Government of Nunavut

Supplemental Environmental Site Evaluation and Preliminary Remedial Action Plan

Type of Document
Final

Project Name
Char Lake Pump House, Resolute, NU

Project Number
OTT-00206333-A0

Prepared By: Robert Renaud, M.Sc., P.Geo.

Reviewed By: Mark McCalla, P.Geo. (ON)

exp Services Inc.
100-2650 Queensview Drive
Ottawa, ON K2B 7H6
Canada

Date Submitted
October 16, 2015

Government of Nunavut

Supplemental Environmental Site Evaluation and Preliminary Remedial Action Plan

Type of Document:
Final

Project Name:
Char Lake Pump House, Resolute, NU

Project Number:
OTT-00206333-A0

Prepared By:
exp
100-2650 Queensview Drive
Ottawa, ON K2B 8H6
Canada
T: 613 688-1899
F: 613 225-7337
www.exp.com

Robert Renaud, M.Sc., P.Geo.
Practice Lead – Northern Environmental Science

Mark McCalla, P.Geo (ON)
Senior Geoscientist

Date Submitted:
October 16, 2015

Legal Notification

This report was prepared by **exp** Services Inc. for the account of the Government of Nunavut (GN) – Department of Community & Government Services (CGS).

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. **Exp** Services Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this project

Executive Summary

Exp Services Inc. (**exp**) was retained by the Government of Nunavut (GN), Department of Community & Government Services (CGS) to conduct a supplemental environmental evaluation of Char Lake Pump House peninsula (site), in the Hamlet of Resolute, Nunavut. During the previous environmental evaluation of the site, the presence of petroleum hydrocarbon (PHC) contamination was identified using a limited program of test pits. The scope of that program was limited due to the weather at the time.

The objective of the supplemental environmental evaluation was to dig additional test pits to better delineate the vertical and lateral extent of the zone impacted by petroleum and the nature of the materials impacted. With a refined estimate of the volume, and of the distribution of the impacted soil (both depth and horizontal extent), a preliminary remedial action plan (RAP) has been developed. The primary objective of the preliminary RAP is to identify the tasks to be performed, and the technology to be used, in order to reduce the likelihood of potential human health and/or environmental risks associated with the petroleum impacted media.

Based on the results of the supplemental environmental evaluation conducted at the site, the following conclusions are presented, with recommendations presented in italics:

- The fieldwork for the supplemental environmental evaluation was carried out on August 25 and 26, 2015. A total of 18 test pits were excavated to depths ranging from 1.0 m to 1.8 m and were terminated on permafrost.
- Based on field observations and measurements, worst case soil samples from each test pit were submitted to a certified analytical laboratory for analyses of a range of parameters including, but not limited to, PHC fractions F1 to F4, benzene, toluene, ethylbenzene, and xylenes (BTEX), total metals, fraction of organic carbon (FOC), nitrogen, phosphorous, potassium, soil pH and moisture content. A sample of pore water (groundwater) was also collected from Test Pit 29 (TP29). The pore water sample was collected into laboratory-supplied sample bottles and submitted for the analyses of PHC (F1 to F4), BTEX, and total metals.
- Soil exceedances of the Canada-Wide Standards (CWS) criteria for PHC (F1 & F2) were measured at the location of the historical (original) tank pad (along the south side of the pump house building), and near the location of the former tank pad (along the site access road). However, no PHC or BTEX soil exceedances were measured in 15 of the 18 test pits, which signifies that the extent of the petroleum hydrocarbon contamination has been effectively delineated. No exceedances of the applicable criteria were measured in the pore water sample collected from TP29.
- Based on the results of the field investigations undertaken to date, the bulk of the petroleum contamination is located on the west side of the pump house peninsula. The approximate areal extent of the petroleum contamination is 500 m^2. The contaminated soil zone is generally between 1.2 m and 1.5 m thick, resulting in a volumetric range of 600 m^3 to 750 m^3 of petroleum contaminated soil.
- *During petroleum hydrocarbon contaminated soil source zone removal activities, material segregation should be undertaken to reduce the amount of potentially clean soil from being remediated and to reduce costs. Impacted soil materials should be transported to a pre-determined, permitted soil remediation facility. Non-impacted soil materials should be transported to an alternate site for potential reuse as fill elsewhere in the Hamlet.*

Table of Contents

Page

List of Appendices

List of Tables

Page

1 Introduction and Background

Exp Services Inc. (**exp**) was retained by the Government of Nunavut (GN), Department of Community & Government Services (CGS) to conduct a supplemental environmental evaluation of Char Lake Pump House peninsula, in the Hamlet Resolute, Nunavut (Figure 1 – Appendix A).

The objective of the supplemental environmental evaluation was to dig additional test pits to better delineate the vertical and lateral extent of the zone impacted by petroleum and the nature of the materials impacted. With a refined estimate of the volume, and of the distribution of the impacted soil (both depth and horizontal extent), a preliminary remedial action plan (RAP) will be developed. For the purposes of this report, the term "soil" is used to describe the granular materials that make up the Char Lake Pump House peninsula.

The primary objective of the preliminary RAP is to identify the tasks to be performed, and the technology to be used, in order to reduce the likelihood of potential human health and/or environmental risks associated with the petroleum impacted media.

1.1 Community & Site Description

The Hamlet of Resolute Bay (Hamlet) is made up of two development areas; the airport area and the town site. The water needs of the airport area are currently met using a truck service delivery system. In the late 1970s the majority of the permanent population of the community were relocated to the current town site area. The town site area was developed with piped water distribution and sewage collection networks, including the following elements:

- Utilidor (piped) water distribution and sewage collection networks;
- A water supply pump house at Char Lake;
- A water treatment plant located above the community on Signal Hill; and,
- A sewage treatment facility.

The current investigation, described herein, focusses on the man-made peninsula which houses the existing Char Lake Pump House.

1.2 Previous Investigations

In September, 2012, **exp** completed a comprehensive soil drilling and sampling program in Resolute as part of the new utilidor system design. During the drilling of a borehole adjacent to the west exterior wall of the Char Lake Pump Station, strong hydrocarbon odours were observed in the drill cuttings and groundwater present in the thawed fill layer. Given the proximity to the drinking water supply for the residents of Resolute, **exp** recommended further investigation to supply the GN with recommendations to address the contamination at the site, as such, a limited fuel oil spill investigation was undertaken at that time. Anecdotal evidence of petroleum hydrocarbon contamination of the drinking water was available from Resolute residents, who claim to be able to smell and taste slight petroleum impacts to their water during the spring freshet.

The primary objective of the limited fuel oil spill investigation was to determine the presence or absence of fuel oil in the fill material located in the man-made peninsula at Char Lake. The limited fuel oil spill investigation at the site consisted of digging three test pits using a rubber-tire backhoe supplied by a local

contractor, ATCO Structures & Logistics. Test pit depths ranged from 1.0 m (TP2) to 1.2 m (TP1 and TP3) with bucket refusal on frost. Worst-case, composite grab soil samples determined by visual and olfactory observations were obtained from each test pit and placed in air-tight containers and shipped to an accredited laboratory in Ottawa, Ontario for analysis. A visual inspection of the existing fuel storage tanks, above ground supply lines, and local ground surface was also completed at that time.

The possible sources of petroleum hydrocarbon contamination at the Char Lake Pump Station site include, but are not necessarily limited to, the original above ground fuel storage tank (formerly located to the south of the pump house building), the former fuel tank (previously located along the site access road), and the buried fuel line (running from the former tank to the pump house building).

Exp documented the findings of the limited fuel oil spill investigation in a letter report to the GN, dated October 2, 2012. In that letter, **exp** confirmed that the results of the limited fuel oil spill investigation indicated that there was petroleum impacted soil (and most likely groundwater/soil pore water) at the site. At that time, **exp** recommended that an environmental soil and groundwater sampling program be executed in the form of borehole drilling and/or test pitting to further delineate the extent of the petroleum contamination at the site. **Exp** submitted a proposal to undertake further delineation work at the site, to the GN, dated October 11, 2012. **Exp** mobilized an environmental field technician to Resolute on October 29, 2012 to undertake the investigation.

Between October 29 and November 5, 2012, a total of fifteen test pits were excavated at the site and assessed for signs of petroleum contamination. The logistical constraints posed by doing this work in winter conditions included frozen ground to surface, ice cover on Char Lake, cold temperatures, darkness, etc. Given these logistical constraints, the site coverage obtained through the test-pitting investigation was quite good. A total of twenty-three soil samples were submitted for laboratory analyses of PHC and BTEX. A soil pore water sample collected from one of the test pits, and a surface water sample collected from the clear well were also submitted laboratory analyses of PHC and BTEX.

Based on the analytical results, exceedances of the applicable Canadian Council of Ministers of the Environment (CCME) soil quality criteria were measured for petroleum hydrocarbon related parameters, and some BTEX parameters. The highest levels of petroleum impact were observed in test pits dug in close proximity to the pump house building. It was considered likely that significant petroleum impact existed beneath the pump house building. Petroleum impact was also observed in other locations across the peninsula, making it possible that the contamination may result from multiple sources.

Based on the analytical results, no exceedances of the any of the applicable water quality criteria were noted for the surface water sample collected from the clear well and the soil pore water sample collected from one of the test pits.

1.3 Scope of Work

The scope of work for the supplemental environmental evaluation was as follows:

- Conduct a soil sampling and soil pore water (groundwater) sampling program on the Char Lake Pump House peninsula (site).
- Compile the analytical results and compare them to the appropriate regulatory guideline values.
- Assess the distribution of contamination across the site.
- Develop an estimate of the volume, and of the distribution of the impacted soil (both depth and horizontal extent).

- Prepare a preliminary RAP – this report will identify the tasks to be performed, and the technology to be used, in order to reduce the likelihood of potential human health and/or environmental risks associated with the petroleum impacted media.

1.4 Site Assessment Criteria

In terms of evaluating the analytical results obtained, the GN defaults to criteria established by the CCME. The CCME Canadian Soil Quality Guidelines (CSQG) for the Protection of Environmental and Human Health (online version) was used to compare the BTEX analytical results. The CCME has also established the Canada-Wide Standards (CWS) for Petroleum Hydrocarbons (PHC) in Soil (updated January 2008), which is the federal remedial standard for petroleum impacted soils.

The CCME and CWS criteria are based on four land use categories: i) agricultural; ii) residential/parkland; iii) commercial; and, iv) industrial. As the soil was used to construct a peninsula to support the pumping station for the local potable water supply, the residential/parkland use category was utilized for the comparison.

However, given the proximity of the soil to a surface water body (<10 m), Tier 2 site-specific assessment criteria were calculated for the site using the CWS spreadsheet model (see Appendix C). The spreadsheet allows the user to calculate Tier 2 risk management objectives based on user-supplied site-specific parameters. Such site-specific parameters include potential exposure pathways, building foundation types, contaminant source depth, length, width, thickness, distance to surface water, etc.

In terms of evaluating the analytical results obtained for the soil pore water (groundwater) sample, the GN defaults to criteria established by the CCME. The CCME does not have soil pore water (or groundwater) quality criteria, so **exp** compared the soil pore water analytical results to the Federal Contaminated Sites Action Plan (FCSAP) document *Guidance Document on Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites* (November 2012) Tier 1 Residential Land Use with coarse grained soil. The Federal Interim Groundwater Quality Guidelines (FIGQG) "*were developed to assist federal custodians in assessing, remediating/risk managing federal contaminated sites funded under FCSAP*" and as such are not directly applicable to the subject site. However, in the absence of territorial/federal soil pore water/groundwater quality guidelines, **exp** decided to use these criteria to compare the soil pore water analytical results for illustration purposes. Also, the Ministry of the Environment and Climate Change (MOECC) of the Province of Ontario has comprehensive groundwater quality criteria. For illustration purposes, **exp** has also compared the soil pore water analytical results to the MOECC *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*, April 15, 2011, Table 8 Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Groundwater Condition for all types of property use, coarse-textured soils.

2 Methodology

2.1 Test Pitting and Soil Sampling

The fieldwork for the supplementary environmental evaluation was carried out on August 25 and 26, 2015. A total of 18 test pits were excavated to depths ranging from 1.0 m to 1.8 m and were terminated on permafrost (i.e., the base of the active layer at the time of the investigation). The approximate locations of the test pits are shown Figure 2 (Appendix A). The test pitting was undertaken using a tracked excavator, supplied by a local contractor, ATCO Structures & Logistics.

All soil samples were logged for visual and olfactory indication of contamination, and for their geological composition. In addition, field measurements for combustible gas readings were performed using a standard jar headspace analysis technique and a GasTechtor Hydrocarbon Surveyor.

Based on field observations and measurements, worst case soil samples from each test pit were submitted to a certified analytical laboratory for analyses of a range of parameters including, but not limited to, PHC fractions F1 to F4, BTEX, total metals, Fraction of Organic Carbon (FOC), Nitrogen (N), Phosphorous (P), Potassium (K), soil pH and moisture content. Several soil samples were also submitted to **exp**'s geotechnical laboratory for grain size analyses.

Soil samples were selected for laboratory analysis on the basis of their composition, odour, and/or vapour readings. The following soil samples were submitted for laboratory analysis:

Table 1: Summary of Soil Samples Submitted for Chemical Analyses

Test Pit & Soil Sample #	Depth (m)	Analysis	Rationale for Submission
TP19, S2	0.6 – 1.2	PHC (F1-F4), BTEX, metals, FOC, pH, N, moisture	Site coverage
TP20, S1	0.3 – 0.6	PHC (F1-F4), BTEX, metals	Site coverage
TP20, S2	0.6 – 1.1	FOC, pH, N, moisture	Site coverage
TP20, S3	1.1 – 1.3	PHC (F1-F4), BTEX, metals	Highest vapour reading
TP21, S2	0.5 – 0.9	FOC, pH, N, moisture	Site coverage
TP21, S4	1.05 – 1.25	PHC (F1-F4), BTEX, metals	Site coverage
TP22, S2	0.6 – 1.2	PHC (F1-F4), BTEX, metals	Site coverage
TP23, S2	0.3 – 0.7	PHC (F1-F4), BTEX, metals	Site coverage
TP23, S3	0.7 – 1.1	FOC, pH, N, moisture	Site coverage
TP24, S2	0.5 – 1.0	PHC (F1-F4), BTEX, metals	Site coverage
TP25, S2	0.3 – 0.6	PHC (F1-F4), BTEX, metals	Site coverage
TP25, S3	0.6 – 0.8	FOC, pH, N, moisture	Site coverage
TP25, S4	0.8 – 1.1	PHC (F1-F4), BTEX, metals	Highest vapour reading
TP26, S1	0 – 0.3	FOC, pH, N, moisture	Site coverage
TP26, S3	0.6 – 0.9	PHC (F1-F4), BTEX, metals	Site coverage
TP27, S3	0.7 – 1.1	PHC (F1-F4), BTEX, metals	Site coverage
TP28, S4	0.8 – 1.0	PHC (F1-F4), BTEX, metals	Site coverage
TP29, S1	0 – 0.5	PHC (F1-F4), BTEX, metals	Highest vapour reading
TP29, S3	1.1 – 1.8	PHC (F1-F4), BTEX, metals, FOC, pH, N, moisture	Site coverage
TP30, S3	0.7 – 1.3	PHC (F1-F4), BTEX, metals	Highest vapour reading
TP31, S3	0.5 – 1.05	PHC (F1-F4), BTEX, metals	Site coverage
TP32, S2	0.6 – 1.2	PHC (F1-F4), BTEX, metals	Site coverage
TP33, S3	0.6 – 0.9	PHC (F1-F4), BTEX, metals, FOC, pH, N, moisture	Site coverage
TP34, S3	0.6 – 0.9	PHC (F1-F4), BTEX, metals	Site coverage
TP35, S2	0.4 – 0.8	PHC (F1-F4), BTEX, metals	Site coverage
TP36, S3	0.6 – 0.9	PHC (F1-F4), BTEX, metals, FOC, pH, N, moisture	Site coverage

2.2 Pore Water (Groundwater) Sampling

A sample of pore water (groundwater) was collected from Test Pit 29 (TP29). This is the only test pit that experienced water infiltration during the supplementary environmental evaluation undertaken in August, 2015. The pore water sample was collected into laboratory-supplied sample bottles and submitted for the analyses of PHC (F1-F4), BTEX, and total metals.

3 Findings

3.1 Soil Conditions

The overburden fill material located at the site consisted primarily of sand and gravel with trace silt. The average depth of the test pits was 1.2 m, underlain by similar, frozen fill material. The test pit logs, along with grain size analysis curves from selected representative soil samples are presented in Appendix B.

The analytical test results of the soil samples submitted from each test pit are presented in Table 1 and Table 2 (Appendix C). Based on the analytical results from the current investigation, exceedances of the Tier 2 CWS criteria for PHC Fraction 1 (F1) and Fraction 2 (F2) were measured in the samples collected from 1.1 m to 1.3 m in TP20, and 0.8 m to 1.1 m from TP25. Also, a minor exceedance of the Tier 2 CWS criterion for PHC F2 was measured in the sample collected from 0.7 m to 1.3 m in TP30. Exceedances of the CCME CSQG criterion for barium were measured in samples collected from 0.6 m to 1.2 m in TP19, 1.05 m to 1.25 m in TP21, 0.6 m to 0.9 m in TP26, 0.6 m to 1.2 m in TP32, and 0.9 m to 1.2 m in TP36.

Four soil samples were submitted to **exp**'s Geotechnical Laboratory for grain size analyses. Table 2 below summarizes the results of the grain size analyses.

Table 2: Summary of Soil Samples Submitted for Grain Size Analyses

Test Pit & Soil Sample #	Depth (m)	Sample Description
TP20, S1	0.3 – 0.6	Silty sandy gravel
TP25, S3	0.6 – 0.8	Silty sandy gravel
TP29, S2	0.5 – 1.1	Gravel, trace sand
TP32, S2	0.6 – 1.2	Gravel, trace sand

3.2 Pore Water (Groundwater) Conditions

The analytical test results of the pore water sample are presented in Table 3 (Appendix C). Based on the analytical results, exceedances of the FIGQG groundwater quality criteria were measured for the following metals parameters: cadmium, iron, titanium, and zinc. No other exceedances of either the FIGQG or MOECC groundwater criteria were measured. These exceedances of the FIGQG groundwater quality criteria are not considered significant as they are not the contaminants of concern on the site (PHC & BTEX parameters), and they do not exceed the MOECC Table 8 criteria.

4 Quality Assurance Program

Quality assurance measures taken in the field include instrument calibration, the use of decontamination procedures, the use of dedicated equipment, proper sample storage, and the use of Chain of Custody documentation.

The subcontract laboratory used during this investigation, Maxxam Analytics Inc., is accredited by the Standards Council of Canada/Canadian Association of Environmental Analytical Laboratories in accordance with ISO/IEC 17025:1999 – "General *Requirements for the Competence of Testing and Calibration Laboratories*" for the analysis of all parameters for all samples in the scope of work for which soil quality criteria have been established by the CCME.

The laboratory quality assurance program included the analysis of laboratory duplicate (replicate) samples, method blanks, spiked blanks, spiked samples and samples of reference materials in accordance with the Analytical Protocol. These analytical results comprise portions of the Certificates of Analysis in Appendix D.

5 Extent of Soil Contamination

5.1 Previous Investigations

Previous delineation efforts (undertaken in October and November, 2012), for the contaminants of concern (i.e., PHC (F1 - F4) and BTEX) in soil, and soil pore water, were somewhat limited by the logistical constraints posed by doing this work in winter conditions (including frozen ground to surface, cold temperatures, darkness, etc.). Despite those difficult conditions, fifteen test pits were dug across the site. The test pits ranged in depth from 1.2 m to 1.8 m. Samples were submitted for laboratory analyses from depths ranging from near surface (i.e., 0 m to 0.3 m depth) to test pit bottom depths (i.e., 1.2 m to 1.5 m depth).

The highest levels of petroleum contamination were observed in TP14 and TP17 (and TP1 during the initial investigation), which are in close proximity to pump house building (Figure 2 – Appendix A). As such, it is likely that significant petroleum contamination exists beneath the pump house building due to the presence of the thaw bulb beneath the building. Measurable amounts of petroleum contamination were also observed in test pits to the south and southeast of the pump house building (i.e., TP8, TP10, TP11, TP12, and TP15), as well as in TP3, located to the north of the building.

Given the multiple locations that petroleum contamination was observed, it is possible that the contamination may result from multiple sources, including the original fuel tank location (formerly located to the south of the pump house building), the former fuel tank (located along the site access road), and the buried fuel line (running from the former tank to the pump house building).

5.2 Current Investigation

As described above, the fieldwork for this supplementary environmental evaluation was carried out in August 2015. A total of 18 test pits were excavated, to depths ranging from 1.0 m to 1.8 m, and were terminated on permafrost. The approximate locations of the test pits are shown Figure 2 (Appendix A).

Exceedances of the CWS criteria for PHC (F1 & F2) were again measured at the location of the historical (original) tank pad (along the south side of the pump house building), and near the location of the former tank pad (along the site access road). However, no PHC or BTEX exceedances were measured in 15 of the 18 test pits, which signifies that the extent of the petroleum hydrocarbon contamination has been effectively delineated.

The minor exceedance of the Tier 2 CWS criterion for PHC F2, measured in the sample collected from 0.7 m to 1.3 m in TP30, is not considered to be significant. The PHC F2 criterion generated using the CWS spreadsheet model is 23 µg/g, while the Tier 1 (generic) criterion is 150 µg/g. As previously stated, the reason why the generic Tier 1 PHC criteria were not used in this report is because of the site's proximity to a surface water body (<10 m). However, strictly speaking, TP30 is greater than 10 m from Char Lake, so the Tier 2 criterion is considered overly conservative.

With respect to the exceedances of the CCME CSQG criterion for barium, **exp** postulates that the measured barium in the soil materials that make up the pump house peninsula is naturally-occurring, and not as a result of anthropogenic activities. According to the CCME CSQG, barium is ubiquitous in soils with concentrations ranging from 15 to 3000 µg/g, and that barium occurs naturally in soils with high levels associated with limestone, feldspar and shale deposits. The bedrock geology of southern portion of Cornwallis Island (in the vicinity of the Hamlet of Resolute) consists of limestone and dolostone, with

minor amounts of shale. As such, there appears to be sufficient evidence to dismiss the elevated barium concentrations measured as naturally-occurring.

5.3 Soil Volume Estimate

Based on the results of the field investigations undertaken to date, the bulk of the petroleum hydrocarbon contamination is located on the west side of the pump house peninsula. Using the half-way to clean hole approach, the approximate areal extent of the petroleum hydrocarbon contamination is 500 m^2 (Figure 3 – Appendix A). The contaminated soil zone is generally between 1.2 m and 1.5 m thick, resulting in range of 600 m^3 to 750 m^3 of petroleum contaminated soil. However, it should be noted that it is assumed that the zone of petroleum contamination extends beneath the footprint of the pump house building. Due to the thaw bulb present beneath the building, it is possible that the contamination extends below a depth of 1.5 m. While this may result in the need to excavate to a deeper depth during future source removal activities, the additional volume of contaminated soil is not anticipated to change the total volume estimates provided above, since the volume range of 600 m^3 to 750 m^3 is considered conservative (i.e., erring on the high side).

6 Preliminary Remedial Action Plan

6.1 Objective

The primary objective of the preliminary remedial action plan is to identify the tasks to be performed, and the technology to be used, in order to reduce the likelihood of potential human health and/or environmental risks associated with the impacted media resulting from the subsurface contamination at the site. This preliminary RAP does not include estimated remediation costs, but the RAP can be revised at a later date when the site decommissioning plans are known in greater detail.

In the following sections, this RAP makes recommendations with respect to the source removal procedure to be undertaken to reduce the amount of potentially clean soil from being remediated and to reduce costs. For example, during source removal activities, material segregation should be undertaken. Impacted soil materials should be transported to a pre-determined, permitted soil remediation facility. Non-impacted soil materials should be transported to an alternate site for potential reuse as fill elsewhere in the Hamlet. These recommendations are further developed below.

6.2 Source Removal

The principal remedial strategy for the site is to remove the bulk of the petroleum contaminated soil materials from the peninsula. By eliminating the source zone soils, the potential for local groundwater and surface water contamination is further reduced and/or eliminated. Since Char Lake is the source of potable drinking water for the Hamlet of Resolute, the removal of the petroleum contaminated soil materials from the site is intended to reduce the likelihood of potential human health risks, associated with the consumption of water from Char Lake.

The removal of the petroleum contaminated soil materials from the existing pump house peninsula cannot take place until the construction and commissioning of a new pump house facility is complete, and the existing pump house is decommissioned and removed. Since the final plan for the decommissioning of the wet well and intake pipe of the existing facility is not known at this time, the source removal methodology provided below focusses only on the removal of the soil materials, however the contractor should be prepared to treat petroleum hydrocarbon contaminated groundwater from the excavations.

1. Using the approximate extent of the zone of petroleum contaminated soil materials (provided on Figure 3 – Appendix A), along with on-site field screening, the top 1.5 m of granular materials should be removed from the existing pump house peninsula.
2. Materials originating from within the footprint of PHC-impacted soil (see Figure 3 – Appendix A) should be segregated for disposal at the approved contaminated soil remediation facility (land farm). Materials originating outside of the footprint described above should be stockpiled for re-use, where needed, as fill at other sites in the Hamlet.
3. The field screening methodology should include random combustible vapour checks of excavated granular materials (in excavator buckets) by an environmental technician or other suitably-trained personnel. Combustible vapour measurements should be made with a calibrated GasTechtor Hydrocarbon Surveyor or RKI Eagle (or similar) field instrument.
4. If the contaminated soil excavated from the pump house peninsula is not immediately transported to the soil remediation facility as the trucks are filled, then it should be stockpiled in a convenient location, away from Char Lake, on an impermeable liner (tarpaulins). The stockpile should be covered with an impermeable cover (tarpaulins) at the end of each day. Care should be taken to

avoid dust generation and wind-blown distribution of the contaminated soil. The contaminated soil materials should be transported to the soil remediation facility as soon as possible.

5. The non-impacted soil materials should be stockpiled in a convenient location, away from Char Lake, with care taken to avoid excessive dust generation.
6. The remediation contractor should have a portable water treatment system consisting of, as a minimum, particulate filtration and granular activated carbon vessels of suitable size, in place at the time of the site remedial activities. The purpose of the water treatment system is to treat potentially contaminated (with PHC) groundwater that enters the site excavations, thereby preventing this groundwater from adversely impacting Char Lake.

7 Conclusions and Recommendations

Based on the results of the supplemental environmental evaluation conducted at the site, the following conclusions are presented, with recommendations presented in italics:

- The fieldwork for the supplemental environmental evaluation was carried out on August 25 and 26, 2015. A total of 18 test pits were excavated to depths ranging from 1.0 m to 1.8 m and were terminated on permafrost.
- Based on field observations and measurements, worst case soil samples from each test pit were submitted to a certified analytical laboratory for analyses of a range of parameters including, but not limited to, PHC fractions F1 to F4, BTEX, total metals, FOC, nitrogen, phosphorous, potassium, soil pH and moisture content. A sample of pore water (groundwater) was also collected from Test Pit 29 (TP29). The pore water sample was collected into laboratory-supplied sample bottles and submitted for the analyses of PHC (F1 to F4), BTEX, and total metals.
- Soil exceedances of the CWS criteria for PHC (F1 & F2) were measured at the location of the historical (original) tank pad (along the south side of the pump house building), and near the location of the former tank pad (along the site access road). However, no PHC or BTEX soil exceedances were measured in 15 of the 18 test pits, which signifies that the extent of the petroleum hydrocarbon contamination has been effectively delineated. No exceedances of the applicable criteria were measured in the pore water sample collected from TP29.
- Based on the results of the field investigations undertaken to date, the bulk of the petroleum contamination is located on the west side of the pump house peninsula. The approximate areal extent of the petroleum contamination is 500 m^2. The contaminated soil zone is generally between 1.2 m and 1.5 m thick, resulting in a volumetric range of 600 m^3 to 750 m^3 of petroleum contaminated soil.
- *During petroleum hydrocarbon contaminated soil source zone removal activities, material segregation should be undertaken to reduce the amount of potentially clean soil from being remediated and to reduce costs. Impacted soil materials should be transported to a pre-determined, permitted soil remediation facility. Non-impacted soil materials should be transported to an alternate site for potential reuse as fill elsewhere in the Hamlet.*

8 References

- Canadian Council of Ministers of the Environment (January 2008): *Canada-wide Standards for Hydrocarbons in Soil*
- Canadian Council of Ministers of the Environment: *Canadian Soil Quality Guidelines for the Protection of the Environmental and Human Health*, Online Version
- **Exp** Services Inc. (November 30, 2012): *Char Lake Pump House Petroleum Hydrocarbon Delineation, Resolute, Nunavut*, **Exp** Report No. OTT-00206333-A0.
- Federal Contaminated Sites Action Plan (November 2012): *Guidance Document on Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites*
- Ontario Ministry of Environment and Climate Change (April 15, 2011): *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*

9 General Limitations

The information presented in this report is based on a limited investigation designed to provide information to support an assessment of the current environmental conditions within the subject property. The conclusions and recommendations presented in this report reflect site conditions existing at the time of the investigation.

More specific information with respect to the conditions between samples, or the lateral and vertical extent of materials may become apparent during excavation operations. The interpretation of the borehole information must, therefore, be validated during any such excavation operations. Consequently, during the future development of the property, conditions not observed during this investigation may become apparent. Should this occur, **exp** Services Inc. should be contacted to assess the situation, and the need for additional testing and reporting. **Exp** has qualified personnel to provide assistance in regards to any future geotechnical and environmental issues related to this property.

The environmental investigation was carried out to address the intent of applicable provincial/territorial Regulations, Guidelines, Policies, Standards, Protocols and Objectives administered by the Ministry of Environment. It should also be noted that current environmental Regulations, Guidelines, Policies, Standards, Protocols and Objectives are subject to change, and such changes, when put into effect, could alter the conclusions and recommendations noted throughout this report. Achieving the study objectives stated in this report has required us to arrive at conclusions based upon the best information presently known to us. No investigative method can completely eliminate the possibility of obtaining partially imprecise or incomplete information; it can only reduce the possibility to an acceptable level. Professional judgment was exercised in gathering and analyzing the information obtained and in the formulation of the conclusions. Like all professional persons rendering advice we do not act as absolute insurers of the conclusions we reach, but we commit ourselves to care and competence in reaching those conclusions.

Our undertaking at **exp**, therefore, is to perform our work within limits prescribed by our clients, with the usual thoroughness and competence of the engineering profession. It is intended that the outcome of this investigation assist in reducing the client's risk associated with environmental impairment. Our work should not be considered 'risk mitigation'. No other warranty or representation, either expressed or implied, is included or intended in this report.

This report was prepared for the exclusive use of Government of Nunavut, Department of Community & Government Services and may not be reproduced in whole or in part, without the prior written consent of **exp**, or used or relied upon in whole or in part by other parties for any purposes whatsoever. Any use which a third party makes of this report, or any part thereof, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. **Exp** Services Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

We trust this report is satisfactory for your purposes. Should you have any questions, please do not hesitate to contact this office.

Appendix A – Figures & Photographs

0 200m 400m 800m

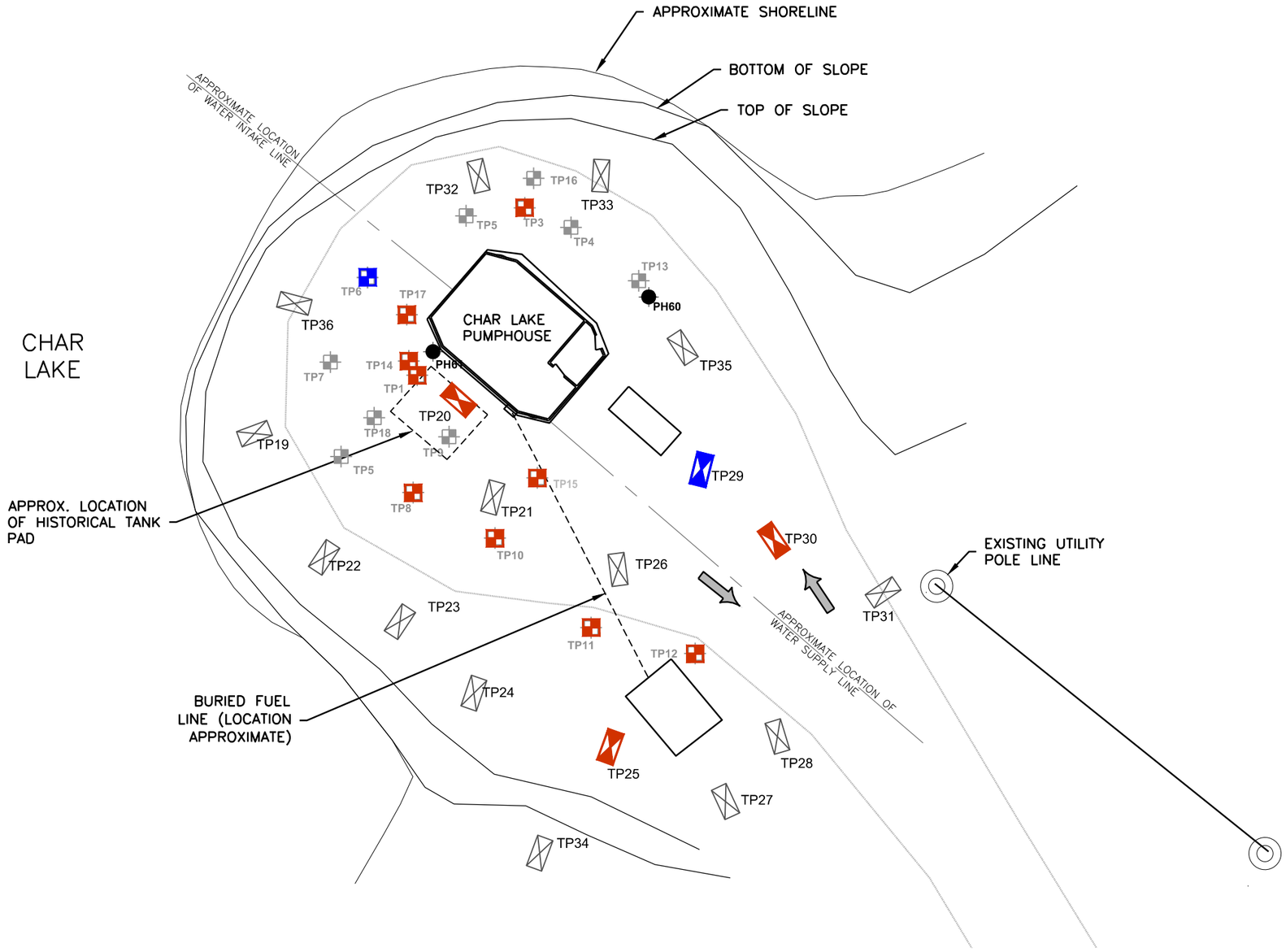
HORIZONTAL 1:20,000

exp Services Inc.
t: +1.613.688.1899 | f: +1.613.225.7337
2650 Queensview Drive, Suite 100
Ottawa, ON K2B 8H6
Canada
www.exp.com

• BUILDINGS • EARTH & ENVIRONMENT • ENERGY •
• INDUSTRIAL • INFRASTRUCTURE • SUSTAINABILITY •

scale 1:20,000	CLIENT: GOVERNMENT OF NUNAVUT	project no. OTT-00206333-A0
date OCT 2015	TITLE: SITE LOCATION PLAN CHAR LAKE SITE	FIG 1
drawn by M.N.		

Filename: r:\200000\206000\206333-a0 char lake pump house\2015 review\206333 char lake - site loc.dwg
Last Saved: 10/14/2015 3:15:37 PM
Last Plotted:10/14/2015 3:17:21 PM Plotted by: revellj Pen Table:: exp-64.ctb



LEGEND

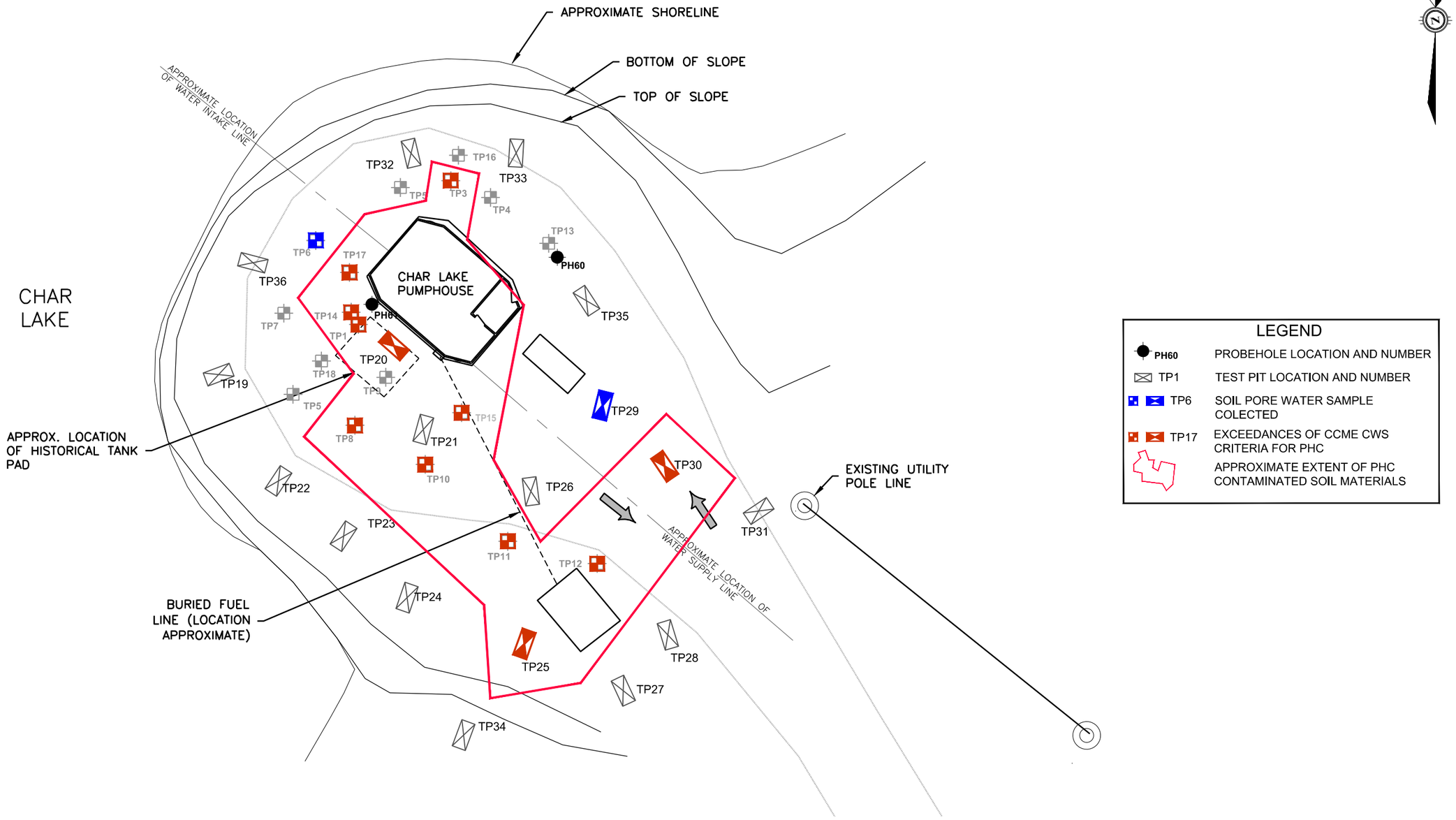
PH60	PROBEHOLE LOCATION AND NUMBER
TP1	TEST PIT LOCATION AND NUMBER
TP6	SOIL PORE WATER SAMPLE COLECTED
TP17	EXCEEDANCES OF CCME CWS CRITERIA FOR PHC

exp Services Inc.
t: +1.613.688.1899 | f: +1.613.225.7337
2650 Queensview Drive, Suite 100
Ottawa, ON K2B 8H6
Canada
www.exp.com

• BUILDINGS • EARTH & ENVIRONMENT • ENERGY •
• INDUSTRIAL • INFRASTRUCTURE • SUSTAINABILITY •

scale: 1:300	CLIENT: GOVERNMENT OF NUNAVUT	project no.: OTT-00206333-A0
date: 19/08/2015	TITLE: CHAR LAKE PUMPHOUSE	FIG 2
drawn by: J.REVELL		

Filename: r:\200000\206000\206333-a0 char lake pump house\2015 review\206333 topo survey 2015 samples.dwg
Last Saved: 10/1/2015 2:51:04 PM
Last Plotted:10/14/2015 3:33:07 PM Plotted by: revellj Pen Table:: trow standard, july 01, 2004.ctb



LEGEND

PH60	PROBEHOLE LOCATION AND NUMBER
TP1	TEST PIT LOCATION AND NUMBER
TP6	SOIL PORE WATER SAMPLE COLECTED
TP17	EXCEEDANCES OF CCME CWS CRITERIA FOR PHC
	APPROXIMATE EXTENT OF PHC CONTAMINATED SOIL MATERIALS

exp Services Inc.
t: +1.613.688.1899 | f: +1.613.225.7337
2650 Queensview Drive, Suite 100
Ottawa, ON K2B 8H6
Canada
www.exp.com

• BUILDINGS • EARTH & ENVIRONMENT • ENERGY •
• INDUSTRIAL • INFRASTRUCTURE • SUSTAINABILITY •

scale: 1:300	CLIENT: GOVERNMENT OF NUNAVUT	project no.: OTT-00206333-A0
date: 15/10/2015	TITLE: CHAR LAKE PUMPHOUSE - ZONE OF PHC IMPACTS	FIG 3
drawn by: J.REVELL		

Filename: r:\200000\206000\206333-a0 char lake pump house\2015 review\206333 topo survey 2015 samples.dwg
Last Saved: 10/15/2015 12:05:03 PM
Last Plotted:10/15/2015 12:18:53 PMPlotted by: revellj Pen Table:: trow standard, july 01, 2004.ctb

Photograph No. 1

Char Lake Pump House peninsula prior to the test pitting program

Photograph No. 2

Test pit number 19

Photograph No. 3

Test pit numbers 21, 20, 22, 19, and 36

Photograph No. 4

Test pit number 29

Photograph No. 5

Test pit number 29

Photograph No. 6

Test pit numbers 36, 19, 20, 21, and 22

Photograph No. 7

Test pit number 35

Photograph No. 8

Test pit number 36

Photograph No. 9

Test pit number 36

Photograph No. 10

Char Lake Pump House peninsula after the completion of the test pitting program

Appendix B –
Test Pit Logs & Grain Size Analyses

exp Services Inc.
2650 Queensview Drive, Suite 100
Ottawa, Ontario K2B 8H6

FIELD TEST PIT LOG

Project Name: Supplemental Environmental Evaluation
Date: 25 Aug 2015
Test Pit ID: TP19
Project Number: OTT-00206333-A0
Project Location: Char Lake Pump House, Resolute
Field Supervisor: Daniel Clarke

Depth (m)		Description	Sample ID	Sample Depth (m)	GasTech/PID (ppm)
From	To				
0.0	0.6	Sand and gravel, with trace of silt, brown, dry. No staining or odours.	S1	0.30 – 0.60	0
0.6	1.2	Gravel with coarse sand, brown, damp. No staining or odours.	S2	0.60 – 1.20	0
		Permafrost at 1.20 m			
		Notes:			
	1	TP investigation via track mounted excavator using bucket.			
	2	Test pit terminated at permafrost and backfilled.			
	3	Grab samples, screened at South Camp Inn.			
	4	See Test Pit Location Plan.			
	5	Sample 2 submitted for analysis of PHC(F1-F4), BTEX and metals			
	6	Sample 2 submitted for analysis of FOC, pH, nitrogen, and moisture.			

exp Services Inc.
2650 Queensview Drive, Suite 100
Ottawa, Ontario K2B 8H6

FIELD TEST PIT LOG

Project Name: Supplemental Environmental Evaluation
Date: 25 Aug 2015
Test Pit ID: TP20
Project Number: OTT-00206333-A0
Project Location: Char Lake Pump House, Resolute
Field Supervisor: Daniel Clarke

Depth (m)		Description	Sample ID	Sample Depth (m)	GasTech/PID (ppm)
From	To				
0.0	1.3	Sand and gravel trace of silt, brown, dry to damp. No odours or staining. Moist and slight PHC odours at 1.10 – 1.30m	1	0.30 – 0.60	5
			2	0.60 – 1.10	0
			3	1.10 – 1.30	15
		Permafrost at 1.30 m			
		Notes:			
	1	TP investigation via track mounted excavator using bucket.			
	2	Test pit terminated at permafrost and backfilled.			
	3	Grab samples, screened at South Camp Inn.			
	4	See Test Pit Location Plan.			
	5	Sample 1 and 3 submitted for analysis of PHC(F1-F4), BTEX and metals			
	6	Sample 2 submitted for analysis of FOC, pH, nitrogen, and moisture.			

exp Services Inc.
2650 Queensview Drive, Suite 100
Ottawa, Ontario K2B 8H6

FIELD TEST PIT LOG

Project Name: Supplemental Environmental Evaluation
Date: 25 Aug 2015
Test Pit ID: TP21
Project Number: OTT-00206333-A0
Project Location: Char Lake Pump House, Resolute
Field Supervisor: Daniel Clarke

Depth (m)		Description	Sample ID	Sample Depth (m)	GasTech/PID (ppm)
From	To				
0.0	0.90	Sand and gravel, trace of silt, dry to damp, brown. No staining or odours.	1	0.0 – 0.50	0
			2	0.50 – 0.90	0
0.90	1.05	Gravel with trace coarse sand, damp. No staining or odours.	3	0.90 – 1.05	0
1.05	1.25	Sand and gravel, trace of silt, moist, brown. No staining or odours.	4	1.05 – 1.25	0
		Permafrost at 1.25 m			
		Notes:			
	1	TP investigation via track mounted excavator using bucket.			
	2	Test pit terminated at permafrost and backfilled.			
	3	Grab samples, screened at South Camp Inn.			
	4	See Test Pit Location Plan.			
	5	Sample 4 submitted for analysis of PHC(F1-F4), BTEX and metals			
	6	Sample 2 submitted for analysis of FOC, pH, nitrogen, and moisture.			

exp Services Inc.
2650 Queensview Drive, Suite 100
Ottawa, Ontario K2B 8H6

FIELD TEST PIT LOG

Project Name: Supplemental Environmental Evaluation
Date: 25 Aug 2015
Test Pit ID: TP22

Project Number: OTT-00206333-A0
Project Location: Char Lake Pump House, Resolute
Field Supervisor: Daniel Clarke

Depth (m)		Description	Sample ID	Sample Depth (m)	GasTech/PID (ppm)
From	To				
0.0	1.20	Sand and gravel, trace of silt, brown, dry to damp. No staining or odours.	1	0.30 – 0.60	5
			2	0.60 – 1.20	5
		Permafrost at 1.20 m			
		Notes:			
	1	TP investigation via track mounted excavator using bucket.			
	2	Test pit terminated at permafrost and backfilled.			
	3	Grab samples, screened at South Camp Inn.			
	4	See Test Pit Location Plan.			
	5	Sample 2 submitted for analysis of PHC(F1-F4), BTEX and metals			

exp Services Inc.
2650 Queensview Drive, Suite 100
Ottawa, Ontario K2B 8H6

FIELD TEST PIT LOG

Project Name: Supplemental Environmental Evaluation
Date: 25 Aug 2015
Test Pit ID: TP23
Project Number: OTT-00206333-A0
Project Location: Char Lake Pump House, Resolute
Field Supervisor: Daniel Clarke

Depth (m)		Description	Sample ID	Sample Depth (m)	GasTech/PID (ppm)
From	To				
0.0	0.70	Sand and gravel, trace of silt, brown, dry to damp. No odours or staining.	1	0 – 0.30	0
			2	0.30 – 0.70	0
0.70	1.10	Gravel with some coarse sand, brown. No odours or staining.	3	0.70 – 1.10	0
		Permafrost at 1.10 m			
		Notes:			
	1	TP investigation via track mounted excavator using bucket.			
	2	Test pit terminated at permafrost and backfilled.			
	3	Grab samples, screened at South Camp Inn.			
	4	See Test Pit Location Plan.			
	5	Sample 2 submitted for analysis of PHC(F1-F4), BTEX and metals			
	6	Sample 3 submitted for analysis of FOC, pH, nitrogen, and moisture.			

exp Services Inc.
2650 Queensview Drive, Suite 100
Ottawa, Ontario K2B 8H6

FIELD TEST PIT LOG

Project Name: Supplemental Environmental Evaluation
Date: 25 Aug 2015
Test Pit ID: TP24
Project Number: OTT-00206333-A0
Project Location: Char Lake Pump House, Resolute
Field Supervisor: Daniel Clarke

Depth (m)		Description	Sample ID	Sample Depth (m)	GasTech/PID (ppm)
From	To				
0.0	1.00	Sand and gravel, brown, dry to damp, trace of silt. No staining or odours.	1	0 – 0.50	0
			2	0.50 – 1.00	0
1.00	1.15	Gravel with some coarse sand, grey, moist. No staining or odours.	3	1.00 – 1.15	5
		Permafrost at 1.15 m			
		Notes:			
	1	TP investigation via track mounted excavator using bucket.			
	2	Test pit terminated at permafrost and backfilled.			
	3	Grab samples, screened at South Camp Inn.			
	4	See Test Pit Location Plan.			
	5	Sample 2 submitted for analysis of PHC(F1-F4), BTEX and metals			

exp Services Inc.
2650 Queensview Drive, Suite 100
Ottawa, Ontario K2B 8H6

FIELD TEST PIT LOG

Project Name: Supplemental Environmental Evaluation
Date: 25 Aug 2015
Test Pit ID: TP25
Project Number: OTT-00206333-A0
Project Location: Char Lake Pump House, Resolute
Field Supervisor: Daniel Clarke

Depth (m)		Description	Sample ID	Sample Depth (m)	GasTech/PID (ppm)
From	To				
0.0	1.10	Sand and gravel, trace of silt, brown, dry to damp. No staining or odours. Moist and slight PHC odour at 0.8m to 1.1m	1	0.0 – 0.30	0
			2	0.30 – 0.60	0
			3	0.60 – 0.80	5
			4	0.80 – 1.10	10
		Permafrost at 1.10 m			
		Notes:			
	1	TP investigation via track mounted excavator using bucket.			
	2	Test pit terminated at permafrost and backfilled.			
	3	Grab samples, screened at South Camp Inn.			
	4	See Test Pit Location Plan.			
	5	Sample 2 and 4 submitted for analysis of PHC(F1-F4), BTEX and metals			
	6	Sample 3 submitted for analysis of FOC, pH, nitrogen, and moisture.			

exp Services Inc.
2650 Queensview Drive, Suite 100
Ottawa, Ontario K2B 8H6

FIELD TEST PIT LOG

Project Name: Supplemental Environmental Evaluation
Date: 26 Aug 2015
Test Pit ID: TP26
Project Number: OTT-00206333-A0
Project Location: Char Lake Pump House, Resolute
Field Supervisor: Daniel Clarke

Depth (m)		Description	Sample ID	Sample Depth (m)	GasTech/PID (ppm)
From	To				
0.0	0.90	Gravel with sand, dry to damp, brown. No staining or odours.	1	0 – 0.30	5
			2	0.30 – 0.60	5
			3	0.60 – 0.90	5
0.90	1.10	Gravel with some coarse sand, moist, brown. No staining or odours	4	0.90 – 1.10	10
		Permafrost at 1.10 m			
		Notes:			
	1	TP investigation via track mounted excavator using bucket.			
	2	Test pit terminated at permafrost and backfilled.			
	3	Grab samples, screened at South Camp Inn.			
	4	See Test Pit Location Plan.			
	5	Sample 3 submitted for analysis of PHC(F1-F4), BTEX and metals			
	6	Sample 1 submitted for analysis of FOC, pH, nitrogen, and moisture.			

exp Services Inc.
2650 Queensview Drive, Suite 100
Ottawa, Ontario K2B 8H6

FIELD TEST PIT LOG

Project Name: Supplemental Environmental Evaluation
Date: 26 Aug 2015
Test Pit ID: TP27
Project Number: OTT-00206333-A0
Project Location: Char Lake Pump House, Resolute
Field Supervisor: Daniel Clarke

Depth (m)		Description	Sample ID	Sample Depth (m)	GasTech/PID (ppm)
From	To				
0.0	0.40	Sand and gravel, trace of silt, brown, dry. No staining or odours.	1	0 – 0.40	0
0.40	0.70	Gravel with sand, grey, damp. No staining or odours.	2	0.40 – 0.70	0
0.70	1.10	Sand and gravel, trace of silt, brown, moist. No staining or odours.	3	0.70 – 1.10	0
		Permafrost at 1.10 m			
		Notes:			
	1	TP investigation via track mounted excavator using bucket.			
	2	Test pit terminated at permafrost and backfilled.			
	3	Grab samples, screened at South Camp Inn.			
	4	See Test Pit Location Plan.			
	5	Sample 3 submitted for analysis of PHC(F1-F4), BTEX and metals			

exp Services Inc.
2650 Queensview Drive, Suite 100
Ottawa, Ontario K2B 8H6

FIELD TEST PIT LOG

Project Name: Supplemental Environmental Evaluation
Date: 26 Aug 2015
Test Pit ID: TP28
Project Number: OTT-00206333-A0
Project Location: Char Lake Pump House, Resolute
Field Supervisor: Daniel Clarke

Depth (m)		Description	Sample ID	Sample Depth (m)	GasTech/PID (ppm)
From	To				
0.0	0.50	Sand and gravel, trace of silt, brown, dry. No staining or odours.	1	0 – 0.30	5
			2	0.30 – 0.50	5
0.50	0.80	Gravel with sand, brown, damp. No staining or odours.	3	0.50 – 0.80	10
0.80	1.00	Sand and gravel, trace of silt, brown, moist. No staining or odours	4	0.80 – 1.00	10
		Permafrost at 1.00 m			
		Notes:			
	1	TP investigation via track mounted excavator using bucket.			
	2	Test pit terminated at permafrost and backfilled.			
	3	Grab samples, screened at South Camp Inn.			
	4	See Test Pit Location Plan.			
	5	Sample 4 submitted for analysis of PHC(F1-F4), BTEX and metals			

exp Services Inc.
2650 Queensview Drive, Suite 100
Ottawa, Ontario K2B 8H6

FIELD TEST PIT LOG

Project Name: Supplemental Environmental Evaluation
Date: 26 Aug 2015
Test Pit ID: TP29
Project Number: OTT-00206333-A0
Project Location: Char Lake Pump House, Resolute
Field Supervisor: Daniel Clarke

Depth (m)		Description	Sample ID	Sample Depth (m)	GasTech/PID (ppm)
From	To				
0.0	0.50	Sand and gravel, brown, dry. No staining or odours.	1	0 – 0.50	10
0.50	1.10	Gravel with coarse sand, brown, damp. No staining or odours.	2	0.50 – 1.10	5
1.10	1.80	Sand and gravel, trace of silt, brown, moist to wet. No staining or odours.	3	1.10 – 1.80	5
		Permafrost at 1.80 m			
		Notes:			
	1	TP investigation via track mounted excavator using bucket.			
	2	Test pit terminated at permafrost and backfilled.			
	3	Grab samples, screened at South Camp Inn.			
	4	See Test Pit Location Plan.			
	5	Sample 1 and 4 submitted for analysis of PHC(F1-F4), BTEX and metals			
	6	Sample 3 submitted for analysis of FOC, pH, nitrogen, and moisture.			
	7	A water sample was collected and submitted for analysis of PHC(F1-F4), BTEX and metals			

exp Services Inc.
2650 Queensview Drive, Suite 100
Ottawa, Ontario K2B 8H6

FIELD TEST PIT LOG

Project Name: Supplemental Environmental Evaluation
Date: 26 Aug 2015
Test Pit ID: TP30
Project Number: OTT-00206333-A0
Project Location: Char Lake Pump House, Resolute
Field Supervisor: Daniel Clarke

Depth (m)		Description	Sample ID	Sample Depth (m)	GasTech/PID (ppm)
From	To				
0.0	0.70	Sand and gravel, brown, dry to damp. No staining or odours.	1	0 – 0.30	5
			2	0.30 – 0.70	10
0.70	1.30	Gravel with some coarse sand, brown, moist. No staining or odours.	3	0.70 – 1.30	15
		Permafrost at 1.30 m			
		Notes:			
	1	TP investigation via track mounted excavator using bucket.			
	2	Test pit terminated at permafrost and backfilled.			
	3	Grab samples, screened at South Camp Inn.			
	4	See Test Pit Location Plan.			
	5	Sample 3 submitted for analysis of PHC(F1-F4), BTEX and metals			

exp Services Inc.
2650 Queensview Drive, Suite 100
Ottawa, Ontario K2B 8H6

FIELD TEST PIT LOG

Project Name: Supplemental Environmental Evaluation
Date: 26 Aug 2015
Test Pit ID: TP31
Project Number: OTT-00206333-A0
Project Location: Char Lake Pump House, Resolute
Field Supervisor: Daniel Clarke

Depth (m)		Description	Sample ID	Sample Depth (m)	GasTech/PID (ppm)
From	To				
0.0	0.15	Sand and gravel, brown, dry. No staining or odours.	1	0 – 0.15	0
0.15	1.05	Sand and gravel, trace of silt, brown, damp to moist. No staining or odours.	2	0.15 – 0.50	0
			3	0.50 – 1.05	0
		Permafrost at 1.05 m			
		Notes:			
	1	TP investigation via track mounted excavator using bucket.			
	2	Test pit terminated at permafrost and backfilled.			
	3	Grab samples, screened at South Camp Inn.			
	4	See Test Pit Location Plan.			
	5	Sample 3 submitted for analysis of PHC(F1-F4), BTEX and metals			

exp Services Inc.
2650 Queensview Drive, Suite 100
Ottawa, Ontario K2B 8H6

FIELD TEST PIT LOG

Project Name: Supplemental Environmental Evaluation
Date: 26 Aug 2015
Test Pit ID: TP32
Project Number: OTT-00206333-A0
Project Location: Char Lake Pump House, Resolute
Field Supervisor: Daniel Clarke

Depth (m)		Description	Sample ID	Sample Depth (m)	GasTech/PID (ppm)
From	To				
0.0	0.60	Sand and gravel, brown, dry. No staining or odours.	1	0.30 – 0.60	10
0.60	1.20	Gravel with some coarse sand, brown, damp to moist. No staining or odours.	2	0.60 – 1.20	10
		Permafrost at 1.20 m			
		Notes:			
	1	TP investigation via track mounted excavator using bucket.			
	2	Test pit terminated at permafrost and backfilled.			
	3	Grab samples, screened at South Camp Inn.			
	4	See Test Pit Location Plan.			
	5	Sample 2 submitted for analysis of PHC(F1-F4), BTEX and metals			

exp Services Inc.
2650 Queensview Drive, Suite 100
Ottawa, Ontario K2B 8H6

FIELD TEST PIT LOG

Project Name: Supplemental Environmental Evaluation
Date: 26 Aug 2015
Test Pit ID: TP33
Project Number: OTT-00206333-A0
Project Location: Char Lake Pump House, Resolute
Field Supervisor: Daniel Clarke

Depth (m)		Description	Sample ID	Sample Depth (m)	GasTech/PID (ppm)
From	To				
0.0	0.90	Sand and gravel, brown to grey, dry to damp. No staining or odours.	1	0.0 – 0.30	10
			2	0.30 – 0.60	10
			3	0.60 – 0.90	10
0.90	1.10	Gravel with some sand, grey, damp. No staining or odours.	4	0.90 – 1.10	5
		Permafrost at 1.10 m			
		Notes:			
	1	TP investigation via track mounted excavator using bucket.			
	2	Test pit terminated at permafrost and backfilled.			
	3	Grab samples, screened at South Camp Inn.			
	4	See Test Pit Location Plan.			
	5	Sample 3 submitted for analysis of PHC(F1-F4), BTEX and metals			
	6	Sample 3 submitted for analysis of FOC, pH, nitrogen, and moisture.			

exp Services Inc.
2650 Queensview Drive, Suite 100
Ottawa, Ontario K2B 8H6

FIELD TEST PIT LOG

Project Name: Supplemental Environmental Evaluation
Date: 26 Aug 2015
Test Pit ID: TP34
Project Number: OTT-00206333-A0
Project Location: Char Lake Pump House, Resolute
Field Supervisor: Daniel Clarke

Depth (m)		Description	Sample ID	Sample Depth (m)	GasTech/PID (ppm)
From	To				
0.0	0.90	Sand and gravel, trace of silt, brown, dry to moist. No staining or odours.	1	0.0 – 0.30	10
			2	0.30 – 0.60	10
			3	0.60 – 0.90	10
0.90	1.00	Gravel with some sand, brown, moist. No staining or odours.	4	0.90 – 1.00	10
		Permafrost at 1.00 m			
		Notes:			
	1	TP investigation via track mounted excavator using bucket.			
	2	Test pit terminated at permafrost and backfilled.			
	3	Grab samples, screened at South Camp Inn.			
	4	See Test Pit Location Plan.			
	5	Sample 3 submitted for analysis of PHC(F1-F4), BTEX and metals			

exp Services Inc.
2650 Queensview Drive, Suite 100
Ottawa, Ontario K2B 8H6

FIELD TEST PIT LOG

Project Name: Supplemental Environmental Evaluation
Date: 26 Aug 2015
Test Pit ID: TP35
Project Number: OTT-00206333-A0
Project Location: Char Lake Pump House, Resolute
Field Supervisor: Daniel Clarke

Depth (m)		Description	Sample ID	Sample Depth (m)	GasTech/PID (ppm)
From	To				
0.0	0.80	Sand and gravel, brown, dry to damp. No staining or odours.	1	0.0 – 0.40	0
			2	0.40 – 0.80	0
0.80	1.30	Gravel with trace coarse sand, grey, damp to moist. No staining or odours.	3	0.80 – 1.30	0
1.30	1.70	Gravel with sand, grey, moist. No staining or odours.	4	1.30 – 1.70	0
		Permafrost at 1.50 m, soft and able to dig to 1.70m			
		Notes:			
	1	TP investigation via track mounted excavator using bucket.			
	2	Test pit terminated at permafrost and backfilled.			
	3	Grab samples, screened at South Camp Inn.			
	4	See Test Pit Location Plan.			
	5	Sample 2 submitted for analysis of PHC(F1-F4), BTEX and metals			

exp Services Inc.
2650 Queensview Drive, Suite 100
Ottawa, Ontario K2B 8H6

FIELD TEST PIT LOG

Project Name: Supplemental Environmental Evaluation
Date: 26 Aug 2015
Test Pit ID: TP36
Project Number: OTT-00206333-A0
Project Location: Char Lake Pump House, Resolute
Field Supervisor: Daniel Clarke

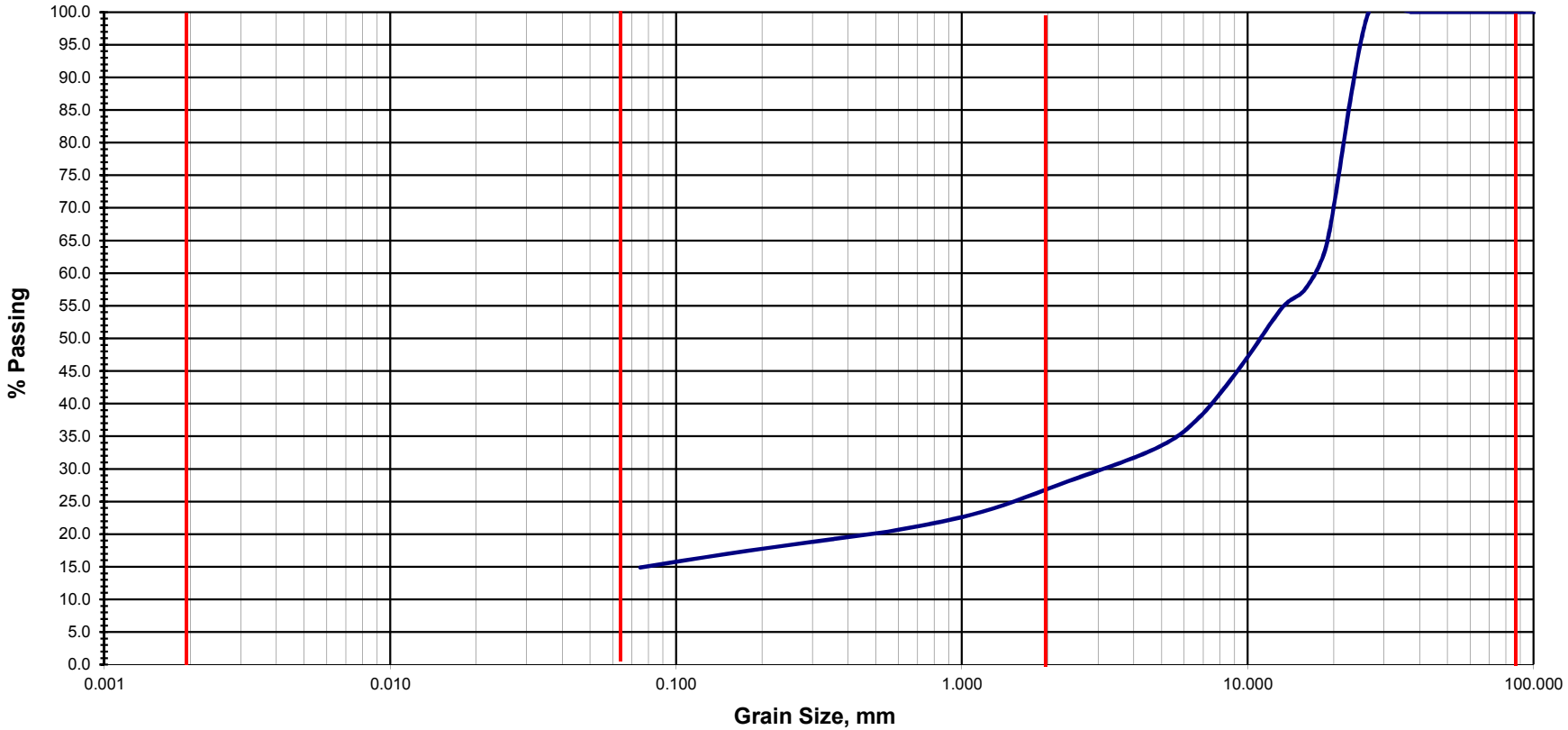
Depth (m)		Description	Sample ID	Sample Depth (m)	GasTech/PID (ppm)
From	To				
0.0	0.30	Sand and gravel, trace of silt, brown, dry. No staining or odours.	1	0.0 – 0.30	5
0.30	1.20	Gravel with sand, brown, damp. No staining or odours.	2	0.30 – 0.60	5
			3	0.60 – 0.90	5
			4	0.90 – 1.20	5
		Permafrost at 1.20 m			
		Notes:			
	1	TP investigation via track mounted excavator using bucket.			
	2	Test pit terminated at permafrost and backfilled.			
	3	Grab samples, screened at South Camp Inn.			
	4	See Test Pit Location Plan.			
	5	Sample 3 submitted for analysis of PHC(F1-F4), BTEX and metals			
	6	Sample 3 submitted for analysis of FOC, pH, nitrogen, and moisture.			

Exp. Services Inc.
2650 Queensview Drive - Unit 100
Ottawa, ON K2B 8H6

Method of Test for Sieve Analysis of Aggregate

MTO Test Method LS - 602, Rev. No. 23

Grain Size Distribution Curve



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	SILT			SAND			GRAVEL			
Modified M.I.T. Classification										

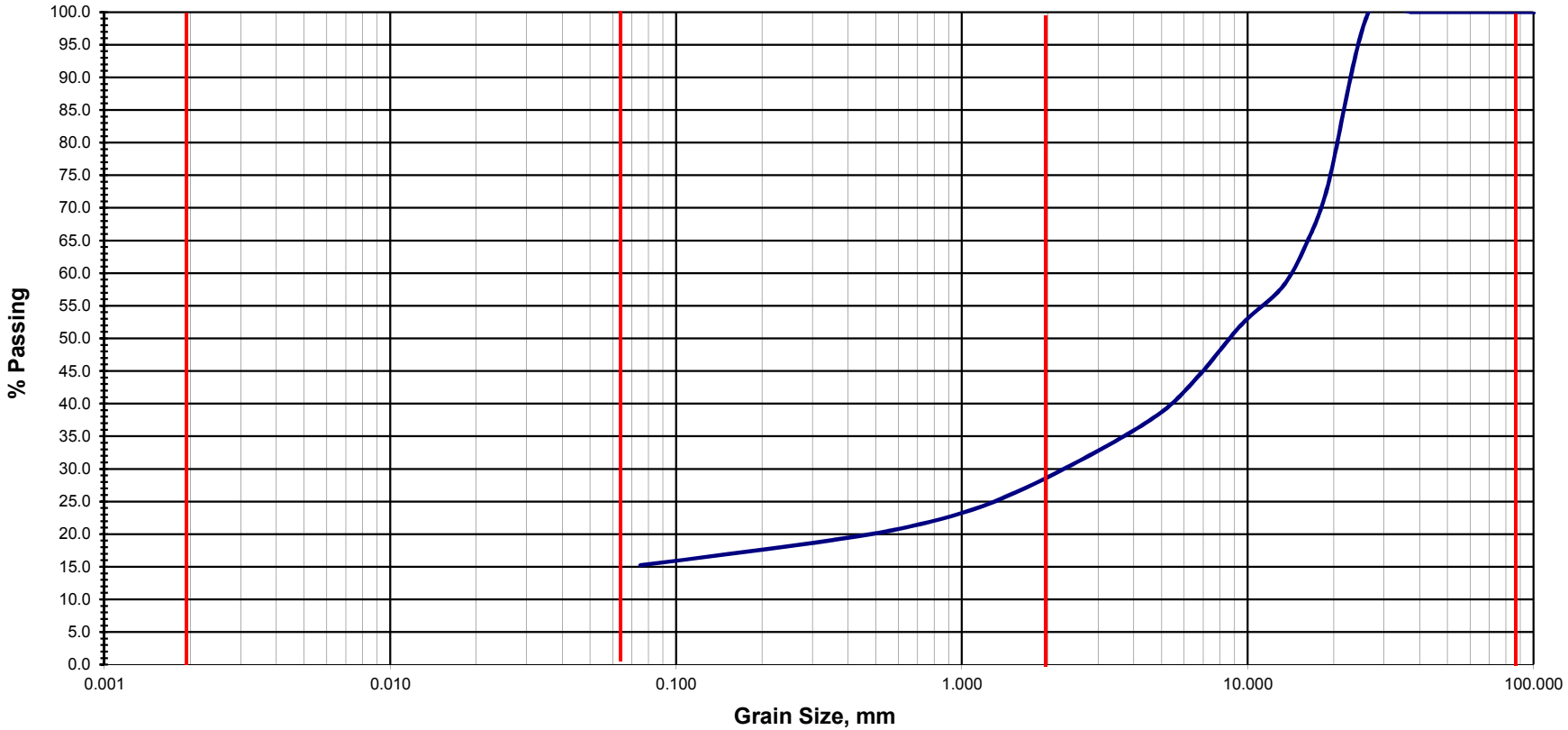
Exp Project No.:	**OTT-00206333-A0**	**Project Name :**	**Char Lake Pump House**			
Client :	**Gvt of Nunavut**	**Project Location :**	**Resolute, NU**			
Date Sampled :	**August 25, 2015**	**Borehole/MW #**	**TP 20-1**	**% Pass 75 um**	**14.9**	**Fine Grained**
Sample Description :	**Silty Sandy Gravel**					**Coarse Grained**	**X**

Exp. Services Inc.
2650 Queensview Drive - Unit 100
Ottawa, ON K2B 8H6

Method of Test for Sieve Analysis of Aggregate

MTO Test Method LS - 602, Rev. No. 23

Grain Size Distribution Curve



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	SILT			SAND			GRAVEL			
Modified M.I.T. Classification										

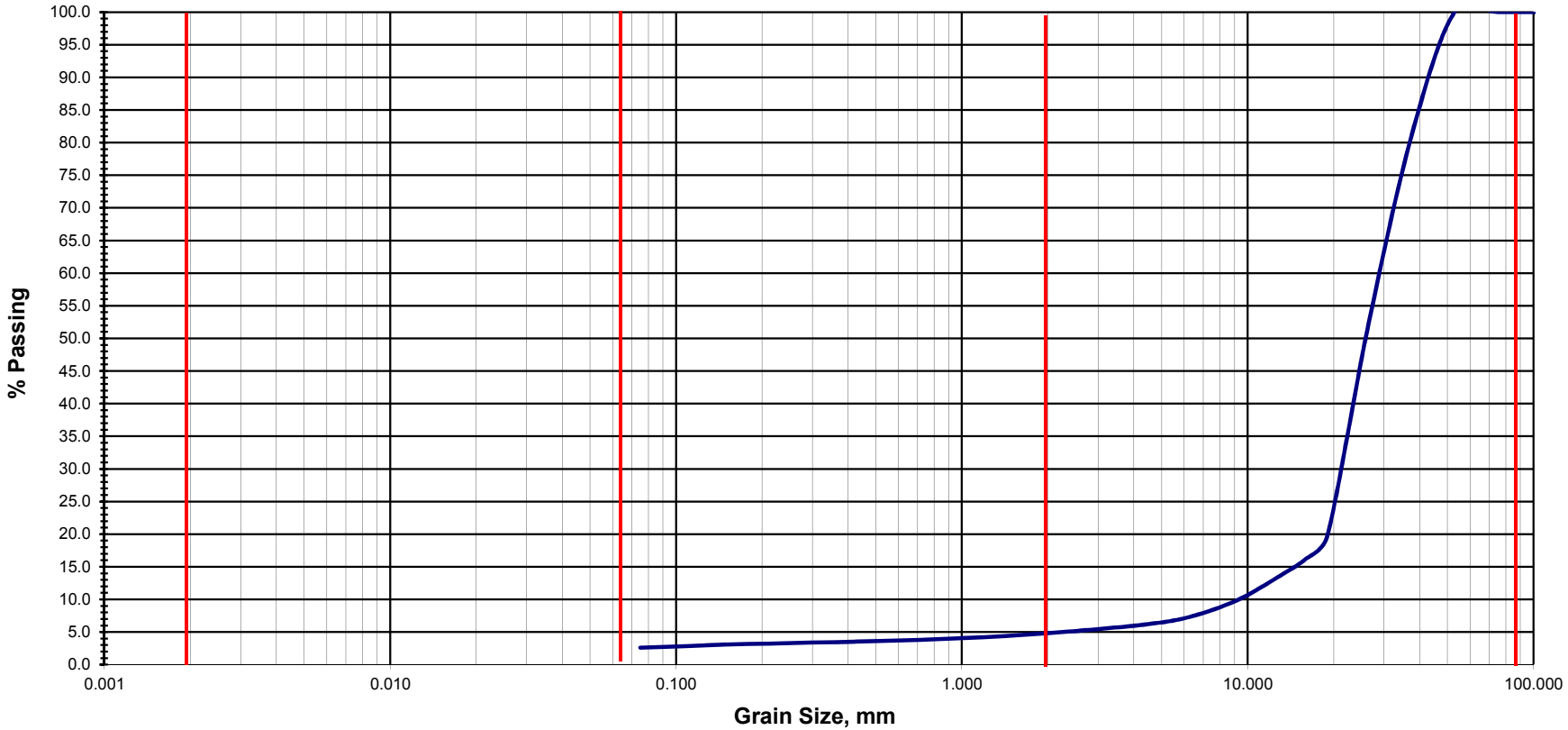
Exp Project No.:	**OTT-00206333-A0**	**Project Name :**	**Char Lake Pump House**			
Client :	**Gvt of Nunavut**	**Project Location :**	**Resolute, NU**			
Date Sampled :	**August 25, 2015**	**Borehole/MW #**	**TP 25-3**	**% Pass 75 um**	**15.2**	**Fine Grained**
Sample Description :	**Silty Sandy Gravel**					**Coarse Grained** **X**

Exp. Services Inc.
2650 Queensview Drive - Unit 100
Ottawa, ON K2B 8H6

Method of Test for Sieve Analysis of Aggregate

MTO Test Method LS - 602, Rev. No. 23

Grain Size Distribution Curve



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	SILT			**SAND**			**GRAVEL**			
Modified M.I.T. Classification										

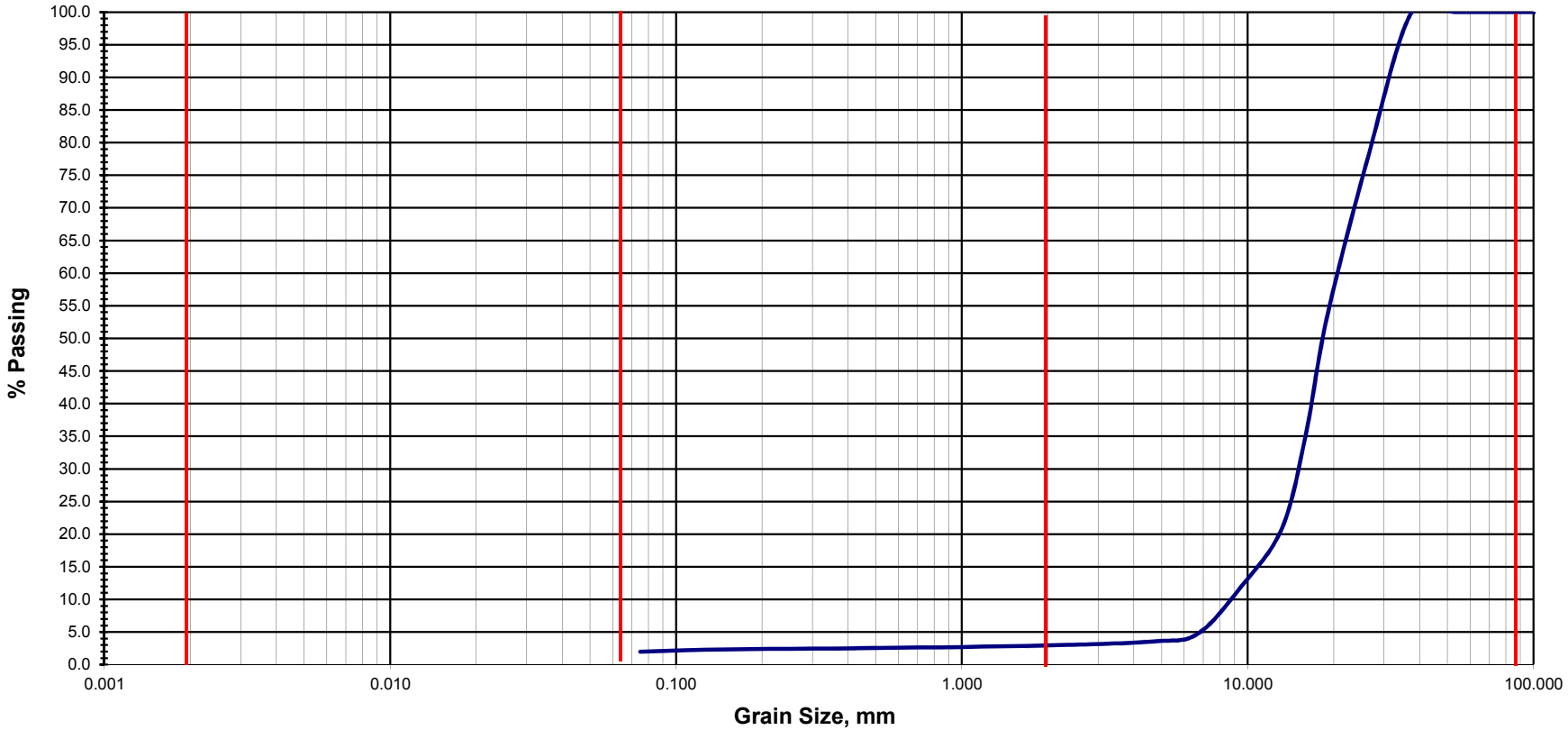
Exp Project No.:	**OTT-00206333-A0**	**Project Name :**	**Char Lake Pump House**			
Client :	**Gvt of Nunavut**	**Project Location :**	**Resolute, NU**			
Date Sampled :	**August 26, 2015**	**Borehole/MW #**	**TP 29-2**	**% Pass 75 um**	**2.6**	**Fine Grained**
Sample Description :	**Gravel, trace Sand**					**Coarse Grained**	**X**

Exp. Services Inc.
2650 Queensview Drive - Unit 100
Ottawa, ON K2B 8H6

Method of Test for Sieve Analysis of Aggregate

MTO Test Method LS - 602, Rev. No. 23

Grain Size Distribution Curve



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	SILT			SAND			GRAVEL			
Modified M.I.T. Classification										

Exp Project No.:	**OTT-00206333-A0**	**Project Name :**	**Char Lake Pump House**			
Client :	**Gvt of Nunavut**	**Project Location :**	**Resolute, NU**			
Date Sampled :	**August 26, 2015**	**Borehole/MW #**	**TP 32-2**	**% Pass 75 um**	**2.0**	**Fine Grained**
Sample Description :	**Gravel, trace sand**					**Coarse Grained** **X**

Appendix C –
Analytical Summary Tables

User Name: Daniel Clarke **Site:** Char Lake Pump House Version: 2.1
Proponent: **File #:** OTT-00206333-A0
Date: September 15, 2015 **Comment:**

TIER 2 EVALUATION RESULTS

	F1	F2	F3	F4
Governing Tier 2 Objectives	15	23	2500	10000
Governing Pathway	Protection of GW for FAL	Protection of GW for FAL	NA	NA
Governing Tier 1 Objectives	30	150	300	2800
Tier 2 Objectives by Pathway				
Human Direct Soil Contact	12000	6800	15000	21000
Protection of Potable Groundwater	980	1300	NA	NA
Vapour Inhalation - Slab-on-Grade	180	1000	NA	NA
Vapour Inhalation - Basement	NA	NA	NA	NA
Protection of Groundwater for Aquatic Life	15	23	NA	NA
Protection of Groundwater for Livestock	NA	NA	NA	NA
Ecological Soil Contact	NA	NA	NA	NA
Management Level	700	1000	2500	10000
Offsite Migration	NA	NA	NA	NA

SUMMARY OF INPUT PARAMETERS

	value	units	restrictions/comments
Exposure Scenario	Residential		
Soil Classification (eco soil contact)	Coarse		
Potable Groundwater Use?	Yes		
Nearby Surface Water?	Yes		
Exclude direct human contact?	No		
Exclude ecological soil contact?	Yes		Elimination of ecological soil contact pathway may not be permitted in some jurisdictions
Building foundation type	Slab-on-grade only		Restricting building scenarios leads to building/land use restrictions
Consider off-site migration?	NA		
Include biodegradation for groundwater transport?	No		Biodegradation excluded by default at Tier 2
Primary Parameters			
Source Dimensions			
Source Length	**15**	m	
Source Width	**10**	m	
Depth to GW	**1.5**	m	
Depth to Contamination	**1**	m	Minimum 30 cm separation between contamination and building foundation is assumed
Thickness of Contamination	**1**	m	
Distance to Surface Water	**2**	m	
Distance to Potable Water User	0	m	
Distance to Livestock Watering	0	m	
Hydrological Parameters			
Recharge	0.28	m/y	
Hydrogeological Parameters			
Bulk Density	1.7	g/cm^3	
Water Content	0.07	g/g	
Saturated Hydraulic Conductivity	320	m/y	
Hydraulic Gradient	0.028	unitless	
Organic Carbon Fraction	**0.0217**	g/g	
Vapour Transport Parameters			
Soil Vapour Permeability	5.00E-08	cm^2	
Secondary Parameters			
Site Characteristics			
Lateral Distance to Inhalation Receptor	0	m	
Soil/GW Characteristics			
Depth of Unconfined Aquifer	5	m	
Building Characteristics			
Length	1225	cm	
Width	1225	cm	
Mixing Height	360	cm	
Foundation Slab Thickness	11.25	cm	
Basement Depth	NA	cm	
Air Exchange Rate	0.5	h^{-1}	
Pressure Differential	40	$g/cm\text{-}s^2$	
Crack Area	994.5	cm^2	

PHC Composition

	F1		F2		F3		F4
Aliphatics	C6-C8	C>8-C10	C>10-C12	C>12-C16	C>16-C21	C>21-C34	C>34
Mass Fraction	0.55	0.36	0.36	0.44	0.56	0.24	0.8
Aromatics		C>8-C10	C>10-C12	C>12-C16	C>16-C21	C>21-C34	C>34
Mass Fraction		0.09	0.09	0.11	0.14	0.06	0.2

Key Calculated Parameters

Soil Gas Flow Rate (L/min)	4.54E+00
Vapour attenuation ratio	4.28E-04
Qsoil/Qb	1.01E-03
Aquifer Dilution Factor	3.29E+00
Groundwater Mixing Depth (m)	1.07E+00

Table 1: Soil Analytical Results for BTEX, PHC and metals
OTT-00206333-A0
Char Lake Pump House, Resolute Bay, Nunavut

Parameter	Criteria		Sample I.D.										
	[1] CWS for PHC	[2] CCME	TP19-2	TP20-1	TP20-3	TP21-4	TP22-2	TP23-2	TP24-2	TP25-2	TP25-4	TP26-3	TP27-3
Sample Date	µg/g	µg/g	Aug 25/15	Aug 25/15	Aug 25/15	Aug 25/15	Aug 25/15	Aug 25/15	Aug 25/15	Aug 25/15	Aug 25/15	Aug 26/15	Aug 26/15
Sample Depth (m)			0.6-1.2	0-0.6	1.1-1.3	1.05-1.25	0.6-1.3	0.3-0.7	0.5-1.0	0.3-0.6	0.8-1.1	0.6-0.9	0.7-1.1
Benzene	NV	0.03	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	NV	0.082	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Toluene	NV	0.37	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Total Xylenes	NV	11	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
F1 (C6-C10)	15	NV	<10	<10	**31**	<10	<10	<10	<10	<10	**76**	<10	<10
F2 (C10-C16)	23	NV	<10	<10	**3600**	<10	<10	<10	<10	<10	**1800**	<10	<10
F3 (C16-C34)	2500	NV	<50	<50	270	<50	<50	<50	<50	<50	<50	<50	<50
F4 (C34-C50)	10000	NV	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Metals													
Sulfur	NV	NV	1800	450	500	1700	330	290	470	450	450	1600	300
Antimony	NV	20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	NV	12	3.8	2.6	2.7	3.7	2.5	2.4	2.7	2.8	2.5	4	2.7
Barium	NV	500	**4100**	130	80	**3900**	46	41	110	51	85	**3600**	24
Beryllium	NV	4	0.37	0.39	0.38	0.45	0.63	0.55	0.43	0.37	0.37	0.39	0.34
Cadmium	NV	10	<0.10	0.12	0.14	<0.10	<0.10	<0.10	<0.10	<0.10	0.1	0.1	<0.10
Chromium	NV	64	19	13	13	18	23	21	13	13	13	19	11
Cobalt	NV	50	5.1	5.7	5.5	5.8	9.4	8.5	5.7	5.6	5.7	5.6	5.3
Copper	NV	63	22	17	19	18	14	17	13	13	13	20	12
Lead	NV	140	9.5	7.6	7.7	9.8	7.2	7.1	7.5	7.6	7.7	11	6.5
Molybdenum	NV	10	0.72	<0.50	<0.50	0.58	<0.50	<0.50	<0.50	<0.50	<0.50	0.63	<0.50
Nickel	NV	50	12	12	13	13	20	19	12	12	12	12	10
Selenium	NV	1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	NV	20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	NV	1	0.2	0.12	0.11	0.24	0.2	0.18	0.12	0.11	0.12	0.24	0.094
Tin	NV	NV	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Uranium	NV	23	0.97	0.62	0.58	0.61	0.6	0.6	0.6	0.58	0.59	0.55	0.59
Vanadium	NV	130	13	14	14	13	19	18	14	14	13	13	12
Zinc	NV	200	32	45	54	34	39	39	46	44	41	41	34

Table 1 - Continued

Parameter	Criteria		Sample I.D.									
	[1] CWS for PHC	[2] CCME	TP28-4	TP29-1	TP29-3	TP30-3	TP31-3	TP32-2	TP33-3	TP34-3	TP35-2	TP36-4
Sample Date	µg/g	µg/g	Aug 26/15	Aug 26/15	Aug 26/15	Aug 26/15	Aug 26/15	Aug 26/15	Aug 26/15	Aug 26/15	Aug 26/15	Aug 25/15
Sample Depth (m)			0.8-1.0	0-0.5	1.1-1.8	0.7-1.3	0.5-1.05	0.6-1.2	0.6-0.9	0.6-0.9	0.4-0.8	0.9-1.2
Benzene	NV	0.03	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	NV	0.082	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Toluene	NV	0.37	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Total Xylenes	NV	11	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
F1 (C6-C10)	15	NV	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10-C16)	23	NV	<10	<10	<10	**38**	<10	<10	<10	<10	<10	14
F3 (C16-C34)	2500	NV	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
F4 (C34-C50)	10000	NV	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Metals												
Sulfur	NV	NV	420	410	430	710	440	1400	440	330	390	870
Antimony	NV	20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	NV	12	3.1	2.4	2.2	2.7	2.4	3	2.5	3	2.6	2.3
Barium	NV	500	25	39	170	370	31	**3700**	57	30	40	**1100**
Beryllium	NV	4	0.35	0.53	0.5	0.43	0.35	0.4	0.51	0.37	0.49	0.39
Cadmium	NV	10	<0.10	0.11	<0.10	<0.10	0.14	<0.10	0.28	<0.10	<0.10	<0.10
Chromium	NV	64	12	16	16	14	11	16	16	12	17	13
Cobalt	NV	50	5.8	7.1	7.2	5.5	5	5.2	7.1	5.9	7.6	5.2
Copper	NV	63	12	9.7	20	28	12	17	24	13	11	23
Lead	NV	140	8.1	7.9	9.3	10	6.1	8.1	10	7.6	7.7	8.2
Molybdenum	NV	10	0.56	<0.50	<0.50	0.5	<0.50	0.56	<0.50	0.56	<0.50	<0.50
Nickel	NV	50	12	15	15	13	11	12	15	12	15	12
Selenium	NV	1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	NV	20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium	NV	1	0.11	0.15	0.14	0.14	0.1	0.15	0.15	0.13	0.14	0.12
Tin	NV	NV	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Uranium	NV	23	0.6	0.64	<5.0	0.65	0.6	0.54	0.65	0.73	0.65	0.6
Vanadium	NV	130	13	18	0.64	14	14	14	17	14	18	14
Zinc	NV	200	43	39	16	38	45	31	95	35	39	45

[1] Tier 2 CWS for PHC (Residential, Coarse) — *Tier 2 - Canada-wide Standards for Hydrocarbons in Soil, January 2008,* for residential land use, coarse grain conditions, protective of groundwater

[2] CCME (Residential, Coarse) — *Canadian Soil Quality Guidelines for the Protection of the Environmental and Human Health, Online Version* - Canadian Council of Ministers of the Environment for residential land use & coarse grained conditions

NV — No Value

Shaded — Analytical result exceeds applicable Residential land use CCME criteria

Table 2: Soil Analytical Results
OTT-00206333-A0
Char Lake Pump House, Resolute Bay, Nunavut

Parameter	Criteria	Sample I.D.									
	[1] CCME	TP19-2	TP20-2	TP21-2	TP23-3	TP25-3	TP26-1	TP29-3	TP32-2	TP33-3	TP36-3
Sample Date		Aug 25/15	Aug 25/15	Aug 25/15	Aug 25/15	Aug 25/15	Aug 26/15	Aug 26/15	Aug 26/15	Aug 26/15	Aug 26/15
Sample Depth (m)		0.6-1.2	0.6-1.1	0.5-0.9	0.7-1.1	0.6-0.8	0-0.3	1.1-1.8	0.6-1.2	0.6-0.9	0.9-1.2
Fraction of Organic Carbon (g/g)	NV	0.0033	0.0076	0.0072	0.0026	0.0058	0.0056	0.0069	0.003	0.0066	0.0036
Total Organic Nitrogen (mg/kg)	NV	230	430	620	190	370	320	420	300	430	180
Total Ammonia-N (ug/g)	NV	<20	<20	<20	<20	<20	55	<20	<20	<20	21
Moisture (%)	NV	1.8	9.2	8.8	4.7	10	5.7	5.6	5.4	7.1	7
Total Organic Carbon (mg/kg)	NV	3300	7600	7200	2600	5800	5600	6900	3000	6600	3600
Avaliable (CaCl2) pH	NV	8.07	7.88	7.92	7.98	7.78	7.97	7.76	7.97	7.84	7.93
Total kjeldahi nitrogen (ug/g)	NV	228	430	619	192	372	377	419	297	425	202

[1] CCME (Residential, Coarse) — *Canadian Soil Quality Guidelines for the Protection of the Environmental and Human Health, Online Version* - Canadian Council of Ministers of the Environment for Residential land use & coarse grained conditions

NV — No Value

Shaded — Analytical result exceeds applicable Residential land use CCME criteria

Table 3: Surface Water Analytical Results for BTEX, PHC and metals
OTT-00206333-A0
Char Lake Pump House, Resolute Bay, Nunavut

Parameter	Criteria		Sample I.D.
	[1]FIGQG	[2]MOECC Table 8	TP 29
Sample Date	µg/L	µg/L	Aug 26/15
Benzene	88	5	<0.20
Ethylbenzene	11000	2.4	<0.20
Toluene	83	22	0.27
Total Xylenes	3900	300	<0.40
F1 (C6-C10)	810	420	<25
F2 (C10-C16)	1300	150	<100
F3 (C16-C34)	NV	500	<200
F4 (C34-C50)	NV	500	<200
Metals			
Aluminum	NV	NV	3260
Antimony	2000	6	0.105
Arsenic	5	25	1.48
Barium	500	1000	234
Beryllium	5.3	4	0.207
Bismuth	NV	NV	0.039
Boron	5000	5000	802
Cadmium	0.017	2.1	0.04
Chromium	8.9	50	5.97
Cobalt	NV	3.8	2.51
Copper	NV	69	4.69
Iron	300	NV	5590
Lead	NV	10	3.82
Lithium	NV	NV	29
Manganese	NV	NV	79.5
Molybdenum	73	70	1.42
Nickel	NV	100	6.27
Selenium	1	10	0.426
Silicon	NV	NV	7280
Silver	0.1	1.2	0.012
Strontium	NV	NV	726
Thallium	0.8	2	0.081
Tin	NV	NV	0.2
Titanium	100	NV	163
Uranium	15	20	2.37
Vanadium	NV	6.2	6.15
Zinc	10	890	17.4
Zironium	NV	NV	0.9
Calcium	NV	NV	198000
Manganesium	NV	NV	57300
Potassium	NV	NV	16400
Sodium	NV	490000	135000
Sulphur	NV	NV	214000
Total Hardness	NV	NV	731000

[1]FIGQC (Residential, Tier 1)	Federal Contaminated Sites Action Plan (FCSAP) document Guidance Document on Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites, November 2012 Tier 1 Residential/Parkland Land Use (coarse grained soil)
[2]MOECC (Table 8)	Ontario Ministry of Environment and Climate Change - *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*, April 15, 2011 Table 8 Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Groundwater Condition, All Types of Property.
NV	No Value
Shaded	Analytical result exceeds applicable FIGQC - Residential/Parkland, Tier 1 criterion
Bold	Analytical result exceeds applicable MOECC Table 8 criterion

Appendix D – Certificates of Analysis

Your Project #: OTT-00206333-A0
Site Location: CHAR LAKE

Attention:Rob Renaud

exp Services Inc
100-2650 Queensview Drive
Ottawa, ON
K2B 8H6

Your C.O.C. #: 526437-03-01, 526437-01-01, 526437-02-01

Report Date: 2015/09/10
Report #: R3657547
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5H4703
Received: 2015/08/31, 10:00

Sample Matrix: Soil
Samples Received: 27

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	1	2015/09/01	2015/09/01	OTT SOP-00002	CCME CWS
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	20	2015/09/01	2015/09/04	OTT SOP-00002	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (1, 2)	2	2015/09/02	2015/09/03	OTT SOP-00001	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (1, 2)	1	2015/09/02	2015/09/04	OTT SOP-00001	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (1, 2)	2	2015/09/03	2015/09/03	OTT SOP-00001	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (1, 2)	12	2015/09/03	2015/09/04	OTT SOP-00001	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (1, 2)	4	2015/09/03	2015/09/05	OTT SOP-00001	CCME CWS
Fraction Organic Carbon in Soil	10	N/A	2015/09/08	CAM SOP-00468	LECO 203-601-224
Strong Acid Leachable Metals by ICPMS	4	2015/09/04	2015/09/04	CAM SOP-00447	EPA 6020A m
Strong Acid Leachable Metals by ICPMS	17	2015/09/09	2015/09/09	CAM SOP-00447	EPA 6020A m
Acid Extractable Metals Analysis by ICP	4	2015/09/04	2015/09/04	CAM SOP-00408	EPA 6010C m
Acid Extractable Metals Analysis by ICP	17	2015/09/09	2015/09/09	CAM SOP-00408	EPA 6010C m
MOISTURE (1)	2	N/A	2015/09/03	CAM SOP-00445	McKeague 2nd ed 1978
MOISTURE (1)	19	N/A	2015/09/04	CAM SOP-00445	McKeague 2nd ed 1978
Moisture	6	N/A	2015/09/03	CAM SOP-00445	Carter 2nd ed 51.2 m
Ammonia-N	10	2015/09/03	2015/09/08	CAM SOP-00441	Carter, SS&A
Organic Nitrogen in Soil	10	N/A	2015/09/08		
pH CaCl2 EXTRACT	10	2015/09/03	2015/09/03	CAM SOP-00413	EPA 9045 D m
Total Kjeldahl Nitrogen - Soil	10	2015/09/04	2015/09/08	CAM SOP-00454	EPA 351.2 m
Total Organic Carbon in Soil	10	N/A	2015/09/08	CAM SOP-00468	LECO 203-601-224

Remarks:

Maxxam Analytics has performed all analytical testing herein in accordance with ISO 17025 and the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. All methodologies comply with this document and are validated for use in the laboratory. The methods and techniques employed in this analysis conform to the performance criteria (detection limits, accuracy and precision) as outlined in the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act.

Maxxam Analytics is accredited for all specific parameters as required by Ontario Regulation 153/04. Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three

Your Project #: OTT-00206333-A0
Site Location: CHAR LAKE

Attention:Rob Renaud

exp Services Inc
100-2650 Queensview Drive
Ottawa, ON
K2B 8H6

Your C.O.C. #: 526437-03-01, 526437-01-01, 526437-02-01

Report Date: 2015/09/10
Report #: R3657547
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5H4703
Received: 2015/08/31, 10:00

weeks from receipt of data or as per contract.

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

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

(1) This test was performed by Maxxam Ottawa
(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.
Hina Siddiqui, Project Manager –Environmental Customer Service
Email: HSiddiqui@maxxam.ca
Phone# (905) 817-5700

==========

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

CCME ICPMS & ICP METALS (SOIL)

Maxxam ID		AWZ650		AWZ656		AWZ657	AWZ657		
Sampling Date		2015/08/25 11:00		2015/08/26 10:35		2015/08/26 14:00	2015/08/26 14:00		
COC Number		526437-03-01		526437-03-01		526437-03-01	526437-03-01		
	UNITS	**TP19-2**	**RDL**	**TP29-3**	**RDL**	**TP32-2**	**TP32-2 Lab-Dup**	**RDL**	**QC Batch**
Metals									
Acid Extractable Sulphur (S)	ug/g	1800	50	430	50	1400	1400	50	4178429
Acid Extractable Antimony (Sb)	ug/g	<0.20	0.20	<0.20	0.20	<0.20		0.20	4178195
Acid Extractable Arsenic (As)	ug/g	3.8	1.0	2.2	1.0	3.0		1.0	4178195
Acid Extractable Barium (Ba)	ug/g	4100	2.5	170	0.50	3700		2.5	4178195
Acid Extractable Beryllium (Be)	ug/g	0.37	0.20	0.50	0.20	0.40		0.20	4178195
Acid Extractable Cadmium (Cd)	ug/g	<0.10	0.10	<0.10	0.10	<0.10		0.10	4178195
Acid Extractable Chromium (Cr)	ug/g	19	1.0	16	1.0	16		1.0	4178195
Acid Extractable Cobalt (Co)	ug/g	5.1	0.10	7.2	0.10	5.2		0.10	4178195
Acid Extractable Copper (Cu)	ug/g	22	0.50	20	0.50	17		0.50	4178195
Acid Extractable Lead (Pb)	ug/g	9.5	1.0	9.3	1.0	8.1		1.0	4178195
Acid Extractable Molybdenum (Mo)	ug/g	0.72	0.50	<0.50	0.50	0.56		0.50	4178195
Acid Extractable Nickel (Ni)	ug/g	12	0.50	15	0.50	12		0.50	4178195
Acid Extractable Selenium (Se)	ug/g	<0.50	0.50	<0.50	0.50	<0.50		0.50	4178195
Acid Extractable Silver (Ag)	ug/g	<0.20	0.20	<0.20	0.20	<0.20		0.20	4178195
Acid Extractable Thallium (Tl)	ug/g	0.20	0.050	0.14	0.050	0.15		0.050	4178195
Acid Extractable Tin (Sn)	ug/g	<5.0	5.0	<5.0	5.0	<5.0		5.0	4178195
Acid Extractable Uranium (U)	ug/g	0.97	0.050	0.64	0.050	0.54		0.050	4178195
Acid Extractable Vanadium (V)	ug/g	13	5.0	16	5.0	14		5.0	4178195
Acid Extractable Zinc (Zn)	ug/g	32	5.0	48	5.0	31		5.0	4178195

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

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

CCME ICPMS & ICP METALS (SOIL)

Maxxam ID		AWZ658		AWZ674	AWZ675		AWZ676		
Sampling Date		2015/08/26 15:00		2015/08/25 12:00	2015/08/25 13:00		2015/08/25 14:00		
COC Number		526437-03-01		526437-01-01	526437-01-01		526437-01-01		
	UNITS	**TP33-3**	**QC Batch**	**TP20-3**	**TP20-1**	**RDL**	**TP21-4**	**RDL**	**QC Batch**
Metals									
Acid Extractable Sulphur (S)	ug/g	440	4178429	500	450	50	1700	50	4182931
Acid Extractable Antimony (Sb)	ug/g	<0.20	4178195	<0.20	<0.20	0.20	<0.20	0.20	4182909
Acid Extractable Arsenic (As)	ug/g	2.5	4178195	2.7	2.6	1.0	3.7	1.0	4182909
Acid Extractable Barium (Ba)	ug/g	57	4178195	80	130	0.50	3900	2.5	4182909
Acid Extractable Beryllium (Be)	ug/g	0.51	4178195	0.38	0.39	0.20	0.45	0.20	4182909
Acid Extractable Cadmium (Cd)	ug/g	0.28	4178195	0.14	0.12	0.10	<0.10	0.10	4182909
Acid Extractable Chromium (Cr)	ug/g	16	4178195	13	13	1.0	18	1.0	4182909
Acid Extractable Cobalt (Co)	ug/g	7.1	4178195	5.5	5.7	0.10	5.8	0.10	4182909
Acid Extractable Copper (Cu)	ug/g	24	4178195	19	17	0.50	18	0.50	4182909
Acid Extractable Lead (Pb)	ug/g	10	4178195	7.7	7.6	1.0	9.8	1.0	4182909
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	4178195	<0.50	<0.50	0.50	0.58	0.50	4182909
Acid Extractable Nickel (Ni)	ug/g	15	4178195	13	12	0.50	13	0.50	4182909
Acid Extractable Selenium (Se)	ug/g	<0.50	4178195	<0.50	<0.50	0.50	<0.50	0.50	4182909
Acid Extractable Silver (Ag)	ug/g	<0.20	4178195	<0.20	<0.20	0.20	<0.20	0.20	4182909
Acid Extractable Thallium (Tl)	ug/g	0.15	4178195	0.12	0.11	0.050	0.24	0.050	4182909
Acid Extractable Tin (Sn)	ug/g	<5.0	4178195	<5.0	<5.0	5.0	<5.0	5.0	4182909
Acid Extractable Uranium (U)	ug/g	0.65	4178195	0.58	0.62	0.050	0.61	0.050	4182909
Acid Extractable Vanadium (V)	ug/g	17	4178195	14	14	5.0	13	5.0	4182909
Acid Extractable Zinc (Zn)	ug/g	95	4178195	54	45	5.0	34	5.0	4182909

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

CCME ICPMS & ICP METALS (SOIL)

Maxxam ID		AWZ677	AWZ678	AWZ679	AWZ680	AWZ681		
Sampling Date		2015/08/25 16:00	2015/08/25 15:30	2015/08/25 18:30	2015/08/25 19:05	2015/08/25 19:00		
COC Number		526437-01-01	526437-01-01	526437-01-01	526437-01-01	526437-01-01		
	UNITS	**TP22-2**	**TP23-2**	**TP24-2**	**TP25-4**	**TP25-2**	**RDL**	**QC Batch**
Metals								
Acid Extractable Sulphur (S)	ug/g	330	290	470	450	450	50	4182931
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4182909
Acid Extractable Arsenic (As)	ug/g	2.5	2.4	2.7	2.5	2.8	1.0	4182909
Acid Extractable Barium (Ba)	ug/g	46	41	110	85	51	0.50	4182909
Acid Extractable Beryllium (Be)	ug/g	0.63	0.55	0.43	0.37	0.37	0.20	4182909
Acid Extractable Cadmium (Cd)	ug/g	<0.10	<0.10	<0.10	0.10	<0.10	0.10	4182909
Acid Extractable Chromium (Cr)	ug/g	23	21	13	13	13	1.0	4182909
Acid Extractable Cobalt (Co)	ug/g	9.4	8.5	5.7	5.7	5.6	0.10	4182909
Acid Extractable Copper (Cu)	ug/g	14	17	13	13	13	0.50	4182909
Acid Extractable Lead (Pb)	ug/g	7.2	7.1	7.5	7.7	7.6	1.0	4182909
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4182909
Acid Extractable Nickel (Ni)	ug/g	20	19	12	12	12	0.50	4182909
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4182909
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4182909
Acid Extractable Thallium (Tl)	ug/g	0.20	0.18	0.12	0.12	0.11	0.050	4182909
Acid Extractable Tin (Sn)	ug/g	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	4182909
Acid Extractable Uranium (U)	ug/g	0.60	0.60	0.60	0.59	0.58	0.050	4182909
Acid Extractable Vanadium (V)	ug/g	19	18	14	13	14	5.0	4182909
Acid Extractable Zinc (Zn)	ug/g	39	39	46	41	44	5.0	4182909

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

CCME ICPMS & ICP METALS (SOIL)

Maxxam ID		AWZ682		AWZ714	AWZ715	AWZ716	AWZ717		
Sampling Date		2015/08/26 07:30		2015/08/26 08:30	2015/08/26 09:30	2015/08/26 10:30	2015/08/26 11:30		
COC Number		526437-01-01		526437-02-01	526437-02-01	526437-02-01	526437-02-01		
	UNITS	**TP26-3**	**RDL**	**TP27-3**	**TP28-4**	**TP29-1**	**TP30-3**	**RDL**	**QC Batch**
Metals									
Acid Extractable Sulphur (S)	ug/g	1600	50	300	420	410	710	50	4182931
Acid Extractable Antimony (Sb)	ug/g	<0.20	0.20	<0.20	<0.20	<0.20	<0.20	0.20	4182909
Acid Extractable Arsenic (As)	ug/g	4.0	1.0	2.7	3.1	2.4	2.7	1.0	4182909
Acid Extractable Barium (Ba)	ug/g	3600	2.5	24	25	39	370	0.50	4182909
Acid Extractable Beryllium (Be)	ug/g	0.39	0.20	0.34	0.35	0.53	0.43	0.20	4182909
Acid Extractable Cadmium (Cd)	ug/g	0.10	0.10	<0.10	<0.10	0.11	<0.10	0.10	4182909
Acid Extractable Chromium (Cr)	ug/g	19	1.0	11	12	16	14	1.0	4182909
Acid Extractable Cobalt (Co)	ug/g	5.6	0.10	5.3	5.8	7.1	5.5	0.10	4182909
Acid Extractable Copper (Cu)	ug/g	20	0.50	12	12	9.7	28	0.50	4182909
Acid Extractable Lead (Pb)	ug/g	11	1.0	6.5	8.1	7.9	10	1.0	4182909
Acid Extractable Molybdenum (Mo)	ug/g	0.63	0.50	<0.50	0.56	<0.50	0.50	0.50	4182909
Acid Extractable Nickel (Ni)	ug/g	12	0.50	10	12	15	13	0.50	4182909
Acid Extractable Selenium (Se)	ug/g	<0.50	0.50	<0.50	<0.50	<0.50	<0.50	0.50	4182909
Acid Extractable Silver (Ag)	ug/g	<0.20	0.20	<0.20	<0.20	<0.20	<0.20	0.20	4182909
Acid Extractable Thallium (Tl)	ug/g	0.24	0.050	0.094	0.11	0.15	0.14	0.050	4182909
Acid Extractable Tin (Sn)	ug/g	<5.0	5.0	<5.0	<5.0	<5.0	<5.0	5.0	4182909
Acid Extractable Uranium (U)	ug/g	0.55	0.050	0.59	0.60	0.64	0.65	0.050	4182909
Acid Extractable Vanadium (V)	ug/g	13	5.0	12	13	18	14	5.0	4182909
Acid Extractable Zinc (Zn)	ug/g	41	5.0	34	43	39	38	5.0	4182909

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

CCME ICPMS & ICP METALS (SOIL)

Maxxam ID		AWZ718	AWZ719	AWZ719	AWZ720	AWZ721		
Sampling Date		2015/08/26 13:00	2015/08/26 16:00	2015/08/26 16:00	2015/08/26 17:00	2015/08/25 10:00		
COC Number		526437-02-01	526437-02-01	526437-02-01	526437-02-01	526437-02-01		
	UNITS	**TP31-3**	**TP34-3**	**TP34-3 Lab-Dup**	**TP35-2**	**TP36-4**	**RDL**	**QC Batch**
Metals								
Acid Extractable Sulphur (S)	ug/g	440	330	320	390	870	50	4182931
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4182909
Acid Extractable Arsenic (As)	ug/g	2.4	3.0	3.1	2.6	2.3	1.0	4182909
Acid Extractable Barium (Ba)	ug/g	31	30	29	40	1100	0.50	4182909
Acid Extractable Beryllium (Be)	ug/g	0.35	0.37	0.37	0.49	0.39	0.20	4182909
Acid Extractable Cadmium (Cd)	ug/g	0.14	<0.10	<0.10	<0.10	<0.10	0.10	4182909
Acid Extractable Chromium (Cr)	ug/g	11	12	12	17	13	1.0	4182909
Acid Extractable Cobalt (Co)	ug/g	5.0	5.9	6.0	7.6	5.2	0.10	4182909
Acid Extractable Copper (Cu)	ug/g	12	13	13	11	23	0.50	4182909
Acid Extractable Lead (Pb)	ug/g	6.1	7.6	7.6	7.7	8.2	1.0	4182909
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	0.56	0.55	<0.50	<0.50	0.50	4182909
Acid Extractable Nickel (Ni)	ug/g	11	12	13	15	12	0.50	4182909
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	4182909
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4182909
Acid Extractable Thallium (Tl)	ug/g	0.10	0.13	0.13	0.14	0.12	0.050	4182909
Acid Extractable Tin (Sn)	ug/g	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	4182909
Acid Extractable Uranium (U)	ug/g	0.60	0.73	0.75	0.65	0.60	0.050	4182909
Acid Extractable Vanadium (V)	ug/g	14	14	14	18	14	5.0	4182909
Acid Extractable Zinc (Zn)	ug/g	45	35	35	39	45	5.0	4182909

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

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

RESULTS OF ANALYSES OF SOIL

Maxxam ID		AWZ650	AWZ650			AWZ651		AWZ652		
Sampling Date		2015/08/25 11:00	2015/08/25 11:00			2015/08/25 12:05		2015/08/25 14:05		
COC Number		526437-03-01	526437-03-01			526437-03-01		526437-03-01		
	UNITS	**TP19-2**	**TP19-2 Lab-Dup**	**RDL**	**QC Batch**	**TP20-2**	**QC Batch**	**TP21-2**	**RDL**	**QC Batch**
Calculated Parameters										
Fraction of Organic Carbon	g/g	0.0033		0.00050	4171987	0.0076	4171987	0.0072	0.00050	4171987
Total Organic Nitrogen	mg/kg	230		0.1	4171988	430	4171988	620	0.1	4171988
Inorganics										
Total Ammonia-N	ug/g	<20		20	4176263	<20	4176263	<20	20	4176263
Moisture	%	1.8	2.7	0.2	4173329	9.2	4176670	8.8	1.0	4177259
Total Organic Carbon	mg/kg	3300	3400	500	4178358	7600	4178358	7200	500	4178358
Available (CaCl2) pH	pH	8.07		N/A	4176919	7.88	4176919	7.92	N/A	4176919
Total Kjeldahl Nitrogen	ug/g	228		10	4178180	430	4178180	619	10	4178180

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

Maxxam ID		AWZ653	AWZ654	AWZ655			AWZ656		
Sampling Date		2015/08/25 15:05	2015/08/25 19:03	2015/08/26 07:25			2015/08/26 10:35		
COC Number		526437-03-01	526437-03-01	526437-03-01			526437-03-01		
	UNITS	**TP23-3**	**TP25-3**	**TP26-1**	**RDL**	**QC Batch**	**TP29-3**	**RDL**	**QC Batch**
Calculated Parameters									
Fraction of Organic Carbon	g/g	0.0026	0.0058	0.0056	0.00050	4171987	0.0069	0.00050	4171987
Total Organic Nitrogen	mg/kg	190	370	320	0.1	4171988	420	0.1	4171988
Inorganics									
Total Ammonia-N	ug/g	<20	<20	55	20	4176263	<20	20	4176263
Moisture	%	4.7	10	5.7	1.0	4177259	5.6	0.2	4174624
Total Organic Carbon	mg/kg	2600	5800	5600	500	4178358	6900	500	4178358
Available (CaCl2) pH	pH	7.98	7.78	7.97	N/A	4176919	7.76	N/A	4176919
Total Kjeldahl Nitrogen	ug/g	192	372	377	10	4178180	419	10	4178180

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

RESULTS OF ANALYSES OF SOIL

Maxxam ID		AWZ657		AWZ658	AWZ658			AWZ659		
Sampling Date		2015/08/26 14:00		2015/08/26 15:00	2015/08/26 15:00			2015/08/25 10:05		
COC Number		526437-03-01		526437-03-01	526437-03-01			526437-03-01		
	UNITS	**TP32-2**	**QC Batch**	**TP33-3**	**TP33-3 Lab-Dup**	**RDL**	**QC Batch**	**TP36-3**	**RDL**	**QC Batch**
Calculated Parameters										
Fraction of Organic Carbon	g/g	0.0030	4171987	0.0066		0.00050	4171987	0.0036	0.00050	4171987
Total Organic Nitrogen	mg/kg	300	4171988	430		0.1	4171988	180	0.1	4171988
Inorganics										
Total Ammonia-N	ug/g	<20	4176263	<20	<20	20	4176263	21	20	4176263
Moisture	%	5.4	4174624	7.1		0.2	4176904	7.0	1.0	4177259
Total Organic Carbon	mg/kg	3000	4178358	6600		500	4178358	3600	500	4178358
Available (CaCl2) pH	pH	7.97	4176919	7.84		N/A	4176919	7.93	N/A	4176919
Total Kjeldahl Nitrogen	ug/g	297	4178180	425		10	4178180	202	10	4178180

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

Maxxam ID		AWZ674	AWZ674	AWZ675	AWZ676	AWZ677	AWZ678		
Sampling Date		2015/08/25 12:00	2015/08/25 12:00	2015/08/25 13:00	2015/08/25 14:00	2015/08/25 16:00	2015/08/25 15:30		
COC Number		526437-01-01	526437-01-01	526437-01-01	526437-01-01	526437-01-01	526437-01-01		
	UNITS	**TP20-3**	**TP20-3 Lab-Dup**	**TP20-1**	**TP21-4**	**TP22-2**	**TP23-2**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	9.3	11	7.0	6.8	5.8	4.4	0.2	4176904

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

Maxxam ID		AWZ679	AWZ680	AWZ681	AWZ682	AWZ714	AWZ715		
Sampling Date		2015/08/25 18:30	2015/08/25 19:05	2015/08/25 19:00	2015/08/26 07:30	2015/08/26 08:30	2015/08/26 09:30		
COC Number		526437-01-01	526437-01-01	526437-01-01	526437-01-01	526437-02-01	526437-02-01		
	UNITS	**TP24-2**	**TP25-4**	**TP25-2**	**TP26-3**	**TP27-3**	**TP28-4**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	9.1	8.2	5.9	4.3	13	14	0.2	4176904

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

RESULTS OF ANALYSES OF SOIL

Maxxam ID		AWZ716	AWZ716	AWZ717	AWZ718	AWZ719	AWZ720		
Sampling Date		2015/08/26 10:30	2015/08/26 10:30	2015/08/26 11:30	2015/08/26 13:00	2015/08/26 16:00	2015/08/26 17:00		
COC Number		526437-02-01	526437-02-01	526437-02-01	526437-02-01	526437-02-01	526437-02-01		
	UNITS	**TP29-1**	**TP29-1 Lab-Dup**	**TP30-3**	**TP31-3**	**TP34-3**	**TP35-2**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	7.3	6.3	3.8	12	9.0	7.3	0.2	4177273

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

Maxxam ID		AWZ721		
Sampling Date		2015/08/25 10:00		
COC Number		526437-02-01		
	UNITS	**TP36-4**	**RDL**	**QC Batch**
Inorganics				
Moisture	%	5.2	0.2	4177273

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		AWZ650		AWZ656	AWZ656	AWZ657		AWZ658		
Sampling Date		2015/08/25 11:00		2015/08/26 10:35	2015/08/26 10:35	2015/08/26 14:00		2015/08/26 15:00		
COC Number		526437-03-01		526437-03-01	526437-03-01	526437-03-01		526437-03-01		
	UNITS	**TP19-2**	**QC Batch**	**TP29-3**	**TP29-3 Lab-Dup**	**TP32-2**	**QC Batch**	**TP33-3**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons										
Benzene	ug/g	<0.005	4173154	<0.005	<0.005	<0.005	4173530	<0.005	0.005	4173530
Toluene	ug/g	<0.02	4173154	<0.02	<0.02	<0.02	4173530	<0.02	0.02	4173530
Ethylbenzene	ug/g	<0.01	4173154	<0.01	<0.01	<0.01	4173530	<0.01	0.01	4173530
o-Xylene	ug/g	<0.02	4173154	<0.02	<0.02	<0.02	4173530	<0.02	0.02	4173530
p+m-Xylene	ug/g	<0.04	4173154	<0.04	<0.04	<0.04	4173530	<0.04	0.04	4173530
Total Xylenes	ug/g	<0.04	4173154	<0.04	<0.04	<0.04	4173530	<0.04	0.04	4173530
F1 (C6-C10)	ug/g	<10	4173154	<10	<10	<10	4173530	<10	10	4173530
F1 (C6-C10) - BTEX	ug/g	<10	4173154	<10	<10	<10	4173530	<10	10	4173530
F2-F4 Hydrocarbons										
F2 (C10-C16 Hydrocarbons)	ug/g	<10	4176933	<10		<10	4174625	<10	10	4176933
F3 (C16-C34 Hydrocarbons)	ug/g	<50	4176933	<50		<50	4174625	<50	50	4176933
F4 (C34-C50 Hydrocarbons)	ug/g	<50	4176933	<50		<50	4174625	<50	50	4176933
Reached Baseline at C50	ug/g	Yes	4176933	Yes		Yes	4174625	Yes		4176933
Surrogate Recovery (%)										
1,4-Difluorobenzene	%	99	4173154	94	92	92	4173530	93		4173530
4-Bromofluorobenzene	%	94	4173154	111	101	108	4173530	96		4173530
D10-Ethylbenzene	%	99	4173154	98	86	97	4173530	89		4173530
D4-1,2-Dichloroethane	%	78	4173154	80	79	77	4173530	78		4173530
o-Terphenyl	%	60	4176933	103		103	4174625	91		4176933

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

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		AWZ674	AWZ674	AWZ675	AWZ676	AWZ677	AWZ678		
Sampling Date		2015/08/25 12:00	2015/08/25 12:00	2015/08/25 13:00	2015/08/25 14:00	2015/08/25 16:00	2015/08/25 15:30		
COC Number		526437-01-01	526437-01-01	526437-01-01	526437-01-01	526437-01-01	526437-01-01		
	UNITS	**TP20-3**	**TP20-3 Lab-Dup**	**TP20-1**	**TP21-4**	**TP22-2**	**TP23-2**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons									
Benzene	ug/g	<0.005		<0.005	<0.005	<0.005	<0.005	0.005	4173530
Toluene	ug/g	<0.02		<0.02	<0.02	<0.02	<0.02	0.02	4173530
Ethylbenzene	ug/g	<0.01		<0.01	<0.01	<0.01	<0.01	0.01	4173530
o-Xylene	ug/g	<0.02		<0.02	<0.02	<0.02	<0.02	0.02	4173530
p+m-Xylene	ug/g	<0.04		<0.04	<0.04	<0.04	<0.04	0.04	4173530
Total Xylenes	ug/g	<0.04		<0.04	<0.04	<0.04	<0.04	0.04	4173530
F1 (C6-C10)	ug/g	31		<10	<10	<10	<10	10	4173530
F1 (C6-C10) - BTEX	ug/g	31		<10	<10	<10	<10	10	4173530
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/g	3600	3200	<10	<10	<10	<10	10	4176933
F3 (C16-C34 Hydrocarbons)	ug/g	270	300	<50	<50	<50	<50	50	4176933
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	<50	<50	<50	<50	50	4176933
Reached Baseline at C50	ug/g	Yes	Yes	Yes	Yes	Yes	Yes		4176933
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	87		90	89	96	97		4173530
4-Bromofluorobenzene	%	96		108	113	100	98		4173530
D10-Ethylbenzene	%	99		85	71	87	88		4173530
D4-1,2-Dichloroethane	%	71		73	81	75	75		4173530
o-Terphenyl	%	93	98	96	99	96	97		4176933

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

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		AWZ679	AWZ680	AWZ681	AWZ682	AWZ714		
Sampling Date		2015/08/25 18:30	2015/08/25 19:05	2015/08/25 19:00	2015/08/26 07:30	2015/08/26 08:30		
COC Number		526437-01-01	526437-01-01	526437-01-01	526437-01-01	526437-02-01		
	UNITS	**TP24-2**	**TP25-4**	**TP25-2**	**TP26-3**	**TP27-3**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons								
Benzene	ug/g	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	4173530
Toluene	ug/g	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	4173530
Ethylbenzene	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	4173530
o-Xylene	ug/g	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	4173530
p+m-Xylene	ug/g	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	4173530
Total Xylenes	ug/g	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	4173530
F1 (C6-C10)	ug/g	<10	76	<10	<10	<10	10	4173530
F1 (C6-C10) - BTEX	ug/g	<10	76	<10	<10	<10	10	4173530
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/g	<10	1800	<10	<10	<10	10	4176933
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	<50	<50	<50	50	4176933
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	<50	<50	<50	50	4176933
Reached Baseline at C50	ug/g	Yes	Yes	Yes	Yes	Yes		4176933
Surrogate Recovery (%)								
1,4-Difluorobenzene	%	97	78	94	95	97		4173530
4-Bromofluorobenzene	%	107	128	106	108	101		4173530
D10-Ethylbenzene	%	101	107	89	92	96		4173530
D4-1,2-Dichloroethane	%	79	69	74	79	79		4173530
o-Terphenyl	%	97	99	97	98	98		4176933

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		AWZ715		AWZ716	AWZ716	AWZ717	AWZ718		
Sampling Date		2015/08/26 09:30		2015/08/26 10:30	2015/08/26 10:30	2015/08/26 11:30	2015/08/26 13:00		
COC Number		526437-02-01		526437-02-01	526437-02-01	526437-02-01	526437-02-01		
	UNITS	**TP28-4**	**QC Batch**	**TP29-1**	**TP29-1 Lab-Dup**	**TP30-3**	**TP31-3**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons									
Benzene	ug/g	<0.005	4173530	<0.005		<0.005	<0.005	0.005	4173530
Toluene	ug/g	<0.02	4173530	<0.02		<0.02	<0.02	0.02	4173530
Ethylbenzene	ug/g	<0.01	4173530	<0.01		<0.01	<0.01	0.01	4173530
o-Xylene	ug/g	<0.02	4173530	<0.02		<0.02	<0.02	0.02	4173530
p+m-Xylene	ug/g	<0.04	4173530	<0.04		<0.04	<0.04	0.04	4173530
Total Xylenes	ug/g	<0.04	4173530	<0.04		<0.04	<0.04	0.04	4173530
F1 (C6-C10)	ug/g	<10	4173530	<10		<10	<10	10	4173530
F1 (C6-C10) - BTEX	ug/g	<10	4173530	<10		<10	<10	10	4173530
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/g	<10	4170971	<10	<10	38	<10	10	4177277
F3 (C16-C34 Hydrocarbons)	ug/g	<50	4170971	<50	<50	<50	<50	50	4177277
F4 (C34-C50 Hydrocarbons)	ug/g	<50	4170971	<50	<50	<50	<50	50	4177277
Reached Baseline at C50	ug/g	Yes	4170971	Yes	Yes	Yes	Yes		4177277
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	93	4173530	93		94	97		4173530
4-Bromofluorobenzene	%	106	4173530	100		102	107		4173530
D10-Ethylbenzene	%	94	4173530	91		93	85		4173530
D4-1,2-Dichloroethane	%	77	4173530	75		78	75		4173530
o-Terphenyl	%	102	4170971	97	91	92	94		4177277

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

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		AWZ719	AWZ720	AWZ721		
Sampling Date		2015/08/26 16:00	2015/08/26 17:00	2015/08/25 10:00		
COC Number		526437-02-01	526437-02-01	526437-02-01		
	UNITS	**TP34-3**	**TP35-2**	**TP36-4**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons						
Benzene	ug/g	<0.005	<0.005	<0.005	0.005	4173530
Toluene	ug/g	<0.02	<0.02	<0.02	0.02	4173530
Ethylbenzene	ug/g	<0.01	<0.01	<0.01	0.01	4173530
o-Xylene	ug/g	<0.02	<0.02	<0.02	0.02	4173530
p+m-Xylene	ug/g	<0.04	<0.04	<0.04	0.04	4173530
Total Xylenes	ug/g	<0.04	<0.04	<0.04	0.04	4173530
F1 (C6-C10)	ug/g	<10	<10	<10	10	4173530
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	10	4173530
F2-F4 Hydrocarbons						
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	14	10	4177277
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	<50	50	4177277
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	<50	50	4177277
Reached Baseline at C50	ug/g	Yes	Yes	Yes		4177277
Surrogate Recovery (%)						
1,4-Difluorobenzene	%	93	92	95		4173530
4-Bromofluorobenzene	%	103	103	97		4173530
D10-Ethylbenzene	%	82	92	90		4173530
D4-1,2-Dichloroethane	%	72	72	74		4173530
o-Terphenyl	%	95	92	96		4177277

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

TEST SUMMARY

Maxxam ID: AWZ650
Sample ID: TP19-2
Matrix: Soil

Collected: 2015/08/25
Shipped:
Received: 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4173154	2015/09/01	2015/09/01	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4176933	2015/09/02	2015/09/04	Liliana Gaburici
Fraction Organic Carbon in Soil		4171987	N/A	2015/09/08	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	4178195	2015/09/04	2015/09/04	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4178429	2015/09/04	2015/09/04	Azita Fazaeli
MOISTURE	BAL	4173329	N/A	2015/09/04	Lyndsey Hart
Ammonia-N	LACH/NH4	4176263	2015/09/03	2015/09/08	Sarabjit Raina
Organic Nitrogen in Soil	CALC	4171988	N/A	2015/09/08	Automated Statchk
pH CaCl2 EXTRACT	AT	4176919	2015/09/03	2015/09/03	Neil Dassanayake
Total Kjeldahl Nitrogen - Soil	KONE	4178180	2015/09/04	2015/09/08	Sarabjit Raina
Total Organic Carbon in Soil	COMB	4178358	N/A	2015/09/08	Birenkumar Patel

Maxxam ID: AWZ650 Dup
Sample ID: TP19-2
Matrix: Soil

Collected: 2015/08/25
Shipped:
Received: 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4173329	N/A	2015/09/04	Lyndsey Hart
Total Organic Carbon in Soil	COMB	4178358	N/A	2015/09/08	Birenkumar Patel

Maxxam ID: AWZ651
Sample ID: TP20-2
Matrix: Soil

Collected: 2015/08/25
Shipped:
Received: 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Fraction Organic Carbon in Soil		4171987	N/A	2015/09/08	Automated Statchk
Moisture	BAL	4176670	N/A	2015/09/03	Shivani Desai
Ammonia-N	LACH/NH4	4176263	2015/09/03	2015/09/08	Sarabjit Raina
Organic Nitrogen in Soil	CALC	4171988	N/A	2015/09/08	Automated Statchk
pH CaCl2 EXTRACT	AT	4176919	2015/09/03	2015/09/03	Neil Dassanayake
Total Kjeldahl Nitrogen - Soil	KONE	4178180	2015/09/04	2015/09/08	Sarabjit Raina
Total Organic Carbon in Soil	COMB	4178358	N/A	2015/09/08	Birenkumar Patel

Maxxam ID: AWZ652
Sample ID: TP21-2
Matrix: Soil

Collected: 2015/08/25
Shipped:
Received: 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Fraction Organic Carbon in Soil		4171987	N/A	2015/09/08	Automated Statchk
Moisture	BAL	4177259	N/A	2015/09/03	Shivani Desai
Ammonia-N	LACH/NH4	4176263	2015/09/03	2015/09/08	Sarabjit Raina
Organic Nitrogen in Soil	CALC	4171988	N/A	2015/09/08	Automated Statchk
pH CaCl2 EXTRACT	AT	4176919	2015/09/03	2015/09/03	Neil Dassanayake
Total Kjeldahl Nitrogen - Soil	KONE	4178180	2015/09/04	2015/09/08	Sarabjit Raina

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

TEST SUMMARY

Maxxam ID: AWZ652
Sample ID: TP21-2
Matrix: Soil

Collected: 2015/08/25
Shipped:
Received: 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Organic Carbon in Soil	COMB	4178358	N/A	2015/09/08	Birenkumar Patel

Maxxam ID: AWZ653
Sample ID: TP23-3
Matrix: Soil

Collected: 2015/08/25
Shipped:
Received: 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Fraction Organic Carbon in Soil		4171987	N/A	2015/09/08	Automated Statchk
Moisture	BAL	4177259	N/A	2015/09/03	Shivani Desai
Ammonia-N	LACH/NH4	4176263	2015/09/03	2015/09/08	Sarabjit Raina
Organic Nitrogen in Soil	CALC	4171988	N/A	2015/09/08	Automated Statchk
pH CaCl2 EXTRACT	AT	4176919	2015/09/03	2015/09/03	Neil Dassanayake
Total Kjeldahl Nitrogen - Soil	KONE	4178180	2015/09/04	2015/09/08	Sarabjit Raina
Total Organic Carbon in Soil	COMB	4178358	N/A	2015/09/08	Birenkumar Patel

Maxxam ID: AWZ654
Sample ID: TP25-3
Matrix: Soil

Collected: 2015/08/25
Shipped:
Received: 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Fraction Organic Carbon in Soil		4171987	N/A	2015/09/08	Automated Statchk
Moisture	BAL	4177259	N/A	2015/09/03	Shivani Desai
Ammonia-N	LACH/NH4	4176263	2015/09/03	2015/09/08	Sarabjit Raina
Organic Nitrogen in Soil	CALC	4171988	N/A	2015/09/08	Automated Statchk
pH CaCl2 EXTRACT	AT	4176919	2015/09/03	2015/09/03	Neil Dassanayake
Total Kjeldahl Nitrogen - Soil	KONE	4178180	2015/09/04	2015/09/08	Sarabjit Raina
Total Organic Carbon in Soil	COMB	4178358	N/A	2015/09/08	Birenkumar Patel

Maxxam ID: AWZ655
Sample ID: TP26-1
Matrix: Soil

Collected: 2015/08/26
Shipped:
Received: 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Fraction Organic Carbon in Soil		4171987	N/A	2015/09/08	Automated Statchk
Moisture	BAL	4177259	N/A	2015/09/03	Shivani Desai
Ammonia-N	LACH/NH4	4176263	2015/09/03	2015/09/08	Sarabjit Raina
Organic Nitrogen in Soil	CALC	4171988	N/A	2015/09/08	Automated Statchk
pH CaCl2 EXTRACT	AT	4176919	2015/09/03	2015/09/03	Neil Dassanayake
Total Kjeldahl Nitrogen - Soil	KONE	4178180	2015/09/04	2015/09/08	Sarabjit Raina
Total Organic Carbon in Soil	COMB	4178358	N/A	2015/09/08	Birenkumar Patel

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

TEST SUMMARY

Maxxam ID: AWZ656
Sample ID: TP29-3
Matrix: Soil

Collected: 2015/08/26
Shipped:
Received: 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4173530	2015/09/01	2015/09/04	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4174625	2015/09/02	2015/09/03	Liliana Gaburici
Fraction Organic Carbon in Soil		4171987	N/A	2015/09/08	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	4178195	2015/09/04	2015/09/04	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4178429	2015/09/04	2015/09/04	Azita Fazaeli
MOISTURE	BAL	4174624	N/A	2015/09/03	Liliana Gaburici
Ammonia-N	LACH/NH4	4176263	2015/09/03	2015/09/08	Sarabjit Raina
Organic Nitrogen in Soil	CALC	4171988	N/A	2015/09/08	Automated Statchk
pH CaCl2 EXTRACT	AT	4176919	2015/09/03	2015/09/03	Neil Dassanayake
Total Kjeldahl Nitrogen - Soil	KONE	4178180	2015/09/04	2015/09/08	Sarabjit Raina
Total Organic Carbon in Soil	COMB	4178358	N/A	2015/09/08	Birenkumar Patel

Maxxam ID: AWZ656 Dup
Sample ID: TP29-3
Matrix: Soil

Collected: 2015/08/26
Shipped:
Received: 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4173530	2015/09/01	2015/09/04	Lyndsey Hart

Maxxam ID: AWZ657
Sample ID: TP32-2
Matrix: Soil

Collected: 2015/08/26
Shipped:
Received: 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4173530	2015/09/01	2015/09/04	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4174625	2015/09/02	2015/09/03	Liliana Gaburici
Fraction Organic Carbon in Soil		4171987	N/A	2015/09/08	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	4178195	2015/09/04	2015/09/04	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4178429	2015/09/04	2015/09/04	Azita Fazaeli
MOISTURE	BAL	4174624	N/A	2015/09/03	Liliana Gaburici
Ammonia-N	LACH/NH4	4176263	2015/09/03	2015/09/08	Sarabjit Raina
Organic Nitrogen in Soil	CALC	4171988	N/A	2015/09/08	Automated Statchk
pH CaCl2 EXTRACT	AT	4176919	2015/09/03	2015/09/03	Neil Dassanayake
Total Kjeldahl Nitrogen - Soil	KONE	4178180	2015/09/04	2015/09/08	Sarabjit Raina
Total Organic Carbon in Soil	COMB	4178358	N/A	2015/09/08	Birenkumar Patel

Maxxam ID: AWZ657 Dup
Sample ID: TP32-2
Matrix: Soil

Collected: 2015/08/26
Shipped:
Received: 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals Analysis by ICP	ICP	4178429	2015/09/04	2015/09/04	Azita Fazaeli

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

TEST SUMMARY

Maxxam ID: AWZ658
Sample ID: TP33-3
Matrix: Soil

Collected: 2015/08/26
Shipped:
Received: 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4173530	2015/09/01	2015/09/04	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4176933	2015/09/03	2015/09/03	Liliana Gaburici
Fraction Organic Carbon in Soil		4171987	N/A	2015/09/08	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	4178195	2015/09/04	2015/09/04	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4178429	2015/09/04	2015/09/04	Azita Fazaeli
MOISTURE	BAL	4176904	N/A	2015/09/04	Liliana Gaburici
Ammonia-N	LACH/NH4	4176263	2015/09/03	2015/09/08	Sarabjit Raina
Organic Nitrogen in Soil	CALC	4171988	N/A	2015/09/08	Automated Statchk
pH CaCl2 EXTRACT	AT	4176919	2015/09/03	2015/09/03	Neil Dassanayake
Total Kjeldahl Nitrogen - Soil	KONE	4178180	2015/09/04	2015/09/08	Sarabjit Raina
Total Organic Carbon in Soil	COMB	4178358	N/A	2015/09/08	Birenkumar Patel

Maxxam ID: AWZ658 Dup
Sample ID: TP33-3
Matrix: Soil

Collected: 2015/08/26
Shipped:
Received: 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Ammonia-N	LACH/NH4	4176263	2015/09/03	2015/09/08	Sarabjit Raina

Maxxam ID: AWZ659
Sample ID: TP36-3
Matrix: Soil

Collected: 2015/08/25
Shipped:
Received: 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Fraction Organic Carbon in Soil		4171987	N/A	2015/09/08	Automated Statchk
Moisture	BAL	4177259	N/A	2015/09/03	Shivani Desai
Ammonia-N	LACH/NH4	4176263	2015/09/03	2015/09/08	Sarabjit Raina
Organic Nitrogen in Soil	CALC	4171988	N/A	2015/09/08	Automated Statchk
pH CaCl2 EXTRACT	AT	4176919	2015/09/03	2015/09/03	Neil Dassanayake
Total Kjeldahl Nitrogen - Soil	KONE	4178180	2015/09/04	2015/09/08	Sarabjit Raina
Total Organic Carbon in Soil	COMB	4178358	N/A	2015/09/08	Birenkumar Patel

Maxxam ID: AWZ674
Sample ID: TP20-3
Matrix: Soil

Collected: 2015/08/25
Shipped:
Received: 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4173530	2015/09/01	2015/09/04	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4176933	2015/09/03	2015/09/03	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4182909	2015/09/09	2015/09/09	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4182931	2015/09/09	2015/09/09	Azita Fazaeli
MOISTURE	BAL	4176904	N/A	2015/09/04	Liliana Gaburici

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

TEST SUMMARY

Maxxam ID: AWZ674 Dup
Sample ID: TP20-3
Matrix: Soil

Collected: 2015/08/25
Shipped:
Received: 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4176933	2015/09/03	2015/09/03	Liliana Gaburici
MOISTURE	BAL	4176904	N/A	2015/09/04	Liliana Gaburici

Maxxam ID: AWZ675
Sample ID: TP20-1
Matrix: Soil

Collected: 2015/08/25
Shipped:
Received: 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4173530	2015/09/01	2015/09/04	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4176933	2015/09/03	2015/09/04	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4182909	2015/09/09	2015/09/09	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4182931	2015/09/09	2015/09/09	Azita Fazaeli
MOISTURE	BAL	4176904	N/A	2015/09/04	Liliana Gaburici

Maxxam ID: AWZ676
Sample ID: TP21-4
Matrix: Soil

Collected: 2015/08/25
Shipped:
Received: 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4173530	2015/09/01	2015/09/04	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4176933	2015/09/03	2015/09/04	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4182909	2015/09/09	2015/09/09	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4182931	2015/09/09	2015/09/09	Azita Fazaeli
MOISTURE	BAL	4176904	N/A	2015/09/04	Liliana Gaburici

Maxxam ID: AWZ677
Sample ID: TP22-2
Matrix: Soil

Collected: 2015/08/25
Shipped:
Received: 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4173530	2015/09/01	2015/09/04	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4176933	2015/09/03	2015/09/04	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4182909	2015/09/09	2015/09/09	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4182931	2015/09/09	2015/09/09	Azita Fazaeli
MOISTURE	BAL	4176904	N/A	2015/09/04	Liliana Gaburici

Maxxam ID: AWZ678
Sample ID: TP23-2
Matrix: Soil

Collected: 2015/08/25
Shipped:
Received: 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4173530	2015/09/01	2015/09/04	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4176933	2015/09/03	2015/09/04	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4182909	2015/09/09	2015/09/09	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4182931	2015/09/09	2015/09/09	Azita Fazaeli

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

TEST SUMMARY

Maxxam ID: AWZ678 **Collected:** 2015/08/25
Sample ID: TP23-2 **Shipped:**
Matrix: Soil **Received:** 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4176904	N/A	2015/09/04	Liliana Gaburici

Maxxam ID: AWZ679 **Collected:** 2015/08/25
Sample ID: TP24-2 **Shipped:**
Matrix: Soil **Received:** 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4173530	2015/09/01	2015/09/04	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4176933	2015/09/03	2015/09/04	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4182909	2015/09/09	2015/09/09	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4182931	2015/09/09	2015/09/09	Azita Fazaeli
MOISTURE	BAL	4176904	N/A	2015/09/04	Liliana Gaburici

Maxxam ID: AWZ680 **Collected:** 2015/08/25
Sample ID: TP25-4 **Shipped:**
Matrix: Soil **Received:** 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4173530	2015/09/01	2015/09/04	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4176933	2015/09/03	2015/09/04	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4182909	2015/09/09	2015/09/09	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4182931	2015/09/09	2015/09/09	Azita Fazaeli
MOISTURE	BAL	4176904	N/A	2015/09/04	Liliana Gaburici

Maxxam ID: AWZ681 **Collected:** 2015/08/25
Sample ID: TP25-2 **Shipped:**
Matrix: Soil **Received:** 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4173530	2015/09/01	2015/09/04	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4176933	2015/09/03	2015/09/04	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4182909	2015/09/09	2015/09/09	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4182931	2015/09/09	2015/09/09	Azita Fazaeli
MOISTURE	BAL	4176904	N/A	2015/09/04	Liliana Gaburici

Maxxam ID: AWZ682 **Collected:** 2015/08/26
Sample ID: TP26-3 **Shipped:**
Matrix: Soil **Received:** 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4173530	2015/09/01	2015/09/04	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4176933	2015/09/03	2015/09/04	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4182909	2015/09/09	2015/09/09	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4182931	2015/09/09	2015/09/09	Azita Fazaeli
MOISTURE	BAL	4176904	N/A	2015/09/04	Liliana Gaburici

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

TEST SUMMARY

Maxxam ID: AWZ714 **Collected:** 2015/08/26
Sample ID: TP27-3 **Shipped:**
Matrix: Soil **Received:** 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4173530	2015/09/01	2015/09/04	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4176933	2015/09/03	2015/09/04	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4182909	2015/09/09	2015/09/09	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4182931	2015/09/09	2015/09/09	Azita Fazaeli
MOISTURE	BAL	4176904	N/A	2015/09/04	Liliana Gaburici

Maxxam ID: AWZ715 **Collected:** 2015/08/26
Sample ID: TP28-4 **Shipped:**
Matrix: Soil **Received:** 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4173530	2015/09/01	2015/09/04	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4170971	2015/09/03	2015/09/04	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4182909	2015/09/09	2015/09/09	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4182931	2015/09/09	2015/09/09	Azita Fazaeli
MOISTURE	BAL	4176904	N/A	2015/09/04	Liliana Gaburici

Maxxam ID: AWZ716 **Collected:** 2015/08/26
Sample ID: TP29-1 **Shipped:**
Matrix: Soil **Received:** 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4173530	2015/09/01	2015/09/04	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4177277	2015/09/03	2015/09/04	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4182909	2015/09/09	2015/09/09	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4182931	2015/09/09	2015/09/09	Azita Fazaeli
MOISTURE	BAL	4177273	N/A	2015/09/04	Liliana Gaburici

Maxxam ID: AWZ716 Dup **Collected:** 2015/08/26
Sample ID: TP29-1 **Shipped:**
Matrix: Soil **Received:** 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4177277	2015/09/03	2015/09/04	Liliana Gaburici
MOISTURE	BAL	4177273	N/A	2015/09/04	Liliana Gaburici

Maxxam ID: AWZ717 **Collected:** 2015/08/26
Sample ID: TP30-3 **Shipped:**
Matrix: Soil **Received:** 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4173530	2015/09/01	2015/09/04	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4177277	2015/09/03	2015/09/04	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4182909	2015/09/09	2015/09/09	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4182931	2015/09/09	2015/09/09	Azita Fazaeli

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

TEST SUMMARY

Maxxam ID: AWZ717 **Collected:** 2015/08/26
Sample ID: TP30-3 **Shipped:**
Matrix: Soil **Received:** 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
MOISTURE	BAL	4177273	N/A	2015/09/04	Liliana Gaburici

Maxxam ID: AWZ718 **Collected:** 2015/08/26
Sample ID: TP31-3 **Shipped:**
Matrix: Soil **Received:** 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4173530	2015/09/01	2015/09/04	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4177277	2015/09/03	2015/09/05	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4182909	2015/09/09	2015/09/09	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4182931	2015/09/09	2015/09/09	Azita Fazaeli
MOISTURE	BAL	4177273	N/A	2015/09/04	Liliana Gaburici

Maxxam ID: AWZ719 **Collected:** 2015/08/26
Sample ID: TP34-3 **Shipped:**
Matrix: Soil **Received:** 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4173530	2015/09/01	2015/09/04	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4177277	2015/09/03	2015/09/05	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4182909	2015/09/09	2015/09/09	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4182931	2015/09/09	2015/09/09	Azita Fazaeli
MOISTURE	BAL	4177273	N/A	2015/09/04	Liliana Gaburici

Maxxam ID: AWZ719 Dup **Collected:** 2015/08/26
Sample ID: TP34-3 **Shipped:**
Matrix: Soil **Received:** 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	4182909	2015/09/09	2015/09/09	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4182931	2015/09/09	2015/09/09	Azita Fazaeli

Maxxam ID: AWZ720 **Collected:** 2015/08/26
Sample ID: TP35-2 **Shipped:**
Matrix: Soil **Received:** 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4173530	2015/09/01	2015/09/04	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4177277	2015/09/03	2015/09/05	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4182909	2015/09/09	2015/09/09	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4182931	2015/09/09	2015/09/09	Azita Fazaeli
MOISTURE	BAL	4177273	N/A	2015/09/04	Liliana Gaburici

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

TEST SUMMARY

Maxxam ID: AWZ721
Sample ID: TP36-4
Matrix: Soil

Collected: 2015/08/25
Shipped:
Received: 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4173530	2015/09/01	2015/09/04	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4177277	2015/09/03	2015/09/05	Liliana Gaburici
Strong Acid Leachable Metals by ICPMS	ICP/MS	4182909	2015/09/09	2015/09/09	Grace Bu
Acid Extractable Metals Analysis by ICP	ICP	4182931	2015/09/09	2015/09/09	Azita Fazaeli
MOISTURE	BAL	4177273	N/A	2015/09/04	Liliana Gaburici

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

GENERAL COMMENTS

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

Package 1	10.0°C

Results relate only to the items tested.

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4170971	o-Terphenyl	2015/09/04	111	30 - 130	96	30 - 130	92	%				
4173154	1,4-Difluorobenzene	2015/09/01	98	60 - 140	95	60 - 140	100	%				
4173154	4-Bromofluorobenzene	2015/09/01	104	60 - 140	90	60 - 140	110	%				
4173154	D10-Ethylbenzene	2015/09/01	90	30 - 130	101	30 - 130	98	%				
4173154	D4-1,2-Dichloroethane	2015/09/01	77	60 - 140	78	60 - 140	79	%				
4173530	1,4-Difluorobenzene	2015/09/04	96	60 - 140	97	60 - 140	93	%				
4173530	4-Bromofluorobenzene	2015/09/04	104	60 - 140	111	60 - 140	102	%				
4173530	D10-Ethylbenzene	2015/09/04	81	30 - 130	88	30 - 130	88	%				
4173530	D4-1,2-Dichloroethane	2015/09/04	77	60 - 140	79	60 - 140	73	%				
4174625	o-Terphenyl	2015/09/03	103	30 - 130	89	30 - 130	94	%				
4176933	o-Terphenyl	2015/09/03	111	30 - 130	95	30 - 130	87	%				
4177277	o-Terphenyl	2015/09/04	95	30 - 130	85	30 - 130	87	%				
4170971	F2 (C10-C16 Hydrocarbons)	2015/09/04	104	50 - 130	90	80 - 120	<10	ug/g	0.56	50		
4170971	F3 (C16-C34 Hydrocarbons)	2015/09/04	104	50 - 130	90	80 - 120	<50	ug/g	NC	50		
4170971	F4 (C34-C50 Hydrocarbons)	2015/09/04	104	50 - 130	90	80 - 120	<50	ug/g	NC	50		
4173154	Benzene	2015/09/01	68	60 - 140	79	60 - 140	<0.005	ug/g	NC	50		
4173154	Ethylbenzene	2015/09/01	80	60 - 140	88	60 - 140	<0.01	ug/g	NC	50		
4173154	F1 (C6-C10) - BTEX	2015/09/01					<10	ug/g	NC	50		
4173154	F1 (C6-C10)	2015/09/01	82	60 - 140	97	80 - 120	<10	ug/g	NC	50		
4173154	o-Xylene	2015/09/01	77	60 - 140	85	60 - 140	<0.02	ug/g	NC	50		
4173154	p+m-Xylene	2015/09/01	81	60 - 140	88	60 - 140	<0.04	ug/g	NC	50		
4173154	Toluene	2015/09/01	66	60 - 140	78	60 - 140	<0.02	ug/g	NC	50		
4173154	Total Xylenes	2015/09/01					<0.04	ug/g	NC	50		
4173329	Moisture	2015/09/04							40	50		
4173530	Benzene	2015/09/04	71	60 - 140	67	60 - 140	<0.005	ug/g	NC	50		
4173530	Ethylbenzene	2015/09/04	75	60 - 140	73	60 - 140	<0.01	ug/g	NC	50		
4173530	F1 (C6-C10) - BTEX	2015/09/04					<10	ug/g	NC	50		
4173530	F1 (C6-C10)	2015/09/04	93	60 - 140	99	80 - 120	<10	ug/g	NC	50		
4173530	o-Xylene	2015/09/04	72	60 - 140	68	60 - 140	<0.02	ug/g	NC	50		
4173530	p+m-Xylene	2015/09/04	76	60 - 140	74	60 - 140	<0.04	ug/g	NC	50		
4173530	Toluene	2015/09/04	66	60 - 140	67	60 - 140	<0.02	ug/g	NC	50		

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

QUALITY ASSURANCE REPORT(CONT'D)

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4173530	Total Xylenes	2015/09/04					<0.04	ug/g	NC	50		
4174624	Moisture	2015/09/03							29	50		
4174625	F2 (C10-C16 Hydrocarbons)	2015/09/03	97	50 - 130	82	80 - 120	<10	ug/g	NC	50		
4174625	F3 (C16-C34 Hydrocarbons)	2015/09/03	97	50 - 130	82	80 - 120	<50	ug/g	NC	50		
4174625	F4 (C34-C50 Hydrocarbons)	2015/09/03	97	50 - 130	82	80 - 120	<50	ug/g	NC	50		
4176263	Total Ammonia-N	2015/09/08	118	75 - 125	114	80 - 120	<20	ug/g	NC	35		
4176670	Moisture	2015/09/03							7.4	20		
4176904	Moisture	2015/09/04							12	50		
4176919	Available (CaCl2) pH	2015/09/03			100	97 - 103			0.56	N/A		
4176933	F2 (C10-C16 Hydrocarbons)	2015/09/03	108	50 - 130	92	80 - 120	<10	ug/g	12	50		
4176933	F3 (C16-C34 Hydrocarbons)	2015/09/03	108	50 - 130	92	80 - 120	<50	ug/g	9.1	50		
4176933	F4 (C34-C50 Hydrocarbons)	2015/09/03	108	50 - 130	92	80 - 120	<50	ug/g	NC	50		
4177259	Moisture	2015/09/03							2.2	20		
4177273	Moisture	2015/09/04							15	50		
4177277	F2 (C10-C16 Hydrocarbons)	2015/09/04	95	50 - 130	80	80 - 120	<10	ug/g	NC	50		
4177277	F3 (C16-C34 Hydrocarbons)	2015/09/04	95	50 - 130	80	80 - 120	<50	ug/g	NC	50		
4177277	F4 (C34-C50 Hydrocarbons)	2015/09/04	95	50 - 130	80	80 - 120	<50	ug/g	NC	50		
4178180	Total Kjeldahl Nitrogen	2015/09/08	NC	80 - 120	90	80 - 120	<10	ug/g	6.1	40	97	80 - 120
4178195	Acid Extractable Antimony (Sb)	2015/09/04	91	75 - 125	100	80 - 120	<0.20	ug/g	NC	30		
4178195	Acid Extractable Arsenic (As)	2015/09/04	94	75 - 125	99	80 - 120	<1.0	ug/g	NC	30		
4178195	Acid Extractable Barium (Ba)	2015/09/04	NC	75 - 125	106	80 - 120	<0.50	ug/g	5.1	30		
4178195	Acid Extractable Beryllium (Be)	2015/09/04	100	75 - 125	98	80 - 120	<0.20	ug/g	NC	30		
4178195	Acid Extractable Cadmium (Cd)	2015/09/04	100	75 - 125	100	80 - 120	<0.10	ug/g	NC	30		
4178195	Acid Extractable Chromium (Cr)	2015/09/04	NC	75 - 125	100	80 - 120	<1.0	ug/g	2.9	30		
4178195	Acid Extractable Cobalt (Co)	2015/09/04	94	75 - 125	103	80 - 120	<0.10	ug/g	1.2	30		
4178195	Acid Extractable Copper (Cu)	2015/09/04	NC	75 - 125	102	80 - 120	<0.50	ug/g	4.2	30		
4178195	Acid Extractable Lead (Pb)	2015/09/04	NC	75 - 125	100	80 - 120	<1.0	ug/g	5.0	30		
4178195	Acid Extractable Molybdenum (Mo)	2015/09/04	101	75 - 125	100	80 - 120	<0.50	ug/g	NC	30		
4178195	Acid Extractable Nickel (Ni)	2015/09/04	NC	75 - 125	102	80 - 120	<0.50	ug/g	3.0	30		
4178195	Acid Extractable Selenium (Se)	2015/09/04	97	75 - 125	103	80 - 120	<0.50	ug/g	NC	30		
4178195	Acid Extractable Silver (Ag)	2015/09/04	98	75 - 125	100	80 - 120	<0.20	ug/g	NC	30		

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

QUALITY ASSURANCE REPORT(CONT'D)

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4178195	Acid Extractable Thallium (Tl)	2015/09/04	94	75 - 125	99	80 - 120	<0.050	ug/g	NC	30		
4178195	Acid Extractable Tin (Sn)	2015/09/04	97	75 - 125	99	80 - 120	<5.0	ug/g				
4178195	Acid Extractable Uranium (U)	2015/09/04	97	75 - 125	101	80 - 120	<0.050	ug/g	3.2	30		
4178195	Acid Extractable Vanadium (V)	2015/09/04	NC	75 - 125	99	80 - 120	<5.0	ug/g	NC	30		
4178195	Acid Extractable Zinc (Zn)	2015/09/04	NC	75 - 125	95	80 - 120	<5.0	ug/g	3.3	30		
4178358	Total Organic Carbon	2015/09/08					<500	mg/kg	3.7	35	98	75 - 125
4178429	Acid Extractable Sulphur (S)	2015/09/04	NC	75 - 125	97	80 - 120	<50	ug/g	3.0	30		
4182909	Acid Extractable Antimony (Sb)	2015/09/09	92	75 - 125	98	80 - 120	<0.20	ug/g	NC	30		
4182909	Acid Extractable Arsenic (As)	2015/09/09	100	75 - 125	101	80 - 120	<1.0	ug/g	NC	30		
4182909	Acid Extractable Barium (Ba)	2015/09/09	NC	75 - 125	97	80 - 120	<0.50	ug/g	1.1	30		
4182909	Acid Extractable Beryllium (Be)	2015/09/09	99	75 - 125	99	80 - 120	<0.20	ug/g	NC	30		
4182909	Acid Extractable Cadmium (Cd)	2015/09/09	96	75 - 125	99	80 - 120	<0.10	ug/g	NC	30		
4182909	Acid Extractable Chromium (Cr)	2015/09/09	97	75 - 125	101	80 - 120	<1.0	ug/g	4.1	30		
4182909	Acid Extractable Cobalt (Co)	2015/09/09	98	75 - 125	103	80 - 120	<0.10	ug/g	2.7	30		
4182909	Acid Extractable Copper (Cu)	2015/09/09	NC	75 - 125	104	80 - 120	<0.50	ug/g	1.5	30		
4182909	Acid Extractable Lead (Pb)	2015/09/09	98	75 - 125	101	80 - 120	<1.0	ug/g	0.034	30		
4182909	Acid Extractable Molybdenum (Mo)	2015/09/09	97	75 - 125	100	80 - 120	<0.50	ug/g	NC	30		
4182909	Acid Extractable Nickel (Ni)	2015/09/09	98	75 - 125	101	80 - 120	<0.50	ug/g	3.5	30		
4182909	Acid Extractable Selenium (Se)	2015/09/09	98	75 - 125	102	80 - 120	<0.50	ug/g	NC	30		
4182909	Acid Extractable Silver (Ag)	2015/09/09	98	75 - 125	103	80 - 120	<0.20	ug/g	NC	30		
4182909	Acid Extractable Thallium (Tl)	2015/09/09	96	75 - 125	101	80 - 120	<0.050	ug/g	NC	30		
4182909	Acid Extractable Tin (Sn)	2015/09/09	95	75 - 125	100	80 - 120	<5.0	ug/g	NC	30		
4182909	Acid Extractable Uranium (U)	2015/09/09	100	75 - 125	101	80 - 120	<0.050	ug/g	2.8	30		
4182909	Acid Extractable Vanadium (V)	2015/09/09	NC	75 - 125	101	80 - 120	<5.0	ug/g	NC	30		
4182909	Acid Extractable Zinc (Zn)	2015/09/09	NC	75 - 125	98	80 - 120	<5.0	ug/g	0.50	30		

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

QUALITY ASSURANCE REPORT(CONT'D)

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
4182931	Acid Extractable Sulphur (S)	2015/09/09	NC	75 - 125	97	80 - 120	<50	ug/g	1.4	30		

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.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

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).

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

Maxxam Job #: B5H4703
Report Date: 2015/09/10

exp Services Inc
Client Project #: OTT-00206333-A0
Site Location: CHAR LAKE
Sampler Initials: DC

VALIDATION SIGNATURE PAGE

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

Cristina Carriere, Scientific Services

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 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

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 3

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#17497 exp Services Inc	Company Name:		Quotation #:	B46066	Maxxam Job #:	Bottle Order #: 526437
Attention:	Accounts Payable	Attention:	Rob Renaud / Daniel Clarke	P.O. #:			
Address:	100-2650 Queensview Drive Ottawa ON K2B 8H6	Address:		Project:	OTT-00206333-A0	COC #:	Project Manager:
Tel:	(613) 688-1899 Fax: (613) 225-7337	Tel:	Fax:	Project Name:	Char Lake	C#526437-03-01	Hina Siddiqui
Email:	accounting.ottawa@exp.com; Karen.Burke@exp.com	Email:	Robert.Renaud@exp.com / Daniel.Clarke@exp.com	Site #:			
				Sampled By:	Daniel Clarke		

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)? ___

Field Filtered (please circle): Metals / Hg / Cr VI

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	CCME Petroleum Hydrocarbons	O.Reg 153 ICPMS Metals (Soil)	Fraction Organic Carbon in Soil	pH CaCl2 EXTRACT	Moisture	Nitrogen	Phosphorous	Potassium	# of Bottles	Comments
1		TP19-2	Aug 25/15	11:00	SOIL			X	X	X	X	X	X	1	
2		TP20-2	Aug 25/15	12:05	SOIL			↓	↓	↓	↓	↓	↓	1	
3		TP21-2	Aug 25/15	14:05	SOIL			↓	↓	↓	↓	↓	↓	1	
4		TP23-3	Aug 25/15	15:05	SOIL			↓	↓	↓	↓	↓	↓	1	
5		TP25-3	Aug 25/15	19:03	SOIL			↓	↓	↓	↓	↓	↓	1	
6		TP26-1	Aug 26/15	7:25	SOIL			↓	↓	↓	↓	↓	↓	1	
7		TP29-3	Aug 26/15	10:35	SOIL			↓	↓	↓	↓	↓	↓	1	
8		TP32-2	Aug 26/15	14:00	SOIL			↓	↓	↓	↓	↓	↓	1	
9		TP33-3	Aug 26/15	15:00	SOIL			↓	↓	↓	↓	↓	↓	1	
10		TP36-3	Aug 25/15	10:05	SOIL			↓	↓	↓	↓	↓	↓	1	

31-Aug-15 10:00
Hina Siddiqui
B5H4703
FHB OTT-002

RECEIVED IN OTTAWA
ON ICE

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Daniel Clarke / Daniel Clarke	15/08/27	6:00 p.m.	Madison	2015/08/31	10:00	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	10, 10, 10	Present	✓	
		Intact	✓	

* 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.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

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

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#17497 exp Services Inc	Company Name:		Quotation #:	B46066	Maxxam Job #:	Bottle Order #: 526437
Attention:	Accounts Payable	Attention:	Rob Renaud / Daniel Clarke	P.O. #:			
Address:	100-2650 Queensview Drive Ottawa ON K2B 8H6	Address:		Project:			
				Project Name:	Chat Lake	COC #:	Project Manager:
Tel:	(613) 688-1899 Fax: (613) 225-7337	Tel:	Fax:	Site #:		C#526437-01-01	Hina Siddiqui
Email:	accounting.ottawa@exp.com; Karen.Burke@exp.com	Email:	Robert.Renaud@exp.com / Daniel.clarke@exp.com	Sampled By:	Daniel Clarke		

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 CWS

Special Instructions

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

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	ANALYSIS REQUESTED (PLEASE BE SPECIFIC): CCME Petroleum Hydrocarbons + BTEX	O.Reg 153 ICPMS Metals (Soil)	Fraction Organic Carbon in Soil	pH CaCl2 EXTRACT	Moisture	# of Bottles	Comments
1		TP 19-2	Aug 25/15	11:00	SOIL		X					1	
2		TP 20-3		12:00	SOIL								
3		TP 20-1		13:00	SOIL								
4		TP 21-4		14:00	SOIL								
5		TP 22-2		16:00	SOIL								
6		TP 23-2		15:30	SOIL								
7		TP 24-2		18:30	SOIL								
8		TP 25-4		19:05	SOIL								RECEIVED IN OTTAWA
9		TP25-2		19:00	SOIL								
10		TP26-3	Aug 26/15	7:30	SOIL								ON ICE

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Daniel Clarke / Daniel Clarke	15/08/27	18:00	Madison B / Madison B	15/08/31	10:00	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	10, 10, 10	Present	✓	
		Intact		

* 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.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

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 2 of 3

INVOICE TO:	REPORT TO:	PROJECT INFORMATION:	Laboratory Use Only:
Company Name: #17497 exp Services Inc	Company Name:	Quotation #: B46066	Maxxam Job #: / Bottle Order #: 526437
Attention: Accounts Payable	Attention: Rob Renaud / Daniel Clarke	P.O. #:	
Address: 100-2650 Queensview Drive, Ottawa ON K2B 8H6	Address:	Project: OH-00206333-A	COC #: C#526437-02-01 / Project Manager: Hina Siddiqui
Tel: (613) 688-1899 Fax: (613) 225-7337	Tel: Fax:	Project Name: Charlotte	
Email: accounting.ottawa@exp.com; Karen.Burke@exp.com	Email: Robert.Renaud@exp.com / Daniel.Clarke@exp.com	Site #:	
		Sampled By: Daniel Clarke	

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 CWS

Special Instructions:

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

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ____ Time Required: ____ ☐
Rush Confirmation Number: ____ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	ANALYSIS REQUESTED (PLEASE BE SPECIFIC): CCME Petroleum Hydrocarbons + BTEX	O.Reg 153 ICPMS Metals (Soil)	Fraction Organic Carbon in Soil	pH CaCl2 EXTRACT	Moisture	# of Bottles	Comments
1		TP27-3	Aug 24/15	8:30	SOIL		X					1	
2		TP28-4		9:30	SOIL								
3		TP29-1		10:30	SOIL								
4		TP29-3		10:35	SOIL								
5		TP30-3		11:30	SOIL								
6		TP31-3		13:00	SOIL								
7		TP32-2		14:00	SOIL								
8		TP33-3		15:00	SOIL								RECEIVED IN OTTAWA
9		TP34-3		16:00	SOIL								
10		TP35-2 / TP36-4	Aug 25/15	17:00 / 10:00	SOIL / Soil								ON ICE

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Daniel Clarke / Daniel Clarke	15/08/27	16:00	Madison B / Madison B	15/08/31	10:00	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	10,10,10	Present	✓	
		Intact	✓	

* 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.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

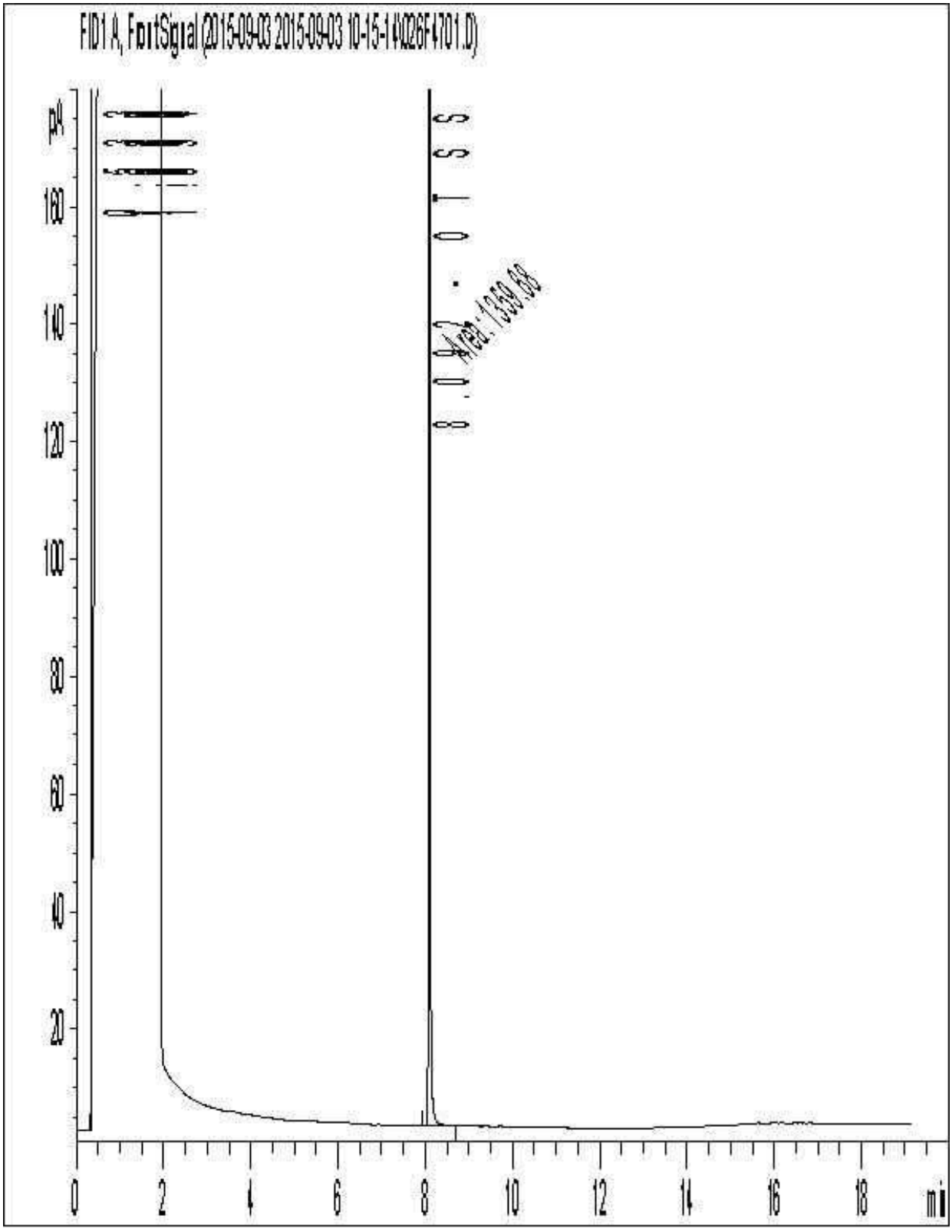
White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B5H4703
Report Date: 2015/09/10
Maxxam Sample: AWZ650

exp Services Inc
Client Project #: OTT-00206333-A0
Project name: CHAR LAKE
Client ID: TP19-2

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

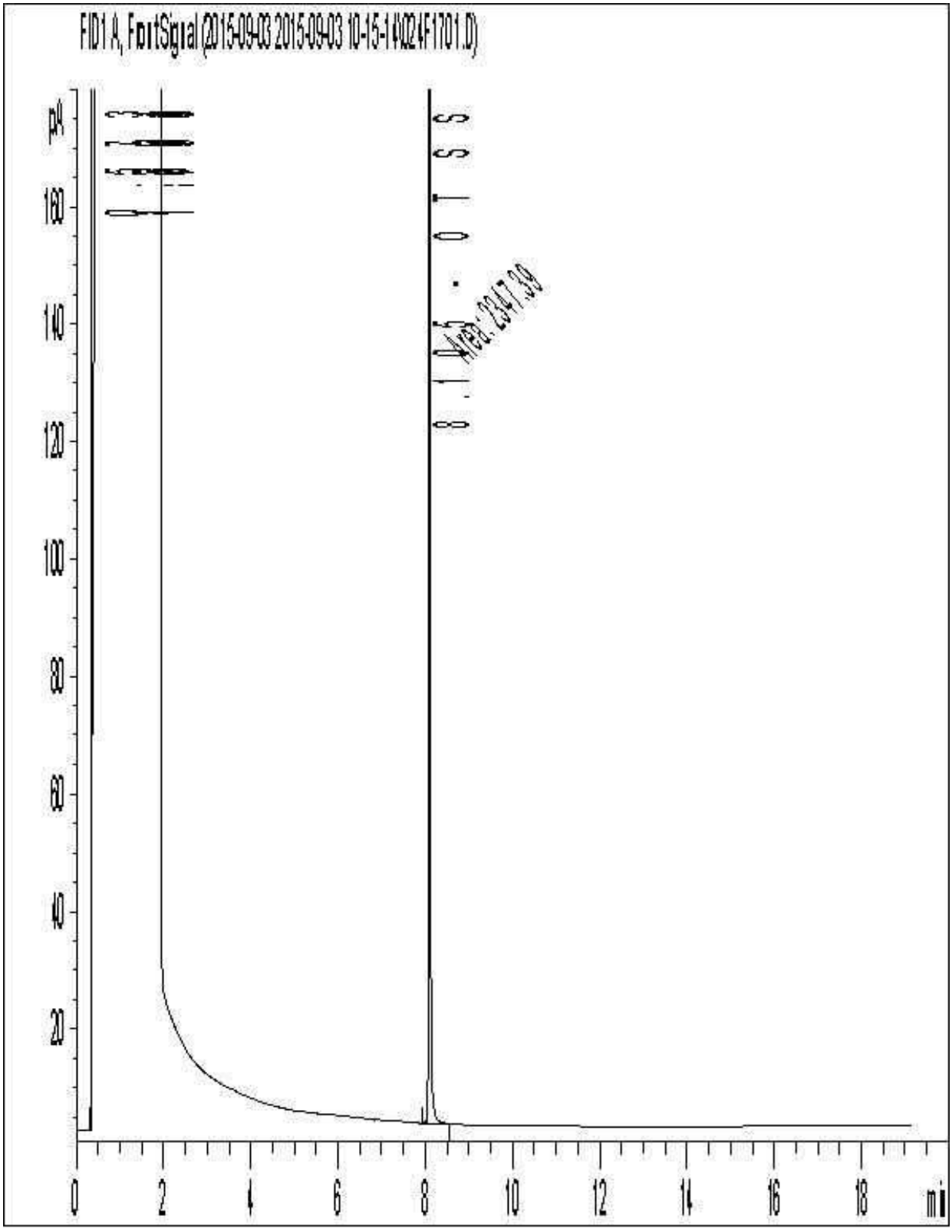


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B5H4703
Report Date: 2015/09/10
Maxxam Sample: AWZ656

exp Services Inc
Client Project #: OTT-00206333-A0
Project name: CHAR LAKE
Client ID: TP29-3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

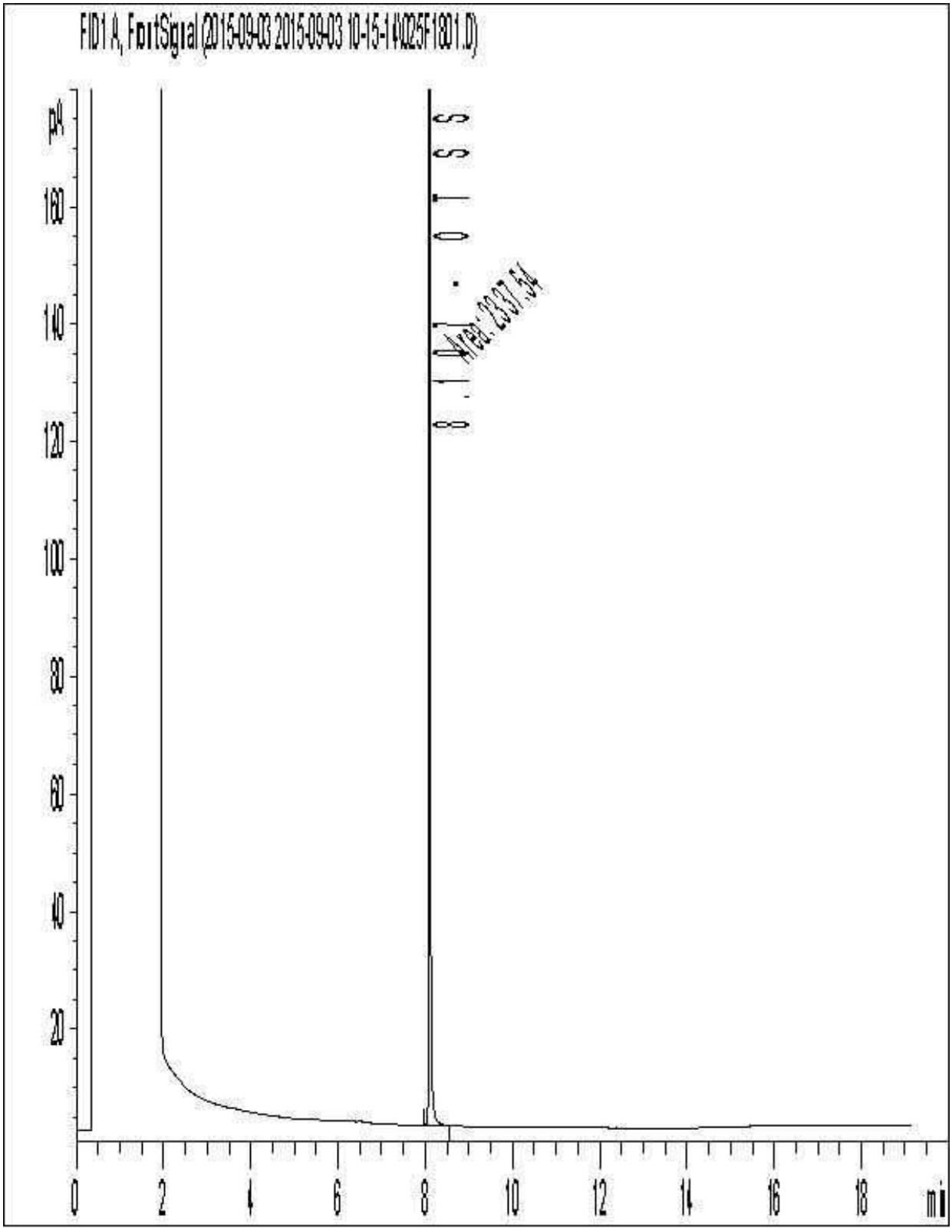


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B5H4703
Report Date: 2015/09/10
Maxxam Sample: AWZ657

exp Services Inc
Client Project #: OTT-00206333-A0
Project name: CHAR LAKE
Client ID: TP32-2

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

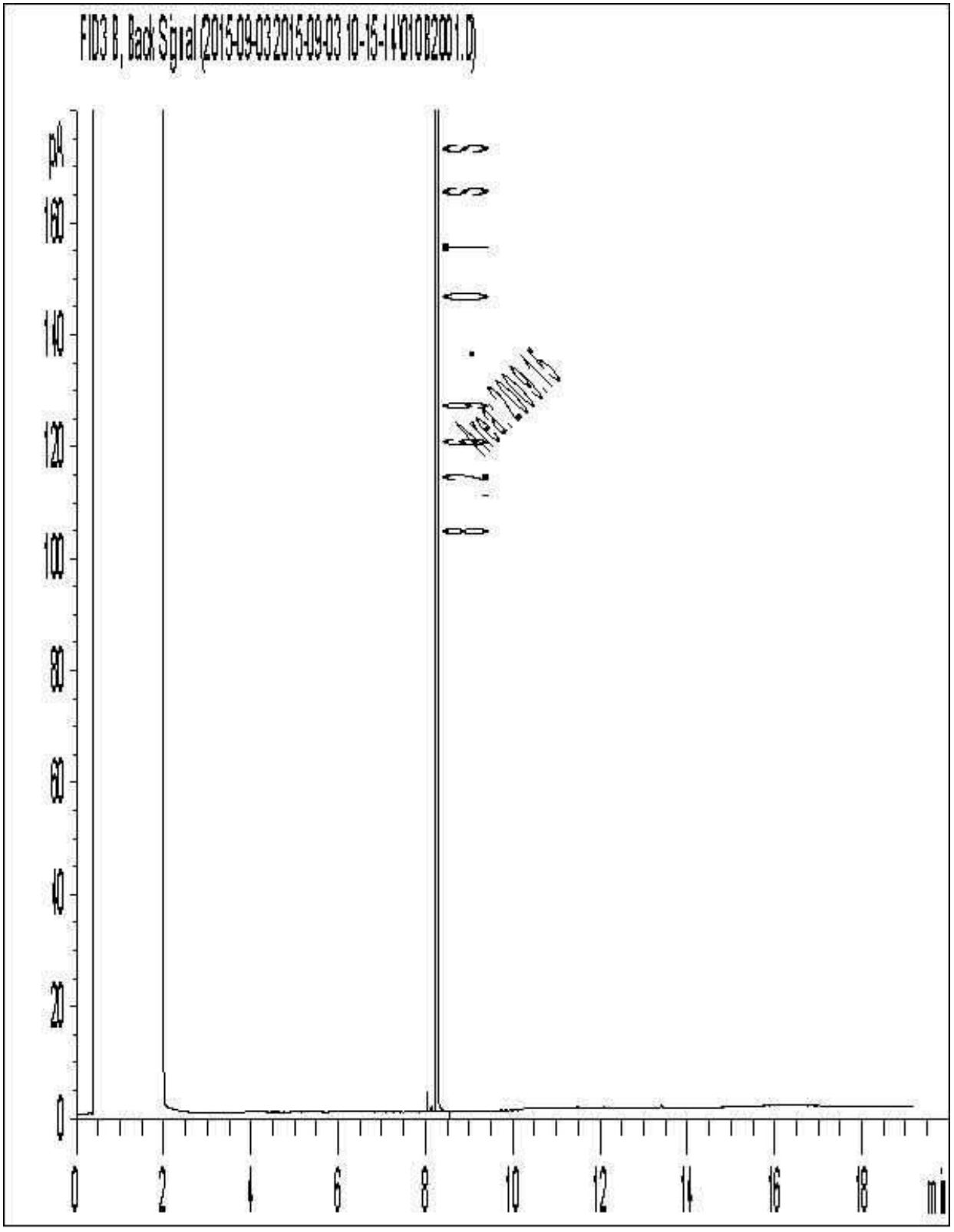


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B5H4703
Report Date: 2015/09/10
Maxxam Sample: AWZ658

exp Services Inc
Client Project #: OTT-00206333-A0
Project name: CHAR LAKE
Client ID: TP33-3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

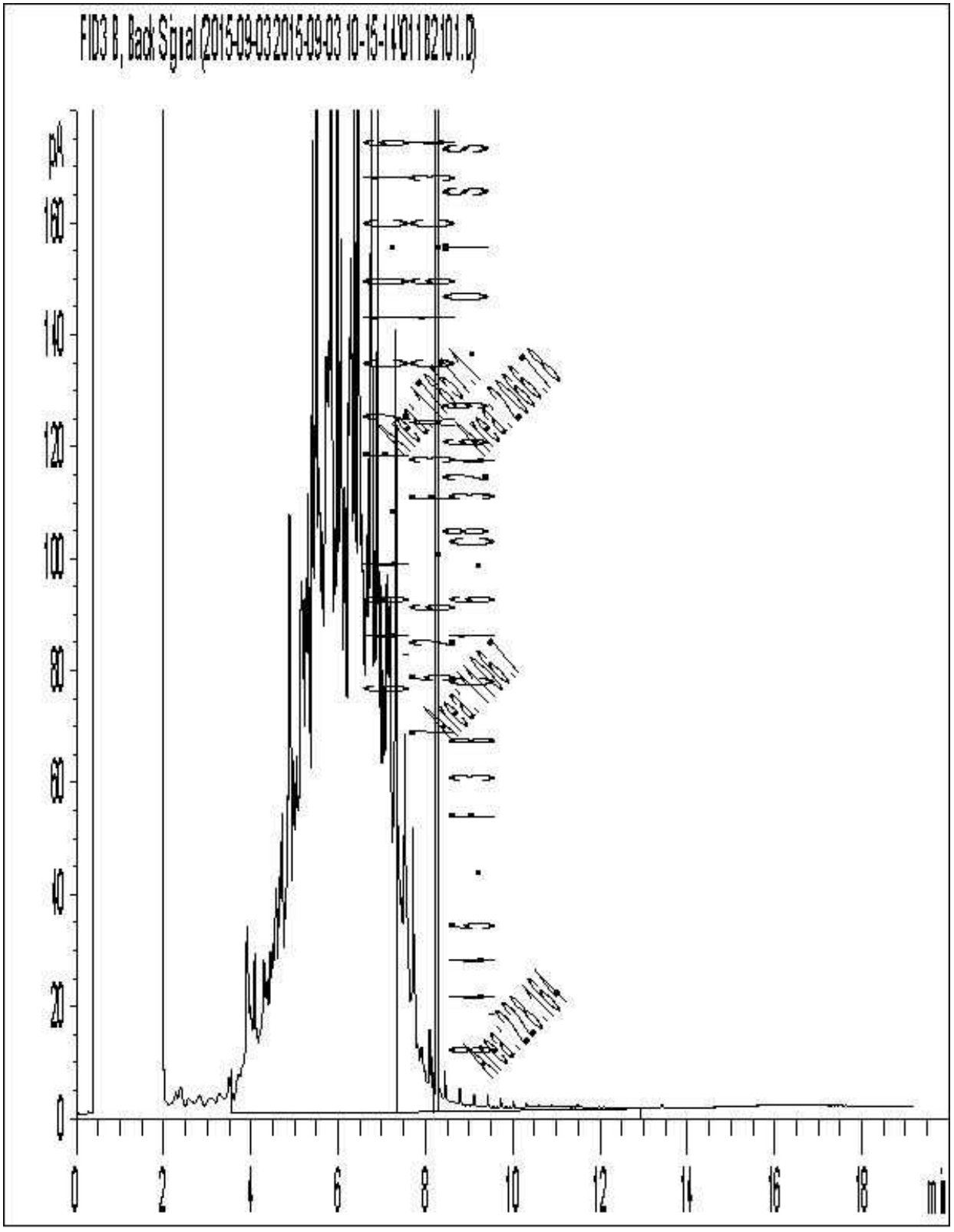


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B5H4703
Report Date: 2015/09/10
Maxxam Sample: AWZ674

exp Services Inc
Client Project #: OTT-00206333-A0
Project name: CHAR LAKE
Client ID: TP20-3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

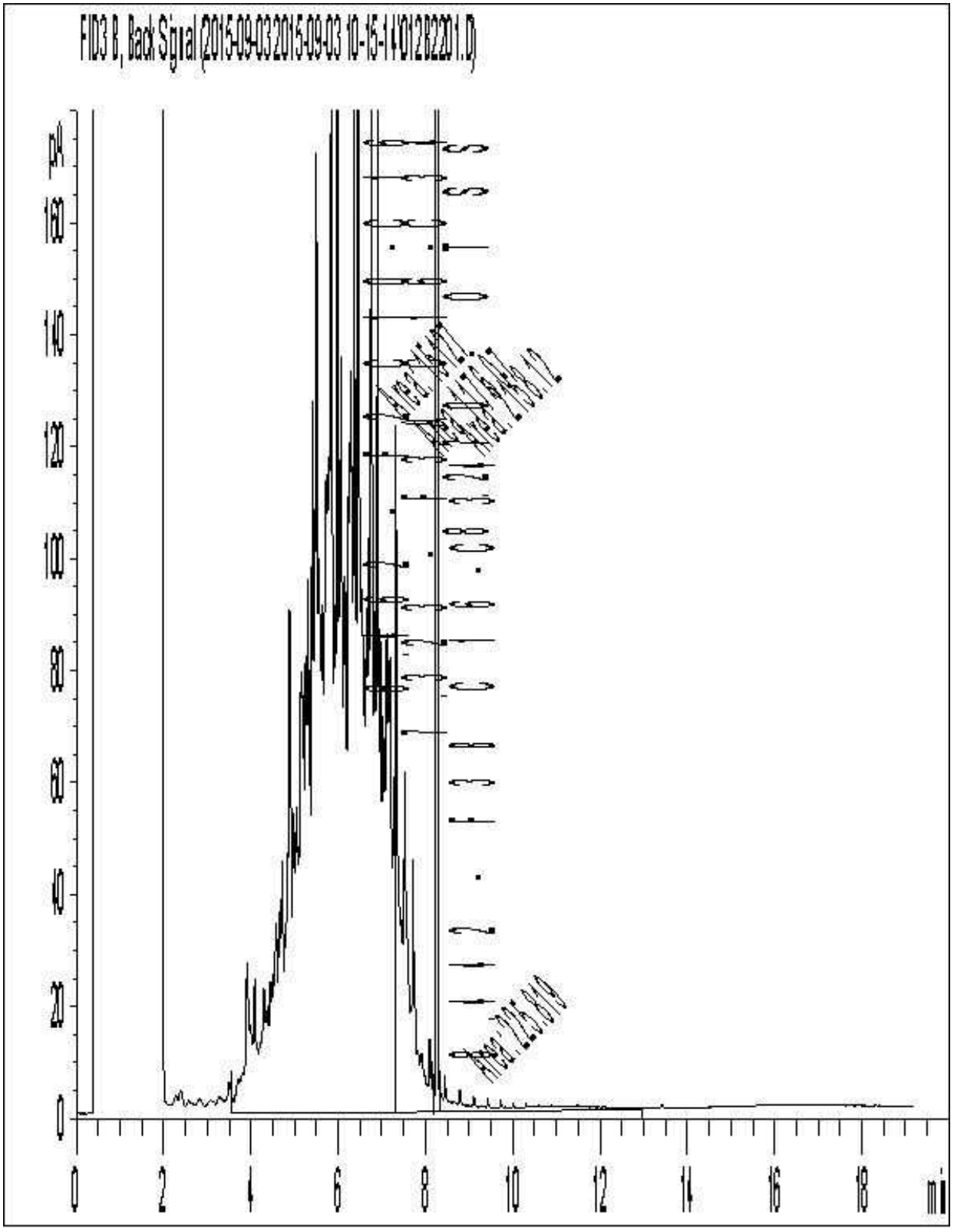


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B5H4703
Report Date: 2015/09/10
Maxxam Sample: AWZ674 Lab-Dup

exp Services Inc
Client Project #: OTT-00206333-A0
Project name: CHAR LAKE
Client ID: TP20-3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

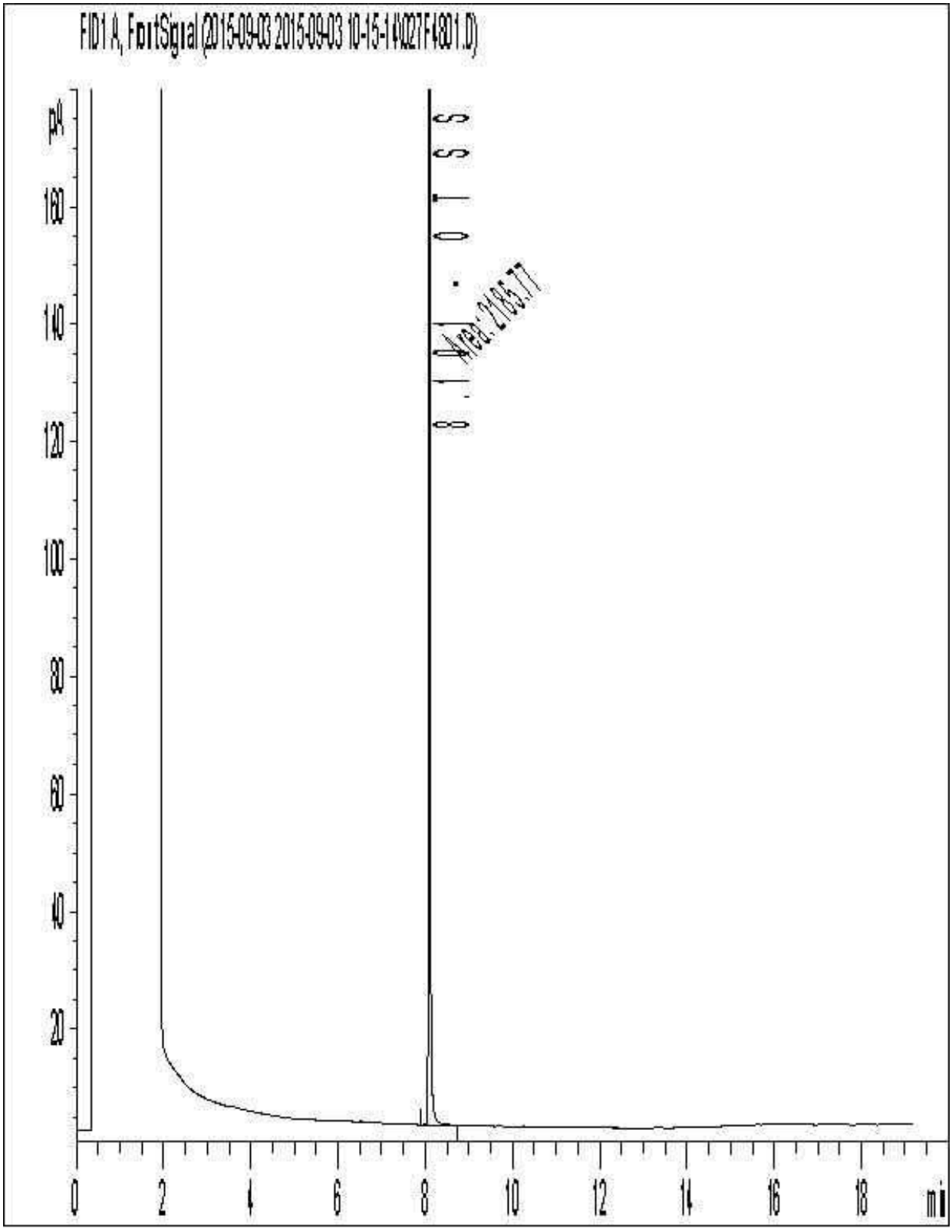


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B5H4703
Report Date: 2015/09/10
Maxxam Sample: AWZ675

exp Services Inc
Client Project #: OTT-00206333-A0
Project name: CHAR LAKE
Client ID: TP20-1

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

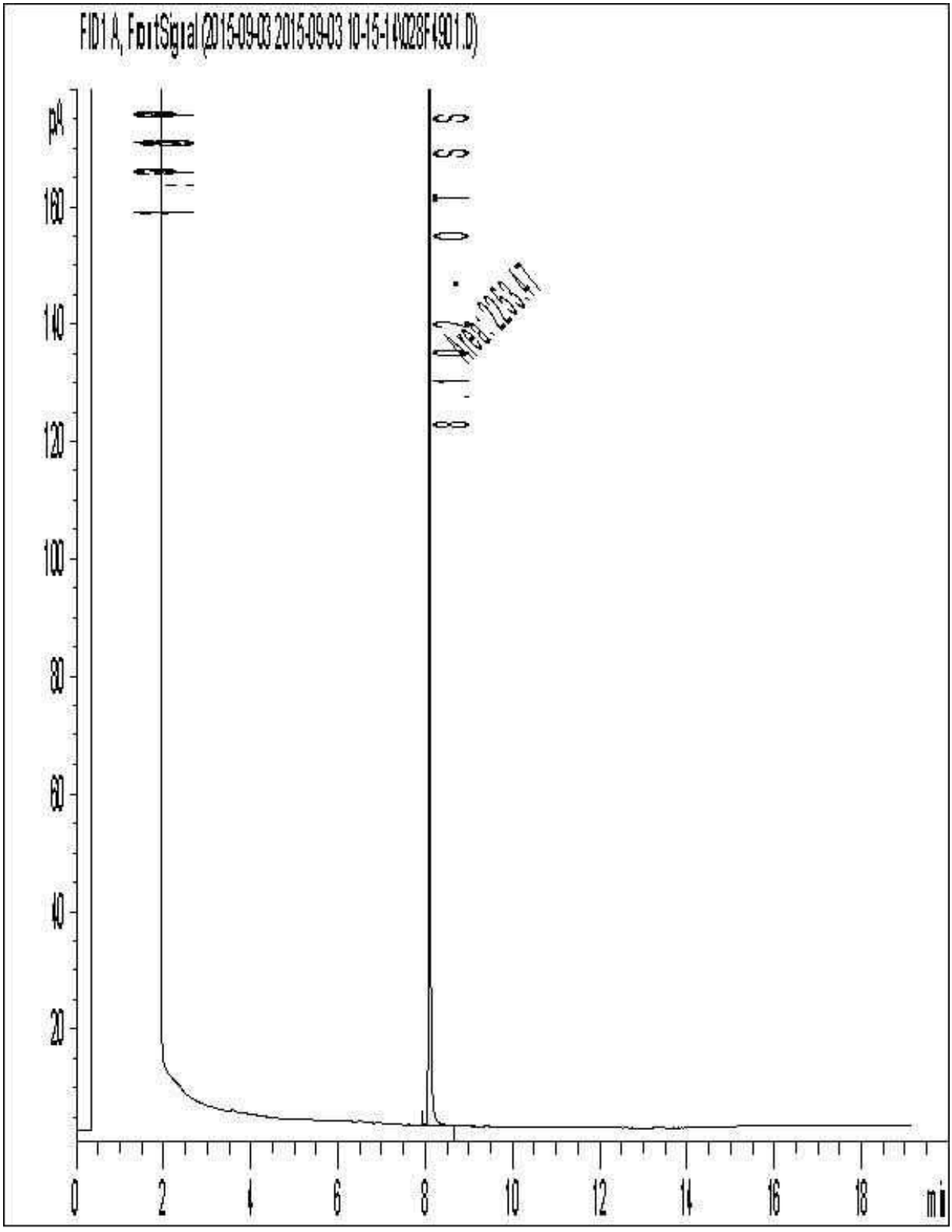


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B5H4703
Report Date: 2015/09/10
Maxxam Sample: AWZ676

exp Services Inc
Client Project #: OTT-00206333-A0
Project name: CHAR LAKE
Client ID: TP21-4

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

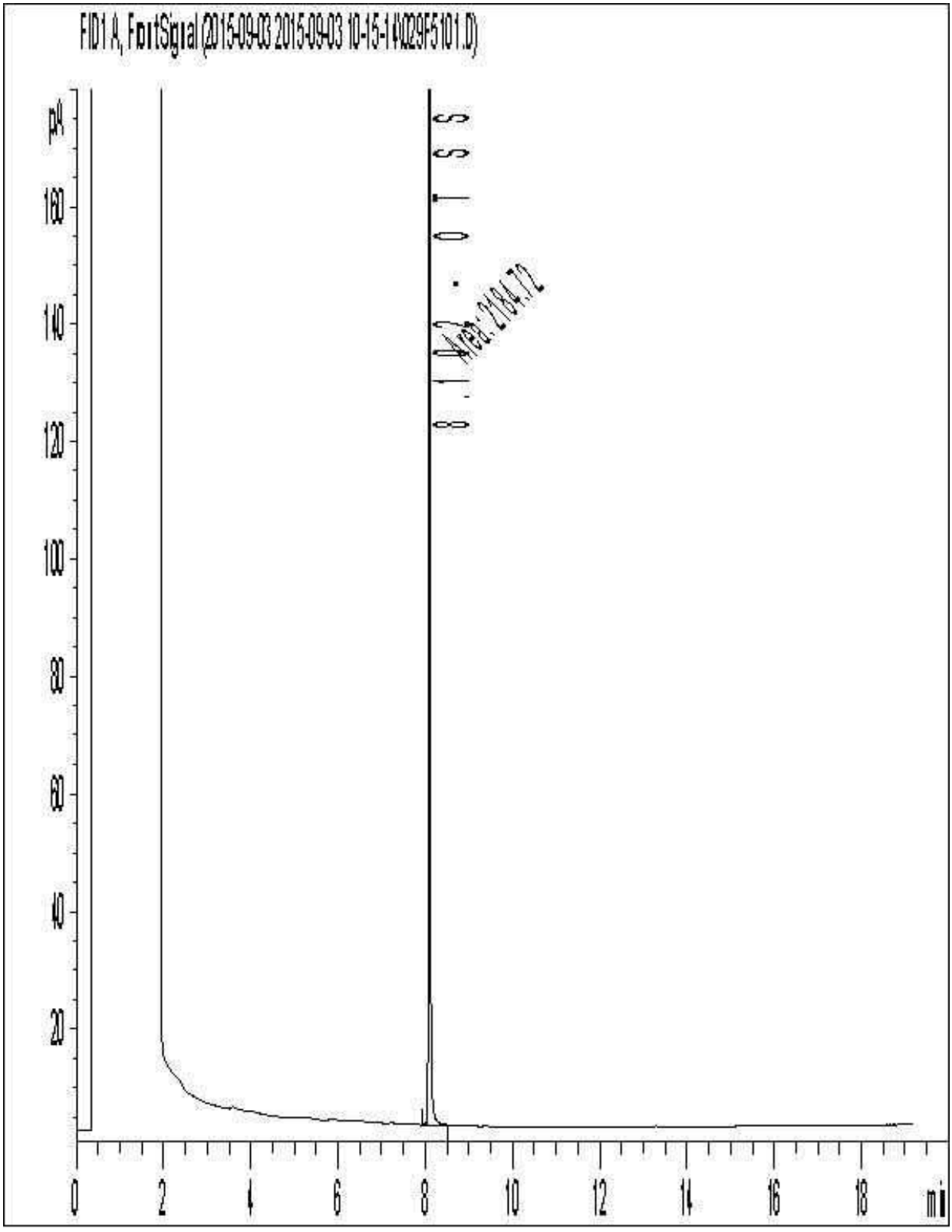


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B5H4703
Report Date: 2015/09/10
Maxxam Sample: AWZ677

exp Services Inc
Client Project #: OTT-00206333-A0
Project name: CHAR LAKE
Client ID: TP22-2

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

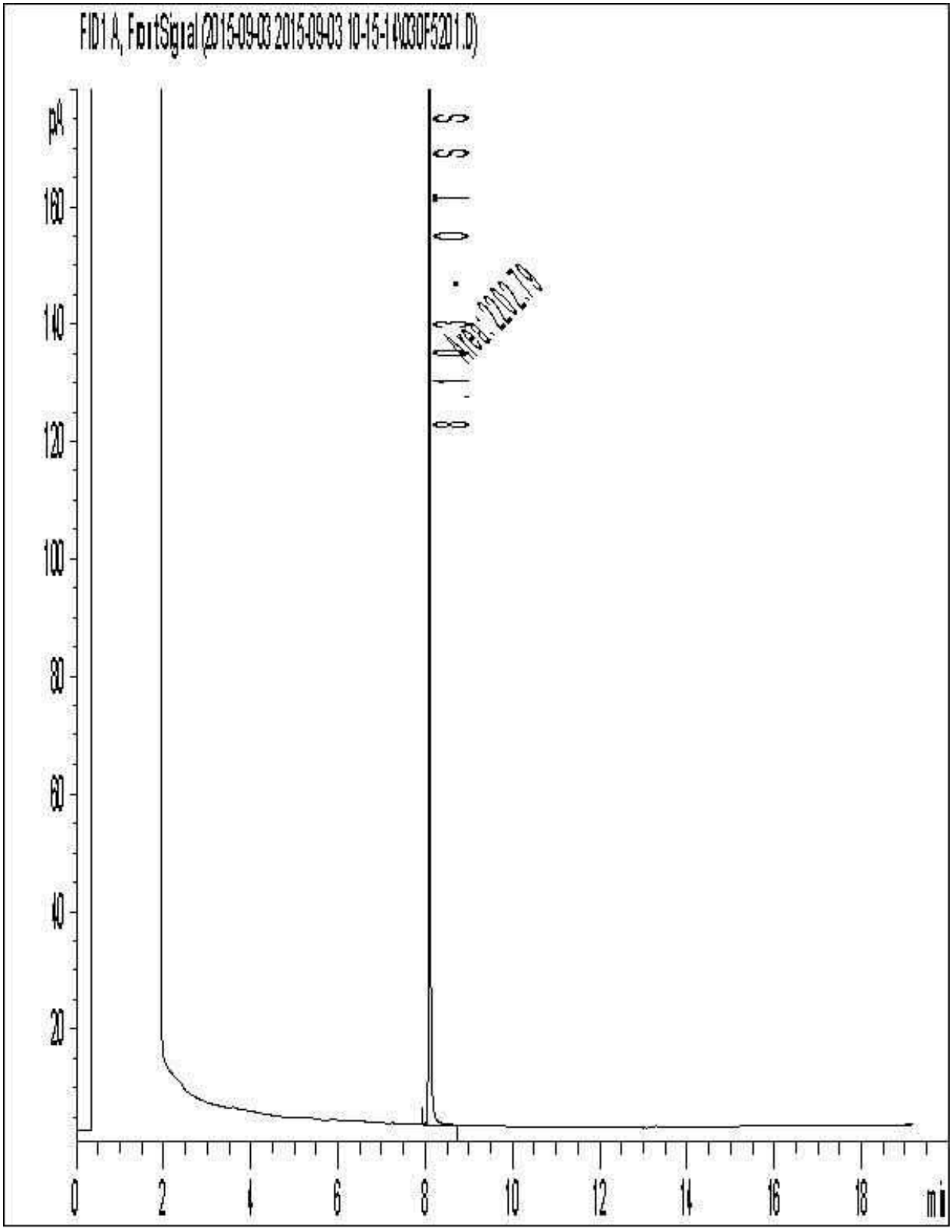


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B5H4703
Report Date: 2015/09/10
Maxxam Sample: AWZ678

exp Services Inc
Client Project #: OTT-00206333-A0
Project name: CHAR LAKE
Client ID: TP23-2

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

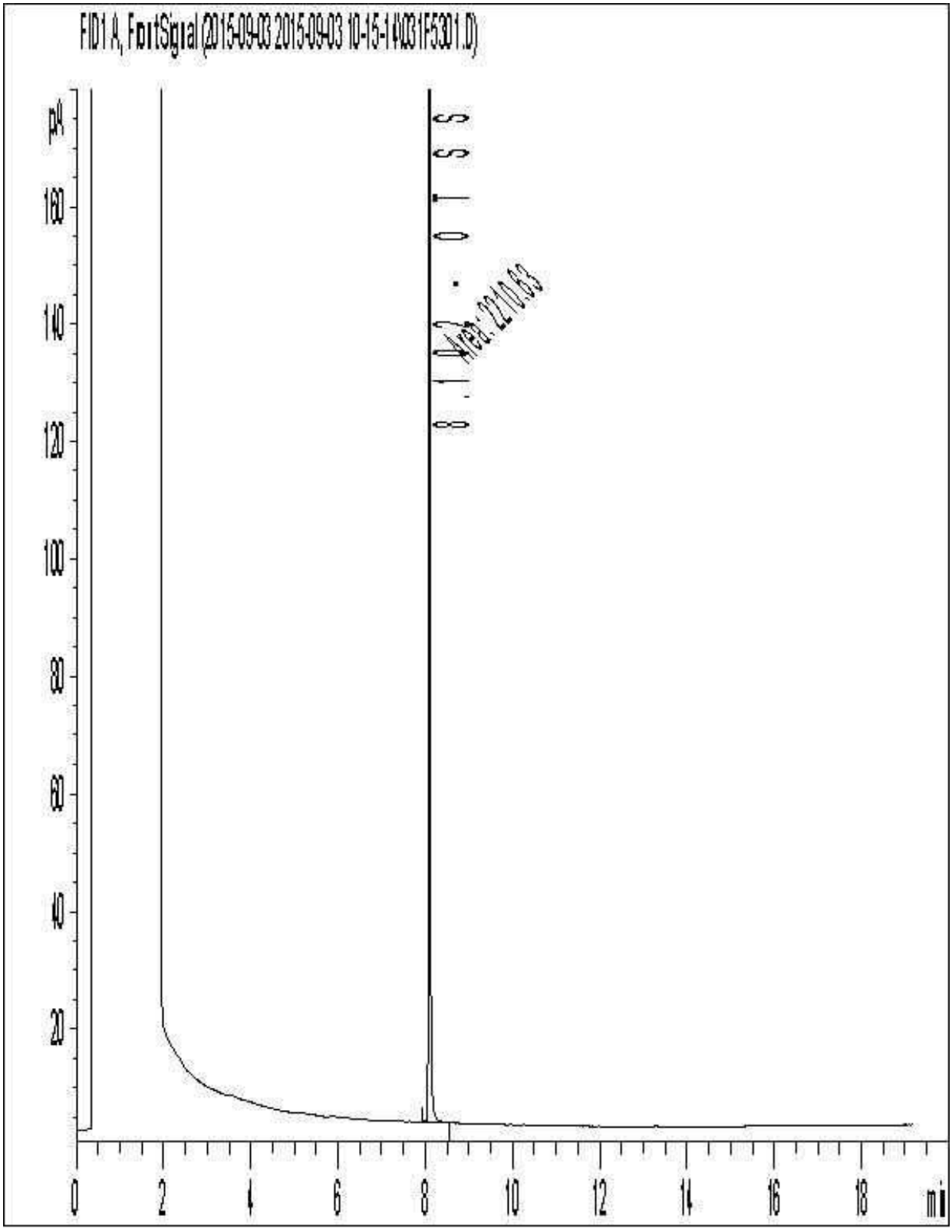


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B5H4703
Report Date: 2015/09/10
Maxxam Sample: AWZ679

exp Services Inc
Client Project #: OTT-00206333-A0
Project name: CHAR LAKE
Client ID: TP24-2

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

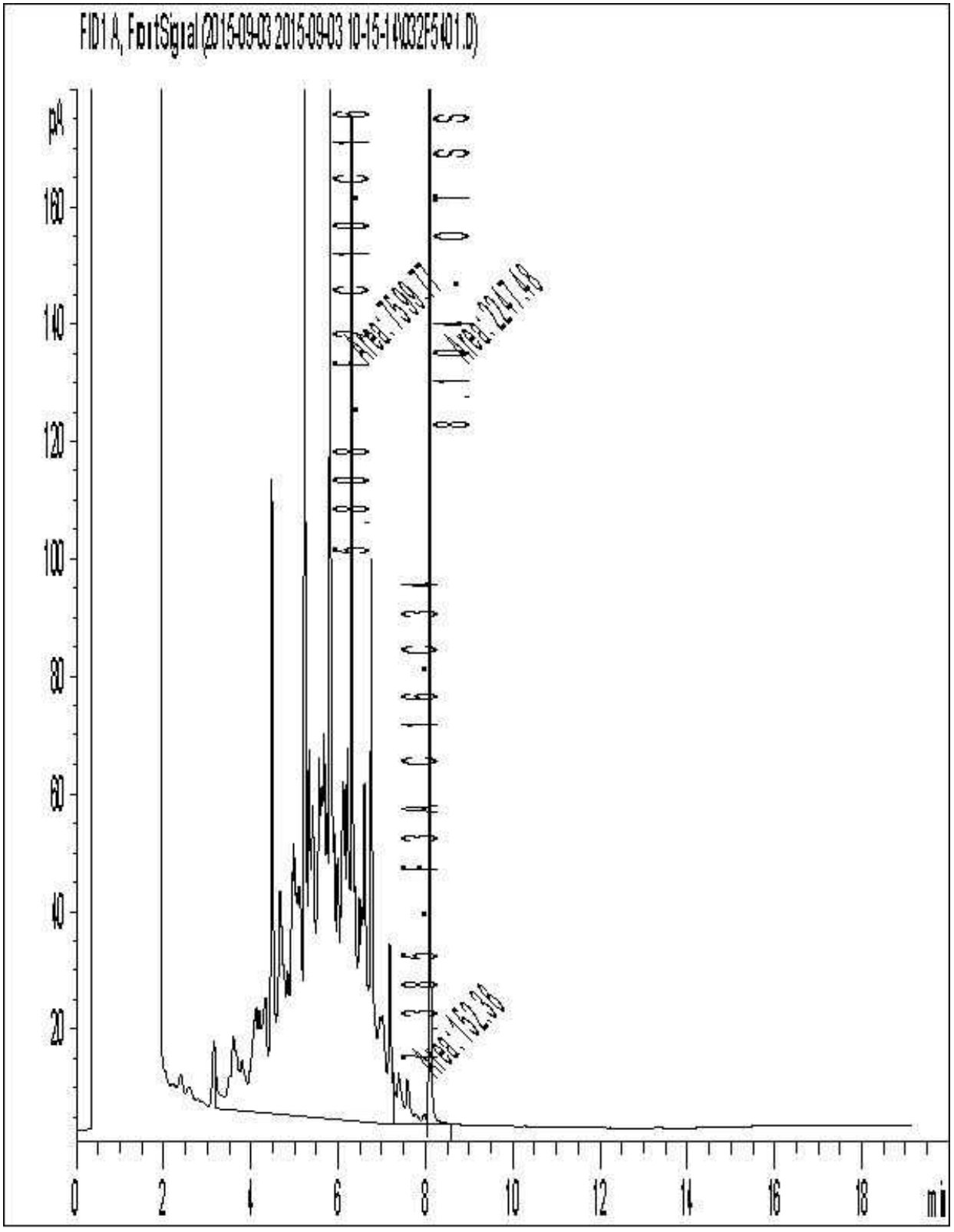


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B5H4703
Report Date: 2015/09/10
Maxxam Sample: AWZ680

exp Services Inc
Client Project #: OTT-00206333-A0
Project name: CHAR LAKE
Client ID: TP25-4

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

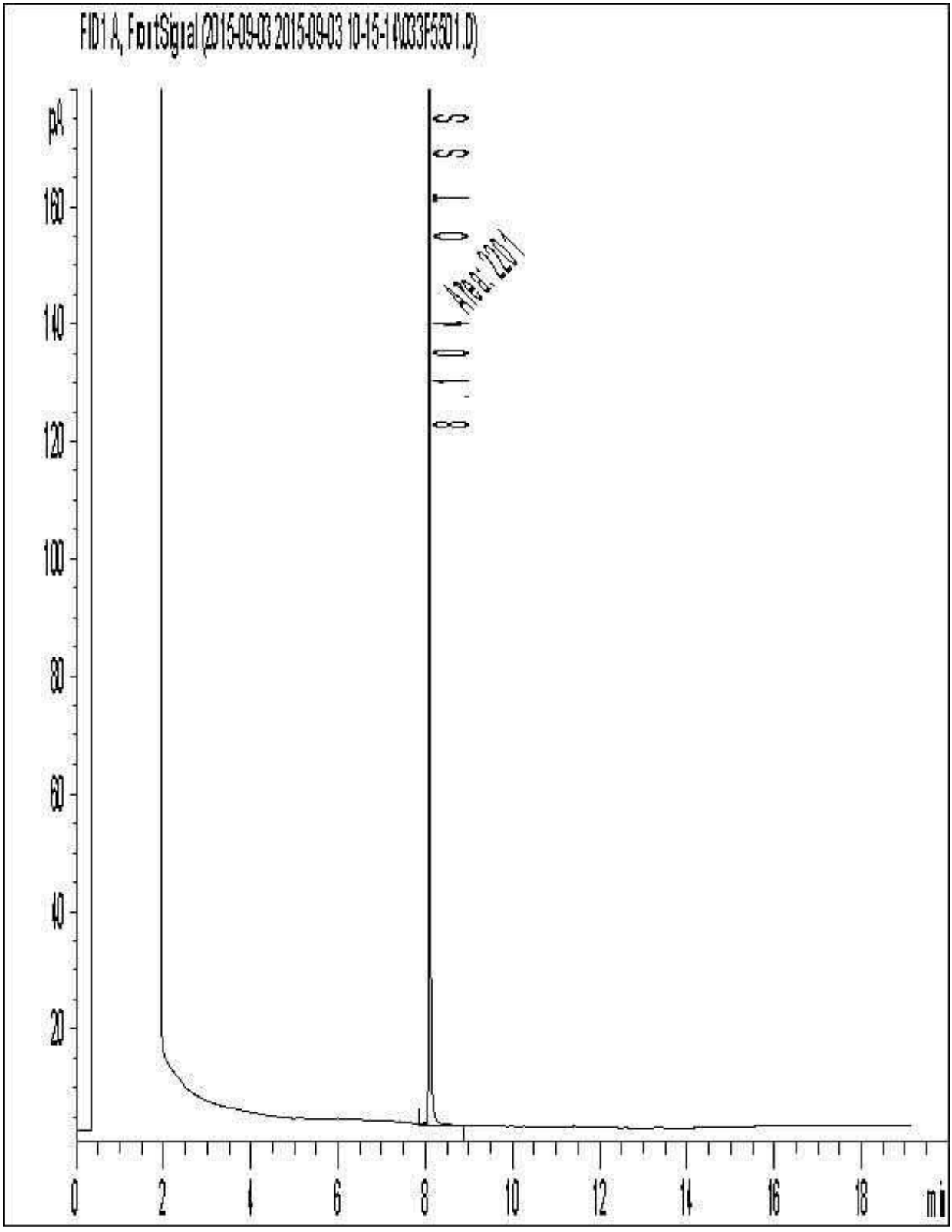


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B5H4703
Report Date: 2015/09/10
Maxxam Sample: AWZ681

exp Services Inc
Client Project #: OTT-00206333-A0
Project name: CHAR LAKE
Client ID: TP25-2

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

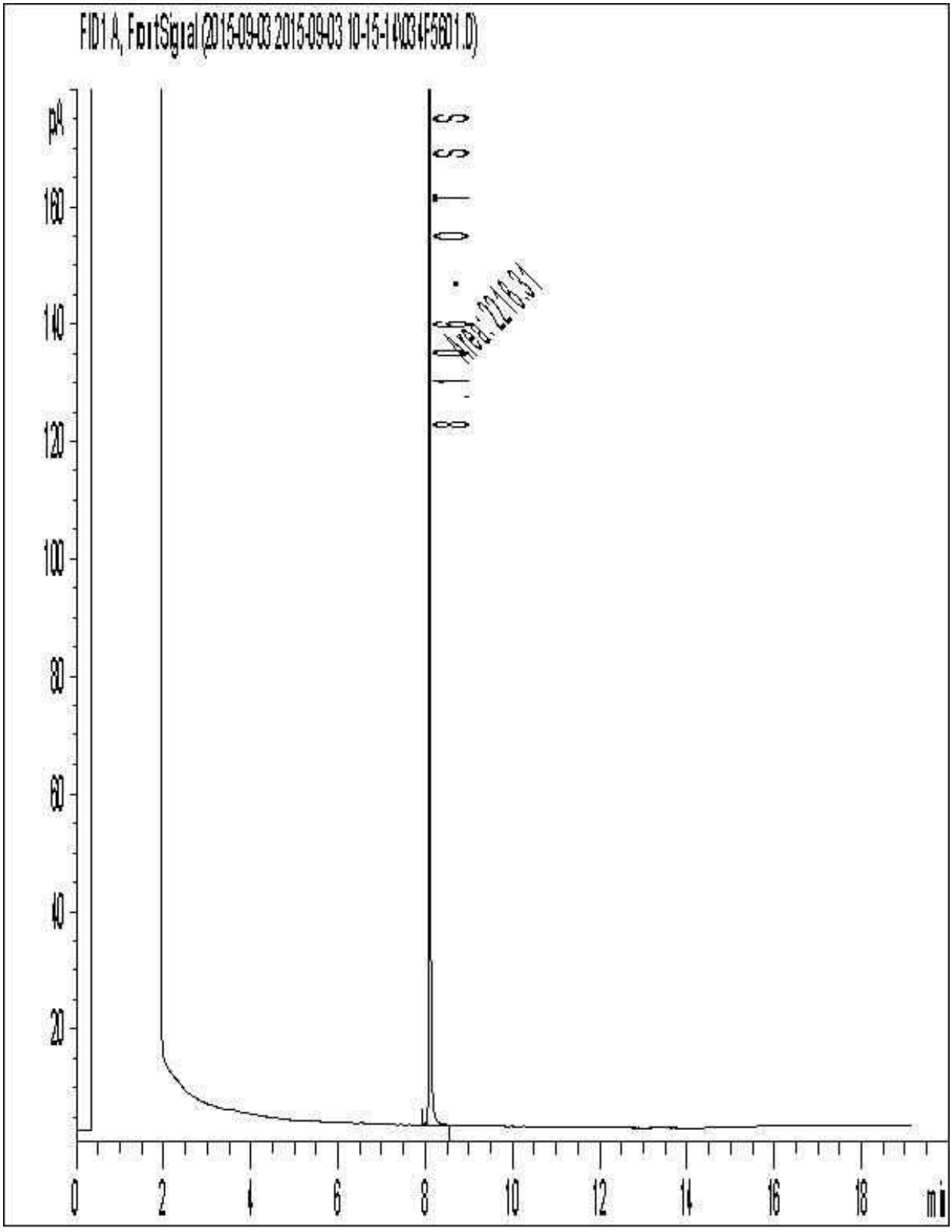


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B5H4703
Report Date: 2015/09/10
Maxxam Sample: AWZ682

exp Services Inc
Client Project #: OTT-00206333-A0
Project name: CHAR LAKE
Client ID: TP26-3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

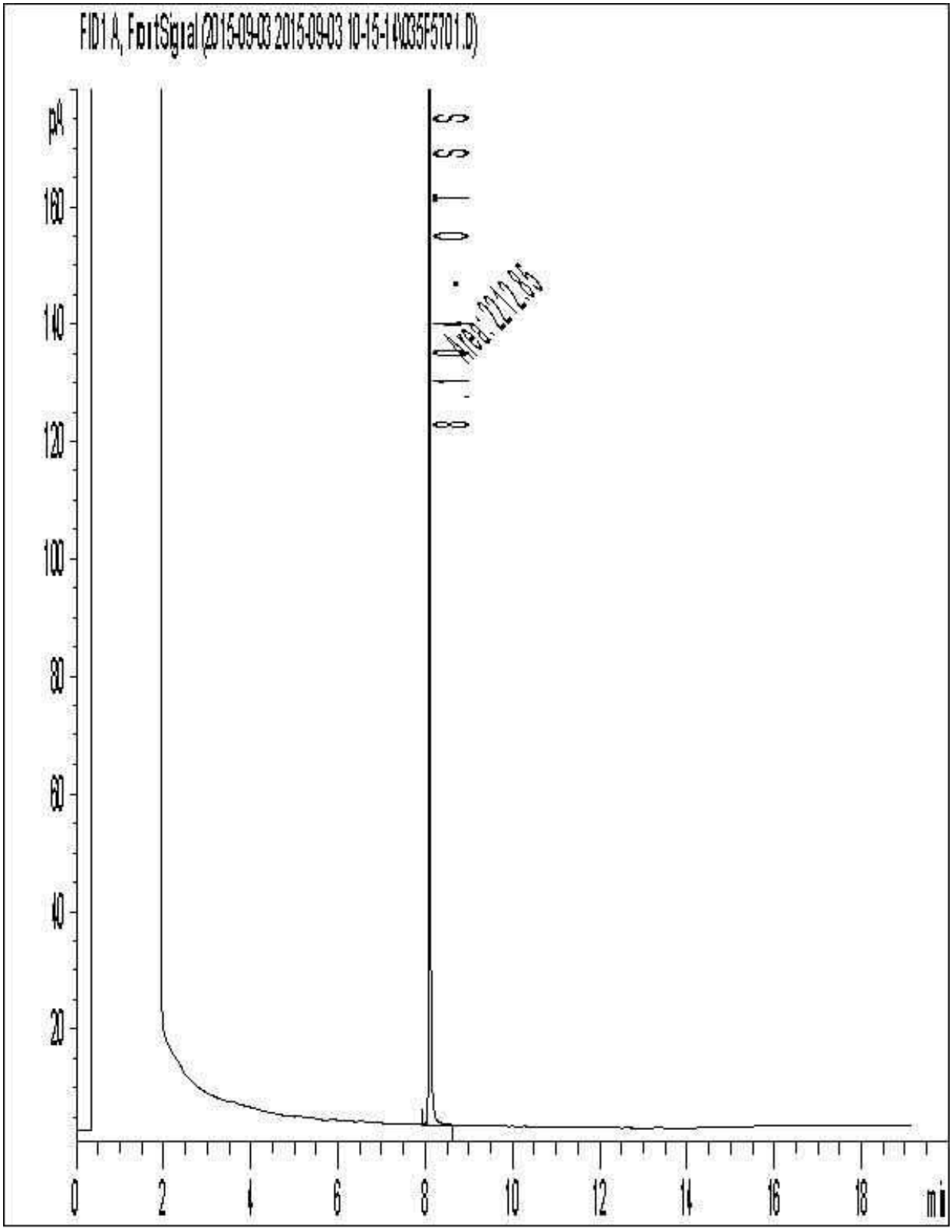


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B5H4703
Report Date: 2015/09/10
Maxxam Sample: AWZ714

exp Services Inc
Client Project #: OTT-00206333-A0
Project name: CHAR LAKE
Client ID: TP27-3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

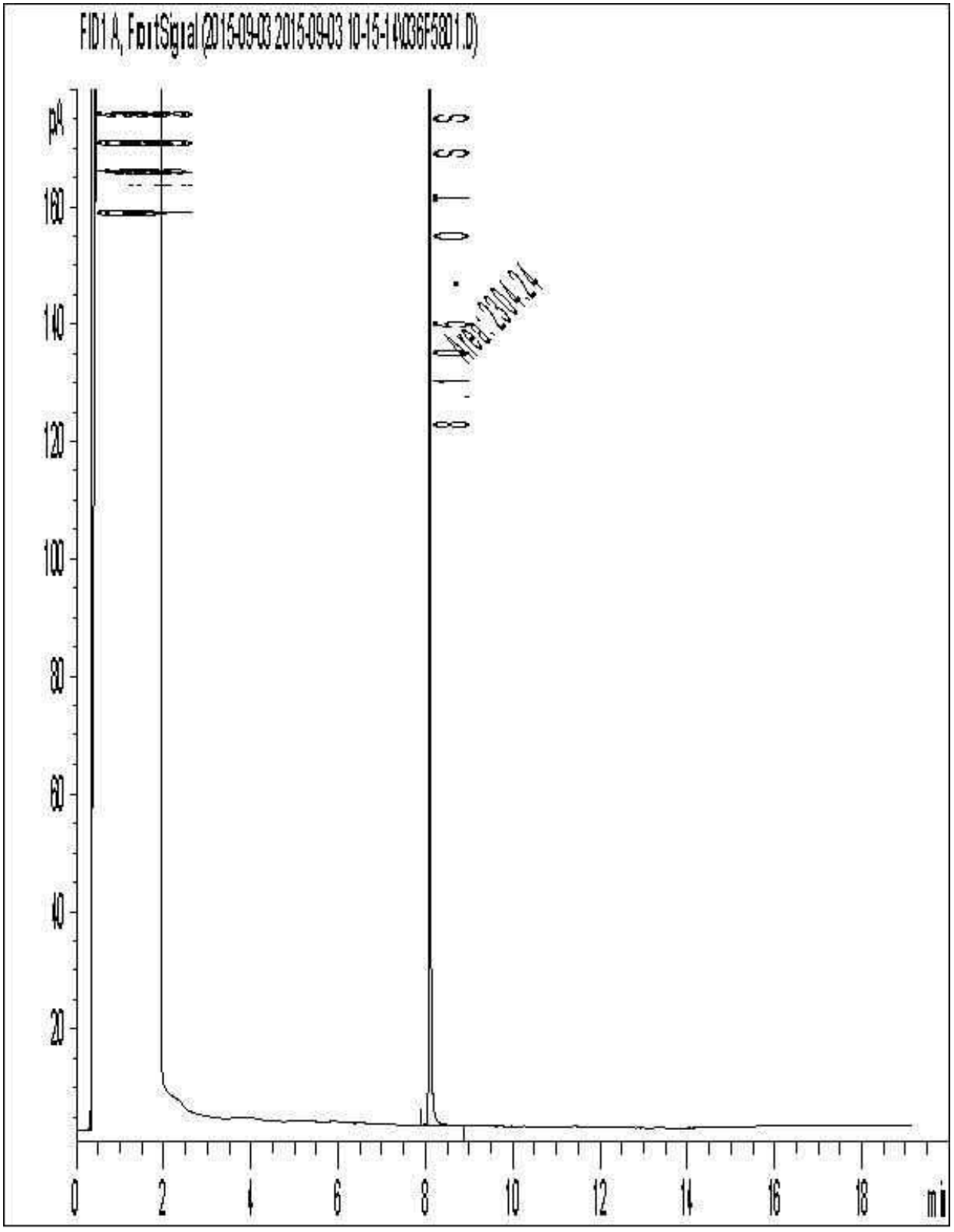


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B5H4703
Report Date: 2015/09/10
Maxxam Sample: AWZ715

exp Services Inc
Client Project #: OTT-00206333-A0
Project name: CHAR LAKE
Client ID: TP28-4

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

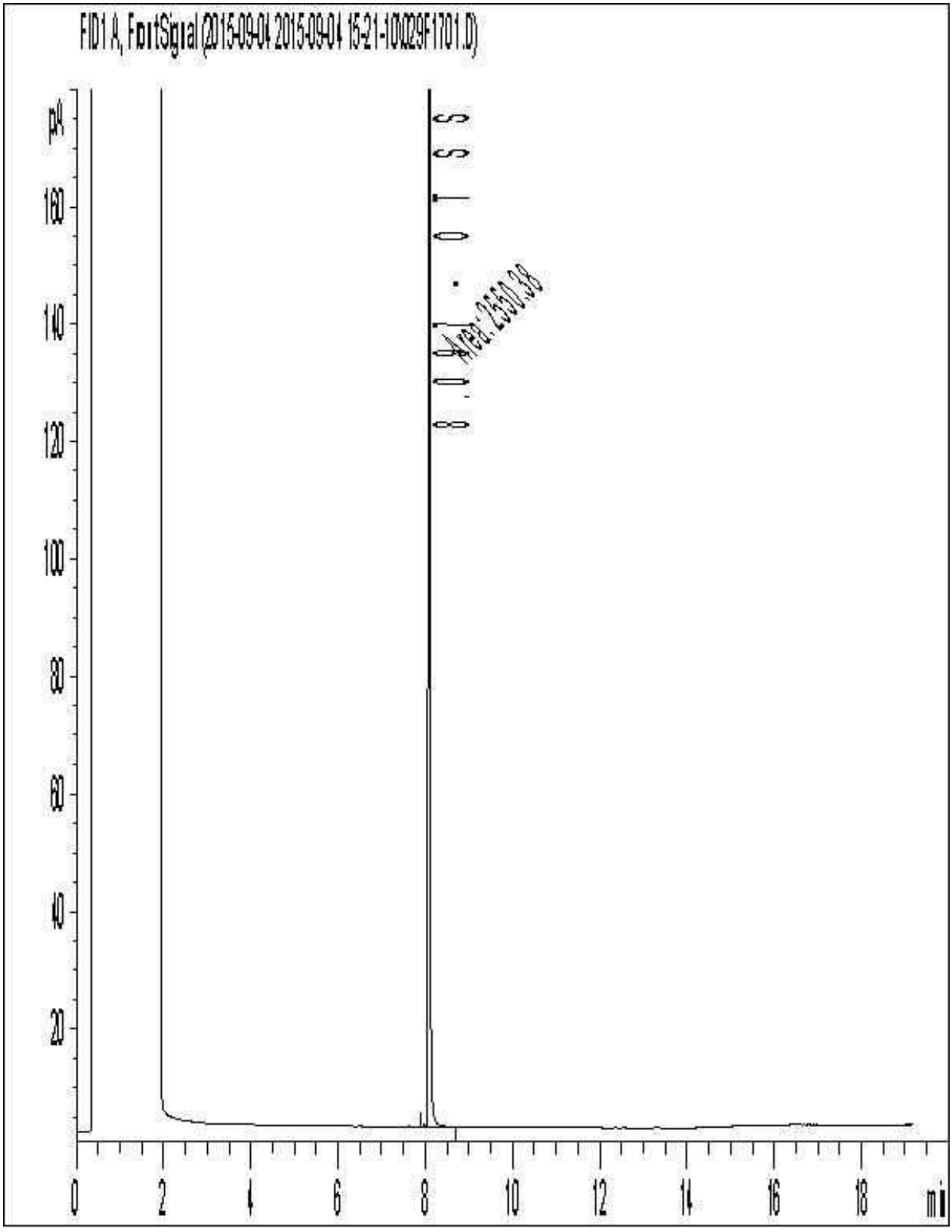


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B5H4703
Report Date: 2015/09/10
Maxxam Sample: AWZ716

exp Services Inc
Client Project #: OTT-00206333-A0
Project name: CHAR LAKE
Client ID: TP29-1

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

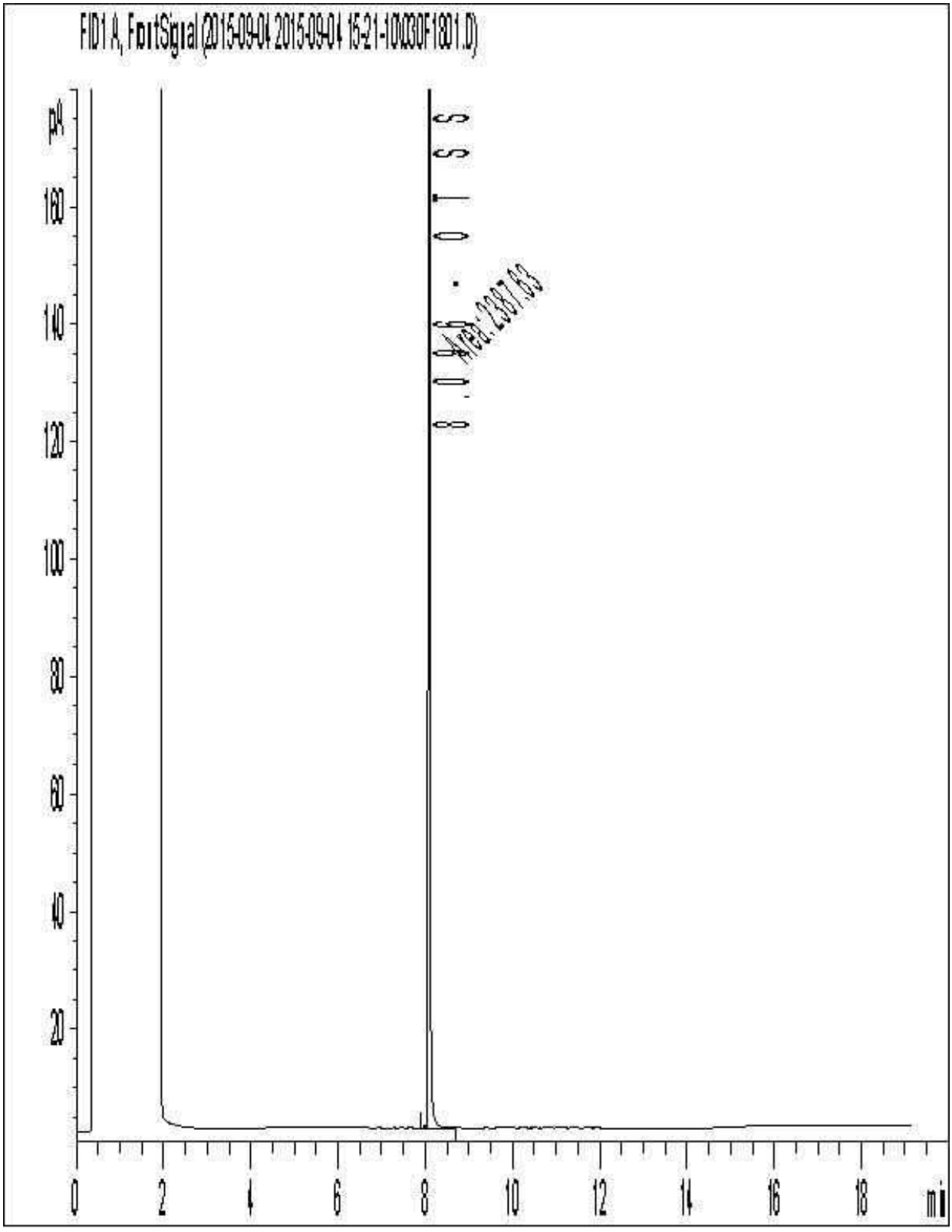


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B5H4703
Report Date: 2015/09/10
Maxxam Sample: AWZ716 Lab-Dup

exp Services Inc
Client Project #: OTT-00206333-A0
Project name: CHAR LAKE
Client ID: TP29-1

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

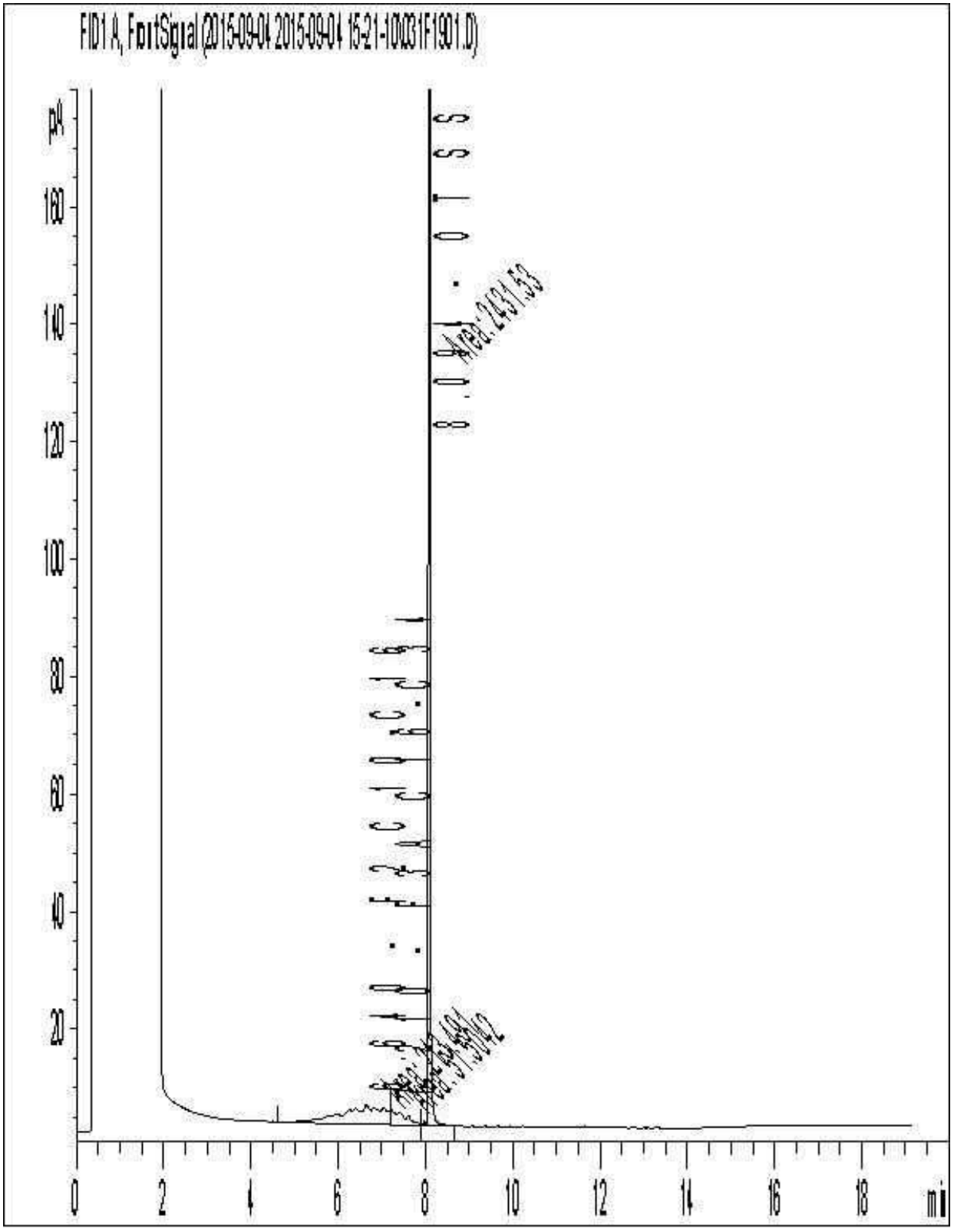


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B5H4703
Report Date: 2015/09/10
Maxxam Sample: AWZ717

exp Services Inc
Client Project #: OTT-00206333-A0
Project name: CHAR LAKE
Client ID: TP30-3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

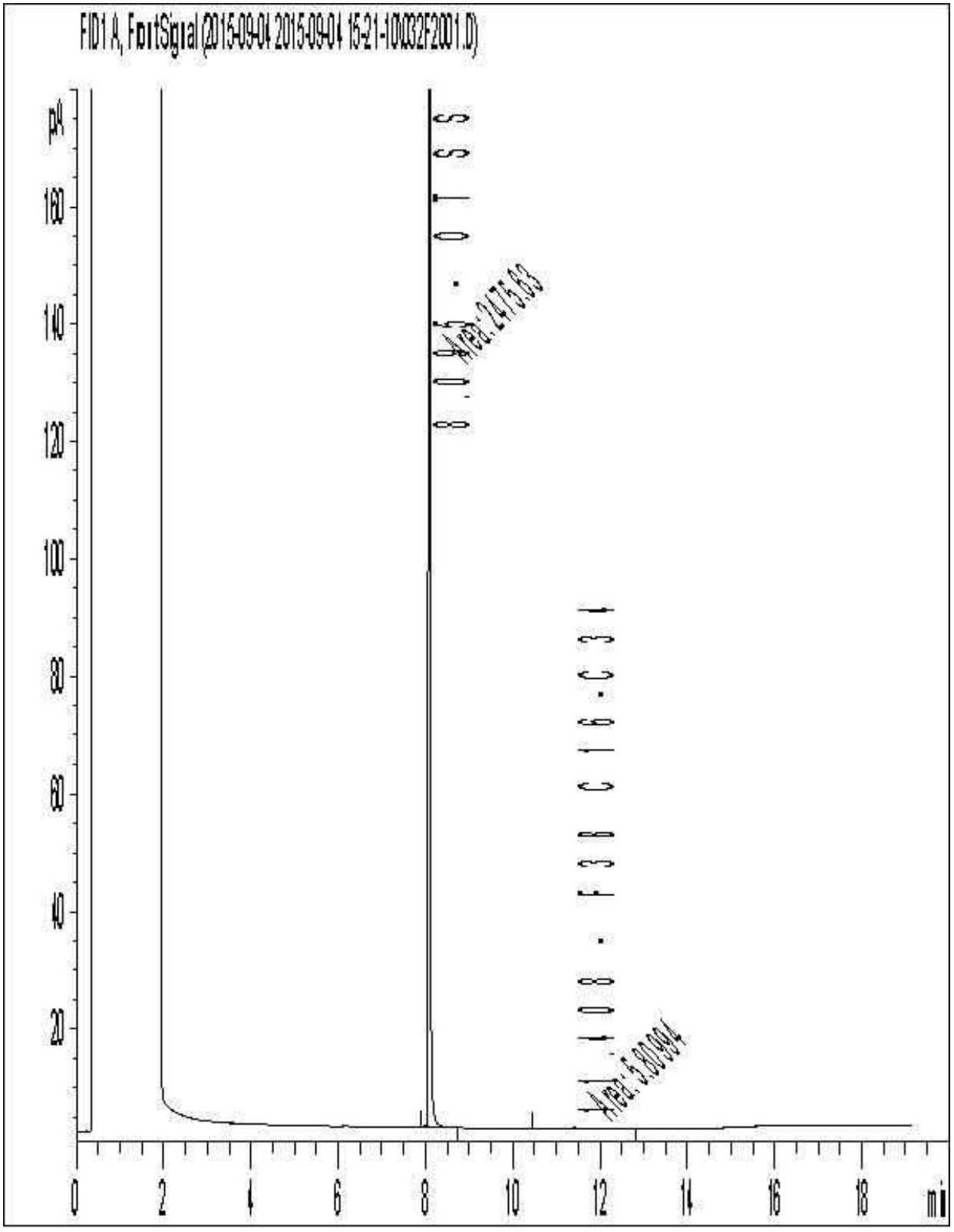


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B5H4703
Report Date: 2015/09/10
Maxxam Sample: AWZ718

exp Services Inc
Client Project #: OTT-00206333-A0
Project name: CHAR LAKE
Client ID: TP31-3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

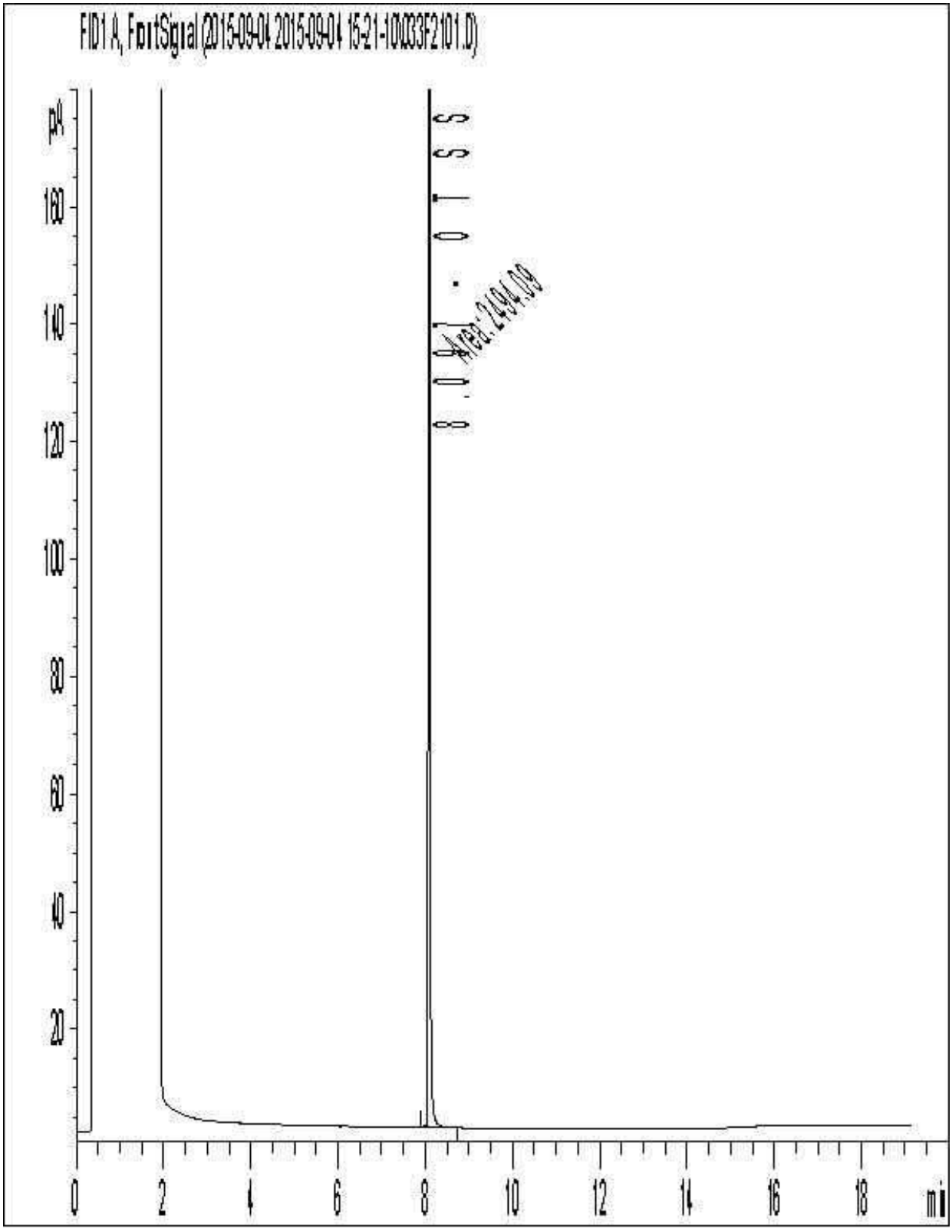


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B5H4703
Report Date: 2015/09/10
Maxxam Sample: AWZ719

exp Services Inc
Client Project #: OTT-00206333-A0
Project name: CHAR LAKE
Client ID: TP34-3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

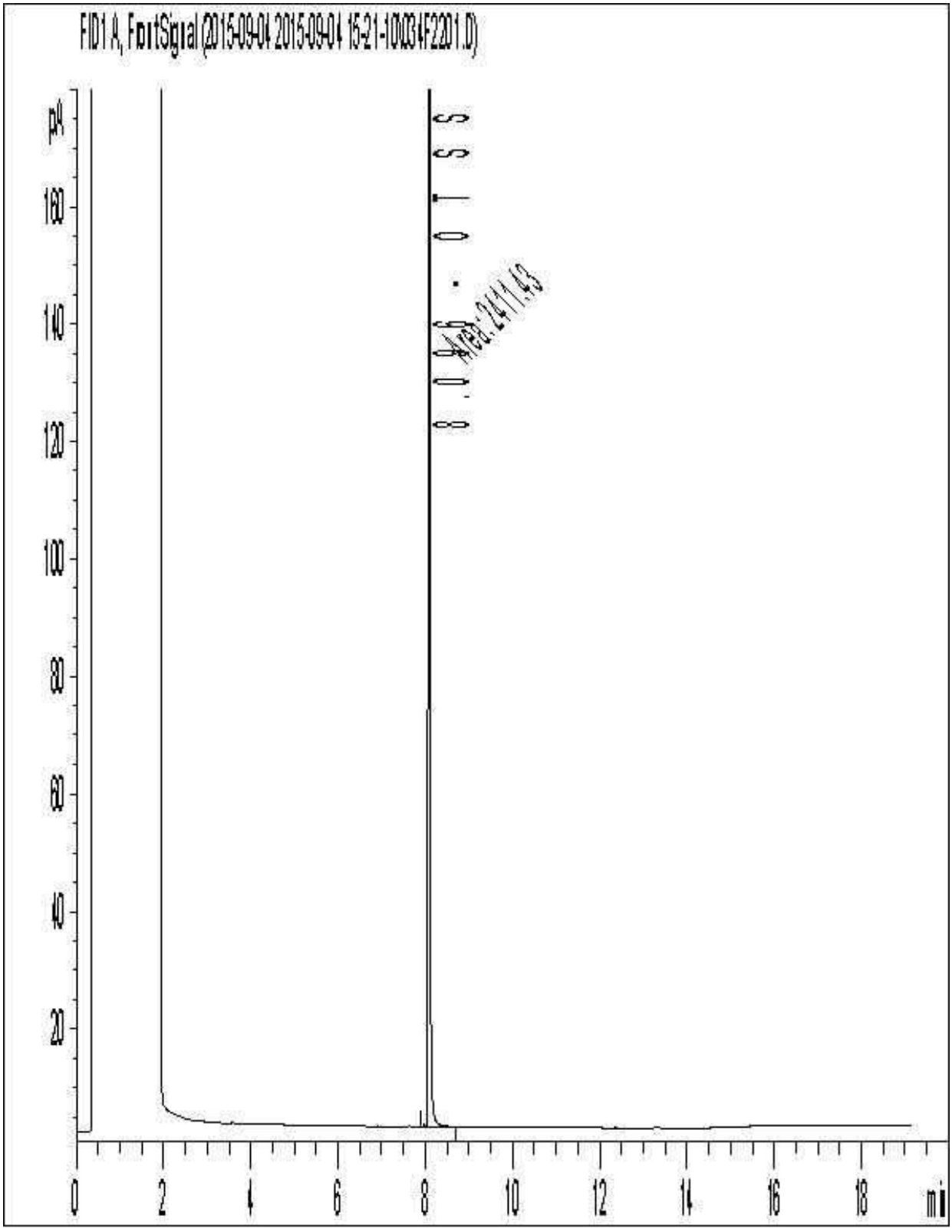


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B5H4703
Report Date: 2015/09/10
Maxxam Sample: AWZ720

exp Services Inc
Client Project #: OTT-00206333-A0
Project name: CHAR LAKE
Client ID: TP35-2

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

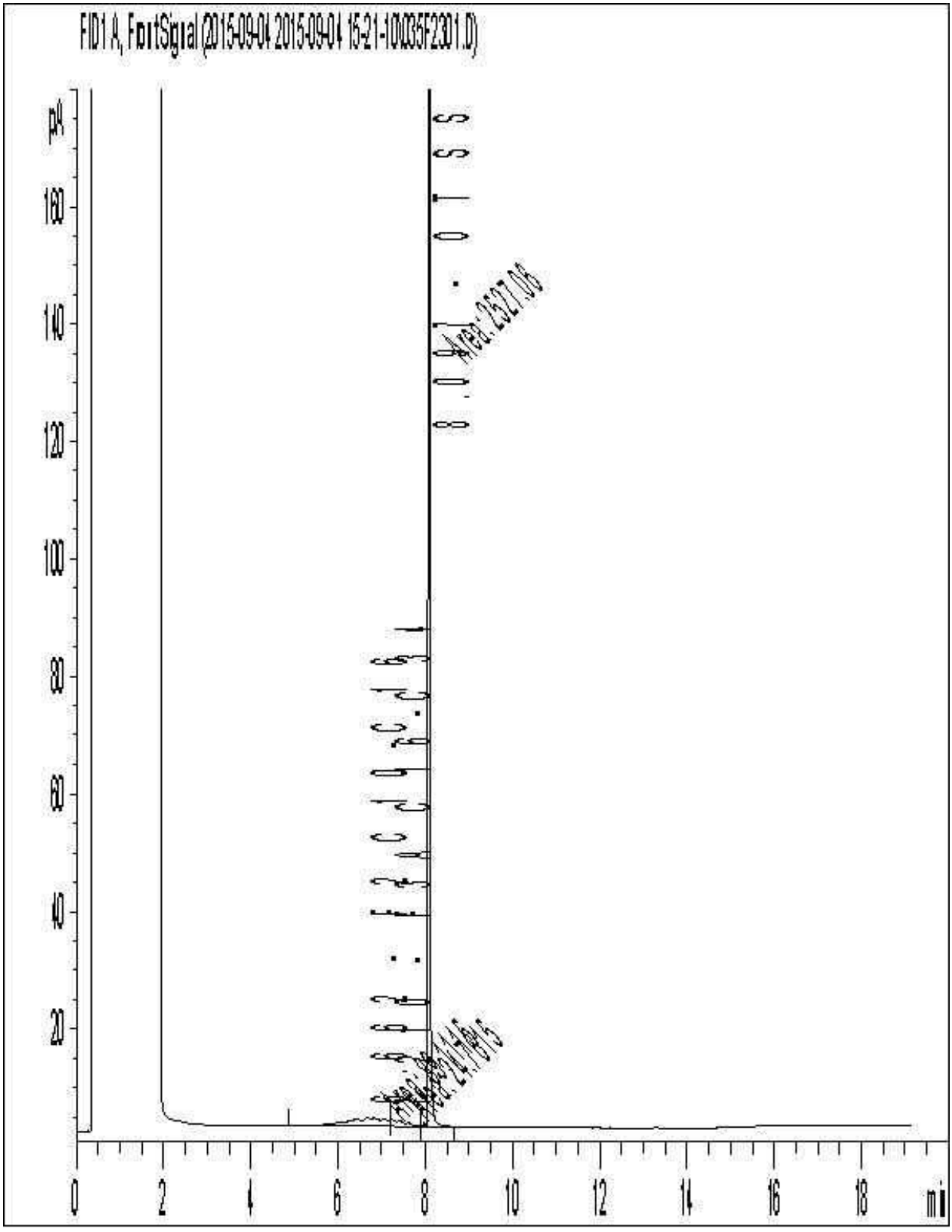


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B5H4703
Report Date: 2015/09/10
Maxxam Sample: AWZ721

exp Services Inc
Client Project #: OTT-00206333-A0
Project name: CHAR LAKE
Client ID: TP36-4

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.

Success Through Science®

Your Project #: MB5H4677
Your C.O.C. #: 08411411

Attention:SUB CONTRACTOR

MAXXAM ANALYTICS
CAMPOBELLO
6740 CAMPOBELLO ROAD
MISSISSAUGA, ON
CANADA L5N 2L8

Report Date: 2015/09/11
Report #: R2039270
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B576074
Received: 2015/09/01, 09:00

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Hardness Total (calculated as CaCO3)	1	N/A	2015/09/10	BBY7SOP-00002	EPA 6020a R1 m
Elements by ICPMS Digested LL (total)	1	2015/09/04	2015/09/10	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	1	N/A	2015/09/10	BBY7SOP-00002	EPA 6020A R1 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Amandeep Nagra, Account Specialist
Email: ANagra@maxxam.ca
Phone# (604)639-2602

==========

This report has been generated and distributed using a secure automated process.
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 Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B576074
Report Date: 2015/09/11

MAXXAM ANALYTICS
Client Project #: MB5H4677

LL TOTAL METALS (DIGESTED) IN WATER

Maxxam ID		NA6847		
Sampling Date		2015/08/26		
COC Number		08411411		
	UNITS	TP29 (AWZ535)	RDL	QC Batch
Calculated Parameters				
Total Hardness (CaCO3)	mg/L	731	0.50	8024738
Total Metals by ICPMS				
Total Aluminum (Al)	ug/L	3260	3.0	8028268
Total Antimony (Sb)	ug/L	0.105	0.050	8028268
Total Arsenic (As)	ug/L	1.48	0.020	8028268
Total Barium (Ba)	ug/L	234	0.10	8028268
Total Beryllium (Be)	ug/L	0.207	0.010	8028268
Total Bismuth (Bi)	ug/L	0.039	0.020	8028268
Total Boron (B)	ug/L	802	50	8028268
Total Cadmium (Cd)	ug/L	0.0400	0.0050	8028268
Total Chromium (Cr)	ug/L	5.97	0.50	8028268
Total Cobalt (Co)	ug/L	2.51	0.010	8028268
Total Copper (Cu)	ug/L	4.69	0.20	8028268
Total Iron (Fe)	ug/L	5590	5.0	8028268
Total Lead (Pb)	ug/L	3.82	0.050	8028268
Total Lithium (Li)	ug/L	29.0	0.50	8028268
Total Manganese (Mn)	ug/L	79.5	0.10	8028268
Total Molybdenum (Mo)	ug/L	1.42	0.050	8028268
Total Nickel (Ni)	ug/L	6.27	0.10	8028268
Total Selenium (Se)	ug/L	0.426	0.040	8028268
Total Silicon (Si)	ug/L	7280	100	8028268
Total Silver (Ag)	ug/L	0.0120	0.0050	8028268
Total Strontium (Sr)	ug/L	726	0.050	8028268
Total Thallium (Tl)	ug/L	0.0810	0.0020	8028268
Total Tin (Sn)	ug/L	0.20	0.20	8028268
Total Titanium (Ti)	ug/L	163	5.0	8028268
Total Uranium (U)	ug/L	2.37	0.0050	8028268
Total Vanadium (V)	ug/L	6.15	0.50	8028268
Total Zinc (Zn)	ug/L	17.4	1.0	8028268
Total Zirconium (Zr)	ug/L	0.90	0.10	8028268
Total Calcium (Ca)	mg/L	198	0.25	8024899
Total Magnesium (Mg)	mg/L	57.3	0.25	8024899
Total Potassium (K)	mg/L	16.4	0.25	8024899
Total Sodium (Na)	mg/L	135	0.25	8024899
Total Sulphur (S)	mg/L	214	15	8024899
RDL = Reportable Detection Limit				

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B576074
Report Date: 2015/09/11

MAXXAM ANALYTICS
Client Project #: MB5H4677

TEST SUMMARY

Maxxam ID: NA6847
Sample ID: TP29 (AWZ535)
Matrix: Water

Collected: 2015/08/26
Shipped:
Received: 2015/09/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hardness Total (calculated as CaCO3)	CALC	8024738	N/A	2015/09/10	Automated Statchk
Elements by ICPMS Digested LL (total)	ICP/CRCM	8028268	2015/09/04	2015/09/10	Adnan Dzebic
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8024899	N/A	2015/09/10	Automated Statchk

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B576074
Report Date: 2015/09/11

MAXXAM ANALYTICS
Client Project #: MB5H4677

GENERAL COMMENTS

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

Package 1	2.3°C

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B576074
Report Date: 2015/09/11

QUALITY ASSURANCE REPORT

MAXXAM ANALYTICS
Client Project #: MB5H4677

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8028268	Total Aluminum (Al)	2015/09/10	NC	80 - 120	121 (2)	80 - 120	<3.0	ug/L	0.24	20
8028268	Total Antimony (Sb)	2015/09/10	116	80 - 120	117	80 - 120	<0.050	ug/L	NC	20
8028268	Total Arsenic (As)	2015/09/10	112	80 - 120	113	80 - 120	<0.020	ug/L	1.6	20
8028268	Total Barium (Ba)	2015/09/10	NC	80 - 120	117	80 - 120	<0.10	ug/L	1.3	20
8028268	Total Beryllium (Be)	2015/09/10	117	80 - 120	110	80 - 120	<0.010	ug/L	NC	20
8028268	Total Bismuth (Bi)	2015/09/10	113	80 - 120	112	80 - 120	<0.020	ug/L	NC	20
8028268	Total Boron (B)	2015/09/10					<50	ug/L	NC	20
8028268	Total Cadmium (Cd)	2015/09/10	106	80 - 120	107	80 - 120	<0.0050	ug/L	NC	20
8028268	Total Chromium (Cr)	2015/09/10	105	80 - 120	111	80 - 120	<0.50	ug/L	NC	20
8028268	Total Cobalt (Co)	2015/09/10	107	80 - 120	110	80 - 120	<0.010	ug/L	NC	20
8028268	Total Copper (Cu)	2015/09/10	85	80 - 120	115	80 - 120	<0.20	ug/L	NC	20
8028268	Total Iron (Fe)	2015/09/10	NC	80 - 120	120	80 - 120	<5.0	ug/L	1.3	20
8028268	Total Lead (Pb)	2015/09/10	108	80 - 120	110	80 - 120	<0.050	ug/L	NC	20
8028268	Total Lithium (Li)	2015/09/10	125 (1)	80 - 120	111	80 - 120	<0.50	ug/L	NC	20
8028268	Total Manganese (Mn)	2015/09/10	NC	80 - 120	114	80 - 120	<0.10	ug/L	0.73	20
8028268	Total Molybdenum (Mo)	2015/09/10	114	80 - 120	118	80 - 120	<0.050	ug/L	NC	20
8028268	Total Nickel (Ni)	2015/09/10	106	80 - 120	110	80 - 120	<0.10	ug/L	NC	20
8028268	Total Selenium (Se)	2015/09/10	107	80 - 120	107	80 - 120	<0.040	ug/L	NC	20
8028268	Total Silicon (Si)	2015/09/10					<100	ug/L	3.9	20
8028268	Total Silver (Ag)	2015/09/10	117	80 - 120	109	80 - 120	<0.0050	ug/L	NC	20
8028268	Total Strontium (Sr)	2015/09/10	NC	80 - 120	108	80 - 120	<0.050	ug/L	5.2	20
8028268	Total Thallium (Tl)	2015/09/10	113	80 - 120	113	80 - 120	<0.0020	ug/L	NC	20
8028268	Total Tin (Sn)	2015/09/10	NC	80 - 120	115	80 - 120	<0.20	ug/L	NC	20
8028268	Total Titanium (Ti)	2015/09/10	112	80 - 120	111	80 - 120	<5.0	ug/L	NC	20
8028268	Total Uranium (U)	2015/09/10	106	80 - 120	107	80 - 120	<0.0050	ug/L	NC	20
8028268	Total Vanadium (V)	2015/09/10	103	80 - 120	106	80 - 120	<0.50	ug/L	NC	20
8028268	Total Zinc (Zn)	2015/09/10	100	80 - 120	110	80 - 120	1.1, RDL=1.0	ug/L	NC	20

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B576074
Report Date: 2015/09/11

QUALITY ASSURANCE REPORT(CONT'D)

MAXXAM ANALYTICS
Client Project #: MB5H4677

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8028268	Total Zirconium (Zr)	2015/09/10					<0.10	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.

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

(2) Blank Spike for (Aluminum) outside acceptance criteria (10% of analytes failure allowed).

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B576074
Report Date: 2015/09/11

MAXXAM ANALYTICS
Client Project #: MB5H4677

VALIDATION SIGNATURE PAGE

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

David Huang, BBY 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.

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam
A Bureau Veritas Group Company

Success Through Science®

Your Project #: OTT-00206333-A0
Your C.O.C. #: 526451-03-01

Attention:Rob Renaud

exp Services Inc
100-2650 Queensview Drive
Ottawa, ON
K2B 8H6

Report Date: 2015/09/11
Report #: R3658570
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5H4677
Received: 2015/08/31, 10:00

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Petroleum Hydro. CCME F1 & BTEX in Water	1	N/A	2015/09/02	OTT SOP-00002	CCME CWS
Petroleum Hydrocarbons F2-F4 in Water (2)	1	2015/09/01	2015/09/01	OTT SOP-00001	CCME Hydrocarbons
Total ICPMS Metals (Low Level) (1)	1	N/A	2015/09/11		

Remarks:

Maxxam Analytics has performed all analytical testing herein in accordance with ISO 17025 and the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. All methodologies comply with this document and are validated for use in the laboratory. The methods and techniques employed in this analysis conform to the performance criteria (detection limits, accuracy and precision) as outlined in the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act.

Maxxam Analytics is accredited for all specific parameters as required by Ontario Regulation 153/04. Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract.

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

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

(1) This test was performed by Campo to Burnaby Subcontract
(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.
Hina Siddiqui, Project Manager –Environmental Customer Service
Email: HSiddiqui@maxxam.ca
Phone# (613) 274-0573

==========

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 #: B5H4677
Report Date: 2015/09/11

exp Services Inc
Client Project #: OTT-00206333-A0
Sampler Initials: DC

O.REG 153 PETROLEUM HYDROCARBONS (WATER)

Maxxam ID		AWZ535		
Sampling Date		2015/08/26 16:00		
COC Number		526451-03-01		
	UNITS	**TP29**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons				
Benzene	ug/L	<0.20	0.20	4171790
Toluene	ug/L	0.27	0.20	4171790
Ethylbenzene	ug/L	<0.20	0.20	4171790
o-Xylene	ug/L	<0.20	0.20	4171790
p+m-Xylene	ug/L	<0.40	0.40	4171790
Total Xylenes	ug/L	<0.40	0.40	4171790
F1 (C6-C10)	ug/L	<25	25	4171790
F1 (C6-C10) - BTEX	ug/L	<25	25	4171790
F2-F4 Hydrocarbons				
F2 (C10-C16 Hydrocarbons)	ug/L	<100	100	4172664
F3 (C16-C34 Hydrocarbons)	ug/L	<200	200	4172664
F4 (C34-C50 Hydrocarbons)	ug/L	<200	200	4172664
Reached Baseline at C50	ug/L	Yes		4172664
Surrogate Recovery (%)				
1,4-Difluorobenzene	%	100		4171790
4-Bromofluorobenzene	%	100		4171790
D10-Ethylbenzene	%	96		4171790
D4-1,2-Dichloroethane	%	78		4171790
o-Terphenyl	%	80		4172664

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 #: B5H4677
Report Date: 2015/09/11

exp Services Inc
Client Project #: OTT-00206333-A0
Sampler Initials: DC

TEST SUMMARY

Maxxam ID: AWZ535
Sample ID: TP29
Matrix: Water

Collected: 2015/08/26
Shipped:
Received: 2015/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4171790	N/A	2015/09/02	Lyndsey Hart
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4172664	2015/09/01	2015/09/01	Liliana Gaburici
Total ICPMS Metals (Low Level)		4186673	N/A	2015/09/11	Hina Siddiqui

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 #: B5H4677
Report Date: 2015/09/11

exp Services Inc
Client Project #: OTT-00206333-A0
Sampler Initials: DC

GENERAL COMMENTS

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

Package 1	10.0°C

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 #: B5H4677
Report Date: 2015/09/11

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00206333-A0
Sampler Initials: DC

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4171790	1,4-Difluorobenzene	2015/09/02	94	70 - 130	96	70 - 130	98	%		
4171790	4-Bromofluorobenzene	2015/09/02	110	70 - 130	105	70 - 130	105	%		
4171790	D10-Ethylbenzene	2015/09/02	82	70 - 130	80	70 - 130	94	%		
4171790	D4-1,2-Dichloroethane	2015/09/02	75	70 - 130	80	70 - 130	73	%		
4172664	o-Terphenyl	2015/09/01	83	30 - 130	81	30 - 130	78	%		
4171790	Benzene	2015/09/02	76	70 - 130	79	70 - 130	<0.20	ug/L	NC	40
4171790	Ethylbenzene	2015/09/02	86	70 - 130	91	70 - 130	<0.20	ug/L	NC	40
4171790	F1 (C6-C10) - BTEX	2015/09/02					<25	ug/L	NC	40
4171790	F1 (C6-C10)	2015/09/02	77	70 - 130	88	70 - 130	<25	ug/L	NC	40
4171790	o-Xylene	2015/09/02	85	70 - 130	86	70 - 130	<0.20	ug/L	NC	40
4171790	p+m-Xylene	2015/09/02	86	70 - 130	91	70 - 130	<0.40	ug/L	NC	40
4171790	Toluene	2015/09/02	75	70 - 130	76	70 - 130	<0.20	ug/L	NC	40
4171790	Total Xylenes	2015/09/02					<0.40	ug/L	NC	40
4172664	F2 (C10-C16 Hydrocarbons)	2015/09/01	72	50 - 130	82	80 - 120	<100	ug/L	NC	50
4172664	F3 (C16-C34 Hydrocarbons)	2015/09/01	72	50 - 130	82	80 - 120	<200	ug/L	NC	50
4172664	F4 (C34-C50 Hydrocarbons)	2015/09/01	72	50 - 130	82	80 - 120	<200	ug/L	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 (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).

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 #: B5H4677
Report Date: 2015/09/11

exp Services Inc
Client Project #: OTT-00206333-A0
Sampler Initials: DC

VALIDATION SIGNATURE PAGE

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

Paul Rubinato, Analyst, Maxxam Analytics

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

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 6 of 7

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#17497 exp Services Inc	Company Name:		Quotation #:	B46066	Maxxam Job #:	Bottle Order #:
Attention:	Accounts Payable	Attention:	Rob Renaud / Daniel Clarke	P.O. #:			526451
Address:	100-2650 Queensview Drive Ottawa ON K2B 8H6	Address:		Project:	OH-00 206 333 A	COC #:	Project Manager:
Tel:	(613) 688-1899 Fax: (613) 225-7337	Tel:	Fax:	Project Name:	CHN 14Kt	C#526451-03-01	Hina Siddiqui
Email:	accounting.ottawa@exp.com; Karen.Burke@exp.com	Email:	Robert.Renaud@exp.com / Daniel.Clarke	Site #:			
				Sampled By:	Daniel Clarke		

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 ESW PHC

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	CCME Petroleum Hydrocarbons: BTEX	Dissolved ICPMS Metals (Low Level): Total	# of Bottles	Comments
1		TP 29	Aug 7/15	16:00	GW	N	+	+	5	
2					GW					
3					GW					
4					GW					
5					GW					
6					GW					
7										
8										
9										RECEIVED IN OTTAWA
10										ON ICE

31-Aug-15 10:00
Hina Siddiqui
B5H4677
FHB 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
Daniel Clarke / Daniel Clarke	15/08/27	18:00	Madison	15/08/31	10:00	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	10, 10, 10	Present	✓	
		Intact	✓	

* 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.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

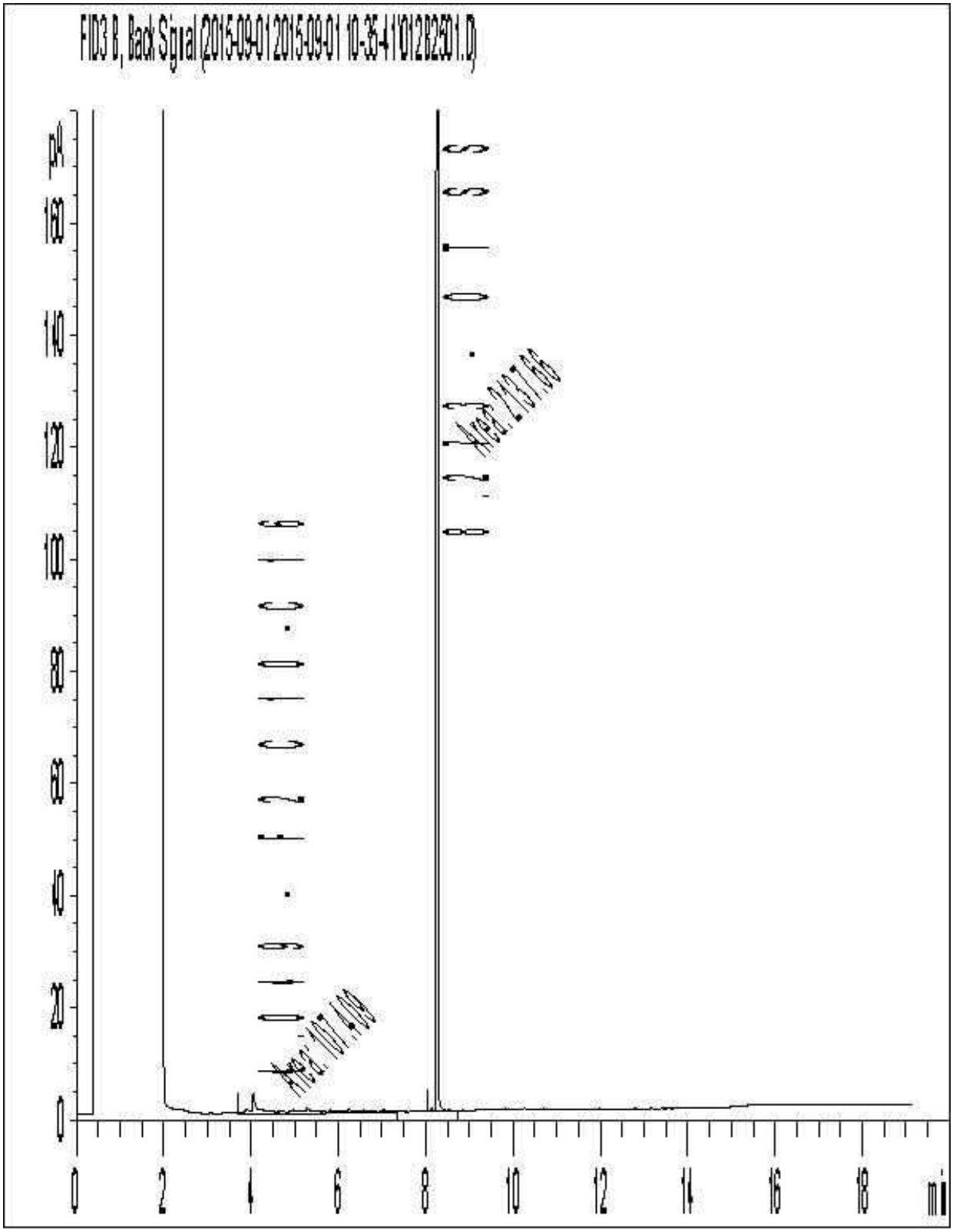
White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Maxxam Job #: B5H4677
Report Date: 2015/09/11
Maxxam Sample: AWZ535

exp Services Inc
Client Project #: OTT-00206333-A0
Client ID: TP29

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.