DVK879

Golder Associates Ltd
Client Project #: 1670949
Client ID: DUP-2

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: 1670949
Your C.O.C. #: 595605-01-01

Attention:Joanne Woodhouse

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/02/09
Report #: R4354248
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B723162
Received: 2017/02/02, 12:20

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	2	N/A	2017/02/08	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum (1)	1	N/A	2017/02/08		EPA 8260C m
Chromium (VI) in Water (1)	1	N/A	2017/02/06	CAM SOP-00436	EPA 7199 m
Petroleum Hydro. CCME F1 & BTEX in Water (1)	1	N/A	2017/02/07	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1, 2)	2	2017/02/07	2017/02/08	CAM SOP-00316	CCME PHC-CWS m
Mercury (1)	1	2017/02/08	2017/02/08	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS (1)	1	N/A	2017/02/07	CAM SOP-00447	EPA 6020B m
PAH Compounds in Water by GC/MS (SIM) (1)	2	2017/02/06	2017/02/07	CAM SOP-00318	EPA 8270D m
Polychlorinated Biphenyl in Water (1)	1	2017/02/04	2017/02/08	CAM SOP-00309	EPA 8082A m
Volatile Organic Compounds and F1 PHCs (1)	1	N/A	2017/02/08	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.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

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

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.

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Your Project #: 1670949
Your C.O.C. #: 595605-01-01

Attention:Joanne Woodhouse

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/02/09
Report #: R4354248
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B723162
Received: 2017/02/02, 12:20

(1) This test was performed by Maxxam Analytics Mississauga
(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.
Madison Bingley, Project Manager
Email: MBingley@maxxam.ca
Phone# (613)274-3549

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B723162
Report Date: 2017/02/09

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		DVY059		
Sampling Date		2017/02/02 10:30		
COC Number		595605-01-01		
	UNITS	17-17	RDL	QC Batch
Metals				
Chromium (VI)	ug/L	3.8	0.50	4853788
Mercury (Hg)	ug/L	<0.1	0.1	4855648

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B723162
Report Date: 2017/02/09

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

O.REG 153 DISSOLVED ICPMS METALS (WATER)

Maxxam ID		DVY059		
Sampling Date		2017/02/02 10:30		
COC Number		595605-01-01		
	UNITS	17-17	RDL	QC Batch
Metals				
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	4853415
Dissolved Arsenic (As)	ug/L	<1.0	1.0	4853415
Dissolved Barium (Ba)	ug/L	39	2.0	4853415
Dissolved Beryllium (Be)	ug/L	<0.50	0.50	4853415
Dissolved Boron (B)	ug/L	68	10	4853415
Dissolved Cadmium (Cd)	ug/L	<0.10	0.10	4853415
Dissolved Chromium (Cr)	ug/L	<5.0	5.0	4853415
Dissolved Cobalt (Co)	ug/L	<0.50	0.50	4853415
Dissolved Copper (Cu)	ug/L	1.2	1.0	4853415
Dissolved Lead (Pb)	ug/L	<0.50	0.50	4853415
Dissolved Molybdenum (Mo)	ug/L	31	0.50	4853415
Dissolved Nickel (Ni)	ug/L	1.9	1.0	4853415
Dissolved Selenium (Se)	ug/L	2.7	2.0	4853415
Dissolved Silver (Ag)	ug/L	<0.10	0.10	4853415
Dissolved Sodium (Na)	ug/L	54000	100	4853415
Dissolved Thallium (Tl)	ug/L	<0.050	0.050	4853415
Dissolved Uranium (U)	ug/L	15	0.10	4853415
Dissolved Vanadium (V)	ug/L	<0.50	0.50	4853415
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	4853415

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B723162
Report Date: 2017/02/09

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

O.REG 153 PAHS (WATER)

Maxxam ID		DVY059	DVY060		
Sampling Date		2017/02/02 10:30	2017/02/02 11:30		
COC Number		595605-01-01	595605-01-01		
	UNITS	17-17	17-19	RDL	QC Batch
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/L	<0.071	<0.071	0.071	4850750
Polyaromatic Hydrocarbons					
Acenaphthene	ug/L	<0.050	<0.050	0.050	4853550
Acenaphthylene	ug/L	<0.050	<0.050	0.050	4853550
Anthracene	ug/L	<0.050	<0.050	0.050	4853550
Benzo(a)anthracene	ug/L	<0.050	<0.050	0.050	4853550
Benzo(a)pyrene	ug/L	<0.010	0.033	0.010	4853550
Benzo(b/j)fluoranthene	ug/L	<0.050	<0.050	0.050	4853550
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	0.050	4853550
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	0.050	4853550
Chrysene	ug/L	<0.050	<0.050	0.050	4853550
Dibenz(a,h)anthracene	ug/L	<0.050	<0.050	0.050	4853550
Fluoranthene	ug/L	<0.050	0.090	0.050	4853550
Fluorene	ug/L	<0.050	<0.050	0.050	4853550
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	0.050	4853550
1-Methylnaphthalene	ug/L	<0.050	<0.050	0.050	4853550
2-Methylnaphthalene	ug/L	<0.050	<0.050	0.050	4853550
Naphthalene	ug/L	<0.050	<0.050	0.050	4853550
Phenanthrene	ug/L	<0.030	0.082	0.030	4853550
Pyrene	ug/L	<0.050	0.067	0.050	4853550
Surrogate Recovery (%)					
D10-Anthracene	%	105	105		4853550
D14-Terphenyl (FS)	%	106	103		4853550
D8-Acenaphthylene	%	98	100		4853550

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B723162
Report Date: 2017/02/09

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

O.REG 153 PCBS (WATER)

Maxxam ID		DVY059		
Sampling Date		2017/02/02 10:30		
COC Number		595605-01-01		
	UNITS	17-17	RDL	QC Batch
PCBs				
Aroclor 1242	ug/L	<0.05	0.05	4855055
Aroclor 1248	ug/L	<0.05	0.05	4855055
Aroclor 1254	ug/L	<0.05	0.05	4855055
Aroclor 1260	ug/L	<0.05	0.05	4855055
Total PCB	ug/L	<0.05	0.05	4855055
Surrogate Recovery (%)				
Decachlorobiphenyl	%	109		4855055

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Report Date: 2017/02/09

Golder Associates Ltd
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Sampler Initials: AB

O.REG 153 PETROLEUM HYDROCARBONS (WATER)

Maxxam ID		DVY060		
Sampling Date		2017/02/02 11:30		
COC Number		595605-01-01		
	UNITS	17-19	RDL	QC Batch
BTEX & F1 Hydrocarbons				
Benzene	ug/L	<0.20	0.20	4854303
Toluene	ug/L	<0.20	0.20	4854303
Ethylbenzene	ug/L	<0.20	0.20	4854303
o-Xylene	ug/L	<0.20	0.20	4854303
p+m-Xylene	ug/L	<0.40	0.40	4854303
Total Xylenes	ug/L	<0.40	0.40	4854303
F1 (C6-C10)	ug/L	<25	25	4854303
F1 (C6-C10) - BTEX	ug/L	<25	25	4854303
F2-F4 Hydrocarbons				
F2 (C10-C16 Hydrocarbons)	ug/L	<100	100	4854832
F3 (C16-C34 Hydrocarbons)	ug/L	<200	200	4854832
F4 (C34-C50 Hydrocarbons)	ug/L	<200	200	4854832
Reached Baseline at C50	ug/L	Yes		4854832
Surrogate Recovery (%)				
1,4-Difluorobenzene	%	106		4854303
4-Bromofluorobenzene	%	88		4854303
D10-Ethylbenzene	%	98		4854303
D4-1,2-Dichloroethane	%	105		4854303
o-Terphenyl	%	98		4854832

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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O.REG 153 VOCS & F1-F4 (WATER)

Maxxam ID		DVY059		
Sampling Date		2017/02/02 10:30		
COC Number		595605-01-01		
	UNITS	17-17	RDL	QC Batch
Calculated Parameters				
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	0.50	4850458
Volatile Organics				
Acetone (2-Propanone)	ug/L	<10	10	4854197
Benzene	ug/L	<0.20	0.20	4854197
Bromodichloromethane	ug/L	<0.50	0.50	4854197
Bromoform	ug/L	<1.0	1.0	4854197
Bromomethane	ug/L	<0.50	0.50	4854197
Carbon Tetrachloride	ug/L	<0.20	0.20	4854197
Chlorobenzene	ug/L	<0.20	0.20	4854197
Chloroform	ug/L	<0.20	0.20	4854197
Dibromochloromethane	ug/L	<0.50	0.50	4854197
1,2-Dichlorobenzene	ug/L	<0.50	0.50	4854197
1,3-Dichlorobenzene	ug/L	<0.50	0.50	4854197
1,4-Dichlorobenzene	ug/L	<0.50	0.50	4854197
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	1.0	4854197
1,1-Dichloroethane	ug/L	<0.20	0.20	4854197
1,2-Dichloroethane	ug/L	<0.50	0.50	4854197
1,1-Dichloroethylene	ug/L	<0.20	0.20	4854197
cis-1,2-Dichloroethylene	ug/L	<0.50	0.50	4854197
trans-1,2-Dichloroethylene	ug/L	<0.50	0.50	4854197
1,2-Dichloropropane	ug/L	<0.20	0.20	4854197
cis-1,3-Dichloropropene	ug/L	<0.30	0.30	4854197
trans-1,3-Dichloropropene	ug/L	<0.40	0.40	4854197
Ethylbenzene	ug/L	<0.20	0.20	4854197
Ethylene Dibromide	ug/L	<0.20	0.20	4854197
Hexane	ug/L	<1.0	1.0	4854197
Methylene Chloride(Dichloromethane)	ug/L	<2.0	2.0	4854197
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	10	4854197
Methyl Isobutyl Ketone	ug/L	<5.0	5.0	4854197
Methyl t-butyl ether (MTBE)	ug/L	<0.50	0.50	4854197
Styrene	ug/L	<0.50	0.50	4854197
1,1,1,2-Tetrachloroethane	ug/L	<0.50	0.50	4854197
1,1,2,2-Tetrachloroethane	ug/L	<0.50	0.50	4854197
Tetrachloroethylene	ug/L	<0.20	0.20	4854197
Toluene	ug/L	<0.20	0.20	4854197

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Report Date: 2017/02/09

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

O.REG 153 VOCS & F1-F4 (WATER)

Maxxam ID		DVY059		
Sampling Date		2017/02/02 10:30		
COC Number		595605-01-01		
	UNITS	17-17	RDL	QC Batch
1,1,1-Trichloroethane	ug/L	<0.20	0.20	4854197
1,1,2-Trichloroethane	ug/L	<0.50	0.50	4854197
Trichloroethylene	ug/L	<0.20	0.20	4854197
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	0.50	4854197
Vinyl Chloride	ug/L	<0.20	0.20	4854197
p+m-Xylene	ug/L	<0.20	0.20	4854197
o-Xylene	ug/L	<0.20	0.20	4854197
Total Xylenes	ug/L	<0.20	0.20	4854197
F1 (C6-C10)	ug/L	<25	25	4854197
F1 (C6-C10) - BTEX	ug/L	<25	25	4854197
F2-F4 Hydrocarbons				
F2 (C10-C16 Hydrocarbons)	ug/L	<100	100	4854832
F3 (C16-C34 Hydrocarbons)	ug/L	<200	200	4854832
F4 (C34-C50 Hydrocarbons)	ug/L	<200	200	4854832
Reached Baseline at C50	ug/L	Yes		4854832
Surrogate Recovery (%)				
o-Terphenyl	%	98		4854832
4-Bromofluorobenzene	%	92		4854197
D4-1,2-Dichloroethane	%	109		4854197
D8-Toluene	%	93		4854197

RDL = Reportable Detection Limit
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Maxxam Job #: B723162
Report Date: 2017/02/09

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: DVY059
Sample ID: 17-17
Matrix: Water

Collected: 2017/02/02
Shipped:
Received: 2017/02/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4850750	N/A	2017/02/08	Automated Statchk
1,3-Dichloropropene Sum	CALC	4850458	N/A	2017/02/08	Automated Statchk
Chromium (VI) in Water	IC	4853788	N/A	2017/02/06	Lang Le
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4854832	2017/02/07	2017/02/08	Barbara Wowk
Mercury	CV/AA	4855648	2017/02/08	2017/02/08	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	4853415	N/A	2017/02/07	Arefa Dabhad
PAH Compounds in Water by GC/MS (SIM)	GC/MS	4853550	2017/02/06	2017/02/07	Mitesh Raj
Polychlorinated Biphenyl in Water	GC/ECD	4855055	2017/02/04	2017/02/08	Sarah Huang
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4854197	N/A	2017/02/08	Yang (Philip) Yu

Maxxam ID: DVY060
Sample ID: 17-19
Matrix: Water

Collected: 2017/02/02
Shipped:
Received: 2017/02/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4850750	N/A	2017/02/08	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4854303	N/A	2017/02/07	Joe Paino
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4854832	2017/02/07	2017/02/08	Barbara Wowk
PAH Compounds in Water by GC/MS (SIM)	GC/MS	4853550	2017/02/06	2017/02/07	Mitesh Raj

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Maxxam Job #: B723162
Report Date: 2017/02/09

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	5.3°C

Custody seal was not present on the cooler.
The samples were received at the laboratory on the sampling date with no ice in the cooler.
All sample vials contained visible sediment.

Results relate only to the items tested.

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Maxxam Job #: B723162
Report Date: 2017/02/09

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4853550	D10-Anthracene	2017/02/07	110	50 - 130	106	50 - 130	111	%		
4853550	D14-Terphenyl (FS)	2017/02/07	65	50 - 130	110	50 - 130	113	%		
4853550	D8-Acenaphthylene	2017/02/07	103	50 - 130	97	50 - 130	101	%		
4854197	4-Bromofluorobenzene	2017/02/07	104	70 - 130	103	70 - 130	94	%		
4854197	D4-1,2-Dichloroethane	2017/02/07	98	70 - 130	98	70 - 130	105	%		
4854197	D8-Toluene	2017/02/07	104	70 - 130	104	70 - 130	92	%		
4854303	1,4-Difluorobenzene	2017/02/07	101	70 - 130	99	70 - 130	98	%		
4854303	4-Bromofluorobenzene	2017/02/07	107	70 - 130	112	70 - 130	95	%		
4854303	D10-Ethylbenzene	2017/02/07	99	70 - 130	90	70 - 130	104	%		
4854303	D4-1,2-Dichloroethane	2017/02/07	99	70 - 130	98	70 - 130	103	%		
4854832	o-Terphenyl	2017/02/07	100	60 - 130	100	60 - 130	96	%		
4855055	Decachlorobiphenyl	2017/02/08	91	60 - 130	99	60 - 130	95	%		
4853415	Dissolved Antimony (Sb)	2017/02/07	113	80 - 120	102	80 - 120	<0.50	ug/L	NC	20
4853415	Dissolved Arsenic (As)	2017/02/07	106	80 - 120	103	80 - 120	<1.0	ug/L	NC	20
4853415	Dissolved Barium (Ba)	2017/02/07	NC	80 - 120	101	80 - 120	<2.0	ug/L	2.2	20
4853415	Dissolved Beryllium (Be)	2017/02/07	107	80 - 120	96	80 - 120	<0.50	ug/L	NC	20
4853415	Dissolved Boron (B)	2017/02/07	106	80 - 120	96	80 - 120	<10	ug/L	NC	20
4853415	Dissolved Cadmium (Cd)	2017/02/07	109	80 - 120	101	80 - 120	<0.10	ug/L	NC	20
4853415	Dissolved Chromium (Cr)	2017/02/07	105	80 - 120	103	80 - 120	<5.0	ug/L	NC	20
4853415	Dissolved Cobalt (Co)	2017/02/07	105	80 - 120	101	80 - 120	<0.50	ug/L	NC	20
4853415	Dissolved Copper (Cu)	2017/02/07	107	80 - 120	100	80 - 120	<1.0	ug/L	NC	20
4853415	Dissolved Lead (Pb)	2017/02/07	100	80 - 120	95	80 - 120	<0.50	ug/L	NC	20
4853415	Dissolved Molybdenum (Mo)	2017/02/07	113	80 - 120	104	80 - 120	<0.50	ug/L	NC	20
4853415	Dissolved Nickel (Ni)	2017/02/07	100	80 - 120	99	80 - 120	<1.0	ug/L	NC	20
4853415	Dissolved Selenium (Se)	2017/02/07	103	80 - 120	97	80 - 120	<2.0	ug/L	NC	20
4853415	Dissolved Silver (Ag)	2017/02/07	104	80 - 120	97	80 - 120	<0.10	ug/L	NC	20
4853415	Dissolved Sodium (Na)	2017/02/07	NC	80 - 120	102	80 - 120	<100	ug/L		
4853415	Dissolved Thallium (Tl)	2017/02/07	99	80 - 120	96	80 - 120	<0.050	ug/L	NC	20
4853415	Dissolved Uranium (U)	2017/02/07	101	80 - 120	95	80 - 120	<0.10	ug/L	NC	20
4853415	Dissolved Vanadium (V)	2017/02/07	106	80 - 120	101	80 - 120	<0.50	ug/L	NC	20
4853415	Dissolved Zinc (Zn)	2017/02/07	102	80 - 120	102	80 - 120	<5.0	ug/L	NC	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
4853550	1-Methylnaphthalene	2017/02/07	99	50 - 130	95	50 - 130	<0.050	ug/L	NC	30
4853550	2-Methylnaphthalene	2017/02/07	100	50 - 130	93	50 - 130	<0.050	ug/L	NC	30
4853550	Acenaphthene	2017/02/07	103	50 - 130	103	50 - 130	<0.050	ug/L	NC	30
4853550	Acenaphthylene	2017/02/07	103	50 - 130	101	50 - 130	<0.050	ug/L	NC	30
4853550	Anthracene	2017/02/07	108	50 - 130	105	50 - 130	<0.050	ug/L	NC	30
4853550	Benzo(a)anthracene	2017/02/07	84	50 - 130	95	50 - 130	<0.050	ug/L	NC	30
4853550	Benzo(a)pyrene	2017/02/07	76	50 - 130	102	50 - 130	<0.010	ug/L	NC	30
4853550	Benzo(b/j)fluoranthene	2017/02/07	73	50 - 130	109	50 - 130	<0.050	ug/L	NC	30
4853550	Benzo(g,h,i)perylene	2017/02/07	52	50 - 130	99	50 - 130	<0.050	ug/L	NC	30
4853550	Benzo(k)fluoranthene	2017/02/07	56	50 - 130	92	50 - 130	<0.050	ug/L	NC	30
4853550	Chrysene	2017/02/07	75	50 - 130	99	50 - 130	<0.050	ug/L	NC	30
4853550	Dibenz(a,h)anthracene	2017/02/07	53	50 - 130	97	50 - 130	<0.050	ug/L	NC	30
4853550	Fluoranthene	2017/02/07	99	50 - 130	110	50 - 130	<0.050	ug/L	NC	30
4853550	Fluorene	2017/02/07	104	50 - 130	105	50 - 130	<0.050	ug/L	NC	30
4853550	Indeno(1,2,3-cd)pyrene	2017/02/07	61	50 - 130	113	50 - 130	<0.050	ug/L	NC	30
4853550	Naphthalene	2017/02/07	99	50 - 130	97	50 - 130	<0.050	ug/L	NC	30
4853550	Phenanthrene	2017/02/07	54	50 - 130	102	50 - 130	<0.030	ug/L	NC	30
4853550	Pyrene	2017/02/07	98	50 - 130	111	50 - 130	<0.050	ug/L	NC	30
4853788	Chromium (VI)	2017/02/06	99	80 - 120	98	80 - 120	<0.50	ug/L	NC	20
4854197	1,1,1,2-Tetrachloroethane	2017/02/07	105	70 - 130	104	70 - 130	<0.50	ug/L	NC	30
4854197	1,1,1-Trichloroethane	2017/02/07	103	70 - 130	104	70 - 130	<0.20	ug/L	NC	30
4854197	1,1,2,2-Tetrachloroethane	2017/02/07	95	70 - 130	95	70 - 130	<0.50	ug/L	NC	30
4854197	1,1,2-Trichloroethane	2017/02/07	94	70 - 130	95	70 - 130	<0.50	ug/L	NC	30
4854197	1,1-Dichloroethane	2017/02/07	99	70 - 130	100	70 - 130	<0.20	ug/L	NC	30
4854197	1,1-Dichloroethylene	2017/02/07	101	70 - 130	101	70 - 130	<0.20	ug/L	NC	30
4854197	1,2-Dichlorobenzene	2017/02/07	95	70 - 130	93	70 - 130	<0.50	ug/L	NC	30
4854197	1,2-Dichloroethane	2017/02/07	90	70 - 130	90	70 - 130	<0.50	ug/L	NC	30
4854197	1,2-Dichloropropane	2017/02/07	95	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
4854197	1,3-Dichlorobenzene	2017/02/07	94	70 - 130	90	70 - 130	<0.50	ug/L	NC	30
4854197	1,4-Dichlorobenzene	2017/02/07	94	70 - 130	88	70 - 130	<0.50	ug/L	NC	30
4854197	Acetone (2-Propanone)	2017/02/07	87	60 - 140	93	60 - 140	<10	ug/L	NC	30

Maxxam Job #: B723162
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QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4854197	Benzene	2017/02/07	99	70 - 130	98	70 - 130	<0.20	ug/L	NC	30
4854197	Bromodichloromethane	2017/02/07	99	70 - 130	99	70 - 130	<0.50	ug/L	NC	30
4854197	Bromoform	2017/02/07	99	70 - 130	98	70 - 130	<1.0	ug/L	NC	30
4854197	Bromomethane	2017/02/07	105	60 - 140	103	60 - 140	<0.50	ug/L	NC	30
4854197	Carbon Tetrachloride	2017/02/07	108	70 - 130	109	70 - 130	<0.20	ug/L	NC	30
4854197	Chlorobenzene	2017/02/07	99	70 - 130	96	70 - 130	<0.20	ug/L	NC	30
4854197	Chloroform	2017/02/07	100	70 - 130	100	70 - 130	<0.20	ug/L	NC	30
4854197	cis-1,2-Dichloroethylene	2017/02/07	103	70 - 130	102	70 - 130	<0.50	ug/L	NC	30
4854197	cis-1,3-Dichloropropene	2017/02/07	85	70 - 130	83	70 - 130	<0.30	ug/L	NC	30
4854197	Dibromochloromethane	2017/02/07	104	70 - 130	104	70 - 130	<0.50	ug/L	NC	30
4854197	Dichlorodifluoromethane (FREON 12)	2017/02/07	103	60 - 140	105	60 - 140	<1.0	ug/L	NC	30
4854197	Ethylbenzene	2017/02/07	93	70 - 130	90	70 - 130	<0.20	ug/L	NC	30
4854197	Ethylene Dibromide	2017/02/07	95	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
4854197	F1 (C6-C10) - BTEX	2017/02/07					<25	ug/L	NC	30
4854197	F1 (C6-C10)	2017/02/07	92	60 - 140	98	60 - 140	<25	ug/L	NC	30
4854197	Hexane	2017/02/07	106	70 - 130	106	70 - 130	<1.0	ug/L	NC	30
4854197	Methyl Ethyl Ketone (2-Butanone)	2017/02/07	91	60 - 140	90	60 - 140	<10	ug/L	NC	30
4854197	Methyl Isobutyl Ketone	2017/02/07	85	70 - 130	85	70 - 130	<5.0	ug/L	NC	30
4854197	Methyl t-butyl ether (MTBE)	2017/02/07	91	70 - 130	92	70 - 130	<0.50	ug/L	NC	30
4854197	Methylene Chloride(Dichloromethane)	2017/02/07	106	70 - 130	105	70 - 130	<2.0	ug/L	NC	30
4854197	o-Xylene	2017/02/07	91	70 - 130	88	70 - 130	<0.20	ug/L	NC	30
4854197	p+m-Xylene	2017/02/07	90	70 - 130	86	70 - 130	<0.20	ug/L	NC	30
4854197	Styrene	2017/02/07	92	70 - 130	89	70 - 130	<0.50	ug/L	NC	30
4854197	Tetrachloroethylene	2017/02/07	107	70 - 130	105	70 - 130	<0.20	ug/L	NC	30
4854197	Toluene	2017/02/07	97	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
4854197	Total Xylenes	2017/02/07					<0.20	ug/L	NC	30
4854197	trans-1,2-Dichloroethylene	2017/02/07	100	70 - 130	97	70 - 130	<0.50	ug/L	NC	30
4854197	trans-1,3-Dichloropropene	2017/02/07	86	70 - 130	82	70 - 130	<0.40	ug/L	NC	30
4854197	Trichloroethylene	2017/02/07	103	70 - 130	101	70 - 130	<0.20	ug/L	NC	30
4854197	Trichlorofluoromethane (FREON 11)	2017/02/07	113	70 - 130	114	70 - 130	<0.50	ug/L	NC	30
4854197	Vinyl Chloride	2017/02/07	113	70 - 130	87	70 - 130	<0.20	ug/L	NC	30

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4854303	Benzene	2017/02/07	109	70 - 130	91	70 - 130	<0.20	ug/L	NC	30
4854303	Ethylbenzene	2017/02/07	123	70 - 130	100	70 - 130	<0.20	ug/L	NC	30
4854303	F1 (C6-C10) - BTEX	2017/02/07					<25	ug/L	NC	30
4854303	F1 (C6-C10)	2017/02/07	81	70 - 130	91	70 - 130	<25	ug/L	NC	30
4854303	o-Xylene	2017/02/07	125	70 - 130	105	70 - 130	<0.20	ug/L	NC	30
4854303	p+m-Xylene	2017/02/07	119	70 - 130	97	70 - 130	<0.40	ug/L	NC	30
4854303	Toluene	2017/02/07	114	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
4854303	Total Xylenes	2017/02/07					<0.40	ug/L	NC	30
4854832	F2 (C10-C16 Hydrocarbons)	2017/02/08	NC	50 - 130	105	60 - 130	<100	ug/L	8.6	30
4854832	F3 (C16-C34 Hydrocarbons)	2017/02/08	104	50 - 130	105	60 - 130	<200	ug/L	NC	30
4854832	F4 (C34-C50 Hydrocarbons)	2017/02/08	103	50 - 130	105	60 - 130	<200	ug/L	NC	30
4855055	Aroclor 1242	2017/02/08					<0.05	ug/L		
4855055	Aroclor 1248	2017/02/08					<0.05	ug/L		
4855055	Aroclor 1254	2017/02/08					<0.05	ug/L		
4855055	Aroclor 1260	2017/02/08	93	60 - 130	95	60 - 130	<0.05	ug/L		
4855055	Total PCB	2017/02/08	93	60 - 130	95	60 - 130	<0.05	ug/L	NC	40
4855648	Mercury (Hg)	2017/02/08	98	75 - 125	104	80 - 120	<0.1	ug/L	NC	20

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

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

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

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

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

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B723162
Report Date: 2017/02/09

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Brad Newman, 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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Maxxam — A Bureau Veritas Group Company

Maxxam Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B63104	Maxxam Job #:	Bottle Order #: 595605
Attention:	Central Accounting	Attention:	Joanne Woodhouse	P.O. #:			
Address:	1931 Robertson Rd	Address:		Project:	1670949	COC #: C#595605-01-01	Project Manager: Madison Bingley
	Ottawa ON K2H 5B7			Project Name:			
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Site #:			
Email:	AP-CustomerService@golder.com	Email:	jwoodhouse@golder.com	Sampled By:	Aaron Bradshaw		

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 ☐ Agri/Other ☒ For RSC; ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw; ☐ Reg 558 ☐ Storm Sewer Bylaw; ☐ MISA Municipality ___; ☐ PWQO; ☐ Other ___

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PAHs	O.Reg 153 Petroleum Hydrocarbons	O.Reg 153 Volatile Organics	O.Reg 153 PCBs	Metals Package, Hot Boron Extraction, Hg & (ICPMS)	O.Reg 153 (ICPMS) Metals	CrG	Mercury	BTEX	# of Bottles	Comments
1		17-17	17/02/02	10:30	GW		X	X	X	X		X	X	X		12	PCB Bottles had preservative removed & triple rinse before filling
2		17-19	17/02/02	11:30	GW		X	X							X	7	
3																	
4																	
5																	RECEIVED IN OTTAWA
6																	
7																	
8																	
9																	No ice
10																	

02-Feb-17 12:20
Madison Bingley
B723162
KES ENV-1255

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 #)*

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
A. Bradshaw / Aaron Bradshaw	17/02/02	12:20	Mariana Dascan / Dascan	2017/02/02	12:20	0
			Ashlie Pulliumur / Ashlie Pulliumur	2017/02/03	08:30	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	5, 5, 6	Present		N
		Intact		N

White: Maxxam / Yellow: Client

* 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

3/1/1

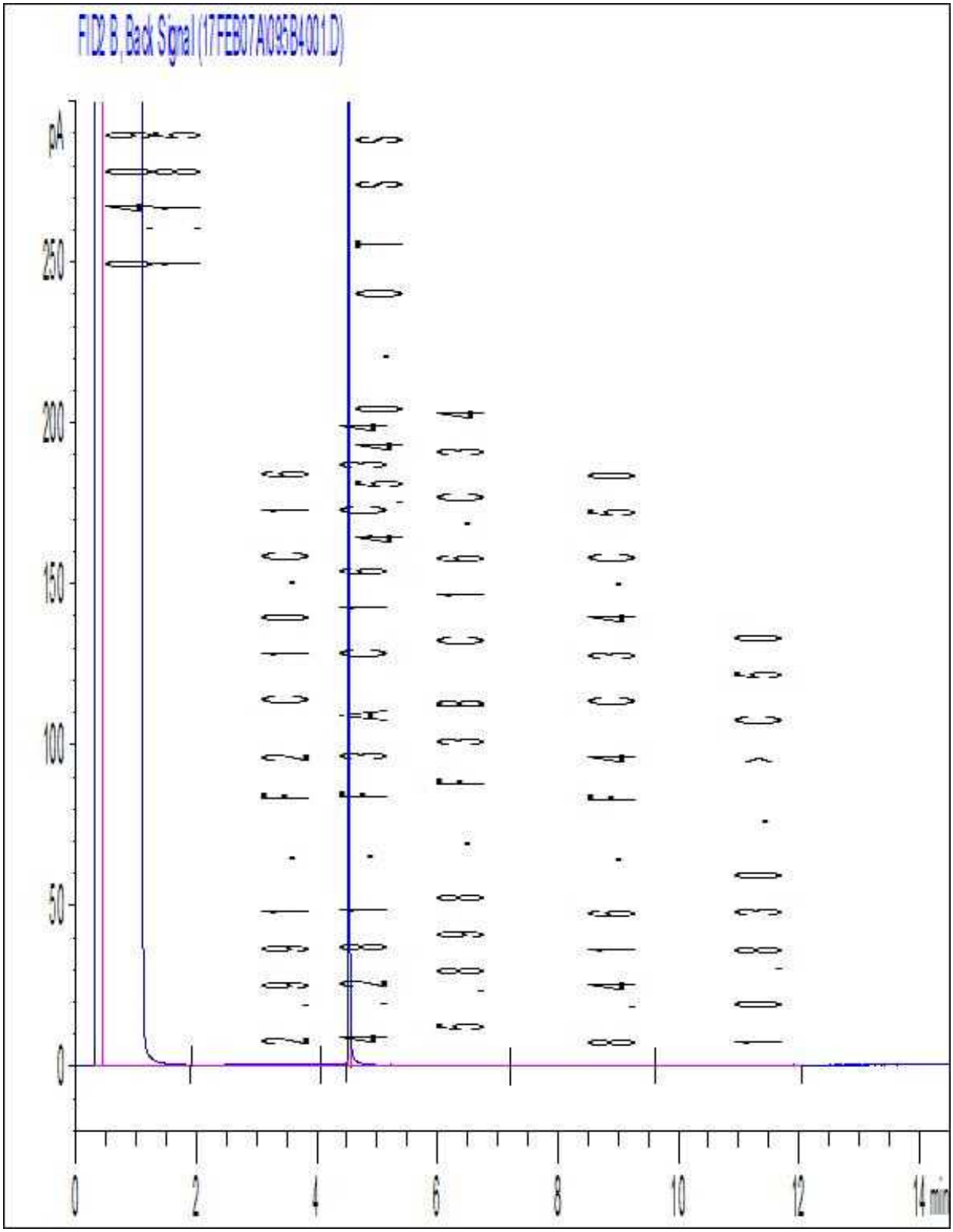
Purolator: 33096658 / 02

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B723162
Report Date: 2017/02/09
Maxxam Sample: DVY059

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-17

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

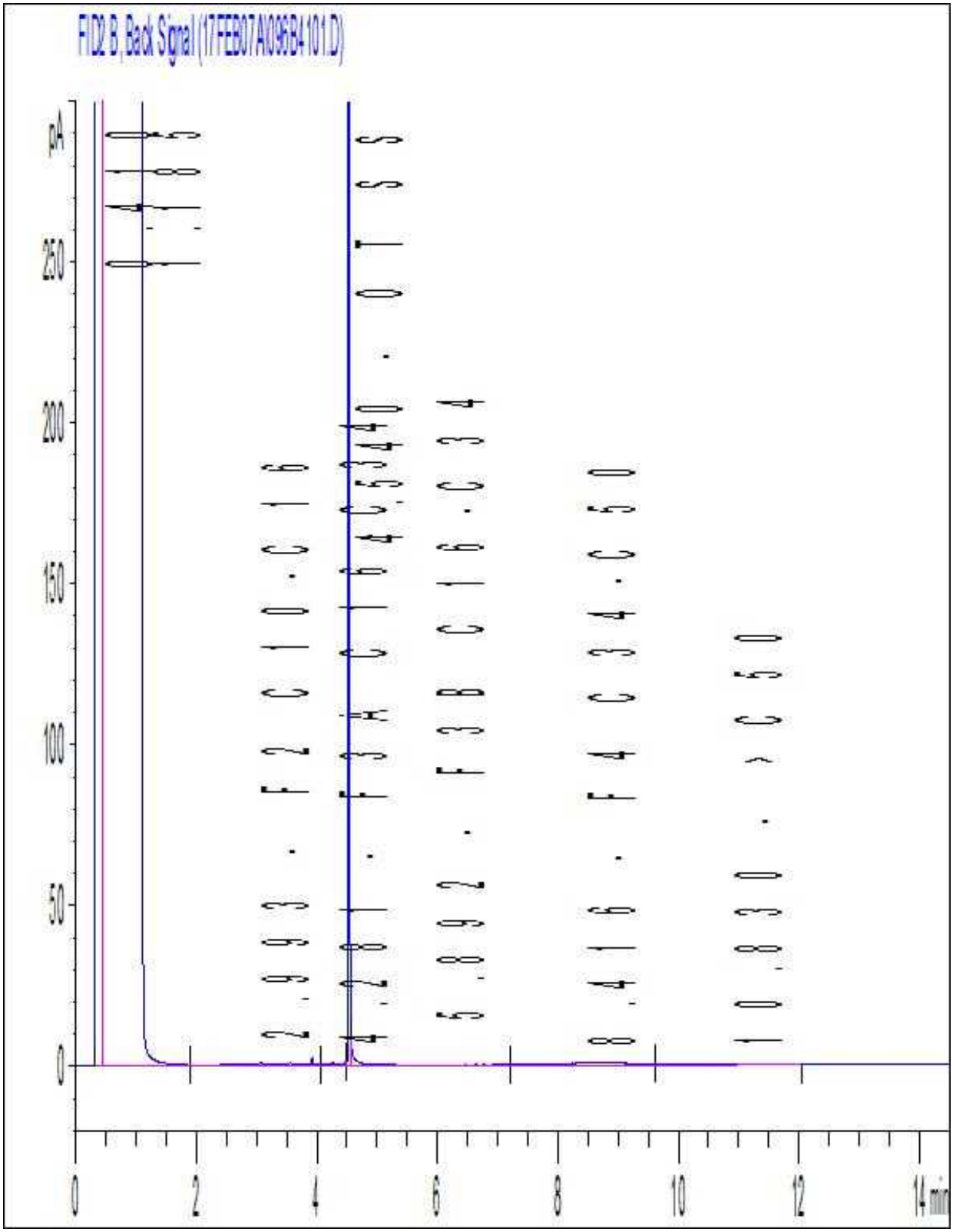


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B723162
Report Date: 2017/02/09
Maxxam Sample: DVY060

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-19

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: 1670949
Your C.O.C. #: 597255-02-01

Attention:Joanne Woodhouse

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/02/13
Report #: R4357883
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B725207
Received: 2017/02/06, 15:25

Sample Matrix: Water
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	5	N/A	2017/02/09	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum (1)	6	N/A	2017/02/09		EPA 8260C m
Chromium (VI) in Water (1)	5	N/A	2017/02/08	CAM SOP-00436	EPA 7199 m
Petroleum Hydro. CCME F1 & BTEX in Water (1)	1	N/A	2017/02/10	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1, 2)	7	2017/02/09	2017/02/11	CAM SOP-00316	CCME PHC-CWS m
Mercury (1)	5	2017/02/13	2017/02/13	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS (1)	5	N/A	2017/02/09	CAM SOP-00447	EPA 6020B m
PAH Compounds in Water by GC/MS (SIM) (1)	5	2017/02/08	2017/02/09	CAM SOP-00318	EPA 8270D m
Polychlorinated Biphenyl in Water (1)	3	2017/02/08	2017/02/09	CAM SOP-00309	EPA 8082A m
Volatile Organic Compounds and F1 PHCs (1)	2	N/A	2017/02/08	CAM SOP-00230	EPA 8260C m
Volatile Organic Compounds and F1 PHCs (1)	4	N/A	2017/02/09	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.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

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

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.

Your Project #: 1670949
Your C.O.C. #: 597255-02-01

Attention:Joanne Woodhouse

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/02/13
Report #: R4357883
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B725207
Received: 2017/02/06, 15:25

(1) This test was performed by Maxxam Analytics Mississauga
(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.
Madison Bingley, Project Manager
Email: MBingley@maxxam.ca
Phone# (613)274-3549

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B725207
Report Date: 2017/02/13

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

O.REG 153 METALS PACKAGE (WATER)

Maxxam ID		DWI790	DWI792	DWI793	DWI794		DWI796		
Sampling Date		2017/02/06 11:00	2017/02/06 13:00	2017/02/06 13:30	2017/02/06 14:00		2017/02/06 13:00		
COC Number		597255-02-01	597255-02-01	597255-02-01	597255-02-01		597255-02-01		
	UNITS	17-14	17-22	17-13	17-10	QC Batch	DUP A	RDL	QC Batch
Metals									
Chromium (VI)	ug/L	<0.50	<0.50	<0.50	<0.50	4855645	<0.50	0.50	4856231
Mercury (Hg)	ug/L	<0.1	<0.1	<0.1	<0.1	4861256	<0.1	0.1	4861256
Dissolved Antimony (Sb)	ug/L	0.53	0.81	0.78	0.76	4855967	0.78	0.50	4855967
Dissolved Arsenic (As)	ug/L	<1.0	<1.0	<1.0	1.1	4855967	<1.0	1.0	4855967
Dissolved Barium (Ba)	ug/L	220	180	120	82	4855967	160	2.0	4855967
Dissolved Beryllium (Be)	ug/L	<0.50	<0.50	<0.50	<0.50	4855967	<0.50	0.50	4855967
Dissolved Boron (B)	ug/L	97	62	84	78	4855967	55	10	4855967
Dissolved Cadmium (Cd)	ug/L	<0.10	<0.10	<0.10	<0.10	4855967	<0.10	0.10	4855967
Dissolved Chromium (Cr)	ug/L	<5.0	<5.0	<5.0	<5.0	4855967	<5.0	5.0	4855967
Dissolved Cobalt (Co)	ug/L	1.1	<0.50	<0.50	0.51	4855967	<0.50	0.50	4855967
Dissolved Copper (Cu)	ug/L	1.5	1.5	1.1	1.5	4855967	1.4	1.0	4855967
Dissolved Lead (Pb)	ug/L	<0.50	<0.50	<0.50	<0.50	4855967	<0.50	0.50	4855967
Dissolved Molybdenum (Mo)	ug/L	24	50	42	44	4855967	50	0.50	4855967
Dissolved Nickel (Ni)	ug/L	5.0	3.6	2.2	3.0	4855967	3.7	1.0	4855967
Dissolved Selenium (Se)	ug/L	<2.0	<2.0	<2.0	<2.0	4855967	<2.0	2.0	4855967
Dissolved Silver (Ag)	ug/L	<0.10	<0.10	<0.10	<0.10	4855967	<0.10	0.10	4855967
Dissolved Sodium (Na)	ug/L	65000	95000	19000	12000	4855967	110000	100	4855967
Dissolved Thallium (Tl)	ug/L	<0.050	<0.050	<0.050	<0.050	4855967	<0.050	0.050	4855967
Dissolved Uranium (U)	ug/L	9.1	6.9	12	9.5	4855967	7.8	0.10	4855967
Dissolved Vanadium (V)	ug/L	0.82	0.96	2.2	2.7	4855967	1.4	0.50	4855967
Dissolved Zinc (Zn)	ug/L	<5.0	<5.0	<5.0	23	4855967	<5.0	5.0	4855967

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B725207
Report Date: 2017/02/13

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

O.REG 153 PAHS (WATER)

Maxxam ID		DWI790	DWI792	DWI793	DWI794	DWI796		
Sampling Date		2017/02/06 11:00	2017/02/06 13:00	2017/02/06 13:30	2017/02/06 14:00	2017/02/06 13:00		
COC Number		597255-02-01	597255-02-01	597255-02-01	597255-02-01	597255-02-01		
	UNITS	**17-14**	**17-22**	**17-13**	**17-10**	**DUP A**	**RDL**	**QC Batch**
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/L	<0.071	<0.071	<0.071	<0.071	<0.071	0.071	4854299
Polyaromatic Hydrocarbons								
Acenaphthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857082
Acenaphthylene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857082
Anthracene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857082
Benzo(a)anthracene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857082
Benzo(a)pyrene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4857082
Benzo(b/j)fluoranthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857082
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857082
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857082
Chrysene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857082
Dibenz(a,h)anthracene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857082
Fluoranthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857082
Fluorene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857082
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857082
1-Methylnaphthalene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857082
2-Methylnaphthalene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857082
Naphthalene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857082
Phenanthrene	ug/L	<0.030	<0.030	<0.030	<0.030	<0.030	0.030	4857082
Pyrene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857082
Surrogate Recovery (%)								
D10-Anthracene	%	104	100	99	103	100		4857082
D14-Terphenyl (FS)	%	97	95	94	98	94		4857082
D8-Acenaphthylene	%	106	105	103	106	105		4857082

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B725207
Report Date: 2017/02/13

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

O.REG 153 PCBS (WATER)

Maxxam ID		DWI790	DWI793	DWI794		
Sampling Date		2017/02/06 11:00	2017/02/06 13:30	2017/02/06 14:00		
COC Number		597255-02-01	597255-02-01	597255-02-01		
	UNITS	17-14	17-13	17-10	RDL	QC Batch
PCBs						
Aroclor 1242	ug/L	<0.05	<0.05	<0.05	0.05	4856408
Aroclor 1248	ug/L	<0.05	<0.05	<0.05	0.05	4856408
Aroclor 1254	ug/L	<0.05	<0.05	<0.05	0.05	4856408
Aroclor 1260	ug/L	<0.05	<0.05	<0.05	0.05	4856408
Total PCB	ug/L	<0.05	<0.05	<0.05	0.05	4856408
Surrogate Recovery (%)						
Decachlorobiphenyl	%	72	77	75		4856408

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B725207
Report Date: 2017/02/13

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

O.REG 153 PETROLEUM HYDROCARBONS (WATER)

Maxxam ID		DWI791		
Sampling Date		2017/02/06 12:00		
COC Number		597255-02-01		
	UNITS	17-1	RDL	QC Batch
BTEX & F1 Hydrocarbons				
Benzene	ug/L	<0.20	0.20	4858939
Toluene	ug/L	<0.20	0.20	4858939
Ethylbenzene	ug/L	<0.20	0.20	4858939
o-Xylene	ug/L	<0.20	0.20	4858939
p+m-Xylene	ug/L	<0.40	0.40	4858939
Total Xylenes	ug/L	<0.40	0.40	4858939
F1 (C6-C10)	ug/L	<25	25	4858939
F1 (C6-C10) - BTEX	ug/L	<25	25	4858939
F2-F4 Hydrocarbons				
F2 (C10-C16 Hydrocarbons)	ug/L	<100	100	4858247
F3 (C16-C34 Hydrocarbons)	ug/L	<200	200	4858247
F4 (C34-C50 Hydrocarbons)	ug/L	<200	200	4858247
Reached Baseline at C50	ug/L	Yes		4858247
Surrogate Recovery (%)				
1,4-Difluorobenzene	%	102		4858939
4-Bromofluorobenzene	%	91		4858939
D10-Ethylbenzene	%	107		4858939
D4-1,2-Dichloroethane	%	96		4858939
o-Terphenyl	%	105		4858247

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B725207
Report Date: 2017/02/13

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

O.REG 153 VOCS & F1-F4 (WATER)

Maxxam ID		DWI790	DWI792	DWI792	DWI793	DWI794		
Sampling Date		2017/02/06 11:00	2017/02/06 13:00	2017/02/06 13:00	2017/02/06 13:30	2017/02/06 14:00		
COC Number		597255-02-01	597255-02-01	597255-02-01	597255-02-01	597255-02-01		
	UNITS	17-14	17-22	17-22 Lab-Dup	17-13	17-10	RDL	QC Batch
Calculated Parameters								
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50		<0.50	<0.50	0.50	4854300
Volatile Organics								
Acetone (2-Propanone)	ug/L	<10	<10	<10	<10	<10	10	4855687
Benzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4855687
Bromodichloromethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4855687
Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4855687
Bromomethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4855687
Carbon Tetrachloride	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4855687
Chlorobenzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4855687
Chloroform	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4855687
Dibromochloromethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4855687
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4855687
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4855687
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4855687
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4855687
1,1-Dichloroethane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4855687
1,2-Dichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4855687
1,1-Dichloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4855687
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4855687
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4855687
1,2-Dichloropropane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4855687
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	<0.30	<0.30	<0.30	0.30	4855687
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	4855687
Ethylbenzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4855687
Ethylene Dibromide	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4855687
Hexane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	4855687
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	4855687
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	<10	<10	<10	10	4855687
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	4855687
Methyl t-butyl ether (MTBE)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4855687
Styrene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4855687
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4855687
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4855687
Tetrachloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4855687

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

Maxxam Job #: B725207
Report Date: 2017/02/13

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

O.REG 153 VOCS & F1-F4 (WATER)

Maxxam ID		DWI790	DWI792	DWI792	DWI793	DWI794		
Sampling Date		2017/02/06 11:00	2017/02/06 13:00	2017/02/06 13:00	2017/02/06 13:30	2017/02/06 14:00		
COC Number		597255-02-01	597255-02-01	597255-02-01	597255-02-01	597255-02-01		
	UNITS	17-14	17-22	17-22 Lab-Dup	17-13	17-10	RDL	QC Batch
Toluene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4855687
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4855687
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4855687
Trichloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4855687
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4855687
Vinyl Chloride	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4855687
p+m-Xylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4855687
o-Xylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4855687
Total Xylenes	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4855687
F1 (C6-C10)	ug/L	<25	<25	<25	<25	<25	25	4855687
F1 (C6-C10) - BTEX	ug/L	<25	<25	<25	<25	<25	25	4855687
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100		<100	<100	100	4858247
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200		<200	<200	200	4858247
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200		<200	<200	200	4858247
Reached Baseline at C50	ug/L	Yes	Yes		Yes	Yes		4858247
Surrogate Recovery (%)								
o-Terphenyl	%	106	105		104	106		4858247
4-Bromofluorobenzene	%	95	96	95	94	94		4855687
D4-1,2-Dichloroethane	%	106	105	109	109	108		4855687
D8-Toluene	%	90	91	91	91	91		4855687

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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O.REG 153 VOCS & F1-F4 (WATER)

Maxxam ID		DWI795	DWI796		
Sampling Date		2017/02/06 14:30	2017/02/06 13:00		
COC Number		597255-02-01	597255-02-01		
	UNITS	17-20	DUP A	RDL	QC Batch
Calculated Parameters					
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	0.50	4854300
Volatile Organics					
Acetone (2-Propanone)	ug/L	<10	<10	10	4855687
Benzene	ug/L	<0.20	<0.20	0.20	4855687
Bromodichloromethane	ug/L	<0.50	<0.50	0.50	4855687
Bromoform	ug/L	<1.0	<1.0	1.0	4855687
Bromomethane	ug/L	<0.50	<0.50	0.50	4855687
Carbon Tetrachloride	ug/L	<0.20	<0.20	0.20	4855687
Chlorobenzene	ug/L	<0.20	<0.20	0.20	4855687
Chloroform	ug/L	<0.20	<0.20	0.20	4855687
Dibromochloromethane	ug/L	<0.50	<0.50	0.50	4855687
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	4855687
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	4855687
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	4855687
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	1.0	4855687
1,1-Dichloroethane	ug/L	<0.20	<0.20	0.20	4855687
1,2-Dichloroethane	ug/L	<0.50	<0.50	0.50	4855687
1,1-Dichloroethylene	ug/L	<0.20	<0.20	0.20	4855687
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	0.50	4855687
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	0.50	4855687
1,2-Dichloropropane	ug/L	<0.20	<0.20	0.20	4855687
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	0.30	4855687
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	0.40	4855687
Ethylbenzene	ug/L	<0.20	<0.20	0.20	4855687
Ethylene Dibromide	ug/L	<0.20	<0.20	0.20	4855687
Hexane	ug/L	<1.0	<1.0	1.0	4855687
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	2.0	4855687
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	10	4855687
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	5.0	4855687
Methyl t-butyl ether (MTBE)	ug/L	<0.50	<0.50	0.50	4855687
Styrene	ug/L	<0.50	<0.50	0.50	4855687
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	0.50	4855687
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	0.50	4855687
Tetrachloroethylene	ug/L	<0.20	<0.20	0.20	4855687
Toluene	ug/L	<0.20	<0.20	0.20	4855687

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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O.REG 153 VOCS & F1-F4 (WATER)

Maxxam ID		DWI795	DWI796		
Sampling Date		2017/02/06 14:30	2017/02/06 13:00		
COC Number		597255-02-01	597255-02-01		
	UNITS	17-20	DUP A	RDL	QC Batch
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	0.20	4855687
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	0.50	4855687
Trichloroethylene	ug/L	<0.20	<0.20	0.20	4855687
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	0.50	4855687
Vinyl Chloride	ug/L	<0.20	<0.20	0.20	4855687
p+m-Xylene	ug/L	<0.20	<0.20	0.20	4855687
o-Xylene	ug/L	<0.20	<0.20	0.20	4855687
Total Xylenes	ug/L	<0.20	<0.20	0.20	4855687
F1 (C6-C10)	ug/L	<25	<25	25	4855687
F1 (C6-C10) - BTEX	ug/L	<25	<25	25	4855687
F2-F4 Hydrocarbons					
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	100	4858247
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	200	4858247
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	200	4858247
Reached Baseline at C50	ug/L	Yes	Yes		4858247
Surrogate Recovery (%)					
o-Terphenyl	%	106	103		4858247
4-Bromofluorobenzene	%	94	94		4855687
D4-1,2-Dichloroethane	%	108	107		4855687
D8-Toluene	%	90	91		4855687

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B725207
Report Date: 2017/02/13

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: DWI790
Sample ID: 17-14
Matrix: Water

Collected: 2017/02/06
Shipped:
Received: 2017/02/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4854299	N/A	2017/02/09	Automated Statchk
1,3-Dichloropropene Sum	CALC	4854300	N/A	2017/02/09	Automated Statchk
Chromium (VI) in Water	IC	4855645	N/A	2017/02/08	Manoj Kumar Gera
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4858247	2017/02/09	2017/02/11	Dorina Popa
Mercury	CV/AA	4861256	2017/02/13	2017/02/13	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	4855967	N/A	2017/02/09	Cristina Petran
PAH Compounds in Water by GC/MS (SIM)	GC/MS	4857082	2017/02/08	2017/02/09	Mitesh Raj
Polychlorinated Biphenyl in Water	GC/ECD	4856408	2017/02/08	2017/02/09	Li Peng
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4855687	N/A	2017/02/08	Denis Reid

Maxxam ID: DWI791
Sample ID: 17-1
Matrix: Water

Collected: 2017/02/06
Shipped:
Received: 2017/02/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4858939	N/A	2017/02/10	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4858247	2017/02/09	2017/02/11	Dorina Popa

Maxxam ID: DWI792
Sample ID: 17-22
Matrix: Water

Collected: 2017/02/06
Shipped:
Received: 2017/02/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4854299	N/A	2017/02/09	Automated Statchk
1,3-Dichloropropene Sum	CALC	4854300	N/A	2017/02/09	Automated Statchk
Chromium (VI) in Water	IC	4855645	N/A	2017/02/08	Manoj Kumar Gera
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4858247	2017/02/09	2017/02/11	Dorina Popa
Mercury	CV/AA	4861256	2017/02/13	2017/02/13	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	4855967	N/A	2017/02/09	Cristina Petran
PAH Compounds in Water by GC/MS (SIM)	GC/MS	4857082	2017/02/08	2017/02/09	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4855687	N/A	2017/02/08	Denis Reid

Maxxam ID: DWI792 Dup
Sample ID: 17-22
Matrix: Water

Collected: 2017/02/06
Shipped:
Received: 2017/02/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4855687	N/A	2017/02/09	Denis Reid

Maxxam ID: DWI793
Sample ID: 17-13
Matrix: Water

Collected: 2017/02/06
Shipped:
Received: 2017/02/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4854299	N/A	2017/02/09	Automated Statchk
1,3-Dichloropropene Sum	CALC	4854300	N/A	2017/02/09	Automated Statchk

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Maxxam Job #: B725207
Report Date: 2017/02/13

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: DWI793
Sample ID: 17-13
Matrix: Water

Collected: 2017/02/06
Shipped:
Received: 2017/02/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chromium (VI) in Water	IC	4855645	N/A	2017/02/08	Manoj Kumar Gera
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4858247	2017/02/09	2017/02/11	Dorina Popa
Mercury	CV/AA	4861256	2017/02/13	2017/02/13	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	4855967	N/A	2017/02/09	Cristina Petran
PAH Compounds in Water by GC/MS (SIM)	GC/MS	4857082	2017/02/08	2017/02/09	Mitesh Raj
Polychlorinated Biphenyl in Water	GC/ECD	4856408	2017/02/08	2017/02/09	Li Peng
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4855687	N/A	2017/02/09	Denis Reid

Maxxam ID: DWI794
Sample ID: 17-10
Matrix: Water

Collected: 2017/02/06
Shipped:
Received: 2017/02/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4854299	N/A	2017/02/09	Automated Statchk
1,3-Dichloropropene Sum	CALC	4854300	N/A	2017/02/09	Automated Statchk
Chromium (VI) in Water	IC	4855645	N/A	2017/02/08	Manoj Kumar Gera
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4858247	2017/02/09	2017/02/11	Dorina Popa
Mercury	CV/AA	4861256	2017/02/13	2017/02/13	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	4855967	N/A	2017/02/09	Cristina Petran
PAH Compounds in Water by GC/MS (SIM)	GC/MS	4857082	2017/02/08	2017/02/09	Mitesh Raj
Polychlorinated Biphenyl in Water	GC/ECD	4856408	2017/02/08	2017/02/09	Li Peng
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4855687	N/A	2017/02/09	Denis Reid

Maxxam ID: DWI795
Sample ID: 17-20
Matrix: Water

Collected: 2017/02/06
Shipped:
Received: 2017/02/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	4854300	N/A	2017/02/09	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4858247	2017/02/09	2017/02/11	Dorina Popa
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4855687	N/A	2017/02/09	Denis Reid

Maxxam ID: DWI796
Sample ID: DUP A
Matrix: Water

Collected: 2017/02/06
Shipped:
Received: 2017/02/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4854299	N/A	2017/02/09	Automated Statchk
1,3-Dichloropropene Sum	CALC	4854300	N/A	2017/02/09	Automated Statchk
Chromium (VI) in Water	IC	4856231	N/A	2017/02/08	Lang Le
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4858247	2017/02/09	2017/02/11	Dorina Popa
Mercury	CV/AA	4861256	2017/02/13	2017/02/13	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	4855967	N/A	2017/02/09	Cristina Petran
PAH Compounds in Water by GC/MS (SIM)	GC/MS	4857082	2017/02/08	2017/02/09	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4855687	N/A	2017/02/09	Denis Reid

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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 #: B725207
Report Date: 2017/02/13

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4855687	4-Bromofluorobenzene	2017/02/08	103	70 - 130	106	70 - 130	94	%		
4855687	D4-1,2-Dichloroethane	2017/02/08	103	70 - 130	100	70 - 130	107	%		
4855687	D8-Toluene	2017/02/08	104	70 - 130	103	70 - 130	90	%		
4856408	Decachlorobiphenyl	2017/02/09	72	60 - 130	69	60 - 130	75	%		
4857082	D10-Anthracene	2017/02/09	99	50 - 130	94	50 - 130	94	%		
4857082	D14-Terphenyl (FS)	2017/02/09	92	50 - 130	98	50 - 130	93	%		
4857082	D8-Acenaphthylene	2017/02/09	98	50 - 130	93	50 - 130	92	%		
4858247	o-Terphenyl	2017/02/10	107	60 - 130	107	60 - 130	101	%		
4858939	1,4-Difluorobenzene	2017/02/09	104	70 - 130	101	70 - 130	102	%		
4858939	4-Bromofluorobenzene	2017/02/09	101	70 - 130	101	70 - 130	98	%		
4858939	D10-Ethylbenzene	2017/02/09	84	70 - 130	82	70 - 130	85	%		
4858939	D4-1,2-Dichloroethane	2017/02/09	95	70 - 130	96	70 - 130	99	%		
4855645	Chromium (VI)	2017/02/08	95	80 - 120	94	80 - 120	<0.50	ug/L	NC	20
4855687	1,1,1,2-Tetrachloroethane	2017/02/09	106	70 - 130	106	70 - 130	<0.50	ug/L	NC	30
4855687	1,1,1-Trichloroethane	2017/02/09	102	70 - 130	105	70 - 130	<0.20	ug/L	NC	30
4855687	1,1,2,2-Tetrachloroethane	2017/02/09	99	70 - 130	95	70 - 130	<0.50	ug/L	NC	30
4855687	1,1,2-Trichloroethane	2017/02/09	97	70 - 130	95	70 - 130	<0.50	ug/L	NC	30
4855687	1,1-Dichloroethane	2017/02/09	100	70 - 130	100	70 - 130	<0.20	ug/L	NC	30
4855687	1,1-Dichloroethylene	2017/02/09	99	70 - 130	100	70 - 130	<0.20	ug/L	NC	30
4855687	1,2-Dichlorobenzene	2017/02/09	98	70 - 130	92	70 - 130	<0.50	ug/L	NC	30
4855687	1,2-Dichloroethane	2017/02/09	95	70 - 130	92	70 - 130	<0.50	ug/L	NC	30
4855687	1,2-Dichloropropane	2017/02/09	96	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
4855687	1,3-Dichlorobenzene	2017/02/09	96	70 - 130	90	70 - 130	<0.50	ug/L	NC	30
4855687	1,4-Dichlorobenzene	2017/02/09	96	70 - 130	90	70 - 130	<0.50	ug/L	NC	30
4855687	Acetone (2-Propanone)	2017/02/09	94	60 - 140	90	60 - 140	<10	ug/L	NC	30
4855687	Benzene	2017/02/09	99	70 - 130	98	70 - 130	<0.20	ug/L	NC	30
4855687	Bromodichloromethane	2017/02/09	102	70 - 130	101	70 - 130	<0.50	ug/L	NC	30
4855687	Bromoform	2017/02/09	105	70 - 130	102	70 - 130	<1.0	ug/L	NC	30
4855687	Bromomethane	2017/02/09	106	60 - 140	106	60 - 140	<0.50	ug/L	NC	30
4855687	Carbon Tetrachloride	2017/02/09	109	70 - 130	111	70 - 130	<0.20	ug/L	NC	30
4855687	Chlorobenzene	2017/02/09	99	70 - 130	97	70 - 130	<0.20	ug/L	NC	30

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4855687	Chloroform	2017/02/09	102	70 - 130	102	70 - 130	<0.20	ug/L	NC	30
4855687	cis-1,2-Dichloroethylene	2017/02/09	106	70 - 130	104	70 - 130	<0.50	ug/L	NC	30
4855687	cis-1,3-Dichloropropene	2017/02/09	89	70 - 130	84	70 - 130	<0.30	ug/L	NC	30
4855687	Dibromochloromethane	2017/02/09	108	70 - 130	106	70 - 130	<0.50	ug/L	NC	30
4855687	Dichlorodifluoromethane (FREON 12)	2017/02/09	92	60 - 140	97	60 - 140	<1.0	ug/L	NC	30
4855687	Ethylbenzene	2017/02/09	90	70 - 130	89	70 - 130	<0.20	ug/L	NC	30
4855687	Ethylene Dibromide	2017/02/09	99	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
4855687	F1 (C6-C10) - BTEX	2017/02/09					<25	ug/L	NC	30
4855687	F1 (C6-C10)	2017/02/09	99	60 - 140	97	60 - 140	<25	ug/L	NC	30
4855687	Hexane	2017/02/09	101	70 - 130	103	70 - 130	<1.0	ug/L	NC	30
4855687	Methyl Ethyl Ketone (2-Butanone)	2017/02/09	95	60 - 140	89	60 - 140	<10	ug/L	NC	30
4855687	Methyl Isobutyl Ketone	2017/02/09	90	70 - 130	84	70 - 130	<5.0	ug/L	NC	30
4855687	Methyl t-butyl ether (MTBE)	2017/02/09	91	70 - 130	89	70 - 130	<0.50	ug/L	NC	30
4855687	Methylene Chloride(Dichloromethane)	2017/02/09	110	70 - 130	108	70 - 130	<2.0	ug/L	NC	30
4855687	o-Xylene	2017/02/09	89	70 - 130	87	70 - 130	<0.20	ug/L	NC	30
4855687	p+m-Xylene	2017/02/09	87	70 - 130	85	70 - 130	<0.20	ug/L	NC	30
4855687	Styrene	2017/02/09	93	70 - 130	90	70 - 130	<0.50	ug/L	NC	30
4855687	Tetrachloroethylene	2017/02/09	108	70 - 130	109	70 - 130	<0.20	ug/L	NC	30
4855687	Toluene	2017/02/09	96	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
4855687	Total Xylenes	2017/02/09					<0.20	ug/L	NC	30
4855687	trans-1,2-Dichloroethylene	2017/02/09	102	70 - 130	101	70 - 130	<0.50	ug/L	NC	30
4855687	trans-1,3-Dichloropropene	2017/02/09	92	70 - 130	85	70 - 130	<0.40	ug/L	NC	30
4855687	Trichloroethylene	2017/02/09	105	70 - 130	105	70 - 130	<0.20	ug/L	NC	30
4855687	Trichlorofluoromethane (FREON 11)	2017/02/09	111	70 - 130	114	70 - 130	<0.50	ug/L	NC	30
4855687	Vinyl Chloride	2017/02/09	108	70 - 130	107	70 - 130	<0.20	ug/L	NC	30
4855967	Dissolved Antimony (Sb)	2017/02/09	111	80 - 120	103	80 - 120	<0.50	ug/L	NC	20
4855967	Dissolved Arsenic (As)	2017/02/09	103	80 - 120	99	80 - 120	<1.0	ug/L	NC	20
4855967	Dissolved Barium (Ba)	2017/02/09	104	80 - 120	98	80 - 120	<2.0	ug/L	0.61	20
4855967	Dissolved Beryllium (Be)	2017/02/09	107	80 - 120	101	80 - 120	<0.50	ug/L	NC	20
4855967	Dissolved Boron (B)	2017/02/09	105	80 - 120	101	80 - 120	<10	ug/L	0.45	20
4855967	Dissolved Cadmium (Cd)	2017/02/09	107	80 - 120	99	80 - 120	<0.10	ug/L	NC	20

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
4855967	Dissolved Chromium (Cr)	2017/02/09	103	80 - 120	98	80 - 120	<5.0	ug/L	NC	20
4855967	Dissolved Cobalt (Co)	2017/02/09	102	80 - 120	98	80 - 120	<0.50	ug/L	NC	20
4855967	Dissolved Copper (Cu)	2017/02/09	104	80 - 120	98	80 - 120	<1.0	ug/L	NC	20
4855967	Dissolved Lead (Pb)	2017/02/09	100	80 - 120	96	80 - 120	<0.50	ug/L	NC	20
4855967	Dissolved Molybdenum (Mo)	2017/02/09	110	80 - 120	101	80 - 120	<0.50	ug/L	NC	20
4855967	Dissolved Nickel (Ni)	2017/02/09	100	80 - 120	97	80 - 120	<1.0	ug/L	NC	20
4855967	Dissolved Selenium (Se)	2017/02/09	104	80 - 120	98	80 - 120	<2.0	ug/L	NC	20
4855967	Dissolved Silver (Ag)	2017/02/09	98	80 - 120	96	80 - 120	<0.10	ug/L	NC	20
4855967	Dissolved Sodium (Na)	2017/02/09	NC	80 - 120	99	80 - 120	<100	ug/L	2.3	20
4855967	Dissolved Thallium (Tl)	2017/02/09	100	80 - 120	95	80 - 120	<0.050	ug/L	NC	20
4855967	Dissolved Uranium (U)	2017/02/09	106	80 - 120	99	80 - 120	<0.10	ug/L	3.7	20
4855967	Dissolved Vanadium (V)	2017/02/09	105	80 - 120	98	80 - 120	<0.50	ug/L	NC	20
4855967	Dissolved Zinc (Zn)	2017/02/09	102	80 - 120	98	80 - 120	<5.0	ug/L	NC	20
4856231	Chromium (VI)	2017/02/08	94	80 - 120	96	80 - 120	<0.50	ug/L	NC	20
4856408	Aroclor 1242	2017/02/09					<0.05	ug/L		
4856408	Aroclor 1248	2017/02/09					<0.05	ug/L		
4856408	Aroclor 1254	2017/02/09					<0.05	ug/L		
4856408	Aroclor 1260	2017/02/09	67	60 - 130	80	60 - 130	<0.05	ug/L		
4856408	Total PCB	2017/02/09	67	60 - 130	80	60 - 130	<0.05	ug/L	NC	40
4857082	1-Methylnaphthalene	2017/02/09	115	50 - 130	112	50 - 130	<0.050	ug/L	NC	30
4857082	2-Methylnaphthalene	2017/02/09	103	50 - 130	99	50 - 130	<0.050	ug/L	NC	30
4857082	Acenaphthene	2017/02/09	109	50 - 130	107	50 - 130	<0.050	ug/L	NC	30
4857082	Acenaphthylene	2017/02/09	106	50 - 130	100	50 - 130	<0.050	ug/L	NC	30
4857082	Anthracene	2017/02/09	102	50 - 130	98	50 - 130	<0.050	ug/L	NC	30
4857082	Benzo(a)anthracene	2017/02/09	96	50 - 130	106	50 - 130	<0.050	ug/L	NC	30
4857082	Benzo(a)pyrene	2017/02/09	87	50 - 130	106	50 - 130	<0.010	ug/L	NC	30
4857082	Benzo(b/j)fluoranthene	2017/02/09	90	50 - 130	108	50 - 130	<0.050	ug/L	NC	30
4857082	Benzo(g,h,i)perylene	2017/02/09	80	50 - 130	106	50 - 130	<0.050	ug/L	NC	30
4857082	Benzo(k)fluoranthene	2017/02/09	90	50 - 130	113	50 - 130	<0.050	ug/L	NC	30
4857082	Chrysene	2017/02/09	91	50 - 130	106	50 - 130	<0.050	ug/L	NC	30
4857082	Dibenz(a,h)anthracene	2017/02/09	78	50 - 130	98	50 - 130	<0.050	ug/L	NC	30

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
4857082	Fluoranthene	2017/02/09	112	50 - 130	113	50 - 130	<0.050	ug/L	NC	30
4857082	Fluorene	2017/02/09	107	50 - 130	105	50 - 130	<0.050	ug/L	NC	30
4857082	Indeno(1,2,3-cd)pyrene	2017/02/09	83	50 - 130	102	50 - 130	<0.050	ug/L	NC	30
4857082	Naphthalene	2017/02/09	95	50 - 130	92	50 - 130	<0.050	ug/L	NC	30
4857082	Phenanthrene	2017/02/09	110	50 - 130	109	50 - 130	<0.030	ug/L	NC	30
4857082	Pyrene	2017/02/09	115	50 - 130	119	50 - 130	<0.050	ug/L	NC	30
4858247	F2 (C10-C16 Hydrocarbons)	2017/02/11	101	50 - 130	93	60 - 130	<100	ug/L	NC	30
4858247	F3 (C16-C34 Hydrocarbons)	2017/02/11	98	50 - 130	95	60 - 130	<200	ug/L	NC	30
4858247	F4 (C34-C50 Hydrocarbons)	2017/02/11	100	50 - 130	100	60 - 130	<200	ug/L	NC	30
4858939	Benzene	2017/02/09	84	70 - 130	86	70 - 130	<0.20	ug/L	NC	30
4858939	Ethylbenzene	2017/02/09	90	70 - 130	90	70 - 130	<0.20	ug/L	NC	30
4858939	F1 (C6-C10) - BTEX	2017/02/09					<25	ug/L	NC	30
4858939	F1 (C6-C10)	2017/02/09	97	70 - 130	107	70 - 130	<25	ug/L	NC	30
4858939	o-Xylene	2017/02/09	93	70 - 130	91	70 - 130	<0.20	ug/L	NC	30
4858939	p+m-Xylene	2017/02/09	82	70 - 130	82	70 - 130	<0.40	ug/L	NC	30
4858939	Toluene	2017/02/09	88	70 - 130	88	70 - 130	<0.20	ug/L	NC	30
4858939	Total Xylenes	2017/02/09					<0.40	ug/L	NC	30
4861256	Mercury (Hg)	2017/02/13	107	75 - 125	105	80 - 120	<0.1	ug/L	NC	20

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

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

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

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

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

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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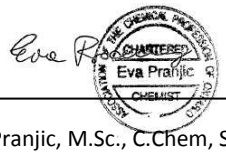
Maxxam Job #: B725207
Report Date: 2017/02/13

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

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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Maxxam Analytics International Corporation o/a Maxxam Analytics
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel (905) 817-5700 Toll-free 800-563-6266 Fax (905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name	#14090 Golder Associates Ltd	Company Name		Quotation #	B63104	Maxxam Job #:	Bottle Order #:
Attention	Central Accounting	Attention	Joanne Woodhouse	P.O. #			597255
Address	1931 Robertson Rd Ottawa ON K2H 5B7	Address		Project	1670949	COC #:	Project Manager:
Tel	(613) 592-9600 x Fax (613) 592-9601 x	Tel	Fax	Project Name		C#597255-02-01	Madison Bingley
Email	AP-CustomerService@golder.com	Email	jwoodhouse@golder.com	Site #			
				Sampled By	Aaron Bradshaw		

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 [X] Res/Park [ ] Medium/Fine
- [ ] Table 2 [ ] Ind/Comm [ ] Coarse
- [X] Table 3 [ ] Agri/Other [X] For RSC
- [ ] Table ___

Other Regulations
- [ ] CCME [ ] Sanitary Sewer Bylaw
- [ ] Reg 558 [ ] Storm Sewer Bylaw
- [ ] MISA Municipality ___
- [ ] PWQO
- [ ] Other ___

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 PCBs (Water)	Metals/Hg/CrVI	PAH	PHC F1-F4	BTEX	VOC	# of Bottles
1		17-14	17/02/06	1100	GW	yes	X	X	X	X		X	12
2		17-1		1200						X	X		5
3		17-22		1300		yes		X	X	X		X	10
4		17-13		1330		yes	X	X	X	X		X	12
5		17-10		1400		yes	X	X	X	X		X	12
6		17-20		1430						X	X	X	5
7		DUP A	↓	1300	↓	yes		X	X	X		X	10
8													
9													
10													

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: ___

06-Feb-17 15:25
Madison Bingley
B725207
HGR ENV-946

RECEIVED IN OTTAWA

N o i a

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time
Aaron Bradshaw	17/02/06	15:25	Mariana Bascan	2017/02/06	15:25
				2017/02/07	08:39

jars used and not submitted: 0

Laboratory Use Only
Time Sensitive
Temperature (°C) on Recei: 6, 6, 6
Custody Seal Present: Yes ✓ Intact: Yes ✓

* 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

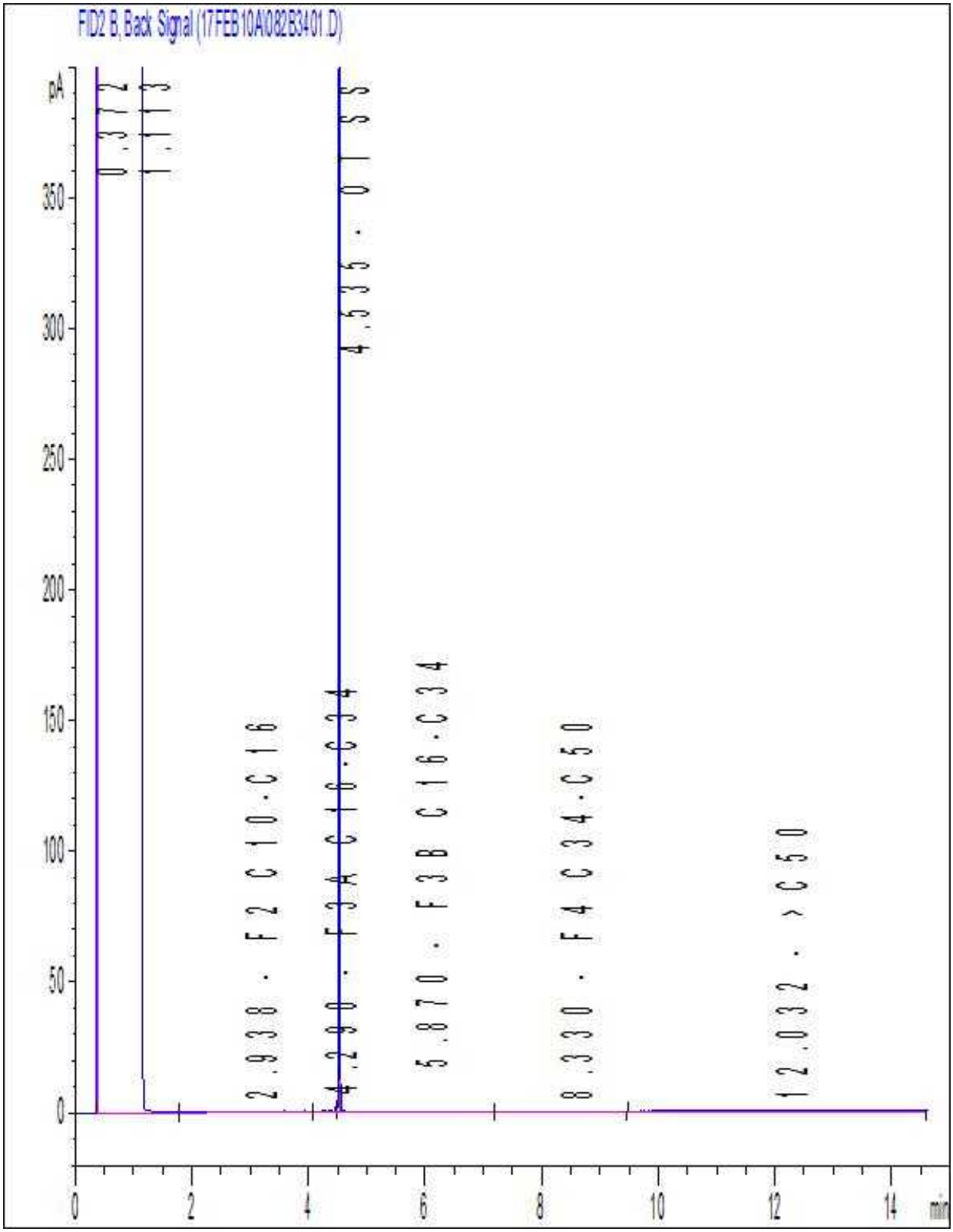
4/4/15 4/3/14

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B725207
Report Date: 2017/02/13
Maxxam Sample: DWI790

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-14

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

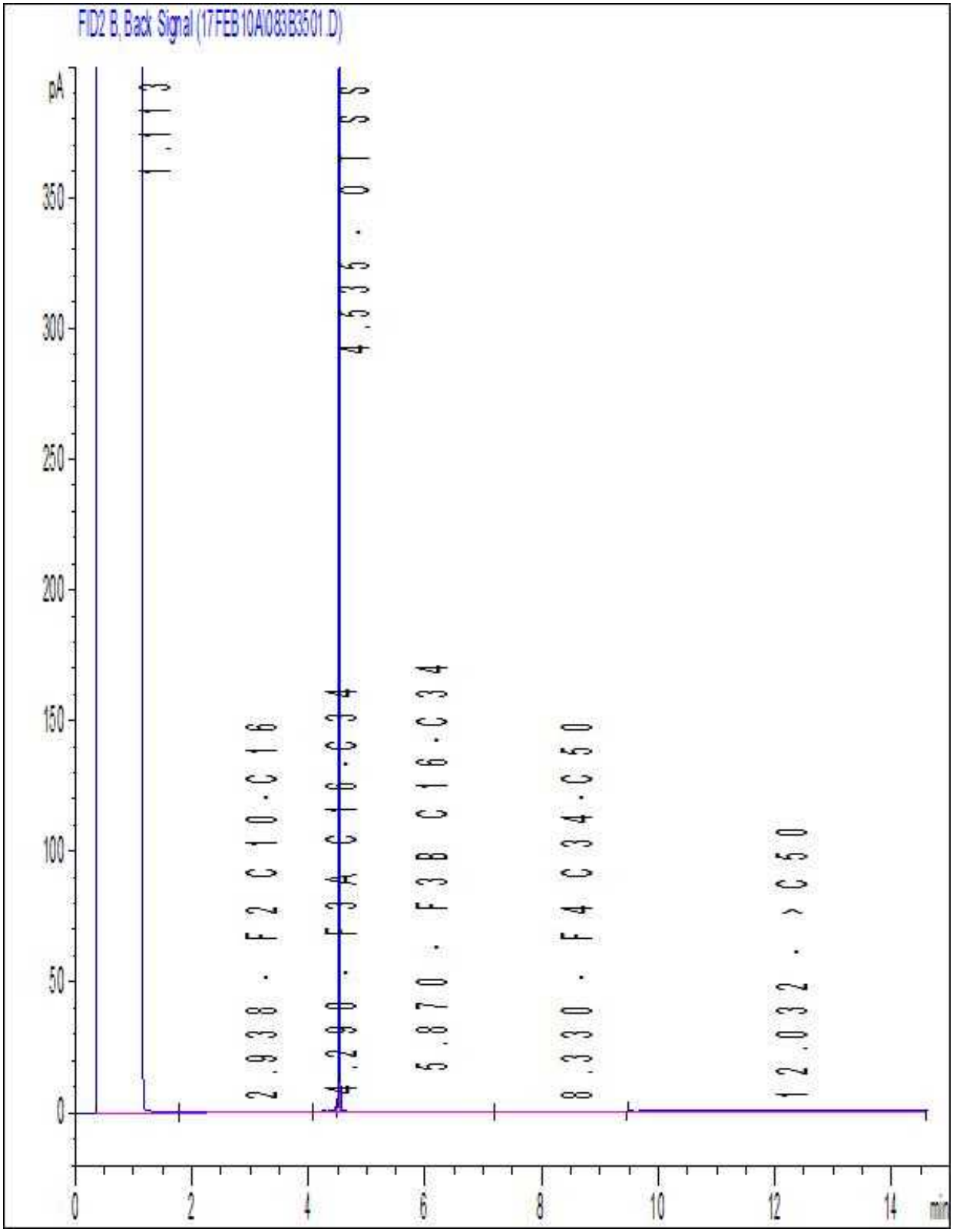


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B725207
Report Date: 2017/02/13
Maxxam Sample: DWI791

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-1

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

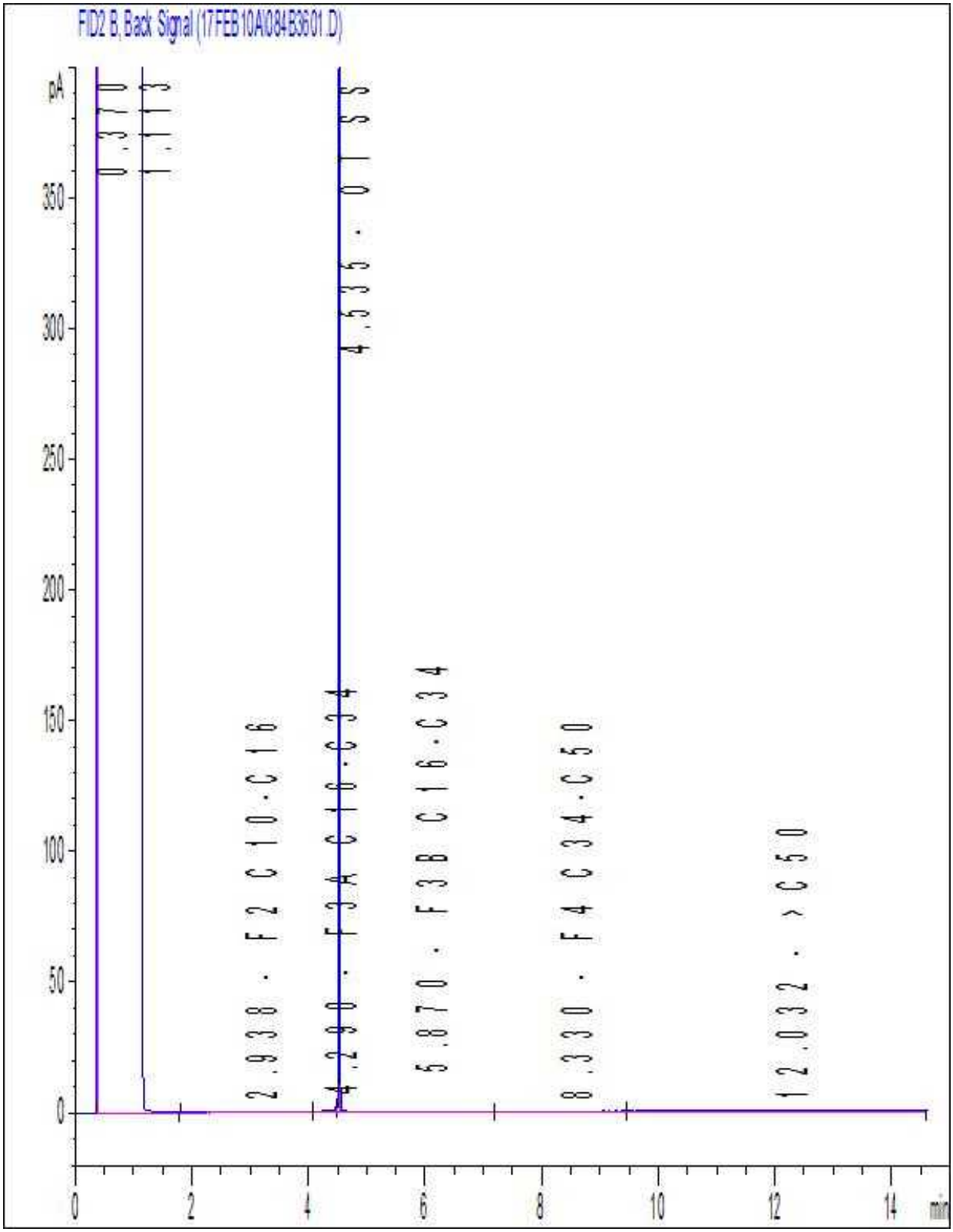


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B725207
Report Date: 2017/02/13
Maxxam Sample: DWI792

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-22

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

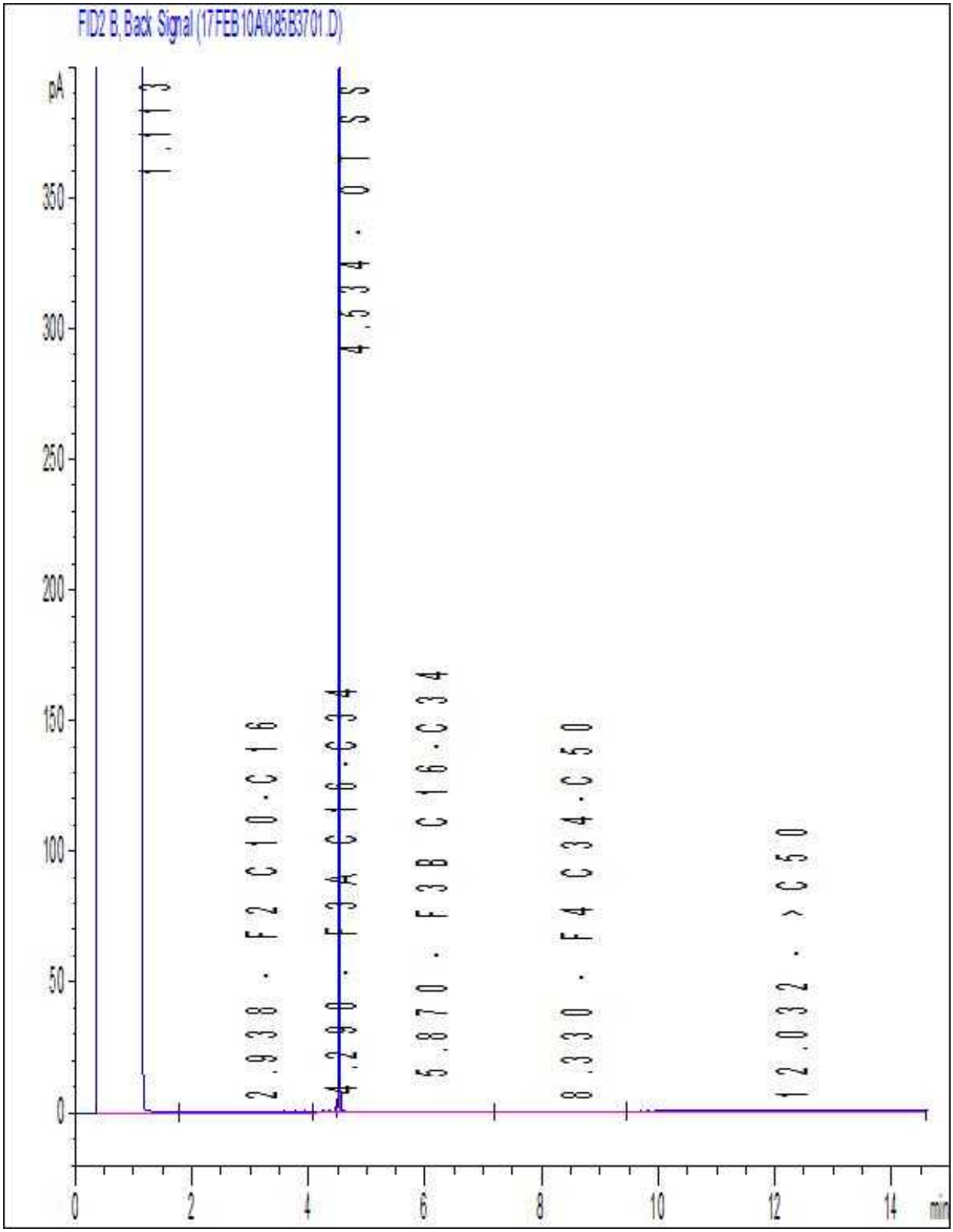


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B725207
Report Date: 2017/02/13
Maxxam Sample: DWI793

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-13

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

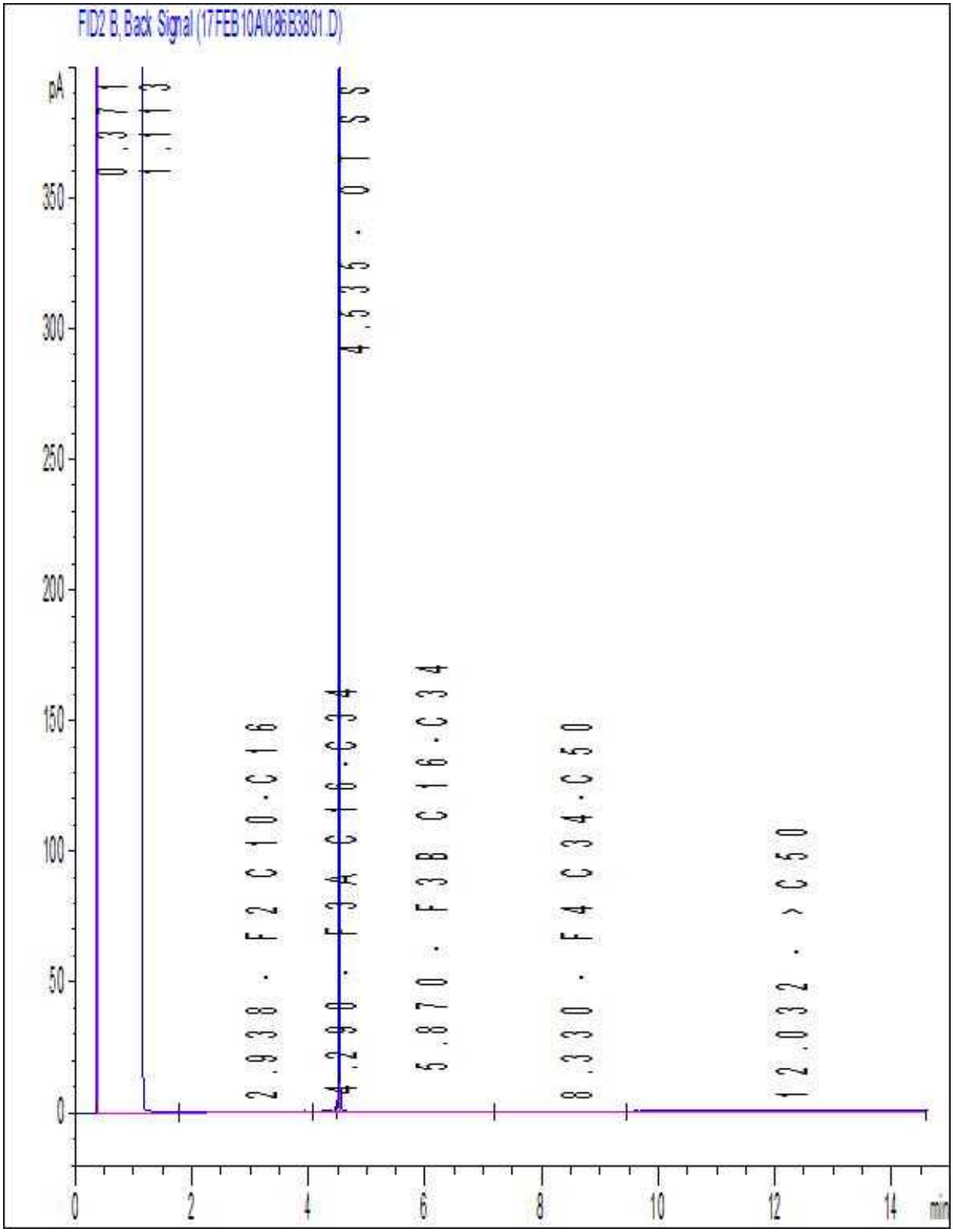


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B725207
Report Date: 2017/02/13
Maxxam Sample: DWI794

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-10

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

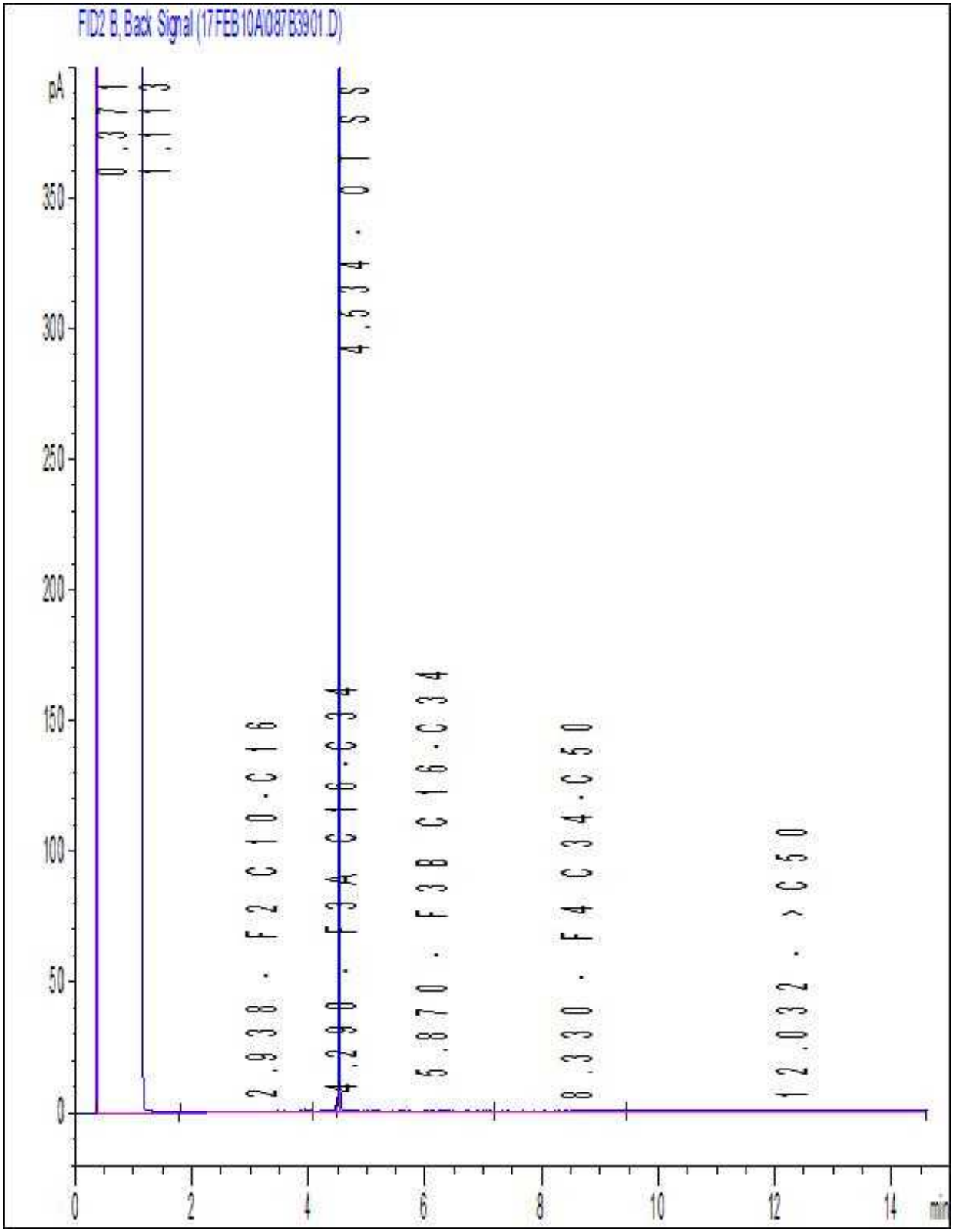


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B725207
Report Date: 2017/02/13
Maxxam Sample: DWI795

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-20

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

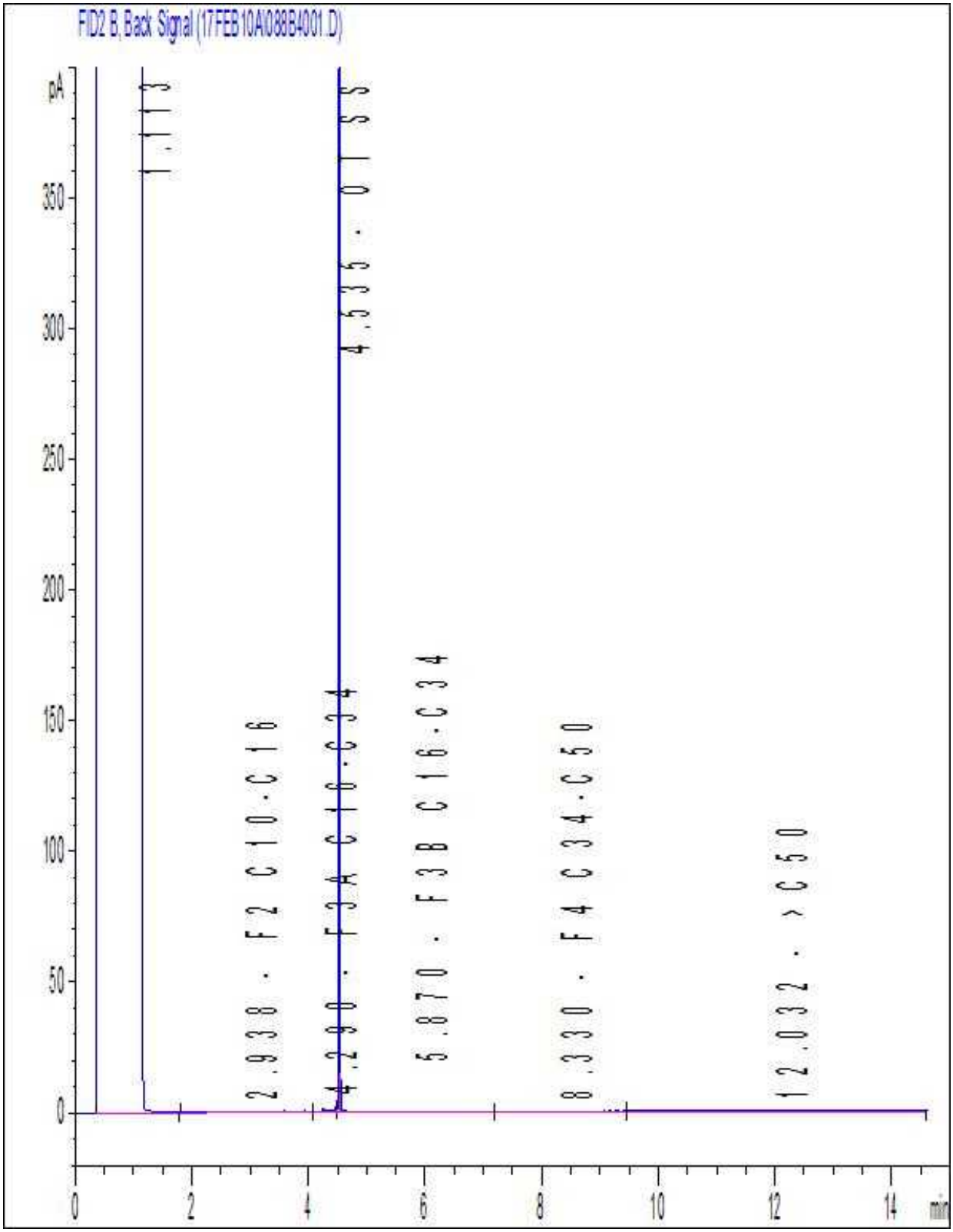


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B725207
Report Date: 2017/02/13
Maxxam Sample: DWI796

Golder Associates Ltd
Client Project #: 1670949
Client ID: DUP A

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: 1670949
Your C.O.C. #: 596564-02-01

Attention:Joanne Woodhouse

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/02/13
Report #: R4357929
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B725770
Received: 2017/02/07, 14:30

Sample Matrix: Water
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum	4	N/A	2017/02/10	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum (1)	2	N/A	2017/02/10		EPA 8260C m
Chromium (VI) in Water (1)	4	N/A	2017/02/09	CAM SOP-00436	EPA 7199 m
Petroleum Hydro. CCME F1 & BTEX in Water	2	N/A	2017/02/10	OTT SOP-00002	CCME CWS
Petroleum Hydrocarbons F2-F4 in Water (2)	6	2017/02/09	2017/02/09	OTT SOP-00001	CCME Hydrocarbons
Mercury (1)	4	2017/02/10	2017/02/10	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS (1)	4	N/A	2017/02/09	CAM SOP-00447	EPA 6020B m
PAH Compounds in Water by GC/MS (SIM)	4	2017/02/09	2017/02/09	OTT SOP-00011	EPA 8270D m
Polychlorinated Biphenyl in Water (1)	3	2017/02/08	2017/02/09	CAM SOP-00309	EPA 8082A m
Volatile Organic Compounds and F1 PHCs (1)	4	N/A	2017/02/09	CAM SOP-00230	EPA 8260C m
Volatile Organic Compounds in Water (1)	2	N/A	2017/02/10	CAM SOP-00228	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.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

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

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.

Your Project #: 1670949
Your C.O.C. #: 596564-02-01

Attention:Joanne Woodhouse

Golder Associates Ltd
1931 Robertson Rd
Ottawa, ON
K2H 5B7

Report Date: 2017/02/13
Report #: R4357929
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B725770
Received: 2017/02/07, 14:30

(1) This test was performed by Maxxam Analytics Mississauga
(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.
Madison Bingley, Project Manager
Email: MBingley@maxxam.ca
Phone# (613)274-3549

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B725770
Report Date: 2017/02/13

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DWL114	DWL115	DWL116	DWL120		
Sampling Date		2017/02/07 09:50	2017/02/07 10:30	2017/02/07 11:00	2017/02/07		
COC Number		596564-02-01	596564-02-01	596564-02-01	596564-02-01		
	UNITS	17-4	17-5	17-23	F BLANK	RDL	QC Batch
Volatile Organics							
Acetone (2-Propanone)	ug/L	11	<10	<10	<10	10	4855687
Benzene	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4855687
Bromodichloromethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4855687
Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	4855687
Bromomethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4855687
Carbon Tetrachloride	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4855687
Chlorobenzene	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4855687
Chloroform	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4855687
Dibromochloromethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4855687
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4855687
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4855687
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4855687
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	4855687
1,1-Dichloroethane	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4855687
1,2-Dichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4855687
1,1-Dichloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4855687
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4855687
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4855687
1,2-Dichloropropane	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4855687
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	<0.30	<0.30	0.30	4855687
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	<0.40	<0.40	0.40	4855687
Ethylbenzene	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4855687
Ethylene Dibromide	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4855687
Hexane	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	4855687
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	<2.0	<2.0	2.0	4855687
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	<10	<10	10	4855687
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	4855687
Methyl t-butyl ether (MTBE)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4855687
Styrene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4855687
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4855687
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4855687
Tetrachloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4855687
Toluene	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4855687
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4855687
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4855687

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B725770
Report Date: 2017/02/13

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DWL114	DWL115	DWL116	DWL120		
Sampling Date		2017/02/07 09:50	2017/02/07 10:30	2017/02/07 11:00	2017/02/07		
COC Number		596564-02-01	596564-02-01	596564-02-01	596564-02-01		
	UNITS	17-4	17-5	17-23	F BLANK	RDL	QC Batch
Trichloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4855687
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4855687
Vinyl Chloride	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4855687
p+m-Xylene	ug/L	0.22	<0.20	<0.20	<0.20	0.20	4855687
o-Xylene	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4855687
Total Xylenes	ug/L	0.22	<0.20	<0.20	<0.20	0.20	4855687
F1 (C6-C10)	ug/L	<25	<25	<25	<25	25	4855687
F1 (C6-C10) - BTEX	ug/L	<25	<25	<25	<25	25	4855687
Surrogate Recovery (%)							
4-Bromofluorobenzene	%	94	94	94	94		4855687
D4-1,2-Dichloroethane	%	107	110	112	110		4855687
D8-Toluene	%	92	91	90	91		4855687

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B725770
Report Date: 2017/02/13

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		DWL114	DWL114	DWL115	DWL116	DWL120		
Sampling Date		2017/02/07 09:50	2017/02/07 09:50	2017/02/07 10:30	2017/02/07 11:00	2017/02/07		
COC Number		596564-02-01	596564-02-01	596564-02-01	596564-02-01	596564-02-01		
	UNITS	**17-4**	**17-4 Lab-Dup**	**17-5**	**17-23**	**F BLANK**	**RDL**	**QC Batch**
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	<100	<100	<100	100	4857670
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	<200	<200	<200	200	4857670
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	<200	220	<200	200	4857670
Reached Baseline at C50	ug/L	Yes	Yes	Yes	Yes	Yes		4857670
Surrogate Recovery (%)								
o-Terphenyl	%	104	102	99	105	99		4857670

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B725770
Report Date: 2017/02/13

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

O.REG 153 METALS PACKAGE (WATER)

Maxxam ID		DWL114	DWL115	DWL116	DWL120	DWL120		
Sampling Date		2017/02/07 09:50	2017/02/07 10:30	2017/02/07 11:00	2017/02/07	2017/02/07		
COC Number		596564-02-01	596564-02-01	596564-02-01	596564-02-01	596564-02-01		
	UNITS	17-4	17-5	17-23	F BLANK	F BLANK Lab-Dup	RDL	QC Batch
Metals								
Chromium (VI)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4857745
Mercury (Hg)	ug/L	<0.1	<0.1	<0.1	<0.1		0.1	4859059
Dissolved Antimony (Sb)	ug/L	<0.50	<0.50	0.75	<0.50		0.50	4855967
Dissolved Arsenic (As)	ug/L	<1.0	<1.0	1.5	<1.0		1.0	4855967
Dissolved Barium (Ba)	ug/L	150	51	27	<2.0		2.0	4855967
Dissolved Beryllium (Be)	ug/L	<0.50	<0.50	<0.50	<0.50		0.50	4855967
Dissolved Boron (B)	ug/L	110	82	59	<10		10	4855967
Dissolved Cadmium (Cd)	ug/L	<0.10	<0.10	<0.10	<0.10		0.10	4855967
Dissolved Chromium (Cr)	ug/L	<5.0	<5.0	<5.0	<5.0		5.0	4855967
Dissolved Cobalt (Co)	ug/L	3.0	<0.50	<0.50	<0.50		0.50	4855967
Dissolved Copper (Cu)	ug/L	<1.0	1.0	1.7	<1.0		1.0	4855967
Dissolved Lead (Pb)	ug/L	<0.50	<0.50	<0.50	<0.50		0.50	4855967
Dissolved Molybdenum (Mo)	ug/L	25	63	33	<0.50		0.50	4855967
Dissolved Nickel (Ni)	ug/L	5.7	1.5	2.2	<1.0		1.0	4855967
Dissolved Selenium (Se)	ug/L	<2.0	<2.0	<2.0	<2.0		2.0	4855967
Dissolved Silver (Ag)	ug/L	<0.10	<0.10	<0.10	<0.10		0.10	4855967
Dissolved Sodium (Na)	ug/L	130000	16000	310000	370		100	4855967
Dissolved Thallium (Tl)	ug/L	<0.050	<0.050	<0.050	<0.050		0.050	4855967
Dissolved Uranium (U)	ug/L	11	10	25	<0.10		0.10	4855967
Dissolved Vanadium (V)	ug/L	<0.50	0.75	5.5	<0.50		0.50	4855967
Dissolved Zinc (Zn)	ug/L	<5.0	<5.0	<5.0	<5.0		5.0	4855967

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B725770
Report Date: 2017/02/13

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

O.REG 153 PAHS (WATER)

Maxxam ID		DWL114	DWL115	DWL115	DWL117	DWL120		
Sampling Date		2017/02/07 09:50	2017/02/07 10:30	2017/02/07 10:30	2017/02/07 12:55	2017/02/07		
COC Number		596564-02-01	596564-02-01	596564-02-01	596564-02-01	596564-02-01		
	UNITS	17-4	17-5	17-5 Lab-Dup	17-18	F BLANK	RDL	QC Batch
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/L	<0.071	<0.071		<0.071	<0.071	0.071	4855132
Polyaromatic Hydrocarbons								
Acenaphthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857989
Acenaphthylene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857989
Anthracene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857989
Benzo(a)anthracene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857989
Benzo(a)pyrene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4857989
Benzo(b/j)fluoranthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857989
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857989
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857989
Chrysene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857989
Dibenz(a,h)anthracene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857989
Fluoranthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857989
Fluorene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857989
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857989
1-Methylnaphthalene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857989
2-Methylnaphthalene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857989
Naphthalene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857989
Phenanthrene	ug/L	<0.030	<0.030	<0.030	<0.030	<0.030	0.030	4857989
Pyrene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	4857989
Surrogate Recovery (%)								
D10-Anthracene	%	91	93	93	93	95		4857989
D14-Terphenyl (FS)	%	113	115	113	115	116		4857989
D8-Acenaphthylene	%	78	82	79	78	83		4857989

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B725770
Report Date: 2017/02/13

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

O.REG 153 PCBS (WATER)

Maxxam ID		DWL114	DWL115	DWL120		
Sampling Date		2017/02/07 09:50	2017/02/07 10:30	2017/02/07		
COC Number		596564-02-01	596564-02-01	596564-02-01		
	UNITS	17-4	17-5	F BLANK	RDL	QC Batch
PCBs						
Aroclor 1242	ug/L	<0.05	<0.05	<0.05	0.05	4856408
Aroclor 1248	ug/L	<0.05	<0.05	<0.05	0.05	4856408
Aroclor 1254	ug/L	<0.05	<0.05	<0.05	0.05	4856408
Aroclor 1260	ug/L	<0.05	<0.05	<0.05	0.05	4856408
Total PCB	ug/L	<0.05	<0.05	<0.05	0.05	4856408
Surrogate Recovery (%)						
Decachlorobiphenyl	%	79	77	72		4856408

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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O.REG 153 PETROLEUM HYDROCARBONS (WATER)

Maxxam ID		DWL117	DWL117	DWL118		
Sampling Date		2017/02/07 12:55	2017/02/07 12:55	2017/02/07 13:25		
COC Number		596564-02-01	596564-02-01	596564-02-01		
	UNITS	17-18	17-18 Lab-Dup	17-21	RDL	QC Batch
BTEX & F1 Hydrocarbons						
Benzene	ug/L	<0.20	<0.20	<0.20	0.20	4857779
Toluene	ug/L	<0.20	<0.20	<0.20	0.20	4857779
Ethylbenzene	ug/L	<0.20	<0.20	<0.20	0.20	4857779
o-Xylene	ug/L	<0.20	<0.20	<0.20	0.20	4857779
p+m-Xylene	ug/L	<0.40	<0.40	<0.40	0.40	4857779
Total Xylenes	ug/L	<0.40	<0.40	<0.40	0.40	4857779
F1 (C6-C10)	ug/L	<25	<25	<25	25	4857779
F1 (C6-C10) - BTEX	ug/L	<25	<25	<25	25	4857779
F2-F4 Hydrocarbons						
F2 (C10-C16 Hydrocarbons)	ug/L	<100		<100	100	4857670
F3 (C16-C34 Hydrocarbons)	ug/L	<200		<200	200	4857670
F4 (C34-C50 Hydrocarbons)	ug/L	<200		<200	200	4857670
Reached Baseline at C50	ug/L	Yes		Yes		4857670
Surrogate Recovery (%)						
1,4-Difluorobenzene	%	115	113	114		4857779
4-Bromofluorobenzene	%	103	101	101		4857779
D10-Ethylbenzene	%	115	124	123		4857779
D4-1,2-Dichloroethane	%	108	109	104		4857779
o-Terphenyl	%	102		99		4857670

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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O.REG 153 VOLATILE ORGANICS (WATER)

Maxxam ID		DWL119	DWL121		
Sampling Date		2017/02/07	2017/02/07		
COC Number		596564-02-01	596564-02-01		
	UNITS	EQUIP-BLANK	TRIP BLANK	RDL	QC Batch
Calculated Parameters					
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	0.50	4854300
Volatile Organics					
Acetone (2-Propanone)	ug/L	<10	<10	10	4855661
Benzene	ug/L	<0.20	<0.20	0.20	4855661
Bromodichloromethane	ug/L	<0.50	<0.50	0.50	4855661
Bromoform	ug/L	<1.0	<1.0	1.0	4855661
Bromomethane	ug/L	<0.50	<0.50	0.50	4855661
Carbon Tetrachloride	ug/L	<0.20	<0.20	0.20	4855661
Chlorobenzene	ug/L	<0.20	<0.20	0.20	4855661
Chloroform	ug/L	<0.20	<0.20	0.20	4855661
Dibromochloromethane	ug/L	<0.50	<0.50	0.50	4855661
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	4855661
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	4855661
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	4855661
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	1.0	4855661
1,1-Dichloroethane	ug/L	<0.20	<0.20	0.20	4855661
1,2-Dichloroethane	ug/L	<0.50	<0.50	0.50	4855661
1,1-Dichloroethylene	ug/L	<0.20	<0.20	0.20	4855661
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	0.50	4855661
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	0.50	4855661
1,2-Dichloropropane	ug/L	<0.20	<0.20	0.20	4855661
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	0.30	4855661
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	0.40	4855661
Ethylbenzene	ug/L	<0.20	<0.20	0.20	4855661
Ethylene Dibromide	ug/L	<0.20	<0.20	0.20	4855661
Hexane	ug/L	<1.0	<1.0	1.0	4855661
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	2.0	4855661
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	10	4855661
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	5.0	4855661
Methyl t-butyl ether (MTBE)	ug/L	<0.50	<0.50	0.50	4855661
Styrene	ug/L	<0.50	<0.50	0.50	4855661
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	0.50	4855661
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	0.50	4855661
Tetrachloroethylene	ug/L	<0.20	<0.20	0.20	4855661
Toluene	ug/L	<0.20	<0.20	0.20	4855661
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	0.20	4855661

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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O.REG 153 VOLATILE ORGANICS (WATER)

Maxxam ID		DWL119	DWL121		
Sampling Date		2017/02/07	2017/02/07		
COC Number		596564-02-01	596564-02-01		
	UNITS	EQUIP-BLANK	TRIP BLANK	RDL	QC Batch
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	0.50	4855661
Trichloroethylene	ug/L	<0.20	<0.20	0.20	4855661
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	0.50	4855661
Vinyl Chloride	ug/L	<0.20	<0.20	0.20	4855661
p+m-Xylene	ug/L	<0.20	<0.20	0.20	4855661
o-Xylene	ug/L	<0.20	<0.20	0.20	4855661
Total Xylenes	ug/L	<0.20	<0.20	0.20	4855661
Surrogate Recovery (%)					
4-Bromofluorobenzene	%	99	98		4855661
D4-1,2-Dichloroethane	%	100	98		4855661
D8-Toluene	%	98	98		4855661

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B725770
Report Date: 2017/02/13

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: DWL114
Sample ID: 17-4
Matrix: Water

Collected: 2017/02/07
Shipped:
Received: 2017/02/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4855132	N/A	2017/02/10	Steve Roberts
Chromium (VI) in Water	IC	4857745	N/A	2017/02/09	Lang Le
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4857670	2017/02/09	2017/02/09	Liliana Gaburici
Mercury	CV/AA	4859059	2017/02/10	2017/02/10	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	4855967	N/A	2017/02/09	Cristina Petran
PAH Compounds in Water by GC/MS (SIM)	GC/MS	4857989	2017/02/09	2017/02/09	Arezoo Habibagahi
Polychlorinated Biphenyl in Water	GC/ECD	4856408	2017/02/08	2017/02/09	Li Peng
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4855687	N/A	2017/02/09	Denis Reid

Maxxam ID: DWL114 Dup
Sample ID: 17-4
Matrix: Water

Collected: 2017/02/07
Shipped:
Received: 2017/02/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4857670	2017/02/09	2017/02/09	Liliana Gaburici

Maxxam ID: DWL115
Sample ID: 17-5
Matrix: Water

Collected: 2017/02/07
Shipped:
Received: 2017/02/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4855132	N/A	2017/02/10	Steve Roberts
Chromium (VI) in Water	IC	4857745	N/A	2017/02/09	Lang Le
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4857670	2017/02/09	2017/02/09	Liliana Gaburici
Mercury	CV/AA	4859059	2017/02/10	2017/02/10	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	4855967	N/A	2017/02/09	Cristina Petran
PAH Compounds in Water by GC/MS (SIM)	GC/MS	4857989	2017/02/09	2017/02/09	Arezoo Habibagahi
Polychlorinated Biphenyl in Water	GC/ECD	4856408	2017/02/08	2017/02/09	Li Peng
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4855687	N/A	2017/02/09	Denis Reid

Maxxam ID: DWL115 Dup
Sample ID: 17-5
Matrix: Water

Collected: 2017/02/07
Shipped:
Received: 2017/02/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Water by GC/MS (SIM)	GC/MS	4857989	2017/02/09	2017/02/09	Arezoo Habibagahi

Maxxam ID: DWL116
Sample ID: 17-23
Matrix: Water

Collected: 2017/02/07
Shipped:
Received: 2017/02/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chromium (VI) in Water	IC	4857745	N/A	2017/02/09	Lang Le
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4857670	2017/02/09	2017/02/09	Liliana Gaburici
Mercury	CV/AA	4859059	2017/02/10	2017/02/10	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	4855967	N/A	2017/02/09	Cristina Petran

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Maxxam Job #: B725770
Report Date: 2017/02/13

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: DWL116 **Collected:** 2017/02/07
Sample ID: 17-23 **Shipped:**
Matrix: Water **Received:** 2017/02/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4855687	N/A	2017/02/09	Denis Reid

Maxxam ID: DWL117 **Collected:** 2017/02/07
Sample ID: 17-18 **Shipped:**
Matrix: Water **Received:** 2017/02/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4855132	N/A	2017/02/10	Steve Roberts
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4857779	N/A	2017/02/10	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4857670	2017/02/09	2017/02/09	Liliana Gaburici
PAH Compounds in Water by GC/MS (SIM)	GC/MS	4857989	2017/02/09	2017/02/09	Arezoo Habibagahi

Maxxam ID: DWL117 Dup **Collected:** 2017/02/07
Sample ID: 17-18 **Shipped:**
Matrix: Water **Received:** 2017/02/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4857779	N/A	2017/02/10	Lyndsey Hart

Maxxam ID: DWL118 **Collected:** 2017/02/07
Sample ID: 17-21 **Shipped:**
Matrix: Water **Received:** 2017/02/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4857779	N/A	2017/02/10	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4857670	2017/02/09	2017/02/09	Liliana Gaburici

Maxxam ID: DWL119 **Collected:** 2017/02/07
Sample ID: EQUIP-BLANK **Shipped:**
Matrix: Water **Received:** 2017/02/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	4854300	N/A	2017/02/10	Automated Statchk
Volatile Organic Compounds in Water	GC/MS	4855661	N/A	2017/02/10	Anna Gabrielyan

Maxxam ID: DWL120 **Collected:** 2017/02/07
Sample ID: F BLANK **Shipped:**
Matrix: Water **Received:** 2017/02/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4855132	N/A	2017/02/10	Steve Roberts
Chromium (VI) in Water	IC	4857745	N/A	2017/02/09	Lang Le
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4857670	2017/02/09	2017/02/09	Liliana Gaburici
Mercury	CV/AA	4859059	2017/02/10	2017/02/10	Magdalena Carlos
Dissolved Metals by ICPMS	ICP/MS	4855967	N/A	2017/02/09	Cristina Petran
PAH Compounds in Water by GC/MS (SIM)	GC/MS	4857989	2017/02/09	2017/02/09	Arezoo Habibagahi

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Maxxam Job #: B725770
Report Date: 2017/02/13

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

TEST SUMMARY

Maxxam ID: DWL120
Sample ID: F BLANK
Matrix: Water

Collected: 2017/02/07
Shipped:
Received: 2017/02/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Polychlorinated Biphenyl in Water	GC/ECD	4856408	2017/02/08	2017/02/09	Li Peng
Volatile Organic Compounds and F1 PHCs	GC/MSFD	4855687	N/A	2017/02/09	Denis Reid

Maxxam ID: DWL120 Dup
Sample ID: F BLANK
Matrix: Water

Collected: 2017/02/07
Shipped:
Received: 2017/02/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chromium (VI) in Water	IC	4857745	N/A	2017/02/09	Lang Le

Maxxam ID: DWL121
Sample ID: TRIP BLANK
Matrix: Water

Collected: 2017/02/07
Shipped:
Received: 2017/02/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	4854300	N/A	2017/02/10	Automated Statchk
Volatile Organic Compounds in Water	GC/MS	4855661	N/A	2017/02/10	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
Package 2	2.0°C

Results relate only to the items tested.

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Maxxam Job #: B725770
Report Date: 2017/02/13

QUALITY ASSURANCE REPORT

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4855661	4-Bromofluorobenzene	2017/02/09	101	70 - 130	100	70 - 130	99	%		
4855661	D4-1,2-Dichloroethane	2017/02/09	102	70 - 130	99	70 - 130	100	%		
4855661	D8-Toluene	2017/02/09	97	70 - 130	99	70 - 130	97	%		
4855687	4-Bromofluorobenzene	2017/02/08	103	70 - 130	106	70 - 130	94	%		
4855687	D4-1,2-Dichloroethane	2017/02/08	103	70 - 130	100	70 - 130	107	%		
4855687	D8-Toluene	2017/02/08	104	70 - 130	103	70 - 130	90	%		
4856408	Decachlorobiphenyl	2017/02/09	72	60 - 130	69	60 - 130	75	%		
4857670	o-Terphenyl	2017/02/09	104	30 - 130	104	30 - 130	105	%		
4857779	1,4-Difluorobenzene	2017/02/10	111	70 - 130	113	70 - 130	113	%		
4857779	4-Bromofluorobenzene	2017/02/10	101	70 - 130	103	70 - 130	102	%		
4857779	D10-Ethylbenzene	2017/02/10	127	70 - 130	117	70 - 130	122	%		
4857779	D4-1,2-Dichloroethane	2017/02/10	105	70 - 130	107	70 - 130	104	%		
4857989	D10-Anthracene	2017/02/09	100	50 - 130	95	50 - 130	94	%		
4857989	D14-Terphenyl (FS)	2017/02/09	125	50 - 130	116	50 - 130	114	%		
4857989	D8-Acenaphthylene	2017/02/09	87	50 - 130	83	50 - 130	82	%		
4855661	1,1,1,2-Tetrachloroethane	2017/02/09	100	70 - 130	96	70 - 130	<0.50	ug/L	NC	30
4855661	1,1,1-Trichloroethane	2017/02/09	101	70 - 130	93	70 - 130	<0.20	ug/L	NC	30
4855661	1,1,2,2-Tetrachloroethane	2017/02/09	103	70 - 130	98	70 - 130	<0.50	ug/L	NC	30
4855661	1,1,2-Trichloroethane	2017/02/09	101	70 - 130	94	70 - 130	<0.50	ug/L	NC	30
4855661	1,1-Dichloroethane	2017/02/09	107	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
4855661	1,1-Dichloroethylene	2017/02/09	105	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
4855661	1,2-Dichlorobenzene	2017/02/09	97	70 - 130	93	70 - 130	<0.50	ug/L	NC	30
4855661	1,2-Dichloroethane	2017/02/09	99	70 - 130	91	70 - 130	<0.50	ug/L	NC	30
4855661	1,2-Dichloropropane	2017/02/09	104	70 - 130	97	70 - 130	<0.20	ug/L	NC	30
4855661	1,3-Dichlorobenzene	2017/02/09	98	70 - 130	94	70 - 130	<0.50	ug/L	NC	30
4855661	1,4-Dichlorobenzene	2017/02/09	99	70 - 130	94	70 - 130	<0.50	ug/L	NC	30
4855661	Acetone (2-Propanone)	2017/02/09	104	60 - 140	98	60 - 140	<10	ug/L	NC	30
4855661	Benzene	2017/02/09	101	70 - 130	93	70 - 130	<0.20	ug/L	NC	30
4855661	Bromodichloromethane	2017/02/09	105	70 - 130	99	70 - 130	<0.50	ug/L	NC	30
4855661	Bromoform	2017/02/09	99	70 - 130	94	70 - 130	<1.0	ug/L	NC	30
4855661	Bromomethane	2017/02/09	105	60 - 140	97	60 - 140	<0.50	ug/L	NC	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
4855661	Carbon Tetrachloride	2017/02/09	102	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
4855661	Chlorobenzene	2017/02/09	102	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
4855661	Chloroform	2017/02/09	101	70 - 130	93	70 - 130	<0.20	ug/L	NC	30
4855661	cis-1,2-Dichloroethylene	2017/02/09	107	70 - 130	97	70 - 130	<0.50	ug/L	NC	30
4855661	cis-1,3-Dichloropropene	2017/02/09	107	70 - 130	100	70 - 130	<0.30	ug/L	NC	30
4855661	Dibromochloromethane	2017/02/09	102	70 - 130	96	70 - 130	<0.50	ug/L	NC	30
4855661	Dichlorodifluoromethane (FREON 12)	2017/02/09	91	60 - 140	75	60 - 140	<1.0	ug/L	NC	30
4855661	Ethylbenzene	2017/02/09	103	70 - 130	96	70 - 130	<0.20	ug/L	NC	30
4855661	Ethylene Dibromide	2017/02/09	103	70 - 130	96	70 - 130	<0.20	ug/L	NC	30
4855661	Hexane	2017/02/09	108	70 - 130	97	70 - 130	<1.0	ug/L	NC	30
4855661	Methyl Ethyl Ketone (2-Butanone)	2017/02/09	108	60 - 140	99	60 - 140	<10	ug/L	NC	30
4855661	Methyl Isobutyl Ketone	2017/02/09	110	70 - 130	101	70 - 130	<5.0	ug/L	NC	30
4855661	Methyl t-butyl ether (MTBE)	2017/02/09	103	70 - 130	96	70 - 130	<0.50	ug/L	NC	30
4855661	Methylene Chloride(Dichloromethane)	2017/02/09	104	70 - 130	97	70 - 130	<2.0	ug/L	NC	30
4855661	o-Xylene	2017/02/09	97	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
4855661	p+m-Xylene	2017/02/09	100	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
4855661	Styrene	2017/02/09	99	70 - 130	93	70 - 130	<0.50	ug/L	NC	30
4855661	Tetrachloroethylene	2017/02/09	99	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
4855661	Toluene	2017/02/09	98	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
4855661	Total Xylenes	2017/02/09					<0.20	ug/L	NC	30
4855661	trans-1,2-Dichloroethylene	2017/02/09	101	70 - 130	92	70 - 130	<0.50	ug/L	NC	30
4855661	trans-1,3-Dichloropropene	2017/02/09	103	70 - 130	99	70 - 130	<0.40	ug/L	NC	30
4855661	Trichloroethylene	2017/02/09	100	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
4855661	Trichlorofluoromethane (FREON 11)	2017/02/09	106	70 - 130	97	70 - 130	<0.50	ug/L	NC	30
4855661	Vinyl Chloride	2017/02/09	107	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
4855687	1,1,1,2-Tetrachloroethane	2017/02/09	106	70 - 130	106	70 - 130	<0.50	ug/L	NC	30
4855687	1,1,1-Trichloroethane	2017/02/09	102	70 - 130	105	70 - 130	<0.20	ug/L	NC	30
4855687	1,1,2,2-Tetrachloroethane	2017/02/09	99	70 - 130	95	70 - 130	<0.50	ug/L	NC	30
4855687	1,1,2-Trichloroethane	2017/02/09	97	70 - 130	95	70 - 130	<0.50	ug/L	NC	30
4855687	1,1-Dichloroethane	2017/02/09	100	70 - 130	100	70 - 130	<0.20	ug/L	NC	30
4855687	1,1-Dichloroethylene	2017/02/09	99	70 - 130	100	70 - 130	<0.20	ug/L	NC	30

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
4855687	1,2-Dichlorobenzene	2017/02/09	98	70 - 130	92	70 - 130	<0.50	ug/L	NC	30
4855687	1,2-Dichloroethane	2017/02/09	95	70 - 130	92	70 - 130	<0.50	ug/L	NC	30
4855687	1,2-Dichloropropane	2017/02/09	96	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
4855687	1,3-Dichlorobenzene	2017/02/09	96	70 - 130	90	70 - 130	<0.50	ug/L	NC	30
4855687	1,4-Dichlorobenzene	2017/02/09	96	70 - 130	90	70 - 130	<0.50	ug/L	NC	30
4855687	Acetone (2-Propanone)	2017/02/09	94	60 - 140	90	60 - 140	<10	ug/L	NC	30
4855687	Benzene	2017/02/09	99	70 - 130	98	70 - 130	<0.20	ug/L	NC	30
4855687	Bromodichloromethane	2017/02/09	102	70 - 130	101	70 - 130	<0.50	ug/L	NC	30
4855687	Bromoform	2017/02/09	105	70 - 130	102	70 - 130	<1.0	ug/L	NC	30
4855687	Bromomethane	2017/02/09	106	60 - 140	106	60 - 140	<0.50	ug/L	NC	30
4855687	Carbon Tetrachloride	2017/02/09	109	70 - 130	111	70 - 130	<0.20	ug/L	NC	30
4855687	Chlorobenzene	2017/02/09	99	70 - 130	97	70 - 130	<0.20	ug/L	NC	30
4855687	Chloroform	2017/02/09	102	70 - 130	102	70 - 130	<0.20	ug/L	NC	30
4855687	cis-1,2-Dichloroethylene	2017/02/09	106	70 - 130	104	70 - 130	<0.50	ug/L	NC	30
4855687	cis-1,3-Dichloropropene	2017/02/09	89	70 - 130	84	70 - 130	<0.30	ug/L	NC	30
4855687	Dibromochloromethane	2017/02/09	108	70 - 130	106	70 - 130	<0.50	ug/L	NC	30
4855687	Dichlorodifluoromethane (FREON 12)	2017/02/09	92	60 - 140	97	60 - 140	<1.0	ug/L	NC	30
4855687	Ethylbenzene	2017/02/09	90	70 - 130	89	70 - 130	<0.20	ug/L	NC	30
4855687	Ethylene Dibromide	2017/02/09	99	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
4855687	F1 (C6-C10) - BTEX	2017/02/09					<25	ug/L	NC	30
4855687	F1 (C6-C10)	2017/02/09	99	60 - 140	97	60 - 140	<25	ug/L	NC	30
4855687	Hexane	2017/02/09	101	70 - 130	103	70 - 130	<1.0	ug/L	NC	30
4855687	Methyl Ethyl Ketone (2-Butanone)	2017/02/09	95	60 - 140	89	60 - 140	<10	ug/L	NC	30
4855687	Methyl Isobutyl Ketone	2017/02/09	90	70 - 130	84	70 - 130	<5.0	ug/L	NC	30
4855687	Methyl t-butyl ether (MTBE)	2017/02/09	91	70 - 130	89	70 - 130	<0.50	ug/L	NC	30
4855687	Methylene Chloride(Dichloromethane)	2017/02/09	110	70 - 130	108	70 - 130	<2.0	ug/L	NC	30
4855687	o-Xylene	2017/02/09	89	70 - 130	87	70 - 130	<0.20	ug/L	NC	30
4855687	p+m-Xylene	2017/02/09	87	70 - 130	85	70 - 130	<0.20	ug/L	NC	30
4855687	Styrene	2017/02/09	93	70 - 130	90	70 - 130	<0.50	ug/L	NC	30
4855687	Tetrachloroethylene	2017/02/09	108	70 - 130	109	70 - 130	<0.20	ug/L	NC	30
4855687	Toluene	2017/02/09	96	70 - 130	94	70 - 130	<0.20	ug/L	NC	30

Maxxam Job #: B725770
Report Date: 2017/02/13

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4855687	Total Xylenes	2017/02/09					<0.20	ug/L	NC	30
4855687	trans-1,2-Dichloroethylene	2017/02/09	102	70 - 130	101	70 - 130	<0.50	ug/L	NC	30
4855687	trans-1,3-Dichloropropene	2017/02/09	92	70 - 130	85	70 - 130	<0.40	ug/L	NC	30
4855687	Trichloroethylene	2017/02/09	105	70 - 130	105	70 - 130	<0.20	ug/L	NC	30
4855687	Trichlorofluoromethane (FREON 11)	2017/02/09	111	70 - 130	114	70 - 130	<0.50	ug/L	NC	30
4855687	Vinyl Chloride	2017/02/09	108	70 - 130	107	70 - 130	<0.20	ug/L	NC	30
4855967	Dissolved Antimony (Sb)	2017/02/09	111	80 - 120	103	80 - 120	<0.50	ug/L	NC	20
4855967	Dissolved Arsenic (As)	2017/02/09	103	80 - 120	99	80 - 120	<1.0	ug/L	NC	20
4855967	Dissolved Barium (Ba)	2017/02/09	104	80 - 120	98	80 - 120	<2.0	ug/L	0.61	20
4855967	Dissolved Beryllium (Be)	2017/02/09	107	80 - 120	101	80 - 120	<0.50	ug/L	NC	20
4855967	Dissolved Boron (B)	2017/02/09	105	80 - 120	101	80 - 120	<10	ug/L	0.45	20
4855967	Dissolved Cadmium (Cd)	2017/02/09	107	80 - 120	99	80 - 120	<0.10	ug/L	NC	20
4855967	Dissolved Chromium (Cr)	2017/02/09	103	80 - 120	98	80 - 120	<5.0	ug/L	NC	20
4855967	Dissolved Cobalt (Co)	2017/02/09	102	80 - 120	98	80 - 120	<0.50	ug/L	NC	20
4855967	Dissolved Copper (Cu)	2017/02/09	104	80 - 120	98	80 - 120	<1.0	ug/L	NC	20
4855967	Dissolved Lead (Pb)	2017/02/09	100	80 - 120	96	80 - 120	<0.50	ug/L	NC	20
4855967	Dissolved Molybdenum (Mo)	2017/02/09	110	80 - 120	101	80 - 120	<0.50	ug/L	NC	20
4855967	Dissolved Nickel (Ni)	2017/02/09	100	80 - 120	97	80 - 120	<1.0	ug/L	NC	20
4855967	Dissolved Selenium (Se)	2017/02/09	104	80 - 120	98	80 - 120	<2.0	ug/L	NC	20
4855967	Dissolved Silver (Ag)	2017/02/09	98	80 - 120	96	80 - 120	<0.10	ug/L	NC	20
4855967	Dissolved Sodium (Na)	2017/02/09	NC	80 - 120	99	80 - 120	<100	ug/L	2.3	20
4855967	Dissolved Thallium (Tl)	2017/02/09	100	80 - 120	95	80 - 120	<0.050	ug/L	NC	20
4855967	Dissolved Uranium (U)	2017/02/09	106	80 - 120	99	80 - 120	<0.10	ug/L	3.7	20
4855967	Dissolved Vanadium (V)	2017/02/09	105	80 - 120	98	80 - 120	<0.50	ug/L	NC	20
4855967	Dissolved Zinc (Zn)	2017/02/09	102	80 - 120	98	80 - 120	<5.0	ug/L	NC	20
4856408	Aroclor 1242	2017/02/09					<0.05	ug/L		
4856408	Aroclor 1248	2017/02/09					<0.05	ug/L		
4856408	Aroclor 1254	2017/02/09					<0.05	ug/L		
4856408	Aroclor 1260	2017/02/09	67	60 - 130	80	60 - 130	<0.05	ug/L		
4856408	Total PCB	2017/02/09	67	60 - 130	80	60 - 130	<0.05	ug/L	NC	40
4857670	F2 (C10-C16 Hydrocarbons)	2017/02/09	99	50 - 130	95	80 - 120	<100	ug/L	NC	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
4857670	F3 (C16-C34 Hydrocarbons)	2017/02/09	99	50 - 130	95	80 - 120	<200	ug/L	NC	50
4857670	F4 (C34-C50 Hydrocarbons)	2017/02/09	99	50 - 130	95	80 - 120	<200	ug/L	NC	50
4857745	Chromium (VI)	2017/02/09	96	80 - 120	95	80 - 120	<0.50	ug/L	NC	20
4857779	Benzene	2017/02/10	108	70 - 130	110	70 - 130	<0.20	ug/L	NC	40
4857779	Ethylbenzene	2017/02/10	113	70 - 130	109	70 - 130	<0.20	ug/L	NC	40
4857779	F1 (C6-C10) - BTEX	2017/02/10					<25	ug/L	NC	40
4857779	F1 (C6-C10)	2017/02/10	96	70 - 130	99	70 - 130	<25	ug/L	NC	40
4857779	o-Xylene	2017/02/10	120	70 - 130	114	70 - 130	<0.20	ug/L	NC	40
4857779	p+m-Xylene	2017/02/10	111	70 - 130	106	70 - 130	<0.40	ug/L	NC	40
4857779	Toluene	2017/02/10	111	70 - 130	104	70 - 130	<0.20	ug/L	NC	40
4857779	Total Xylenes	2017/02/10					<0.40	ug/L	NC	40
4857989	1-Methylnaphthalene	2017/02/09	83	50 - 130	86	50 - 130	<0.050	ug/L	NC	30
4857989	2-Methylnaphthalene	2017/02/09	88	50 - 130	90	50 - 130	<0.050	ug/L	NC	30
4857989	Acenaphthene	2017/02/09	97	50 - 130	101	50 - 130	<0.050	ug/L	NC	30
4857989	Acenaphthylene	2017/02/09	78	50 - 130	82	50 - 130	<0.050	ug/L	NC	30
4857989	Anthracene	2017/02/09	87	50 - 130	90	50 - 130	<0.050	ug/L	NC	30
4857989	Benzo(a)anthracene	2017/02/09	87	50 - 130	88	50 - 130	<0.050	ug/L	NC	30
4857989	Benzo(a)pyrene	2017/02/09	90	50 - 130	91	50 - 130	<0.010	ug/L	NC	30
4857989	Benzo(b/j)fluoranthene	2017/02/09	95	50 - 130	98	50 - 130	<0.050	ug/L	NC	30
4857989	Benzo(g,h,i)perylene	2017/02/09	74	50 - 130	72	50 - 130	<0.050	ug/L	NC	30
4857989	Benzo(k)fluoranthene	2017/02/09	94	50 - 130	95	50 - 130	<0.050	ug/L	NC	30
4857989	Chrysene	2017/02/09	98	50 - 130	98	50 - 130	<0.050	ug/L	NC	30
4857989	Dibenz(a,h)anthracene	2017/02/09	80	50 - 130	79	50 - 130	<0.050	ug/L	NC	30
4857989	Fluoranthene	2017/02/09	88	50 - 130	91	50 - 130	<0.050	ug/L	NC	30
4857989	Fluorene	2017/02/09	99	50 - 130	104	50 - 130	<0.050	ug/L	NC	30
4857989	Indeno(1,2,3-cd)pyrene	2017/02/09	76	50 - 130	69	50 - 130	<0.050	ug/L	NC	30
4857989	Naphthalene	2017/02/09	79	50 - 130	84	50 - 130	<0.050	ug/L	NC	30
4857989	Phenanthrene	2017/02/09	90	50 - 130	92	50 - 130	<0.030	ug/L	NC	30
4857989	Pyrene	2017/02/09	89	50 - 130	92	50 - 130	<0.050	ug/L	NC	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
4859059	Mercury (Hg)	2017/02/10	97	75 - 125	94	80 - 120	<0.1	ug/L	NC	20

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

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

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

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

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

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B725770
Report Date: 2017/02/13

Golder Associates Ltd
Client Project #: 1670949
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

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

Brad Newman, Scientific Specialist

Steve Roberts, Ottawa Lab Manager

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:	#14090 Golder Associates Ltd	Company Name:		Quotation #:	B63104	Maxxam Job #:	Bottle Order #:
Attention:	Central Accounting	Attention:	Joanne Woodhouse	P.O. #:			596564
Address:	1931 Robertson Rd Ottawa ON K2H 5B7	Address:		Project:	1670949	COC #:	Project Manager:
Tel:	(613) 592-9600 Fax: (613) 592-9601	Tel:	Fax:	Project Name:		C#596564-02-01	Madison Bingley
Email:	AP-CustomerService@golder.com	Email:	jwoodhouse@golder.com	Site #:			
				Sampled By:	Aaron Bradshaw		

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: ☒
(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	ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Metals	Hg & CrVI	PAH	PHC	VOC	PCB	* BTEX				# of Bottles	Comments
1		17-4	17/02/07	950	GW	yes	X	X	X	X	X	X					12	
2		17-5		1030	GW	yes	X	X	X	X	X	X					12	
3		17-23		1100	GW	yes	X	X		X	X						7	limited Sample
4		17-18		1255	GW				X	X			X				7	
5		17-21		1325	GW					X			X				5	
6		Equip. BLANK			/						X						3	
7		F BLANK			/	yes	X	X	X	X	X	X					9	limited Sample
8		Trip Blank	/	/	/						X						3	
9																		RECEIVED IN OTTAWA
10																		ON ICE

07-Feb-17 14:30
Madison Bingley
B725770
MVA OTT-001

* 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				
A Bradshaw Aaron Bradshaw	17/02/07	14:30	Ian Jamieson	2017/02/07	14:30	0	Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
								4,3,3 / 2,3,2	Present	✓	
									Intact	X	

* 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

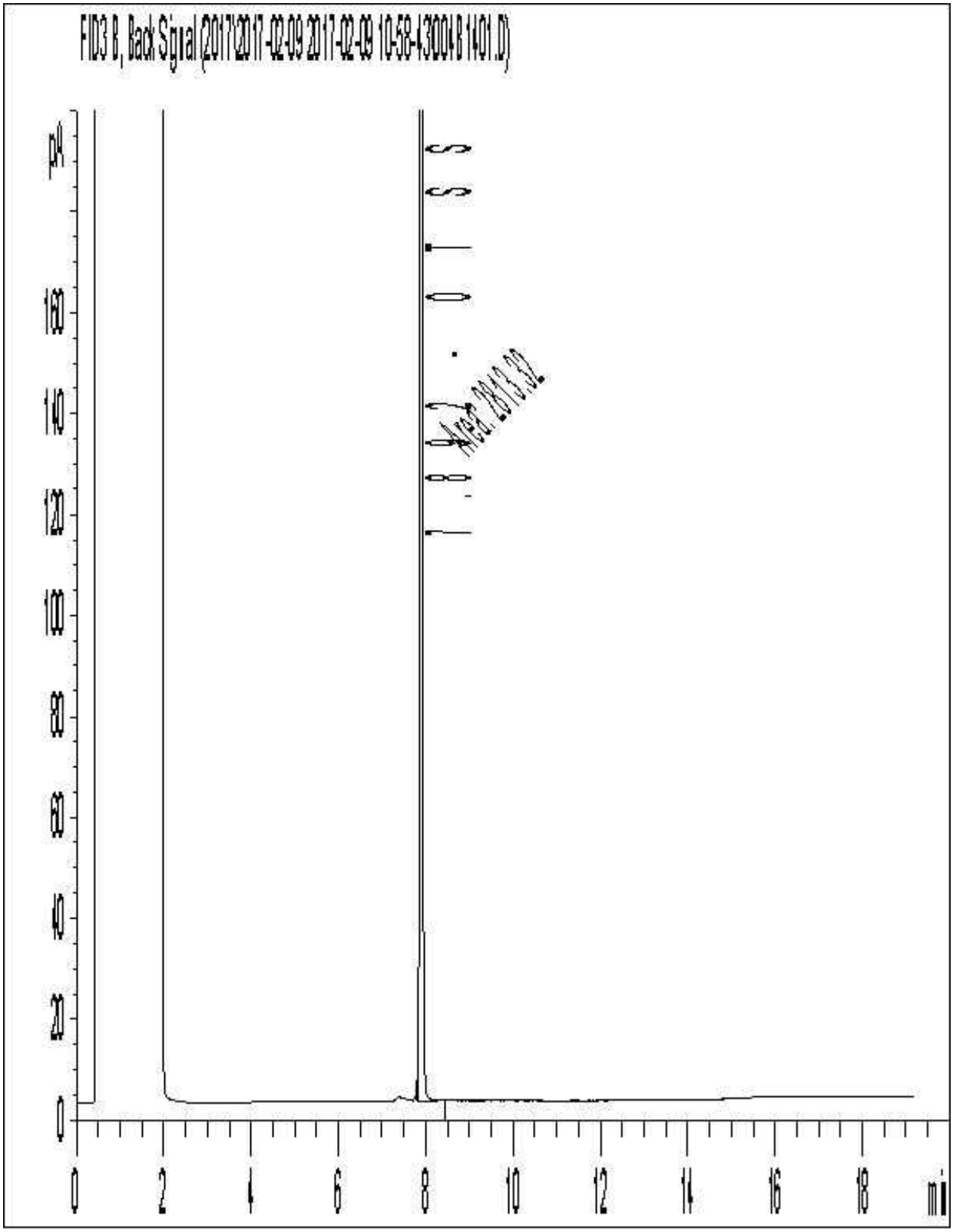
White: Maxxa Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B725770
Report Date: 2017/02/13
Maxxam Sample: DWL114

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-4

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

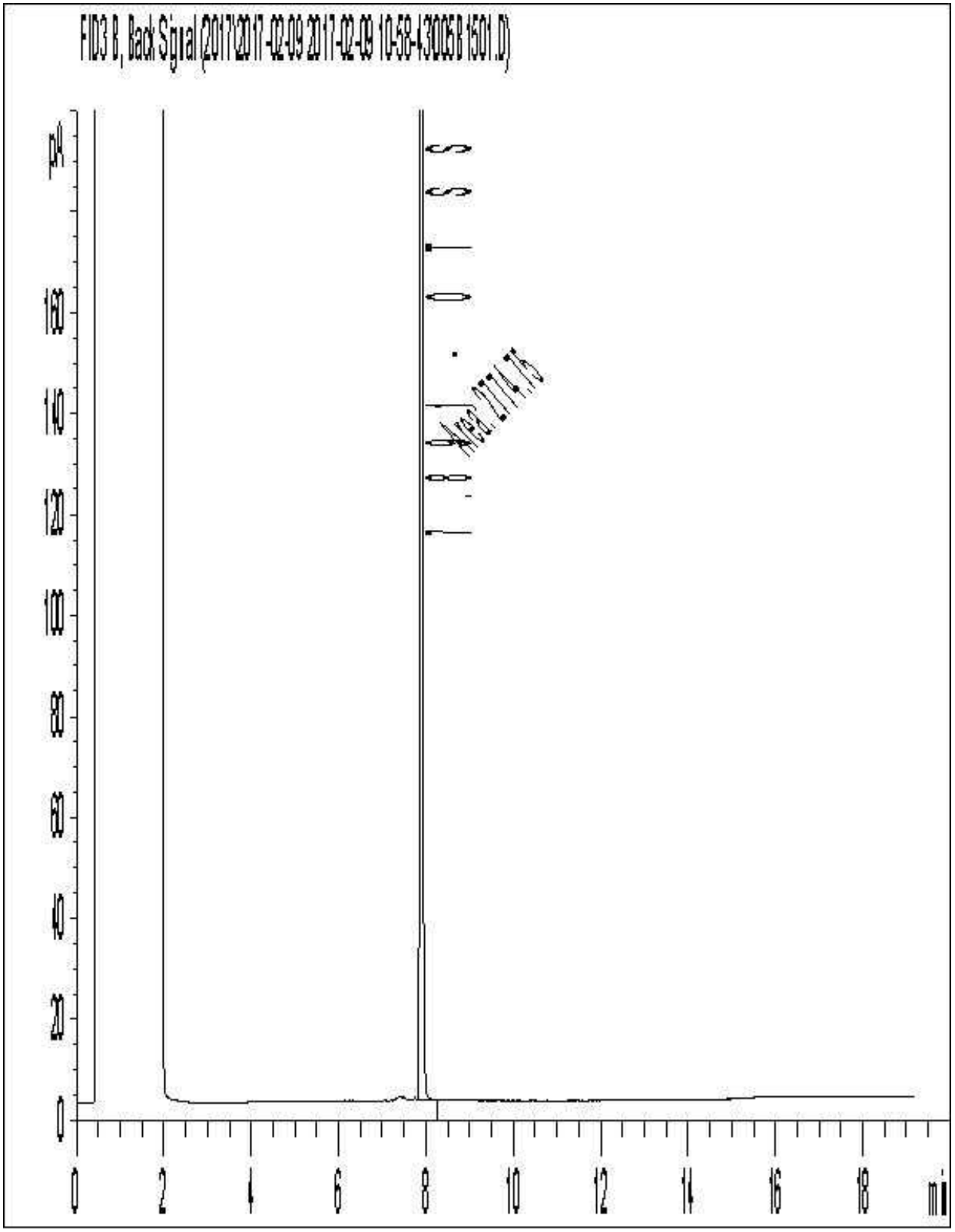


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B725770
Report Date: 2017/02/13
Maxxam Sample: DWL114 Lab-Dup

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-4

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

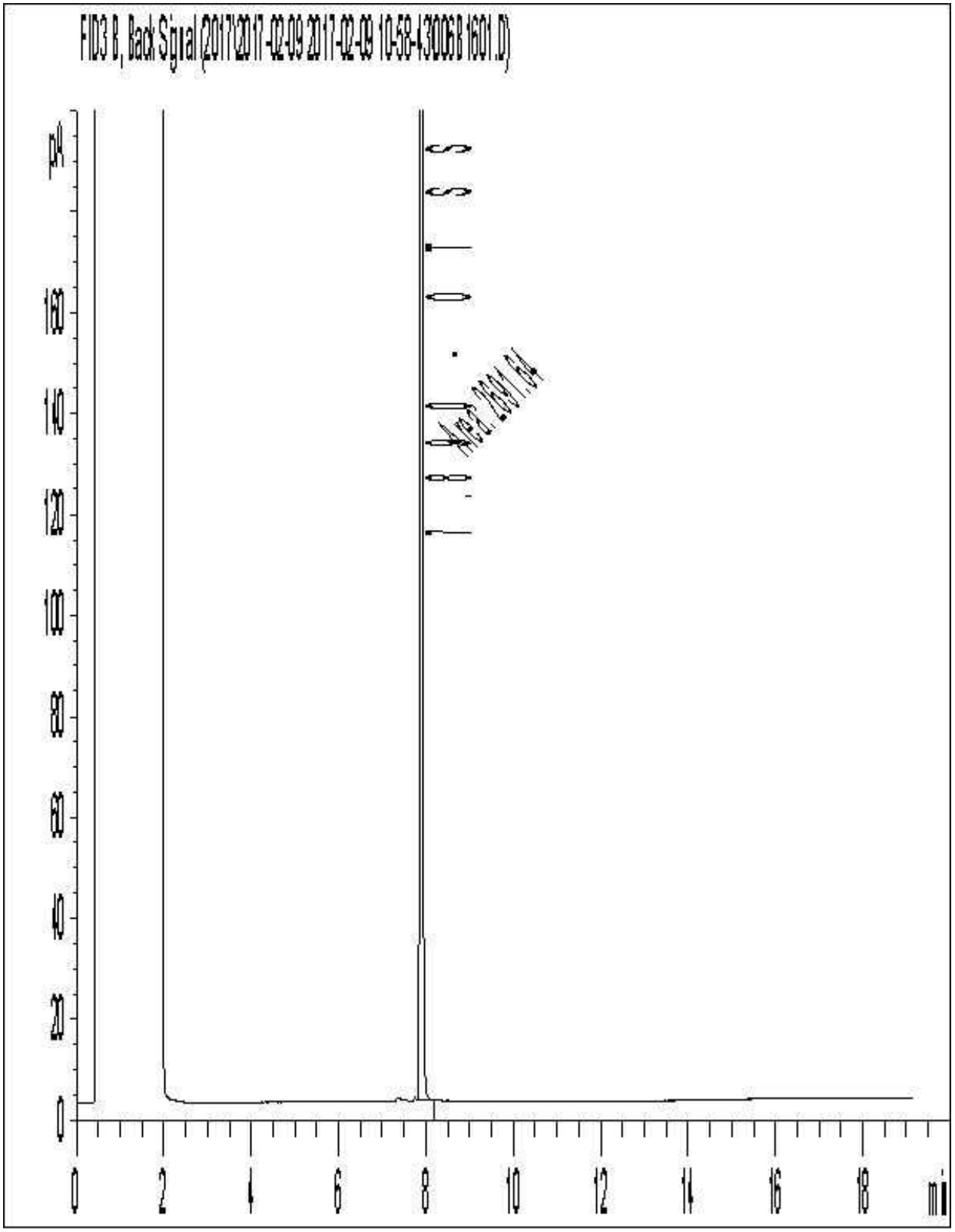


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B725770
Report Date: 2017/02/13
Maxxam Sample: DWL115

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-5

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

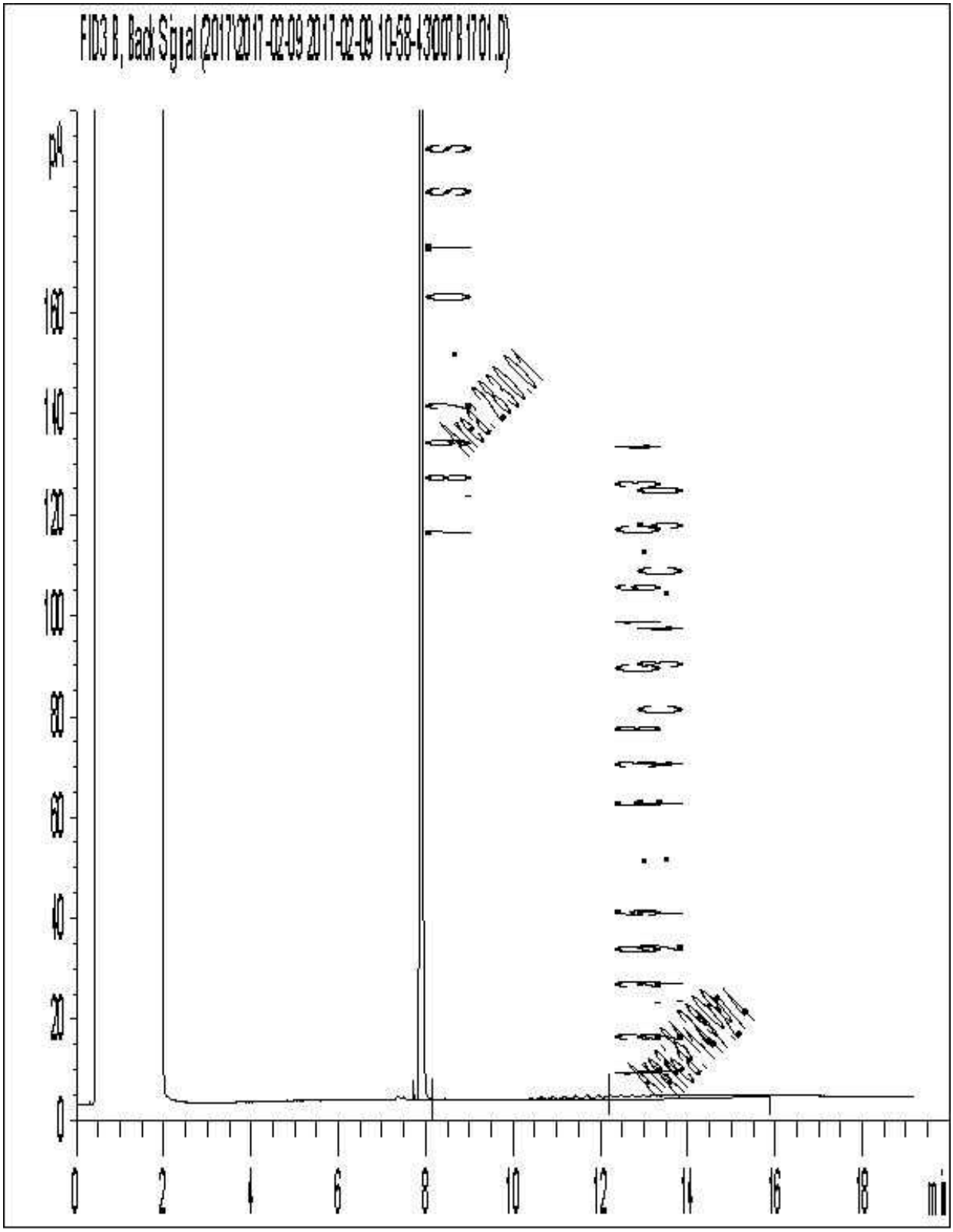


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B725770
Report Date: 2017/02/13
Maxxam Sample: DWL116

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-23

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

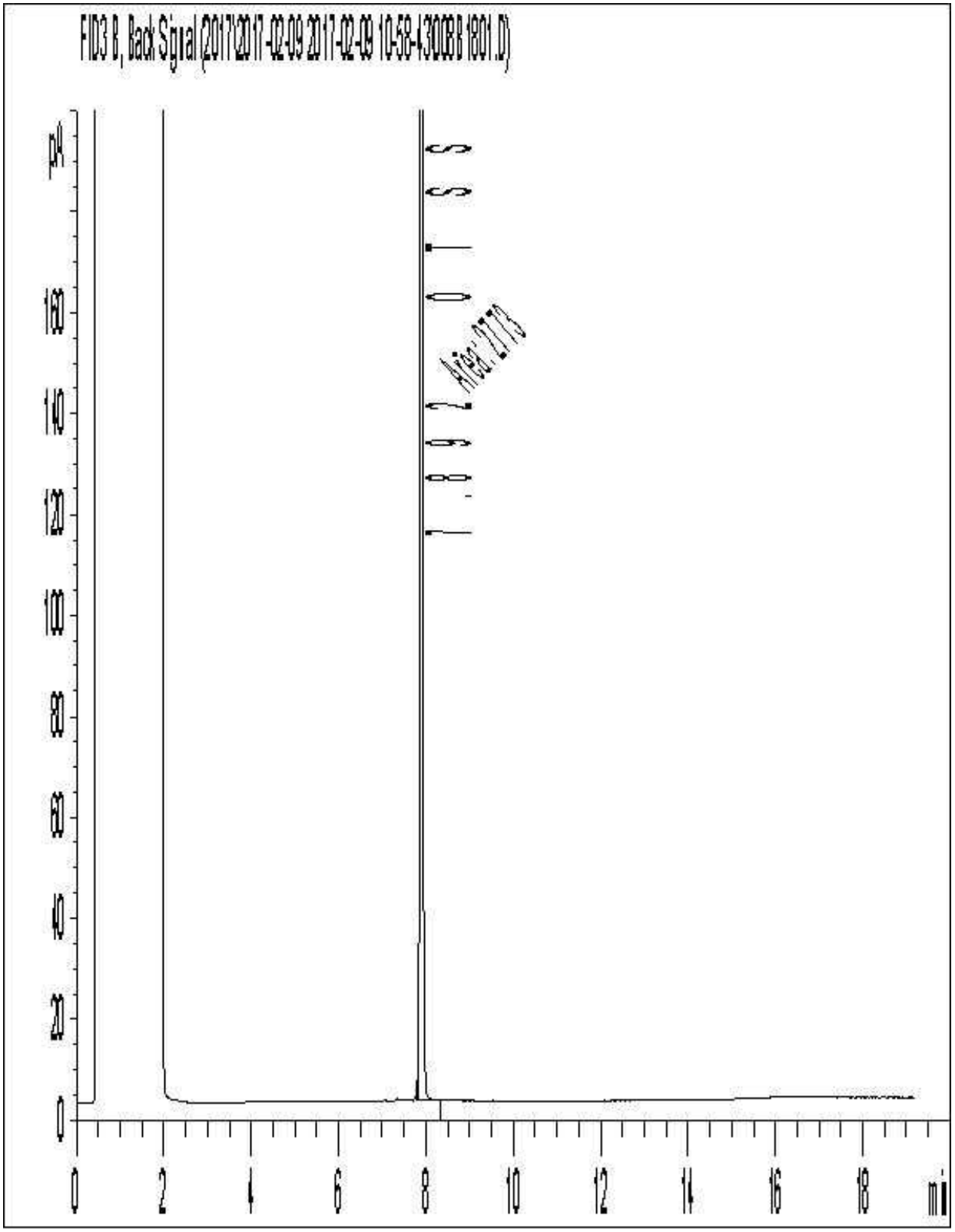


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B725770
Report Date: 2017/02/13
Maxxam Sample: DWL117

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-18

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

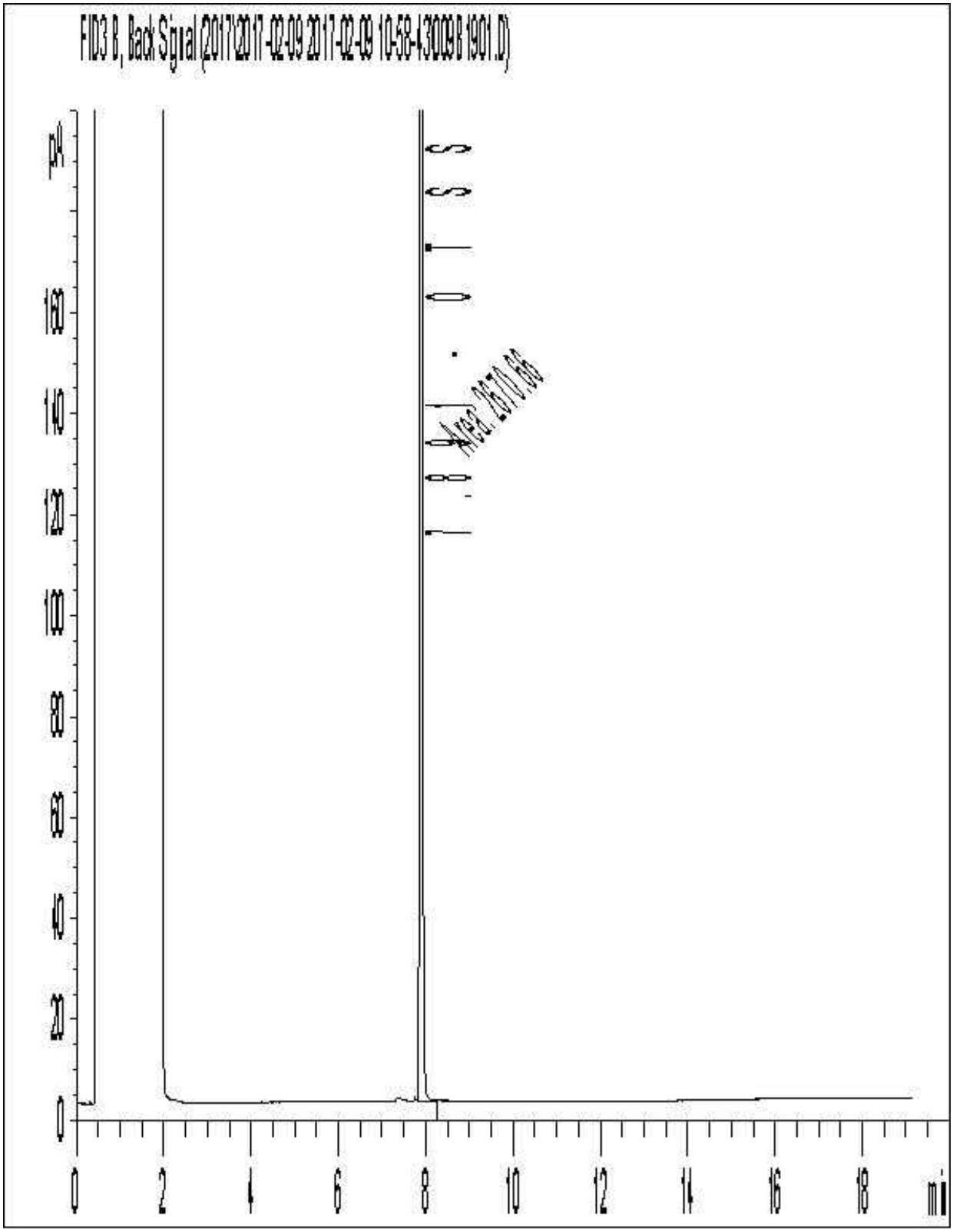


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B725770
Report Date: 2017/02/13
Maxxam Sample: DWL118

Golder Associates Ltd
Client Project #: 1670949
Client ID: 17-21

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

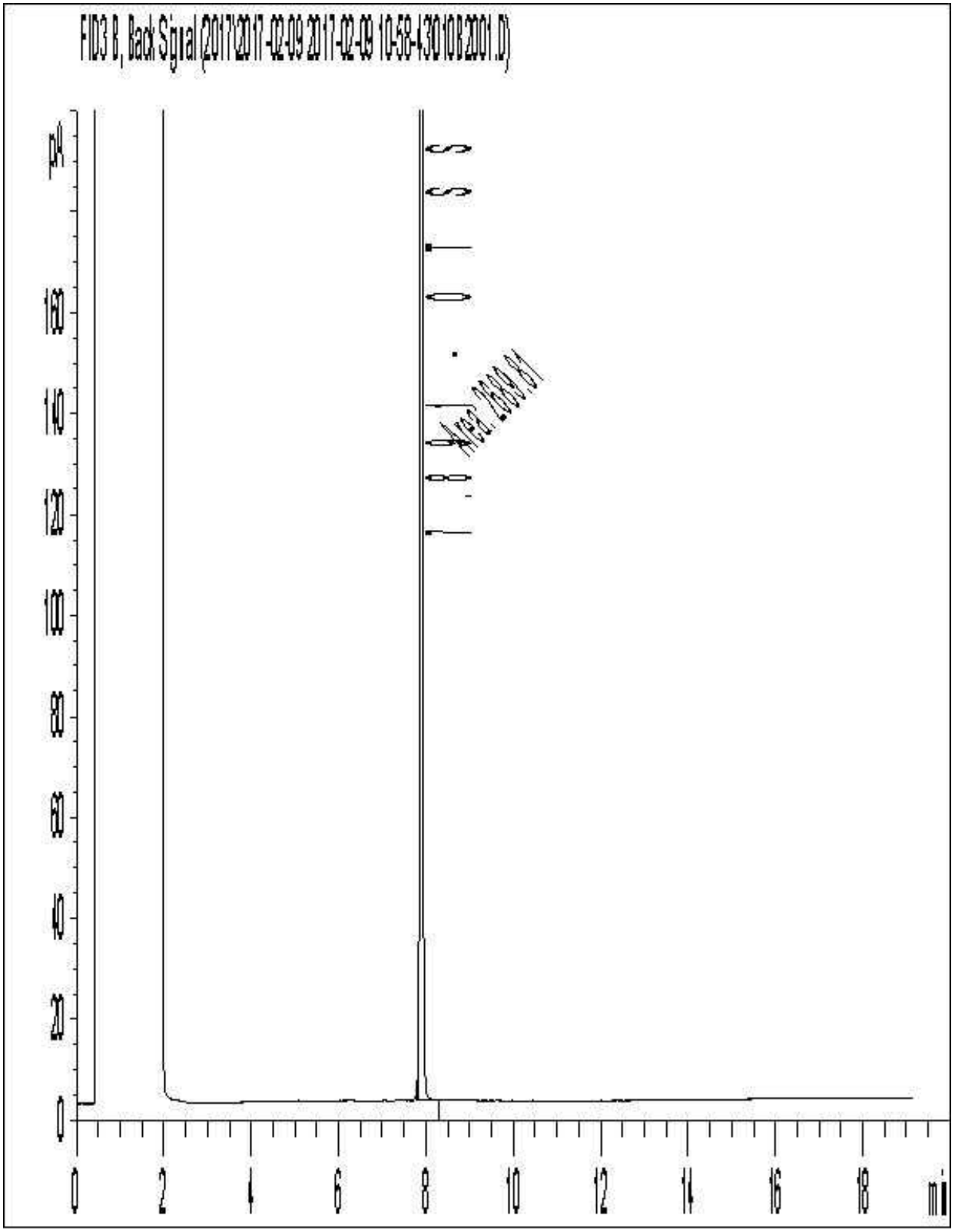


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B725770
Report Date: 2017/02/13
Maxxam Sample: DWL120

Golder Associates Ltd
Client Project #: 1670949
Client ID: F BLANK

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

As a global, employee-owned organisation with over 50 years of experience, Golder Associates is driven by our purpose to engineer earth's development while preserving earth's integrity. We deliver solutions that help our clients achieve their sustainable development goals by providing a wide range of independent consulting, design and construction services in our specialist areas of earth, environment and energy.

For more information, visit golder.com

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