The Collection of Landfill Monitoring Data at the PIN-3 Lady Franklin Point Site

Prepared for
Defence Construction Canada

Submitted by
Gartner Lee Limited

January, 2008

Gartner Lee

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Reference: **GLL 70-516**

Distribution:

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Gartner Lee Limited

January 25, 2008

Mr. Thuc Nyugen
Defence Construction Canada
Constitution Square, Suite 1720
350 Albert Street
Ottawa, ON K1A 0K3

Dear Mr. Nyugen:

Re: GLL 70-516 – FINAL Report for the 2007 Collection of Landfill Monitoring Data at the PIN-3 Dew Line Site, Lady Franklin Point, Nunavut

Gartner Lee Limited is pleased to submit eight hard copies of the 2007 Final Report on the Collection of Landfill Monitoring Data at the PIN-3 Dew Line Site at Lady Franklin Point, Nunavut. The report was previously submitted in draft for review and comments received have been incorporated into this final report. This report documents the data collected from the site visit to the PIN-3 Site between August 20, and 23, 2007. In addition to the hard copy reports, also attached are three digital data discs to the report, which contain:

a) all numeric data files including analytical results, thermistor data and associated graphs submitted in MS Excel 2000;

b) all text files submitted in MS Word 2000;

c) all drawings submitted in AutoCAD Version 2008;

d) all photographic records of the geotechnical inspection submitted in digital format and in hardcopy in the location specific report as well;

e) all photographic records of the soil samples collected at each location. These have been provided as an attachment to the main report and include an index of the photo numbers and the locations;

f) all photographic records of the condition of the thermistor casings along with maintenance report forms;

g) all photographic records of the condition of the monitoring wells. These have been provided as attachments to the main report and include an index of the photo numbers and the locations; and

h) all field notes have been attached to each specific landfill investigation report.

300 Town Centre Boulevard, Suite 300, Markham, Ontario, L3R 5Z6 tel 905.477.8400 fax 905.477.1456
www.gartnerlee.com

Visual inspections were completed at the following landfills: Main, Non-Hazardous Waste, NWS, Tier II, North and South. In all cases, the condition of the landfills appeared substantially unchanged from the 2006 inspection period. From the visual analysis during the site visit, there does not appear to be any significant erosion or cover issues that require immediate attention or that would be expected to lead to degraded cover performance in the near term.

Soil samples were collected at two depths from each of the 28 test pits. Sample results are located within each site report. DCC should compare the laboratory results to their internal DEW Line Site Guidelines to confirm whether the analytical results are in compliance.

Seven of the twelve wells sampled contained sufficient water for analysis. A full suite of groundwater samples were collected from wells MW-5 and MW-8 at the Main Landfill, only wells MW-11 and MW-12 were sampled at the Tier II Disposal Facility, and wells MW-14, MW-15, and MW-16 were sampled at the Non-hazardous Waste Landfill. Sample results are located within each site report. DCC should compare the laboratory results to their internal DEW Line Site Guidelines to confirm whether the analytical results are in compliance.

All of the thermistors were downloaded successfully. The batteries were also replaced, and data loggers reset in accordance with the instructions provided by other consultants representing DCC.

We trust this report meets your requirements and appreciate the opportunity to assist DCC with this interesting assignment. If you have any questions or comments concerning this report please do not hesitate to call.

Yours very truly,
GARTNER LEE LIMITED

(Original signed and stamped)

Darrin C. Johnson, M.Sc., P.Eng.
Senior Geotechnical Engineer and Project Manager

DCJ/KAB:pc
Attach.

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1. Introduction

The Department of National Defence (DND) in co-operation with Nunavut Tunngavik Incorporated (NTI) has developed a Landfill Monitoring Plan to address post closure monitoring requirements for the landfills at the DEW Line sites. Defence Construction Canada (DCC) is managing the clean-up monitoring programs on behalf of DND. Kitnuna Corporation and Gartner Lee Limited in a joint venture were awarded the contract for the purposes of providing services for the collection of landfill monitoring data at the PIN-3 Lady Franklin Point Site in the Nunavut Settlement Area for 2007. This report will provide the procedures and the results for interpretation on the monitoring completed in 2007.

2. Background

The PIN-3 Lady Franklin Point DEW Line Site is located on the Southwestern side of Victoria Island at 68^{o} 28' North and 113 ^{o} 13' West in Nunavut Territory. PIN-3 is located approximately 325 km west of Cambridge Bay and 115 km northeast of Kugluktuk.

PIN-3 was converted to a Long Range Radar (LRR) site in the early 1990's. Demolition and remediation of the components not required for operation of the LRR commenced in 2002 and was completed in 2004. As part of the cleanup, five landfills were decommissioned, a non-hazardous landfill was constructed for demolition debris, and a soil disposal facility for the containment of contaminated soil was constructed. A total of 6 landfills exist at the PIN-3 site today:

1. Main Landfill.
2. NWS Landfill.
3. South Landfill – East and West.
4. North Landfill.
5. Non-Hazardous Waste Landfill.
6. DCC Tier II Soil Disposal Facility.

The locations of the various landfills are shown on Figure 1. Access to the landfills was gained through on-site roads. The baseline monitoring of the landfills commenced in 2005. Monitoring is to occur annually until 2008, after which, monitoring frequency at this site will decrease.

Figure 1. Dew Line Clean Up Monitoring Plan

2.1 Project Objectives

The objective of the landfill monitoring program is to collect sufficient information to assess the performance of the landfill from a geotechnical and environmental perspective. The Landfill Monitoring Plan specified the requirements for the visual inspection as well as the chemical and thermal monitoring of the landfills. The long term monitoring plan consists of visual monitoring for signs of settlement, erosion and/or slope instability, collection of soil and groundwater samples to evaluate the effectiveness of the leachate containment system, and monitoring of the sub-surface ground temperatures along the toe of and within the main body of the landfill.

2.2 2007 Monitoring Event

Between August 20, and 23, 2007 field data collection was conducted at the PIN-3 DEW Line site. The monitoring event consisted of visual geotechnical inspections, soil sampling, groundwater sampling, and thermal monitoring of the landfills at designated locations (see Figure 1). The landfill monitoring requirements as outlined in the Terms of Reference (TOR) are displayed in Table 1 below.

Table 1. Summary of Landfill Monitoring Requirements for 2007

Landfill Designation	Visual Inspection	Soil Sampling	Groundwater Sampling	Thermal Monitoring
PIN-3 Lady Franklin Point				
Main Landfill	√	√	√	√
NWS Landfill	√	√		
South Landfill – East	√	√		
South Landfill – West	√	√		
North Landfill	√	√		
DCC Tier II Disposal Facility	√	√	√	√
Nan-hazardous Waste Landfill	√	√	√	

At each of the landfill locations mentioned previously, a field inspection was conducted to observe whether there were any visual signs of impact (such as seepage or stressed vegetation caused by the landfill) and for physical stability. Photographic records were taken to show the condition of the landfill and any area of concern that was observed. The observations and the photographic record for each of the landfills is discussed individually in the Site reports presented in Appendices A through F.

Soil sampling was conducted at all of the designated landfills for 2007. Groundwater sampling was conducted at the Main Landfill, the DCC Tier II Soil Disposal Facility, and the Non-hazardous Waste Landfill. Generally, soil samples were collected at depths of approximately 0.1m and approximately 0.4-0.5m, although there were some variations in sample depths dependent on the ground conditions. The soil samples were analyzed for Polychlorinated Biphenyls (PCBs) analyzed for Total Aroclors, total petroleum hydrocarbons (TPHs) as defined by the Canadian Council of Ministers of the Environment (CCME) Canada Wide Standards (CWS) Fraction 1 to Fraction 3 and inorganic elements analyzed for total metals using low level detection limits.

The analytical results for each sampled landfill are discussed individually in the Site reports presented in Appendices A through F.

Where possible, groundwater elevations were measured at each observation well for the landfills designated to be monitored in 2007. The monitoring conditions and field measurements were documented and collected at each monitoring well. The field measurements included the following: presence and thickness of free product (if present), depth to bottom of well, stick up height and visual condition of the observation well. Groundwater samples were collected from the 2007 designated observation wells that had sufficient water volumes to obtain samples. The water samples were obtained utilizing a peristaltic pump for low flow extraction. Disposable tubing was used in every well. The groundwater samples were analyzed for PCBs, TPHs, and inorganic elements.

The field methods for collecting the groundwater samples followed the QA/QC protocols and sampling requirements as requested in the Terms of Reference. The monitoring wells were purged at a rate equivalent or less than 100 ml/min with a peristaltic pump until at least one well volume had been purged and the field chemistry measurements had stabilized. Field chemistry measurements were taken at monitoring wells using a flow through cell and a digital probe measuring for temperature, pH, and conductivity. Further discussion regarding the field measurements, the field chemistry and the analytical results are discussed in the Site reports presented in Appendices A, E, and F. The well development records and well condition records are appended to the relevant sections in Appendices A, E, and F.

Thermal Monitoring was conducted at the Main Landfill and the DCC Tier II Soil Disposal Facility in 2007. The data was downloaded from the system using the Lakewoods Systems Ltd. software. The information downloaded is further discussed in the individual Site Reports presented in Appendices A and F.

3. Landfill Monitoring

As requested by DCC, Gartner Lee has presented the landfill monitoring reports as individual reports under the cover of this main report. The Landfill Monitoring Reports for each locality are presented in the appendices of this main report as follows:

- Appendix A Main Landfill;
- Appendix B NWS Landfill;
- Appendix C South Landfill – East and West;
- Appendix D North Landfill;
- Appendix E Non-Hazardous Waste Landfill; and
- Appendix F DCC Tier II Soil Disposal Facility.

All information collected that is relevant to these individual areas is presented in these sections or as attachments at the end of the respective appendices.

4. Quality Assurance/Quality Control

For the soil and groundwater samples collected, a blind duplicate was collected with a frequency of one in ten samples collected. Tables used for the calculation of RSDs are located in Appendix H.

A total of six (6) blind duplicate soil samples and two (2) blind duplicate groundwater samples were collected for submission. All duplicate samples were submitted to both ALS Environmental and Cantest Ltd. for analysis. As well, all duplicate soil samples were sent to the Environmental Services Group for archival purposes. No blank groundwater sample was collected in the 2007 sampling event. The soil and water samples submitted and the corresponding sample locations are documented in Table 2.

Table 2. Blind Duplicates

Sample Identification	Duplicate of Sample	Sample Location	Depth (m)	Matrix (soil/water)	Landfill
P3-17-1	P3-MW-5-1	MW-5	0.1	Soil	Main Landfill
P3-18-2	P3-MW-11-2	MW-11	0.5	Soil	Tier II
P3-19-2	P3-MW-15-2	MW-15	0.5	Soil	NHW Landfill
P3-20-2	P3-2-2	P3-2	0.5	Soil	NWS Landfill
P3-21-2	P3-8-2	P3-8	0.5	Soil	South Landfill – West
P3-22-2	P3-9-2	P3-9	0.5	Soil	South Landfill – East
P3-MW-17	P3-MW-5	MW-5	-	Water	Main Landfill
P3-MW-18	P3-MW-11	MW-11	-	Water	Tier II

Each soil sample was analyzed for 14 parameters yielding a total of 84 sets of numbers to be calculated for relative standard deviation (RSD). Of the eighty-four (84) RSDs calculated, sixty-two (62) sets returned a value of "n/a" due to one or more concentrations being below the detection limit. Thirteen (13) sets returned an acceptable RSD of below 20% for inorganics and 30% for organics and nine (9) sets returned unacceptable RSDs.

The duplicate sets collected at MW-5, MW-15, P3-2-2, and P3-9-2 returned unacceptable RSD values of 52.8%, 48.4%, 38.9%, and 26.1% respectively for Copper. In all cases at least one of the concentrations measured in each duplicate set was within three times the method detection limit of 3.0 mg/kg for Copper, and so a higher RSD value is expected.

The duplicate sets collected at MW-5 and P3-9-2 returned unacceptable RSD values of 138% and 56.5% respectively for TPH. Again, at least one of the measured concentrations was within the MDL of 40 mg/kg for TPH, and so a higher RSD value is expected. Additionally, these samples were not properly refrigerated during shipping causing the temperature upon receipt at the laboratories to be in excess of 20ºC. Refrigeration was requested by GLL when the coolers containing the samples were delivered for shipping and appropriate labelling was applied to the coolers, however upon inspection of the waybill it was noted that the shipping company failed to make note that the coolers should be refrigerated during shipping. This increased temperature is a potential source of error for the analysis of TPH, which is highly volatile. Furthermore, the soil at each of these test pit locations ranged from peat and fine sandy silt in a plant root matrix near surface to fine sand and gravel below. It appears that a slight change of matrix within the same sample depth may sufficient to affect the concentration.

The duplicate set collected at MW-11 returned a RSD value of 23%. All of the concentrations for these samples were within three times the MDL and so a higher RSD value is to be expected.

The duplicate sets collected at MW-5 and MW-11 returned an RSD value of 24% and 21% respectively for zinc. There is no apparent cause for the elevated RSD value however all values are well below a concentration of concern; none of the concentrations exceed 10mg/kg where as by comparison, the site condition standards for zinc in soil in a potable groundwater condition are 600mg/kg.

Each water sample was analyzed for 14 parameters yielding a total of 28 sets of numbers to be calculated for RSD. Of the twenty-eight (28) RSDs calculated, twenty-five (25) returned a value of "n/a" due to one or both concentrations being below the detection limit and three (3) RSD returned a value above the acceptable RSD goal of 20% for inorganics and 30% for organics.

The duplicate set collected at MW-5 returned an RSD value of 22.9% for Cobalt, 37.7% for Copper, and 29.7% for Nickel. In each case, at least one of the measured concentrations was within 3 times the MDL of the respective parameter and as a result a higher RSD is expected. The MDL for both Cobalt and Copper is 0.005 mg/L, and the MDL for Nickel is 0.01 mg/L.

Although RSDs exceed limits, concentrations were near detection limits and results are considered suitable for the intent of the monitoring program.

5. Conclusions

From the visual analysis during the site visit, there does not appear to be any significant erosion or cover issues that require immediate attention or that would be expected to lead to degraded cover performance in the near term. The effectiveness of a visual inspection relies in large part on the ability to detect relative changes in the surface contours and elevations. The existing relatively rough final grade of several of the landfill covers (Tier II in particular) does not lend itself to effective visual inspection as the pre-existing construction irregularities mask all but large and obvious changes.

No as-built survey records are available for the PIN-3 landfills.

Soil samples were collected at the designated locations in 2007. Two samples were collected at the each location. Minor concentrations of detectable hydrocarbons were noted in at least one test pit at each of the designated landfills. Inspections of the chromatograms reveal that the minor hydrocarbon concentrations are likely caused by naturally occurring organics in the peat found on site. The chromatograms and field observations agree with the correlation of naturally occurring organics in the peat layer.

In 2007, groundwater samples were collected from 7 of the 12 monitoring wells at the site. The mid-August timing of the sampling appears to have occurred during maximum thaw. There does not appear to be any significant issues with groundwater quality issues.

6. Limitations

This report has been prepared as an assessment of the environmental condition of the subject site located at Lady Franklin Point, Nunavut. The monitoring and investigation programs as described in this report, were conducted in a manner consistent with that level of care and skill normally exercised by other members of the engineering and science professions currently practising under similar conditions, subject to the time limits and financial and physical constraints applicable to the services.

The assessment of environmental conditions and possible hazards at this Site has been made using the results of chemical analysis of soil/sediment and groundwater from a limited number of locations. The Site conditions between sampling locations have been inferred based on conditions observed at sampling locations. Subsurface conditions may vary from those encountered at the sample locations.

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. GLL accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on the information contained in this report.

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

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

If you should have any questions regarding this report, please contact the undersigned at your convenience.

Report Prepared By:

Kenneth Boldt, B.Sc.
Environmental Engineer-In-Training

Jim Theriault, M.Sc.Eng., P.Eng.
Geologic Engineer

Report Reviewed By:

Darrin Johnson, M.Sc., P.Eng.
Senior Geotechnical Engineer

Karl Reimer, M.Sc., P.Eng.
Senior Remediation Engineer

Appendix A

Main Landfill

Appendix A

Landfill Monitoring Report - Main Landfill

A.1 Main Landfill

A.1.1 Landfill Summary

The main landfill is located approximately 800 m west of the main station area and encompasses an area of approximately 61,000 m^2. The average thickness of the landfill is approximately 1.5 m. The landfill configuration and sample locations are shown on Figure A-1. Prior to the remedial work in 2004, DCC had previously classified this site as a moderate to high potential environmental risk. The remedial work for this landfill included the installation of a synthetic liner anchored into the permafrost along the toe of the landfill and re-grading, with the placement of additional granular fill material sufficient to promote permafrost aggradation through the landfill contents. The cover of the landfill has no vegetation. The surface consists of a veneer of pebbles and cobbles overlying the silty sand and gravel cover.

For 2007, the monitoring requirements for the Main Landfill included visual inspection, soil sampling, groundwater sampling, and thermal monitoring.

A.1.2 Visual Inspection

Based on the 2007 visual inspection, the Main Landfill appears to be in good condition overall. The condition is substantially unchanged from last year and there are no indications of degraded performance. There are no visible indications of frost action or significant differential settlement. Several areas of minor rutting and surficial erosion, likely remnants from heavy equipment traffic during construction, were observed during the previous inspection. In all cases the minor erosional features appear to have stabilized and self-armoured to effectively mitigate against further degradation.

As noted in the 2006 inspection, the top surface of the landfill appears to have several areas of broad depression, specifically in the areas around thermistors VT-1 and VT-3 (refer to Photographs 26 and 25). There is no as-built survey information available for this landfill; therefore it is not possible to compare the current surface contours with the original shaping of the landfill. There is no indication of significant differential settlement or problematic foundation conditions associated with these broad depressions. These depressions should continue to be monitored to confirm that they are not associated with problematic foundation conditions.

The overall performance of the landfill is considered acceptable. The noted areas of broad depression should continue to be monitored.

Legend

- TBM203 — TEMPORARY BENCHMARK
- BM-2 — PERMANENT BENCHMARK
- MW-5 — MONITORING WELL LOCATION
- VT — VERTICAL THERMISTOR
- 820 — COORDINATE POINT
- 18 — PHOTOGRAPH LOCATION - 2007
- 10 — CLOSE-UP PHOTOGRAPH LOCATION - 2007
- SETTLEMENT (NTS)
- EROSION (NTS)
- PONDING
- STANDING WATER

Map Sources / Notes:
Source drawing from UMA: P3-RD02.dwg

0 5 10 20 30 40 m

1 : 1000
UTM Zone 12N, NAD83

File Name:	70516_By1_A1_MainLandfill(P3-RD02).DWG		
Reviewed by:	KAB, JAT	Prepared by:	MH
Date Issued:	December, 2007	Project Number:	70-516

Defence Construction Canada

2007 PIN-3 DEW Line Monitoring Program
PIN-3 Lady Franklin Point
Nunavut Territory

Main Landfill

Gartner Lee

Figure A-1
Version 1

Date Plotted: October 16, 2006 Path: N:\Projects\2007\70516\2007Final\ACAD\02-PIN-3\70516_By1_A1_MainLandfill(P3-RD02).DWG

A.1.3 Soil Sampling

Soil samples were collected at the designated locations of MW-5, MW-6, MW-7 and MW-8. The sampling locations are shown on Figure A-1. At each location wherever possible two samples were collected at approximately 0.1m below ground and between 0.4-0.5m below ground. The test pit at MW-7 was excavated to a depth of 0.4 m before refusal, and sample P3-MW-7-2 was collected at this depth. A photograph of each test pit for each location sampled is shown in Appendix A3.

Gartner Lee Limited (GLL) did not identify any hydrocarbon odours at any of the sampling locations at the Main Landfill. Laboratory analysis detected low concentrations of TPH (C6-34) in the test pits from soil sample locations MW-5 and MW-6. The concentrations noted are not considered to be of significance. However, these should be evaluated in the context of the Landfill Monitoring Plan.

Analytical results and depths of samples are provided in Table A-1 and the laboratory certificate is provided in Appendix G.

Table A-1. PIN-3 Lady Franklin Point, Summary of 2007 Soil Analysis - Main Landfil

Sample Ident.	Sample Location	Depth (m)	Arsenic (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Cobalt (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Zinc (mg/kg)	Petroleum Hydrocarbons				PCB Total Aroclors (mg/kg)
												TPH (C6-34) (mg/kg)	C6-C10 (mg/kg)	C10-C16 (mg/kg)	C16-C34 (mg/kg)	
Upgradient Samples																
P3-MW-5-1	MW-5	0.1	0.5	< 1.0	< 20	< 5.0	11.8	< 30	< 0.1	< 5.0	< 15	206	< 10	26	180	< 0.05
P3-17-1*	MW-5	0.1	1.5	< 1.0	< 20	< 5.0	6.7	< 30	< 0.1	< 5.0	< 15	< 40	< 10	< 5	9	< 0.05
P3-MW-5-2	MW-5	0.5	0.8	< 1.0	< 20	< 5.0	16.8	< 30	< 0.1	< 5.0	< 15	< 40	< 10	< 5	22	< 0.05
Downgradient Samples																
P3-MW-6-1	MW-6	0.1	0.9	< 1.0	< 20	< 5.0	12	< 30	< 0.1	6	< 15	170	< 10	< 5	170	< 0.05
P3-MW-6-2	MW-6	0.5	3.2	< 1.0	< 20	< 5.0	19.2	< 30	< 0.1	8	< 15	< 40	< 10	< 5	15	< 0.05
P3-MW-7-1	MW-7	0.1	1.3	< 1.0	< 20	< 5.0	11.5	< 30	< 0.1	< 5.0	< 15	< 40	< 10	< 5	24	< 0.05
P3-MW-7-2	MW-7	0.4	1.2	< 1.0	< 20	< 5.0	8	< 30	< 0.1	< 5.0	< 15	< 40	< 10	< 5	31	< 0.05
P3-MW-8-1	MW-8	0.1	0.3	< 1.0	< 20	< 5.0	4	< 30	< 0.1	< 5.0	< 15	< 40	< 10	< 5	19	< 0.05
P3-MW-8-2	MW-8	0.5	0.5	< 1.0	< 20	< 5.0	4.5	< 30	< 0.1	< 5.0	< 15	< 40	< 10	< 5	18	< 0.05

***** *Denotes duplicate sample. (Further information located in Table 2 of main report)*

Note: mg/kg = ug/g

A.1.4 Groundwater

Groundwater depths and monitor well conditions were documented for observation wells MW-5, MW-6, MW-7 and MW-8. The monitoring well development records are provided in Appendix A4. Generally the observation wells appeared to be in good condition during GLL's site visit.

Sufficient water was available from wells MW-5 and MW-8, however insufficient water for sample collection was present at monitoring wells MW-6 and MW-7. Furthermore, the groundwater pH measured in MW-6 and MW-7 was in excess of 10.5 and the extremely low recharge rate raises concerns as to the future production of the monitoring well in the context of a sampling program. Wells were purged and samples were collected at a maximum flow rate of 100 mL/min using a peristaltic pump, and disposable LDPE tubing at each well. The groundwater samples were not filtered and not preserved, and were analyzed for total concentration of inorganics, TPH (C6-C34) and PCBs. The results are presented in Table A-2 and the laboratory certificate is provided in Appendix G.

Table A-2. PIN-3 Lady Franklin Point, Summary of 2007 Groundwater Analysis - Main Landfill

Sample Ident.	Location	Groundwater Elevation (masl)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Lead (mg/L)	Mercury (mg/L)	Nickel (mg/L)	Zinc (mg/L)	Petroleum Hydrocarbons				PCB Total Aroclors (mg/L)
												TPH (C6-34) (mg/L)	C6-C10 (mg/L)	C10-C16 (mg/L)	C16-C34 (mg/L)	
Upgradient Samples																
P3-MW-5	MW-5	7.96	< 0.05	< 0.001	< 0.005	0.016	0.0131	< 0.01	< 0.001	0.0421	< 0.005	13.3				< 0.003
P3-MW-17*	MW-5	7.96	< 0.05	< 0.001	< 0.005	0.0138	0.0092	< 0.01	< 0.001	0.0394	< 0.005	10.1				< 0.003
Downgradient Samples																
N/A	MW-6	2.55	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	MW-7	2.32	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P3-MW-8	MW-8	2.02	< 0.05	< 0.001	0.076	< 0.005	< 0.005	< 0.01	< 0.001	0.055	< 0.005	< 1				< 0.003

***** *Denotes duplicate sample. (Further information located in Table 2 of main report)*

Note: mg/L = 1000 ug/L

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A.1.5 Thermal Monitoring

The manual readings taken from each thermistor from the Main Landfill are provided in Maintenance Records located in Appendix A5. The tabulated thermistor data is located in Appendix A5 and the 2007 graphs for each thermistor are provided in Graphs 1 through 4 located in Appendix A6.

All thermistors were downloaded, reset and had their batteries replaced. A thermistor maintenance report was completed and is located in Appendix A5. A full download of the thermistor data loggers should be completed in the summer of 2008.

Appendix A Attachments

A1 Site Condition/Visual Inspection Records

A2 Geotechnical Inspection Photographic Records

A3 Monitoring Photographic Records

A4 Monitoring Well Development Records

A5 Thermistor Data Tables and Maintenance Records 2007

A6 Thermistor Graphs 2007

A7 Field Notes

Appendix A1

Site Condition/Visual Inspection Records

Visual Inspection Checklist
Inspection Report – Page 1 of 2

SITE NAME:	PIN-3 Lady Franklin Point
LANDFILL/AREA DESIGNATION:	Main Landfill
DATE OF INSPECTION:	August 21, 2007
DATE OF PREVIOUS INSPECTION:	August 16, 2006
INSPECTED BY:	James Theriault
REPORT PREPARED BY:	James Theriault
The preparer represents to the best of the preparer's knowledge, the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.	

Inspection Report – Page 2 of 2

Checklist Item	Present Yes/No	Location	Length	Width	Depth	Extent relative to Area extent of Landfill/ Area (%)	Description	Photographic Records	Additional Comments/ Preliminary Stability Assessment
Settlement	Yes	Landfill cap areas around VT-1 and VT-2	50m	50m	0.2 to 0.5m (est.)	5	Minor depressions	25 and 26	Monitor, should be surveyed, Acceptable
Erosion	Yes	Various locations along crest of slope					Minor rutting, equipment tracks	10, 18 and 19	Self armoring, Acceptable
Frost Action	No								
Animal Burrows	No								
Vegetation	Sparse								Acceptable
Staining	No								
Vegetation Stress	No								
Seepage Points	No								
Debris Exposed	No								
Presence/ Condition of Monitoring Instruments	Yes						VT-1, VT-2, VT-3, VT-4, MW-5, MW-6, MW-7 and MW-8		All Instrumentation remains functional; locks need replacing
Other Features of Note.	Yes	Refer to plan map					Additional photos	1 – 9, 11-17, 20-24, 27, 28	General photos for documentation, no features of note

Preliminary Stability Assessment

Feature	Severity Rating	Extent
Settlement	Acceptable	Occasional
Erosion	Acceptable	Isolated
Frost Action	Not Observable	None
Animal Burrows	Not Observable	None
Vegetation	Not Observable	None
Staining	Not Observable	None
Vegetation Stress	Not Observable	None
Seepage Points	Not Observable	None
Debris Exposed	Not Observable	None
Presence/Condition - Monitoring Instruments	Not Observable	None
Overall Landfill Performance	**Acceptable**	

Appendix A2

Geotechnical Inspection Photographic Records

Overview Photograph:
Main Landfill: Looking south from near NWS Landfill (central lobe). ↑

Photograph 1. Main Landfill: Panoramic looking NW towards the southeast corner of the landfill. ↑

Photograph 2. Main Landfill: Panoramic looking NE from approximately 80 m west of the SW corner of the landfill. ↑

Photograph 3. Main Landfill: Panoramic looking SE from approximately 80 m NW of the NW corner of the landfill. Note hanger in background. ↑

Photograph 4. Main Landfill: Looking N from the SE corner along the dam crest. Whiteboard for scale (61cm x 46cm). No features of note. ↑

Photograph 5. Main Landfill: Looking N along the mid-slope of the eastern slope. Note MW-5 in the background. ↑

Photograph 6. Looking N along crest of MLF. ↑

Photograph 7. Panoramic of MLF looking N from 2 m downslope of crest. Sign next to VT-1. ↑

Photograph 8. MLF looking N from mid-slope pin high VT-1. ↑

Photograph 9. MLF looking about 300º from NE corner of landfill mid-slope. Same ruts as last year, self armoured. ATV in background. ↑

Photograph 10. Close up of rut (self armoured). ↑

Photograph 11. Looking to NW corner from mid-slope. ↑

Photograph 12. Looking SSW from mid-slope of NW corner. ↑

Photograph 13. Panoramic of slope looking SSW. VT-2 and MW-6 in view. ↑

Photograph 14. Looking S towards MW-6 along toe. ↑

Photograph 15. Looking S to VT-2 along crest. ↑

Photograph 16. Panoramic looking E. Ken at MW-7. Slope looks great. ↑

Photograph 17. 4 shot panoramic looking NE to SSE. ↑

Photograph 18. Close up of area previously identified as surficial erosion to monitor. It has completely self armoured - not a problem. ↑

Photograph 19. Close up of another area previously identified as erosional and to monitor. Self armoured, not problematic. Looking upslope ENE.↑

Photograph 20. Panoramic looking to SW corner standing near crest. ↑

Photograph 21. Standing mid-slope looking S. VT-4 left frame, MW-8 downslope (out of frame).↑

Photograph 22. At toe with MW-8 in frame.↑

Photograph 23. Panoramic looking ENE to SE. ↑

Photograph 24. Near SE corner looking to VT-4. ↑

Photograph 25. Looking NW towards VT-3 to VT-1. ↑

Photograph 26. 3 photo panoramic looking from NW to NNE. Sign on lower swale. ↑

Photograph 27. 2 shots looking S on top of MLF. ↑

Photograph 28. Looking SE from NW corner. VT-1 closest. ↑

Appendix A3

Monitoring Photographic Records

Photograph 1. Test pit P3-MW-5. Samples P3-MW-5-1, P3-MW-5-2, and P3-17-1 (Duplicate of P3-MW-5-1) collected. ↑

Photograph 2. Test Pit P3-MW-6. Samples P3-MW-6-1 and P3-MW-6-2 collected. ↑

Photograph 3. Test Pit P3-MW-7. Samples P3-MW-7-1 and P3-MW-7-2 collected. Bedrock reached at ~40cm.↑

Photograph 4. Test Pit P3-MW-8. Samples P3-MW-8-1 and P3-MW-8-2 collected. ↑

Photograph 5. Monitoring well MW-5 (Upgradient). Sample P3-MW-5 and P3-MW-17 (Duplicate) collected. ↑

Photograph 6. Monitoring well MW-6. No Sample collected. ↑

Photograph 5. Monitoring well MW-5 (Upgradient). Sample P3-MW-5 and P3-MW-17 (Duplicate) collected. ↑

Photograph 6. Monitoring well MW-6. No Sample collected. ↑

Photograph 7. Monitoring well MW-7. No sample collected. ↑

Photograph 8. Monitoring well MW-8. Sample P3-MW-8 collected. ↑

Photograph 9. Vertical thermistor VT-1. ↑

Photograph 10. Vertical thermistor VT-2. ↑

Photograph 11. Vertical thermistor VT-3. ↑

Photograph 12. Vertical thermistor VT-4. ↑

Appendix A4

Monitoring Well Development Records

Gartner Lee

Monitoring Well Observations (MW-05)

Development of Monitoring Wells (2007)			
Site Name:	PIN-3		
Date of Sampling Event:	21-Aug-07	Time:	8:25
Names of Samplers:	Ken Boldt		
Landfill Name:	Main Landfill		
Monitoring Well ID:	MW-5		
Sample Number:	P3-MW-5, P3-MW-17 (Duplicate)		
Condition of Well:	Good		
Measured Data			
Well height above ground (cm)=	60		
Diameter of well (cm)=	5		
Depth of installation (cm)=	390	From ground surface	
Length screened section (cm)=	333		
Depth to top of screen (cm)=	57	From ground surface	
Depth to water surface (cm)=	221	Method:	Interface meter
Static water level (cm)=	161	From ground surface	
Depth to bottom (cm)=	325	Evidence of sludge or siltation:	no
Depth of water (cm)=	104		
Well volume of water (mL)=	2042.04		
Free product thickness (mm)=	N/A	Method:	Interface meter
Purging: (Y/N)	Y	Procedure/Equipment:	N/A
Volume Purged Water (L)=	1.5		
Decontamination required: (Y/N)	Y	*Notes:*	
Number washes:	1		
Number rinses:	1		
pH=	7.00		
Conductivity (uS/cm)=	2612		
Temperature (degC)=	2.6		

n/a=not applicable
TOP = Top Of Pipe

Gartner Lee

Monitoring Well Observations (MW-06)

Development of Monitoring Wells (2007)			
Site Name:	PIN-3		
Date of Sampling Event:	21-Aug-07	Time:	10:00
Names of Samplers:	Ken Boldt		
Landfill Name:	Main Landfill		
Monitoring Well ID:	MW-6		
Sample Number:	No Sample		
Condition of Well:	Good		
Measured Data			
Well height above ground (cm)=	62		
Diameter of well (cm)=	5		
Depth of installation (cm)=	473	From ground surface	
Length screened section (cm)=	300		
Depth to top of screen (cm)=	53	From ground surface	
Depth to water surface (cm)=	214	Method:	Interface meter
Static water level (cm)=	152	From ground surface	
Depth to bottom (cm)=	270	Evidence of sludge or siltation:	no
Depth of water (cm)=	56		
Well volume of water (mL)=	1099.56		
Free product thickness (mm)=	N/A	Method:	Interface meter
Purging: (Y/N)	Y	Procedure/Equipment:	Peristaltic Pump, LDPE Tubing
Volume Purged Water (L)=	2.0		
Decontamination required: (Y/N)	Y	*Notes:*	
Number washes:	1	Initially water was clear but became cloudy. Well ran dry even with very low flow purging (< 100mL/min). No sign of reasonable recharge rate for sampling purposes. Very high pH could indicate a problem with well installation	
Number rinses:	1		
pH=	11.92		
Conductivity (uS/cm)=	1487		
Temperature (degC)=	2.4		

n/a=not applicable
TOP = Top Of Pipe

Gartner Lee

Monitoring Well Observations (MW-07)

Development of Monitoring Wells (2007)			
Site Name:	PIN-3		
Date of Sampling Event:	21-Aug-07	Time:	10:35
Names of Samplers:	Ken Boldt		
Landfill Name:	Main Landfill		
Monitoring Well ID:	MW-7		
Sample Number:	No Sample		
Condition of Well:	Good		
Measured Data			
Well height above ground (cm)=	55		
Diameter of well (cm)=	5		
Depth of installation (cm)=	480	From ground surface	
Length screened section (cm)=	300		
Depth to top of screen (cm)=	60	From ground surface	
Depth to water surface (cm)=	289	Method:	Interface meter
Static water level (cm)=	234	From ground surface	
Depth to bottom (cm)=	292	Evidence of sludge or siltation:	cloudy water
Depth of water (cm)=	3		
Well volume of water (mL)=	58.90		
Free product thickness (mm)=	N/A	Method:	Interface meter
Purging: (Y/N)	Y	Procedure/Equipment:	Peristaltic Pump, LDPE Tubing
Volume Purged Water (L)=	~100 mL		
Decontamination required: (Y/N)	Y	*Notes:*	
Number washes:	1	water was very cloudy and ran dry immediately, no sign of recharge.	
Number rinses:	1	Similar to other wells with very high pH. Again this could be an	
		indication of a problem with well installation.	
pH=	12.37		
Conductivity (uS/cm)=	1415		
Temperature (degC)=	5.5		

n/a=not applicable
TOP = Top Of Pipe

Gartner Lee

Monitoring Well Observations (MW-08)

Development of Monitoring Wells (2007)			
Site Name:	PIN-3		
Date of Sampling Event:	21-Aug-07	Time:	11:15
Names of Samplers:	Ken Boldt		
Landfill Name:	Main Landfill		
Monitoring Well ID:	MW-8		
Sample Number:	P3-MW-8		
Condition of Well:	Good		
Measured Data			
Well height above ground (cm)=	60		
Diameter of well (cm)=	5		
Depth of installation (cm)=	475	From ground surface	
Length screened section (cm)=	300		
Depth to top of screen (cm)=	55	From ground surface	
Depth to water surface (cm)=	166	Method:	Interface meter
Static water level (cm)=	106	From ground surface	
Depth to bottom (cm)=	305	Evidence of sludge or siltation:	no
Depth of water (cm)=	139		
Well volume of water (mL)=	2729.26		
Free product thickness (mm)=	N/A	Method:	Interface meter
Purging: (Y/N)	Y	Procedure/Equipment:	Peristaltic Pump, LDPE Tubing
Volume Purged Water (L)=	2.0		
Decontamination required: (Y/N)	Y	*Notes:*	
Number washes:	1	Checked conductivity meter with distilled water after purging and had appropriate readings. Error indicates the conductivity of the sample water was outside of the meter's range.	
Number rinses:	1		
pH=	8.00		
Conductivity (uS/cm)=	Error		
Temperature (degC)=	3.3		

n/a=not applicable
TOP = Top Of Pipe

Appendix A5

Thermistor Data Tables and Maintenance Records 2007

Thermal Monitoring
Ground Temperature Annual Maintenance Report

Contarctor Name:	**Gartner Lee Limited**	Inspection Date:	**22-Aug-07**
Prepared By:	**Ken Boldt**		

Thermistor Information

Site Name:	**PIN-3**		Thermistor Location		**Main Landfill**		
Thermistor Number:	**VT1**		Inclination		**Vertical**		
Install Date:	**5-Sep-04**		First Date Event		**17-Aug-06**	Last Date Event	**22-Aug-07**
Coordinates and Elevation		N	**9681.35**	E	**9291.581**	Elev	**10.714**
Length of Cable (m)	**7.8**		Cable Lead Above Ground (m)	**2.6**	Nodal Points	**11**	
Datalogger Serial #	**108043**				Cable Serial Number		**1607**

Code PIN-3VT1

Thermistor Inspection

	Good	Needs Maintenance
Casing	☑	☐
Cover	☑	☐
Data Logger	☑	☐
Cable	☑	☐
Beads	☑	☐

Battery Installation Date **22-Aug-07**

Battery Levels Main **11.34 V** Aux **12.53 V**

Manual Ground Temperature Readings

Bead	ohms	Temp. (ºC)
1	**11370**	**7.2**
2	**12120**	**5.9**
3	**13160**	**4.3**
4	**14230**	**2.4**
5	**15320**	**1.3**
6	**16660**	**-0.4**
7	**18100**	**-2.0**
8	**19140**	**-3.0**

Bead	ohms	Temp. (ºC)
9	**20010**	**-4.0**
10	**21190**	**-5.0**
11	**21670**	**-5.4**

Observations and Proposed Maintenance

Thermal Monitoring
Ground Temperature Annual Maintenance Report

Contarctor Name:	**Gartner Lee Limited**	Inspection Date:	**22-Aug-07**
Prepared By:	**Ken Boldt**		

Thermistor Information

Site Name:	**PIN-3**		Thermistor Location		**Main Landfill**		
Thermistor Number:	**VT2**		Inclination		**Vertical**		
Install Date:	**5-Sep-04**		First Date Event		**18-Aug-06**	Last Date Event	**22-Aug-07**
Coordinates and Elevation		N	**9698.82**	E	**9209.988**	Elev	**7.92**
Length of Cable (m)	**9.5**	Cable Lead Above Ground (m)	**4.9**	Nodal Points	**14**		
Datalogger Serial #	**111103**			Cable Serial Number			**1608**

Code PIN-3VT2

Thermistor Inspection

	Good	Needs Maintenance
Casing	☑	☐
Cover	☑	☐
Data Logger	☑	☐
Cable	☑	☐
Beads	☑	☐

Battery Installation Date **22-Aug-07**

Battery Levels Main **11.34 V** Aux **13.02 V**

Manual Ground Temperature Readings

Bead	ohms	Temp. (ºC)
1	**11450**	**7.1**
2	**11400**	**7.2**
3	**11360**	**7.2**
4	**10760**	**8.3**
5	**11130**	**7.7**
6	**12070**	**6.0**
7	**12920**	**4.5**
8	**16320**	**0.1**

Bead	ohms	Temp. (ºC)
9	**15710**	**0.7**
10	**16810**	**-0.6**
11	**17580**	**-1.5**
12	**18270**	**-2.1**
13	**18810**	**-2.7**
14	**19490**	**-3.4**

Observations and Proposed Maintenance

Thermal Monitoring
Ground Temperature Annual Maintenance Report

Contarctor Name:	**Gartner Lee Limited**	Inspection Date:	**22-Aug-07**
Prepared By:	**Ken Boldt**		

Thermistor Information

Site Name:	**PIN-3**		Thermistor Location		**Main Landfill**		
Thermistor Number:	**VT3**		Inclination		**Vertical**		
Install Date:	**5-Sep-04**		First Date Event		**17-Aug-06**	Last Date Event	**22-Aug-07**
Coordinates and Elevation		N	**9602.44**	E	**9298.113**	Elev	**10.014**
Length of Cable (m)	**7.8**		Cable Lead Above Ground (m)	**2.7**	Nodal Points	**11**	
Datalogger Serial #	**111108**				Cable Serial Number		**1609**

Code PIN-3VT3

Thermistor Inspection

	Good	Needs Maintenance
Casing	☑	☐
Cover	☑	☐
Data Logger	☑	☐
Cable	☑	☐
Beads	☑	☐

Battery Installation Date **22-Aug-07**

Battery Levels Main **11.34 V** Aux **12.90 V**

Manual Ground Temperature Readings

Bead	ohms	Temp. (ºC)
1	**11280**	**7.4**
2	**12180**	**5.8**
3	**13320**	**4.0**
4	**14430**	**2.4**
5	**15870**	**0.6**
6	**17070**	**-0.8**
7	**18460**	**-2.4**
8	**19440**	**-3.3**

Bead	ohms	Temp. (ºC)
9	**20570**	**-4.4**
10	**21440**	**-5.2**
11	**21960**	**-5.6**

Observations and Proposed Maintenance

Thermal Monitoring
Ground Temperature Annual Maintenance Report

Contarctor Name:	**Gartner Lee Limited**	Inspection Date:	**22-Aug-07**
Prepared By:	**Ken Boldt**		

Thermistor Information

Site Name:	**PIN-3**		Thermistor Location		**Main Landfill**		
Thermistor Number:	**VT4**		Inclination		**Vertical**		
Install Date:	**5-Sep-04**		First Date Event		**17-Aug-06**	Last Date Event	**22-Aug-07**
Coordinates and Elevation		N	**9588.91**	E	**9233.938**	Elev	**7.82**
Length of Cable (m)	**8.2**		Cable Lead Above Ground (m)	**3.7**	Nodal Points	**12**	
Datalogger Serial #	**108093**				Cable Serial Number		**1610**

Code PIN-3VT4

Thermistor Inspection

	Good	Needs Maintenance
Casing	☑	☐
Cover	☑	☐
Data Logger	☑	☐
Cable	☑	☐
Beads	☑	☐

Battery Installation Date **22-Aug-07**

Battery Levels Main **11.34 V** Aux **13.14 V**

Manual Ground Temperature Readings

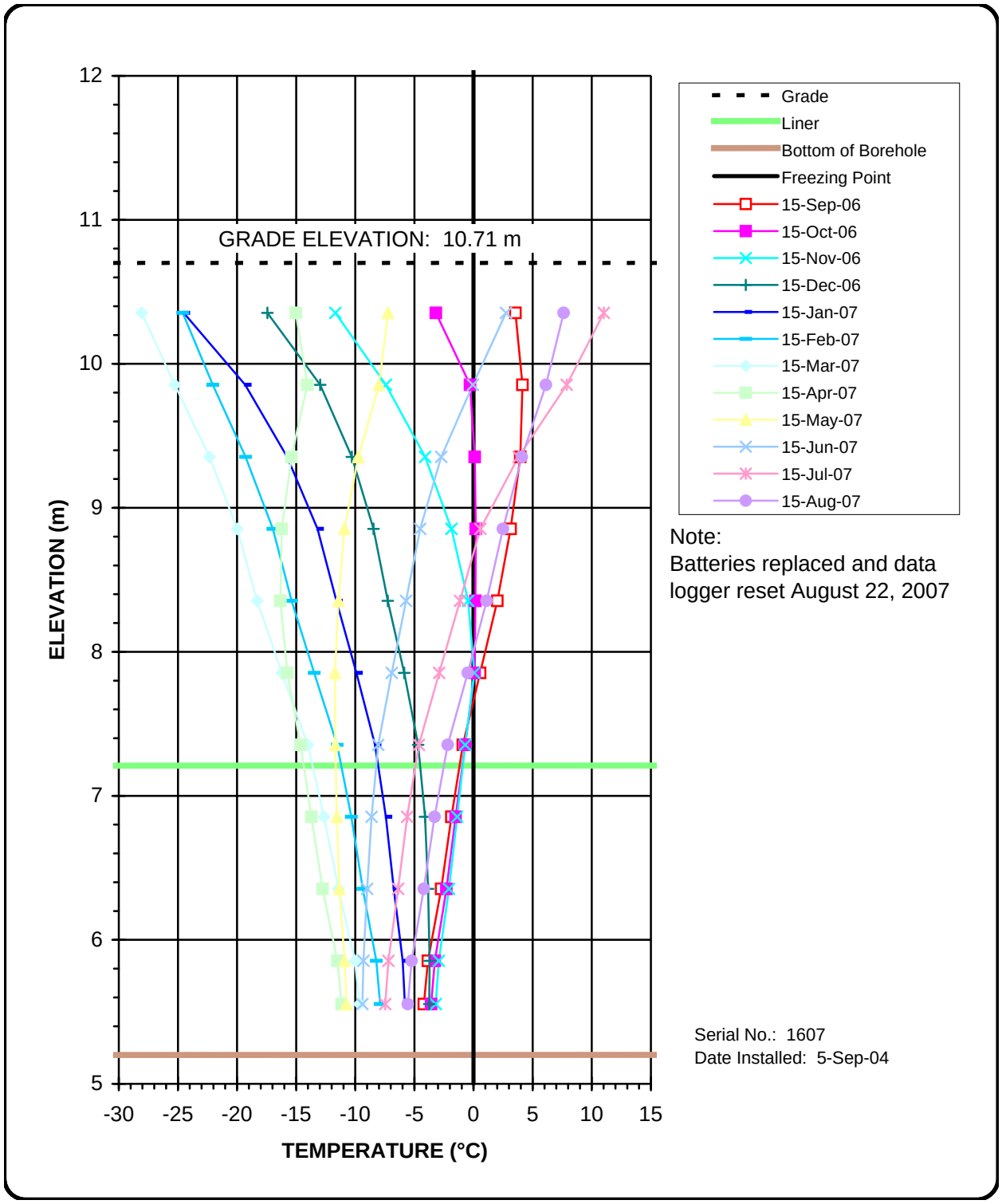
Bead	ohms	Temp. (ºC)
1	**11380**	**7.3**
2	**10980**	**8.0**
3	**11220**	**7.4**
4	**12280**	**5.7**
5	**13170**	**4.3**
6	**14390**	**2.5**
7	**15470**	**1.0**
8	**16740**	**-0.4**

Bead	ohms	Temp. (ºC)
9	**17460**	**-1.3**
10	**18360**	**-2.2**
11	**19100**	**-3.0**
12	**19680**	**-3.5**

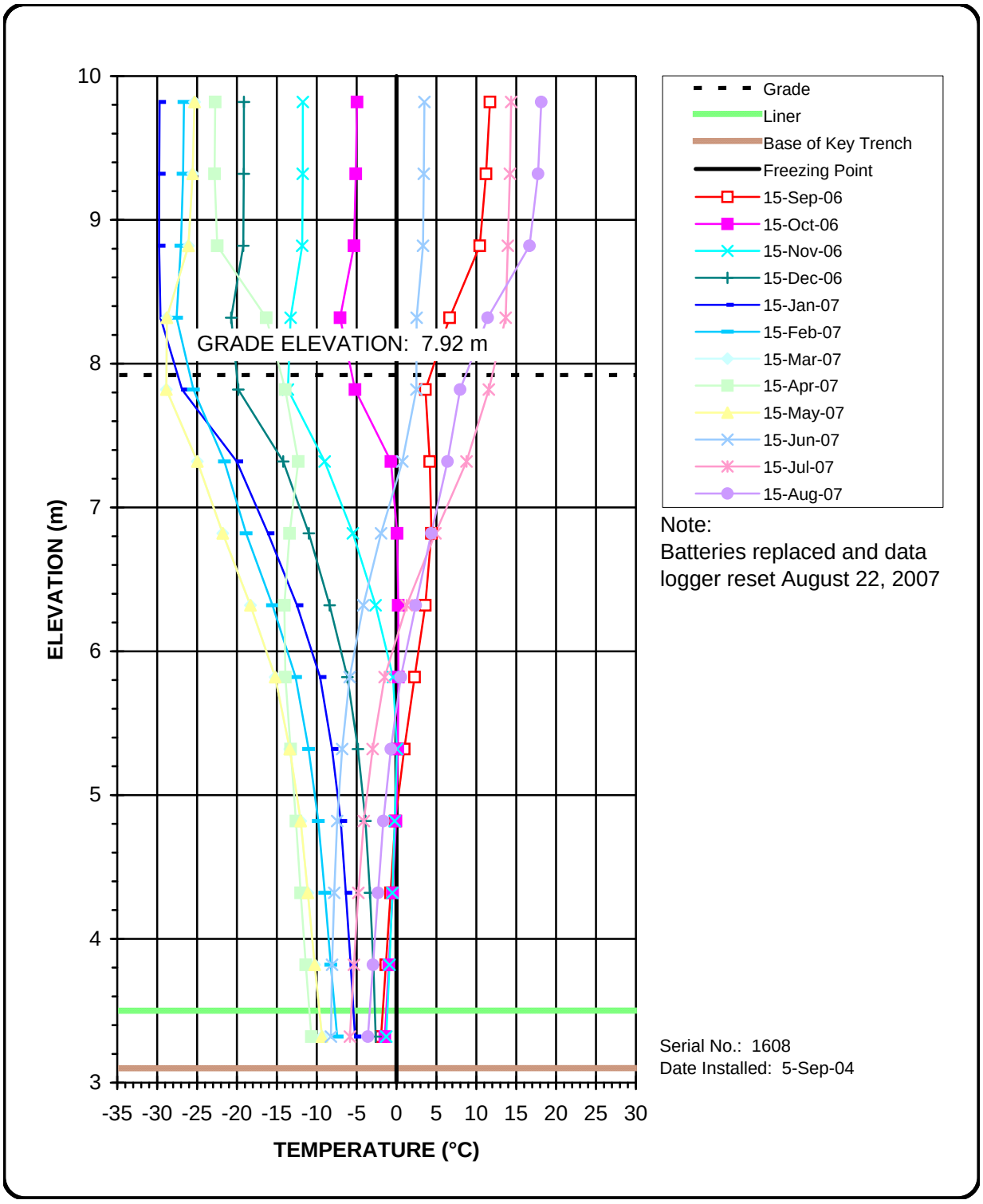
Observations and Proposed Maintenance

Appendix A6

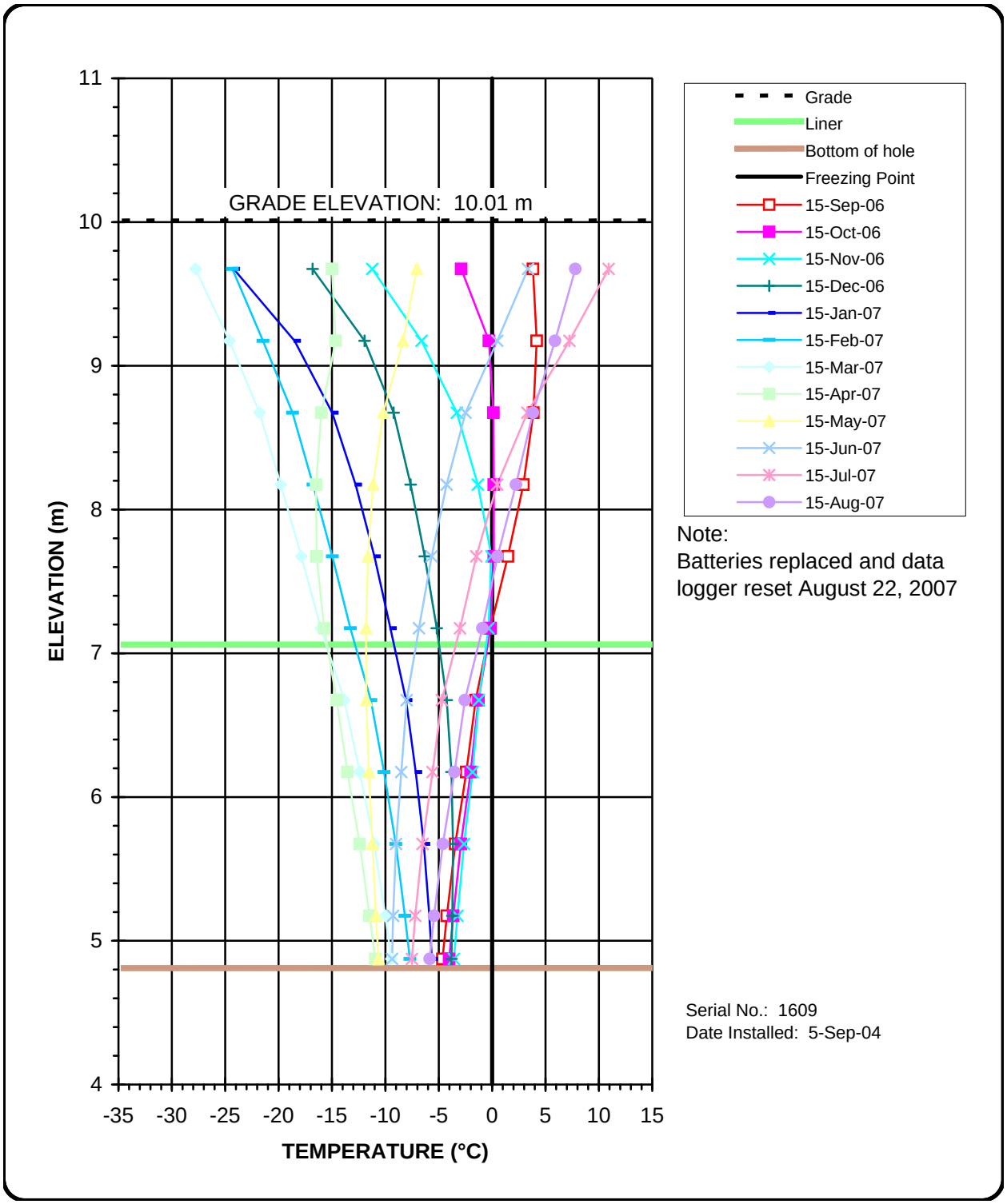
Thermistor Graphs 2007



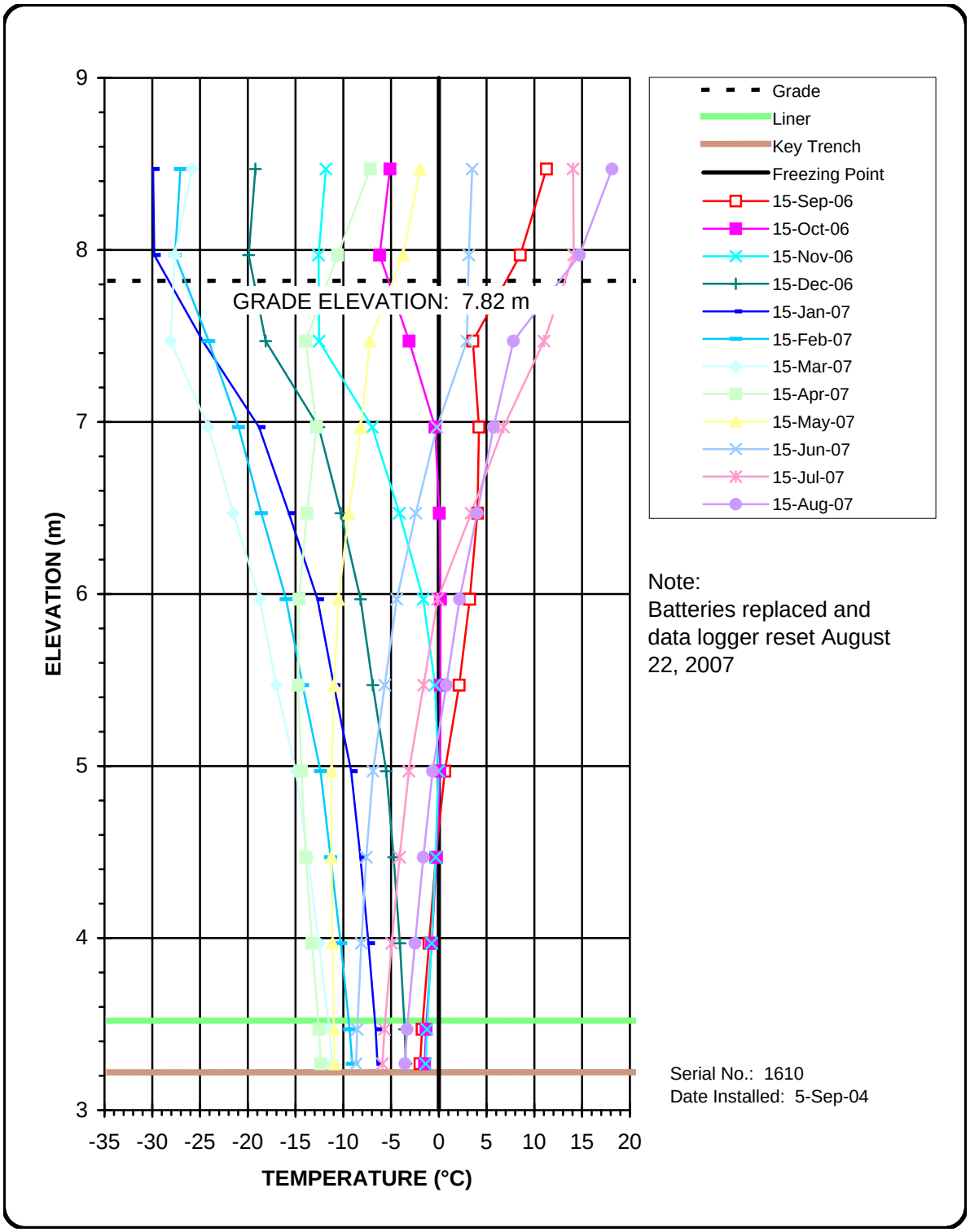
Graph 1
Ground Temperature Profile
Main Landfill Facility
Vertical GTC VT-1



Graph 2
Ground Temperature Profile
Main Landfill Facility
Vertical GTC VT-2



Graph 3
Ground Temperature Profile
Main Landfill Facility
Vertical GTC VT-3



Graph 4
Ground Temperature Profile
Main Landfill Facility
Vertical GTC VT-4

Appendix A7

Field Notes

Partly sunny 6°C 70516

Aug 21 PIN-3
Starting inspections MAIN LANDFILL

Arrived on site yesterday afternoon and set up camp

Photo
1,2 MLF looking NW from 0408014
Panoramic 7597463

3,4,5 MLF looking NE from 407806
Panoramic 7597574

6,7 MLF looking SE Panoramic 407941
Hanger in b/g to radio tower 7597870

8 MLF looking N from SE corner
along crest 407981/7597584

9 MLF looking N 407989/7597578

Aug 21

10 Looking N along crest from 407995 7597628

11,12 MLF looking N from 407999 7597668
Panoramic from 2m d/s of crest
Sign next to VT-1

13 MLF looking N from 407988 7597715
Mid-slope pin high VT-1

14 MLF looking about 300° from NE corner of landfill mid slope
- same rits as last year, self armoured
407974 7597760 ATV in background

15 Close-up of rut (self armoured)
407959/7597769

16 Looking to NW corner from midslope
407952 7597776 looking 300°

17 Looking SSW from midslope of NW corner
407923 7597796 10:38 am
VT- in background

Aug 21

18,19 Panoramic of slope looking SSW from 407898 7597772
VT-2 & MW-6 in view

20 Looking S towards MW-6 along toe from 407879/7597764

21 Looking S to VT-2 along crest from 407896 7597758

22,23 Panoramic looking E from 407874 7597725
Ken @ MW-7 slope looks great

24,25,26,27 4 shot panoramic from 407867 7597717 looking NE to SSE

28 Close-up of area previously identified as surficial erosion to monitor, it has completely self armoured - not problem
407924 7597713

29 Close-up of another area previously identified as erosional and to monitor
- self armoured, not problematic
407931 7597688 looking upslope ENE

Aug 21/2007

30,31 Panoramic looking to SW/ corner standing near crest @ 407936 7597699

32 Standing midslope looking S VT-4 left frame, MW-8 dls (out of frame) 407895 7597644

33 # @ toe with MW-8 in frame 407884 7597644

34,35 Panoramic looking ENE to SE from 407890 7597595

Moving up top MLF

36,37 Near SE corner looking to VT-4 from 407979 7597603 to VT-3

38,39 Looking NW from 407982 7597612 towards VT-3 to VT-1

PIN-3 70516

40 Low spot between VT-3 & VT-1 view from 407990 7597662 looking NW

41,42,43 3 Photo panoramic looking from NW to NNE 407971 7597704 sign on lower swale

44,45 2 shots looking S on top of MLF from 407956 7597765

X 46 Looking SE from NW corner @ 407929 7597776 VT-1 closest CAMERA DEAD NO PHOTO X

ON TO SOUTH LANDFILL EAST

46,47,48 Panoramic looking N from 30m S of landfill 408834 7597399 ATV for scale starting SE corner and moving CC

Aug 20, 07

PIN-3

Weather: Partly Cloudy, 5°C, breeze

MW-13 Non-Haz Landfill

Well in good condition
Water purged cloudy, quickly ran dry
and recharged at a very low rate
Could not take sample due to lack
of water
Picture 001 of well

Soil Sample
P3-MW-13-1 @ 0-10cm
P3-MW-13-2 @ 40-50 cm
Picture 002 of ~~well~~ Test-pit

Aug 21, 07

MW-5

Well in good condition
Sample Collected
P3-MW-5
4 x 500 mL amber glass
1 x 250 mL plastic
2 x ~~250 mL amber~~ glass vials VOC

Aug 21, 07

P3-MW-17 Duplicate of MW-5
4 x 500 mL amber glass
4 x 1000 mL amber glass
2 x 250 mL plastic
1 x 250 mL amber glass
2 x VOC vials
Picture 003 of MW-5

Soil Sample
P3-MW-5-1 } @ 0-10cm
P3-17-1 (Duplicate) }
P3-MW-5-2 @ 40-50cm
Picture 004 of test pit

10:00 AM MW-6

Well condition good. water became
cloudy during purging. Refresh rate
was not sufficient for sampling
Picture 005 of MW-6

Soil Sample
P3-MW-6-1 @ 0-10cm
P3-MW-6-2 @ 40-50cm
Picture 006 of test pit

Aug 21, 07

MW-7

Well in good condition. Only 3cm of water in well. Very high pH (>12.). Zero noticeable recharge after purging. No sample collected at this time

Picture 007 of well MW-7

Soil sampling

P3-MW-7-1 @ 0-10 cm

P3-MW-7-2 @ 40-50cm

Picture 008 of test pit.

Reached Bedrock @ 40cm depth

MW-8

Well in good condition

Sample collected P3-MW-8

4x 500 mL amber glass

1x 250 mL plastic

2x VOC vials

Picture 010 of MW-8

Soil Sampling

P3-MW-8-1 @ 0-10cm

P3-MW-8-2 @ 40-50cm

Picture **009** of test pit

Aug 21, 07

2:00PM

MW-9

Well in good condition

No water to take sample

Picture 011 of MW-9

Soil Sampling

P3-MW-9-1 @ 0-10cm

P3-MW-9-2 @ 40-50cm

Picture 012 of test pit

MW-10

Well in good condition above ground surface however at 117cm the well had a refusal of filter sand.

No water to sample

Picture **014** of MW-10

Soil Sampling

P3-MW-10-1 @ 0-10cm

P3-MW-10-2 @ 40-50cm

Picture **013** of test pit

Aug 22, 07

Tier II

VT-6

Thermister in good condition

Picture 042 of VT-6

VT-5

Thermister in good condition

Picture 043 of VT-5

VT-7

Good condition

Picture 044 of VT-7

VT-8

Good condition

Picture 045 of VT-8

Main Landfill

VT-3

Good condition

Picture 046 of VT-3

VT-4

Good condition

Picture 047 of VT-4

Aug 22, 07

VT-2

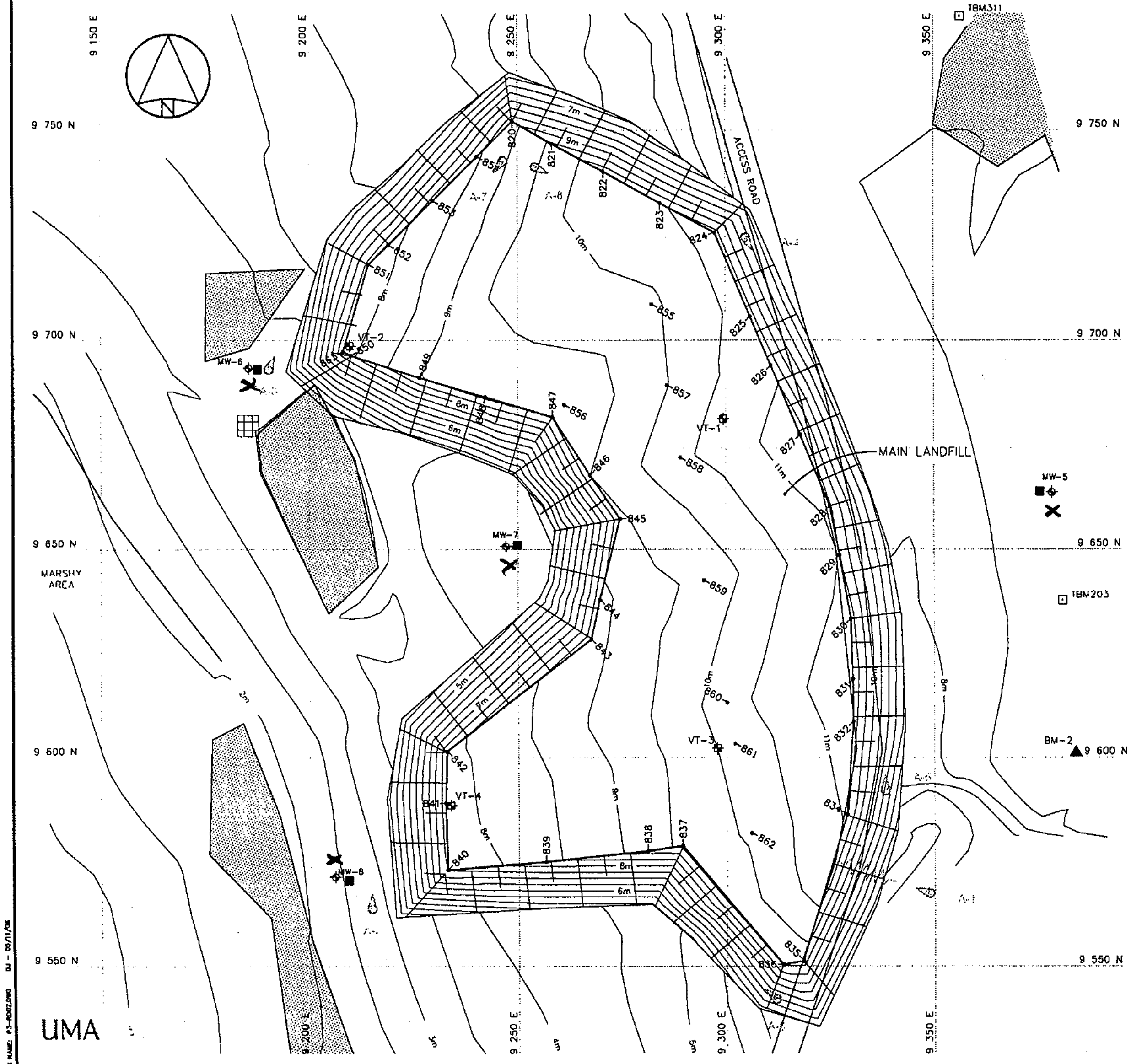
Good condition

Picture 048 of VT-2

VT-1

Good condition

Picture 049 of VT-1



BENCHMARKS				
NO.	COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
TBM203	9 637.763	9 380.841	8.869	SPIKE
TBM311	9 777.439	9 356.332	8.842	50mm X 50mm WOODEN HUB
BM-2	9 601.307	9 384.159	9.277	25mm DIA. STEEL PIPE

RECORD DRAWING
NOT FOR CONSTRUCTION

LEGEND:

- TBM203 TEMPORARY BENCHMARK
- BM-2 PERMANENT BENCHMARK
- MW-5 MONITORING WELL LOCATION
- VT VERTICAL THERMISTOR
- 820 COORDINATE POINT
- MONITORING SOIL SAMPLE LOCATION
- PHOTOGRAPH REFERENCE
- SETTLEMENT
- EROSION
- PONDING
- (A) OBSERVATION OF CHECKLIST ITEM

COORDINATE POINTS (AS-BUILT) FINAL LANDFILL SURFACE			
NO.	NORTHING	EASTING	ELEV.
820	9 752.2	9 248.8	8.86
821	9 746.9	9 258.2	9.58
822	9 740.2	9 270.7	10.34
823	9 732.6	9 284.3	10.46
824	9 725.6	9 297.4	10.71
825	9 705.7	9 305.9	10.73
826	9 694.0	9 310.9	10.87
827	9 677.5	9 317.8	11.36
828	9 660.4	9 325.0	11.09
829	9 648.6	9 327.3	11.02
830	9 633.4	9 330.0	11.20
831	9 618.8	9 330.4	11.40
832	9 608.6	9 330.5	11.26
833			
834	9 586.4	9 329.0	11.05
835	9 551.3	9 318.4	9.75
836	9 550.5	9 313.6	9.56
837	9 579.0	9 289.4	9.64
838	9 577.7	9 281.0	9.20
839	9 575.1	9 256.5	8.36
840	9 573.1	9 232.9	7.53
841	9 589.1	9 232.4	7.82
842	9 601.5	9 232.8	7.86
843	9 628.3	9 267.6	8.84
844	9 637.9	9 269.7	8.87
845	9 657.4	9 274.6	9.43
846	9 667.8	9 267.4	9.50
847	9 681.6	9 258.3	9.02
848	9 686.4	9 242.1	9.12
849	9 691.0	9 226.3	8.99
850	9 696.3	9 210.0	7.93
851	9 718.0	9 214.2	7.68
852	9 722.6	9 218.9	7.83
853	9 733.2	9 229.6	8.17
854	9 743.8	9 240.3	8.42
855	9 708.5	9 282.3	9.91
856	9 684.6	9 261.1	9.04
857	9 689.3	9 285.9	9.98
858	9 672.0	9 289.1	10.39
859	9 642.6	9 294.6	9.64
860	9 613.1	9 300.2	10.28
861	9 603.3	9 302.0	10.12
862	9 582.0	9 306.0	10.08
863	9 697.4	9 208.1	7.80

MONITORING WELLS			
NO.	NORTHING	EASTING	ELEV.
MW-5	9 663.625	9 378.293	9.57
MW-6	9 693.324	9 185.410	4.07
MW-7	9 650.712	9 247.115	4.66
MW-8	9 571.398	9 205.859	3.08

THERMISTORS			
NO.	NORTHING	EASTING	ELEV.
VT-1	9 681.173	9 299.360	10.70
VT-2	9 698.633	9 209.688	7.92
VT-3	9 602.196	9 297.756	10.01
VT-4	9 588.565	9 233.678	7.82

0 10 20 30m
10 5 1:1000

UMA

DEW LINE CLEAN UP
LANDFILL MONITORING PLAN

PIN-3 - LADY FRANKLIN POINT

EXISTING MAIN LANDFILL

FIGURE PIN-3.2

Monitoring Well Sampling Record

Site Name:	PIN-3		
Date of Sampling Event:	21-Aug-07	Time:	8:25 AM
Names of Samplers:	Ken Boldt		
Landfill Name:	Main Landfill		
Monitoring Well ID:	MW-5		
Sample Number:	P3-MW-5,	P3-MW-17 (Duplicate)	
Condition of Well:	Good		
Measured Data			
Well pipe height above ground (cm)=	60		
Diameter of well (cm)=	~~2.54~~ 5		
Depth of well installation (cm)= (from ground surface)	390		
Length screened section (cm)=	333		
Depth to top of screen (cm)= (from ground surface)	57		
Depth to water surface (cm)= (from top of pipe)	221	Measurement method: (meter, tape, etc)	Interface Meter
Static water level (cm)= (below ground surface)	161		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	325	Evidence of sludge or siltation:	no
Thickness of water column (cm)=			
Static volume of water in well (mL)=			
Free product thickness (mm)=	N/A	Measurement method: (meter, paste, etc)	Interface Meter
Purging: (Y/N)	Y	Purging/Sampling Equipment:	Peristaltic Pump
Volume Purged Water=	1.5 L		LDPE Tubing
Decontamination required: (Y/N)	Y		
Number washes:	1		
Number rinses:	1		
Final pH=	7.00		
Final Conductivity (uS/cm)=	2612		
Final Temperature (degC)=	2.6		

Monitoring Well Sampling Record

Site Name:	PIN-3		
Date of Sampling Event:	21-Aug-07	Time:	10:00 AM
Names of Samplers:	Ken Boldt		
Landfill Name:	Main Landfill		
Monitoring Well ID:	MW-6		
Sample Number:	No Sample		
Condition of Well:	Good		
Measured Data			
Well pipe height above ground (cm)=	62		
Diameter of well (cm)=	5		
Depth of well installation (cm)= (from ground surface)	473		
Length screened section (cm)=	300		
Depth to top of screen (cm)= (from ground surface)	53		
Depth to water surface (cm)= (from top of pipe)	214	Measurement method: (meter, tape, etc)	Interface Meter
Static water level (cm)= (below ground surface)	152		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	270	Evidence of sludge or siltation:	No
Thickness of water column (cm)=			
Static volume of water in well (mL)=			
Free product thickness (mm)=	N/A	Measurement method: (meter, paste, etc)	Interface Meter
Purging: (Y/N)	Y	Purging/Sampling Equipment:	Peristaltic
Volume Purged Water=	2.0 L		LDPE tubing
Decontamination required: (Y/N)	Y		
Number washes:	1		
Number rinses:	1		
Final pH=	11.92		
Final Conductivity (uS/cm)=	1487		
Final Temperature (degC)=	2.4		

Initial water was clear but became cloudy. Well ran dry even with very low flow purging & <100mL/min. No sign of reasonable recharge rate for sampling purposes

Monitoring Well Sampling Record

Site Name:	PIN-3		
Date of Sampling Event:	21-Aug-07	Time:	10:35 AM
Names of Samplers:	Ken Boldt		
Landfill Name:	Main Landfill		
Monitoring Well ID:	MW-7		
Sample Number:	No Sample		
Condition of Well:	Good		
Measured Data			
Well pipe height above ground (cm)=	58		
Diameter of well (cm)=	5.08		
Depth of well installation (cm)= (from ground surface)	480		
Length screened section (cm)=	300		
Depth to top of screen (cm)= (from ground surface)	60		
Depth to water surface (cm)= (from top of pipe)	289	Measurement method: (meter, tape, etc)	Interface Meter
Static water level (cm)= (below ground surface)	234		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	292	Evidence of sludge or siltation:	cloudy water
Thickness of water column (cm)=			
Static volume of water in well (mL)=			
Free product thickness (mm)=	N/A	Measurement method: (meter, paste, etc)	Interface Meter
Purging: (Y/N)	Y	Purging/Sampling Equipment:	Peristaltic Pump
Volume Purged Water=	~~200mL~~ 100 mL		LDPE tubing
Decontamination required: (Y/N)	Y		
Number washes:	1		
Number rinses:	1		
Final pH=	12.37		
Final Conductivity (uS/cm)=	1415		
Final Temperature (degC)=	5.5		

Monitoring Well Sampling Record

Site Name:	PIN-3		
Date of Sampling Event:	21-Aug-07	Time:	11:15 AM
Names of Samplers:	KenBoldt		
Landfill Name:	Main Landfill		
Monitoring Well ID:	MW-8		
Sample Number:			
Condition of Well:	Good		
Measured Data			
Well pipe height above ground (cm)=	60		
Diameter of well (cm)=	5.08		
Depth of well installation (cm)= (from ground surface)	475		
Length screened section (cm)=	300		
Depth to top of screen (cm)= (from ground surface)	55		
Depth to water surface (cm)= (from top of pipe)	166	Measurement method: (meter, tape, etc)	Interface Meter
Static water level (cm)= (below ground surface)	106		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	305	Evidence of sludge or siltation:	slightly cloudy, turning clear
Thickness of water column (cm)=			
Static volume of water in well (mL)=			
Free product thickness (mm)=	N/A	Measurement method: (meter, paste, etc)	Interface Meter
Purging: (Y/N)	Y	Purging/Sampling Equipment:	Peristaltic Pump
Volume Purged Water=	2.0L		LDPE tubing
Decontamination required: (Y/N)	Y		
Number washes:	1		
Number rinses:	1		
Final pH=	8.00		
Final Conductivity (uS/cm)=	Error		
Final Temperature (degC)=	3.3		

Thermal Monitoring

Ground Temperature Annual Maintenance Report

Contractor Name: GLL	Inspection Date: 22-Aug-07
Prepared By: Ken Boldt	

Thermistor Information

Site Name: **PIN-3**		Thermistor Location: **Main Landfill**			
Thermistor Number: **VT1**		Inclination: **Vertical**			
Install Date: **05-Sep-04**	First Date Event: **23-Aug-05**		Last Date Event: **16-Aug-06**		
Coordinates and Elevation N: **9681.35**		E: **9291.581**		Elev: **10.714**	
Length of Cable (m): **7.8**	Cable Lead Above Ground (m): **2.6**		Nodal Points: **11**		
Datalogger Serial #: **108043**		Cable Serial Number: **1607**			

Code PIN-3VT1

Thermistor Inspection

	Good	Needs Maintenance
Casing	☑	☐
Cover	☑	☐
Data Logger	☑	☐
Cable	☑	☐
Beads	☑	☐

Battery Installation Date

Battery Levels Main 11.34 V Aux 12.53 V

Manual Ground Bead Temperature Readings

Bead	Ohms	Temp. (°C)
1	11.37	
2	12.12	
3	13.16	
4	14.23	
5	15.32	
6	16.66	
7	18.10	
8	19.14	

Bead	Ohms	Temp. (°C)
9	20.01	
10	21.19	
11	21.67	
12		
13		
14		
15		
16		

Observations and Proposed Maintenance

Thermal Monitoring

Ground Temperature Annual Maintenance Report

Contractor Name:	Inspection Date: 22-Aug-07
Prepared By:	

Thermistor Information

Site Name:	**PIN-3**	Thermistor Location:	**Main Landfill**		
Thermistor Number:	**VT2**	Inclination:	**Vertical**		
Install Date:	**05-Sep-04**	First Date Event:	**23-Aug-05**	Last Date Event:	**16-Aug-06**
Coordinates and Elevation	N: **9698.82**	E: **9209.988**		Elev:	**7.92**
Length of Cable (m):	**9.5**	Cable Lead Above Ground (m):	**4.9**	Nodal Points:	**14**
Datalogger Serial #:	**111103**	Cable Serial Number:	**1608**		

Code PIN-3VT2

Thermistor Inspection

	Good	Needs Maintenance	
Casing	☑	☐	
Cover	☑	☐	
Data Logger	☑	☐	
Cable	☑	☐	
Beads	☑	☐	
Battery Installation Date			
Battery Levels	Main 11.34	Aux 13.02	

Manual Ground Bead Temperature Readings

Bead	Ohms	Temp. (°C)
1	11.45	
2	11.40	
3	11.36	
4	10.76	
5	11.13	
6	12.07	
7	12.92	
8	14.32	

Bead	Ohms	Temp. (°C)
9	15.71	
10	16.81	
11	17.58	
12	18.27	
13	18.81	
14	19.49	
15		
16		

Observations and Proposed Maintenance

Thermal Monitoring

Ground Temperature Annual Maintenance Report

Contractor Name:	Inspection Date: 22-Aug
Prepared By:	

Thermistor Information

Site Name:	**PIN-3**	Thermistor Location:	**Main Landfill**		
Thermistor Number:	**VT3**	Inclination:	**Vertical**		
Install Date:	**05-Sep-04**	First Date Event:	**23-Aug-05**	Last Date Event:	**16-Aug-06**
Coordinates and Elevation	N: **9602.44**	E:	**9298.113**	Elev:	**10.014**
Length of Cable (m):	**7.8**	Cable Lead Above Ground (m):	**2.7**	Nodal Points:	**11**
Datalogger Serial #:	**111108**	Cable Serial Number:	**1609**		

Code PIN-3VT3

Thermistor Inspection

	Good	Needs Maintenance
Casing	☑	☐
Cover	☑	☐
Data Logger	☑	☐
Cable	☑	☐
Beads	☑	☐
Battery Installation Date		
Battery Levels	Main 11.34V	Aux 12.90V

Manual Ground Bead Temperature Readings

Bead	KOhms	Temp. (°C)
1	11.28	
2	12.18	
3	13.32	
4	14.43	
5	15.87	
6	17.07	
7	18.46	
8	19.44	

Bead	Ohms	Temp. (°C)
9	20.57	
10	21.44	
11	21.96	
12		
13		
14		
15		
16		

Observations and Proposed Maintenance

Thermal Monitoring

Ground Temperature Annual Maintenance Report

Contractor Name:	Inspection Date: 22-Aug-07
Prepared By:	

Thermistor Information

Site Name:	**PIN-3**	Thermistor Location:	**Main Landfill**		
Thermistor Number:	**VT4**	Inclination:	**Vertical**		
Install Date:	**05-Sep-04**	First Date Event:	**23-Aug-05**	Last Date Event:	**16-Aug-06**
Coordinates and Elevation N:	**9588.91**	E:	**92333938**	Elev:	**7.82**
Length of Cable (m):	**8.2**	Cable Lead Above Ground (m):	**3.7**	Nodal Points:	**12**
Datalogger Serial #:	**108093**	Cable Serial Number:	**1610**		

Code PIN-3VT4

Thermistor Inspection

	Good	Needs Maintenance
Casing	☑	☐
Cover	☑	☐
Data Logger	☑	☐
Cable	☑	☐
Beads	☑	☐
Battery Installation Date		
Battery Levels	Main 11.34	Aux 13.14

Manual Ground Bead Temperature Readings

Bead	kOhms	Temp. (°C)
1	11.38	
2	10.98	
3	11.22	
4	12.28	
5	13.17	
6	14.39	
7	15.47	
8	16.74	

Bead	Ohms	Temp. (°C)
9	17.46	
10	18.36	
11	19.10	
12	19.38	
13		
14		
15		
16		

Observations and Proposed Maintenance

Appendix B

NWS Landfill

Appendix B

Landfill Monitoring Report – NWS Landfill

B.1 NWS Landfill

B.1.1 Landfill Summary

The NWS Landfill is located approximately 700 m west of the main station buildings and occupies an area of approximately 42,000 m^2 with a thickness of approximately 0.5 m. The NWS Landfill was previously used as a waste burn pit during the operation of the site. The landfill configuration is provided on Figure B-1. Prior to the remedial work in 2004, DCC had classified the landfill as a moderate potential environmental risk. Remediation of the landfill included the excavation of surface contaminated soils, and regrading with the placement of additional granular fill. The landfill cover comprises three distinct cells which are herein referred to as the East, Central and West Cell. There is no monitoring instrumentation installed at this location.

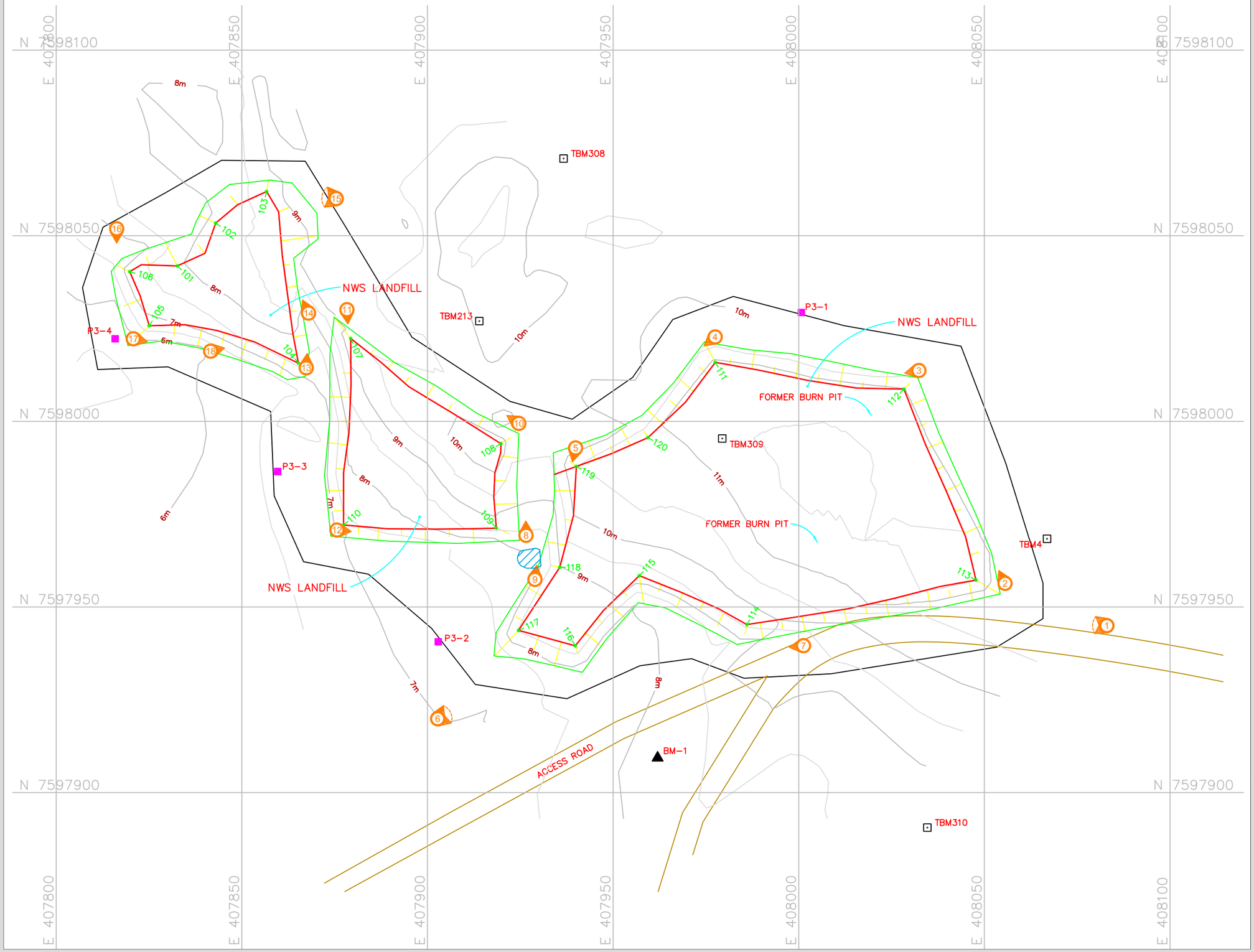
For 2007, the monitoring requirements for the NWS Landfill included visual inspection, and soil sampling.

B.1.2 Visual Monitoring

Based on the visual inspection, the NWS Landfill area appears to be in good condition and continues to function as designed. The overall condition is substantially unchanged from the time of last year's inspection. There is no evidence of problematic or degraded conditions.

Minor rutting that was observed last year, which was presumed to be a remnant of construction equipment traffic is completely self-armoured and stable. The area of ponded water adjacent to the southeast corner of the central lobe appears substantially unchanged from last year, although there appeared to be less volume of ponded water within the saturated zone of finer material. The ponded water is clear and there is no clear evidence that the ponded water is seepage related. The presence of ponded water at this location is not considered problematic.

The overall performance of the landfill is considered acceptable. There is no as-built survey data available for this landfill.



Legend

- TBM4 — TEMPORARY BENCHMARK
- BM-1 — PERMANENT BENCHMARK
- 101 — COORDINATE POINT
- MONITORING SOIL SAMPLE LOCATION
- 18 — PHOTOGRAPH LOCATION - 2007
- 10 — CLOSE-UP PHOTOGRAPH LOCATION - 2007
- SETTLEMENT (NTS)
- EROSION (NTS)
- PONDING
- STANDING WATER

Map Sources / Notes:
Source drawing from UMA: P3-RD03.dwg

0 5 10 20 30 40 m

1 : 1000
UTM Zone 12N, NAD83

File Name: 70516_By1_B1_NWSLandfill(P3-RD03).DWG
Reviewed by: KAB, JAT
Prepared by: MH
Date Issued: December, 2007
Project Number: 70-516

Defence Construction Canada

2007 PIN-3 DEW Line Monitoring Program
PIN-3 Lady Franklin Point
Nunavut Territory

NWS Landfill

Gartner Lee

Figure B-1
Version 1

Date Plotted: October 16, 2006 Path: N:\Projects\2007\70516\2007\Final\ACAD\02-PIN-3\70516_By1_B1_NWSLandfill(P3-RD03).DWG

B.1.3 Soil Sampling

Soil samples were collected at the designated locations of P3-1, P3-2, P3-3 and P3-4. The sampling locations are shown on Figure B-1. At each location wherever possible two samples were collected at approximately 0.10 m below ground and between 0.40-0.50 m below ground. A photograph of each test pit for each location sampled is shown in Appendix B3.

No hydrocarbon odours were identified at any of the sampling locations at the NWS Landfill. Laboratory analysis detected low concentrations of TPH (C6-34) in the test pits from soil sample locations P3-1 and P3-3. The concentrations noted are not considered to be of significance. However, these should be evaluated in the context of the Landfill Monitoring Plan.

Analytical results and depths of samples are provided in Table B-1 and the laboratory certificate is provided in Appendix G.

Table B-1. PIN-3 Lady Franklin Point, Summary of 2007 Soil Analysis - NWS Landfil

Sample Ident.	Sample Location			Depth	Arsenic	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Zinc	Petroleum Hydrocarbons				PCB Total Aroclors (mg/kg)
														TPH (C6-34)	C6-C10	C10-C16	C16-C34	
	Location Id.	Northing	Easting	(m)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	
Upgradient Samples																		
P3-1-1	P3-1	7598043	408028	0.1	2.3	< 1.0	< 20	< 5.0	11.9	< 30	< 0.1	< 5.0	19.5	724	< 10	24	700	< 0.05
P3-1-2	P3-1	7598043	408028	0.4	1.6	< 1.0	< 20	< 5.0	3.9	< 30	< 0.1	< 5.0	< 15	< 40	< 10	5	5	< 0.05
Downgradient Samples																		
P3-2-1	P3-2	7597950	407901	0.1	1.2	< 1.0	< 20	< 5.0	10.2	< 30	< 0.1	< 5.0	< 15	< 40	< 10	6	< 5	< 0.05
P3-2-2	P3-2	7597950	407901	0.5	1.0	< 1.0	< 20	< 5.0	8.4	< 30	< 0.1	< 5.0	< 15	< 40	< 10	< 5	< 5	< 0.05
P3-20-2*	P3-2	7597950	407901	0.5	1.0	< 1.0	< 20	< 5.0	9.2	< 30	< 0.1	< 5.0	< 15	< 40	< 10	< 5	< 5	< 0.05
P3-3-1	P3-3	7598008	407858	0.1	2.9	< 1.0	< 20	< 5.0	13.1	< 30	< 0.1	< 5.0	20	209	< 10	9	200	< 0.05
P3-3-2	P3-3	7598008	407858	0.5	1.2	< 1.0	< 20	< 5.0	7.5	< 30	< 0.1	< 5.0	< 15	< 40	< 10	< 5	< 5	< 0.05
P3-4-1	P3-4	7598048	407822	0.1	1.6	< 1.0	< 20	< 5.0	13.2	< 30	< 0.1	< 5.0	37.4	< 40	< 10	13	< 5	< 0.05
P3-4-2	P3-4	7598048	407822	0.4	3.1	< 1.0	< 20	< 5.0	10	< 30	< 0.1	< 5.0	< 15	< 40	< 10	< 5	5	< 0.05

***** *Denotes duplicate sample. (Further information located in Table 2 of main report)*

Gartner Lee

Appendix B Attachments

B1 Site Condition/Visual Inspection Records

B2 Geotechnical Inspection Photographic Records

B3 Monitoring Photographic Records

B4 Field Notes

Appendix B1

Site Condition/Visual Inspection Records

Visual Inspection Checklist
Inspection Report – Page 1 of 2

SITE NAME:	PIN-3 Lady Franklin Point
LANDFILL/AREA DESIGNATION:	NWS Landfill
DATE OF INSPECTION:	August 22, 2007
DATE OF PREVIOUS INSPECTION:	August 16, 2006
INSPECTED BY:	James Theriault
REPORT PREPARED BY:	James Theriault
The preparer represents to the best of the preparer's knowledge, the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.	

Checklist Item	Present Yes/No	Location	Length	Width	Depth	Extent relative to Landfill Area (%)	Description	Photographic Records	Additional Comments/ Preliminary Stability Assessment
Settlement	No								
Erosion	No								Self-armoring ruts, not erosion. Acceptable.
Frost Action	No								
Animal Burrows	No								
Vegetation	Sparse								Acceptable
Staining	No								
Vegetation Stress	No								
Seepage Points	No								
Debris Exposed	No								
Presence/ Condition of Monitoring Instruments	None								
Other Features of Note.	Yes		4 m	5 m	0.1 m	minor	Ponded water and loose fill	Photograph 8	a) Possible construction artifact. No clear evidence of seepage. Acceptable
Additional Photos	Yes	Refer to plan map					General photos	Photos 1-7 and 9-18	General photos for documentation, no features of note

Preliminary Stability Assessment

Feature	Severity Rating	Extent
Settlement	Not Observable	None
Erosion	Not Observable	None
Frost Action	Not Observable	None
Animal Burrows	Not Observable	None
Vegetation	Not Observable	None
Staining	Not Observable	None
Vegetation Stress	Not Observable	None
Seepage Points	Not Observable	None
Debris Exposed	Not Observable	None
Presence/Condition - Monitoring Instruments	Not Observable	None
Overall Landfill Performance	**Acceptable**	

Appendix B2

Geotechnical Inspection Photographic Records

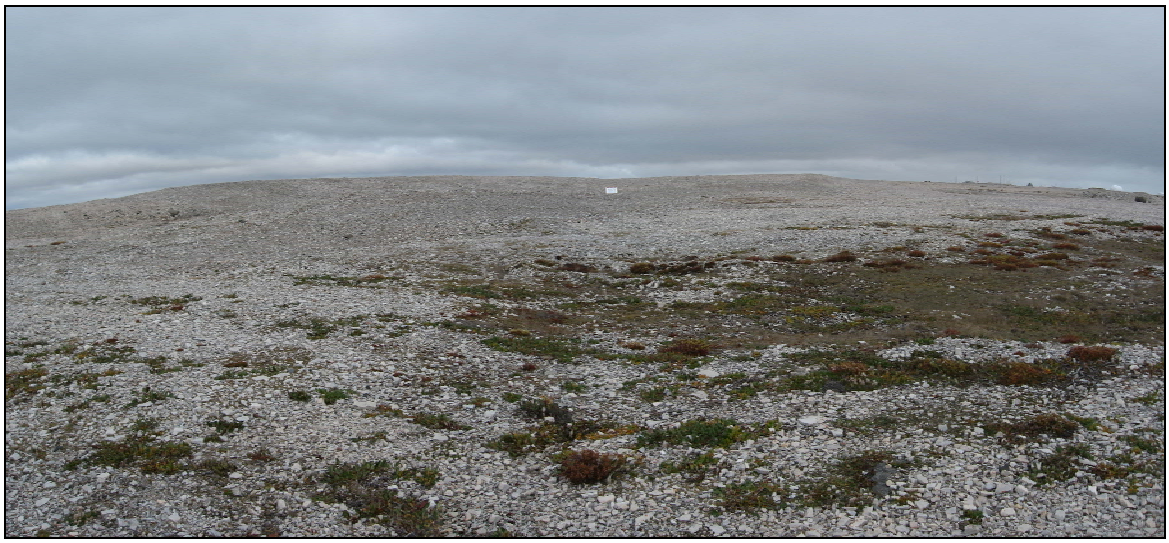
Photograph 1. NWS Landfill: Panoramic looking NW from 30m SE of SE corner east cell.↑

Photograph 2. NWS Landfill (East Cell): Looking N along the east side of east lobe. No features of note. White board sign for scale (61cm by 46cm).↑

Photograph 3. NWS Landfill (East Cell): Looking W from NE corner of the east cell. No features of note.↑

Photograph 4. NWS Landfill (East Cell): Looking SW from NW corner of east cell.↑

Photograph 5. NWS Landfill (East Cell): Looking south along west side of the east cell to the SW corner. Landfill cover rock can be differentiated from adjacent ground cover rock by the more uniform grey colour.↑



Photograph 6. NWS Landfill (East Cell): Panoramic looking NE from 20m SW of east cell showing most of the south side of the east cell along the access road . White board is located south of survey point 116 (refer to NWS plan map).↑

Photograph 7. NWS Landfill (East Cell): Looking W along south side of NWS east cell from approximately the mid-point of the east cell. No features of note.↑

Photograph 8. NWS Landfill (Central Cell): Looking N along east side of central cell from SE corner.↑

Photograph 9. NWS Landfill (Central Cell): Looking N to ponded water along west side of east cell of NWS. Water is clear. Darker ground is saturated with significant fines (mud) at surface. Ponded water is approximately 8m east of SE corner of central cell.↑

Photograph 10. NWS Landfill (Central Cell): Looking WNW from NE corner of central cell. No features of note.↑

Photograph 11. NWS Landfill (Central Cell): Looking S from the NE corner of central cell. No features of note.↑

Photograph 12. NWS Landfill: Looking E along south side of central lobe. East lobe and ponded water in background.↑

Photograph 13. NWS Landfill (West Cell): Looking N along east side of west lobe from SE corner.↑

Photograph 14. NWS Landfill (West Cell): Close up of rocky/mossy area between the central & western lobes.↑

Photograph 15. NWS Landfill (West Cell): Panoramic looking W from rock apron around the NE corner of the west lobe. No features of note. The landfill cover is difficult to distinguish from adjacent rocky surface.↑

Photograph 16. NWS Landfill (West Cell): Looking SSE to SW corner NWS West. Minor organics along portion of toe. No indications of slope movement or seepage. Note Main Landfill in background.↑

Photograph 17. NWS Landfill (West Cell): Looking east along the south edge of the landfill from the SW corner to SE corner. The landfill cover abuts organics. No indications of movement or seepage.↑

Photograph 18. NWS Landfill (West Cell): Looking to SE corner from midpoint of south side of the western cell. No staining or ponding. Note organics along perimeter. White board for scale (61cm by 46cm).↑

Appendix B3

Monitoring Photographic Records

Photograph 1. Test pit P3-1. Samples P3-1-1 and P3-1-2 collected. Bedrock reached at ~40cm.↑

Photograph 2. Test pit P3-2. Samples P3-2-1, P3-2-2, and P3-20-2 (Duplicate of P3-2-2) collected.↑

Photograph 3. Test pit P3-3. Samples P3-3-1 and P3-3-2 collected.↑

Photograph 4. Test pit P3-4. Samples P3-4-1 and P3-4-2 collected. Bedrock reached at ~40cm.↑

Appendix B4

Field Notes

PIN-3 Aug 22/2007

20 Looking east to VT-8 from crest adjacent to VT-7 409507 7597353

21,22 Looking east from mid-slope d/s of VT-7 along south slope 409507 7597341

23,24 Panoramic looking WSW along south slope from mid-slope SE corner 409517 7597346

25 East slope of landfill (Tier II) viewed from MW-12 409594 7597312

26 Looking N along crest from SE corner 409570 7597349
- poor finish, numerous vehicle tracks and ruts, no sign of instability

27 Looking N along eastern crest, mid-point to the NE corner, poor finish, no sign of movement 409568 7597372

70517

28,29,30,31 4 shot panoramic looking from NE corner scanning L to R (S to W) 409565 7597405
- top is irregular and inconsistent with monitoring via visual inspection

32,33,34 3 shot panoramic of top of Tier II standing near NW corner scanning L to R (E to S) 409490 7597401

1:20 pm NWS LANDFIL
- quick inspection of perimeter on ATV → no stability problems
- seepage/ponding at same locations as last year

35,36 Panoramic looking NW from 30 m SE of SE corner east lobe 408088 7597956

37 Looking N along east side of East Lobe of NWS 408063 7597964

Aug 22/2007

38 Looking W from NE corner of East Lobe NWS 408041 7598023

39 Look SW from NW corner of East limb 407988, 7598035

40 Looking south along west side of NWS East Limb to SW corner – landfill cover is grey 407948 7598010

41/42 Panoramic Looking NE from 20 m SW of East Lobe → see entire south side along access road except indent which is blocked 408907 7597937 – sign blocking indent in south side

43 Looking W along south side of NWS east lobe towards semi-circular bite in south side 408001 7597954

Moving to central lobe NWS → indistinct east side due to continuous rock between east & central lobe

45 Look N along east side of central lobe from SE corner → 407927, 7597985

44 Ponded water along West side of East Lobe NWS → looking North 5 m (N-S) x 4 m (E-W) Centred @ 407937 7597984 Water is clear, wet mud 3 m east of SE corner central lobe

46 Looking WNW from NE corner of central lobe 407933 7598013

47 Look SSE from NE corner of central lobe NWS 407885 7598050

48 Look ENE along south side of central Lobe → East Lobe and ponded water in background 407881 7597990

Aug 22/2007

49 Looking N along east side of West Ldr from SE corner (5m S of)
407878 7598024

50 Close-up of rocky/mossy area between the central & western Ldrs
407878 7598045

4 Entire area around West Ldr is covered by gravel → difficult to delineate actual outline of LF

51, 52 Looking W from rock apron around the NE corner of the West Ldr
407879 7598075

53 Looking WSW to Western top corner
407851 7598072
- sign @ corner

54 Looking SSE to SW corner NWS West
407824 7598071
- minor organics along portion of toe, no movement or ponding

PIN-3 7051?

55 looking East from SW corner to SE corner of NWS LF, west ldr
407829 7598043

56 Ldr to SE corner from midpoint of South side - no staining or ponding noted along organic perimeter
407852 7598042

56?

57 [redacted] of MAIN LF viewed looking south from near NWS LF central ldr
407883 7597960

4:05pm
NON HAZARDOUS WASTE LF

57, 58 Panoramic look ~225° from about 25m NE of NE corner

59 Looking West along dls toe of north side from NE corner
408876 7597633

Aug 22.07

9:25 AM MW-15

Well in good condition
Sample collected P3-MW-15
4x 500mL amber glass
2x VOC vials
1x 250mL amber glass
Picture 027 of MW-15

Soil Sampling
P3-MW-15-1 @ 0-10cm
P3-MW-15-2 @ 40-50cm
P3-19-2 } Duplicate of 15-2
Picture 028 of test pit

MW-16
Well in good condition
Sample collected P3-MW-16
4x 500mL amber glass
2x VOC vials
1x 250mL plastic
Picture 029 of well
Soil Sampling
P3-MW-16-1 @ 0-10cm
P3-MW-16-2 @ 10-15cm
Reached Bedrock at 15cm
Picture 030 of test pit

Aug 22.07

NWS Landfill
P3-1-1 @ 0-10cm
P3-1-2 @ 30-40cm
Bedrock @ 40cm
UTM W 0408028
12 7598043
Picture 031 of test pit

P3-2-1 @ 0-10cm
P3-2-2 @ 40-50cm
P3-20-2 Duplicate of 2-2 at 40-5cm
Picture 032 of test pit
UTM W 0407901
12 7597950

P3-3-1 @ 0-10cm
P3-3-2 @ 40-50cm
Picture 033 of test pit
UTM W 0407858
12 7598008

Aug 22. 07

P3-4-1 @ 0-10 cm
P3-4-2 @ 30-40 cm
Picture 034 of testpit
UTM W 0407822
12 7598048

South Land Fills

P3-7-1 @ 0-10 cm
P3-7-2 @ 40-50 cm
Picture 035 of testpit
UTM W 0408694
12 7596426

P3-8-1 @ 0-10 cm
P3-8-2 @ 40-50 cm
P3-21-2 Duplicate of 8-2 @ 40-50cm
Picture 036 of testpit
UTM W 0408674
12 7596472

P3-6-1 @ 0-10 cm
P3-6-2 @ 40-50 cm
Picture 37 of test pit
UTM W 0408732
12 7596463

Aug 22. 07

P3-5-1 @ 0-10cm
P3-5-2 @ 40-50 cm
Picture 038 of test pit
UTM W 0408701
12 7596527

P3-9-1 @ 0-10 cm
P3-9-2 @ 40-50 cm
P3-22-2 Duplicate of 9-2 @ 40-50cm
Picture 039 of test Pit
UTM W 0408862
12 7596506

P3-10-1 @ 0-10cm
P3-10-2 @ 40-50cm
Picture 040 of test Pit
UTM W 0408848
12 7596419

P3-11-1 @ 0-10cm
P3-11-2
Picture 041 of test pit
UTM W 0408801
12 7596452

Soil Sampling Record

	Previous Coordinates		2007 Coordinates		Surface Sample	Depth Sample	Photograph
Monitoring Locations	North (m)	East (m)	North (m)	East (m)	0 - 10 cm	40 - 50 cm	
NWS Landfill							
P3-1 (soil)	10010	9330	7598043	408028	✓	✓	031
P3-2 (soil)	9922	9232	7597950	407901	✓	✓	032
P3-3 (soil)	9968	9189	7598008	407858	✓	✓	033
P3-4 (soil)	10003	9145	7598048	407822	✓	✓	034

Comments:

Very Rocky, shallow bedrock

Appendix C

South Landfill – East and West

Appendix C

Landfill Monitoring Report – South Landfills – East and West

C.1 South Landfills – East and West

C.1.1 Landfill Summary

The South Landfill consists of an eastern and western portion and is located approximately 1.5 km south of the main facilities area. The area of the south shore landfill has an area of approximately 40,000 m^2 with an estimated depth of 1.0 m. The location of the landfill is shown on Figure C-1.

The original landfills consisted of 4 "lobes" – 3 lobes north of the access road and 1 lobe south of the access road. Based on a previously completed evaluation, the landfills north of the access road have been classified as a low to moderate potential environmental risk and the lobe south of the access road was classified as a moderate potential environmental risk. The lobes north of the access road were remediated by regrading and placing additional granular fill overtop. The lobe south of the access road was completely excavated. No evidence of contaminated soil was detected after remediation.

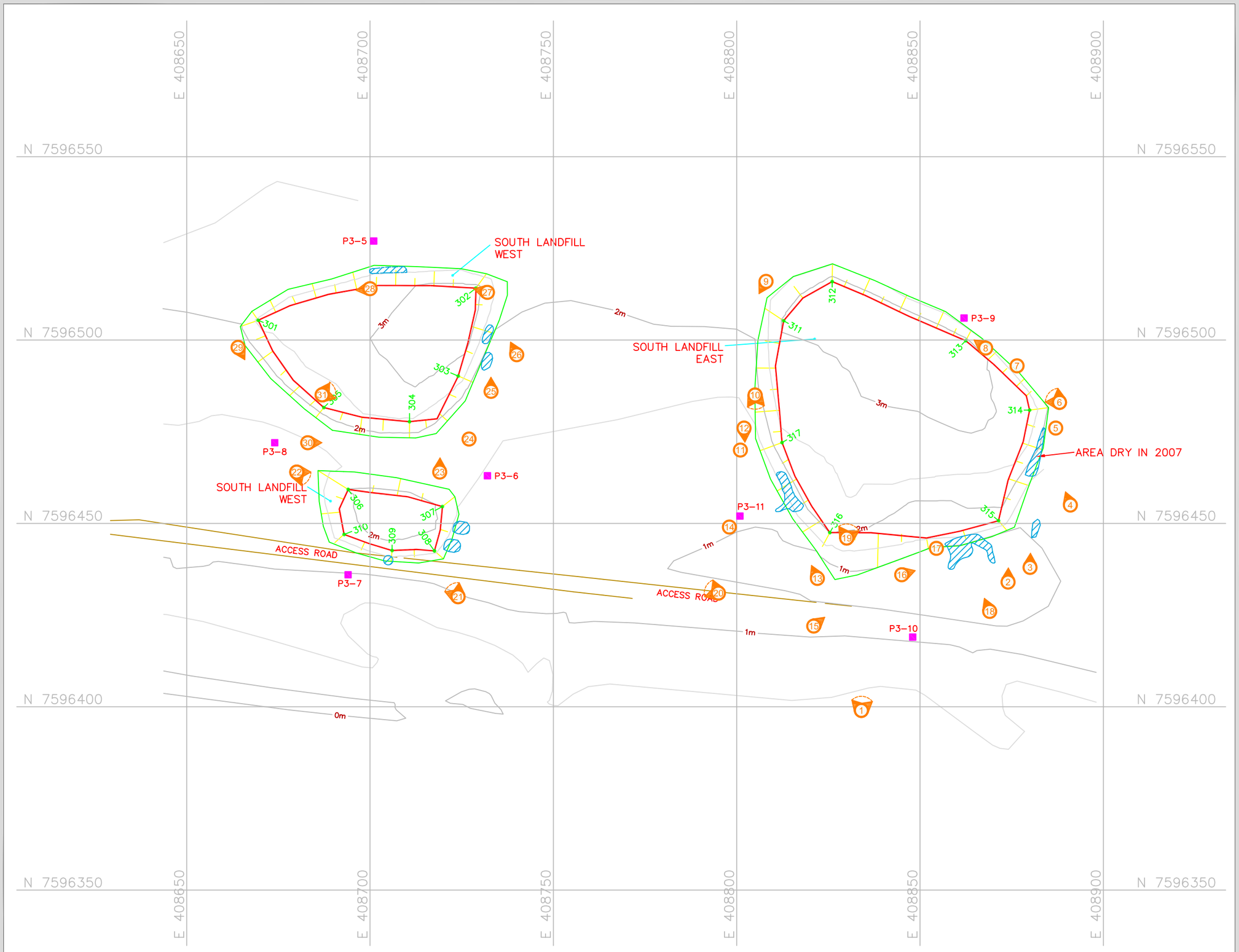
For 2007, the monitoring requirements for the South Landfills – East and West included visual inspection, and soil sampling.

C.1.2 Visual Monitoring

Based on the visual inspection, the south landfills appear to be in reasonably good condition and the physical condition appears essentially unchanged since the time of last year's inspection. The granular covers over the three lobes of the landfill showed no visible signs of problematic settlement or erosion. The landfill profiles are very low, on the order to 2 to 4 meters above the natural topography and the granular covers slope gently onto the adjacent marshy terrain. There are a few erosion rills on the slopes along the margins of the landfill. However, the cover is relatively coarse and therefore stable.

The Eastern Cell and the two Western Cells have water ponded along the perimeter toe (refer to Photographs _3, 12, 18, 27). The landfill waste has been classified (by DCC) as low to moderate environmental risk and the approved granular cover was not designed to prevent infiltration. Similar to last year, several areas of known or suspected seeps were also observed along the perimeter toe of the East landfill cell. Areas of possible seepage were specifically noted adjacent to the northeast, southwest and southeast portions of the East landfill cell (refer to Photographs 5, 13, 18 respectively) and along the eastern perimeter of the larger West Cell (refer to Photographs 23 and 25). The areas of ponded water around the perimeter of the landfill cover appears to be a result of a high water level in the surrounded muskeg terrain which accumulates in construction-related disturbances (e.g. areas of displaced muskeg).

The site inspection record for the landfill is appended as an attachment to this section. There is no as-built documentation for the existing landfill configuration. Overall performance of the landfill is considered acceptable. The water quality of the ponded water and in the areas of suspected seepage was not sampled, as directed by DCC.



Legend

- COORDINATE POINT
- PHOTOGRAPH LOCATION - 2007
- CLOSE-UP PHOTOGRAPH LOCATION - 2007
- MONITORING SOIL SAMPLE LOCATION
- SETTLEMENT (NTS)
- EROSION (NTS)
- PONDING
- STANDING WATER

Map Sources / Notes:
Source drawing from UMA: P3-RD04.dwg

0 5 10 20 30 40 m

1 : 1000
UTM Zone 12N, NAD83

File Name:	70516_By1_C1_SouthLandfill(P3-RD04).DWG		
Reviewed by:	KAB, JAT	Prepared by:	MH
Date Issued:	December, 2007	Project Number:	70-516

Defence Construction Canada

2007 PIN-3 DEW Line Monitoring Program
PIN-3 Lady Franklin Point
Nunavut Territory

South Landfill

Gartner Lee

Figure C-1
Version 1

Date Plotted: October 16, 2006 Path: N:\Projects\2007\70516\2007\Final\ACAD\02-PIN-3\70516_By1_C1_SouthLandfill(P3-RD04).DWG

C.1.3 Soil Sampling

Soil samples were collected at the designated locations of P3-5, P3-6, P3-7, P3-8, P3-9, P3-10, and P3-11. The sampling locations are shown on Figure C-1. At each location wherever possible two samples were collected at approximately 0.1m below ground and between 0.4-0.5m below ground. A photograph of each test pit for each location sampled is shown in Appendix C3.

GLL did not identify any hydrocarbon odours at any of the sampling locations at the South Shore Landfill. Laboratory analysis detected low concentrations of TPH (C6-34) in the test pits from soil sample locations P3-9, P3-6, P3-8, and P3-11. GLL does not consider the concentrations to be of significance, however, these should be evaluated in the context of the Landfill Monitoring Plan.

Analytical results and depths of samples are provided in Table C-1 and the laboratory certificate is provided in Appendix G.

Table C-1. PIN-3 Lady Franklin Point, Summary of 2007 Soil Analysis - South Landfill

Sample Ident.	Sample Location			Depth	Arsenic	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Zinc	Petroleum Hydrocarbons				PCB Total Aroclors (mg/kg)
	Location Id.	Northing	Easting	(m)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	TPH (C6-34) (mg/kg)	C6-C10 (mg/kg)	C10-C16 (mg/kg)	C16-C34 (mg/kg)	
Upgradient Samples																		
P3-5-1	P3-5	7596527	408701	0.1	1.6	<0.50	5.7	2.9	7.1	<30	0.0093	<5.0	9.7	0	<10	<5	<5	<0.010
P3-5-2	P3-5	7596527	408701	0.5	1.2	<0.50	4.6	<2.0	8.1	<30	<0.0050	<5.0	6.7	0	<10	<5	<5	<0.010
P3-9-1	P3-9	7596506	408862	0.1	1.0	<0.50	5.2	2.3	5.7	<30	<0.0050	<5.0	7.9	0	<10	<5	<5	<0.050
P3-9-2	P3-9	7596506	408862	0.5	1.2	<0.50	4.8	2.7	10.2	<30	<0.0050	<5.0	8.3	66	<10	26	40	<0.050
P3-22-2*	P3-9	7596506	408862	0.5	1.1	<0.50	5.8	2.9	9.4	<30	<0.0050	<5.0	8.9	230	<10	120	110	<0.050
Downgradient Samples																		
P3-6-1	P3-6	7596463	408732	0.1	0.5	<0.50	3.2	<2.0	124	<30	0.0543	9.1	6.1	133	<10	13	120	<0.010
P3-6-2	P3-6	7596463	408732	0.5	1.4	<0.50	5.5	2.6	7.5	<30	<0.0050	<5.0	8.3	0	<10	<5	<5	<0.010
P3-7-1	P3-7	7596436	408694	0.1	1.5	<0.50	6.9	3	14.6	<30	<0.0050	5.1	12	0	<10	<5	<5	<0.050
P3-7-2	P3-7	7596436	408694	0.5	1.0	<0.50	6.2	2.5	9.4	<30	<0.0050	<5.0	9.4	24	10	14	<5	<0.050
P3-8-1	P3-8	7596472	408674	0.1	1.2	<0.50	7	2.9	20.7	<30	0.0052	5.4	12.3	88	<10	<5	88	<0.050
P3-8-2	P3-8	7596472	408674	0.5	0.9	<0.50	4.3	2	8.8	<30	<0.0050	<5.0	7.1	0	<10	<5	<5	<0.050
P3-21-2*	P3-8	7596472	408674	0.5	1.0	<0.50	3.8	<2.0	7.2	<30	0.0064	<5.0	6.3	32	<10	<5	32	<0.050
P3-10-1	P3-10	7596419	408848	0.1	0.8	<0.50	4.4	2.1	11.2	<30	<0.0050	<5.0	8.6	0	<10	<5	<5	<0.050
P3-10-2	P3-10	7596419	408848	0.5	1.2	<0.50	8.1	3.2	15.1	<30	<0.0050	5.9	10.1	0	<10	<5	<5	<0.050
P3-11-1	P3-11	7596452	408801	0.1	0.2	<0.50	3.9	<2.0	7	<30	0.0104	<5.0	7.9	218	<15	8	210	<0.050
P3-11-2	P3-11	7596452	408801	0.5	0.9	<0.50	5.2	2.4	12.5	<30	<0.0050	<5.0	9	35	<10	<5	35	<0.050

***** *Denotes duplicate sample. (Further information located in Table 2 of main report)*

Note: mg/kg = ug/g

Gartner Lee

Appendix C Attachments

C1 Site Condition/Visual Inspection Records

C2 Geotechnical Inspection Photographic Records

C3 Monitoring Photographic Records

C4 Field Notes

Appendix C1

Site Condition/Visual Inspection Records

Visual Inspection Checklist
Inspection Report – Page 1 of 2

SITE NAME:	PIN-3 Lady Franklin Point
LANDFILL/AREA DESIGNATION:	South Landfill (East and West Cells)
DATE OF INSPECTION:	August 21, 2007
DATE OF PREVIOUS INSPECTION:	August 16, 2006
INSPECTED BY:	James Theriault
REPORT PREPARED BY:	James Theriault
The preparer represents to the best of the preparer's knowledge, the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.	

Checklist Item	Present Yes/No	Location	Length	Width	Depth	Extent relative to Area extent of Landfill/ Area (%)	Description	Photographic Records	Additional Comments/ Preliminary Stability Assessment
Settlement	No								
Erosion	Yes	Perimeter of both cells – see photo log				< 2	Numerous ruts/depressions from equipment traffic	Photographs 3, 12, 26, 27	Granular fill is self-armouring. Acceptable
Frost Action	No								
Animal Burrows	No								
Vegetation	Sparse								
Staining	Yes	Perimeter of both cells – see photo log				< 1	Rust coloured staining, intermittent ponding water	Photographs 3, 4, 14, 16, 18, 23, 25	Rust colour staining, possible seepage
Vegetation Stress	No								
Seepage Points	Yes	Southeast corner of East Cell	1 m	1 m	surficial	point	Trickle of seepage flowing to rust stained ponded water	Photograph 17	Only one flowing point observed
Debris Exposed	Yes	Northeast corner East Cell					Compressed buried rusty barrel (partially exposed)	Photograph 7	Not problematic
Presence/ Condition of Monitoring Instruments	No								
Other Features of Note.	Yes	Refer to plan map					Additional Photos	Photographs 1, 2, 5, 6, 8 – 11, 13, 15, 16, 19 – 22, 24, 28 - 31	General photos for documentation, no features of note

Preliminary Stability Assessment

Feature	Severity Rating	Extent
Settlement	Not Observable	None
Erosion	Acceptable	Occasional
Frost Action	Not Observable	None
Animal Burrows	Not Observable	None
Vegetation	Not Observable	None
Staining	Acceptable	Occasional
Vegetation Stress	Acceptable	Occasional
Seepage Points	Acceptable	Occasional
Debris Exposed	Acceptable	Isolated
Presence/Condition - Monitoring Instruments	Not Observable	None
Overall Landfill Performance	**Acceptable**	

Appendix C2

Geotechnical Inspection Photographic Records

Photograph 1. South Landfill East Cell: Panoramic looking N from 30 m S of landfill. ATV for scale.↑

Photograph 2. South Landfill East Cell: Looking N from the SE corner along toe of fill slope toe. Whiteboard for scale (61cm by 46cm).↑

Photograph 3. South Landfill East Cell: Close up of ponded water in depression. Minor/negligible staining. Approx. 3m x 1m areal extent.↑

Photograph 4. South Landfill East Cell: Looking NW to NE corner of landfill. Whiteboard situated in area of previous seepage/staining (tags 12991 and 12990 indicate previous sampling).↑

Photograph 5. South Landfill East Cell: Close up of staining and pins named above.↑

Photograph 6. South Landfill East Cell: Looking NW along NE edge of landfill. Entire downslope toe is dry. No signs of instability.↑

Photograph 7. South Landfill East Cell: Close up of rusty barrel exposed at surface.↑

Photograph 8. South Landfill East Cell: Looking WNW along NW slope. West Cell visible in background. No features of note.↑

Photograph 9. South Landfill East Cell: Looking south along the West side of the landfill cell from 10 m NW of the NW corner. Gravel slope pushed into peat. Geometry is problematic for surface drainage.↑

Photograph 10. South Landfill East Cell: Looking S along west side the landfill cell to standing water in displaced peat/muskeg. Pond appears smaller than last year. Orange staining around most ponded water.↑

Photograph 11. South Landfill East Cell: Close up of typical staining and ponding along western perimeter of the landfill cell.↑

Photograph 12. South Landfill East Cell: Looking towards ponded water along the SW corner of landfill cell. Ponded water accumulates in depressions adjacent to the landfill.↑

Photograph 13. South Landfill East Cell: Looking NW from SW corner of landfill towards the ponded water. Whiteboard located in an area of previous sampling locations at sign 26728, 15407, 26729.↑

Photograph 14. South Landfill East Cell: Close up of pins mentioned above indicating previous sampling in this location.↑

Photograph 15. South Landfill East Cell: Looking East along south side of landfill cell from 8m SW of the SW corner. White board adjacent to staining/ponding at SE corner of the landfill cell.↑

Photograph 16. South Landfill East Cell: Looking east to the SE corner of landfill. Extensive staining and indications of ongoing seepage.↑

Photograph 17. South Landfill East Cell: Staining/seepage along the SE portion of the landfill cell. Seepage appears to come to surface adjacent to the field book.↑

Photograph 18. South Landfill East Cell: Looking NW towards seepage area and staining along the SE corner of the landfill cell. Whiteboard for scale (61cm by 46cm).↑

Photograph 19. South Landfill East Cell: Panoramic looking NNE over the upper surface of the landfill cover. Granular cover appears stable.↑

Photograph 20. South Landfill West Cell: Panoramic of west cell looking NW from about 40 m SW of the east cell.↑

Photograph 21. South Landfill West Cell: Looking NW to the smaller southern lobe of the west cell. No indications of instability or degraded performance.↑

Photograph 22. South Landfill West Cell: Looking SE to the smaller south lobe of the West Cell. No problems noted.↑

Photograph 23. South Landfill West Cell: Looking N along east side of the larger (northern) lobe of the West Cell. Displaced organics and some minor ponding, Staining along eastern toe.↑

Photograph 24. South Landfill West Cell: Close up of staining adjacent to the southeast corner of the larger (northern) West Cell (Pin 12954 indicates sample previously collected). Now dry.↑

Photograph 25. South Landfill West Cell: Ponded water and staining along eastern edge of the West Cell. Pin 12958 and sample hole are located next to ponded water. Whiteboard for scale (61cm by 46cm).↑

Photograph 26. South Landfill West Cell: Looking N to NE corner of larger northern lobe. Minor displacement of organics in vehicle ruts.↑

Photograph 27. South Landfill West Cell: Looking W along northern toe of north lobe. Ponded water is approximately 15m x 3m. Depression surrounded by extensive construction equipment rutting.↑

Photograph 28. South Landfill West Cell: Looking WSW along north edge of landfill cell. Heavy rutting, minor staining, indicative of periodic ponding. ↑

Photograph 29. South Landfill West Cell: Looking S along west sided of landfill cell. The granular cover appears stable. South lobe of the West Cell is visible in the in distance.↑

Photograph 30. South Landfill West Cell: Looking E along south side of the larger (northern) West Cell. Granular cover appears stable. South Landfill East Cell is visible in the background.

Photograph 31. South Landfill West Cell: Panoramic of portion of top of northern (larger) West Cell looking NW from near SW corner. Tier II is visible in background.

Appendix C3

Monitoring Photographic Records

Photograph 1. Test pit P3-5. Samples P3-5-1 and P3-5-2 collected.↑

Photograph 2. Test pit P3-2. Samples P3-6-1 and P3-6-2 collected.↑

Photograph 3. Test pit P3-7. Samples P3-7-1 and P3-7-2 collected.↑

Photograph 4. Test pit P3-8. Samples P3-8-1, P3-8-2, and P3-21-2 (Duplicate of P3-8-2) collected.↑

Photograph 5. Test pit P3-9. Samples P3-9-1, P3-9-2, and P3-22-2 (Duplicate of P3-9-2) collected.↑

Photograph 6. Test pit P3-10. Samples P3-10-1 and P3-10-2 collected.↑

Photograph 7. Test pit P3-11. Samples P3-11-1 and P3-11-2 collected. Water table reached at ~30cm.↑

Appendix C4

Field Notes

Aug 21/2007

30,31 Panoramic looking to SW/ corner standing near crest @ 407936 7597699

32 Standing midslope looking S VT-4 left frame, MW-8 dls (out of frame) 407895 7597644

33 # @ toe with MW-8 in frame 407884 7597644

34,35 Panoramic looking ENE to SE from 407890 7597595

Moving up top MLF

36,37 Near SE corner looking to VT-4 from 407979 7597603 to VT-3

38,39 Looking NW from 407982 7597612 towards VT-3 to VT-1

PIN-3 70516

40 Low spot between VT-3 & VT-1 view from 407990 7597662 looking NW

41,42,43 3 Photo panoramic looking from NW to NNE 407971 7597704 sign on lower swale

44,45 2 shots looking S on top of MLF from 407956 7597765

X 46 Looking SE from NW corner @ 407929 7597776 VT-1 closest CAMERA DEAD NO PHOTO X

ON TO SOUTH LANDFILL EAST

46,47,48 Panoramic looking N from 30m S of landfill 408834 7597399 ATV for scale starting SE corner and moving CC

Aug 21/2007

49 SE corner looking N along dls toe
from 408874 7596434

50 close-up of ponded water in depression
minor iron staining 3m x 1m
@ 408880 7596438

51 Looking NW to NE corner of landfill
from 408891 7596455
Signs of old seepage PIN3 1299 & 1299a

52 Close-up of staining and pins named above
408887 7596476

53, 54 Looking NW along NE edge of landfill
from 408883 7596464
- entire dls toe dry

55 Close-up of rusty ~~barrel~~ disposal barrel
at surface 408872 7596488

56 NW slope of South LF East looking
~W from 408864 7596491
West portion visible in background

4°C cloudy

57 West side of landfill (SLF - East)
viewed from 10m NW of NW corner
408808 7596516 Gravel slope
pushed into peat → problematic geometry
for drainage & ponding of water

58, 59 Looking S along west side of East SLF
from 408805 7596485
→ looking at standing water in displaced
peat/muskeg
→ looks like less water than last year
→ orange staining around most ponded
water

60 Close-up of typical staining & ponding
along west edge of SLF-East
408801 7596470

61 Look towards ponded water along
the SE corner of SLF-East
from 408802 7596476

62 Looking NW from SW corner of landfill towards the ponded water pics @ 315° 26728, 15407, 26729
15407 @ 408822 7596435

63 Close-up of pics above
408798 7596449

64 SLF - East looking East along south side from 8m SW of corner looking towards stormy/ponding at SE corner from 408821 7596422

65 SE corner of landfill viewed from 408845 7596436 looking east extensive staining

66 - staining/seepage appears to start at shovel point 408853 7596434
Close-up photo

67 Looking west towards step over and staining from 408869 7596426

68, 69, 70 3 shot panorama looking NE from 0408830 7596496
→ granular berm stable

South Landfill West Lobe

71, 72 2 shot panorama looking NW from 408795 7596431

73, 74 South looking SOUTH LF WEST looking NW from 408784 7596430

75, 76 South LF south lobe looking SE from 408680 7596464
- absolutely no problems noted

77 SLF West - looking N along east side from 408719 7596469
→ displaced organics and some minor ponding & staining along eastern toe

78 Close up of staining at pin 12954
- now dry 408727 7596473

Aug 21/2007

79 Ponded water x staining along NE corner looking N from 408733 7596486 PIN 12958 and sample bottle right is ponded water

80 Looking N to NE corner from 408740 7596496 - minor displacement of organics during construction, staining on vehicle rut

81 Looking W along north edge from 408732 7596513 Ponded water 15m x 3m → depression surrounded by extensive construction equipment rutting

82 Looking WSW along north edge from 408700 7596514 - heavy rutting, minor staining indicative of ponded pooling

83 Looking S along west edge of West South LF → all granular, stable, good geometry South lobe in distance 408664, 7596498

84 Looking E along south side of larger West SLF → stable, granular 408683 7596472 East lobe in background

85, 86, 87 3 shot panorama of portion of top of west SLF looking from near SW corner 408686 7596472 Tier II in background

NORTH LANDFILL

5:45pm

East Lobe

88, 89 Looking NW from 15m S of SE corner 408643 7598677

Aug 22. 07

P3-4-1 @ 0-10 cm
P3-4-2 @ 30-40 cm
Picture 034 of testpit
UTM W 0407822
12 7598048

South Land Fills

P3-7-1 @ 0-10 cm
P3-7-2 @ 40-50 cm
Picture 035 of testpit
UTM W 0408694
12 7596426

P3-8-1 @ 0-10 cm
P3-8-2 @ 40-50 cm
P3-21-2 Duplicate of 8-2 @ 40-50cm
Picture 036 of testpit
UTM W 0408674
12 7596472

P3-6-1 @ 0-10 cm
P3-6-2 @ 40-50 cm
Picture 37 of test pit
UTM W 0408732
12 7596463

Aug 22. 07

P3-5-1 @ 0-10cm
P3-5-2 @ 40-50 cm
Picture 038 of test pit
UTM W 0408701
12 7596527

P3-9-1 @ 0-10 cm
P3-9-2 @ 40-50 cm
P3-22-2 Duplicate of 9-2 @ 40-50cm
Picture 039 of test Pit
UTM W 0408862
12 7596506

P3-10-1 @ 0-10cm
P3-10-2 @ 40-50cm
Picture 040 of test Pit
UTM W 0408848
12 7596419

P3-11-1 @ 0-10cm
P3-11-2
Picture 041 of test pit
UTM W 0408801
12 7596452

Soil Sampling Record

	Previous Coordinates		2007 Coordinates		Surface Sample	Depth Sample	Photograph
Monitoring Locations	North (m)	East (m)	North (m)	East (m)	0 - 10 cm	40 - 50 cm	
South Landfill - West							
P3-5 (soil)	8515	10072	7596527	0408701	✓	✓	038
P3-6 (soil)	8454	10105	7596463	0408732	✓	✓	037
P3-7 (soil)	8413	10083	7596426	408694	✓	✓	035
P3-8 (soil)	8456	10054	7596472	408674	✓	✓	036
South Landfill - East							
P3-9 (soil)	8510	10230	7596506	408862	✓	✓	039
P3-10 (soil)	8421	10234	7596419	408848	✓	✓	040
P3-11 (soil)	8449	10170	7596452	408801	✓	✓	041

Comments:

Appendix D

North Landfill

Appendix D

Landfill Monitoring Report - North Landfill

D.1 North Landfill

D.1.1 Landfill Summary

The North landfill is located approximately 650 m northwest of the main facilities. The buried material at the landfill exists in three lobes with an estimated combined area of 28,000 m^2 and an estimated depth of 1.0 m. The three lobes are herein referred to as the East Cell, Centre Cell and the West Cell. The location of the landfill is shown on Figure D-1. Prior to remediation, DCC has classified this landfill as a low potential environmental risk. Remediation of this landfill included re-grading with the placement of additional granular fill. There is no monitoring instrumentation installed at this location.

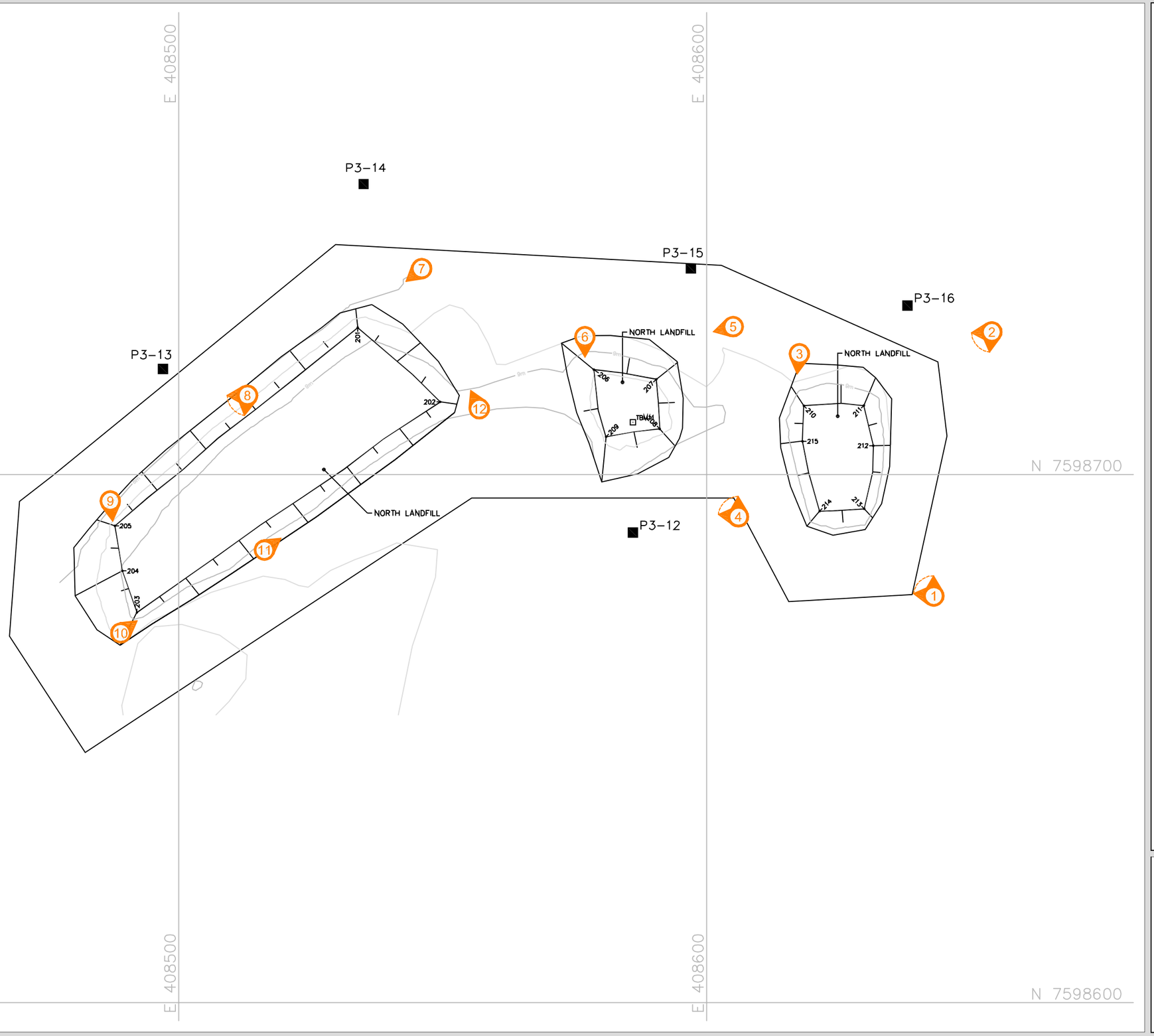
For 2007, the monitoring requirements for the North Landfill included visual inspection, and soil sampling.

D.1.2 Visual Monitoring

Based on the visual inspection, the North Landfill area appears to be in good condition and continues to function as designed. The condition of the North Landfill appears substantially unchanged from the time of last year's inspection. The granular cover over all three cells is relatively low profile (i.e., a couple of meters proud of natural topography at most) and the side slopes are shallow. The granular cover appears show no evidence of problematic or degraded conditions. Bedrock is at or near surface throughout the area.

Minor rutting, which appears to be associated with equipment traffic, was observed at several locations. None of the ruts appear to warrant remediation at this time and show no evidence of recent degradation or risk of further degradation.

The overall performance of the landfill is considered acceptable. There is no as-built survey data available for this landfill.



Legend

- TBM11 — TEMPORARY BENCHMARK
- 201 — COORDINATE POINT
- MONITORING SOIL SAMPLE LOCATION
- 5 — PHOTOGRAPH LOCATION - 2007
- 10 — CLOSE-UP PHOTOGRAPH LOCATION - 2007
- SETTLEMENT (NTS)
- EROSION (NTS)
- PONDING
- STANDING WATER

Map Sources / Notes:
Source drawing from UMA: P3-RD05.dwg

0 5 10 20 30 m

1 : 750
UTM Zone 12N, NAD83

File Name:	70516_By1_D1_NorthLandfill(P3-RD05).DWG		
Reviewed by:	KAB, JAT	Prepared by:	MH
Date Issued:	December, 2007	Project Number:	70-516

Defence Construction Canada

2007 PIN-3 DEW Line Monitoring Program
PIN-3 Lady Franklin Point
Nunavut Territory

North Landfill

Gartner Lee

Figure D-1
Version 1

Date Plotted: October 16, 2006 Path: N:\Projects\2007\70516\2007\Final\ACAD\02-PIN-3\70516_By1_D1_NorthLandfill(P3-RD05).DWG

D.1.3 Soil Sampling

Soil samples were collected at the designated locations of P3-12, P3-13, P3-14, P3-15, and P3-16. The sampling locations are shown on Figure D-1. At each location wherever possible two samples were collected at approximately 0.1m below ground and between 0.4-0.5m below ground. A photograph of each test pit for each location sampled is shown in Appendix D3.

GLL did not identify any hydrocarbon odours at any of the sampling locations at the North Landfill. Laboratory analysis detected low concentrations of TPH (C6-34) in each of the test pits from the soil sample locations at the North Landfill. GLL does not consider the concentrations noted to be of significance, however, these should be evaluated in the context of the Landfill Monitoring Plan.

Analytical results and depths of samples are provided in Table D-1 and the laboratory certificate is provided in Appendix G.

Table D-1. PIN-3 Lady Franklin Point, Summary of 2007 Soil Analysis - North Landfill

Sample Ident.	Sample Location			Depth	Arsenic	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Zinc	Petroleum Hydrocarbons				PCB Total Aroclors
	Location Id.	Northing	Easting	(m)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	TPH (C6-34) (mg/kg)	C6-C10 (mg/kg)	C10-C16 (mg/kg)	C16-C34 (mg/kg)	(mg/kg)
Upgradient Samples																		
P3-12-1	P3-12	7598689	408586	0.1	1.5	<0.50	3.4	<2.0	13.3	<30	0.0575	<5.0	34.5	51	<10	<5	51	<0.050
P3-12-2	P3-12	7598689	408586	0.4	1.0	<0.50	4.1	<2.0	3.5	<30	<0.0050	<5.0	6.9	9	<10	<5	9	<0.050
Downgradient Samples																		
P3-13-1	P3-13	7598720	408497	0.1	1.1	<0.50	3.9	<2.0	4.6	<30	0.0283	<5.0	13.4	140	<10	<5	140	<0.050
P3-13-2	P3-13	7598720	408497	0.4	1.8	<0.50	3.4	<2.0	3.3	<30	0.0099	<5.0	7.1	59	<10	<5	59	<0.050
P3-14-1	P3-14	7598755	408535	0.1	0.8	<0.50	3.2	<2.0	3.7	<30	0.0094	<5.0	8.1	31	<10	<5	31	<0.050
P3-14-2	P3-14	7598755	408535	0.3	2.9	<0.50	3.2	<2.0	3.9	<30	0.0074	<5.0	7.2	59	<10	7	52	<0.050
P3-15-1	P3-15	7598739	408597	0.1	1.1	<0.50	4.5	<2.0	9.3	<30	0.0101	<5.0	11.3	61	<10	<5	61	<0.050
P3-15-2	P3-15	7598739	408597	0.2	1.8	<0.50	4.1	<2.0	4.6	<30	0.009	<5.0	9	44	<10	<5	44	<0.050
P3-16-1	P3-16	7598732	408638	0.1	1.7	<0.50	3.9	<2.0	8.4	<30	0.0083	6.4	7.9	78	<10	<5	78	<0.050
P3-16-2	P3-16	7598732	408638	0.4	2.1	<0.50	3.7	<2.0	6.9	<30	0.0063	5.2	6.5	51	<10	7	44	<0.050

***** *Denotes duplicate sample. (Further information located in Table 2 of main report)*
Note: mg/kg = ug/g

Gartner Lee

Appendix D Attachments

D1 Site Condition/Visual Inspection Records

D2 Geotechnical Inspection Photographic Records

D3 Monitoring Photographic Records

D4 Field Notes

Appendix D1

Site Condition/Visual Inspection Records

Visual Inspection Checklist
Inspection Report – Page 1 of 2

SITE NAME:	PIN-3 Lady Franklin Point
LANDFILL/AREA DESIGNATION:	North Landfill
DATE OF INSPECTION:	August 21, 2007
DATE OF PREVIOUS INSPECTION:	August 17, 2006
INSPECTED BY:	James Theriault
REPORT PREPARED BY:	James Theriault
The preparer represents to the best of the preparer's knowledge, the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.	

Checklist Item	Present Yes/No	Location	Length	Width	Depth	Extent relative to Area extent of Landfill/ Area (%)	Description	Photographic Records	Additional Comments/ Preliminary Stability Assessment
Settlement	No								Not observed
Erosion	No								
Frost Action	No								
Animal Burrows	No								
Vegetation	Sparse								Acceptable
Staining	No								
Vegetation Stress	No								No vegetation
Seepage Points	No								
Debris Exposed	No								
Presence/ Condition of Monitoring Instruments	No								No monitoring instrumentation
Other Features of Note.	Yes	Refer to plan map					General Photographic Record	Photos 1 thru 12	General photos for documentation. No features of note.

Preliminary Stability Assessment

Feature	Severity Rating	Extent
Settlement	Not Observable	None
Erosion	Not Observable	None
Frost Action	Not Observable	None
Animal Burrows	Not Observable	None
Vegetation	Not Observable	None
Staining	Not Observable	None
Vegetation Stress	Not Observable	None
Seepage Points	Not Observable	None
Debris Exposed	Not Observable	None
Presence/Condition - Monitoring Instruments	Not Observable	None
Overall Landfill Performance	**Acceptable**	

Appendix D2

Geotechnical Inspection Photographic Records

Photograph 1. North Landfill (East Cell): Looking NW from about 15m S of SE corner. Granular cover is rutted due to heavy equipment traffic (likely associated with construction) but appears stable and is self armouring against erosion.↑

Photograph 2. North Landfill (East Cell): Looking SE from about 30m NE of the NE corner of the east cell). No features of note.↑

Photograph 3. North Landfill (East Cell): Looking south along the west side of east cell. Viewed from the NW corner of the landfill cell. No features of note.↑

Photograph 4. North Landfill (Central Cell): Looking NW to the SW corner of the central llandfill cell. Landfill cover is identifiable by the darker, uniformly coloured grey rock. Lighter coloured, less evenly graded rock to the east & west.↑

Photograph 5. North Landfill (Central Cell): Looking west along the north side of the central cell. West landfill cell visible in the background. Whiteboard (61cm by 46cm) is located at the NW corner of the central cell.↑

Photograph 6. North Landfill (Central Cell): Looking south along the western edge of the cell from NW corner. Whiteboard (61cm by 41 cm) is situated just south of SW corner.↑

Photograph 7. North Landfill (West Cell): Looking SW along the north side of the landfill cell from the NE corner. Whiteboard located about half way to the NW corner the landfill cover.↑

Photograph 8. North Landfill (West Cell): Looking SW along the north toe of the landfill cover. Whiteboard located at the NW corner of the cell. Cover is stable. No features of note.↑

Photograph 9. North Landfill (West Cell): Looking S along the western toe of the landfill cover from the NW corner. Toe is unclear however the cover appears stable.↑

Photograph 10. North Landfill (West Cell): Looking NE along the south side of the landfill cover from the SW corner. Whiteboard located about half way to the SE corner. Toe is indistinct. Cover material is more uniform and darker grey coloured rock.↑

Photograph 11 North Landfill (West Cell): Looking NE along the south side of the landfill cover from mid-point along the south side of the cell. Whiteboard is located at the SE corner of the cell.↑

Photograph 12. North Landfill (West Cell): Looking N along east side of Western NLF. Soil sample being collected in background.↑

Appendix D3

Monitoring Photographic Records

Photograph 1. Test pit P3-12. Samples P3-12-1 and P3-12-2 collected. Bedrock reached at ~40cm.↑

Photograph 2. Test pit P3-13. Samples P3-13-1 and P3-13-2 collected. Bedrock reached at ~40cm.↑

Photograph 3. Test pit P3-14. Samples P3-14-1 and P3-14-2 collected. Bedrock reached at ~30cm.↑

Photograph 4. Test pit P3-15. Samples P3-15-1 and P3-15-2 collected. Bedrock reached at ~20cm.↑

Photograph 5. Test pit P3-16. Samples P3-16-1 and P3-16-2 collected. Bedrock reached at ~40cm.↑

Appendix D4

Field Notes

Aug 21/2007

79 Ponded water x staining along NE corner looking N from 408733 7596486 PIN 12958 and sample bottle right is ponded water

80 Looking N to NE corner from 408740 7596496 - minor displacement of organics during construction, staining on vehicle rut

81 Looking W along north edge from 408732 7596513 Ponded water 15m x 3m → depression surrounded by extensive construction equipment rutting

82 Looking WSW along north edge from 408700 7596514 - heavy rutting, minor staining indicative of ponded pooling

83 Looking S along west edge of West South LF → all granular, stable, good geometry South lobe in distance 408664, 7596498

84 Looking E along south side of larger West SLF → stable, granular 408683 7596472 East lobe in background

85, 86, 87 3 shot panorama of portion of top of west SLF looking from near SW corner 408686 7596472 Tier II in background

NORTH LANDFILL

5:45pm

East Lobe

88, 89 Looking NW from 15m S of SE corner 408643 7598677

Aug 21 /2007

90,91 2 shots east lobe looking SE from 408654 7598727

92 West side of East Lobe NLF Looking South from 408624 7598723 at NW corner

93,94 Central lobe looking NNW from 408606 7598692
Lighter coloured, less evenly graded rock to the east & west
-> West lobe visible on left side photo

95 Central lobe, north side looking West 408605 7598728 NE corner
- West lobe in background, sign @ corner

96 Central lobe looking South from NW corner 408581 7598726
- sign just south of SW corner

Cloudy 3°C PIN-3 70516

West Lobe of North Landfill

97 Looking west along north side from NE corner 408546 7598739
- sign @ ≈ ½ way to NW corner

98,99 2 shots continuing west mid-way 408513 7598715 sign @ NW corner

100 Looking to the SW corner from the NW corner 408487 7598695
- toe is unclear, rock graded to rock

101 Looking east along south side from the SW corner 408489 7598670
- sign at half way point
- toe unclear, gravel grading into gravel

102 Looking East from mid-point South side of North Landfill West Lobe 408518 7598685

Aug 21/2007 PIN-3

103 Looking N along east side of Western NLF 409563 7598717
- soil sample being collected in background

104, 105 View of W NLF from 408562 7598718 (SE corner)

At night
- computer work until 10:45 pm

Cloudy 4°C

Aug 22

TIER II Landfill 8am

101 - 002

106, 107, 108 Panoramic of Tier II from NE corner (25m NE) 409609 7597443

(4) 109 Looking west from NE corner along d/s north toe 409587 7597428
- slope appears stable, good shallow geometry but undulation and poor finishing grade make it difficult to differentiate differential settlement from poor finish at time of construction
Sign is 3m E of VT-6 along toe

(5) 110 Looking west along crest from NE corner to VT-6 409573 7597411
→ there is a 0.5m deep depression about 4m x 6m wide centred 4m NE of VT-6 (4m down slope)
→ likely poor construction finish
≈ 4m x 6m x .5m +/-

Aug 21, 07

MW-11

Well in good condition

Sample collected

P3-MW-11

P3-MW-18 Duplicate

4 x 1000 mL amber glass

8 x 500 mL amber glass

4 x VOC Vials

3 x 250 mL plastic

1 x 250 mL amber glass

Picture 015 of MW-11

Soil Sampling

P3-MW-11-1 @ 0-10 cm

P3-MW-11-2 @ 40-50 cm

P3-18-2 (Duplicate of 11-2) @ 40-50 cm

Picture 016 of test pit

MW-12

Well in good condition

Sample Collected P3-MW-12

4 x 500 mL amber glass

2 x VOC vials

1 x 250 mL plastic

Picture 017 of MW-12

Aug 21. 07

Soil Sampling

P3-MW-12-1 @ 0-10 cm

P3-MW-12-2 @ 40-50 cm

Picture 018 of test pit

5:50PM North Land Ltd.

P3-16-1 @ 0-10 cm

P3-16-2 @ 30-40 cm

The depth sample was taken at a shallower depth due to extremely rocky terrain

Picture 019 of test pit

UTM W 0408638

12 7598732

P3-15-1 @ 0-10 cm

P3-15-2 @ 10-20 cm

Bed rock reached @ 20 cm

Picture 020 of test pit

UTM W 0408597

12 7598739

Aug 21, 07

6:30 PM P3-14-1 @ 0-10 cm
P3-14-2 @ 20-30 cm
Bedrock reached at 30cm
Picture 021 of test pit
UTM W 0408535
12 7598755

P3-13-1 @ 0-10cm
P3-13-2 @ 30-40cm
Bedrock reached @ 40cm
Picture 022 of test pit
UTM W 0408497
12 7598720

P3-12-1 @ 0-10cm
P3-12-2 @ 30-40cm
Bedrock reached @ 40cm
Picture 023 of test pit
UTM W 0408586
12 7598689

Aug 22

Non-Haz LandFill
Weather: Cloudy, Cool 6-7°C
Samplers: Ken Boldt
Susie Koaha
Joe Koaha (Bear Monitor)

MW-14
Well in good condition, One of the red pipe markers has fallen down
Sample collected P3-MW-14
4x 500mL amber glass
1x 250 mL plastic
2x VOC vials
Picture 024 of MW-14
Soil Sampling
P3-MW-14-1 @ 0-10cm
P3-MW-14-2 @ 10-20cm
Bedrock reached @ 20cm
Picture 025 of test pit
Picture 026 of fallen marker

Soil Sampling Record

	Previous Coordinates		2007 Coordinates		Surface Sample	Depth Sample	Photograph
Monitoring Locations	North (m)	East (m)	North (m)	East (m)	0 - 10 cm	40 - 50 cm	
North Landfill							
P3-12 (soil)	10691	9871	7598689	0408586			
P3-13 (soil)	10699	9789	7598720	0408497			
P3-14 (soil)	10729	9825	7598755	0408535			
P3-15 (soil)	10727	9891	7598739	0408597			
P3-16 (soil)	10721	9937	7598732	0408638			

Comments:

Appendix E

Non-Hazardous Waste Landfill

Appendix E

Landfill Monitoring Report – Non-Hazardous Waste Landfill

E.1 Non-Hazardous Waste Landfill

E.1.1 Landfill Summary

The Non-Hazardous Waste Landfill is located north of the airstrip, approximately 800 m from the main station facilities and covers an area of approximately 5,000 m^2 and an estimated depth of 2 m. The landfill configuration is shown on Figure E-1.

The design of this landfill includes perimeter berms, and placement of a granular fill cover over the material. The material in the landfill consists of DCC Tier I and Type A hydrocarbon (lubricating oil and greases) contaminated soil. Four groundwater monitoring wells were installed at the landfill perimeter.

For 2007, the monitoring requirements for the Non-hazardous Waste Landfill included visual inspection, soil sampling, and groundwater sampling.

E.1.2 Visual Monitoring

Based on the visual inspection, the Non-Hazardous Waste Landfill area appears to be in good condition. There are no visible signs of frost action or differential settlement. The condition of the side slopes and landfill cap appears substantially unchanged from the time of the 2006 inspection and show no evidence of problematic or degraded conditions. Minor rutting, which appears to be associated with equipment traffic, was noted at several locations (refer to Photographs 6 and 10). The granular cover material is self armouring (i.e., not susceptible to ongoing erosion by surface runoff). None of the ruts appear to warrant remediation at this time and show no evidence of recent degradation.

Damp, organic rich soil was observed adjacent to the toe of the landfill at several locations along the toe of the west and south slopes (refer to Photographs 7, 8 and 12) where the landfill encroaches onto muskeg. There was no indication of seepage, slope instability or slope movement at any of these locations. The moist soil conditions are most likely associated with recent precipitation and a high water table.

The overall performance of the landfill is considered acceptable. There is no as-built survey available for this landfill.

N 7597700
N 7597650
N 7597600
N 7597550
N 7597500
E 408650
E 408700
E 408750
E 408800
E 408850
E 408900
E 408950

MW-14
MW-15
MW-16
MW-13
BM-3
TBM214
501
502
503
504
14m
16m
17m
15m
13m
NON-HAZARDOUS WASTE LANDFILL
AIRSTRIP

Legend

- TBM214 — TEMPORARY BENCHMARK
- BM-3 — PERMANENT BENCHMARK
- MW-13 — MONITORING WELL LOCATION
- 501 — COORDINATE POINT
- 9 — PHOTOGRAPH LOCATION - 2007
- 10 — CLOSE-UP PHOTOGRAPH LOCATION - 2007
- SETTLEMENT (NTS)
- EROSION (NTS)
- PONDING
- STANDING WATER

Map Sources / Notes:
Source drawing from UMA: P3-RD07.dwg

N
W E
S

0 5 10 20 30 40 m

1 : 1000
UTM Zone 12N, NAD83

File Name:	70516_By1_E1_NonHazard(P3-RD07).dwg		
Reviewed by:	KAB, JAT	Prepared by:	MH
Date Issued:	December, 2007	Project Number:	70-516

Defence Construction Canada

2007 PIN-3 DEW Line Monitoring Program
PIN-3 Lady Franklin Point
Nunavut Territory

Non-Hazardous Waste Landfill

Gartner Lee

Figure E-1
Version 1

Date Plotted: October 16, 2006 Path: N:\Projects\2007\70516\2007Final\ACAD\02-PIN-3\70516_By1_E1_NonHazard(P3-RD07).dwg

E.1.3 Soil Sampling

Soil samples were collected at the designated locations of P3-MW-13, P3-MW-14, P3-MW-15, and P3-MW-16. The sampling locations are shown on Figure E-1. At each location wherever possible two samples were collected at approximately 0.1m below ground and between 0.4-0.5m below ground. A photograph of each test pit for each location sampled is shown in Appendix E3.

GLL did not identify any hydrocarbon odours at any of the sampling locations at the Non-hazardous Landfill. Laboratory analysis detected low concentrations of TPH (C6-34) in the test pits from soil sample locations MW-13 and MW-14. GLL does not consider the concentrations noted to be of significance, however, these should be evaluated in the context of the Landfill Monitoring Plan.

Analytical results and depths of samples are provided in Table E-1 and the laboratory certificate is provided in Appendix G.

Table E-1. PIN-3 Lady Franklin Point, Summary of 2007 Soil Analysis - Non-hazardous Waste Landfil

Sample Ident.	Sample Location	Depth (m)	Arsenic (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Cobalt (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Zinc (mg/kg)	Petroleum Hydrocarbons				PCB Total Aroclors (mg/kg)
												TPH (C6-34) (mg/kg)	C6-C10 (mg/kg)	C10-C16 (mg/kg)	C16-C34 (mg/kg)	
Upgradient Samples																
P3-MW-13-1	MW-13	0.1	0.9	<0.50	5.2	<2.0	6	<30	0.01	<5.0	10.2	191	<10	11	180	<0.010
P3-MW-13-2	MW-13	0.5	1.0	<0.50	4.4	2.1	8	<30	<0.0050	<5.0	7	195	<10	5	190	<0.010
Downgradient Samples																
P3-MW-14-1	MW-14	0.1	1.2	<0.50	3.7	<2.0	22	<30	0.0559	6.7	54.1	110	<10	<5	110	0.014
P3-MW-14-2	MW-14	0.2	3.3	<0.50	3.5	<2.0	3.9	<30	<0.0050	<5.0	6.7	0	<10	<5	<5	<0.010
P3-MW-15-1	MW-15	0.1	0.5	<0.50	3.6	<2.0	9.1	<30	0.012	<5.0	10	12	<10	<5	12	<0.010
P3-MW-15-2	MW-15	0.5	1.0	<0.50	4.2	<2.0	8.8	<30	<0.0050	<5.0	5.5	0	<10	<5	<5	<0.010
P3-19-2*	MW-15	0.5	1.1	<0.50	4.2	2.1	6.2	<30	0.01	<5.0	7.1	0	<10	<5	<5	<0.050
P3-MW-16-1	MW-16	0.1	1.1	<0.50	4.2	<2.0	6.9	<30	0.0117	<5.0	9	19	<10	<5	19	<0.010
P3-MW-16-2	MW-16	0.15	1.1	<0.50	3.6	<2.0	4.4	<30	0.0098	<5.0	7.4	39	<10	<5	39	<0.010

***** *Denotes duplicate sample. (Further information located in Table 2 of main report)*
Note: mg/kg = ug/g

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E.1.4 Groundwater Sampling

Groundwater depths and monitor well conditions were documented for observation wells MW-13, MW-14, MW-15 and MW-16. The monitoring well development records are provided in Appendix E4.

Sufficient water was available from wells MW-14, MW-15 and MW-16, however there was insufficient water to collect a sample from monitoring well MW-13. Furthermore, the pH measured in MW-13 was in excess of 10.5 and the extremely low recharge rate raises concerns as to the future production of the well in the context of a sampling program. Wells were purged and samples were collected at a maximum flow rate of 100 mL/min using a peristaltic pump, and disposable LDPE tubing at each well. The groundwater samples were not filtered and not preserved, and were analyzed for total concentration of inorganics (Arsenic, Cadmium, Chromium, Cobalt, Copper, Lead, Mercury, Nickel, and Zinc), TPH (C6-C34) and PCBs. The results are presented in Table E-2 and the laboratory certificate is provided in Appendix G.

Table E-2. PIN-3 Lady Franklin Point, Summary of 2007 Groundwater Analysis - Non-hazardous Waste Landfil

Sample Ident.	Location	Groundwater Elevation (masl)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Lead (mg/L)	Mercury (mg/L)	Nickel (mg/L)	Zinc (mg/L)	Petroleum Hydrocarbons				PCB Total Aroclors (mg/L)
												TPH (C6-34) (mg/L)	C6-C10 (mg/L)	C10-C16 (mg/L)	C16-C34 (mg/L)	
Upgradient Samples																
N/A	MW-13	13.54	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Downgradient Samples																
P3-MW-14	MW-14	13.36	<0.0025	0.00025	0.0155	<0.0015	<0.0050	<0.0025	<0.000020	0.0156	<0.025	<0.25				<0.0010
P3-MW-15	MW-15	13.29	<0.0025	<0.000085	<0.0050	0.0095	<0.0050	<0.0025	<0.000020	0.0154	<0.025	<0.25				<0.0010
P3-MW-16	MW-16	13.53	<0.0025	0.000297	0.0089	<0.0015	<0.0050	<0.0025	<0.000020	0.0061	<0.025	<0.25				<0.0010

***** *Denotes duplicate sample. (Further information located in Table 2 of main report)*
Note: mg/L = 1000 ug/L

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Appendix E Attachments

E1 Site Condition/Visual Inspection Records

E2 Geotechnical Inspection Photographic Records

E3 Monitoring Photographic Records

E4 Monitoring Well Development Records

E5 Field Notes

Appendix E1

Site Condition/Visual Inspection Records

Visual Inspection Checklist
Inspection Report – Page 1 of 2

SITE NAME:	PIN-3 Lady Franklin Point
LANDFILL/AREA DESIGNATION:	Non-hazardous Waste Landfill
DATE OF INSPECTION:	August 22, 2007
DATE OF PREVIOUS INSPECTION:	August 16, 2006
INSPECTED BY:	James Theriault
REPORT PREPARED BY:	James Theriault
The preparer represents to the best of the preparer's knowledge, the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.	

Checklist Item	Present Yes/No	Location	Length	Width	Depth	Extent relative to Area extent of Landfill/ Area (%)	Description	Photographic Record	Additional Comments/ Preliminary Stability Assessment
Settlement	No								Not Observed
Erosion	No								Self-armouring minor ruts from traffic, not erosion
Frost Action	No								
Animal Burrows	No								
Vegetation	No								
Staining	No								
Vegetation Stress	No								
Seepage Points	No								
Debris Exposed	No								
Presence/ Condition of Monitoring Instruments	Yes	Refer to plan map							4 MWs, no visible problems
Other Features of Note.	Yes	Refer to plan map					General Photographic Record	Photos 1 thru 14	General photos for documentation. No features of note.

Preliminary Stability Assessment

Feature	Severity Rating	Extent
Settlement	Not observable	None
Erosion	Not observable	None
Frost Action	Not observable	None
Animal Burrows	Not observable	None
Vegetation	Not observable	None
Staining	Not observable	None
Vegetation Stress	Not observable	None
Seepage Points	Not observable	None
Debris Exposed	Not observable	None
Presence/Condition – Monitoring Instruments	Not observable	None
Overall Landfill Performance	Acceptable	

Appendix E2

Geotechnical Inspection Photographic Records

Photograph 1. Non-Hazardous Waste Landfill: Panoramic looking about 225 degrees from about 25m NE of the NE corner of the landfill.↑

Photograph 2. Non-Hazardous Waste Landfill: Looking west from the NE corner along downslope toe of north side of the landfill. Whiteboard for scale (61cm by 46cm).↑

Photograph 3. Non-Hazardous Waste Landfill: Looking east from midslope NW corner. Slope appears stable with no indications of degraded performance.↑

Photograph 4. Non-Hazardous Waste Landfill: Looking W along the crest from NE corner of the landfill. No features of note.↑

Photograph 5. Non-Hazardous Waste Landfill: Looking south along crest from the NW corner of the landfill. MW-15 visible along toe of slope. Whiteboard (61cm by 46cm) for scale.↑

Photograph 6. Non-Hazardous Waste Landfill: Looking S along downslope toe of NW corner. Stable slope, minor irregularities in finish. The granular fill appears to be self armouring.↑

Photograph 7. Non-Hazardous Waste Landfill: Looking S along downslope toe mid-way along west side. MW-15 in the distance. Toe area is damp (organics present) but there is no clear evidence of seepage.↑

Photograph 8. Non-Hazardous Waste Landfill: Looking east along downslope toe of south side NHWLF. MW-16 in frame. Photo taken from the access road to the west of the SW corner of the landfill.↑

Photograph 9. Non-Hazardous Waste Landfill: Look east along crest from SW corner. Whiteboard for scale (61cm by 46cm).↑

Photograph 10. Non-Hazardous Waste Landfill: South slope looking East to the SE corner from mid-slope, mid-way to corner. The slope has a slightly irregular finish and steepens (still gentle) downslope of whiteboard towards the toe of slope. Slope appears stable with no indications of degraded performance.↑

Photograph 11. Non-Hazardous Waste Landfill: Looking N along the east side of the landfill. Viewed from mid-slope at the SE corner.↑

Photograph 12. Non-Hazardous Waste Landfill: Looking NE to toe of slope/access road interface from centre crest east slope. Slope abuts onto organic layer (darker area). No indications of instability.↑

Photograph 13. Non-Hazardous Waste Landfill: Paroramic view of the top of the landfill cover looking WNW from the SE corner.↑

Photograph 14. Non-Hazardous Waste Landfill: Panoramic view of the top of the landfill cover looking WSW from NE corner.↑

Appendix E3

Monitoring Photographic Records

Test Pits

Photograph 1. Test pit P3-MW-13. Samples P3-MW-13-1 and P3-MW-13-2 collected.↑

Photograph 2. Test Pit P3-MW-14. Samples P3-MW-14-1 and P3-MW-14-2 collected. Bedrock reached at ~20cm.↑

Test Pits

Photograph 3. Test Pit P3-MW-15. Samples P3-MW-15-1, P3-MW-15-2, and P3-19-2 (Duplicate of P3-MW-15-2) collected.↑

Photograph 4. Test Pit P3-MW-16. Samples P3-MW-16-1 and P3-MW-16-2 collected. Bedrock reached at ~15cm.↑

Monitoring Wells

Photograph 1. Monitoring well MW-13 (Upgradient). No sample collected.↑

Photograph 2. Monitoring well MW-14. Sample P3-MW-14 collected.↑

Monitoring Wells

Photograph 3. One of the red markers for MW-14 has fallen over.↑

Photograph 4. Monitoring well MW-15. Sample P3-MW-15 collected.↑

Monitoring Wells

Photograph 5. Monitoring well MW-16. Sample P3-MW-16 collected. ↑

Appendix E4

Monitoring Well Development Records

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Monitoring Well Observations (MW-13)

Development of Monitoring Wells (2007)			
Site Name:	PIN-3		
Date of Sampling Event:	20-Aug-07	Time:	21:20
Names of Samplers:	Ken Boldt		
Landfill Name:	Non Hazardous Waste Landfill		
Monitoring Well ID:	MW-13		
Sample Number:	No Sample		
Condition of Well:	Good		
Measured Data			
Well height above ground (cm)=	58		
Diameter of well (cm)=	5		
Depth of installation (cm)=	392	From ground surface	
Length screened section (cm)=	333		
Depth to top of screen (cm)=	59	From ground surface	
Depth to water surface (cm)=	216	Method:	Interface meter
Static water level (cm)=	158	From ground surface	
Depth to bottom (cm)=	289	Evidence of sludge or siltation:	no
Depth of water (cm)=	73		
Well volume of water (mL)=	1433.35		
Free product thickness (mm)=	N/A	Method:	Interface meter
Purging: (Y/N)	Y	Procedure/Equipment:	N/A
Volume Purged Water (L)=	1.5		
Decontamination required: (Y/N)	Y	*Notes:*	
Number washes:	1	water was very cloudy and well ran dry even with extremely low flow purging. Returned on Aug 22 at ~10:30 AM and only 2 cm of water had recharged into the well so no sample was collected. This allowed for 37 hours of recharge with no appreciable amount of water entering the well. The pH is very high and indicates a problem with well installation.	
Number rinses:	1		
pH=	10.74		
Conductivity (uS/cm)=	-		
Temperature (degC)=	2.0		

n/a=not applicable
TOP = Top Of Pipe

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Monitoring Well Observations (MW-14)

Development of Monitoring Wells (2007)			
Site Name:	PIN-3		
Date of Sampling Event:	22-Aug-07	Time:	8:20
Names of Samplers:	Ken Boldt		
Landfill Name:	Non Hazardous Waste Landfill		
Monitoring Well ID:	MW-14		
Sample Number:	P3-MW-14		
Condition of Well:	Good, standing water above bentonite inside casing, however, well below TOP		
Measured Data			
Well height above ground (cm)=	50		
Diameter of well (cm)=	5		
Depth of installation (cm)=	474	From ground surface	
Length screened section (cm)=	300		
Depth to top of screen (cm)=	65	From ground surface	
Depth to water surface (cm)=	142	Method:	Interface meter
Static water level (cm)=	92	From ground surface	
Depth to bottom (cm)=	323	Evidence of sludge or siltation:	no
Depth of water (cm)=	181		
Well volume of water (mL)=	3553.93		
Free product thickness (mm)=	N/A	Method:	Interface meter
Purging: (Y/N)	Y	Procedure/Equipment:	Peristaltic Pump, LDPE Tubing
Volume Purged Water (L)=	2.0		
Decontamination required: (Y/N)	Y	*Notes:*	
Number washes:	1		
Number rinses:	1		
pH=	7.26		
Conductivity (uS/cm)=	2008		
Temperature (degC)=	2.2		

n/a=not applicable
TOP = Top Of Pipe

Gartner Lee

Monitoring Well Observations (MW-15)

Development of Monitoring Wells (2007)			
Site Name:	PIN-3		
Date of Sampling Event:	22-Aug-07	Time:	9:00
Names of Samplers:	Ken Boldt		
Landfill Name:	Non Hazardous Waste Landfill		
Monitoring Well ID:	MW-15		
Sample Number:	P3-MW15		
Condition of Well:	Good		
Measured Data			
Well height above ground (cm)=	65		
Diameter of well (cm)=	5		
Depth of installation (cm)=	472	From ground surface	
Length screened section (cm)=	304		
Depth to top of screen (cm)=	48	From ground surface	
Depth to water surface (cm)=	185	Method:	Interface meter
Static water level (cm)=	120	From ground surface	
Depth to bottom (cm)=	286	Evidence of sludge or siltation:	no
Depth of water (cm)=	101		
Well volume of water (mL)=	1983.13		
Free product thickness (mm)=	N/A	Method:	Interface meter
Purging: (Y/N)	Y	Procedure/Equipment:	Peristaltic Pump, LDPE Tubing
Volume Purged Water (L)=	2.0		
Decontamination required: (Y/N)	Y	*Notes:*	
Number washes:	1		
Number rinses:	1		
pH=	7.00		
Conductivity (uS/cm)=	2240		
Temperature (degC)=	2.1		

n/a=not applicable
TOP = Top Of Pipe

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Monitoring Well Observations (MW-16)

Development of Monitoring Wells (2007)			
Site Name:	PIN-3		
Date of Sampling Event:	22-Aug-07	Time:	9:45
Names of Samplers:	Ken Boldt		
Landfill Name:	Non Hazardous Waste Landfill		
Monitoring Well ID:	MW-16		
Sample Number:	P3-MW-16		
Condition of Well:	Good		
Measured Data			
Well height above ground (cm)=	78		
Diameter of well (cm)=	5		
Depth of installation (cm)=	445	From ground surface	
Length screened section (cm)=	300		
Depth to top of screen (cm)=	37	From ground surface	
Depth to water surface (cm)=	167	Method:	Interface meter
Static water level (cm)=	89	From ground surface	
Depth to bottom (cm)=	406	Evidence of sludge or siltation:	no
Depth of water (cm)=	239		
Well volume of water (mL)=	4692.75		
Free product thickness (mm)=	N/A	Method:	Interface meter
Purging: (Y/N)	Y	Procedure/Equipment:	Peristaltic Pump, LDPE Tubing
Volume Purged Water (L)=	2.0		
Decontamination required: (Y/N)	Y	*Notes:*	
Number washes:	1		
Number rinses:	1		
pH=	7.69		
Conductivity (uS/cm)=	1764		
Temperature (degC)=	2.5		

n/a=not applicable
TOP = Top Of Pipe

Appendix E5

Field Notes

Aug 22/2007

49 Looking N along east side of West Ldr from SE corner (5m S of)
407878 7598024

50 Close-up of rocky/mossy area between the central & western Ldrs
407878 7598045

4 Entire area around West Ldr is covered by gravel → difficult to delineate actual outline of LF

51, 52 Looking W from rock apron around the NE corner of the West Ldr
407879 7598075

53 Looking WSW to Western top corner
407851 7598072
- sign @ corner

54 Looking SSE to SW corner NWS West
407824 7598071
- minor organics along portion of toe, no movement or ponding

PIN-3 7051?

55 looking East from SW corner to SE corner of NWS LF, west ldr
407829 7598043

56 Ldr to SE corner from midpoint of South side - no staining or ponding noted along organic perimeter
407852 7598042

56?

57 [redacted] of MAIN LF viewed looking south from near NWS LF central ldr
407883 7597960

4:05pm
NON HAZARDOUS WASTE LF

57, 58 Panoramic look ~225° from about 25m NE of NE corner

59 Looking West along dls toe of north side from NE corner
408876 7597633

Aug. 22/2007

61 Looking W along crest from NE corner 408863 7597628

60 Looking East from midslope NW corner 408776 7597631

62 Look south along crest from NW corner 408780 7597630

63 Looking S along d/s toe of NW corner 408767, 7597638
- stable slope minor irregularities in finish

64 Looking S along d/s toe mid-way along west side NW- in distance 408768 7597614

65 Looking East along d/s toe of south side NHW landfill MW-16 in frame Photo taken standing on access road 408756 7597560

66 Look east along crest from SW corner 408778 7597571

67 South slope looking East to SE corner from midslope → midway to corner Note: irregular finish and slight increase steepening (still gentle) d/s of sign along the toe 408901 7598567

68 Looking North at East Side slope from mid-slope SE corner 408866 7597570

69 Looking NE to toe of slope/ access road interface from centre crest east slope 408856 7597600

70, 71 2 shot panoramic from SE corner looking W-NW along top 408856 7597583

72, 73 2 shots looking SW to W from NE corner of top NHW 408859 7597624

Evening → data entry until 11 pm 16 hrs+ (Chrg 12 hrs)

Aug 20, 07

PIN-3

Weather: Partly Cloudy, 5°C, breeze

MW-13 Non-Haz Landfill

Well in good condition
Water purged cloudy, quickly ran dry
and recharged at a very low rate
Could not take sample due to lack
of water
Picture 001 of well

Soil Sample
P3-MW-13-1 @ 0-10cm
P3-MW-13-2 @ 40-50 cm
Picture 002 of ~~well~~ Test-pit

Aug 21, 07

MW-5

Well in good condition
Sample Collected
P3-MW-5
4 x 500 mL amber glass
1 x 250 mL plastic
2 x ~~250 mL amber~~ glass vials VOC

Aug 21, 07

P3-MW-17 Duplicate of MW-5
4 x 500 mL amber glass
4 x 1000 mL amber glass
2 x 250 mL plastic
1 x 250 mL amber glass
2 x VOC vials
Picture 003 of MW-5

Soil Sample
P3-MW-5-1 } @ 0-10cm
P3-17-1 (Duplicate) }
P3-MW-5-2 @ 40-50cm
Picture 004 of test pit

10:00 AM MW-6

Well condition good. water became
cloudy during purging. Refresh rate
was not sufficient for sampling
Picture 005 of MW-6

Soil Sample
P3-MW-6-1 @ 0-10cm
P3-MW-6-2 @ 40-50cm
Picture 006 of test pit

Aug 21, 07

6:30 PM P3-14-1 @ 0-10 cm
P3-14-2 @ 20-30 cm
Bedrock reached at 30cm
Picture 021 of test pit
UTM W 0408535
12 7598755

P3-13-1 @ 0-10cm
P3-13-2 @ 30-40cm
Bedrock reached @ 40cm
Picture 022 of test pit
UTM W 0408497
12 7598720

P3-12-1 @ 0-10cm
P3-12-2 @ 30-40cm
Bedrock reached @ 40cm
Picture 023 of test pit
UTM W 0408586
12 7598689

Aug 22

Non-Haz LandFill
Weather: Cloudy, Cool 6-7°C
Samplers: Ken Boldt
Susie Koaha
Joe Koaha (Bear Monitor)

MW-14
Well in good condition, One of the red pipe markers has fallen down
Sample collected P3-MW-14
4x 500mL amber glass
1x 250 mL plastic
2x VOC vials
Picture 024 of MW-14
Soil Sampling
P3-MW-14-1 @ 0-10cm
P3-MW-14-2 @ 10-20cm
Bedrock reached @ 20cm
Picture 025 of test pit
Picture 026 of fallen marker

Aug 22.07

9:25 AM MW-15

Well in good condition
Sample collected P3-MW-15
4x 500mL amber glass
2x VOC vials
1x 250mL amber glass
Picture 027 of MW-15

Soil Sampling
P3-MW-15-1 @ 0-10cm
P3-MW-15-2 @ 40-50cm
P3-19-2 } Duplicate of 15-2
Picture 028 of test pit

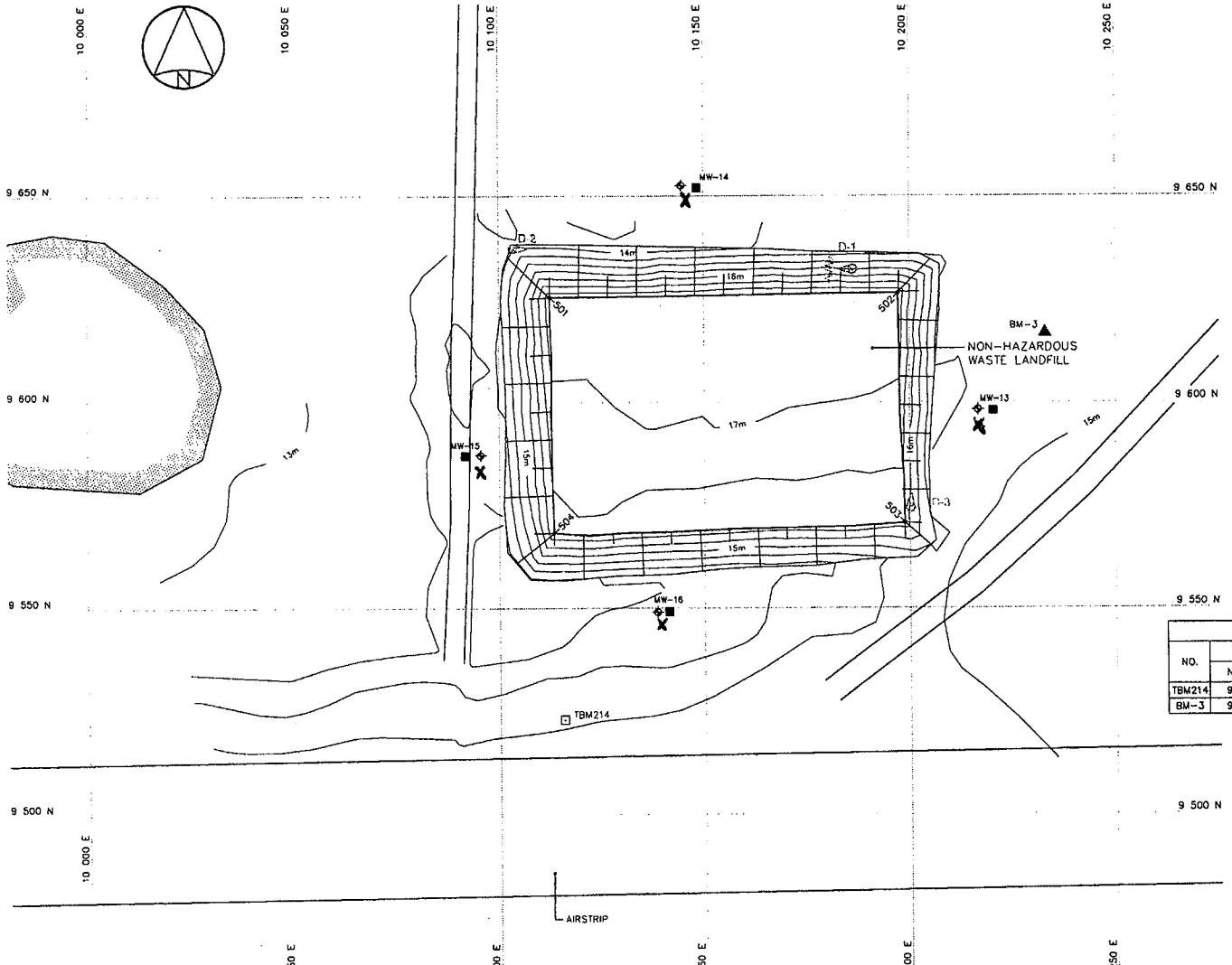
MW-16
Well in good condition
Sample collected P3-MW-16
4x 500mL amber glass
2x VOC vials
1x 250mL plastic
Picture 029 of well
Soil Sampling
P3-MW-16-1 @ 0-10cm
P3-MW-16-2 @ 10-15cm
Reached Bedrock at 15cm
Picture 030 of test pit

Aug 22.07

NWS Landfill
P3-1-1 @ 0-10cm
P3-1-2 @ 30-40cm
Bedrock @ 40cm
UTM W 0408028
12 7598043
Picture 031 of test pit

P3-2-1 @ 0-10cm
P3-2-2 @ 40-50cm
P3-20-2 Duplicate of 2-2 at 40-5cm
Picture 032 of test pit
UTM W 0407901
12 7597950

P3-3-1 @ 0-10cm
P3-3-2 @ 40-50cm
Picture 033 of test pit
UTM W 0407858
12 7598008



LEGEND:

- TBM214 — TEMPORARY BENCHMARK
- BM-3 — PERMANENT BENCHMARK
- MW-13 — MONITORING WELL LOCATION
- 501 — COORDINATE POINT
- MONITORING SOIL SAMPLE LOCATION
- PHOTOGRAPH REFERENCE
- SETTLEMENT
- EROSION
- PONDING
- OBSERVATION OF CHECKLIST ITEM

COORDINATE POINTS (AS-BUILT) NON-HAZARDOUS WASTE LANDFILL			
NO.	NORTHING	EASTING	ELEV.
501	9 625.6	10 112.5	17.31
502	9 626.5	10 197.3	17.33
503	9 570.6	10 198.7	16.23
504	9 568.2	10 113.4	16.38

MONITORING WELLS			
NO.	NORTHING	EASTING	ELEV.
MW-13	9 598.156	10 216.575	15.12
MW-14	9 652.461	10 144.538	14.28
MW-15	9 587.139	1 0095.465	14.49
MW-16	9 549.004	10 138.411	14.42

BENCHMARKS				
NO.	COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
TBM214	9 522.916	10 115.689	14.439	SPIKE
BM-3	9 616.683	10 232.970	14.890	25mm DIA. STEEL PIPE

RECORD DRAWING
NOT FOR CONSTRUCTION

0 10 20 30m
10 5 1:1000

UMA

DEW LINE CLEAN UP
LANDFILL MONITORING PLAN

PIN-3 - LADY FRANKLIN POINT

NON - HAZARDOUS WASTE LANDFILL

FIGURE PIN-3.7

Monitoring Well Sampling Record

Site Name:	PIN-3		
Date of Sampling Event:	20-Aug-07	Time:	9:20 PM
Names of Samplers:	Ken Boldt		
Landfill Name:	Non Hazardous Waste Landfill		
Monitoring Well ID:	MW-13		
Sample Number:			
Condition of Well:	Good		
Measured Data			
Well pipe height above ground (cm)=	58		
Diameter of well (cm)=	5.08		
Depth of well installation (cm)= (from ground surface)	392		
Length screened section (cm)=	333		
Depth to top of screen (cm)= (from ground surface)	59		
Depth to water surface (cm)= (from top of pipe)	216	Measurement method: (meter, tape, etc)	Interface Meter
Static water level (cm)= (below ground surface)	158		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	289	Evidence of sludge or siltation:	no
Thickness of water column (cm)=			
Static volume of water in well (mL)=			
Free product thickness (mm)=	N/A	Measurement method: (meter, paste, etc)	Interface Meter
Purging: (Y/N)	Y	Purging/Sampling Equipment:	Peristaltic Pump
Volume Purged Water=	~~2.0L~~	1.5L	LDPE Tubing
Decontamination required: (Y/N)	Y		
Number washes:	1		
Number rinses:	1		
Final pH=	10.74		
Final Conductivity (uS/cm)=			
Final Temperature (degC)=	2.0		

Water was very cloudy

returned on Aug 22 and only 2cm of water had recharged into the well so no sample was collected. This allowed for 37 hours of recharge with no appreciable amount entering the well.

Monitoring Well Sampling Record

Site Name:	PIN-3		
Date of Sampling Event:	22-Aug-07	Time:	8:20 AM
Names of Samplers:	Ken Boldt		
Landfill Name:	Non Hazardous Waste Landfill		
Monitoring Well ID:	MW-14		
Sample Number:	P3-MW-14		
Condition of Well:	Good, standing water above bentonite inside casing - Well below TOP		
Measured Data			
Well pipe height above ground (cm)=	50		
Diameter of well (cm)=			
Depth of well installation (cm)= (from ground surface)			
Length screened section (cm)=			
Depth to top of screen (cm)= (from ground surface)			
Depth to water surface (cm)= (from top of pipe)	142	Measurement method: (meter, tape, etc)	
Static water level (cm)= (below ground surface)	92		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	323	Evidence of sludge or siltation:	No
Thickness of water column (cm)=			
Static volume of water in well (mL)=			
Free product thickness (mm)=	N/A	Measurement method: (meter, paste, etc)	
Purging: (Y/N)	Y	Purging/Sampling Equipment:	
Volume Purged Water=	2.0L		
Decontamination required: (Y/N)	Y		
Number washes:	1		
Number rinses:	1		
Final pH=	7.26		
Final Conductivity (uS/cm)=	2.2		
Final Temperature (degC)=	2008		

Monitoring Well Sampling Record

Site Name:	PIN-3		
Date of Sampling Event:	22-Aug-07	Time:	9:00 AM
Names of Samplers:	Ken Boldt		
Landfill Name:	Non Hazardous Waste Landfill		
Monitoring Well ID:	MW-15		
Sample Number:	~~MW~~ P3-MW-15		
Condition of Well:	Good		
Measured Data			
Well pipe height above ground (cm)=	65		
Diameter of well (cm)=			
Depth of well installation (cm)= (from ground surface)			
Length screened section (cm)=			
Depth to top of screen (cm)= (from ground surface)			
Depth to water surface (cm)= (from top of pipe)	185	Measurement method: (meter, tape, etc)	
Static water level (cm)= (below ground surface)	120		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	286	Evidence of sludge or siltation:	No
Thickness of water column (cm)=			
Static volume of water in well (mL)=			
Free product thickness (mm)=	N/A	Measurement method: (meter, paste, etc)	
Purging: (Y/N)	Y	Purging/Sampling Equipment:	
Volume Purged Water=	2.0 L		
Decontamination required: (Y/N)	Y		
Number washes:	1		
Number rinses:	1		
Final pH=	7.00		
Final Conductivity (uS/cm)=	2240		
Final Temperature (degC)=	2.1		

Monitoring Well Sampling Record

Site Name:	PIN-3		
Date of Sampling Event:	22-Aug-07	Time:	9:45 AM
Names of Samplers:	Ken Boldt		
Landfill Name:	Non Hazardous Waste Landfill		
Monitoring Well ID:	MW-16		
Sample Number:	P3-MW-16		
Condition of Well:	Good		
Measured Data			
Well pipe height above ground (cm)=	78		
Diameter of well (cm)=			
Depth of well installation (cm)= (from ground surface)			
Length screened section (cm)=			
Depth to top of screen (cm)= (from ground surface)			
Depth to water surface (cm)= (from top of pipe)	167	Measurement method: (meter, tape, etc)	
Static water level (cm)= (below ground surface)	89		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	406	Evidence of sludge or siltation:	NO
Thickness of water column (cm)=			
Static volume of water in well (mL)=			
Free product thickness (mm)=	N/A	Measurement method: (meter, paste, etc)	
Purging: (Y/N)	Y	Purging/Sampling Equipment:	
Volume Purged Water=	2 L		
Decontamination required: (Y/N)	Y		
Number washes:	1		
Number rinses:	1		
Final pH=	7.69		
Final Conductivity (uS/cm)=	1764		
Final Temperature (degC)=	2.5		

Appendix F

DCC Tier II Soil Disposal Facility

Appendix F

Landfill Monitoring Report – Tier II Soil Disposal Facility

F.1 Tier II Disposal Facility

F.1.1 Landfill Summary

The Tier II Disposal Facility is located south of the eastern portion of the airstrip and encompasses an area of approximately 16,250 m^2. This landfill was constructed to contain contaminated soils. The landfill configuration is shown on Figure F-1.

The landfill has a double containment system that consists of a liner and the placement of granular fill overtop of the landfill to promote permafrost aggradation through the landfill contents. The liner was placed across the bottom of the landfill, along the berms and over the top of the landfill contents, thus fully encapsulating them.

For 2007, the monitoring requirements for the DCC Tier II Soil Disposal Facility included visual inspection, soil sampling, groundwater sampling, and thermal monitoring.

F.1.2 Visual Monitoring

Based on the visual inspection, the Tier II Soil Disposal Facility appears to be in good condition overall. The effectiveness of a visual inspection relies in large part on the ability to detect relative changes in the surface contours and elevations. Relative changes are most easily detected when surfaces and crest lines start out flat, and straight. In general, the final grade of the granular cover is quite rough and disrupted by a large number of ruts from vehicular traffic. The existing rough grade does not lend itself to effective visual inspection as the pre-existing construction irregularities mask all but large and obvious changes.

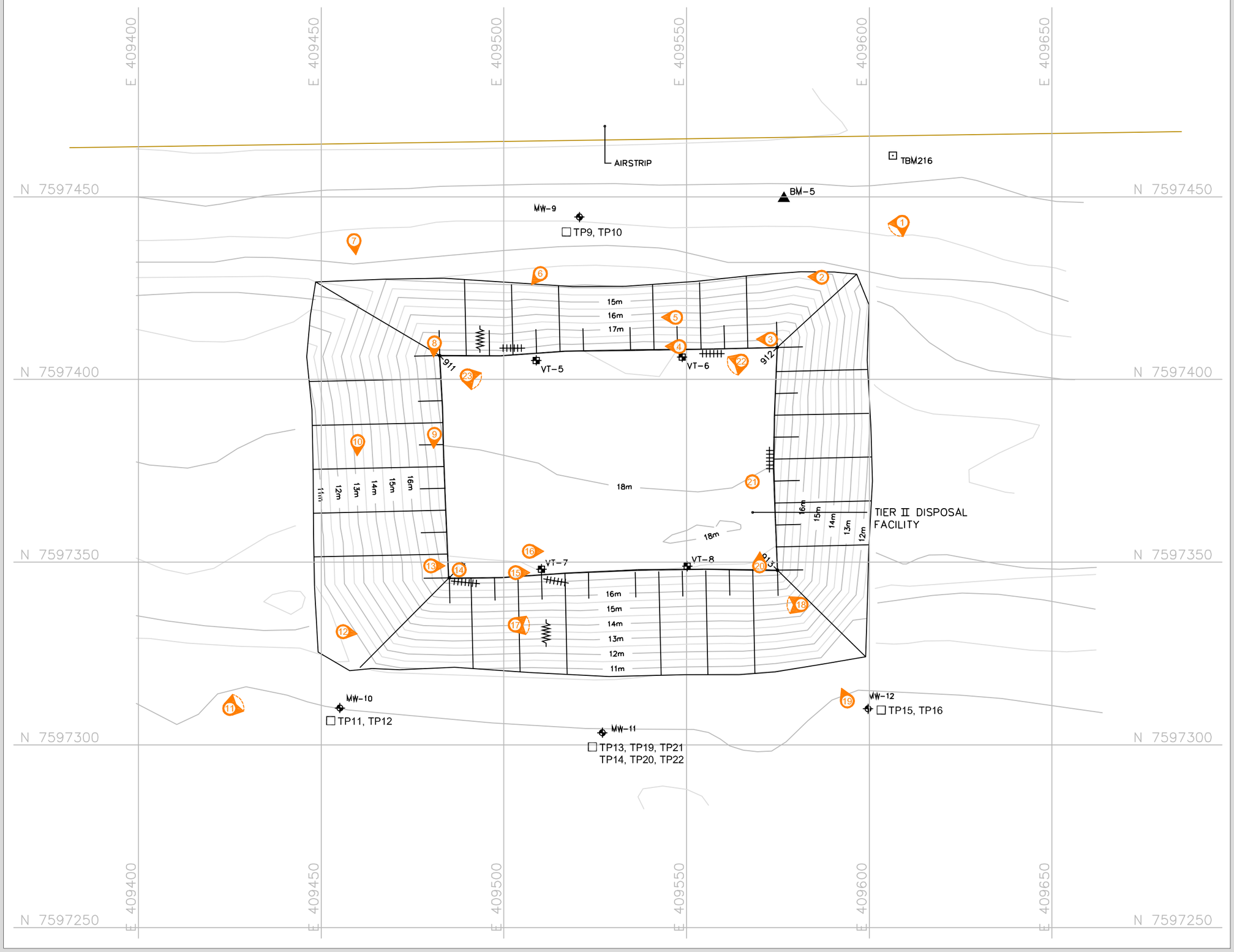
There are no obvious indications of problematic frost action or significant differential settlement; however, it must be stressed that the ability to detect such conditions through visual inspection is impeded by the extensive rutting and irregular final grade on the granular cap.

The condition of the side slopes and landfill cap appear consistent with the site photos available from the previous inspection in 2005, and show no evidence of problematic or degraded conditions. Minor to fairly significant (e.g., 5m x 1m x 0.4m) rutting and surface irregularities, which appears to be associated with equipment traffic and a poor final grading during construction, was noted at several locations (refer to Photographs 2, 3, 4, 6, 7, 14, 15, 18,20,21,23). None of the ruts or depressions appear to warrant remediation at this time as the granular cover is coarse and self-armoring. There is no evidence of recent degradation or conditions that would be expected to deteriorate in the short-term.

Damp, organic-rich soil was observed adjacent to the toe of the landfill at several locations (refer to Photographs 11, 12, 17, 18) where the landfill encroaches onto muskeg, specifically along the toe of the south slope of the landfill. There was no indication of seepage, slope instability or slope movement at any

of these locations. The moist soil conditions are most likely associated with recent precipitation and a high water table.

There is no as-built survey available for this landfill, and therefore it is not possible to compare the current surface contours with the original shaping of the landfill cap. While the overall performance of the landfill is considered acceptable, the noted ruts and minor depressions should continue to be monitored to confirm that they are not associated with problematic subsurface conditions.



Legend

- TBM216 — TEMPORARY BENCHMARK
- BM-5 — PERMANENT BENCHMARK
- MW-12 — MONITORING WELL LOCATION
- VT — VERTICAL THERMISTOR
- 911 — COORDINATE POINT
- TP10 — TEST PIT LOCATIONS - 2006
- 2 — PHOTOGRAPH LOCATION - 2007
- 10 — CLOSE-UP PHOTOGRAPH LOCATION - 2007
- SETTLEMENT (NTS)
- EROSION (NTS)
- PONDING
- STANDING WATER

Map Sources / Notes:
Source drawing from UMA: P3-RD06.dwg

N
W E
S

0 5 10 20 30 40 m

1 : 1000
UTM Zone 12N, NAD83

File Name:	70516_By1_F1_SoilDisposal(P3-RD06).dwg		
Reviewed by:	KAB, JAT	Prepared by:	MH
Date Issued:	December, 2007	Project Number:	70-516

Defence Construction Canada

2007 PIN-3 DEW Line Monitoring Program
PIN-3 Lady Franklin Point
Nunavut Territory

Tier II Soil Disposal Facility

Gartner Lee

Figure F-1
Version 1

Date Plotted: October 16, 2006 Path: N:\Projects\2007\70516\2007\Final\CAD\02-PIN-3\70516_By1_F1_SoilDisposal(P3-RD06).dwg

F.1.3 Soil Sampling

Soil samples were collected at the designated locations of MW-9, MW-10, MW-11 and MW-12. The sampling locations are shown on Figure F-1. At each location, wherever possible, two samples were collected at approximately 0.1m below ground and between 0.4-0.5m below ground. The photographs of each test pit for each location sampled are shown in Appendix F3.

GLL did not observe any staining or free product during the sampling event. There were no odours documented during the sampling event at the DCC Tier II Soil Facility.

The laboratory analyses detected low concentrations of TPH (C6-34) in the test pits from soil sample locations MW-11 and MW-12. The concentrations noted are not considered to be of significance. However these results should be evaluated in the context of the Landfill Monitoring Plan.

The analytical results and depths of samples are provided in Table F-1 and the laboratory certificate is provided in Appendix G.

Table F-1. PIN-3 Lady Franklin Point, Summary of 2007 Soil Analysis - Tier II Soil Disposal Facility

Sample Ident.	Sample Location	Depth (m)	Arsenic (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Cobalt (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Zinc (mg/kg)	Petroleum Hydrocarbons				PCB Total Aroclors (mg/kg)
												TPH (C6-34) (mg/kg)	C6-C10 (mg/kg)	C10-C16 (mg/kg)	C16-C34 (mg/kg)	
Upgradient Samples																
P3-MW-9-1	MW-9	0.1	1.3	<0.50	5.7	2.8	10	<30	<0.0050	<5.0	9	20	<10	<5	20	<0.010
P3-MW-9-2	MW-9	0.5	1.6	<0.50	5.8	3.1	14	<30	0.0254	5.2	16.4	31	<10	<5	31	<0.010
Downgradient Samples																
P3-MW-10-1	MW-10	0.1	0.9	<0.50	5.9	2.2	11.9	<30	0.0087	<5.0	7.2	29	<10	<5	29	<0.010
P3-MW-10-2	MW-10	0.5	1.1	<0.50	5.2	2.3	9.8	<30	<0.0050	<5.0	6.6	14	<10	<5	14	<0.010
P3-MW-11-1	MW-11	0.1	0.7	<0.50	4.6	2	4.9	<30	<0.0050	<5.0	5.4	54	<10	13	41	<0.010
P3-MW-11-2	MW-11	0.5	0.9	<0.50	4.7	2.3	7.4	<30	<0.0050	<5.0	7.1	0	<10	<5	<5	<0.010
P3-18-2*	MW-11	0.5	0.8	<0.50	4.6	<2.0	7	<30	<0.0050	<5.0	5	0	<10	<5	<5	<0.050
P3-MW-12-1	MW-12	0.1	1.6	<0.50	5.8	<2.0	21.6	<30	0.0398	<5.0	27.7	190	<10	<5	190	<0.010
P3-MW-12-2	MW-12	0.5	1.0	<0.50	4.3	2.1	6.4	<30	<0.0050	<5.0	6	0	<10	<5	<5	<0.010

***** *Denotes duplicate sample. (Further information located in Table 2 of main report)*
Note: mg/kg = ug/g

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F.1.4 Groundwater

Groundwater measurements and monitoring system condition records were documented for observation wells MW-9, MW-10, MW-11, and MW-12. These records are appended as attachments at the end of this section. Some inconsistencies appear in the well construction details between the 2004 and 2006 sampling event. Well heights in 2006 were measured to the top of pipe from the average ground elevation. As the ground is uneven, some discrepancies are realized. All well diameters are 5.08 cm (2 inches). The 2004 sampling event indicated a well diameter of 2.54 cm (1 inch) however the more detailed 2004 monitoring well installation report indicated a threaded screen of 5 cm thus confirming the 5.08 measurement taken in 2006.

Observation monitors MW-9 and MW-10 had insufficient volumes of water to permit groundwater sampling. Therefore, no groundwater samples were submitted to the laboratory for analyses. MW-9 appeared to be frozen at a depth of 1.55 m below surface. MW-10 was blocked very near to surface at 0.49 m below grade. The blocked portion of the borehole appeared to consist of filter sand.

Samples were collected from MW-11 and MW-12. Samples were collected at a maximum flow rate of 100 mL/min using a peristaltic pump and LDPE tubing. The groundwater samples were not filtered and not preserved as per the Terms of Reference and were analyzed for total concentration of inorganics, TPH (C6-C34) and PCBs. The results are presented in Table A-2 and the laboratory certificate is provided in Appendix G.

Table F-2. PIN-3 Lady Franklin Point, Summary of 2007 Groundwater Analysis - Tier II Soil Disposal Facilit

Sample Ident.	Location	Groundwater Elevation (masl)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Lead (mg/L)	Mercury (mg/L)	Nickel (mg/L)	Zinc (mg/L)	Petroleum Hydrocarbons				PCB Total Aroclors (mg/L)
												TPH (C6-34) (mg/L)	C6-C10 (mg/L)	C10-C16 (mg/L)	C16-C34 (mg/L)	
Upgradient Samples																
-	MW-9	-														
Downgradient Samples																
-	MW-10	-														
P3-MW-11	MW-11	9.280	<0.025	<0.00085	<0.050	<0.015	<0.050	<0.025	<0.000020	<0.050	<0.25	<0.25				<0.0010
P3-MW-18*	MW-11	9.280	<0.025	<0.00085	<0.050	<0.015	<0.050	<0.025	<0.000020	<0.050	<0.25	<0.25				<0.0010
P3-MW-12	MW-12	9.680	<0.0050	<0.00017	0.01	<0.0030	<0.010	<0.0050	<0.000020	0.014	<0.050	<0.25				<0.0010

***** *Denotes duplicate sample. (Further information located in Table 2 of main report)*
Note: mg/L = 1000 ug/L

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F.1.5 Thermal Monitoring

The manual readings taken from each thermistor from the DCC Tier II Soil Disposal Facility are provided in the Maintenance Records located in Appendix F5. The graphs for the 2007 data for these thermistors are shown in Graphs 5 through 8 and are located in Appendix F6.

All thermistor bulbs were operational during manual reading. However, the data logger did not read the 16th bulb on each thermistor string at the Tier II Soil Disposal Facility. This could be due to improper programming. It also appears that the 10th bulb on thermistor VT5 is not functioning properly.

The data from all thermistor data loggers were downloaded, and the data loggers were reset and had their batteries replaced. A thermistor maintenance report was completed and is located in Appendix F5. Data loggers have an anticipated memory capacity to January 2009. A full download of the thermistor data loggers should be completed the summer of 2008.

Appendix F Attachments

F1 Site Condition/Visual Inspection Records

F2 Geotechnical Inspection Photographic Records

F3 Monitoring Photographic Records

F4 Monitoring Well Development Records

F5 Thermistor Data Tables & Maintenance Records 2007

F6 Thermistor Graphs 2007

F7 Field Notes

Appendix F1

Site Condition/Visual Inspection Records

Visual Inspection Checklist
Inspection Report – Page 1 of 2

SITE NAME:	PIN-3 Lady Franklin Point
LANDFILL/AREA DESIGNATION:	DCC Tier II Soil Disposal Landfill
DATE OF INSPECTION:	August 22, 2007
DATE OF PREVIOUS INSPECTION:	August 17, 2006
INSPECTED BY:	James Theriault
REPORT PREPARED BY:	James Theriault
The preparer represents to the best of the preparer's knowledge, the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.	

Checklist Item	Present Yes/No	Location	Length	Width	Depth	Extent relative to Area extent of Landfill/ Area (%)	Description	Photographic Records	Additional Comments/ Preliminary Stability Assessment
Settlement	Yes	Multiple locations along crest, slopes and top cover	Var. 1 to 5 m	Var. 0.5 to 1.0 m	Var. 0.1 to 0.4m	Approx. 2 to 5%	Appears to be construction remnants – rutting and poor final grade	Photographs 2, 3, 4, 7, 14, 18, 22, 23	Poor final construction grade masks post-construction settlement
Erosion	Yes	See above					Rutting	See above	Self-armouring : acceptable
Frost Action	No								Masked by poor grading
Animal Burrows	No								
Vegetation	Sparse								
Staining	No								
Vegetation Stress	No								
Seepage Points	No								
Debris Exposed	No								
Presence/ Condition of Monitoring Instruments	Good	Refer to Plan Map							Sampled and monitored in 2007
Other Features of Note.	Yes	Refer to Plan Map					Additional Photos	Photos 1, 5, 6, 8 – 13, 15 – 17, 19 – 21	General photos for documentation, no features of note

Preliminary Stability Assessment

Feature	Severity Rating	Extent
Settlement	Acceptable	Numerous
Erosion	Acceptable	Isolated
Frost Action	Not observable	None
Animal Burrows	Not observable	None
Vegetation	Not observable	None
Staining	Not observable	None
Vegetation Stress	Not observable	None
Seepage Points	Not observable	None
Debris Exposed	Not observable	None
Presence/Condition – Monitoring Instruments	Not observable	None
Overall Landfill Performance	Acceptable	

Appendix F2

Geotechnical Inspection Photographic Records

Photograph 1. Tier II Landfill: Panoramic of Tier II viewed from about 25m NE of the NE corner. Whiteboard (61cm by 46cm) at toe and person standing on top of landfill for scale.↑

Photograph 2. Tier II Landfill: Looking west from NE corner along downslope north toe. Slope appears stable with no signs of cracking; however, inconsistent finished grade (undulations and vehicle ruts) makes it difficult to differentiante differential settlement from poor finish at the time of construction.↑

Photograph 3. Tier II Landfill: Looking west along crest from NE corner to VT-6. There is a 0.5m deep depression about 4m x 6m wide centred 4m NE of VT-6. Appears consistent with poor construction finish (i.e., not post construction settlement) but will need to be monitored.↑

Photograph 4. Tier II Landfill: Looking west along crest from VT-6 to VT-5. Large depression just NW of VT-5 approx. 0.7m deep. Feature appears consistent with poor construction finish. Should be monitored).↑

Photograph 5. Tier II Landfill: Looking west from mid-slope about 8m downslope of VT-6 looking to VT-5. Zone of depression noted downslope of VT-5.↑

Photograph 6. Tier II Landfill: Looking SW from toe of slope towards area of depression adjacent to VT-5 along the upper slope.↑

Photograph 7. Tier II Landfill: Looking S falong the western toe of the landfill from about 3m N of NW corner. Broad zones of depression are visible which are consistent with poor construction finish.↑

Photograph 8. Tier II Landfill: Looking S along the western crest of landfill from the NW corner. Whiteboard (61cm by 41cm) for scale. No features of note.↑

Photograph 9. Tier II Landfill: Looking South along the western crest from mid-way to the SW corner. No features of note.↑

Photograph 10. Tier II Landfill: Looking S along the western toe of slope to the SW corner of the landfill. No features of note. Slope appears stable with no indications of instability or slope movement.↑

Photograph 11. Tier II Landfill: Looking NE to SW corner of the landfill. MW-10 visible in the foreground.↑

Photograph 12. Tier II Landfill: Looking east along the downstream toe of the landfill from the SW corner. Slope abuts into organic layer. Slope has relativley gentle grade and appears stable.↑

Photograph 13. Tier II Landfill: Looking east along the top of slope to VT-7 from SW corner of the landfill. Note the deep rutting in foreground and irregular rutting and fill placement along crest. The granular fill is self armouring and not susceptible to erosion by surface runoff. ↑

Photograph 14. Tier II Landfill: Close-up of deep rut along the crest in the SW corner of the landfill. The feature is consistent with rutting due to vehicle traffic (i.e., not settlement) but show continue to be monitored.↑

Photograph 15. Tier II Landfill: Deep rut immediately south of VT-7. The depression appears unchanged since the time of the 2006 inspection but should continue to be monitored.↑

Photograph 16. Tier II Landfill: Looking east to VT-8 from crest adjacent to VT-7. No features of note.↑

Photograph 17. Tier II Landfill: Looking east from mid-slope of the southern slope of the landfill. Thermistor VT-8 visible along crest. Slope appears stable.↑

Photograph 18. Tier II Landfill: Panoramic looking WSW along south slope of the landfill from mid-slope of the SE sorner. Whiteboard is located slightly west of a shallow zone of depression. Slope appears stable with no indication of slope movement. The area(s) of depression are consistent with construction finish but should continue to be monitored for change.↑

Photograph 19. Tier II Landfill: East slope of landfill (Tier II) viewed from MW-12. No features of note.↑

Photograph 20. Tier II Landfill: Looking N along crest from the SE corner of the landfill. Slope appears stable with no signs of slope movement. Numerous vehicle tracks and ruts are present.↑

Photograph 21. Tier II Landfill: Looking N along the eastern crest of the landfill. Significant vehicle ruts and inconsistent construction finish in this area. Slope appears stable with no signs of movement.↑

Photograph 22. Tier II Landfill: Panoramic of the top of the landfill viewed from the NE corner. There are no obvious indications of problematic conditions (e.g., significant differential settlement or slope movement). The seemingly irregular construction finish makes it difficult to observe minor changes.↑

Photograph 23. Tier II Landfill: Panoramic view of top of Tier II landfill looking SE from near the NW corner. Note general undulation and inconsitent construction finish.↑

Appendix F3

Monitoring Photographic Records

Test Pits

Photograph 1. Test pit P3-MW-9 (Upgradient). Samples P3-MW-9-1 and P3-MW-9-2 collected.↑

Photograph 2. Test Pit P3-MW-10. Samples P3-MW-10-1 and P3-MW-10-2 collected.↑

Test Pits

Photograph 3. Test Pit P3-MW-11. Samples P3-MW-11-1, P3-MW-11-2, and P3 18-2 (Duplicate of P3 MW 11 2) collected.↑

Photograph 4. Test Pit P3-MW-12. Samples P3-MW-12-1 and P3-MW-12-2 collected.↑

Monitoring Wells

Photograph 1. Monitoring well MW-9 (Upgradient). No Sample collected.↑

Photograph 2. Monitoring well MW-10. No Sample collected. Refusal of sand at 117cm.↑

Monitoring Wells

Photograph 3. Monitoring well MW-11. Sample P3-MW-11 and P3-MW-18 (Duplicate) collected.↑

Photograph 4. Monitoring well MW-12. Sample P3-MW-12 collected.↑

Thermistors

Photograph 1. Vertical thermistor VT-5.↑

Photograph 2. Vertical thermistor VT-6.↑

Thermistors

Photograph 3. Vertical thermistor VT-7.↑

Photograph 4. Vertical thermistor VT-8.↑

Appendix F4

Monitoring Well Development Records

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Monitoring Well Observations (MW-09)

Development of Monitoring Wells (2007)			
Site Name:	PIN-3		
Date of Sampling Event:	21-Aug-07	Time:	13:50
Names of Samplers:	Ken Boldt		
Landfill Name:	Tier II Soil Disposal Facility		
Monitoring Well ID:	MW-9		
Sample Number:	No Sample		
Condition of Well:	Good		
Measured Data			
Well height above ground (cm)=	42		
Diameter of well (cm)=	5		
Depth of installation (cm)=	350	From ground surface	
Length screened section (cm)=	200		
Depth to top of screen (cm)=	50	From ground surface	
Depth to water surface (cm)=		Method:	Interface meter
Static water level (cm)=		From ground surface	
Depth to bottom (cm)=	199	Evidence of sludge or siltation:	no
Depth of water (cm)=			
Well volume of water (mL)=			
Free product thickness (mm)=	N/A	Method:	Interface meter
Purging: (Y/N)	N	Procedure/Equipment:	N/A
Volume Purged Water (L)=	0		
Decontamination required: (Y/N)	N	*Notes:*	
Number washes:	0		
Number rinses:	0		
pH=	-		
Conductivity (uS/cm)=	-		
Temperature (degC)=	-		

n/a=not applicable
TOP = Top Of Pipe

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Monitoring Well Observations (MW-10)

Development of Monitoring Wells (2007)			
Site Name:	PIN-3		
Date of Sampling Event:	21-Aug-07	Time:	14:20
Names of Samplers:	Ken Boldt		
Landfill Name:	Tier II Soil Disposal Facility		
Monitoring Well ID:	MW-10		
Sample Number:	No Sample		
Condition of Well:	Good at surface, filled with sand at 117 cm		
Measured Data			
Well height above ground (cm)=	65		
Diameter of well (cm)=	5		
Depth of installation (cm)=	350	From ground surface	
Length screened section (cm)=	200		
Depth to top of screen (cm)=	50	From ground surface	
Depth to water surface (cm)=		Method:	Interface meter
Static water level (cm)=		From ground surface	
Depth to bottom (cm)=	142.5	Evidence of sludge or siltation:	no
Depth of water (cm)=			
Well volume of water (mL)=			
Free product thickness (mm)=	N/A	Method:	Interface meter
Purging: (Y/N)	N	Procedure/Equipment:	N/A
Volume Purged Water (L)=	0		
Decontamination required: (Y/N)	N	*Notes:*	
Number washes:	0		
Number rinses:	0		
pH=	-		
Conductivity (uS/cm)=	-		
Temperature (degC)=	-		

n/a=not applicable
TOP = Top Of Pipe

Gartner Lee

Monitoring Well Observations (MW-11)

Development of Monitoring Wells (2007)			
Site Name:	PIN-3		
Date of Sampling Event:	21-Aug-07	Time:	14:45
Names of Samplers:	Ken Boldt		
Landfill Name:	Tier II Soil Disposal Facility		
Monitoring Well ID:	MW-11		
Sample Number:	P3-MW-11, P3-MW-18 (Duplicate)		
Condition of Well:	Good		
Measured Data			
Well height above ground (cm)=	41		
Diameter of well (cm)=	5		
Depth of installation (cm)=	350	From ground surface	
Length screened section (cm)=	200		
Depth to top of screen (cm)=	50	From ground surface	
Depth to water surface (cm)=	178	Method:	Interface meter
Static water level (cm)=	137	From ground surface	
Depth to bottom (cm)=	205	Evidence of sludge or siltation:	no
Depth of water (cm)=	27		
Well volume of water (mL)=	530.14		
Free product thickness (mm)=	N/A	Method:	Interface meter
Purging: (Y/N)	Y	Procedure/Equipment:	Peristaltic Pump, LDPE Tubing
Volume Purged Water (L)=	2		
Decontamination required: (Y/N)	Y	*Notes:*	
Number washes:	1		
Number rinses:	1		
pH=	7.5		
Conductivity (uS/cm)=	2300		
Temperature (degC)=	2.69		

n/a=not applicable
TOP = Top Of Pipe

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Monitoring Well Observations (MW-12)

Development of Monitoring Wells (2007)			
Site Name:	PIN-3		
Date of Sampling Event:	21-Aug-07	Time:	15:45
Names of Samplers:	Ken Boldt		
Landfill Name:	Tier II Soil Disposal Facility		
Monitoring Well ID:	MW-12		
Sample Number:	P3-MW-12		
Condition of Well:	Good		
Measured Data			
Well height above ground (cm)=	63		
Diameter of well (cm)=	5		
Depth of installation (cm)=	350	From ground surface	
Length screened section (cm)=	200		
Depth to top of screen (cm)=	50	From ground surface	
Depth to water surface (cm)=	191	Method:	Interface meter
Static water level (cm)=	128	From ground surface	
Depth to bottom (cm)=	206	Evidence of sludge or siltation:	no
Depth of water (cm)=	15		
Well volume of water (mL)=	294.52		
Free product thickness (mm)=	N/A	Method:	Interface meter
Purging: (Y/N)	Y	Procedure/Equipment:	Peristaltic Pump, LDPE Tubing
Volume Purged Water (L)=	2		
Decontamination required: (Y/N)	Y	*Notes:*	
Number washes:	1	Conductivity meter gave an error during purging through the flow through cell. After purging, the meter was tested with distilled water and the appropriate levels were displayed. This indicates that the likely cause for the error is that the conductivity for the well water was outside the range of the meter.	
Number rinses:	1		
pH=	7.28		
Conductivity (uS/cm)=	Error		
Temperature (degC)=	2.5		

n/a=not applicable
TOP = Top Of Pipe

Appendix F5

Thermistor Data Tables & Maintenance Records 2007

Thermal Monitoring
Ground Temperature Annual Maintenance Report

Contarctor Name:	**Gartner Lee Limited**	Inspection Date:	**22-Aug-07**
Prepared By:	**Ken Boldt**		

Thermistor Information

Site Name:	**PIN-3**		Thermistor Location	**Tier II Disposal Facility**			
Thermistor Number:	**VT5**		Inclination	**Vertical**			
Install Date:	**9-Sep-03**		First Date Event	**18-Aug-06**	Last Date Event		**22-Aug-07**
Coordinates and Elevation	N	**9430.72**	E	**10848.42**	Elev		**18.5**
Length of Cable (m)	**11.5**	Cable Lead Above Ground (m)	**0**	Nodal Points	**16**		
Datalogger Serial #	**108066**			Cable Serial Number			**1611**

Code PIN-3VT5

Thermistor Inspection

	Good	Needs Maintenance	
Casing	☑	☐	
Cover	☑	☐	
Data Logger	☑	☐	
Cable	☑	☐	
Beads	☐	☑	**10 and 16 not working**
Battery Installation Date	**22-Aug-07**		
Battery Levels	Main **11.34 V**	Aux	**12.65 V**

Manual Ground Temperature Readings

Bead	ohms	Temp. (ºC)
1	**10230**	**9.5**
2	**10110**	**9.7**
3	**9890**	**10.1**
4	**11660**	**6.8**
5	**12250**	**5.8**
6	**13310**	**4.1**
7	**14930**	**1.7**
8	**17470**	**-1.3**

Bead	ohms	Temp. (ºC)
9	**18130**	**-2.0**
10	**0.0000022**	**52.6**
11	**19610**	**-3.4**
12	**20200**	**-4.1**
13	**20830**	**-4.6**
14	**21480**	**-5.2**
15	**22370**	**-6.0**
16	**23320**	**-6.7**

Observations and Proposed Maintenance

Thermal Monitoring
Ground Temperature Annual Maintenance Report

Contarctor Name:	**Gartner Lee Limited**	Inspection Date:	**22-Aug-07**
Prepared By:	**Ken Boldt**		

Thermistor Information

Site Name:	**PIN-3**		Thermistor Location		**Tier II Disposal Facility**		
Thermistor Number:	**VT6**		Inclination		**Vertical**		
Install Date:	**8-Sep-03**		First Date Event		**18-Aug-06**	Last Date Event	**22-Aug-07**
Coordinates and Elevation		N	**9431.74**	E	**10888.36**	Elev	**18.5**
Length of Cable (m)	**11.5**		Cable Lead Above Ground (m)	**4.5**	Nodal Points	**16**	
Datalogger Serial #	**111096**				Cable Serial Number		**1612**

Code PIN-3VT6

Thermistor Inspection

	Good	Needs Maintenance
Casing	☑	☐
Cover	☑	☐
Data Logger	☑	☐
Cable	☑	☐
Beads	☐	☑ **Bead 16 not responding to data logger**

Battery Installation Date **22-Aug-07**

Battery Levels Main **11.34 V** Aux **12.65 V**

Manual Ground Temperature Readings

Bead	ohms	Temp. (ºC)
1	**10120**	**9.7**
2	**10300**	**9.4**
3	**9790**	**10.4**
4	**11230**	**7.5**
5	**12220**	**5.8**
6	**13310**	**3.9**
7	**15220**	**1.4**
8	**17410**	**-1.2**

Bead	ohms	Temp. (ºC)
9	**17990**	**-1.8**
10	**18670**	**-2.5**
11	**19420**	**-3.3**
12	**20200**	**-4.0**
13	**20840**	**-4.6**
14	**21420**	**-5.2**
15	**22450**	**-6.0**
16	**23170**	**-6.7**

Observations and Proposed Maintenance

Thermal Monitoring
Ground Temperature Annual Maintenance Report

Contarctor Name:	**Gartner Lee Limited**	Inspection Date:	**22-Aug-07**
Prepared By:	**Ken Boldt**		

Thermistor Information

Site Name:	**PIN-3**		Thermistor Location		**Tier II Disposal Facility**		
Thermistor Number:	**VT7**		Inclination		**Vertical**		
Install Date:	**10-Sep-03**		First Date Event		**18-Aug-06**	Last Date Event	**22-Aug-07**
Coordinates and Elevation		N	**9373.65**	E	**10849.85**	Elev	**17.4**
Length of Cable (m)	**10.5**		Cable Lead Above Ground (m)	**0**	Nodal Points	**16**	
Datalogger Serial #	**111099**				Cable Serial Number		**1613**

Code PIN-3VT7

Thermistor Inspection

	Good	Needs Maintenance	
Casing	☑	☐	
Cover	☑	☐	
Data Logger	☑	☐	
Cable	☑	☐	
Beads	☐	☑	**16 not responding to data logger**
Battery Installation Date	**22-Aug-07**		
Battery Levels	Main **11.34 V**	Aux	**13.26 V**

Manual Ground Temperature Readings

Bead	ohms	Temp. (ºC)
1	**9850**	**10.2**
2	**10580**	**8.8**
3	**11880**	**6.4**
4	**12820**	**4.8**
5	**14020**	**3.0**
6	**16460**	**-0.1**
7	**17310**	**-1.1**
8	**17930**	**-1.8**

Bead	ohms	Temp. (ºC)
9	**18730**	**-2.6**
10	**19520**	**-3.4**
11	**20220**	**-4.0**
12	**20910**	**-4.7**
13	**21490**	**-5.2**
14	**22020**	**-5.7**
15	**22450**	**-6.0**
16	**22610**	**-6.3**

Observations and Proposed Maintenance

Thermal Monitoring
Ground Temperature Annual Maintenance Report

Contarctor Name:	**Gartner Lee Limited**	Inspection Date:	**22-Aug-07**
Prepared By:	**Ken Boldt**		

Thermistor Information

Site Name:	**PIN-3**		Thermistor Location		**Tier II Disposal Facility**		
Thermistor Number:	**VT8**		Inclination		**Vertical**		
Install Date:	**9-Sep-03**		First Date Event		**18-Aug-06**	Last Date Event	**22-Aug-07**
Coordinates and Elevation		N	**9374.48**	E	**10889.74**	Elev	**17.4**
Length of Cable (m)	**10.5**	Cable Lead Above Ground (m)	**3.5**	Nodal Points	**16**		
Datalogger Serial #	**111091**			Cable Serial Number			**1614**

Code PIN-3VT8

Thermistor Inspection

	Good	Needs Maintenance
Casing	☑	☐
Cover	☑	☐
Data Logger	☑	☐
Cable	☑	☐
Beads	☐	☑ **16 not responding to data logger**

Battery Installation Date **22-Aug-07**

Battery Levels Main **11.34 V** Aux **13.02 V**

Manual Ground Temperature Readings

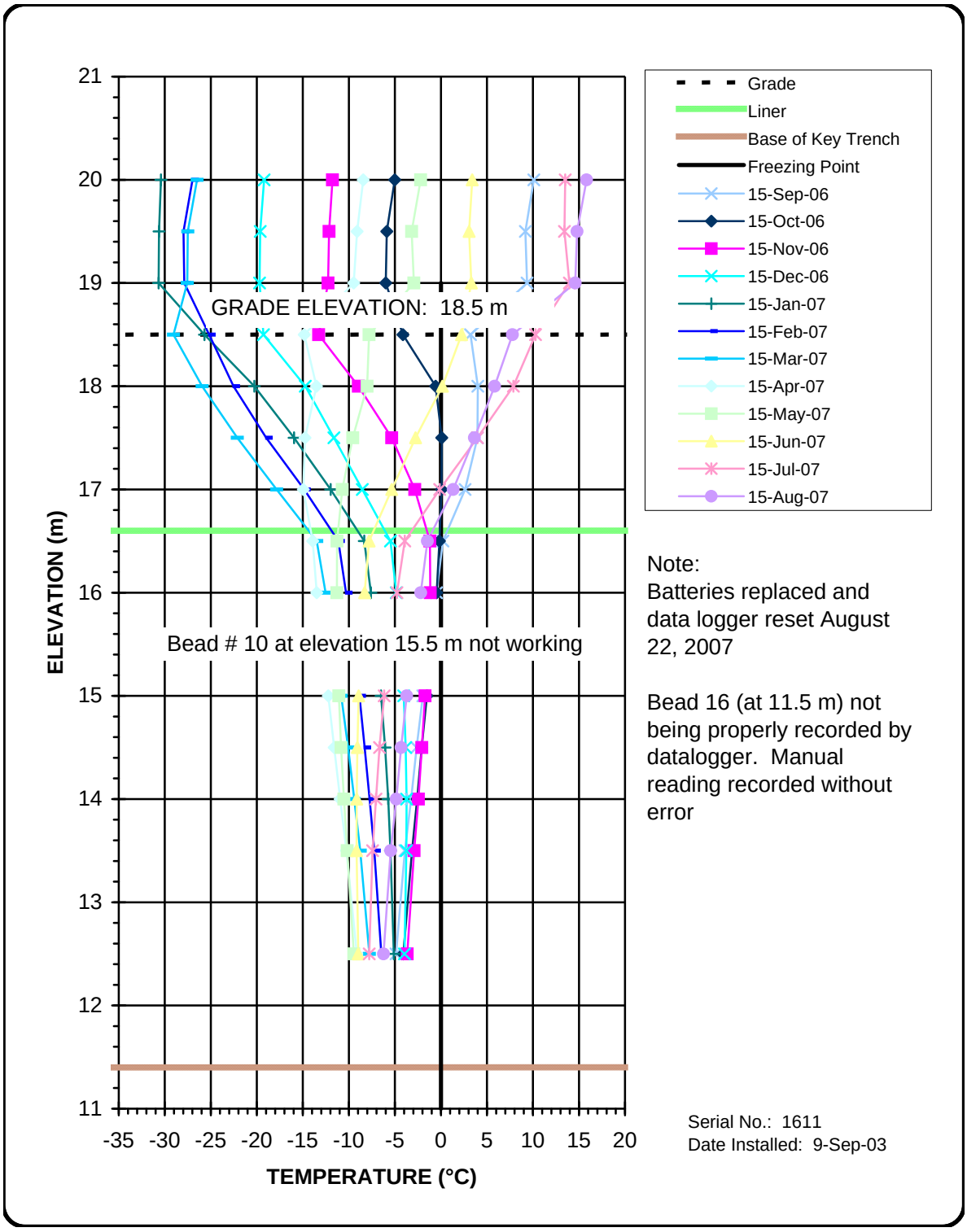
Bead	ohms	Temp. (ºC)
1	**9840**	**10.2**
2	**10680**	**8.5**
3	**11780**	**6.5**
4	**12620**	**5.0**
5	**14030**	**3.0**
6	**16510**	**-0.2**
7	**17470**	**-1.3**
8	**18130**	**-2.0**

Bead	ohms	Temp. (ºC)
9	**18860**	**-2.7**
10	**19610**	**-3.5**
11	**20360**	**-4.2**
12	**21160**	**-4.9**
13	**21780**	**-5.4**
14	**22230**	**-5.9**
15	**22660**	**-6.2**
16	**23030**	**-6.5**

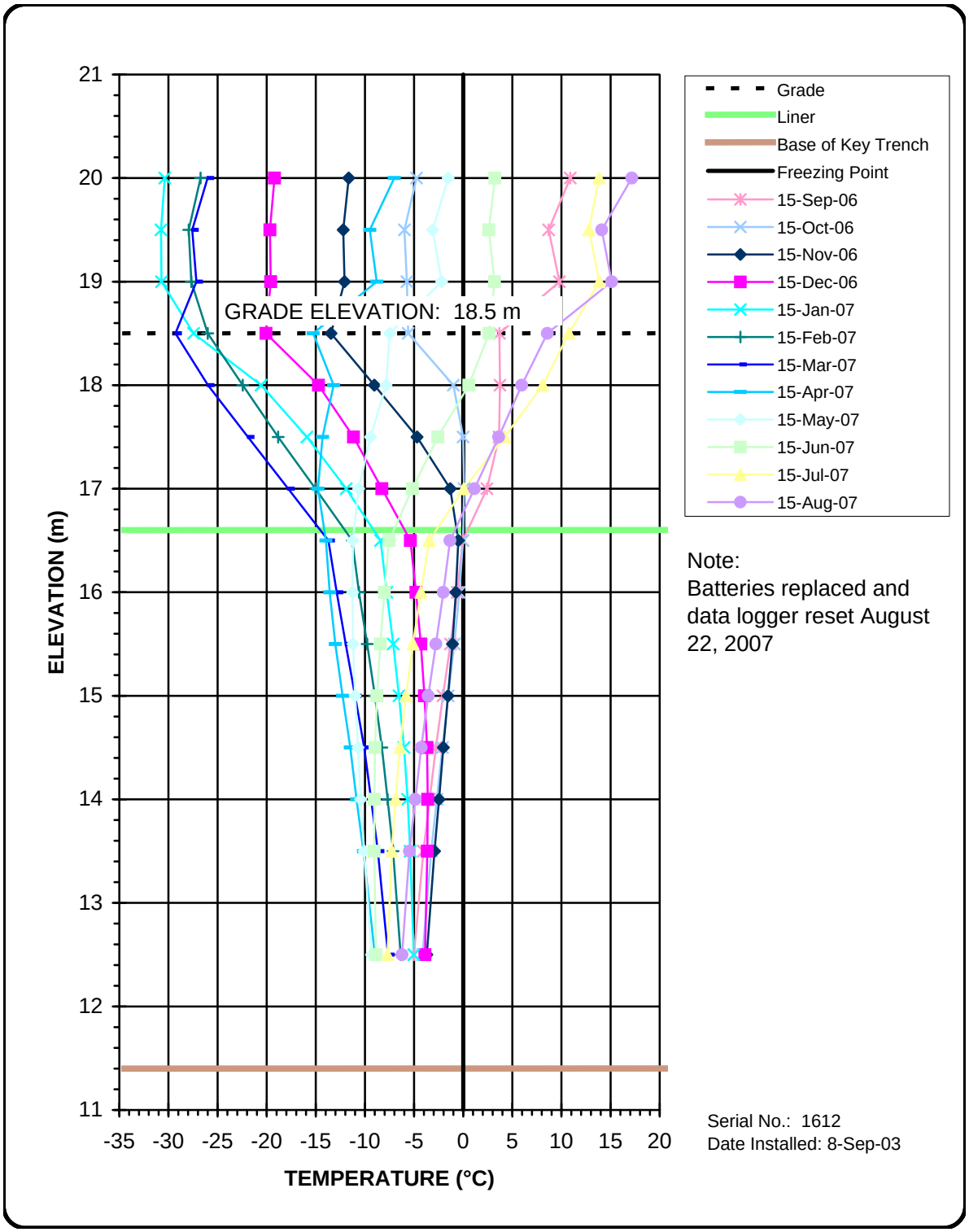
Observations and Proposed Maintenance

Appendix F6

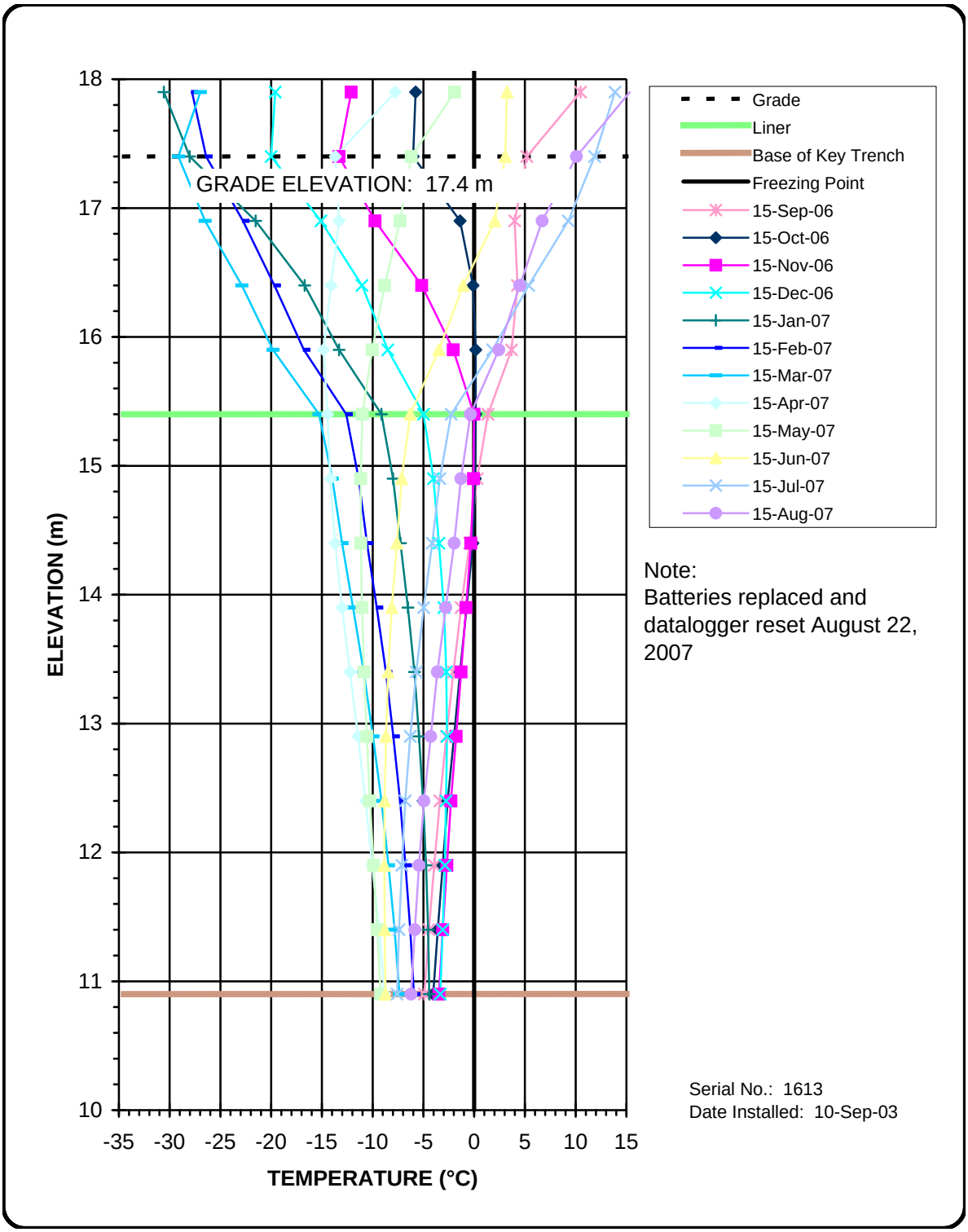
Thermistor Graphs 2007



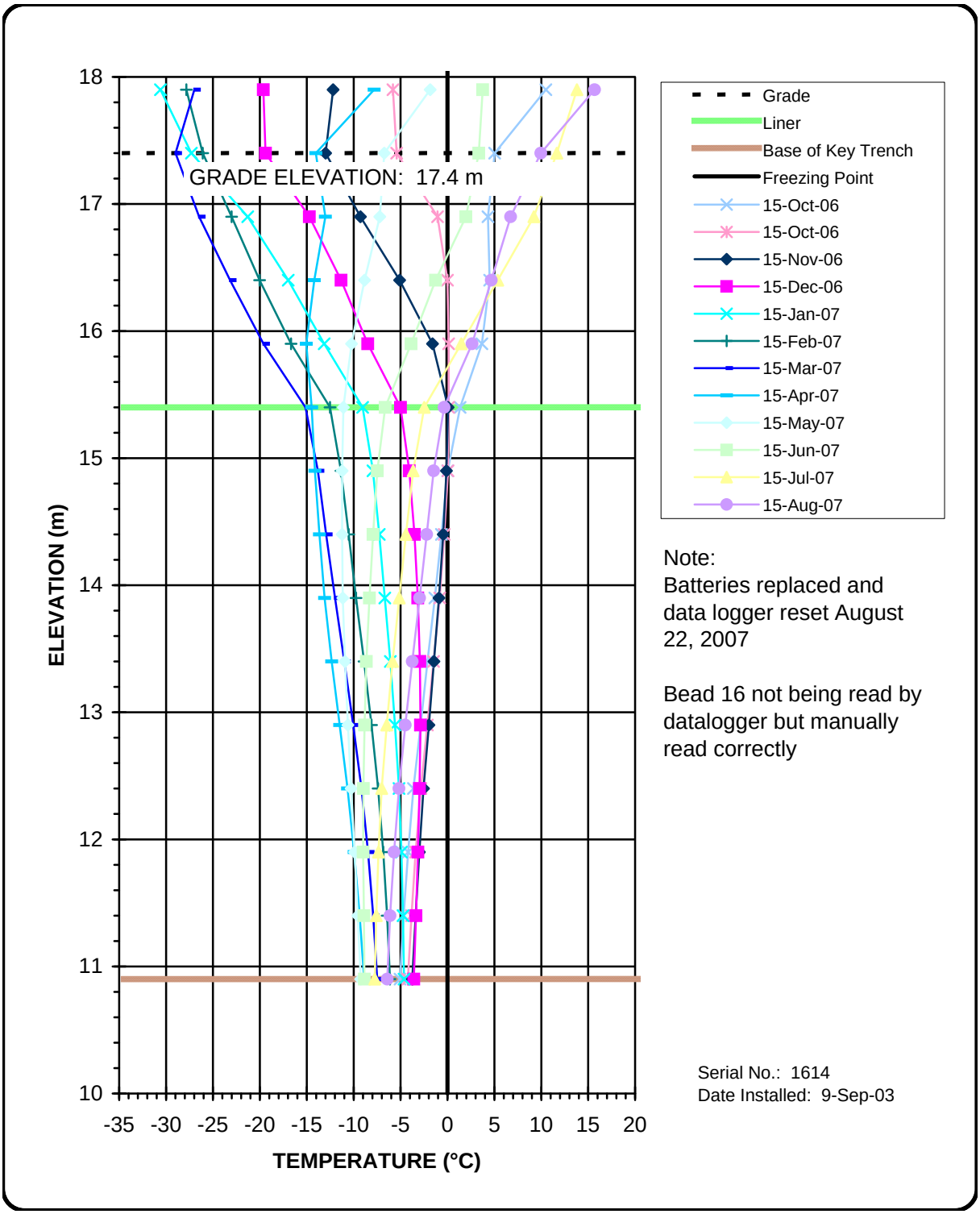
Graph 5
Ground Temperature Profile
Tier II Disposal Facility
Vertical GTC VT-5



Graph 6
Ground Temperature Profile
Tier II Disposal Facility
Vertical GTC VT-6



Graph 7
Ground Temperature Profile
Tier II Disposal Facility
Vertical GTC VT-7



Graph 8
Ground Temperature Profile
Tier II Disposal Facility
Vertical GTC VT-8

Appendix F7

Field Notes

Aug 21/2007 PIN-3

103 Looking N along east side of Western NLF 409563 7598717
- soil sample being collected in background

104, 105 View of W NLF from 408562 7598718 (SE corner)

At night
- computer work until 10:45 pm

Cloudy 4°C

Aug 22

TIER II Landfill 8am

101 - 002

106, 107, 108 Panoramic of Tier II from NE corner (25m NE) 409609 7597443

(4) 109 Looking west from NE corner along d/s north toe 409587 7597428
- slope appears stable, good shallow geometry but undulation and poor finishing grade make it difficult to differentiate differential settlement from poor finish at time of construction
Sign is 3m E of VT-6 along toe

(5) 110 Looking west along crest from NE corner to VT-6 409573 7597411
→ there is a 0.5m deep depression about 4m x 6m wide centred 4m NE of VT-6 (4m down slope)
→ likely poor construction finish
≈ 4m x 6m x .5m +/-

PIN-3 70516

Running #

(6) 111 Looking west along crest from VT-6 to VT-5
409548 7597409
→ large depression just NW of VT-5
± 0.7m deep
→ likely pre construction finish

Photo 7
112 Mid-slope d/s of VT-6 looking to VT-5 and zone of depression
409547 7597417

Photo 8 Look SW ~~from~~ to area of depression along upper slope 10m west of VT-5
→ standing at toe 4m east of VT-5
409510 7597429

9 Looking S from 8m NW of NW corner 409459 7597438
- broad zone of depression consistent w pre construction finish

10 Looking S from NW corner along crest
409481 7597410

Evening data entry until 10:30pm (15 hrs ++)

Aug 22

11 Looking South from crest mid-way to SW corner 409481 7597385

12 Looking S from toe to SW toe. Photo mid-way to SW corner
409460 7597383

13, 14, 15 Looking NE to SW corner d/s toe from ≈ 30m SW of d/s toe
409425 7597310

16 Looking east from SW toe along toe 409456 7597331

17 Looking east to VT-7 from SW crest
- note rutting (deep) in foreground and irregular rutting and fill placement along crest 409480 7597349

18 Close-up of deep rut in corner SW

19 Close-up of deep rutting adjacent to VT-7

PIN-3 Aug 22/2007

20 Looking east to VT-8 from crest adjacent to VT-7 409507 7597353

21,22 Looking east from mid-slope d/s of VT-7 along south slope 409507 7597341

23,24 Panoramic looking WSW along south slope from mid-slope SE corner 409517 7597346

25 East slope of landfill (Tier II) viewed from MW-12 409594 7597312

26 Looking N along crest from SE corner 409570 7597349
- poor finish, numerous vehicle tracks and ruts, no sign of instability

27 Looking N along eastern crest, mid-point to the NE corner, poor finish, no sign of movement 409568 7597372

70517

28,29,30,31 4 shot panoramic looking from NE corner scanning L to R (S to W) 409565 7597405
- top is irregular and inconsistent with monitoring via visual inspection

32,33,34 3 shot panoramic of top of Tier II standing near NW corner scanning L to R (E to S) 409490 7597401

1:20 pm NWS LANDFIL
- quick inspection of perimeter on ATV → no stability problems
- seepage/ponding at same locations as last year

35,36 Panoramic looking NW from 30 m SE of SE corner east lobe 408088 7597956

37 Looking N along east side of East Lobe of NWS 408063 7597964

Aug 21, 07

MW-7

Well in good condition. Only 3cm of water in well. Very high pH (>12.). Zero noticeable recharge after purging. No sample collected at this time

Picture 007 of well MW-7

Soil sampling

P3-MW-7-1 @ 0-10 cm

P3-MW-7-2 @ 40-50cm

Picture 008 of test pit.

Reached Bedrock @ 40cm depth

MW-8

Well in good condition

Sample collected P3-MW-8

4x 500 mL amber glass

1x 250 mL plastic

2x VOC vials

Picture 010 of MW-8

Soil Sampling

P3-MW-8-1 @ 0-10cm

P3-MW-8-2 @ 40-50cm

Picture **009** of test pit

Aug 21, 07

2:00PM

MW-9

Well in good condition

No water to take sample

Picture 011 of MW-9

Soil Sampling

P3-MW-9-1 @ 0-10cm

P3-MW-9-2 @ 40-50cm

Picture 012 of test pit

MW-10

Well in good condition above ground surface however at 117cm the well had a refusal of filter sand.

No water to sample

Picture **014** of MW-10

Soil Sampling

P3-MW-10-1 @ 0-10cm

P3-MW-10-2 @ 40-50cm

Picture **013** of test pit

Aug 21, 07

MW-11

Well in good condition

Sample collected

P3-MW-11

P3-MW-18 Duplicate

4 x 1000 mL amber glass

8 x 500 mL amber glass

4 x VOC Vials

3 x 250 mL plastic

1 x 250 mL amber glass

Picture 015 of MW-11

Soil Sampling

P3-MW-11-1 @ 0-10 cm

P3-MW-11-2 @ 40-50 cm

P3-18-2 (Duplicate of 11-2) @ 40-50 cm

Picture 016 of test pit

MW-12

Well in good condition

Sample Collected P3-MW-12

4 x 500 mL amber glass

2 x VOC vials

1 x 250 mL plastic

Picture 017 of MW-12

Aug 21. 07

Soil Sampling

P3-MW-12-1 @ 0-10 cm

P3-MW-12-2 @ 40-50 cm

Picture 018 of test pit

5:50PM North Land Ltd.

P3-16-1 @ 0-10 cm

P3-16-2 @ 30-40 cm

The depth sample was taken at a shallower depth due to extremely rocky terrain

Picture 019 of test pit

UTM W 0408638

12 7598732

P3-15-1 @ 0-10 cm

P3-15-2 @ 10-20 cm

Bed rock reached @ 20 cm

Picture 020 of test pit

UTM W 0408597

12 7598739

Aug 22, 07

Tier II

VT-6

Thermister in good condition

Picture 042 of VT-6

VT-5

Thermister in good condition

Picture 043 of VT-5

VT-7

Good condition

Picture 044 of VT-7

VT-8

Good condition

Picture 045 of VT-8

Main Landfill

VT-3

Good condition

Picture 046 of VT-3

VT-4

Good condition

Picture 047 of VT-4

Aug 22, 07

VT-2

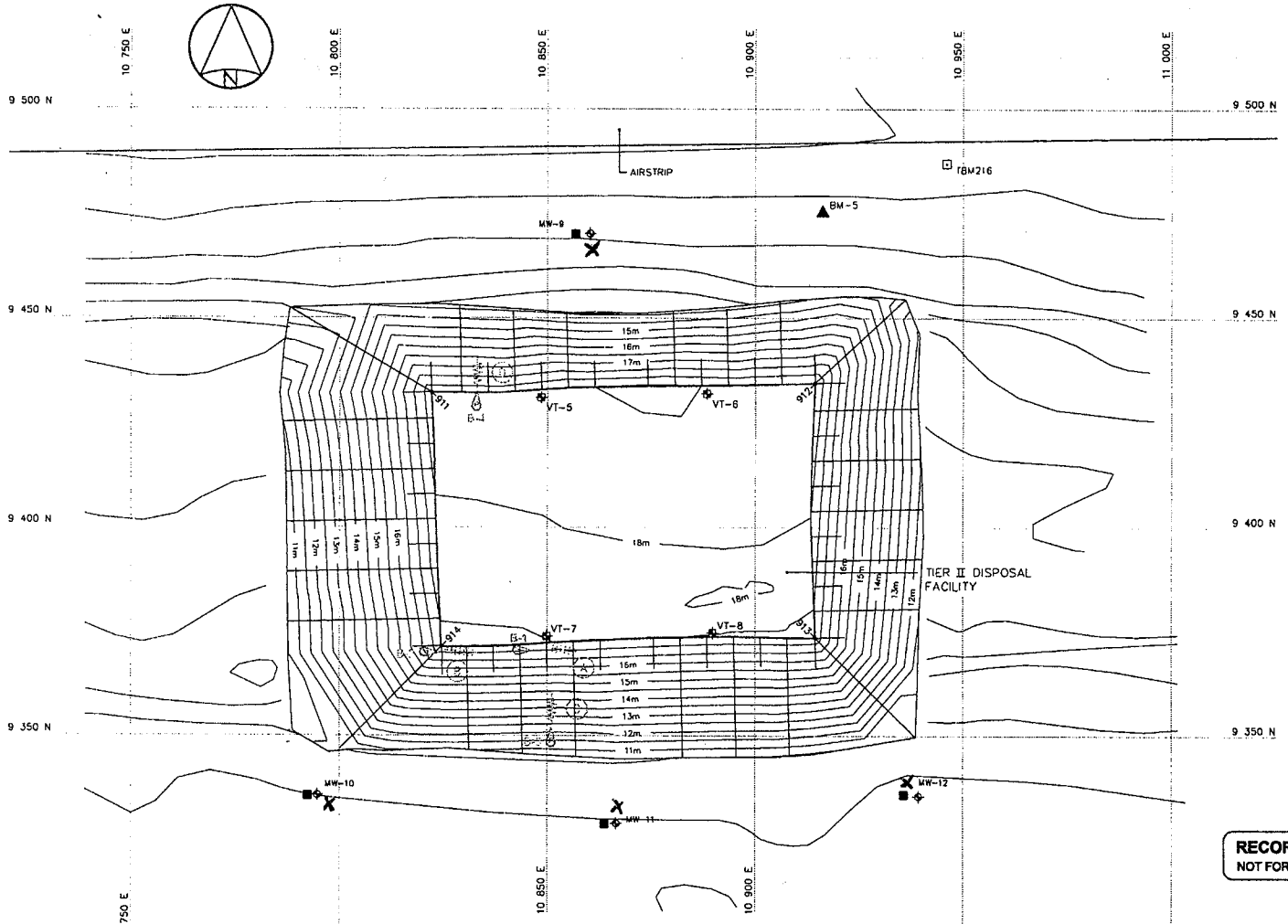
Good condition

Picture 048 of VT-2

VT-1

Good condition

Picture 049 of VT-1



LEGEND:

- TBM216 — TEMPORARY BENCHMARK
- BM-5 — PERMANENT BENCHMARK
- MW-12 — MONITORING WELL LOCATION
- VT — VERTICAL THERMISTOR
- 911 — COORDINATE POINT
- MONITORING SOIL SAMPLE LOCATION
- PHOTOGRAPH REFERENCE
- SETTLEMENT
- EROSION
- PONDING
- (A) — OBSERVATION OF CHECKLIST ITEM

COORDINATE POINTS (AS-BUILT) FINAL LANDFILL SURFACE			
NO.	NORTHING	EASTING	ELEV.
911	9 432.2	10 822.0	18.34
912	9 434.4	10 914.4	18.49
913	9 373.5	10 914.5	17.33
914	9 371.3	10 824.5	17.34

MONITORING WELLS			
NO.	NORTHING	EASTING	ELEV.
MW-9	9 470.139	10 860.245	15.26
MW-10	9 335.781	10 794.677	10.88
MW-11	9 329.010	10 866.509	10.65
MW-12	9 335.553	10 939.239	10.96

THERMISTORS			
NO.	NORTHING	EASTING	ELEV.
VT-5	9 430.905	10 848.417	18.62
VT-6	9 431.839	10 888.360	18.59
VT-7	9 373.743	10 849.853	17.50
VT-8	9 374.578	10 889.744	17.52

BENCHMARKS				
NO.	COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
TBM216	9 486.951	10 946.044	15.334	SPIKE
BM-5	9 475.214	10 916.196	15.430	25mm DIA. STEEL PIPE

RECORD DRAWING
NOT FOR CONSTRUCTION

0 10 20 30m
10 5 1:1000

UMA

DEW LINE CLEAN UP
LANDFILL MONITORING PLAN

PIN-3 - LADY FRANKLIN POINT

DCC TIER II SOIL DISPOSAL FACILITY

FIGURE PIN-3.6

DGS NAME: P3-#0017.DWG DJ - 05/11/08

Monitoring Well Sampling Record

Site Name:	PIN-3		
Date of Sampling Event:	21-Aug-07	Time:	1:50 PM
Names of Samplers:	Ken Boldt		
Landfill Name:	DCC Tier II		
Monitoring Well ID:	MW-9		
Sample Number:	No sample		
Condition of Well:	Good		
Measured Data			
Well pipe height above ground (cm)=	42		
Diameter of well (cm)=	5.08		
Depth of well installation (cm)= (from ground surface)			
Length screened section (cm)=			
Depth to top of screen (cm)= (from ground surface)			
Depth to water surface (cm)= (from top of pipe)	—	Measurement method: (meter, tape, etc)	
Static water level (cm)= (below ground surface)	—		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	194	Evidence of sludge or siltation:	No
Thickness of water column (cm)=	–		
Static volume of water in well (mL)=	–		
Free product thickness (mm)=	N/A	Measurement method: (meter, paste, etc)	
Purging: (Y/N)	N	Purging/Sampling Equipment:	
Volume Purged Water=	—		
Decontamination required: (Y/N)	N		
Number washes:	–		
Number rinses:	–		
Final pH=	–		
Final Conductivity (uS/cm)=	–		
Final Temperature (degC)=	–		

Monitoring Well Sampling Record

Site Name:	PIN-3		
Date of Sampling Event:	21-Aug-07	Time:	2:20 PM
Names of Samplers:	Ken Boldt		
Landfill Name:	DCC Tier II		
Monitoring Well ID:	MW-10		
Sample Number:	–		
Condition of Well:	Good at surface, Filled with filter sand at 117cm		
Measured Data			
Well pipe height above ground (cm)=	65		
Diameter of well (cm)=	5.08		
Depth of well installation (cm)= (from ground surface)	460		
Length screened section (cm)=	299		
Depth to top of screen (cm)= (from ground surface)	50		
Depth to water surface (cm)= (from top of pipe)	–	Measurement method: (meter, tape, etc)	Interface Meter
Static water level (cm)= (below ground surface)	–		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	117 cm	Evidence of sludge or siltation:	sand refusal
Thickness of water column (cm)=	–		
Static volume of water in well (mL)=	–		
Free product thickness (mm)=	N/A	Measurement method: (meter, paste, etc)	–
Purging: (Y/N)	N	Purging/Sampling Equipment:	–
Volume Purged Water=	–		
Decontamination required: (Y/N)	N		
Number washes:	–		
Number rinses:	–		
Final pH=	–		
Final Conductivity (uS/cm)=	–		
Final Temperature (degC)=	–		

Monitoring Well Sampling Record

Site Name:	PIN-3		
Date of Sampling Event:	21-Aug-07	Time:	2:45
Names of Samplers:	Ken Boldt		
Landfill Name:	DCC Tier II		
Monitoring Well ID:	MW-11		
Sample Number:	P3-MW-11,	P3-MW-18 (Duplicate)	
Condition of Well:	Good		
Measured Data			
Well pipe height above ground (cm)=	41		
Diameter of well (cm)=	5.08		
Depth of well installation (cm)= (from ground surface)	483		
Length screened section (cm)=	300		
Depth to top of screen (cm)= (from ground surface)	74		
Depth to water surface (cm)= (from top of pipe)	178	Measurement method: (meter, tape, etc)	Interface Meter
Static water level (cm)= (below ground surface)	137		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	205	Evidence of sludge or siltation:	no
Thickness of water column (cm)=			
Static volume of water in well (mL)=			
Free product thickness (mm)=	n/a	Measurement method: (meter, paste, etc)	Interface Meter
Purging: (Y/N)	Y	Purging/Sampling Equipment:	Peristaltic Pump
Volume Purged Water=	2.0 L		LDPE tubing
Decontamination required: (Y/N)	Y		
Number washes:	1		
Number rinses:	1		
Final pH=	7.50		
Final Conductivity (uS/cm)=	2300		
Final Temperature (degC)=	2.6		

Monitoring Well Sampling Record

Site Name:	PIN-3		
Date of Sampling Event:	21-Aug-07	Time:	3:45 PM
Names of Samplers:	Ken Boldt		
Landfill Name:	DCC Tier II		
Monitoring Well ID:	MW-12		
Sample Number:	P3-MW-12		
Condition of Well:	Good		
Measured Data			
Well pipe height above ground (cm)=	63		
Diameter of well (cm)=	5.08		
Depth of well installation (cm)= (from ground surface)	470		
Length screened section (cm)=	300		
Depth to top of screen (cm)= (from ground surface)	56		
			Interface Meter
Depth to water surface (cm)= (from top of pipe)	191	Measurement method: (meter, tape, etc)	~~Installation M~~
Static water level (cm)= (below ground surface)	128		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	206	Evidence of sludge or siltation:	No
Thickness of water column (cm)=			
Static volume of water in well (mL)=			
Free product thickness (mm)=	N/A	Measurement method: (meter, paste, etc)	Interface Meter
Purging: (Y/N)	Y	Purging/Sampling Equipment:	Peristaltic Pump
Volume Purged Water=	2		LDPE tubing
Decontamination required: (Y/N)	Y		
Number washes:	1		
Number rinses:	1		
Final pH=	7.28		
Final Conductivity (uS/cm)=	Error		
Final Temperature (degC)=	2.5		

Checked instrument with cal solution. Still working ∴ well water must be out of range for this parameter

Thermal Monitoring

Ground Temperature Annual Maintenance Report

Contractor Name: GLL	Inspection Date: 22-Aug-07
Prepared By: Ken Boldt	

Thermistor Information

Site Name: **PIN-3**	Thermistor Location: **Tier II Disposal Facility**	
Thermistor Number: **VT5**	Inclination: **Vertical**	
Install Date: **09-Sep-03**	First Date Event: **23-Aug-05**	Last Date Event: **16-Aug-06**
Coordinates and Elevation N: **9430.72**	E: **10848.42**	Elev: **18.5**
Length of Cable (m): **11.5**	Cable Lead Above Ground (m): **0**	Nodal Points: **16**
Datalogger Serial #: **108066**	Cable Serial Number: **1611**	

Code PIN-3VT5

Thermistor Inspection

	Good	Needs Maintenance	
Casing	☑	☐	
Cover	☑	☐	
Data Logger	☑	☐	
Cable	☑	☐	
Beads	☐	☒	10 and 16 not working
Battery Installation Date			
Battery Levels	Main 100% 11.34V	Aux 90% 12.65V	

Manual Ground Bead Temperature Readings

Bead	Ohms	Temp. (°C)
1	10.23	
2	10.11	
3	9.89	
4	11.66	
5	12.25	
6	13.31	
7	14.93	
8	17.47	

Bead	Ohms	Temp. (°C)
9	18.13	
10	0.0022	
11	19.61	
12	20.20	
13	20.83	
14	21.48	
15	22.37	
16	23.32	

Observations and Proposed Maintenance

Thermal Monitoring

Ground Temperature Annual Maintenance Report

Contractor Name: GLL	Inspection Date: Aug 22 - 07
Prepared By: Ken Boldt	

Thermistor Information

Site Name:	**PIN-3**	Thermistor Location:	**Tier II Disposal Facility**		
Thermistor Number:	**VT6**	Inclination:	**Vertical**		
Install Date:	**08-Sep-03**	First Date Event:	**23-Aug-05**	Last Date Event:	**16-Aug-06**
Coordinates and Elevation	N: **9431.74**	E: **10888.36**		Elev:	**18.5**
Length of Cable (m):	**11.5**	Cable Lead Above Ground (m):	**4.5**	Nodal Points:	**16**
Datalogger Serial #:	**111096**	Cable Serial Number:	**1612**		

Code PIN-3VT6

Thermistor Inspection

	Good	Needs Maintenance	
Casing	☑	☐	
Cover	☑	☐	
Data Logger	☑	☐	
Cable	☑	☐	
Beads	☐	☒	Bead 16 not responding
Battery Installation Date			
Battery Levels	Main 100% 11.34V	Aux 90% 12.65 V	

Manual Ground Bead Temperature Readings

Bead	Ohms	Temp. (°C)
1	10.12	
2	10.30	
3	9.79	
4	11.23	
5	12.22	
6	13.31	
7	15.22	
8	17.41	

Bead	Ohms	Temp. (°C)
9	17.99	
10	18.67	
11	19.42	
12	20.20	
13	20.84	
14	21.42	
15	22.45	
16	23.17	

Observations and Proposed Maintenance

Thermal Monitoring

Ground Temperature Annual Maintenance Report

Contractor Name: GLL	Inspection Date: 22-Aug-07
Prepared By: Ken Beidt	

Thermistor Information

Site Name: **PIN-3**			Thermistor Location: **Tier II Disposal Facility**		
Thermistor Number: **VT7**			Inclination: **Vertical**		
Install Date: **10-Sep-03**		First Date Event: **23-Aug-05**		Last Date Event: **16-Aug-06**	
Coordinates and Elevation	N: **9373.65**		E: **10849.85**		Elev: **17.4**
Length of Cable (m): **10.5**		Cable Lead Above Ground (m): **0**		Nodal Points: **16**	
Datalogger Serial #: **111099**			Cable Serial Number: **1613**		

Code PIN-3VT7

Thermistor Inspection

	Good	Needs Maintenance	
Casing	☑	☐	
Cover	☑	☐	
Data Logger	☑	☐	
Cable	☑	☐	
Beads	☐	☒	#16 not reading
Battery Installation Date			
Battery Levels	Main 11.34 ✓	Aux 13.26 ✓	

Manual Ground Bead Temperature Readings

Bead	Ohms	Temp. (°C)
1	09.85	
2	10.58	
3	11.89	
4	12.82	
5	14.02	
6	16.46	
7	17.31	
8	17.93	

Bead	Ohms	Temp. (°C)
9	18.73	
10	19.52	
11	20.22	
12	20.91	
13	21.49	
14	22.02	
15	22.45	
16	22.61	

Observations and Proposed Maintenance

Thermal Monitoring

Ground Temperature Annual Maintenance Report

Contractor Name: GLL	Inspection Date: 22-Aug-07
Prepared By: Ken Boldt	

Thermistor Information

Site Name:	**PIN-3**	Thermistor Location:	**Tier II Disposal Facility**		
Thermistor Number:	**VT8**	Inclination:	**Vertical**		
Install Date:	**09-Sep-03**	First Date Event:	**23-Aug-05**	Last Date Event:	**16-Aug-06**
Coordinates and Elevation	N: **9374.48**	E: **10889.74**		Elev:	**17.4**
Length of Cable (m):	**10.5**	Cable Lead Above Ground (m):	**3.5**	Nodal Points:	**16**
Datalogger Serial #:	**111091**	Cable Serial Number:	**1614**		

Code PIN-3VT8

Thermistor Inspection

	Good	Needs Maintenance
Casing	☑	☐
Cover	☑	☐
Data Logger	☑	☐
Cable	☑	☐
Beads	☐	☒ #16 Not reading
Battery Installation Date		
Battery Levels	Main 11.34 ✓	Aux 13.02 ✓

Manual Ground Bead Temperature Readings

Bead	KOhms	Temp. (°C)
1	09.84	
2	10.68	
3	11.78	
4	12.62	
5	14.03	
6	16.51	
7	17.47	
8	18.13	

Bead	Ohms	Temp. (°C)
9	18.86	
10	19.61	
11	20.36	
12	21.16	
13	21.78	
14	22.23	
15	22.66	
16	23.03	

Observations and Proposed Maintenance

Appendix G

Laboratory Results

Analysis Report

REPORT ON: Analysis of Soil, Water Samples

REPORTED TO: Gartner Lee Limited
Suite 300
300 Town Centre Boulevard
Markham, ON
L3R 5Z6

Att'n: Ken Boldt

CHAIN OF CUSTODY: 2090867
PROJECT NAME: PIN-3
PROJECT NUMBER: 70516

NUMBER OF SAMPLES: 8

REPORT DATE: September 10, 2007

DATE SUBMITTED: August 30, 2007

GROUP NUMBER: 80830146

SAMPLE TYPE: Water & Soil

NOTE: Results contained in this report refer only to the testing of samples as submitted. Other information is available on request.

TEST METHODS:

Aromatic Volatile Organic Compounds in Water and Soil - analysis was performed using procedures based on U.S. EPA Methods 624/8240, involving sparging/collection with a Purge and Trap apparatus and analysis using GC/MS.

Volatile Hydrocarbons - analysis was performed by sparging/collection with a Purge and Trap apparatus, followed by analysis using GC/FID. The components present in the boiling range of C5 to C10 were quantified with m & p-xylenes.

CCME Petroleum Hydrocarbons in Soil - analysis was performed using Canadian Council of Ministers of the Environment (CCME) "Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil" approved December 2000. The method involves extraction of the different hydrocarbon fractions and analysis by gas chromatography with flame ionization detection (GC/FID).

Canada-Wide Standard for Petroleum Hydrocarbons in Soil (F1 Fraction) - The F1 Fraction (nC6 to nC10) was analyzed based on the CCME Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method (2001). Analysis involves methanol extraction and quantitation using GasChromatography with Flame Ionization Detector (GC-FID). The F1 Fraction is reported with the BTEX compounds (benzene, toluene, ethylbenzene, and ortho, meta and para-xylenes) subtracted (e.g. corrected). These BTEX compounds analyzed by GCMS may be included in this report on request by the customer.

Moisture in Soil - analysis was performed gravimetrically by heating a separate sample portion at 105 C

(Continued)

CANTEST LTD.

Greg Sparrow, B.Sc.
Senior Analyst

4606 Canada Way, Burnaby, BC V5G 1K5
Tel: 604 734 7276 Fax: 604 731 2386

Moisture in Soil

and measuring the weight loss.

pH in Soil or Solid - analysis was performed based on procedures described in the Manual on Soil Sampling and Methods of Analysis, published by the Canadian Society of Soil Science,1993. The test was performed using a deionized water leach with measurement by pH meter.

Conventional Parameters - analyses were performed using procedures based on those described in the most current editions of "British Columbia Environmental Laboratory Manual for the Analysis of Water, Wastewater, Sediment and Biological Materials", (2005 edition) Province of British Columbia and "Standard Methods for the Examination of Water and Wastewater" (21st Edition), published by the American Public Health Association.

Petroleum Hydrocarbons (C10-16 and C16-C34) in Water - analysis was performed by extraction, silica gel clean-up and analysis by Gas Chromatography with flame ionization detection (GC/FID).

Petroleum Hydrocarbons (C34-50) in Water - analysis was performed by extraction, silica gel clean-up and analysis by Gas Chromatography with flame ionization detection (GC/FID).

Mercury in Water - analysis was performed using procedures based on U. S. EPA Method 245.7, oxidative digestion using bromination, and analysis using Cold Vapour Atomic Fluorescence Spectroscopy.

Metals in Water - analysis was performed using Inductively Coupled Plasma Optical Emission Spectroscopy (ICP), Inductively Coupled Plasma-Mass Spectroscopy (ICP/MS).

Polychlorinated Biphenyls - analysis was performed using procedures based upon U.S. EPA Methods 608/8080, involving extraction, clean-up steps, and analysis using GC/ECD. Arochlors 1242, 1248, 1254 and 1260 were included.

Mercury in Soil - analysis was performed using Cold Vapour Atomic Fluorescence.

Strong Acid Leachable Metals in Soil - analysis was performed using B.C. MOELP Method "Strong Acid Leachable Metals in Soil, Version 1.0". The method involves drying the sample at 60 C, sieving using a 2 mm (10 mesh) sieve and digestion using a mixture of hydrochloric and nitric acids. Analysis was performed using Inductively Coupled Argon Plasma Spectroscopy (ICAP) or by specific techniques as described.

Semi-Volatile Hydrocarbons - analysis was performed using procedures based on U.S. EPA Method 8015, involving dichloromethane extraction and analysis using GC/FID. Components in the C10 to C30 range are included, using an alkane standard for quantitation.

Total Petroleum Hydrocarbons - analysis was performed using procedures based on Alberta Environment Site Investigation requirements, involving summation of the total volatile (purgeable) and semi-volatile (extractable) hydrocarbons.

TEST RESULTS:

(See following pages)

REPORTED TO: Gartner Lee Limited

REPORT DATE: September 10, 2007

GROUP NUMBER: 80830146

CANTEST

Conventional Parameters in Water

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	Hardness (Total) CaCO3
P3-MW-17	Aug 21/07	708300482	1300
P3-MW-18	Aug 21/07	708300486	1720
DETECTION LIMIT			1
UNITS			mg/L

mg/L = milligrams per liter

REPORTED TO: Gartner Lee Limited

REPORT DATE: September 10, 2007

GROUP NUMBER: 80830146

CANTEST

Metals Analysis in Water

CLIENT SAMPLE IDENTIFICATION:		P3-MW-17	P3-MW-18	DETECTION LIMIT	UNITS
SAMPLE PREPARATION:		TOTAL	TOTAL		
DATE SAMPLED:		Aug 21/07	Aug 21/07		
CANTEST ID:		708300482	708300486		
Aluminum	Al	0.015	0.042	0.005	mg/L
Antimony	Sb	<	<	0.001	mg/L
Arsenic	As	0.001	0.003	0.001	mg/L
Barium	Ba	0.034	0.017	0.001	mg/L
Beryllium	Be	<	<	0.001	mg/L
Bismuth	Bi	<	<	0.001	mg/L
Boron	B	0.37	0.47	0.05	mg/L
Cadmium	Cd	<	<	0.0002	mg/L
Calcium	Ca	283	233	0.05	mg/L
Chromium	Cr	<	0.002	0.001	mg/L
Cobalt	Co	0.010	<	0.001	mg/L
Copper	Cu	0.006	0.004	0.001	mg/L
Iron	Fe	0.13	1.70	0.05	mg/L
Lead	Pb	<	0.001	0.001	mg/L
Lithium	Li	0.010	0.040	0.005	mg/L
Magnesium	Mg	144	275	0.05	mg/L
Manganese	Mn	0.76	0.10	0.001	mg/L
Mercury	Hg	<	<	0.02	µg/L
Molybdenum	Mo	0.0083	0.060	0.0005	mg/L
Nickel	Ni	0.023	0.003	0.001	mg/L
Phosphorus	P	<	<	0.15	mg/L
Potassium	K	12.3	58.6	0.1	mg/L
Selenium	Se	0.001	<	0.001	mg/L
Silicon	Si	2.5	2.7	0.25	mg/L
Silver	Ag	<	<	0.00025	mg/L
Sodium	Na	69.2	1770	0.05	mg/L
Strontium	Sr	0.70	2.23	0.001	mg/L
Tellurium	Te	<	<	0.001	mg/L
Thallium	Tl	0.0001	<	0.0001	mg/L
Thorium	Th	<	<	0.0005	mg/L
Tin	Sn	<	<	0.001	mg/L

(Continued on next page)

REPORTED TO: Gartner Lee Limited

REPORT DATE: September 10, 2007

GROUP NUMBER: 80830146

CANTEST

Metals Analysis in Water

CLIENT SAMPLE IDENTIFICATION:		P3-MW-17	P3-MW-18	DETECTION LIMIT	UNITS
SAMPLE PREPARATION:		TOTAL	TOTAL		
DATE SAMPLED:		Aug 21/07	Aug 21/07		
CANTEST ID:		708300482	708300486		
Titanium	Ti	<	0.002	0.001	mg/L
Uranium	U	0.032	0.013	0.0005	mg/L
Vanadium	V	<	<	0.001	mg/L
Zinc	Zn	0.017	0.012	0.005	mg/L
Zirconium	Zr	<	<	0.01	mg/L

mg/L = milligrams per liter
< = Less than detection limit

μg/L = micrograms per liter

REPORTED TO: Gartner Lee Limited

REPORT DATE: September 10, 2007

GROUP NUMBER: 80830146

CANTEST

Polychlorinated Biphenyls in Water

CLIENT SAMPLE IDENTIFICATION:	P3-MW-17	P3-MW-18	
DATE SAMPLED:	Aug 21/07	Aug 21/07	DETECTION LIMIT
CANTEST ID:	708300482	708300486	
Arochlor 1242	<	<	0.1
Arochlor 1248	<	<	0.1
Arochlor 1254	<	<	0.1
Arochlor 1260	<	<	0.1
Total PCB	<	<	0.4
Surrogate Recovery			
2,2',4,4',6,6'-hexabromobiphenyl	100	100	-

Results expressed as micrograms per liter (μg/L)
Surrogate recoveries expressed as percent (%)
< = Less than detection limit

REPORTED TO: Gartner Lee Limited

REPORT DATE: September 10, 2007

GROUP NUMBER: 80830146

CANTEST

Semi-Volatile Hydrocarbons in Water

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	Total Extractable Hydrocarbons
P3-MW-17	Aug 21/07	708300482	390
P3-MW-18	Aug 21/07	708300486	<
DETECTION LIMIT			100
UNITS			µg/L

µg/L = micrograms per liter
< = Less than detection limit

REPORTED TO: Gartner Lee Limited

REPORT DATE: September 10, 2007

GROUP NUMBER: 80830146

CANTEST

Extractable Petroleum Hydrocarbons - Silica-gel Cleanup in Water

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	Petroleum Hydrocarbons C10-16	Petroleum Hydrocarbons C16-34	Petroleum Hydrocarbons C34-50
P3-MW-17	Aug 21/07	708300482	260	<	<
P3-MW-18	Aug 21/07	708300486	<	<	<
DETECTION LIMIT			100	250	250
UNITS			µg/L	µg/L	µg/L

µg/L = micrograms per liter
< = Less than detection limit

REPORTED TO: Gartner Lee Limited

REPORT DATE: September 10, 2007

GROUP NUMBER: 80830146

CANTEST

Conventional Parameters in Soil

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	Moisture	pH
P3-17-1	Aug 21/07	708300487	5.2	7.2
P3-18-2	Aug 21/07	708300493	5.1	7.3
P3-19-2	Aug 22/07	708300494	3.1	7.8
P3-20-2	Aug 22/07	708300496	1.9	7.6
P3-21-2	Aug 22/07	708300498	12.9	7.5
P3-22-2	Aug 22/07	708300500	2.8	8.0
DETECTION LIMIT			0.1	0.1
UNITS			%	pH units

% = percent

REPORTED TO: Gartner Lee Limited

REPORT DATE: September 10, 2007

GROUP NUMBER: 80830146

CANTEST

Polychlorinated Biphenyls in Soil

CLIENT SAMPLE IDENTIFICATION:	P3-17-1	P3-18-2	P3-19-2	P3-20-2	
DATE SAMPLED:	Aug 21/07	Aug 21/07	Aug 22/07	Aug 22/07	DETECTION LIMIT
CANTEST ID:	708300487	708300493	708300494	708300496	
Arochlor 1242	<	<	<	<	0.03
Arochlor 1248	<	<	<	<	0.03
Arochlor 1254	<	<	<	<	0.03
Arochlor 1260	<	<	<	<	0.03
Total PCB	<	<	<	<	0.03
Surrogate Recovery					
2,2',4,4',6,6'-hexabromobiphenyl	106	111	108	103	-

Results expressed as micrograms per gram, on a dry weight basis. (μg/g)
Surrogate recoveries expressed as percent (%)
< = Less than detection limit

REPORTED TO: Gartner Lee Limited

REPORT DATE: September 10, 2007

GROUP NUMBER: 80830146

CANTEST

Polychlorinated Biphenyls in Soil

CLIENT SAMPLE IDENTIFICATION:	P3-21-2	P3-22-2	
DATE SAMPLED:	Aug 22/07	Aug 22/07	DETECTION LIMIT
CANTEST ID:	708300498	708300500	
Arochlor 1242	<	<	0.03
Arochlor 1248	<	<	0.03
Arochlor 1254	<	<	0.03
Arochlor 1260	<	<	0.03
Total PCB	<	<	0.03
Surrogate Recovery			
2,2',4,4',6,6'-hexabromobiphenyl	91	97	-

Results expressed as micrograms per gram, on a dry weight basis. (μg/g)
Surrogate recoveries expressed as percent (%)
< = Less than detection limit

REPORTED TO: Gartner Lee Limited

REPORT DATE: September 10, 2007

GROUP NUMBER: 80830146

CANTEST

Semi-Volatile Hydrocarbons in Soil

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	Total Extractable Hydrocarbons
P3-17-1	Aug 21/07	708300487	24
P3-18-2	Aug 21/07	708300493	<
P3-19-2	Aug 22/07	708300494	<
P3-20-2	Aug 22/07	708300496	<
P3-21-2	Aug 22/07	708300498	<
P3-22-2	Aug 22/07	708300500	140
DETECTION LIMIT			20
UNITS			µg/g

µg/g = micrograms per gram, on a dry weight basis.
< = Less than detection limit

REPORTED TO: Gartner Lee Limited

REPORT DATE: September 10, 2007

GROUP NUMBER: 80830146

CANTEST

Total Petroleum Hydrocarbons in Soil

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	Total Petroleum Hydrocarbons
P3-17-1	Aug 21/07	708300487	24
P3-18-2	Aug 21/07	708300493	<
P3-19-2	Aug 22/07	708300494	<
P3-20-2	Aug 22/07	708300496	<
P3-21-2	Aug 22/07	708300498	<
P3-22-2	Aug 22/07	708300500	140
DETECTION LIMIT			20
UNITS			µg/g

µg/g = micrograms per gram, on a dry weight basis.
< = Less than detection limit

REPORTED TO: Gartner Lee Limited

REPORT DATE: September 10, 2007

GROUP NUMBER: 80830146

CANTEST

CCME Petroleum Hydrocarbons in Soil

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	F2 uncorrected (C10-C16)	F3 uncorrected (C16-C34)
P3-17-1	Aug 21/07	708300487	<	<
P3-18-2	Aug 21/07	708300493	<	<
P3-19-2	Aug 22/07	708300494	<	<
P3-20-2	Aug 22/07	708300496	<	<
P3-21-2	Aug 22/07	708300498	<	<
P3-22-2	Aug 22/07	708300500	<	<
DETECTION LIMIT			80	250
UNITS			µg/g	µg/g

µg/g = micrograms per gram, on a dry weight basis.
< = Less than detection limit

REPORTED TO: Gartner Lee Limited

REPORT DATE: September 10, 2007

GROUP NUMBER: 80830146

CANTEST

CCME Petroleum Hydrocarbons in Soil

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	F1 (C6-C10) uncorrected
P3-17-1	Aug 21/07	708300487	<
P3-18-2	Aug 21/07	708300493	<
P3-19-2	Aug 22/07	708300494	<
P3-20-2	Aug 22/07	708300496	<
P3-21-2	Aug 22/07	708300498	<
P3-22-2	Aug 22/07	708300500	<
DETECTION LIMIT			5
UNITS			µg/g

µg/g = micrograms per gram, on a dry weight basis.
< = Less than detection limit

REPORTED TO: Gartner Lee Limited

REPORT DATE: September 10, 2007

GROUP NUMBER: 80830146

CANTEST

Strong Acid Soluble Metals in Soil

CLIENT SAMPLE IDENTIFICATION:		P3-17-1	P3-18-2	P3-19-2	P3-20-2	
DATE SAMPLED:		Aug 21/07	Aug 21/07	Aug 22/07	Aug 22/07	DETECTION LIMIT
CANTEST ID:		708300487	708300493	708300494	708300496	
Selenium	Se	<	<	<	<	2
Antimony	Sb	<	<	<	<	10
Arsenic	As	<	<	<	<	10
Barium	Ba	23	29	20	65	1
Beryllium	Be	<	<	<	<	1
Cadmium	Cd	<	<	<	<	0.5
Chromium	Cr	5	3	4	5	2
Cobalt	Co	3	2	2	2	1
Copper	Cu	4	6	3	4	1
Lead	Pb	<	<	<	<	5
Mercury	Hg	<	<	<	<	0.01
Molybdenum	Mo	<	<	<	<	4
Nickel	Ni	4	3	3	3	2
Silver	Ag	<	<	<	<	2
Tin	Sn	<	<	<	<	5
Vanadium	V	18	9	13	10	1
Zinc	Zn	8	5	6	7	1
Aluminum	Al	1990	1760	1800	2060	10
Boron	B	4	2	1	2	1
Calcium	Ca	86700	26000	43300	77300	1
Iron	Fe	6340	3880	4610	5020	2
Magnesium	Mg	42500	16900	20000	39500	0.1
Manganese	Mn	161	75	92	131	1
Phosphorus	P	177	154	128	174	20
Potassium	K	400	391	237	333	10
Sodium	Na	126	75	224	112	5
Strontium	Sr	26	10	54	22	1
Titanium	Ti	101	110	192	86	1
Zirconium	Zr	2	2	2	2	1

Results expressed as micrograms per gram, on a dry weight basis. (μg/g)
< = Less than detection limit

REPORTED TO: Gartner Lee Limited

REPORT DATE: September 10, 2007

GROUP NUMBER: 80830146

CANTEST

Strong Acid Soluble Metals in Soil

CLIENT SAMPLE IDENTIFICATION:		P3-21-2	P3-22-2	
DATE SAMPLED:		Aug 22/07	Aug 22/07	DETECTION LIMIT
CANTEST ID:		708300498	708300500	
Selenium	Se	<	<	2
Antimony	Sb	<	<	10
Arsenic	As	<	<	10
Barium	Ba	19	21	1
Beryllium	Be	<	<	1
Cadmium	Cd	<	<	0.5
Chromium	Cr	4	5	2
Cobalt	Co	2	3	1
Copper	Cu	7	6	1
Lead	Pb	<	<	5
Mercury	Hg	<	<	0.01
Molybdenum	Mo	<	<	4
Nickel	Ni	3	4	2
Silver	Ag	<	<	2
Tin	Sn	<	<	5
Vanadium	V	14	16	1
Zinc	Zn	7	9	1
Aluminum	Al	1670	2480	10
Boron	B	3	3	1
Calcium	Ca	33900	45800	1
Iron	Fe	4580	6350	2
Magnesium	Mg	20100	27200	0.1
Manganese	Mn	79	194	1
Phosphorus	P	98	271	20
Potassium	K	300	402	10
Sodium	Na	200	220	5
Strontium	Sr	14	18	1
Titanium	Ti	160	158	1
Zirconium	Zr	2	2	1

Results expressed as micrograms per gram, on a dry weight basis. (μg/g)
< = Less than detection limit

REPORTED TO: Gartner Lee Limited

REPORT DATE: September 10, 2007

GROUP NUMBER: 80830146

CANTEST

Aromatic Volatile Organic Compounds in Soil

CLIENT SAMPLE IDENTIFICATION:	P3-17-1	P3-18-2	P3-19-2	P3-20-2	
DATE SAMPLED:	Aug 21/07	Aug 21/07	Aug 22/07	Aug 22/07	DETECTION LIMIT
CANTEST ID:	708300487	708300493	708300494	708300496	
Benzene	<	<	<	<	0.03
Ethylbenzene	<	<	<	<	0.03
Toluene	<	<	<	<	0.03
Xylenes	<	<	<	<	0.03
Volatile Hydrocarbons	<	<	<	<	2
Surrogate Recovery					
Toluene-d8	103	105	105	102	-
Bromofluorobenzene	82	86	85	85	-

Results expressed as micrograms per gram, on a dry weight basis. (μg/g)
Surrogate recoveries expressed as percent (%)
< = Less than detection limit

REPORTED TO: Gartner Lee Limited

REPORT DATE: September 10, 2007

GROUP NUMBER: 80830146

CANTEST

Aromatic Volatile Organic Compounds in Soil

CLIENT SAMPLE IDENTIFICATION:	P3-21-2	P3-22-2	
DATE SAMPLED:	Aug 22/07	Aug 22/07	DETECTION LIMIT
CANTEST ID:	708300498	708300500	
Benzene	<	<	0.03
Ethylbenzene	<	<	0.03
Toluene	<	<	0.03
Xylenes	<	<	0.03
Volatile Hydrocarbons	<	<	2
Surrogate Recovery			
Toluene-d8	104	100	-
Bromofluorobenzene	88	88	-

Results expressed as micrograms per gram, on a dry weight basis. (μg/g)
Surrogate recoveries expressed as percent (%)
< = Less than detection limit

CHROMATOGRAM COVER SHEET

CANTEST

CONTACT	COMPANY NAME	
Ken Boldt.	Gartner Lee Ltd.	
FAX NUMBER	**DATE**	**PGS INCL. COVER**
1(905)477-1456.	Sept 7 '07.	5.
FROM	**RETURN FAX**	**TELEPHONE**
CANTEST LTD	604 731 2386	604 734 7276

SUBJECT

Chromatogram(s).

Please find the attached chromatograms associated with:

CANTEST Group # 808 30146

Your Project Name PIN-3

Your Project Number 70516

Sample Matrix ..... Soil

The originals will follow with the report.

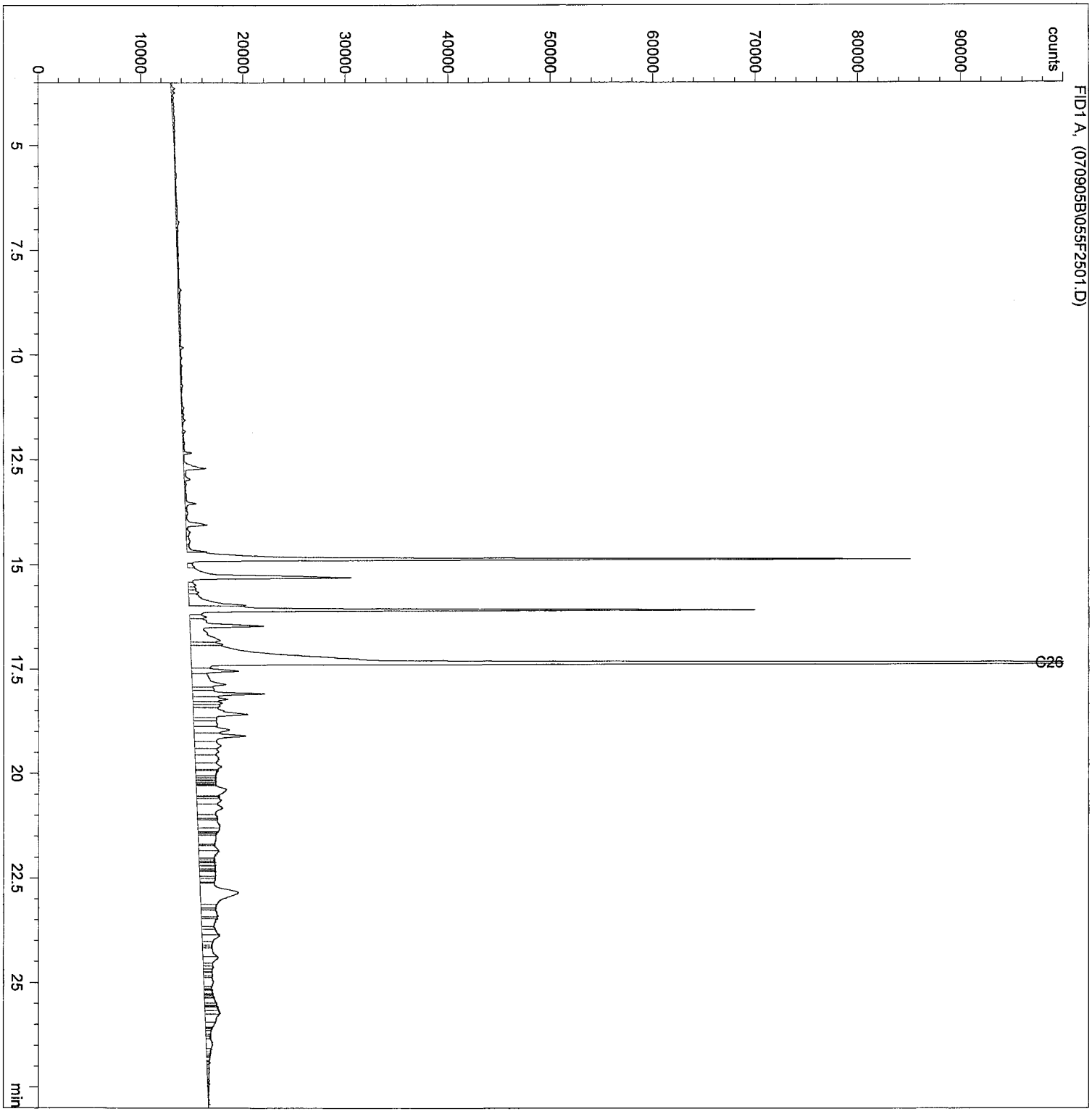
Data File D:\HPCHEM\1\DATA\070905B\055F2501.D Sample Name: 708300487

Injection Date	: 9/6/07 3:47:14 AM	Seq. Line	: 25
Sample Name	: 708300487	Vial	: 55
Acq. Operator	: pcn	Inj	: 1
		Inj Volume	: 2 µl
Acq. Method	: D:\HPCHEM~1\1\METHODS\!EPH.M		
Last changed	: 9/5/07 9:37:24 PM by pcn		
Analysis Method	: D:\HPCHEM~1\1\METHODS\!TEH_NAP.M		
Last changed	: 9/7/07 7:53:15 AM by pcn (modified after loading)		

Gr # 80830146.

Total Extractable Hydrocarbons. Soils and Waters are extracted using methylene chloride and then analyzed using an HPGC-FID. Calculations are based on an internal standard and reported in ug/L for waters and ug/g for soils.

P3-17-1

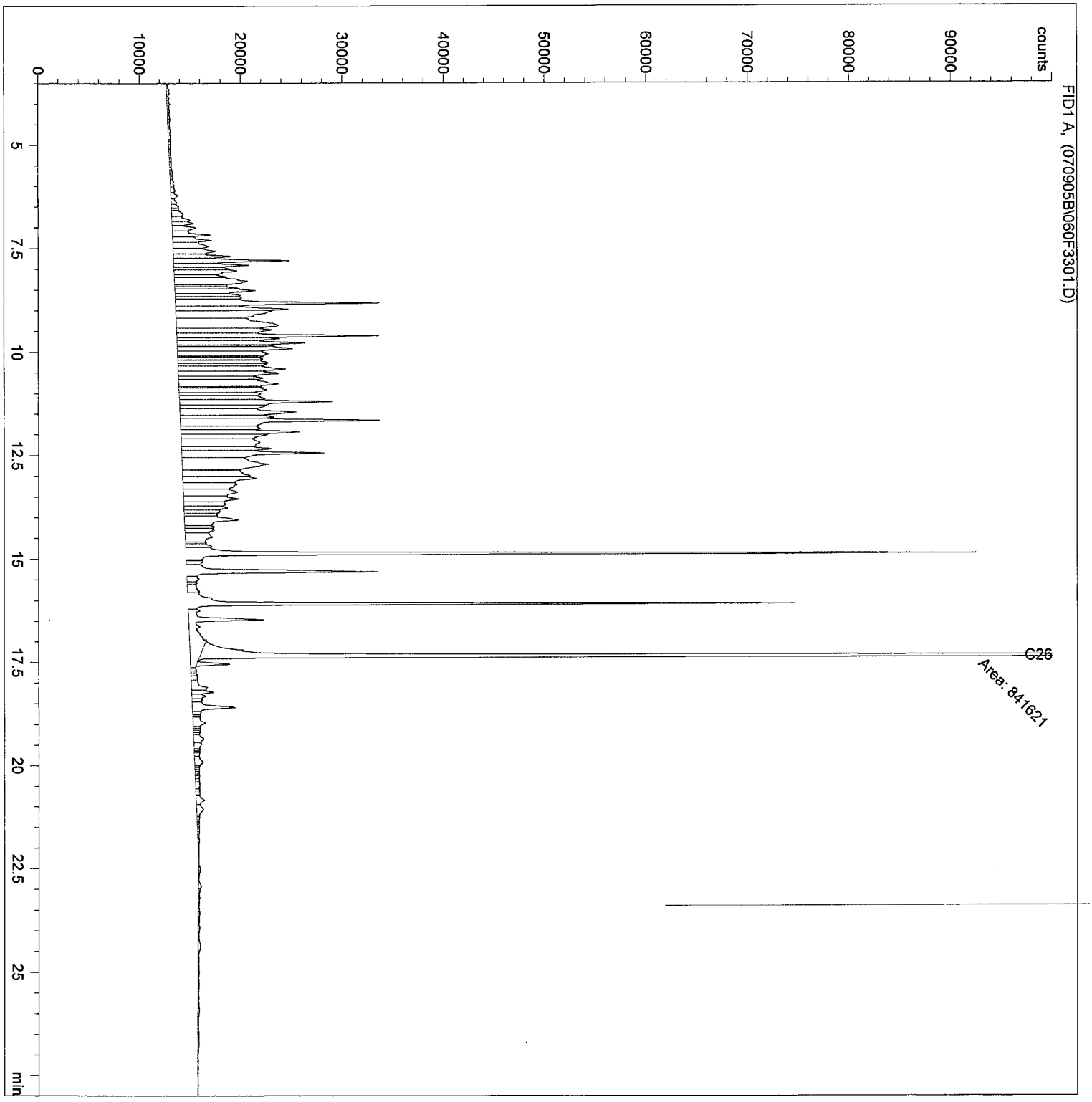


Data File D:\HPCHEM\1\DATA\070905B\060F3301.D Sample Name: 708300500

Injection Date	: 9/6/07 8:37:59 AM	Seq. Line	: 33
Sample Name	: 708300500	Vial	: 60
Acq. Operator	: pcn	Inj	: 1
		Inj Volume	: 2 µl
Acq. Method	: D:\HPCHEM~1\1\METHODS\!EPH.M		
Last changed	: 9/6/07 6:06:35 AM by pcn		
Analysis Method	: D:\HPCHEM~1\1\METHODS\!TEH_NAP.M		
Last changed	: 9/7/07 7:53:15 AM by pcn (modified after loading)		

Total Extractable Hydrocarbons. Soils and Waters are extracted using methylene chloride and then analyzed using an HPGC-FID. Calculations are based on an internal standard and reported in ug/L for waters and ug/g for soils.

P3-22-2.



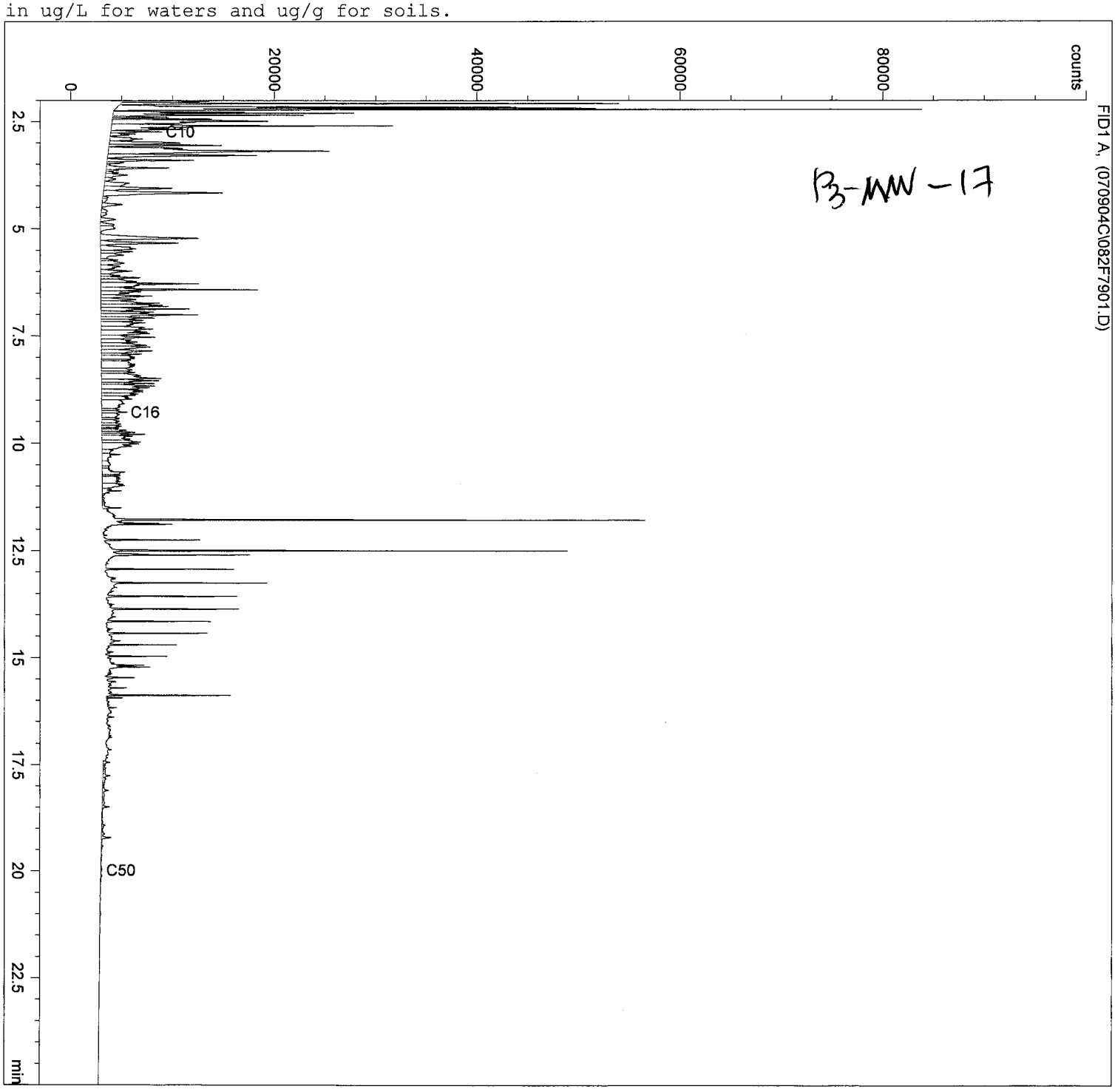
==========

Injection Date : 9/6/07 9:12:22 AM Seq. Line : 79
Sample Name : 708300482 Vial : 82
Acq. Operator : pcn Inj : 1
Inj Volume : 2 µl

Acq. Method : C:\HPCHEM\1\METHODS\CCMEHT.M
Last changed : 5/11/07 3:22:08 PM by ry
Analysis Method : C:\HPCHEM\1\METHODS\CCMEHTP.M
Last changed : 9/5/07 10:30:19 AM by pcn

8083014G
GAR 005

Total Extractable Hydrocarbons. Soils and Waters are extracted using methylene chloride and then analyzed using an HPGC-FID. Calculations are based on an internal standard and reported in ug/L for waters and ug/g for soils.

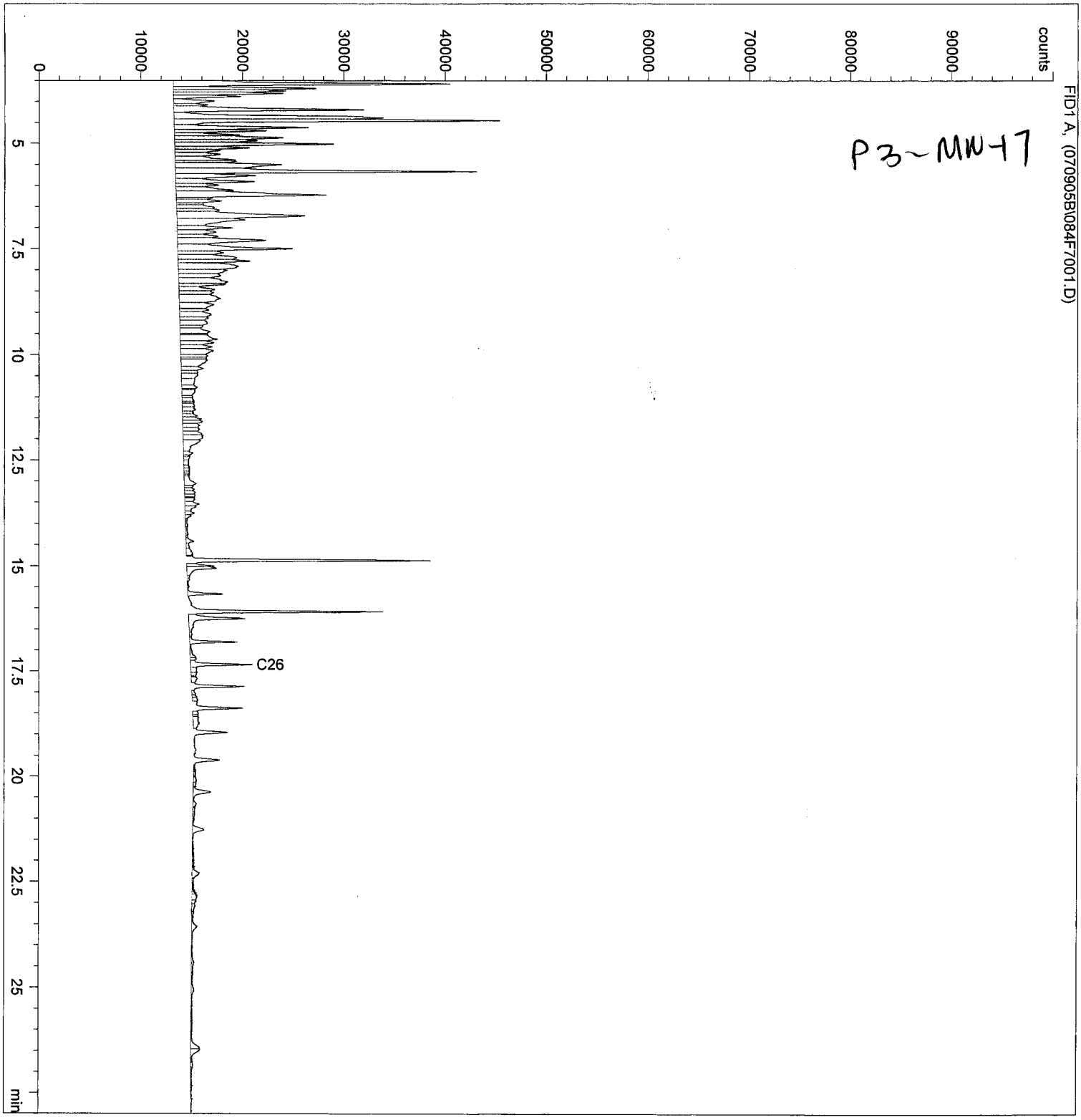


Data File D:\HPCHEM\1\DATA\070905B\084F7001.D Sample Name: 708300482

Injection Date	: 9/7/07 7:03:32 AM	Seq. Line	: 70
Sample Name	: 708300482	Vial	: 84
Acq. Operator	: pcn	Inj	: 1
		Inj Volume	: 2 µl
Acq. Method	: D:\HPCHEM~1\1\METHODS\!EPH.M		
Last changed	: 9/6/07 10:29:09 PM by pcn		
Analysis Method	: D:\HPCHEM~1\1\METHODS\!TEH_NAP.M		
Last changed	: 9/4/07 10:40:55 AM by pcn		

80830146
GAR005

Total Extractable Hydrocarbons. Soils and Waters are extracted using methylene chloride and then analyzed using an HPGC-FID. Calculations are based on an internal standard and reported in ug/L for waters and ug/g for soils.



ANALYTICAL REPORT

GARTNER LEE LTD.

ATTN: KEN BOLDT

Reported On: 24-SEP-07 10:38 AM

300 TOWN CENTRE BOULVARD
SUITE 300
MARKHAM ON L3R 5Z6

Lab Work Order #: **L548829** **Date Received:** **30-AUG-07**

Project P.O. #: ALSEQ07-487
Job Reference: 70516
Legal Site Desc:
CofC Numbers: A018187, A018194, A018232

Other Information:

Comments: Please note that BTEX-F1 detection limits have been increased for sample identified as P3-11-1 due to the low dry weight caused by a high moisture content of this sample.

Timothy Guy Crowther
General Manager, Vancouver

For any questions about this report please contact your Account Manager:

NATASHA MARKOVIC-MIROVIC

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L548829-1	L548829-2	L548829-3	L548829-4	L548829-5
	Description					
	Sampled Date	22-AUG-07	22-AUG-07	22-AUG-07	22-AUG-07	22-AUG-07
	Sampled Time					
	Client ID	P3-7-1	P3-7-2	P3-8-1	P3-8-2	P3-9-1
Grouping	**Analyte**					
SOIL						
Physical Tests	% Moisture (%)	6.76	8.09	5.55	12.3	2.36
	pH (pH)	8.43	8.74	8.95	8.59	8.37
Metals	Antimony (Sb) (mg/kg)	<10	<10	<10	<10	<10
	Arsenic (As) (mg/kg)	1.54	1.01	1.20	0.901	1.02
		<5.0	<5.0	<5.0	<5.0	<5.0
	Barium (Ba) (mg/kg)	61.9	34.6	34.7	40.7	25.5
	Beryllium (Be) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Cadmium (Cd) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Chromium (Cr) (mg/kg)	6.9	6.2	7.0	4.3	5.2
	Cobalt (Co) (mg/kg)	3.0	2.5	2.9	2.0	2.3
	Copper (Cu) (mg/kg)	14.6	9.4	20.7	8.8	5.7
	Lead (Pb) (mg/kg)	<30	<30	<30	<30	<30
	Mercury (Hg) (mg/kg)	<0.0050	<0.0050	0.0052	<0.0050	<0.0050
	Molybdenum (Mo) (mg/kg)	<4.0	<4.0	<4.0	<4.0	<4.0
	Nickel (Ni) (mg/kg)	5.1	<5.0	5.4	<5.0	<5.0
	Selenium (Se) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Silver (Ag) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Thallium (Tl) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Tin (Sn) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Vanadium (V) (mg/kg)	25.2	22.2	20.1	17.4	18.7
	Zinc (Zn) (mg/kg)	12.0	9.4	12.3	7.1	7.9
Non-Halogenated Volatiles	Benzene (mg/kg)	<0.040	<0.040	<0.040	<0.040	<0.040
	Ethylbenzene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Methyl t-butyl ether (MTBE) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Styrene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Toluene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	meta- & para-Xylene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	ortho-Xylene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Xylenes (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	F1-BTEX (mg/kg)	<10	10	<10	<10	<10
	Surrogate: 4-Bromofluorobenzene (SS) (%)	108	101	98	103	107
	Surrogate: 2,4-Dichlorotoluene (SS) (%)	100	100	89	93	97
	Surrogate: Fluorobenzene (SS) (%)	109	101	97	103	106
Extractable Hydrocarbons	F1 (C6-C10) (mg/kg)	<10	10	<10	<10	<10
	F2 (C10-C16) (mg/kg)	<5	14	<5	<5	<5
	F3 (C16-C34) (mg/kg)	<5	<5	88	<5	<5
	F4 (C34-C50) (mg/kg)	<5	<5	140	41	<5
	Surrogate: 2-Bromobenzotrifluoride (%)	79	72	79	55	46

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L548829-6	L548829-7	L548829-8	L548829-9	L548829-10
	Description					
	Sampled Date	22-AUG-07	22-AUG-07	22-AUG-07	22-AUG-07	22-AUG-07
	Sampled Time					
	Client ID	P3-9-2	P3-10-1	P3-10-2	P3-11-1	P3-11-2
Grouping	**Analyte**					
SOIL						
Physical Tests	% Moisture (%)	3.24	7.70	8.51	65.1	16.2
	pH (pH)	8.42	8.22	8.80	7.37	7.59
Metals	Antimony (Sb) (mg/kg)	<10	<10	<10	<10	<10
	Arsenic (As) (mg/kg)	1.15	0.838	1.24	0.222	0.912
		<5.0	<5.0	<5.0	<5.0	<5.0
	Barium (Ba) (mg/kg)	56.5	34.4	49.4	20.3	14.3
	Beryllium (Be) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Cadmium (Cd) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Chromium (Cr) (mg/kg)	4.8	4.4	8.1	3.9	5.2
	Cobalt (Co) (mg/kg)	2.7	2.1	3.2	<2.0	2.4
	Copper (Cu) (mg/kg)	10.2	11.2	15.1	7.0	12.5
	Lead (Pb) (mg/kg)	<30	<30	<30	<30	<30
	Mercury (Hg) (mg/kg)	<0.0050	<0.0050	<0.0050	0.0104	<0.0050
	Molybdenum (Mo) (mg/kg)	<4.0	<4.0	<4.0	<4.0	<4.0
	Nickel (Ni) (mg/kg)	<5.0	<5.0	5.9	<5.0	<5.0
	Selenium (Se) (mg/kg)	<3.0	<2.0	<2.0	<2.0	<2.0
	Silver (Ag) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Thallium (Tl) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Tin (Sn) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Vanadium (V) (mg/kg)	19.3	28.2	27.7	14.8	17.7
	Zinc (Zn) (mg/kg)	8.3	8.6	10.1	7.9	9.0
Non-Halogenated Volatiles	Benzene (mg/kg)	<0.040	<0.040	<0.040	<0.060	<0.040
	Ethylbenzene (mg/kg)	<0.050	<0.050	<0.050	<0.075	<0.050
	Methyl t-butyl ether (MTBE) (mg/kg)	<0.20	<0.20	<0.20	<0.30	<0.20
	Styrene (mg/kg)	<0.050	<0.050	<0.050	<0.075	<0.050
	Toluene (mg/kg)	<0.050	<0.050	<0.050	<0.075	<0.050
	meta- & para-Xylene (mg/kg)	<0.050	<0.050	<0.050	<0.075	<0.050
	ortho-Xylene (mg/kg)	<0.050	<0.050	<0.050	<0.075	<0.050
	Xylenes (mg/kg)	<0.10	<0.10	<0.10	<0.15	<0.10
	F1-BTEX (mg/kg)	<10	<10	<10	<15	<10
	Surrogate: 4-Bromofluorobenzene (SS) (%)	104	103	105	107	101
	Surrogate: 2,4-Dichlorotoluene (SS) (%)	92	95	92	72	93
	Surrogate: Fluorobenzene (SS) (%)	105	104	108	108	104
Extractable Hydrocarbons	F1 (C6-C10) (mg/kg)	<10	<10	<10	<15	<10
	F2 (C10-C16) (mg/kg)	26	<5	<5	8	<5
	F3 (C16-C34) (mg/kg)	40	<5	<5	210	35
	F4 (C34-C50) (mg/kg)	<5	35	7	250	17
	Surrogate: 2-Bromobenzotrifluoride (%)	71	61	66	88	79

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L548829-11	L548829-12	L548829-13	L548829-14	L548829-15
	Description					
	Sampled Date	21-AUG-07	21-AUG-07	21-AUG-07	21-AUG-07	21-AUG-07
	Sampled Time					
	Client ID	P3-12-1	P3-12-2	P3-13-1	P3-13-2	P3-14-1
Grouping	**Analyte**					
SOIL						
Physical Tests	% Moisture (%)	39.5	7.79	26.6	12.9	17.5
	pH (pH)	7.84	8.13	7.88	8.10	8.03
Metals	Antimony (Sb) (mg/kg)	<10	<10	<10	<10	<10
	Arsenic (As) (mg/kg)	1.46	1.00	1.08	1.83	0.768
		<5.0	<5.0	<5.0	<5.0	<5.0
	Barium (Ba) (mg/kg)	64.9	23.8	20.8	24.0	13.5
	Beryllium (Be) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Cadmium (Cd) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Chromium (Cr) (mg/kg)	3.4	4.1	3.9	3.4	3.2
	Cobalt (Co) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Copper (Cu) (mg/kg)	13.3	3.5	4.6	3.3	3.7
	Lead (Pb) (mg/kg)	<30	<30	<30	<30	<30
	Mercury (Hg) (mg/kg)	0.0575	<0.0050	0.0283	0.0099	0.0094
	Molybdenum (Mo) (mg/kg)	<4.0	<4.0	<4.0	<4.0	<4.0
	Nickel (Ni) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Selenium (Se) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Silver (Ag) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Thallium (Tl) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Tin (Sn) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Vanadium (V) (mg/kg)	6.8	12.2	10.2	8.3	11.4
	Zinc (Zn) (mg/kg)	34.5	6.9	13.4	7.1	8.1
Non-Halogenated Volatiles	Benzene (mg/kg)	<0.040	<0.040	<0.040	<0.040	<0.040
	Ethylbenzene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Methyl t-butyl ether (MTBE) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Styrene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Toluene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	meta- & para-Xylene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	ortho-Xylene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Xylenes (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	F1-BTEX (mg/kg)	<10	<10	<10	<10	<10
	Surrogate: 4-Bromofluorobenzene (SS) (%)	107	102	103	102	104
	Surrogate: 2,4-Dichlorotoluene (SS) (%)	95	106	89	92	85
	Surrogate: Fluorobenzene (SS) (%)	115	105	104	99	103
Extractable Hydrocarbons	F1 (C6-C10) (mg/kg)	<10	<10	<10	<10	<10
	F2 (C10-C16) (mg/kg)	<5	<5	<5	<5	<5
	F3 (C16-C34) (mg/kg)	51	9	140	59	31
	F4 (C34-C50) (mg/kg)	30	10	200	73	59
	Surrogate: 2-Bromobenzotrifluoride (%)	131	64	107	76	51

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L548829-16	L548829-17	L548829-18	L548829-19	L548829-20
	Description					
	Sampled Date	21-AUG-07	21-AUG-07	21-AUG-07	21-AUG-07	21-AUG-07
	Sampled Time					
	Client ID	P3-14-2	P3-15-1	P3-15-2	P3-16-1	P3-16-2
Grouping	**Analyte**					
SOIL						
Physical Tests	% Moisture (%)	9.46	18.7	10.4	18.0	11.4
	pH (pH)	7.79	7.91	8.03	8.06	8.29
Metals	Antimony (Sb) (mg/kg)	<10	<10	<10	<10	<10
	Arsenic (As) (mg/kg)	2.85	1.05	1.79	1.73	2.12
		<5.0	<5.0	<5.0	<5.0	<5.0
	Barium (Ba) (mg/kg)	20.0	28.4	39.1	14.4	16.2
	Beryllium (Be) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Cadmium (Cd) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Chromium (Cr) (mg/kg)	3.2	4.5	4.1	3.9	3.7
	Cobalt (Co) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Copper (Cu) (mg/kg)	3.9	9.3	4.6	8.4	6.9
	Lead (Pb) (mg/kg)	<30	<30	<30	<30	<30
	Mercury (Hg) (mg/kg)	0.0074	0.0101	0.0090	0.0083	0.0063
	Molybdenum (Mo) (mg/kg)	<4.0	<4.0	<4.0	<4.0	<4.0
	Nickel (Ni) (mg/kg)	<5.0	<5.0	<5.0	6.4	5.2
	Selenium (Se) (mg/kg)	<2.0	<2.0	<2.0	<3.0	<2.0
	Silver (Ag) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Thallium (Tl) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Tin (Sn) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Vanadium (V) (mg/kg)	9.1	16.4	10.4	10.8	9.8
	Zinc (Zn) (mg/kg)	7.2	11.3	9.0	7.9	6.5
Non-Halogenated Volatiles	Benzene (mg/kg)	<0.040	<0.040	<0.040	<0.040	<0.040
	Ethylbenzene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Methyl t-butyl ether (MTBE) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Styrene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Toluene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	meta- & para-Xylene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	ortho-Xylene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Xylenes (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	F1-BTEX (mg/kg)	<10	<10	<10	<10	<10
	Surrogate: 4-Bromofluorobenzene (SS) (%)	101	112	109	104	101
	Surrogate: 2,4-Dichlorotoluene (SS) (%)	85	75	84	89	96
	Surrogate: Fluorobenzene (SS) (%)	97	113	108	103	99
Extractable Hydrocarbons	F1 (C6-C10) (mg/kg)	<10	<10	<10	<10	<10
	F2 (C10-C16) (mg/kg)	7	<5	<5	<5	7
	F3 (C16-C34) (mg/kg)	52	61	44	78	44
	F4 (C34-C50) (mg/kg)	51	87	50	100	50
	Surrogate: 2-Bromobenzotrifluoride (%)	86	82	69	100	102

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L548829-21	L548829-22	L548829-23	L548829-24	L548829-25
	Description					
	Sampled Date	21-AUG-07	21-AUG-07	22-AUG-07	22-AUG-07	22-AUG-07
	Sampled Time					
	Client ID	P3-17-1	P3-18-2	P3-19-2	P3-20-2	P3-21-2
Grouping	**Analyte**					
SOIL						
Physical Tests	% Moisture (%)	6.15	2.66	3.83	1.65	12.8
	pH (pH)	8.21	8.20	8.45	8.34	8.32
Metals	Antimony (Sb) (mg/kg)	<10	<10	<10	<10	<10
	Arsenic (As) (mg/kg)	1.53	0.777	1.07	1.00	1.03
		<5.0	<5.0	<5.0	<5.0	<5.0
	Barium (Ba) (mg/kg)	35.2	15.4	36.3	38.1	30.6
	Beryllium (Be) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Cadmium (Cd) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Chromium (Cr) (mg/kg)	5.8	4.6	4.2	5.2	3.8
	Cobalt (Co) (mg/kg)	3.1	<2.0	2.1	2.4	<2.0
	Copper (Cu) (mg/kg)	6.7	7.0	6.2	9.2	7.2
	Lead (Pb) (mg/kg)	<30	<30	<30	<30	<30
	Mercury (Hg) (mg/kg)	0.0071	<0.0050	0.0100	<0.0050	0.0064
	Molybdenum (Mo) (mg/kg)	<4.0	<4.0	<4.0	<4.0	<4.0
	Nickel (Ni) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Selenium (Se) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Silver (Ag) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Thallium (Tl) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Tin (Sn) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Vanadium (V) (mg/kg)	18.4	10.6	17.2	14.2	15.8
	Zinc (Zn) (mg/kg)	9.6	5.0	7.1	7.9	6.3
Non-Halogenated Volatiles	Benzene (mg/kg)	<0.040	<0.040	<0.040	<0.040	<0.040
	Ethylbenzene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Methyl t-butyl ether (MTBE) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Styrene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Toluene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	meta- & para-Xylene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	ortho-Xylene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Xylenes (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	F1-BTEX (mg/kg)	<10	<10	0.0	<10	<10
	Surrogate: 4-Bromofluorobenzene (SS) (%)	100	121	91	120	118
	Surrogate: 2,4-Dichlorotoluene (SS) (%)	94	94	94	95	89
	Surrogate: Fluorobenzene (SS) (%)	97	101	98	99	102
Extractable Hydrocarbons	F1 (C6-C10) (mg/kg)	<10	<10	<10	<10	<10
	F2 (C10-C16) (mg/kg)	<5	<5	<5	<5	<5
	F3 (C16-C34) (mg/kg)	9	<5	<5	<5	32
	F4 (C34-C50) (mg/kg)	26	12	8	<5	29
	Surrogate: 2-Bromobenzotrifluoride (%)	101	63	52	94	67

ALS LABORATORY GROUP ANALYTICAL REPORT

		Sample ID	L548829-26				
		Description					
		Sampled Date	22-AUG-07				
		Sampled Time					
		Client ID	P3-22-2				
Grouping	**Analyte**						
SOIL							
Physical Tests	% Moisture (%)		2.81				
	pH (pH)		8.31				
Metals	Antimony (Sb) (mg/kg)		<10				
	Arsenic (As) (mg/kg)		1.06				
			<5.0				
	Barium (Ba) (mg/kg)		43.8				
	Beryllium (Be) (mg/kg)		<0.50				
	Cadmium (Cd) (mg/kg)		<0.50				
	Chromium (Cr) (mg/kg)		5.8				
	Cobalt (Co) (mg/kg)		2.9				
	Copper (Cu) (mg/kg)		9.4				
	Lead (Pb) (mg/kg)		<30				
	Mercury (Hg) (mg/kg)		<0.0050				
	Molybdenum (Mo) (mg/kg)		<4.0				
	Nickel (Ni) (mg/kg)		<5.0				
	Selenium (Se) (mg/kg)		<2.0				
	Silver (Ag) (mg/kg)		<2.0				
	Thallium (Tl) (mg/kg)		<1.0				
	Tin (Sn) (mg/kg)		<5.0				
	Vanadium (V) (mg/kg)		17.4				
	Zinc (Zn) (mg/kg)		8.9				
Non-Halogenated Volatiles	Benzene (mg/kg)		<0.040				
	Ethylbenzene (mg/kg)		<0.050				
	Methyl t-butyl ether (MTBE) (mg/kg)		<0.20				
	Styrene (mg/kg)		<0.050				
	Toluene (mg/kg)		<0.050				
	meta- & para-Xylene (mg/kg)		<0.050				
	ortho-Xylene (mg/kg)		<0.050				
	Xylenes (mg/kg)		<0.10				
	F1-BTEX (mg/kg)		<10				
	Surrogate: 4-Bromofluorobenzene (SS) (%)		124				
	Surrogate: 2,4-Dichlorotoluene (SS) (%)		87				
	Surrogate: Fluorobenzene (SS) (%)		101				
Extractable Hydrocarbons	F1 (C6-C10) (mg/kg)		<10				
	F2 (C10-C16) (mg/kg)		120				
	F3 (C16-C34) (mg/kg)		110				
	F4 (C34-C50) (mg/kg)		6				
	Surrogate: 2-Bromobenzotrifluoride (%)		79				

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L548829-1	L548829-2	L548829-3	L548829-4	L548829-5
	Description					
	Sampled Date	22-AUG-07	22-AUG-07	22-AUG-07	22-AUG-07	22-AUG-07
	Sampled Time					
	Client ID	P3-7-1	P3-7-2	P3-8-1	P3-8-2	P3-9-1
Grouping	**Analyte**					
SOIL						
Extractable Hydrocarbons	Surrogate: Hexatriacontane (%)	97	98	135	108	94
	Chromatogram to baseline at nC50	YES	YES	NO	NO	YES
Polychlorinated Biphenyls	PCB-1016 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1221 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1232 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1242 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1248 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1254 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1260 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1262 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1268 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Total Polychlorinated Biphenyls (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050

ALS LABORATORY GROUP ANALYTICAL REPORT

		Sample ID	L548829-6	L548829-7	L548829-8	L548829-9	L548829-10
		Description					
		Sampled Date	22-AUG-07	22-AUG-07	22-AUG-07	22-AUG-07	22-AUG-07
		Sampled Time					
		Client ID	P3-9-2	P3-10-1	P3-10-2	P3-11-1	P3-11-2
Grouping	**Analyte**						
SOIL							
Extractable Hydrocarbons	Surrogate: Hexatriacontane (%)		98	102	94	114	106
	Chromatogram to baseline at nC50		YES	NO	NO	NO	NO
Polychlorinated Biphenyls	PCB-1016 (mg/kg)		<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1221 (mg/kg)		<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1232 (mg/kg)		<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1242 (mg/kg)		<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1248 (mg/kg)		<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1254 (mg/kg)		<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1260 (mg/kg)		<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1262 (mg/kg)		<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1268 (mg/kg)		<0.050	<0.050	<0.050	<0.050	<0.050
	Total Polychlorinated Biphenyls (mg/kg)		<0.050	<0.050	<0.050	<0.050	<0.050

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L548829-11	L548829-12	L548829-13	L548829-14	L548829-15
	Description					
	Sampled Date	21-AUG-07	21-AUG-07	21-AUG-07	21-AUG-07	21-AUG-07
	Sampled Time					
	Client ID	P3-12-1	P3-12-2	P3-13-1	P3-13-2	P3-14-1
Grouping	**Analyte**					
SOIL						
Extractable Hydrocarbons	Surrogate: Hexatriacontane (%)	124	86	84	102	69
	Chromatogram to baseline at nC50	NO	NO	NO	NO	NO
Polychlorinated Biphenyls	PCB-1016 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1221 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1232 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1242 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1248 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1254 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1260 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1262 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1268 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Total Polychlorinated Biphenyls (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L548829-16	L548829-17	L548829-18	L548829-19	L548829-20
	Description					
	Sampled Date	21-AUG-07	21-AUG-07	21-AUG-07	21-AUG-07	21-AUG-07
	Sampled Time					
	Client ID	P3-14-2	P3-15-1	P3-15-2	P3-16-1	P3-16-2
Grouping	**Analyte**					
SOIL						
Extractable Hydrocarbons	Surrogate: Hexatriacontane (%)	102	109	98	103	113
	Chromatogram to baseline at nC50	NO	NO	NO	NO	NO
Polychlorinated Biphenyls	PCB-1016 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1221 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1232 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1242 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1248 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1254 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1260 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1262 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1268 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Total Polychlorinated Biphenyls (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L548829-21	L548829-22	L548829-23	L548829-24	L548829-25
	Description					
	Sampled Date	21-AUG-07	21-AUG-07	22-AUG-07	22-AUG-07	22-AUG-07
	Sampled Time					
	Client ID	P3-17-1	P3-18-2	P3-19-2	P3-20-2	P3-21-2
Grouping	**Analyte**					
SOIL						
Extractable Hydrocarbons	Surrogate: Hexatriacontane (%)	109	102	88	118	83
	Chromatogram to baseline at nC50	NO	NO	NO	YES	NO
Polychlorinated Biphenyls	PCB-1016 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1221 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1232 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1242 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1248 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1254 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1260 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1262 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	PCB-1268 (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Total Polychlorinated Biphenyls (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L548829-26				
	Description					
	Sampled Date	22-AUG-07				
	Sampled Time					
	Client ID	P3-22-2				
Grouping	**Analyte**					
SOIL						
Extractable Hydrocarbons	Surrogate: Hexatriacontane (%)	88				
	Chromatogram to baseline at nC50	NO				
Polychlorinated Biphenyls	PCB-1016 (mg/kg)	<0.050				
	PCB-1221 (mg/kg)	<0.050				
	PCB-1232 (mg/kg)	<0.050				
	PCB-1242 (mg/kg)	<0.050				
	PCB-1248 (mg/kg)	<0.050				
	PCB-1254 (mg/kg)	<0.050				
	PCB-1260 (mg/kg)	<0.050				
	PCB-1262 (mg/kg)	<0.050				
	PCB-1268 (mg/kg)	<0.050				
	Total Polychlorinated Biphenyls (mg/kg)	<0.050				

Reference Information

Qualifiers for Individual Samples Listed:

Sample Number	Client Sample ID	Qualifier	Description
L548829-1	P3-7-1	IPC	Instrument performance not showing the C50 response factor within 30% of the average of C10, C16 & C34 response factors. - TEH-CCME-ED F2-F4
L548829-2	P3-7-2	IPC	Instrument performance not showing the C50 response factor within 30% of the average of C10, C16 & C34 response factors. - TEH-CCME-ED F2-F4
L548829-3	P3-8-1	IPC	Instrument performance not showing the C50 response factor within 30% of the average of C10, C16 & C34 response factors. - TEH-CCME-ED F2-F4
L548829-4	P3-8-2	IPC	Instrument performance not showing the C50 response factor within 30% of the average of C10, C16 & C34 response factors. - TEH-CCME-ED F2-F4
L548829-5	P3-9-1	IPC	Instrument performance not showing the C50 response factor within 30% of the average of C10, C16 & C34 response factors. - TEH-CCME-ED F2-F4
L548829-7	P3-10-1	IPC	Instrument performance not showing the C50 response factor within 30% of the average of C10, C16 & C34 response factors. - TEH-CCME-ED F2-F4
L548829-8	P3-10-2	IPC	Instrument performance not showing the C50 response factor within 30% of the average of C10, C16 & C34 response factors. - TEH-CCME-ED F2-F4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
RAMB	Result Adjusted For Method Blank

Samples with Qualifiers for Individual Parameters as listed above:

Sample Number	Client Sample ID	Qualifier
L548829-1	P3-7-1	RAMB
L548829-2	P3-7-2	RAMB
L548829-3	P3-8-1	RAMB
L548829-4	P3-8-2	RAMB
L548829-5	P3-9-1	RAMB
L548829-6	P3-9-2	RAMB
L548829-7	P3-10-1	RAMB
L548829-8	P3-10-2	RAMB
L548829-9	P3-11-1	RAMB
L548829-10	P3-11-2	RAMB
L548829-11	P3-12-1	RAMB
L548829-12	P3-12-2	RAMB
L548829-13	P3-13-1	RAMB
L548829-14	P3-13-2	RAMB
L548829-15	P3-14-1	RAMB
L548829-16	P3-14-2	RAMB
L548829-17	P3-15-1	RAMB
L548829-18	P3-15-2	RAMB
L548829-19	P3-16-1	RAMB
L548829-20	P3-16-2	RAMB
L548829-21	P3-17-1	RAMB
L548829-22	P3-18-2	RAMB
L548829-23	P3-19-2	RAMB
L548829-24	P3-20-2	RAMB
L548829-25	P3-21-2	RAMB
L548829-26	P3-22-2	RAMB

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)
AS-CSR-HVAAS-VA	Soil	As in Soil by HVAAS (CSR SALM)	BCMELP CSR SALM Method 8

This analysis is carried out using procedures from CSR Analytical Method 8 "Strong Acid Leachable Metals (SALM) in Soil", BC Ministry of Environment, Lands and Parks, 26 June 2001, and procedures adapted from "Test Methods for Evaluating Solid Waste", SW-846 Method 3050B United States Environmental Protection Agency (EPA). The sample is manually homogenized, dried at 60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve, and a representative subsample of the dry material is weighed. The sample is then digested at 90 degrees Celsius for 2 hours by block digester using a 1:1 ratio of concentrated nitric and hydrochloric acids. Instrumental analysis is by atomic absorption spectrophotometry (EPA Method 7000 series).

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

ETL-TEH-CCME-ED	Soil	CCME Total Extractable Hydrocarbons	CCME CWS-PHC Dec-2000 - Pub# 1310
ETL-TVH,TEH-CCME-ED	Soil	CCME Total Hydrocarbons	CCME CWS-PHC Dec-2000 - Pub# 1310

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

Hydrocarbon results are expressed on a dry weight basis.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F1-BTX-CALC-VA	Soil	F1-Total BTX	CCME CWS PHC TIER 1 (2001)

Petroleum Hydrocarbons in Sediment/Soil (Canada-Wide Standard) This analysis is carried out in accordance with the "Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil - Tier 1 Method, Canadian Council of Ministers of the Environment, December 2000." The various extraction fractions are analysed as follows:

CWS Fractions 1 and 1-BTEX:
This procedure involves the extraction of a subsample of the sediment/soil with methanol. Aliquots of the methanol extract are then analysed by capillary column gas chromatography with flame-ionization detection (GC/FID) for CWS Fraction 1, and by capillary column gas chromatography with mass spectrometric detection (GC/MS) for the BTEX compounds.

Reported results may include any or all of the following:
CWS Fraction 1 (C6-10): sum of all petroleum hydrocarbon compounds that elute between nC6 and nC10 obtained by GC/FID analysis CWS Fraction 1-BTEX:CWS Fraction 1 (C6-10), minus BTEX compounds

F1-MET-PT-FID-VA	Soil	CCME by Purge and Trap with GCMS	EPA 8260B & 524.2

Volatile Organic Compounds (VOC) are extracted from sediment or soil with methanol, following a procedure from the British Columbia Ministry of Water Land and Air Protection (BCWLAP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Solids by GC/FID" (Version 2.1 July 1999). Aliquots of the extract are analyzed by direct injection capillary column gas chromatography with mass spectrometric detection (GC/MS), using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8260B, published by the United States Environmental Protection Agency (EPA).

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)
HG-CCME-CVAFS-VA	Soil	CVAFS Hg in Soil (CCME)	CCME

This analysis is carried out using procedures from CSR Analytical Method 8 "Strong Acid Leachable Metals (SALM) in Soil", BC Ministry of Environment, Lands and Parks, 26 June 2001, and procedures adapted from "Test Methods for Evaluating Solid Waste", SW-846 Method 3050B United States Environmental Protection Agency (EPA). The sample is manually homogenized, dried at 60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve, and a representative subsample of the dry material is weighed. The sample is then digested at 90 degrees Celsius for 2 hours by block digester using a 1:1 ratio of concentrated nitric and hydrochloric acids. Instrumental analysis is by atomic fluorescence spectrophotometry (EPA Method 7000 series).

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

MET-CSR-FULL-ICP-VA	Soil	Metals in Soil by ICPOES (CSR SALM)	BCMELP CSR SALM METHOD 8

This analysis is carried out using procedures from CSR Analytical Method 8 "Strong Acid Leachable Metals (SALM) in Soil", BC Ministry of Environment, Lands and Parks, 26 June 2001, and procedures adapted from "Test Methods for Evaluating Solid Waste", SW-846 Method 3050B United States Environmental Protection Agency (EPA). The sample is manually homogenized, dried at 60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve, and a representative subsample of the dry material is weighed. The sample is then digested at 90 degrees Celsius for 2 hours by block digester using a 1:1 ratio of concentrated nitric and hydrochloric acids. Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

MOISTURE-VA	Soil	% Moisture	ASTM METHOD D2794-00

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

PCB-SE-ECD-VA	Soil	PCB by Extraction with GCECD	EPA 3630/8082 GCECD

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Methods 3500, 3620, 3630, 3660, 3665 & 8082, published by the United States Environmental Protection Agency (EPA). The procedure involves a solid-liquid extraction of a subsample of the sediment/soil using a mixture of hexane and acetone. Water is added to the extract and the resulting hexane extract undergoes one or more of the following clean-up procedures (if required): florisil clean-up, silica gel clean-up, sulphur clean-up and/or sulphuric acid clean-up. The final extract is analysed by capillary column gas chromatography with electron capture detection (GC/ECD).

PH-1:2-VA	Soil	CSR pH by 1:2 Water Leach	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL

This analysis is carried out in accordance with procedures described in the BC WLAP method: pH, Electrometric, Soil and Sediment. The procedure involves mixing the dried (at <60°C) and seived (10 mesh/2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water. The pH of the solution is then measured using a standard pH probe.

TL-CSR-MS-VA	Soil	ICPMS Tl in Soil by CSR SALM	BCMELP CSR SALM Method 8

This analysis is carried out using procedures from CSR Analytical Method 8 "Strong Acid Leachable Metals (SALM) in Soil", BC Ministry of Environment, Lands and Parks, 26 June 2001, and procedures adapted from "Test Methods for Evaluating Solid Waste", SW-846 Method 3050B United States Environmental Protection Agency (EPA). The sample is manually homogenized, dried at 60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve, and a representative subsample of the dry material is weighed. The sample is then digested at 90 degrees Celsius for 2 hours by either hotplate or block digester using a 1:1 ratio of concentrated nitric and hydrochloric acids. Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

VOC7-MET-PT-MS-VA	Soil	BTEX by MeOH with Purge and Trap GCMS	EPA 8260B & 524.2

Volatile Organic Compounds (VOC) are extracted from sediment or soil with methanol, following a procedure from the British Columbia Ministry of Water Land and Air Protection (BCWLAP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Solids by GC/FID" (Version 2.1 July 1999). Aliquots of the extract are analyzed by direct injection capillary column gas chromatography with mass spectrometric detection (GC/MS), using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8260B, published by the United States Environmental Protection Agency (EPA). Surrogate recoveries may not be reported in cases where interferences from the sample matrix prevent accurate quantitation.

XYLENES-CALC-VA	Soil	CSR VOC7 by MeOH with DI GCMS	EPA 8260B & 524.2

Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero.

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)

The DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** Laboratory Methods employed follow in-house procedures, which are generally based on nationally or internationally accepted methodologies.
The last two letters of the above ALS Test Code column indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
ED	ALS LABORATORY GROUP - EDMONTON, ALBERTA, CANADA	VA	ALS LABORATORY GROUP - VANCOUVER, BC, CANADA

GLOSSARY OF REPORT TERMS
Surr - A surrogate is an organic compound that is similar to the target analyte(s) in chemical composition and behavior but not normally detected in enviromental samples. Prior to sample processing, samples are fortified with one or more surrogate compounds.
The reported surrogate recovery value provides a measure of method efficiency.
mg/kg (units) - unit of concentration based on mass, parts per million
mg/L (units) - unit of concentration based on volume, parts per million
N/A - Result not available. Refer to qualifier code and definition for explanation

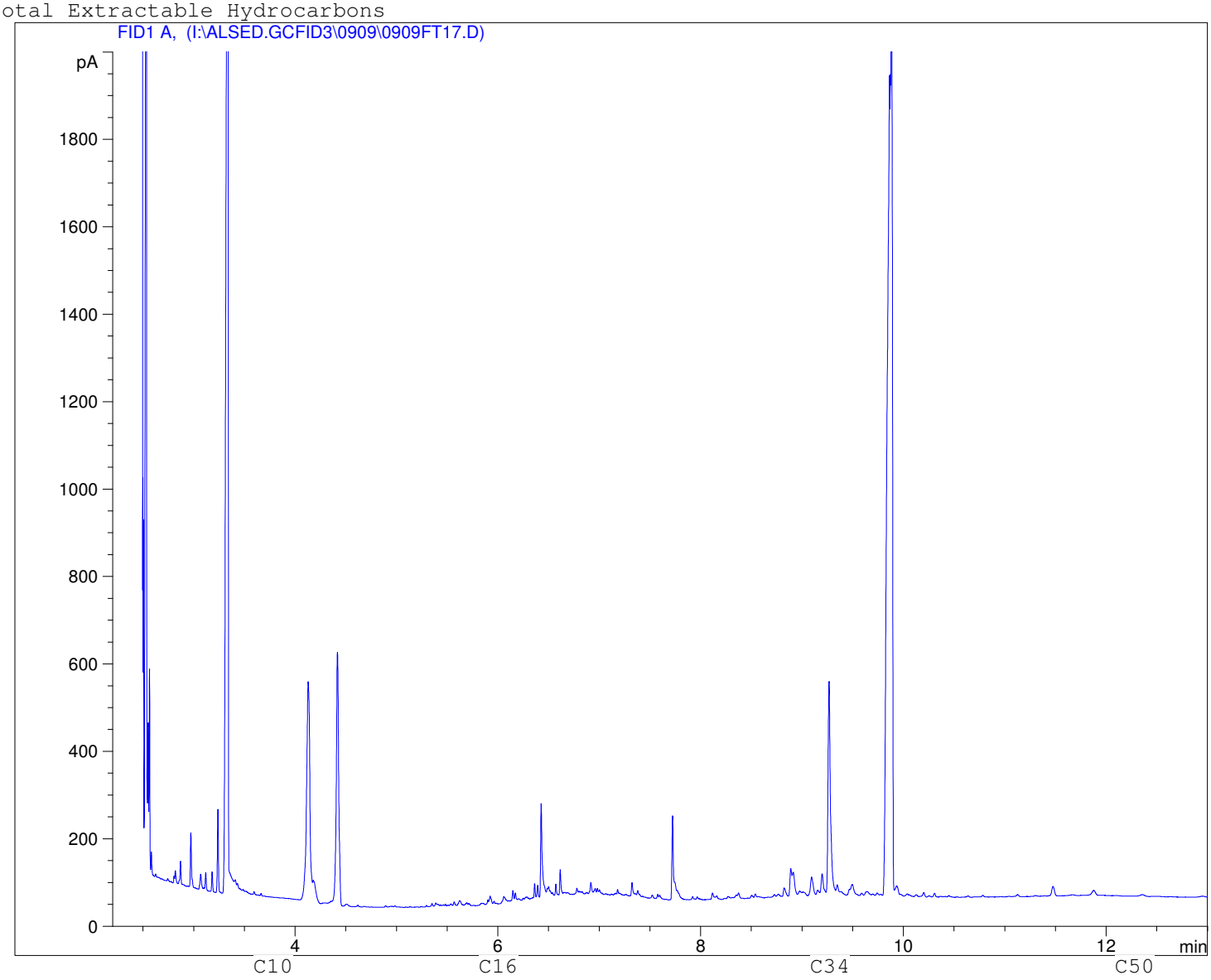
Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Although test results are generated under strict QA/QC protocols, any unsigned test reports, faxes, or emails are considered preliminary.

ALS Laboratory Group has an extensive QA/QC program where all analytical data reported is analyzed using approved referenced procedures followed by checks and reviews by senior managers and quality assurance personnel. However, since the results are obtained from chemical measurements and thus cannot be guaranteed, ALS Laboratory Group assumes no liability for the use or interpretation of the results.

Client ID: P3-11-2

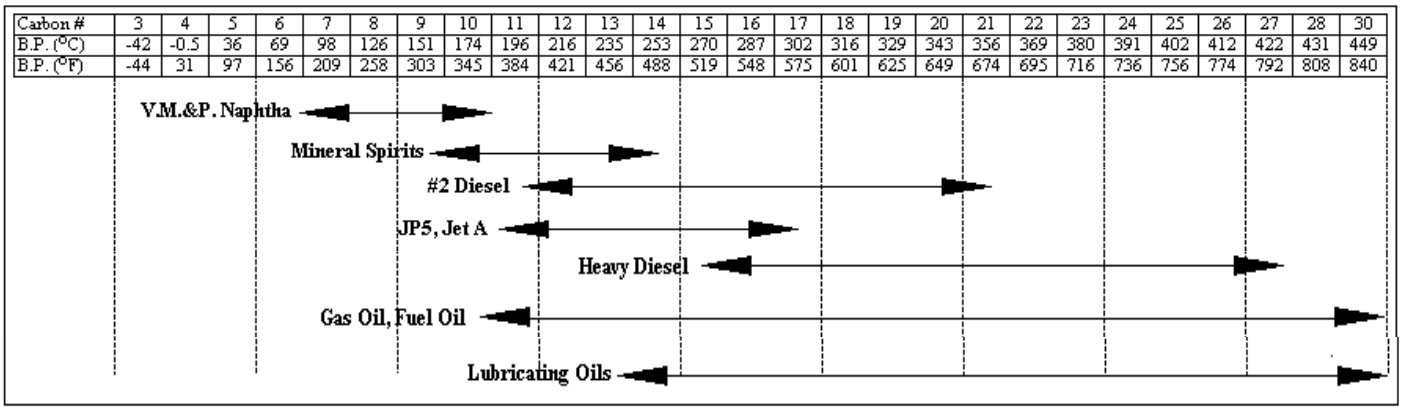
Sample ID: L548829-10 4
Injection Date: 9/9/07 11:14:05 PM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

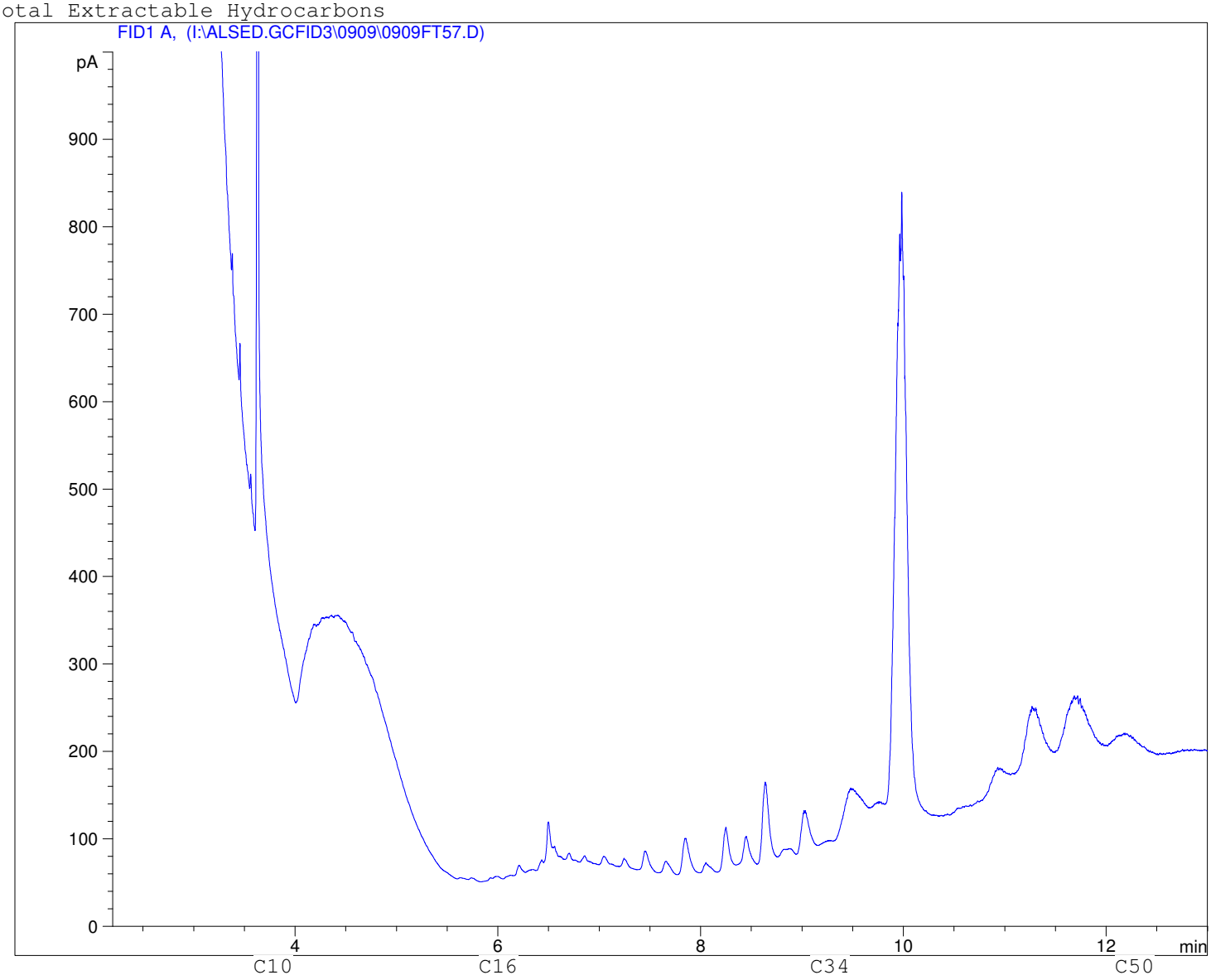


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-12-1

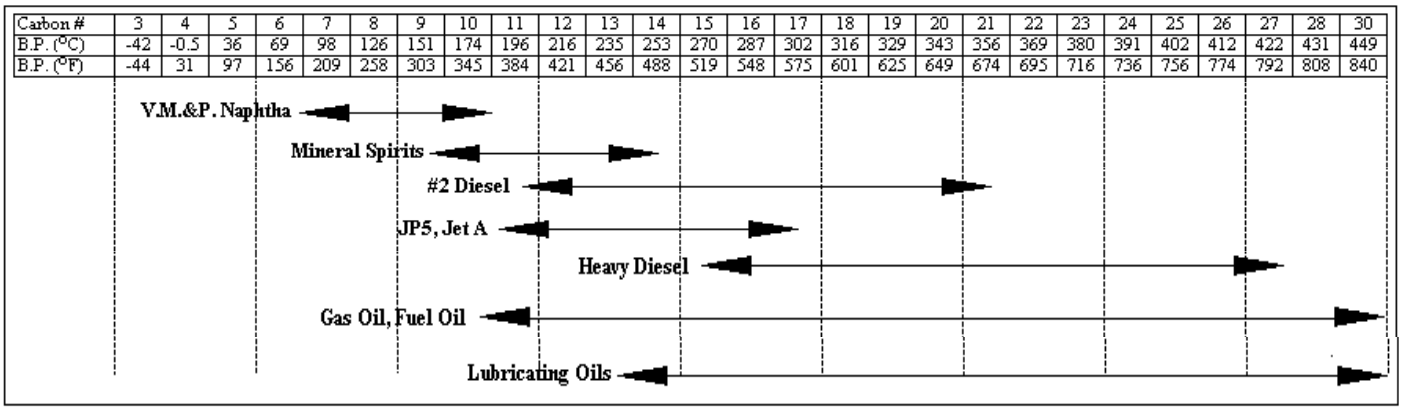
Sample ID: L548829-11 4
Injection Date: 9/10/07 4:16:56 PM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

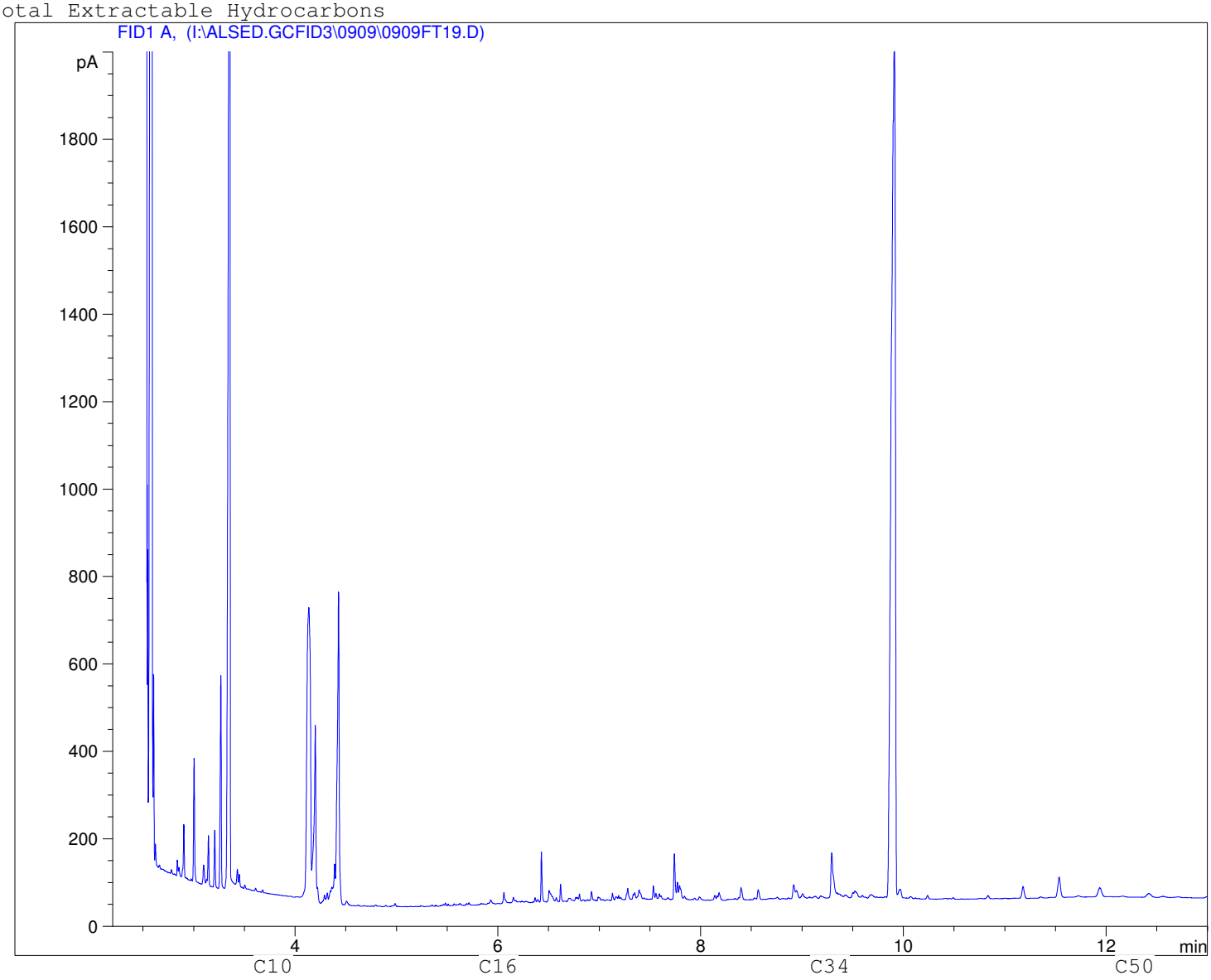


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-12-2

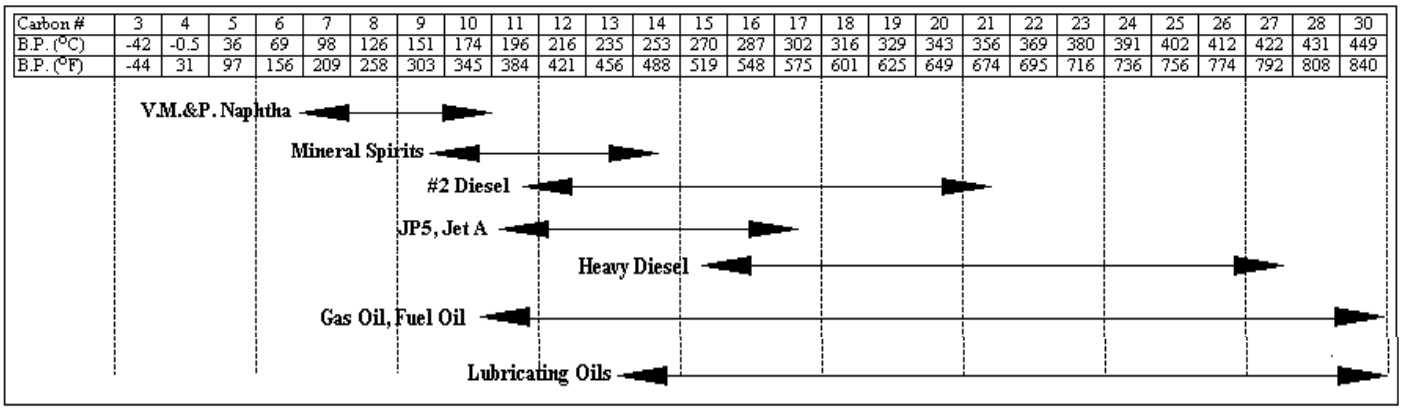
Sample ID: L548829-12 4
Injection Date: 9/10/07 12:05:43 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

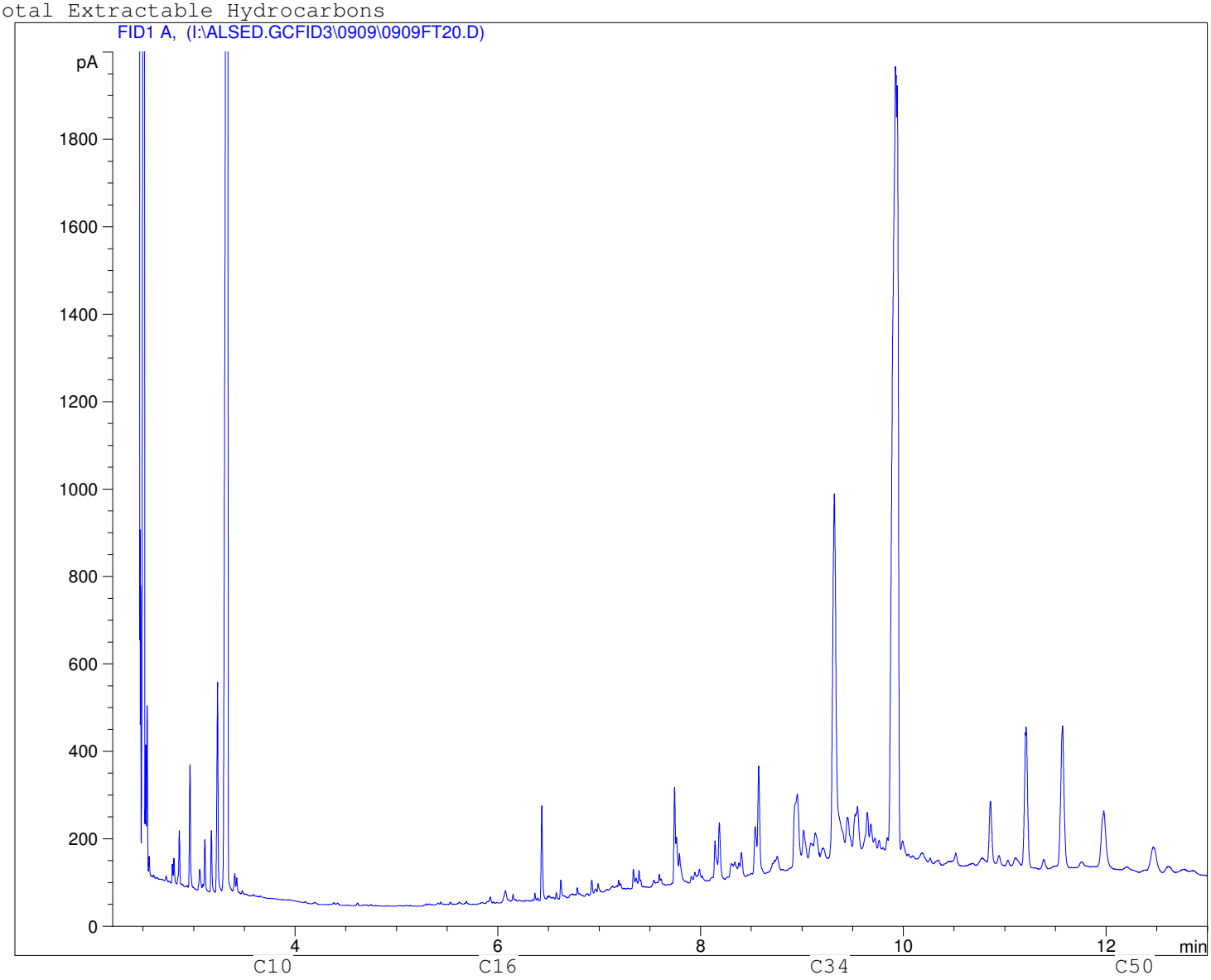


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-13-1

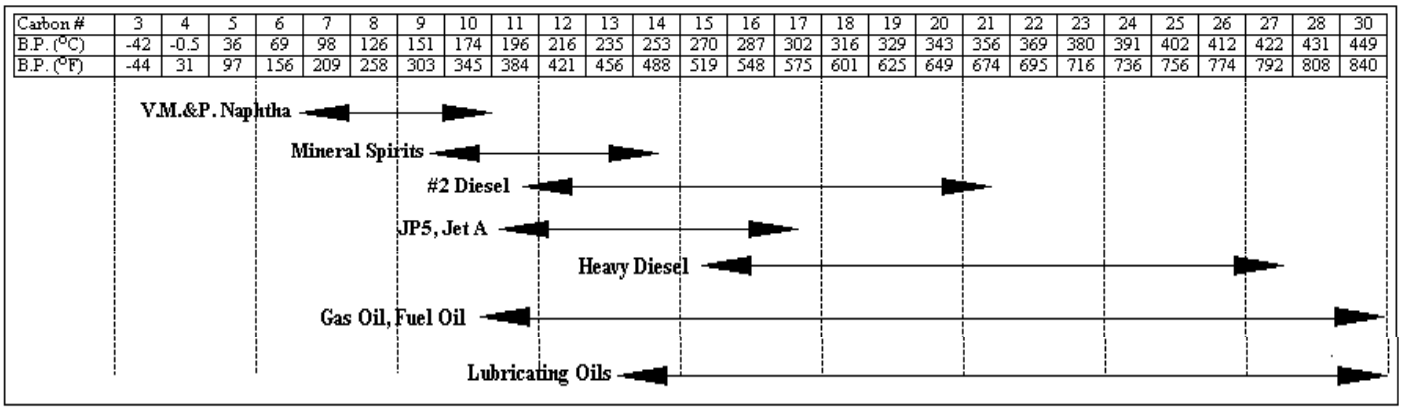
Sample ID: L548829-13 4
Injection Date: 9/10/07 12:31:24 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

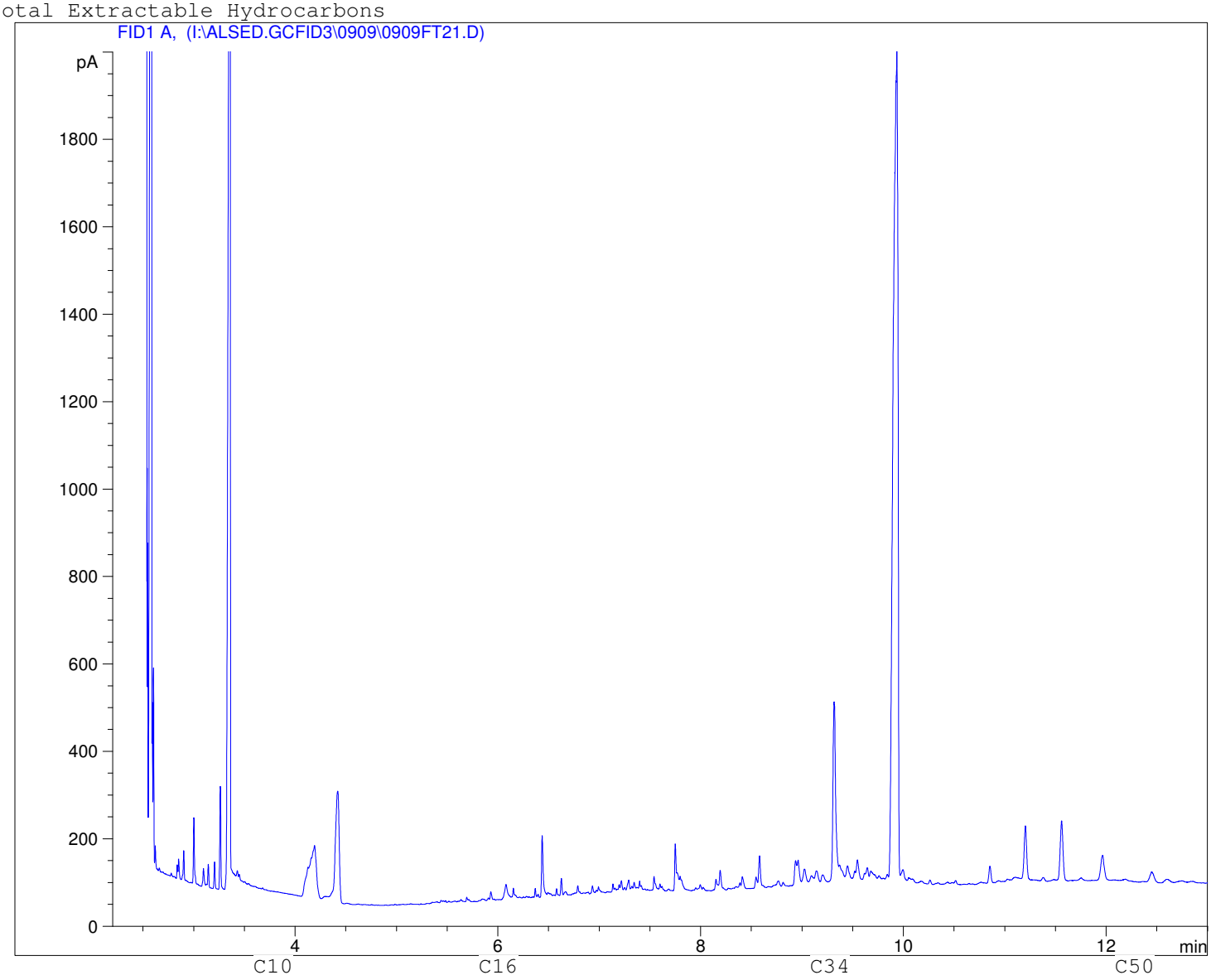


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-13-2

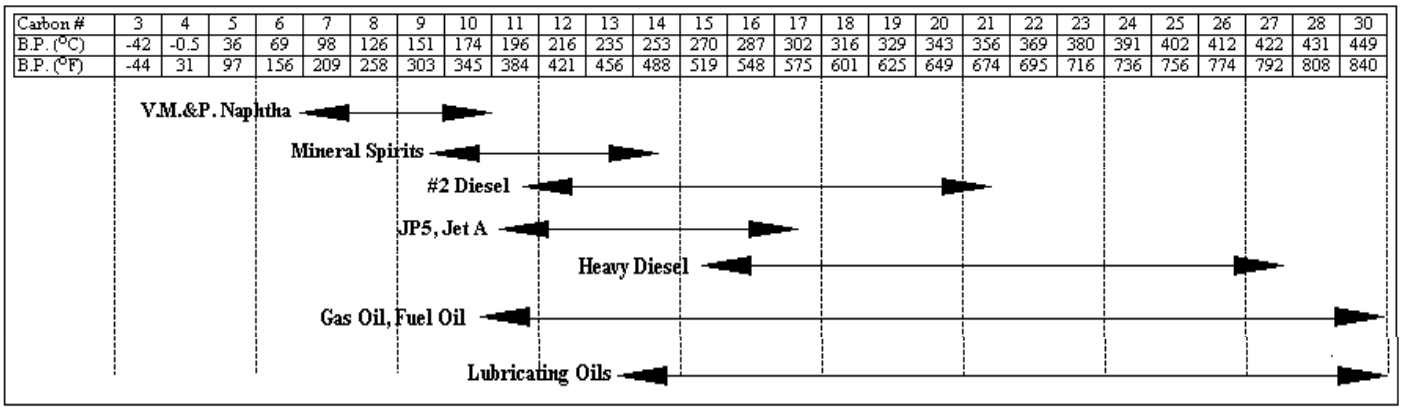
Sample ID: L548829-14 4
Injection Date: 9/10/07 12:57:06 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

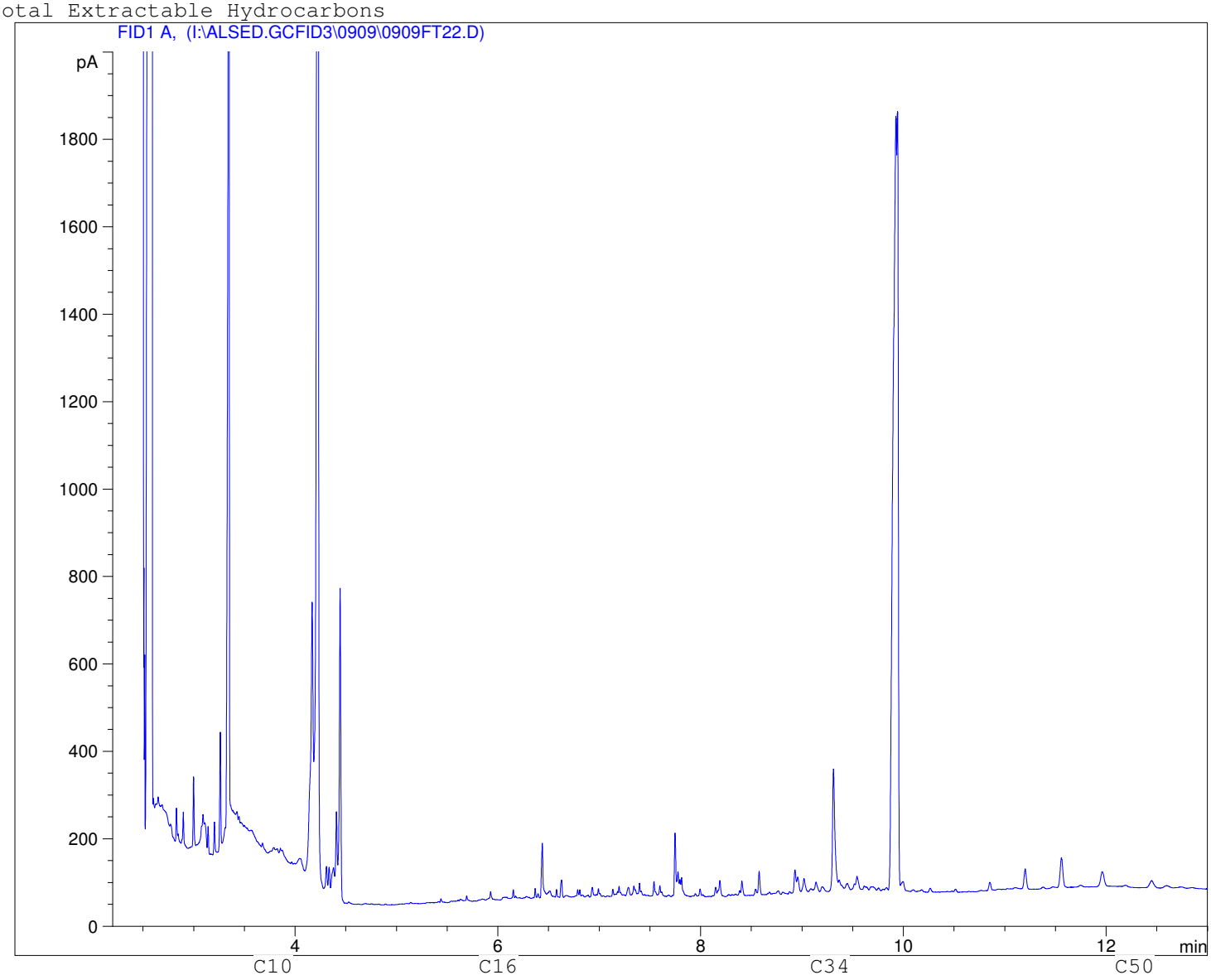


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-14-1

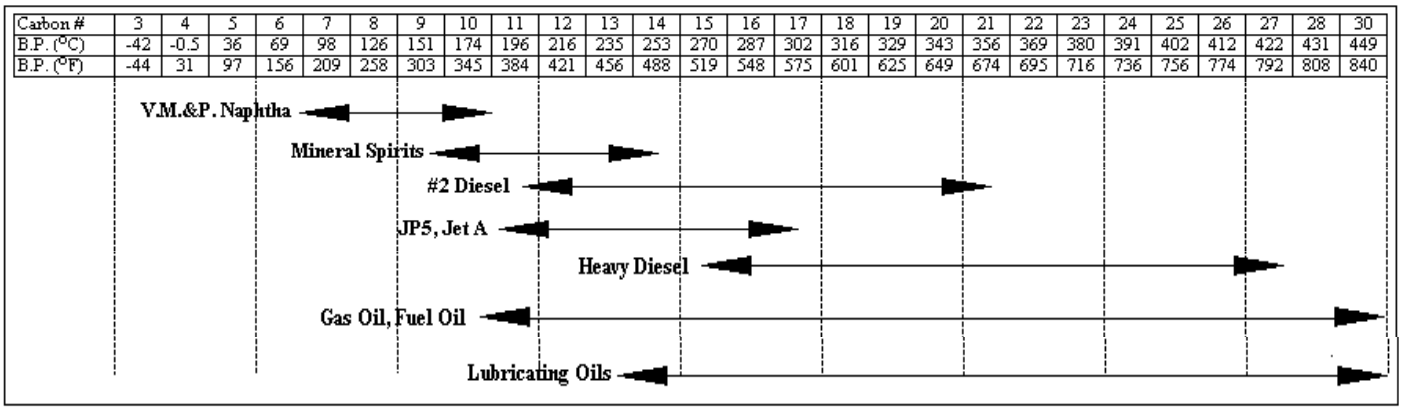
Sample ID: L548829-15 4
Injection Date: 9/10/07 1:23:03 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

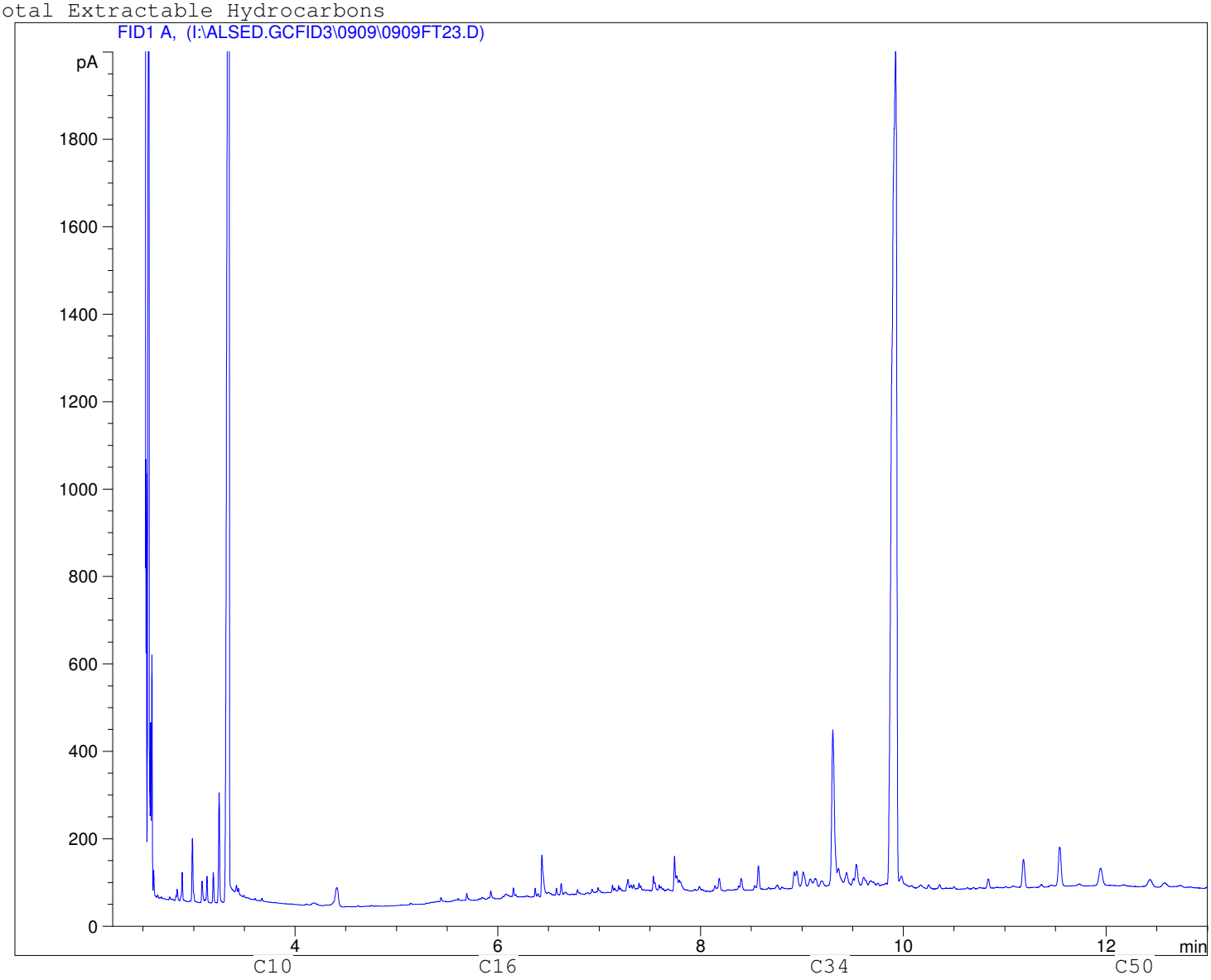


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-14-2

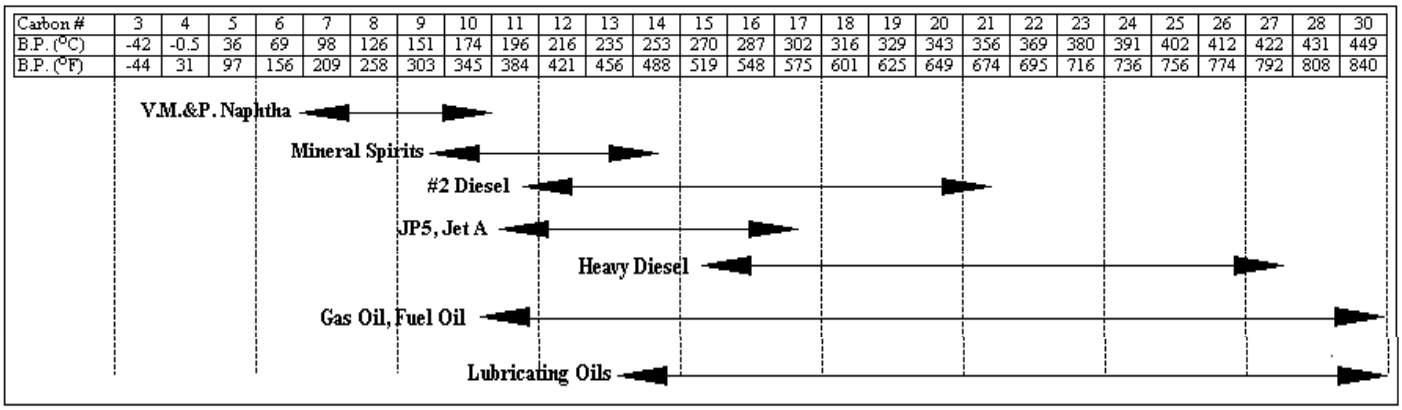
Sample ID: L548829-16 4
Injection Date: 9/10/07 1:48:49 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

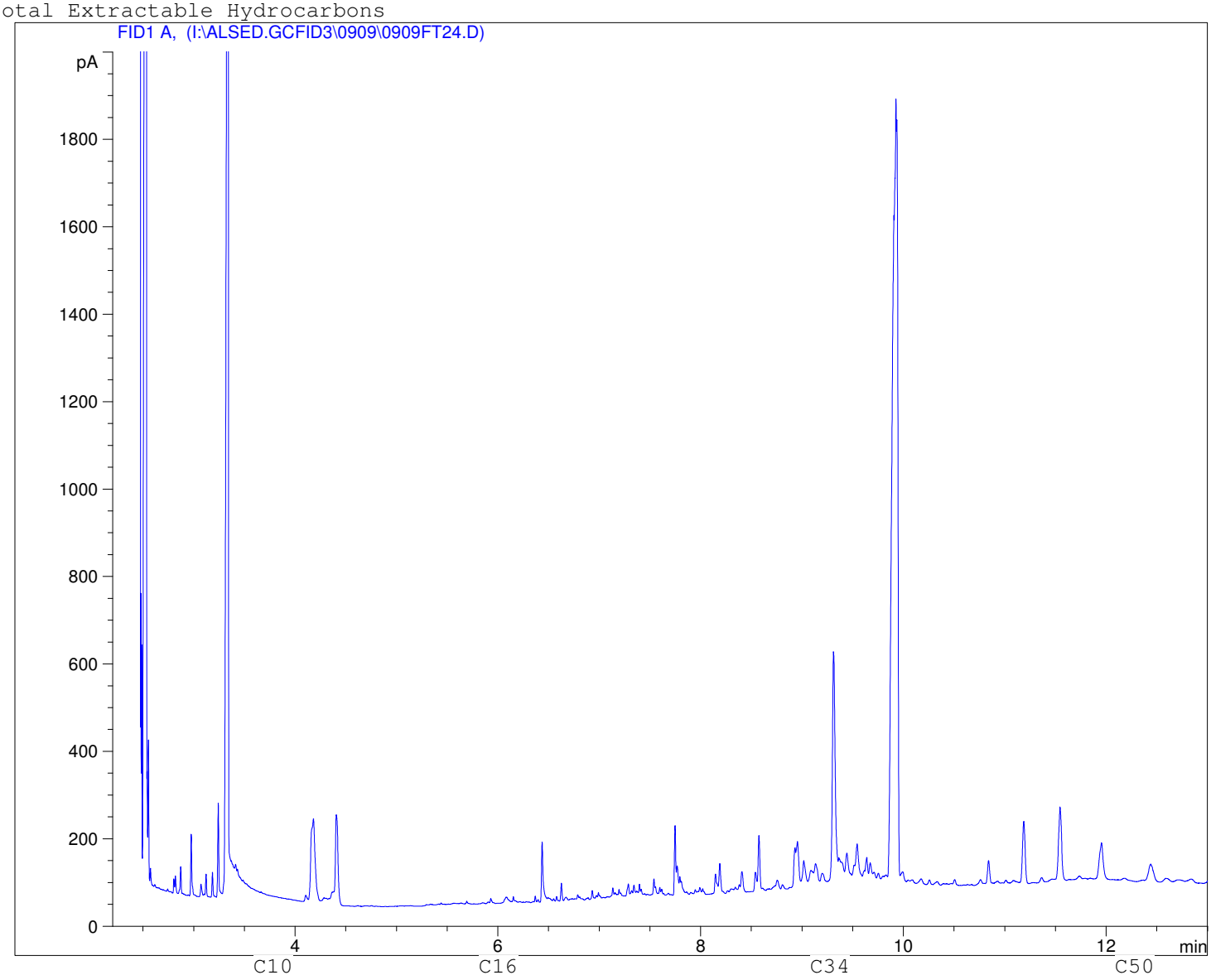


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-15-1

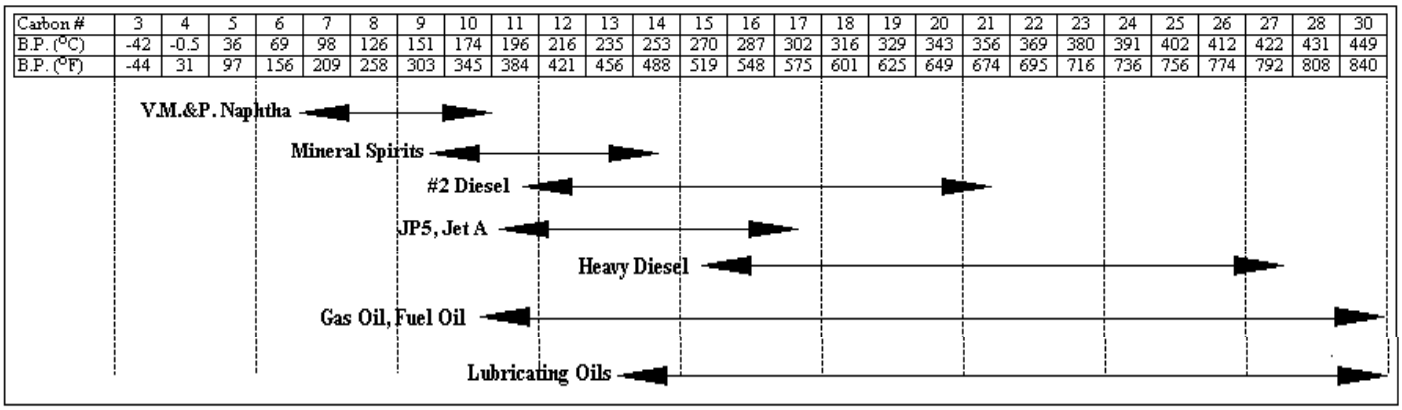
Sample ID: L548829-17 4
Injection Date: 9/10/07 2:14:32 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

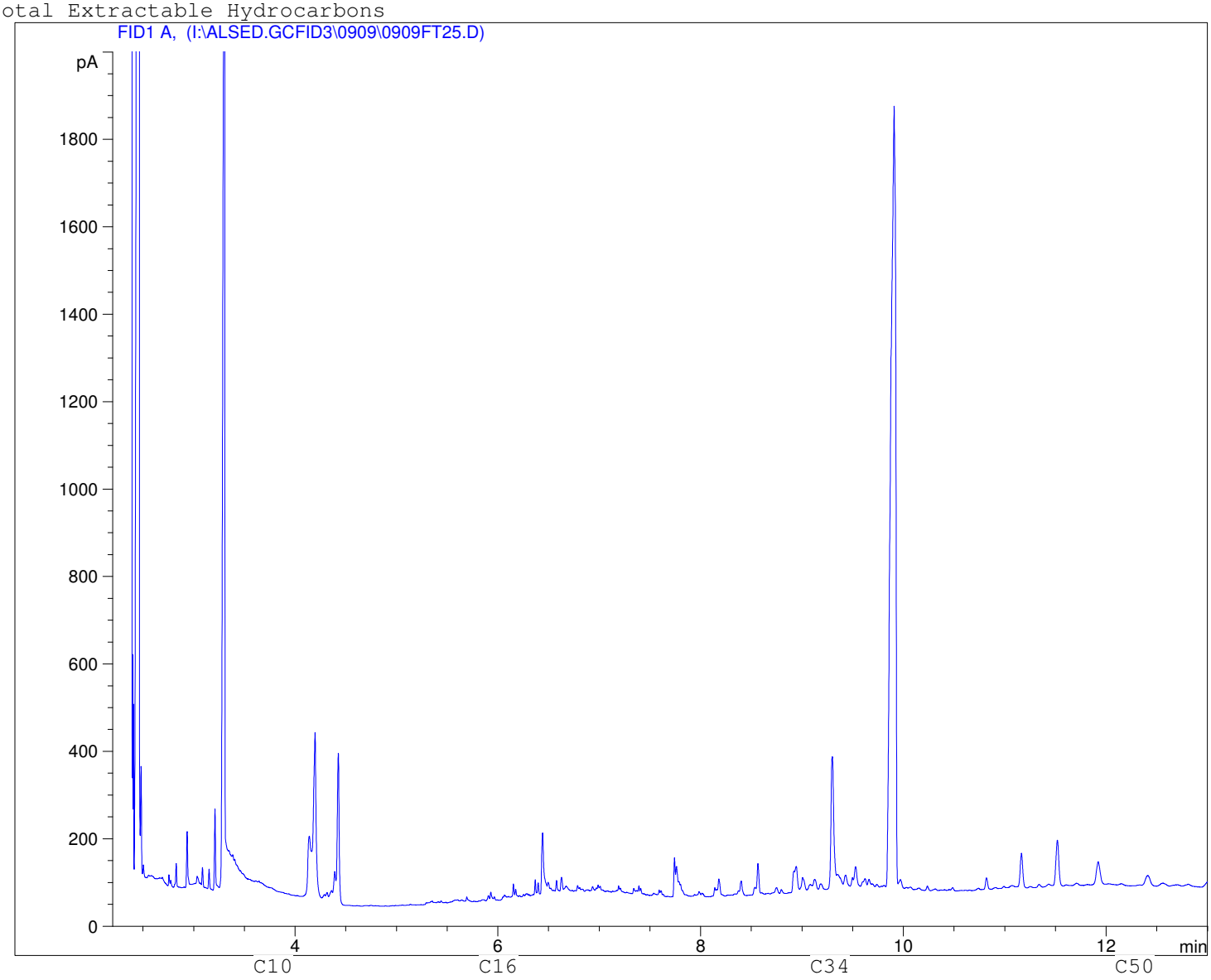


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-15-2

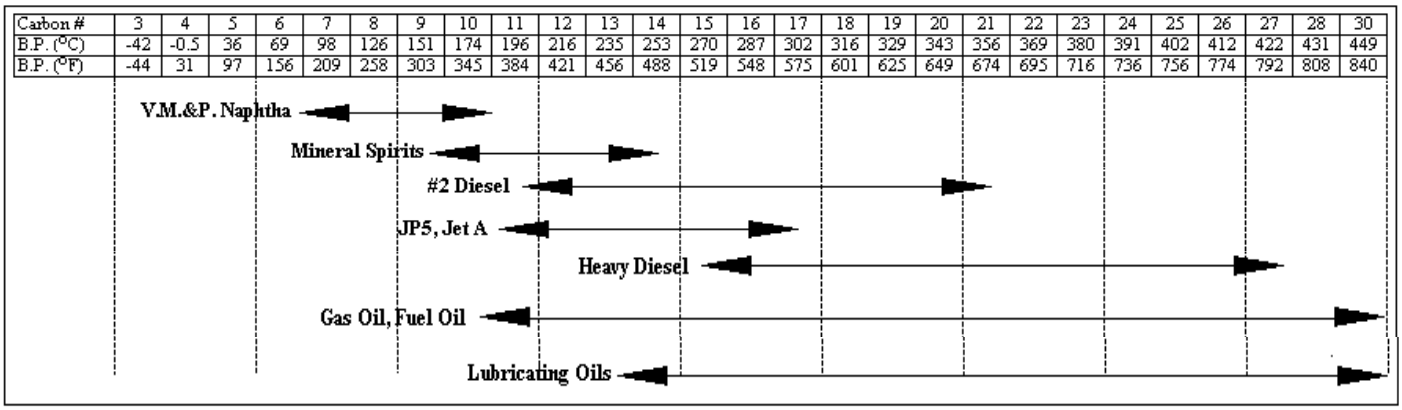
Sample ID: L548829-18 4
Injection Date: 9/10/07 2:40:27 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

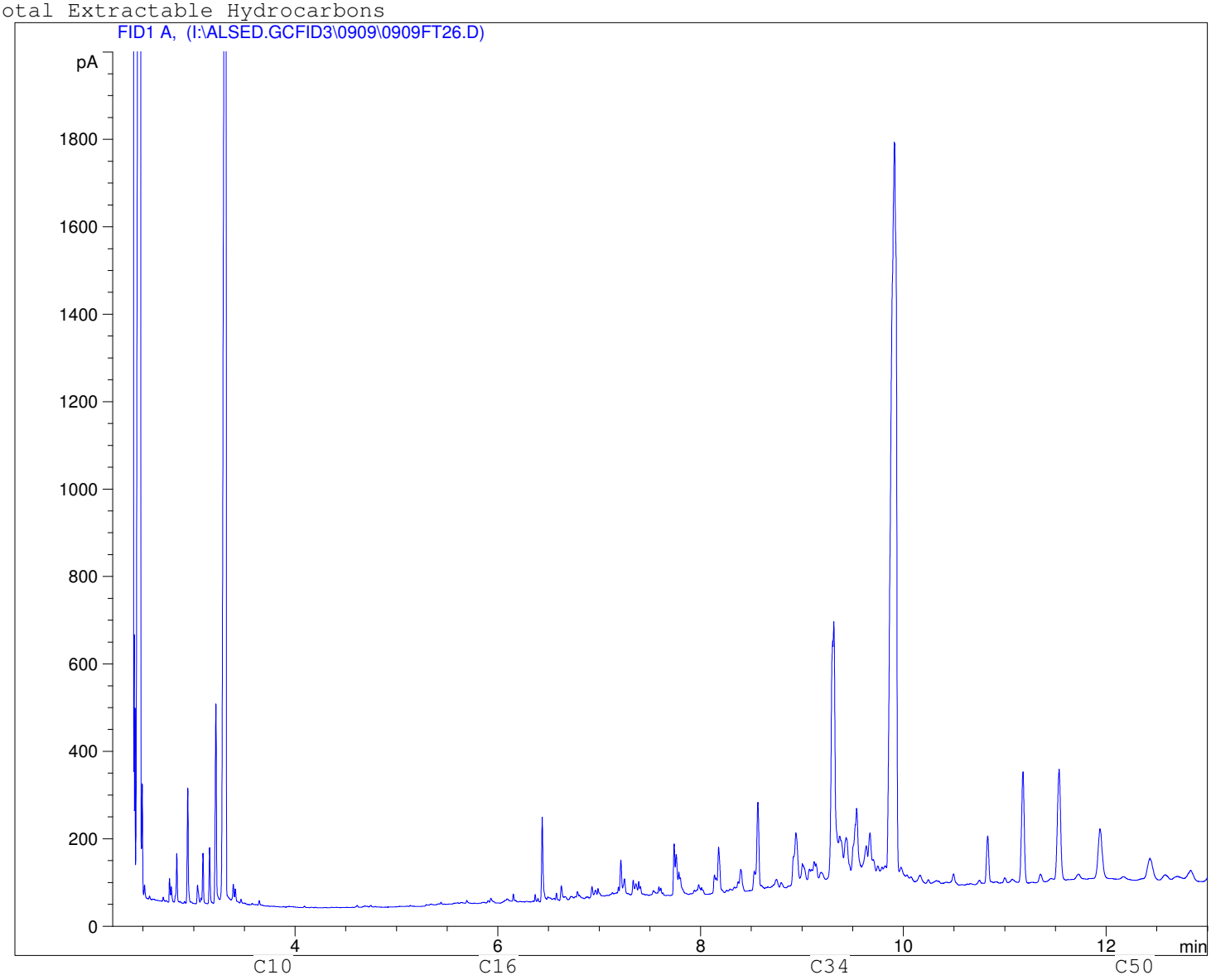


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-16-1

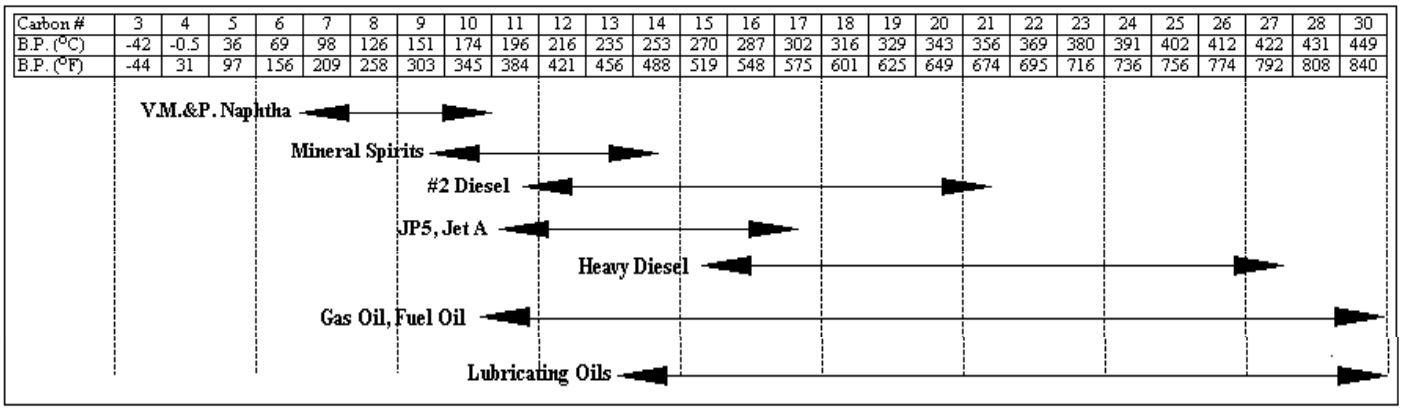
Sample ID: L548829-19 4
Injection Date: 9/10/07 3:06:07 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

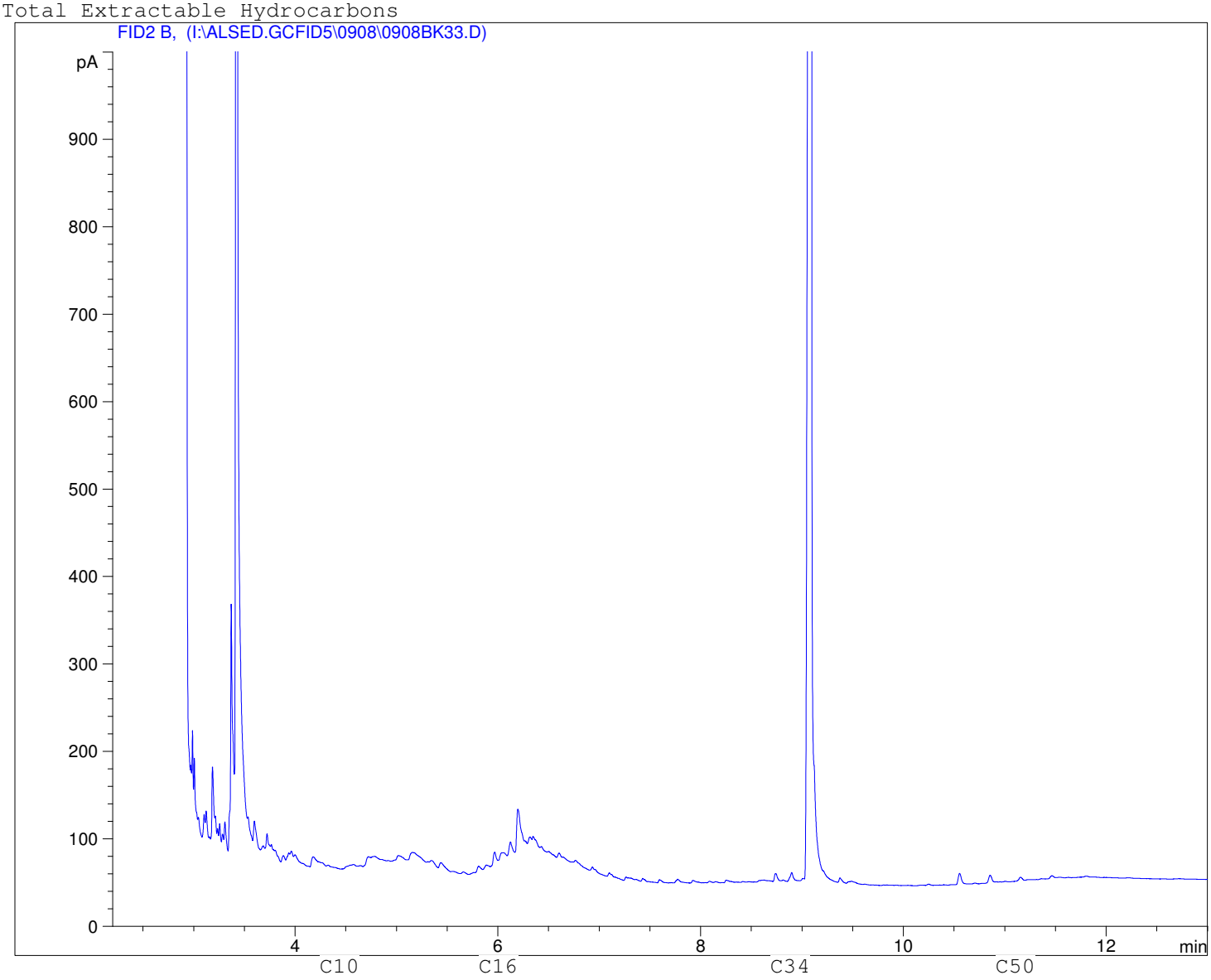


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-7-2

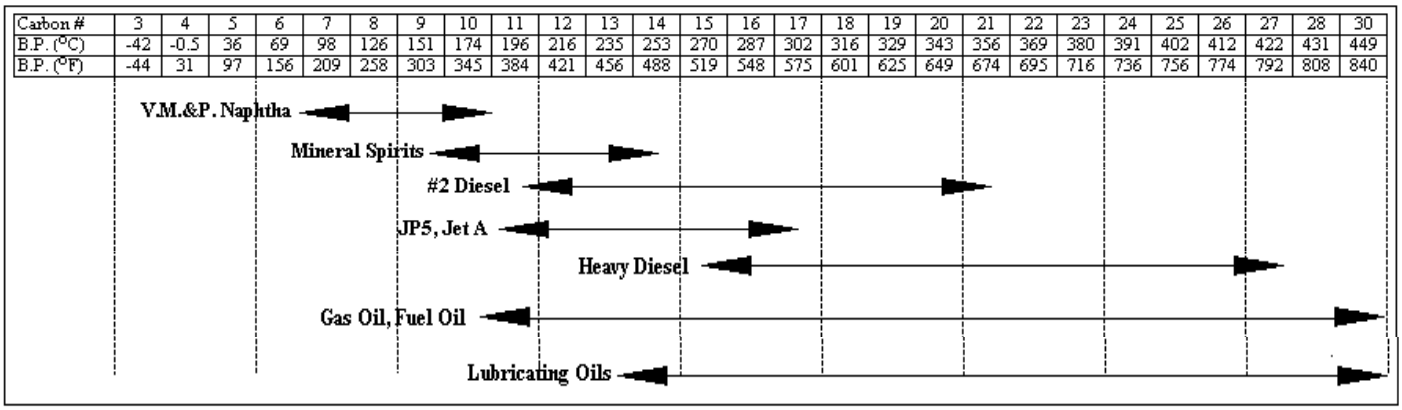
Sample ID: L548829-2 4
Injection Date: 9/9/2007 7:32:04 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

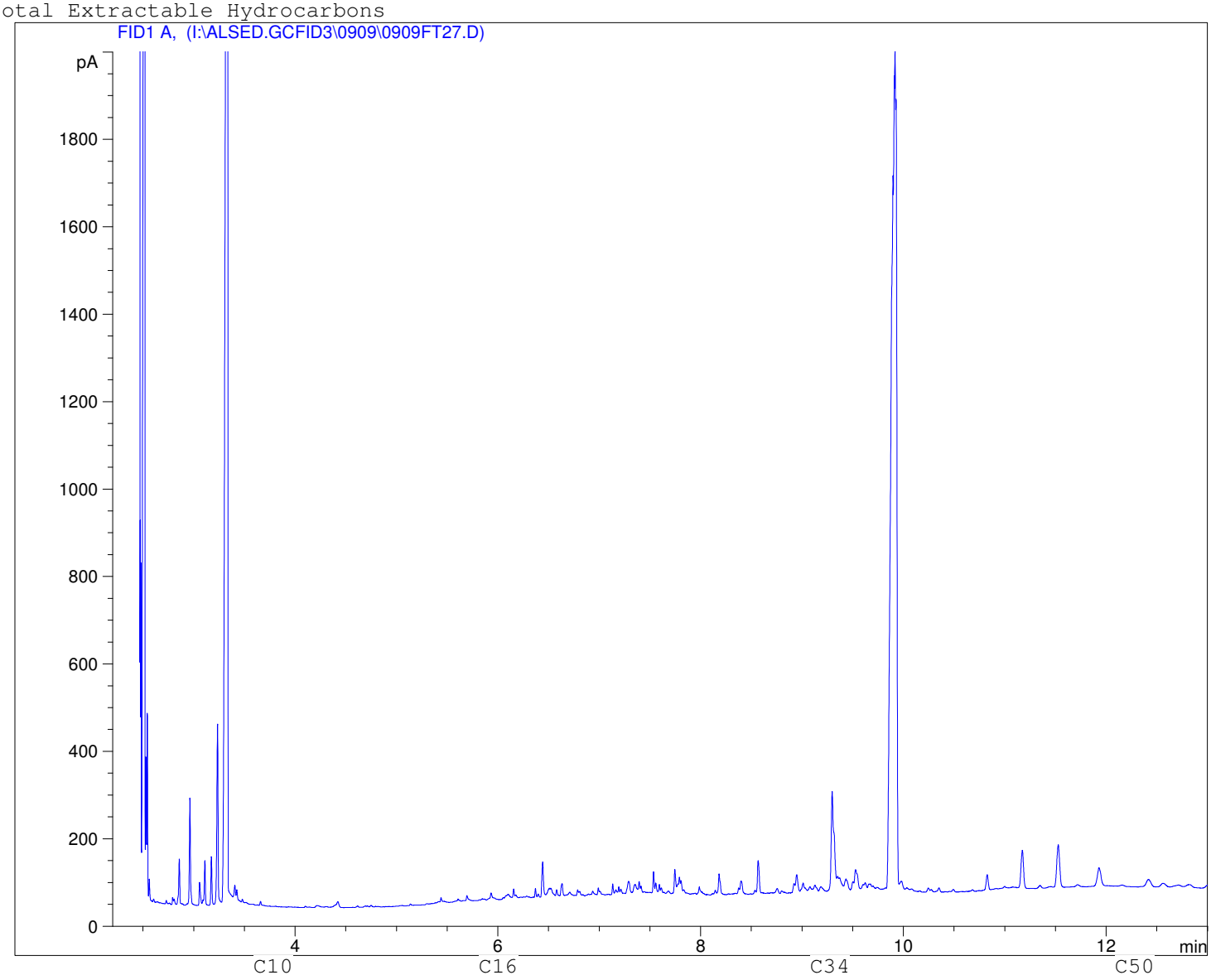


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-16-2

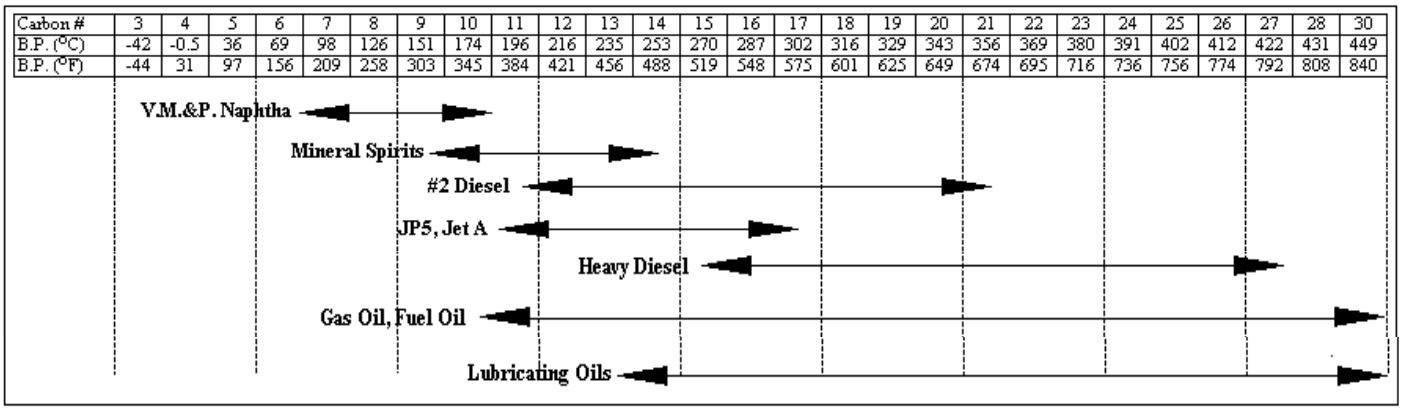
Sample ID: L548829-20 4
Injection Date: 9/10/07 3:31:48 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

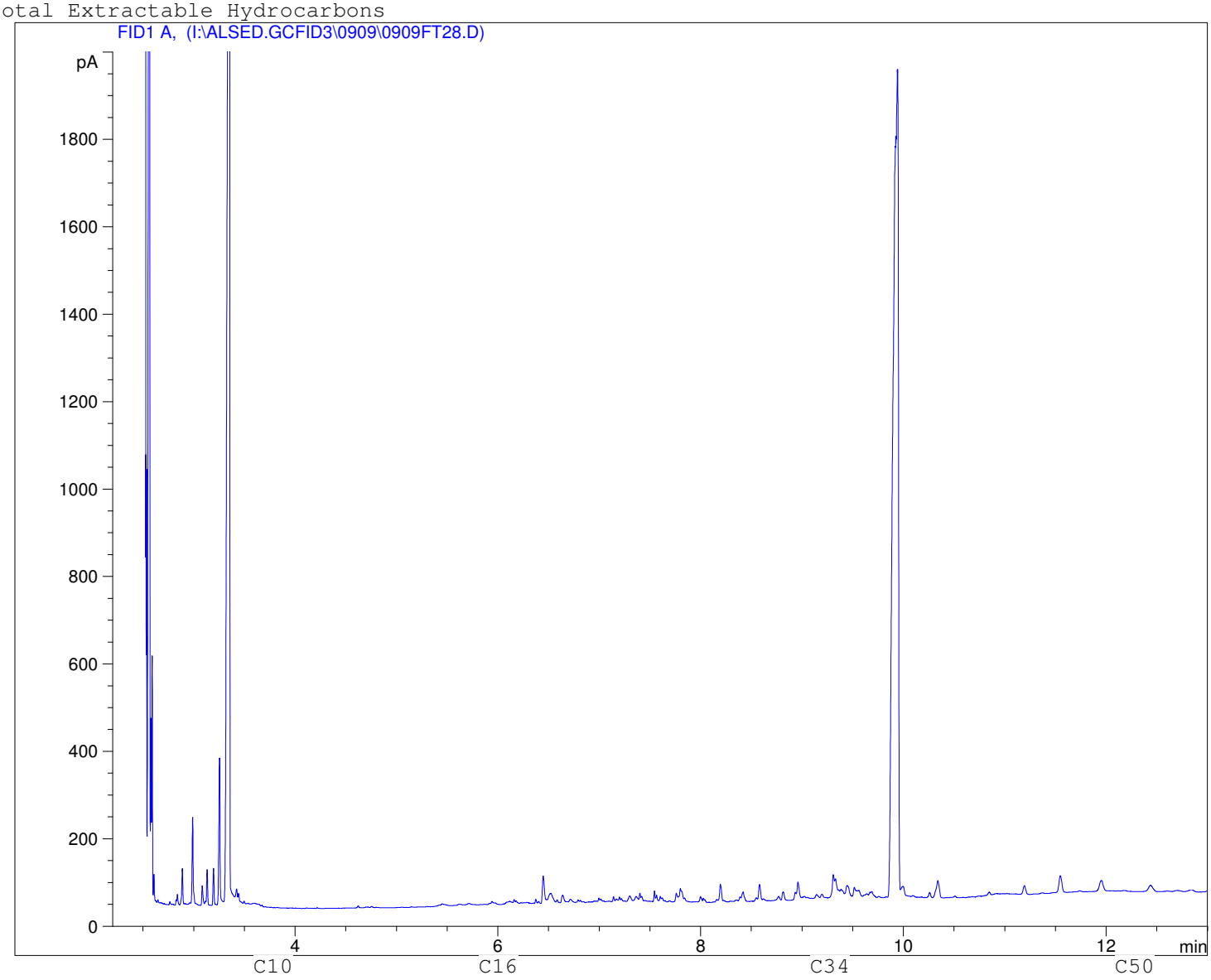


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-17-1

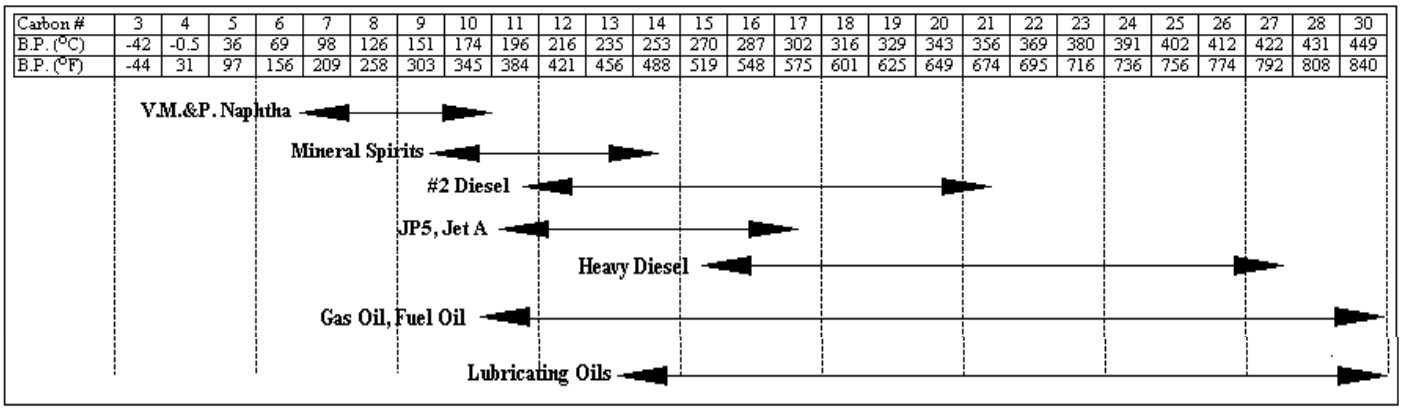
Sample ID: L548829-21 4
Injection Date: 9/10/07 3:57:44 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

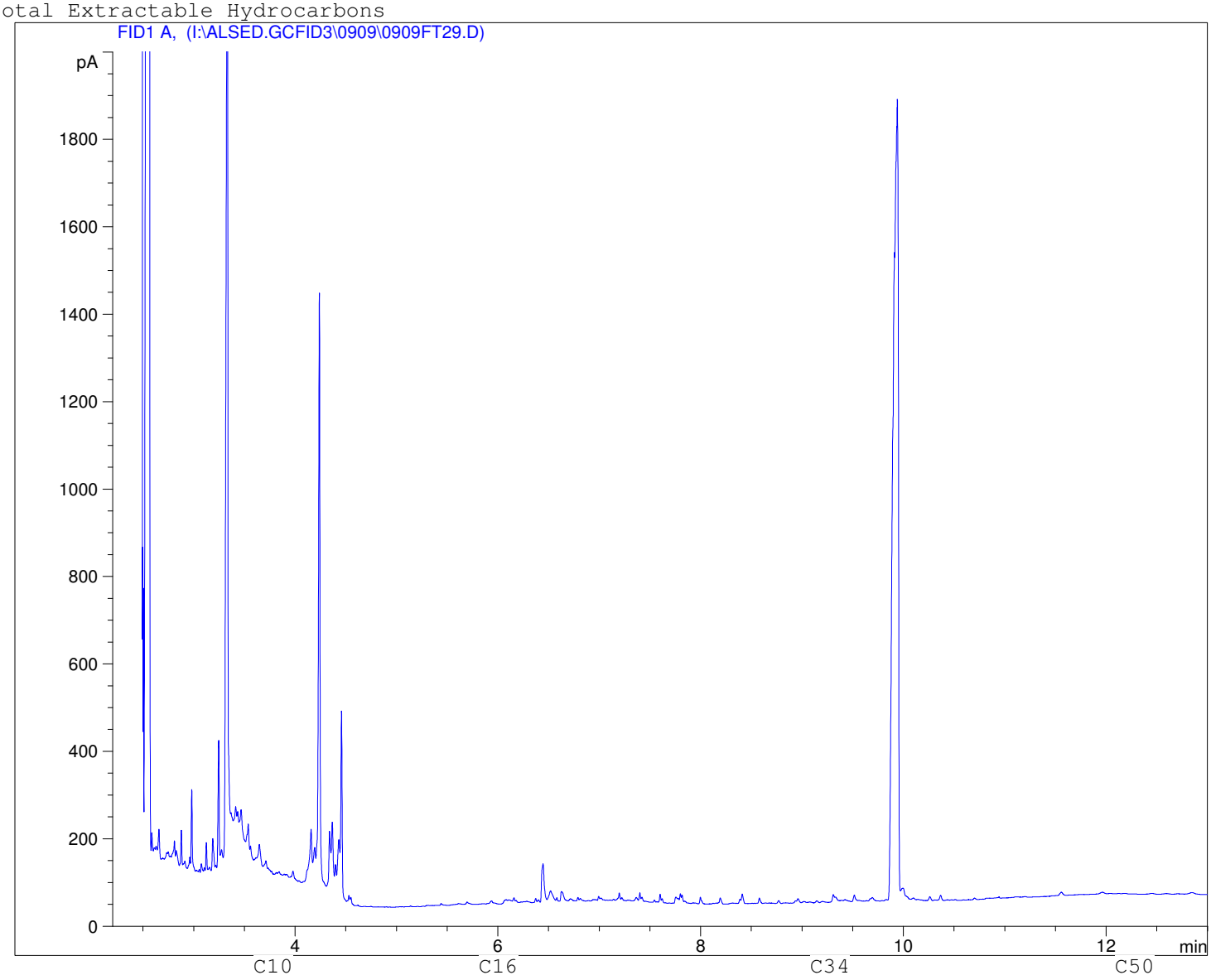


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-18-2

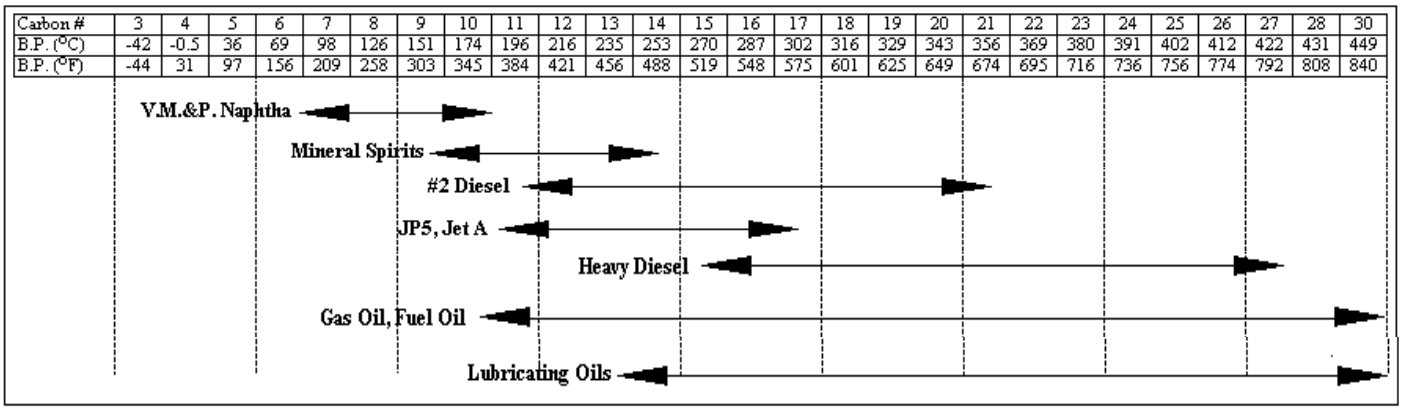
Sample ID: L548829-22 4
Injection Date: 9/10/07 4:23:26 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

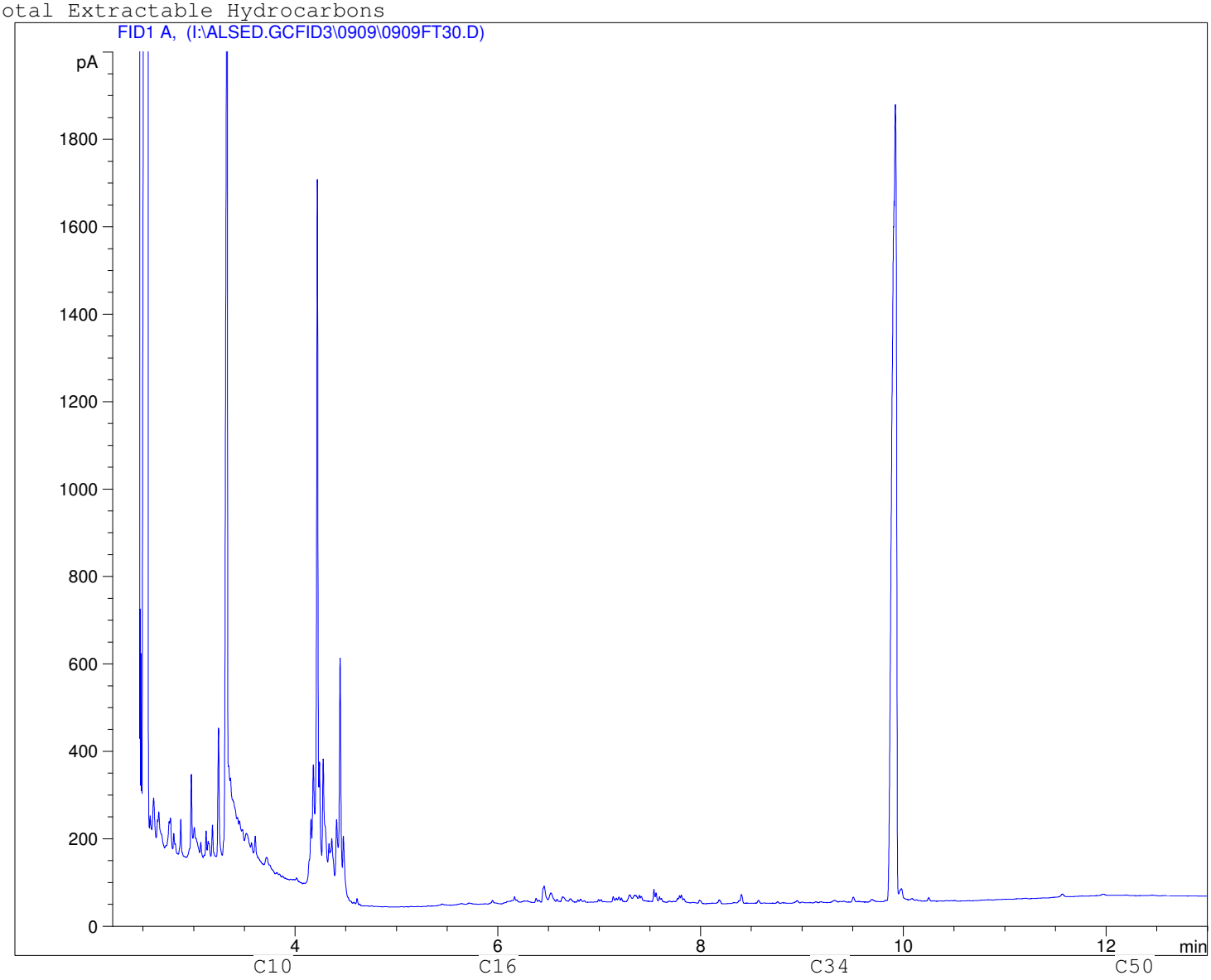


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-19-2

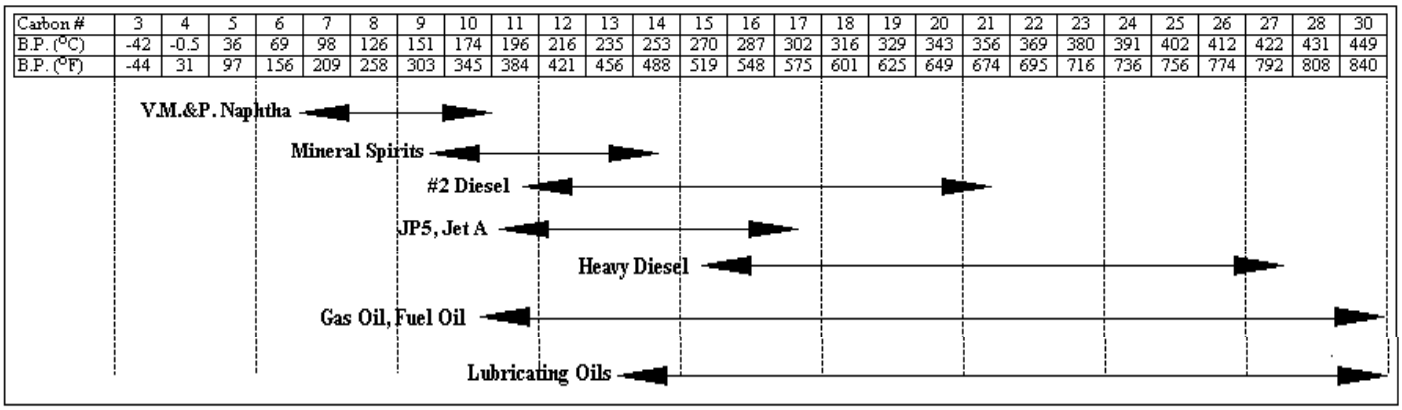
Sample ID: L548829-23 4
Injection Date: 9/10/07 4:49:08 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

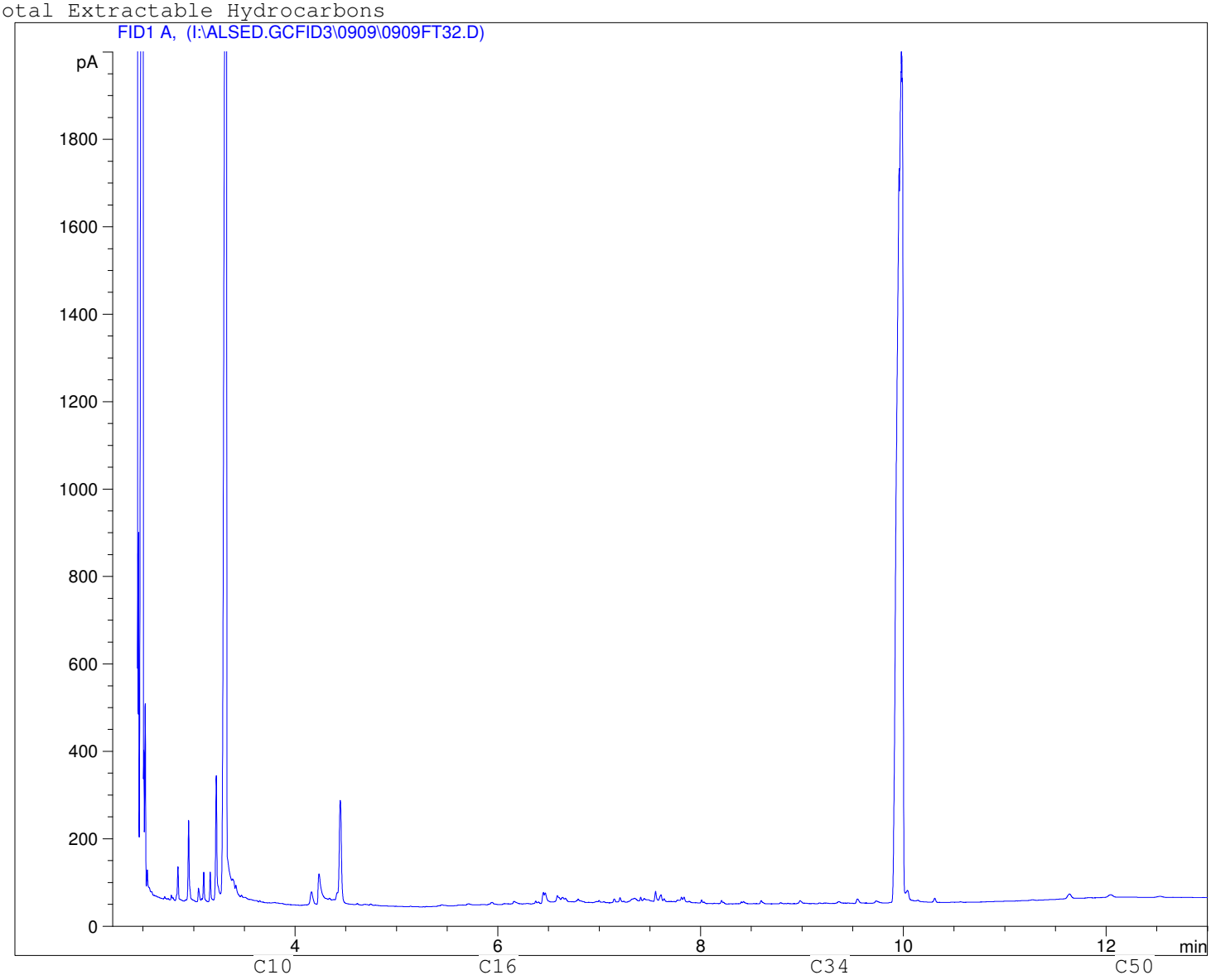


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-20-2

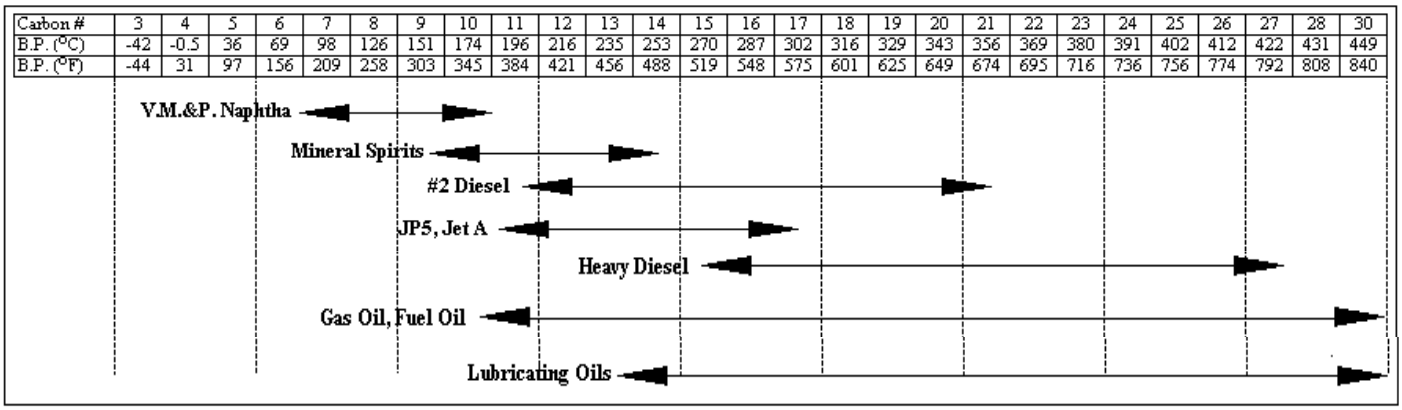
Sample ID: L548829-24 4
Injection Date: 9/10/07 5:40:48 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

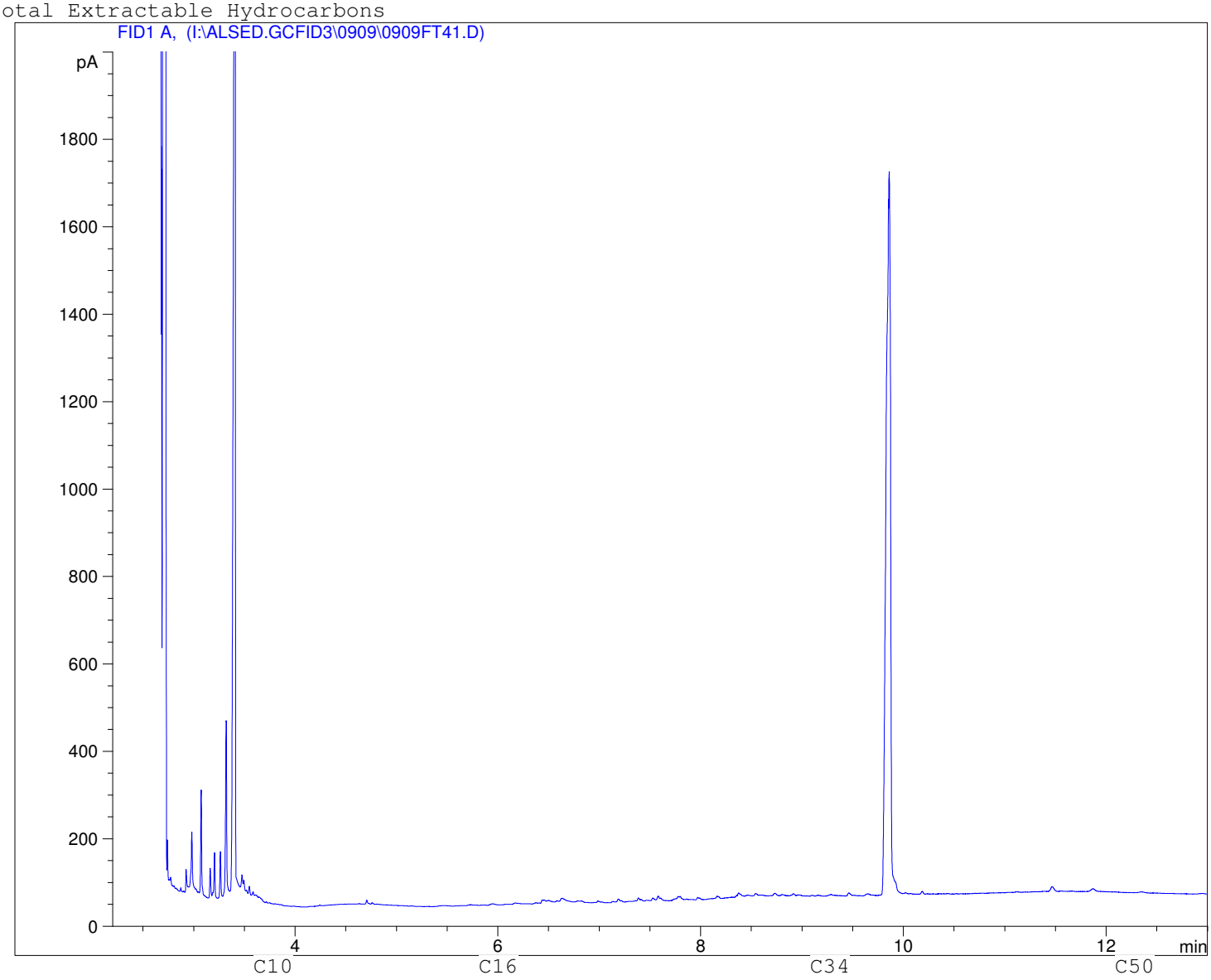


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-21-2

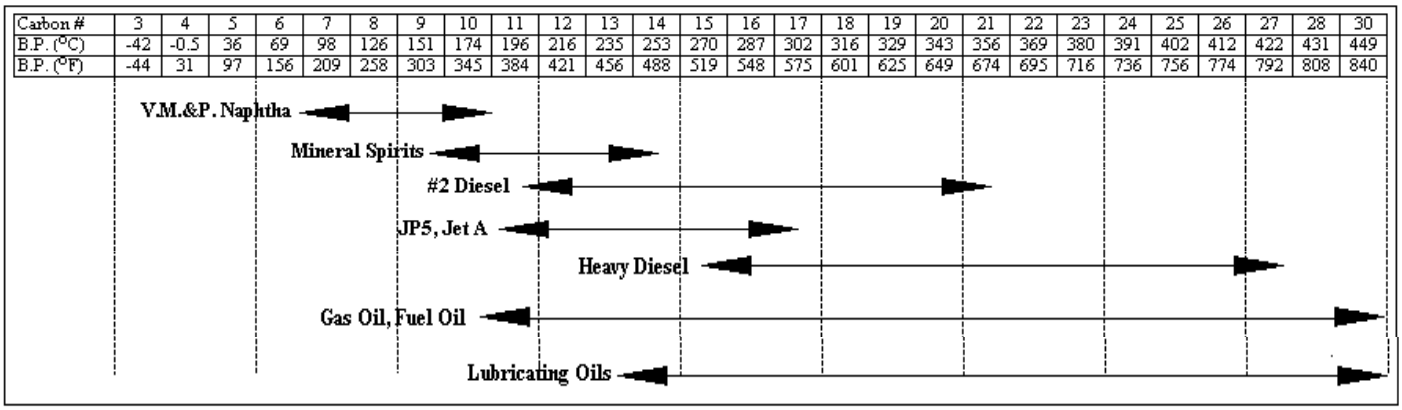
Sample ID: L548829-25 4
Injection Date: 9/10/07 9:32:00 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

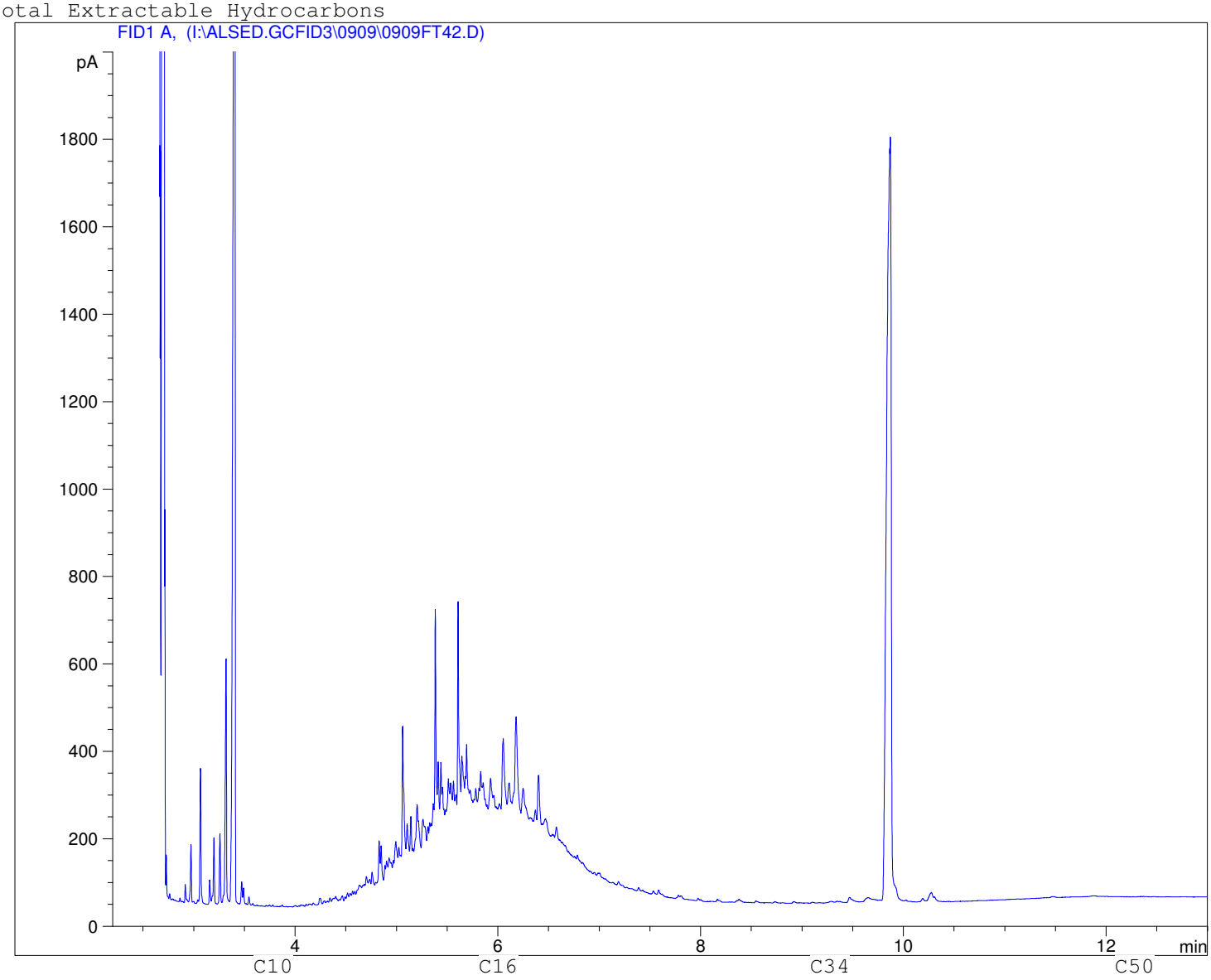


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-22-2

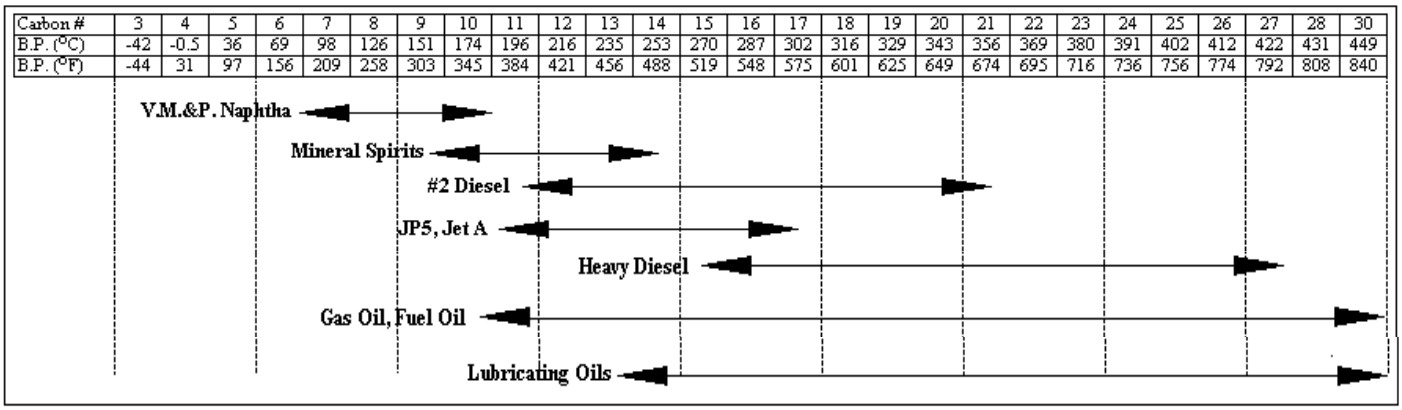
Sample ID: L548829-26 4
Injection Date: 9/10/07 9:56:54 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

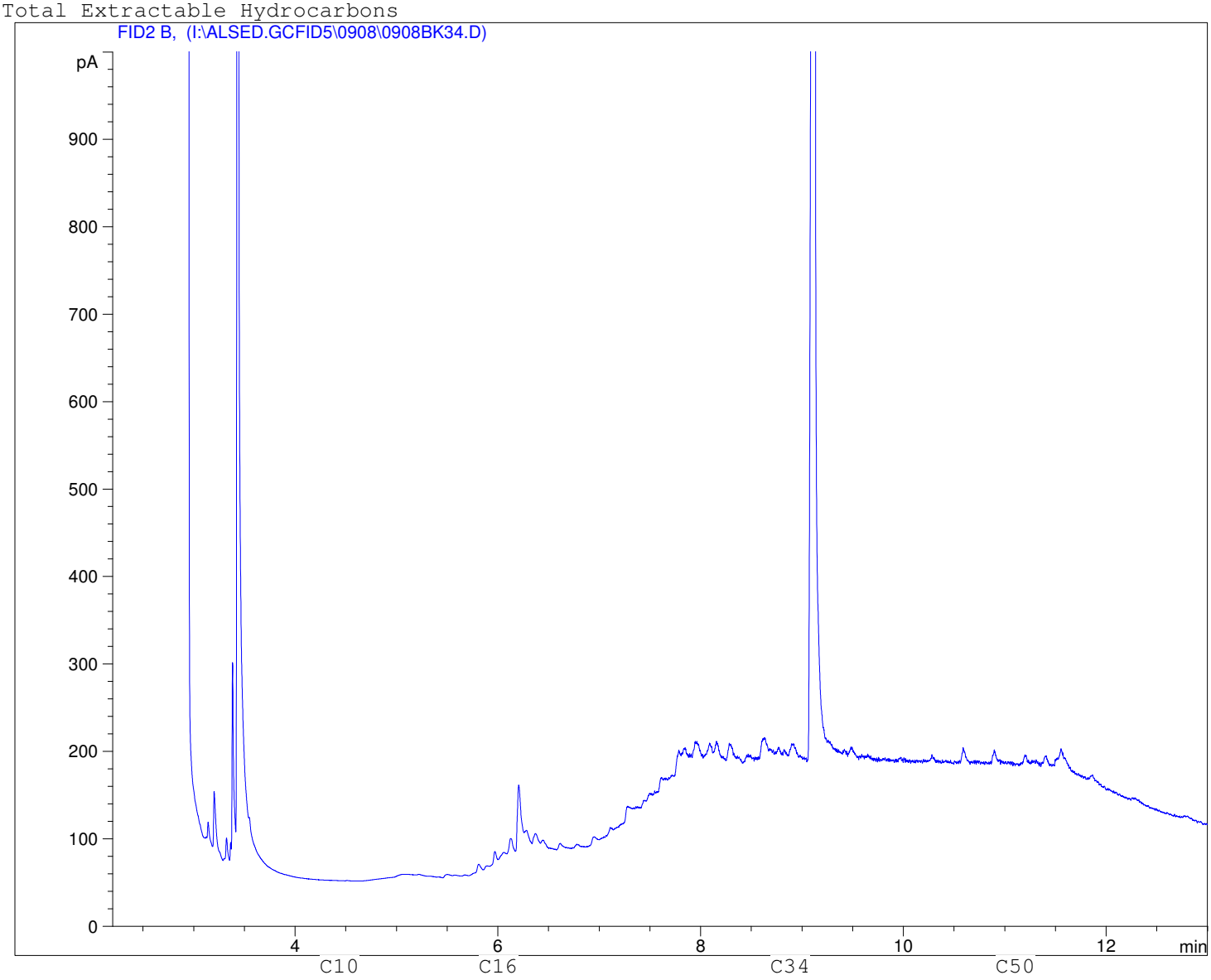


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-8-1

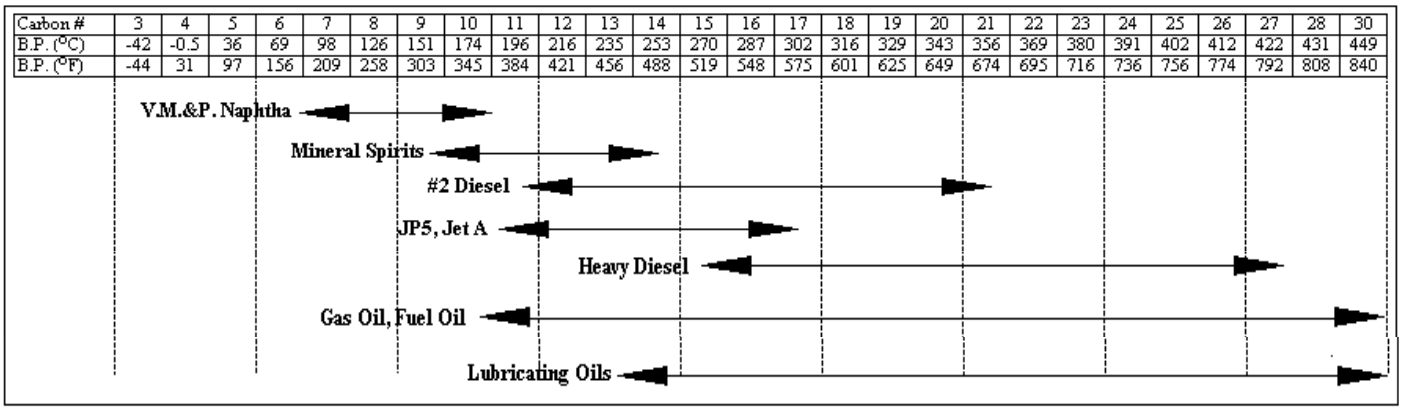
Sample ID: L548829-3 4
Injection Date: 9/9/2007 7:57:41 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

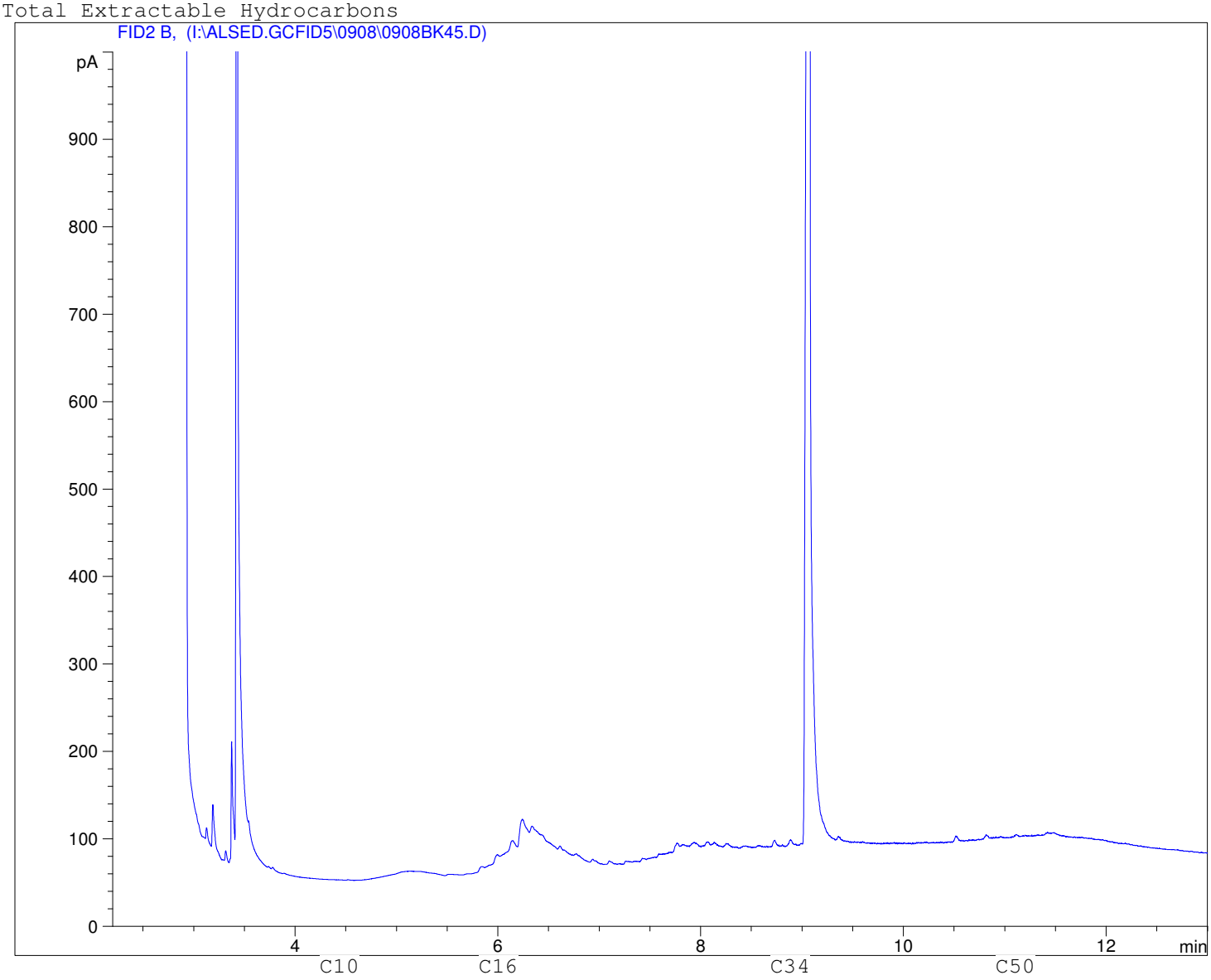


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-8-2

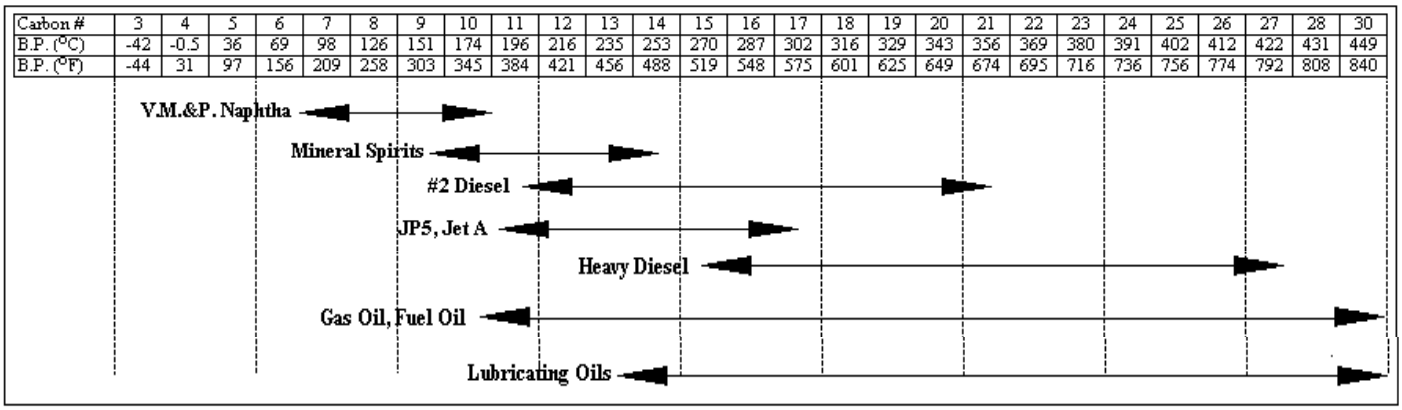
Sample ID: L548829-4 4 RR
Injection Date: 9/9/2007 12:39:35 PM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

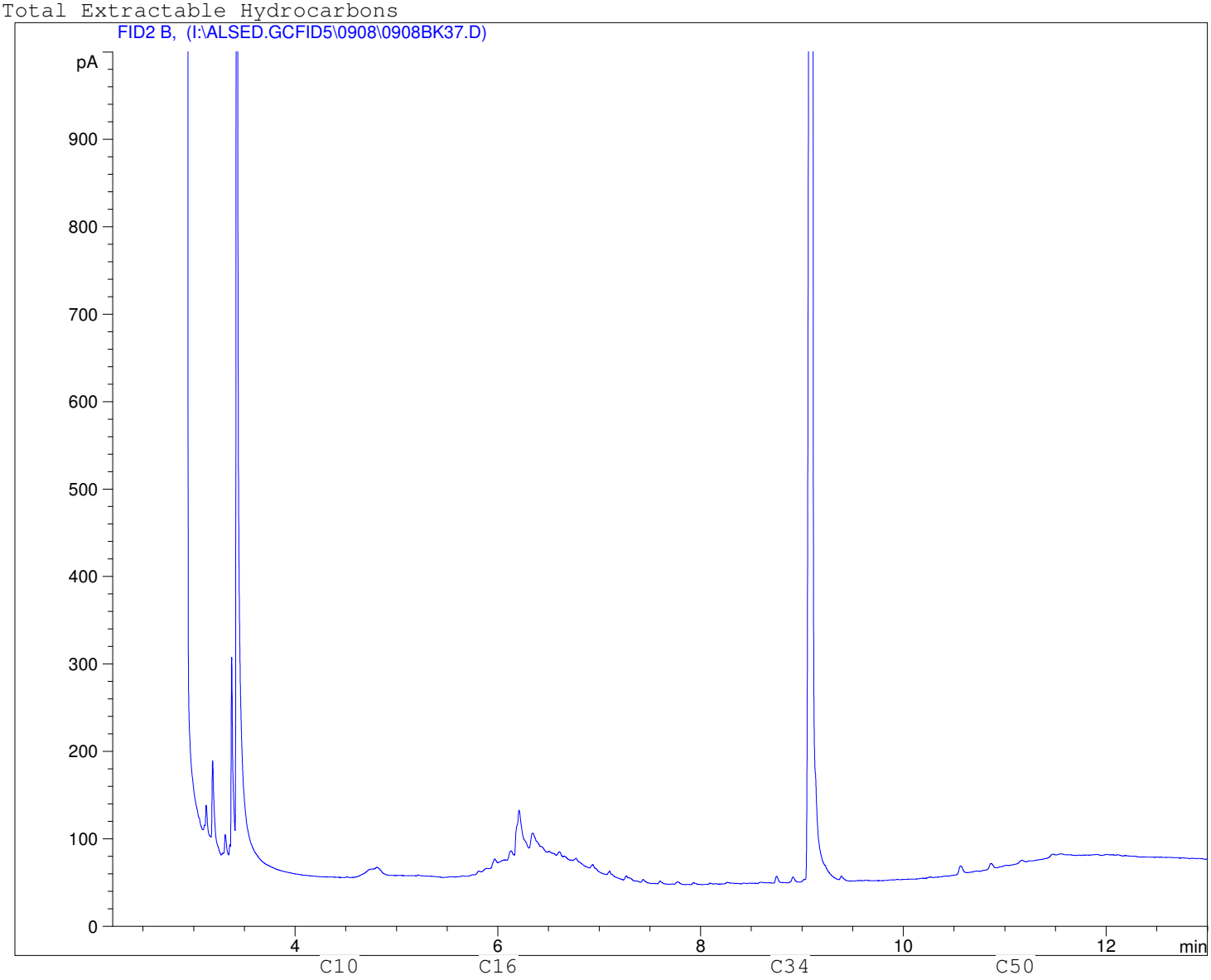


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-9-1

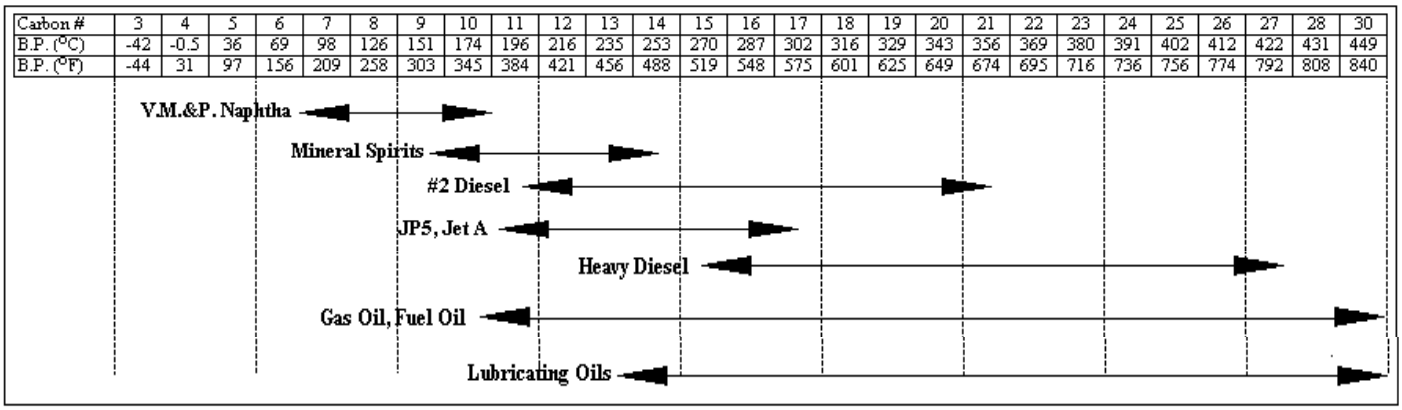
Sample ID: L548829-5 4
Injection Date: 9/9/2007 9:14:48 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

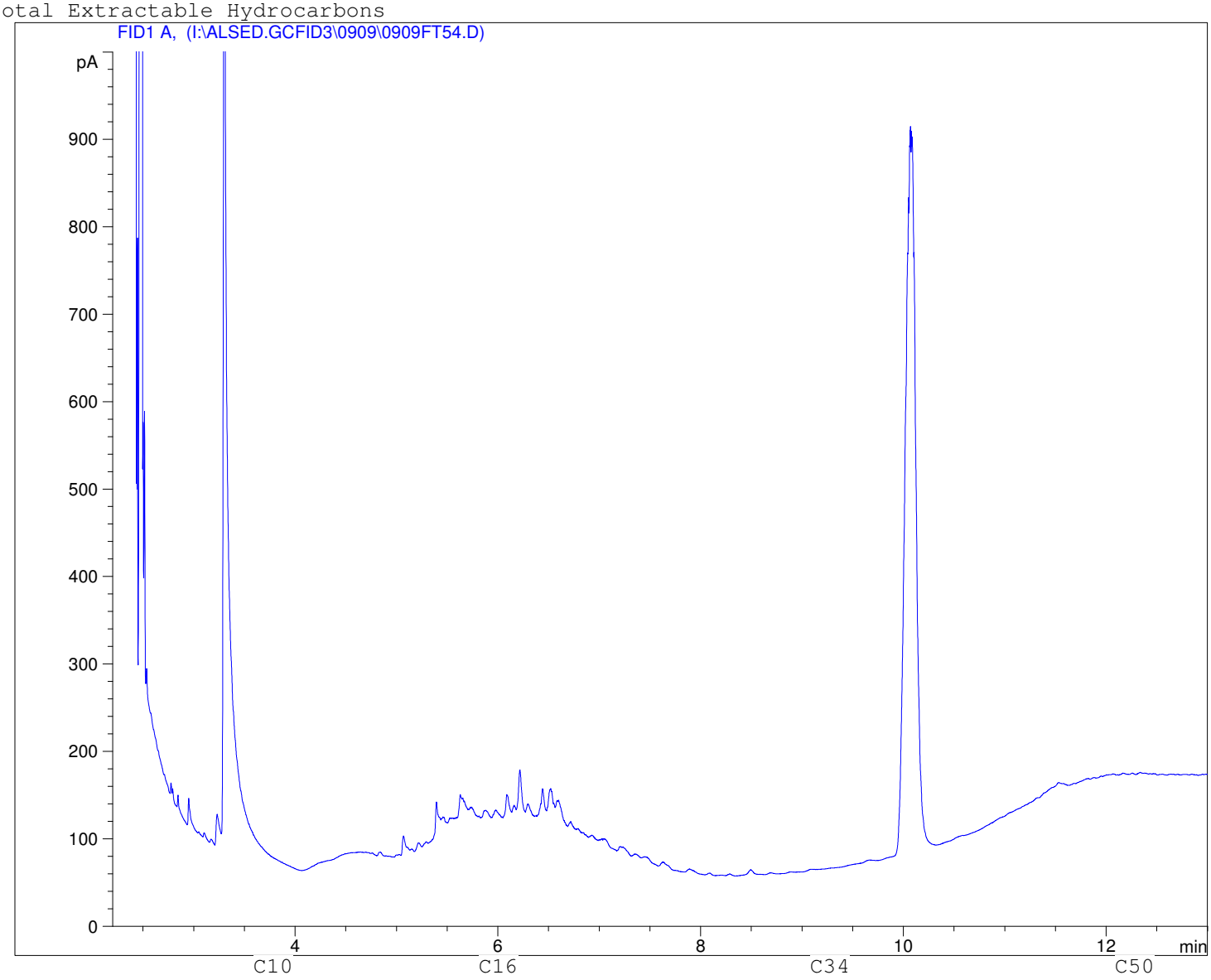


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-9-2

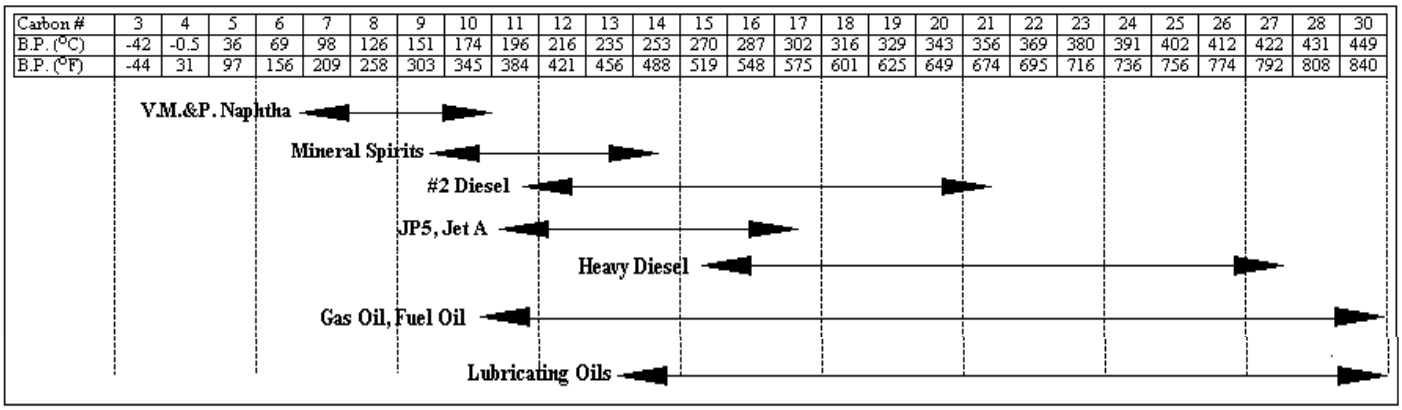
Sample ID: L548829-6 4
Injection Date: 9/10/07 3:00:02 PM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

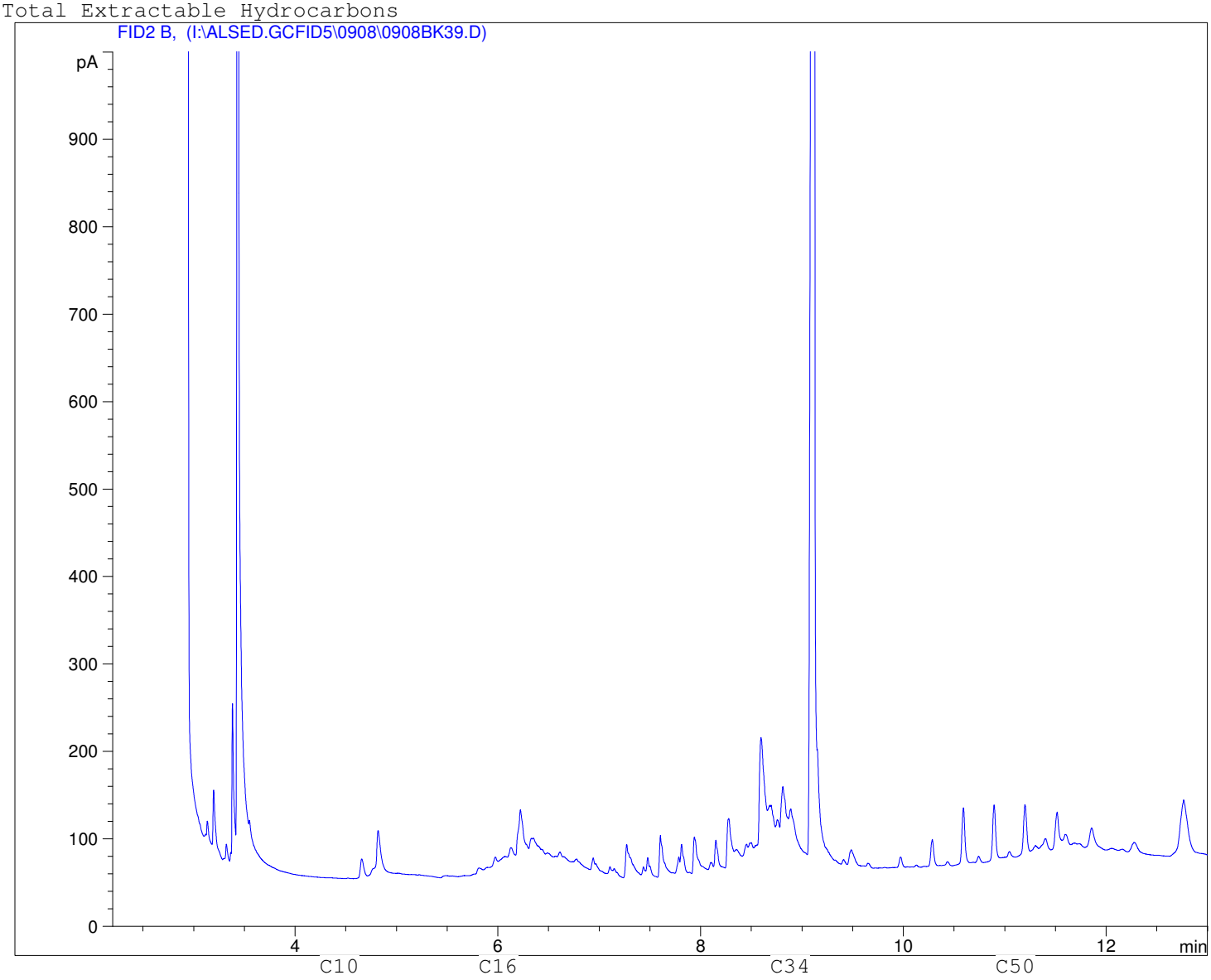


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-10-1

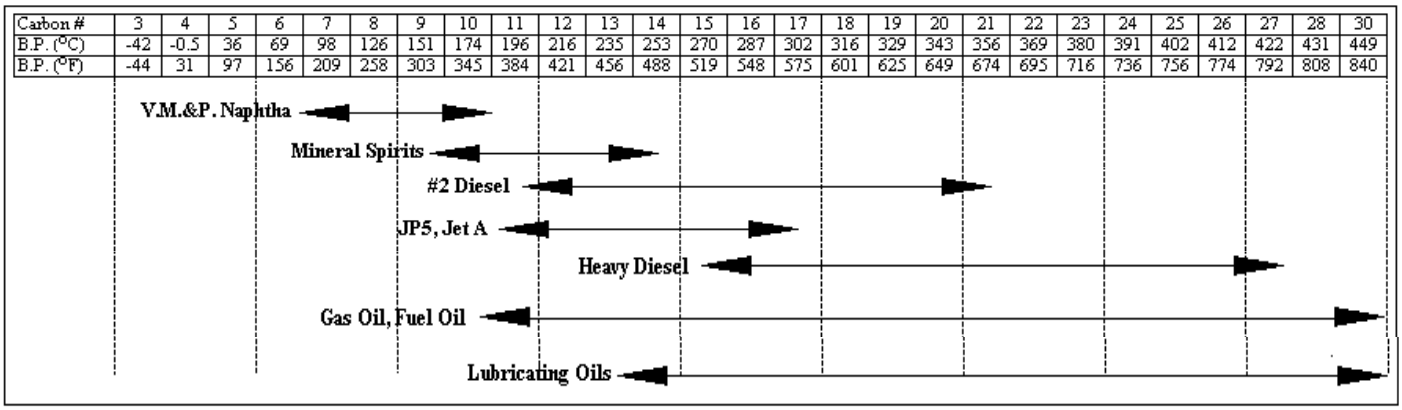
Sample ID: L548829-7 4
Injection Date: 9/9/2007 10:06:14 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

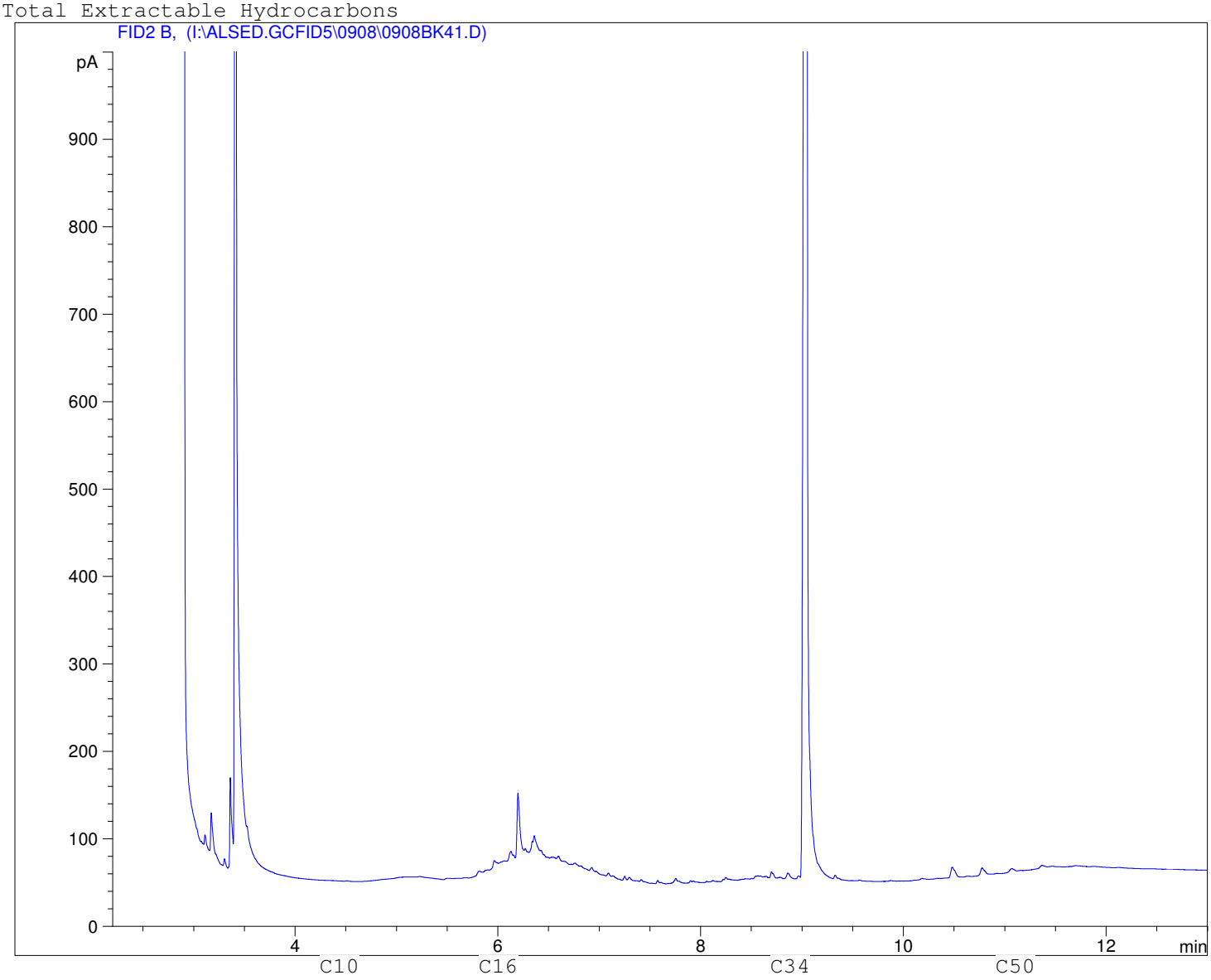


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-10-2

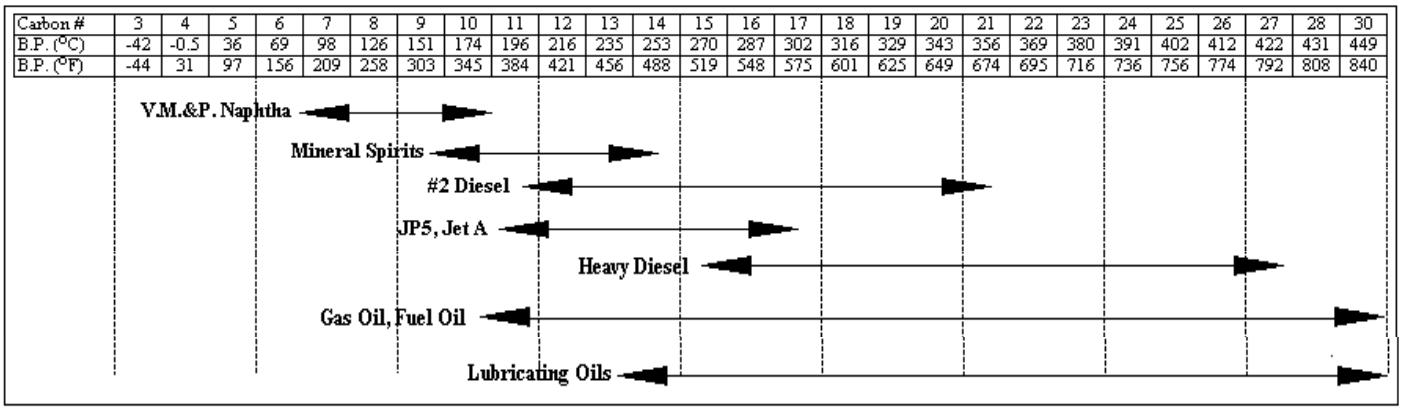
Sample ID: L548829-8 4
Injection Date: 9/9/2007 10:57:45 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

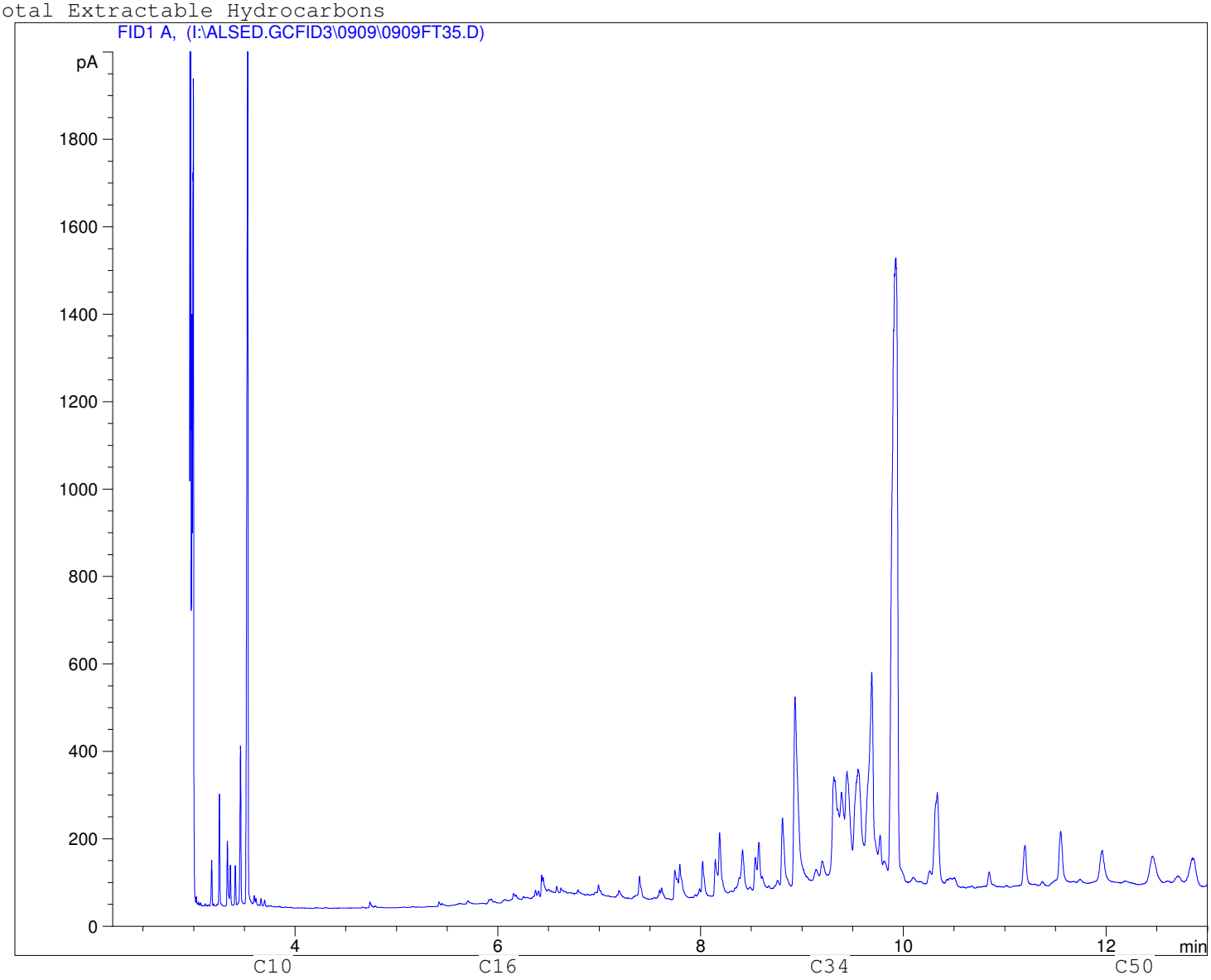


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-11-1

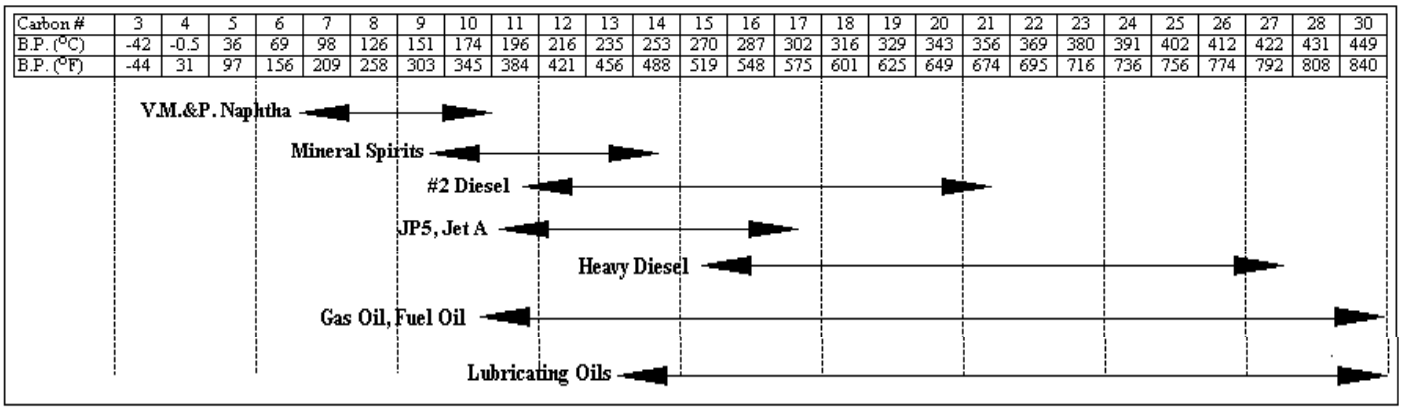
Sample ID: L548829-9 4 SGC
Injection Date: 9/10/07 6:58:09 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840



Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

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CANADA TOLL FREE 1-800-668-9878

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Page 1 of 3

L548829

REPORT TO: Ken Boldt	REPORT FORMAT / DISTRIBUTION
COMPANY: Gartner Lee Limited	STANDARD ✓ OTHER ___
CONTACT: Ken Boldt	PDF ___ ✓EXCEL ___ ✓CUSTOM ___ FAX ___
ADDRESS: 300 Town Centre Blvd., Suite 300	EMAIL 1: kboldt@gartnerlee.com
Markham, ON, L3R 5Z6	EMAIL 2: mherrell@gartnerlee.com
PHONE: 905-477-8400 x351 FAX: 905-477-1456	
INVOICE TO: SAME AS REPORT ? YES / (NO)	INDICATE BOTTLES: FILTERED / PRESERVED (F/P) → → →
COMPANY: Kitikmeot Projects Inc.	CLIENT / PROJECT INFORMATION:
CONTACT: Ed Powell	JOB #: 70516
ADDRESS: Box 92 Cambridge Bay, Nu X0B 0C0	PO /AFE:
	Legal Site Description: PIN-3
PHONE: 867-983-7500 FAX: 867-983-7501	QUOTE #: ALSEQ07-487
Lab Work Order # (lab use only): L548829	SAMPLER (Initials): KB

SERVICE REQUESTED

- ✓ REGULAR SERVICE (DEFAULT)
- RUSH SERVICE (2-3 DAYS)
- PRIORITY SERVICE (1 DAY or ASAP)
- EMERGENCY SERVICE (<1 DAY / WEEKEND) - CONTACT ALS

ANALYSIS REQUEST

Sample #	SAMPLE IDENTIFICATION (This description will appear on the report)	DATE	TIME	SAMPLE TYPE	Total Metals - CCME	Total PCB	CCME-CWS F1 incl. BTEX	CCME-CWS F2, F3, F4	HAZARDOUS ?	HIGHLY CONTAMINATED ?	NUMBER OF CONTAINERS
	P3-7-1	Aug 22.07		Soil							2
	P3-7-2	Aug 22.07		Soil							2
	P3-8-1	Aug 22.07		Soil							2
	P3-8-2	Aug 22.07		Soil							2
	P3-9-1	Aug 22.07		Soil							2
	P3-9-2	Aug 22.07		Soil							2
	P3-10-1	Aug 22.07		Soil							2
	P3-10-2	Aug 22.07		Soil							2
	P3-11-1	Aug 22.07		Soil							2
	P3-11-2	Aug 22.07		Soil							2

GUIDELINES / REGULATIONS

SPECIAL INSTRUCTIONS / HAZARDOUS DETAILS

Failure to complete all portions of this form may delay analysis. Please fill in this form *LEGIBLY*.

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RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:
[signature]	Aug 24.07	[signature] 13:30	Aug 24/07
RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:
		[signature]	Aug 30/07 13:39

SAMPLE CONDITION (lab use only)

TEMPERATURE	SAMPLES RECEIVED IN GOOD CONDITION ? YES NO (If no provide details)
22°C	(YES)

REFER TO BACK PAGE FOR REGIONAL LOCATIONS AND SAMPLING INFORMATION

WHITE - REPORT COPY, PINK - FILE COPY, YELLOW - CLIENT COPY

GENF14.00

TERMS AND CONDITIONS:

1. Quote number must be provided to ensure correct pricing.
2. Turnaround times will vary dependent on complexity of analysis & lab workload at time of submission. Please contact the lab to confirm faster turnaround times are available.
3. All hazardous samples submitted must be labeled to comply with WHMIS and TDG regulations. Appropriate Material Safety Data Sheets (MSDS) must be supplied for all hazardous materials. This must include the nature of the hazard, as well as a contact name and phone number to call for further information.

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Results are obtained from chemical measurements and cannot be guaranteed.

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The quality, condition, contents and source of samples stored and tested are not known to ALS except as declared and described on the Chain of Custody form completed and submitted by the customer and accompanying the sample.

ALS assumes no liability for the use or interpretation of the results or for any action, inaction, negligence, including gross negligence, strict liability, in tort or otherwise arising from the use or interpretation of the results.

ALS reserves the right to re-test any sample that remains in its possession.

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ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

CANADA TOLL FREE 1-800-668-9878

www.alsenviro.com

COC # A018232

REPORT TO:	REPORT FORMAT / DISTRIBUTION	SERVICE REQUESTED
COMPANY: Gartner Lee Limited	STANDARD ✓ OTHER	✓ REGULAR SERVICE (DEFAULT)
CONTACT: Ken Boldt	PDF ✓ EXCEL ✓ CUSTOM FAX	RUSH SERVICE (2-3 DAYS)
ADDRESS: 300 Town Centre Blvd. Suite 300	EMAIL 1: kboldt@gartnerlee.com	PRIORITY SERVICE (1 DAY or ASAP)
Markham, ON, L3R 5Z6	EMAIL 2: mherrell@gartnerlee.com	EMERGENCY SERVICE (<1 DAY / WEEKEND) - CONTACT ALS
PHONE: 905-477-0100x351 FAX: 905-477-1456		ANALYSIS REQUEST
INVOICE TO: SAME AS REPORT ? YES / (NO)	INDICATE BOTTLES: FILTERED / PRESERVED (F/P) → → →	
COMPANY: Kitnuna Projects Inc.	CLIENT / PROJECT INFORMATION:	
CONTACT: Ed Powell	JOB #: 70516	
ADDRESS: Box 92 Cambridge Bay, Nu	PO /AFE:	
X0B 0C0	Legal Site Description: PIN-3	
PHONE: 867-983-7500 FAX: 867-983-7501	QUOTE #: ASLEQ07-	
Lab Work Order # (lab use only): L548829	SAMPLER (Initials): KB	

Sample #	SAMPLE IDENTIFICATION (This description will appear on the report)	DATE	TIME	SAMPLE TYPE	Total Metals - CCME	Total PCB	CCME-CWS F1 incl. BTEX	CCME-CWS F2, F3, F4	HAZARDOUS ?	HIGHLY CONTAMINATED ?	NUMBER OF CONTAINERS
	P3-12-1	Aug 21.07		Soil							2
	P3-12-2	Aug 21.07		Soil							2
	P3-13-1	Aug 21.07		Soil							2
	P3-13-2	Aug 21.07		Soil							2
	P3-14-1	Aug 21.07		Soil							2
	P3-14-2	Aug 21.07		Soil							2
	P3-15-1	Aug 21.07		Soil							2
	P3-15-2	Aug 21.07		Soil							2
	P3-16-1	Aug 21.07		Soil							2
	P3-16-2	Aug 21.07		Soil							2

GUIDELINES / REGULATIONS	SPECIAL INSTRUCTIONS / HAZARDOUS DETAILS

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RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	SAMPLE CONDITION (lab use only)	
	Aug 24, 07	AG	Aug 30/07 13:39	TEMPERATURE	SAMPLES RECEIVED IN GOOD CONDITION ? YES / NO (If no provide details)
RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	21°C	

TERMS AND CONDITIONS:

1. Quote number must be provided to ensure correct pricing.
2. Turnaround times will vary dependent on complexity of analysis & lab workload at time of submission. Please contact the lab to confirm faster turnaround times are available.
3. All hazardous samples submitted must be labeled to comply with WHMIS and TDG regulations. Appropriate Material Safety Data Sheets (MSDS) must be supplied for all hazardous materials. This must include the nature of the hazard, as well as a contact name and phone number to call for further information.

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ALS reserves the right to re-test any sample that remains in its possession.

IN NO EVENT SHALL ALS, ITS OFFICERS, DIRECTORS, AGENTS, EMPLOYEES OR AFFILIATES BE LIABLE FOR ANY CONSEQUENTIAL, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY OR PUNITIVE DAMAGES, WHETHER FORESEEABLE OR UNFORESEEABLE, (INCLUDING CLAIMS FOR LOSS OF PROFITS OR REVENUE OR LOSSES CAUSED BY STOPPAGE OF OTHER WORK OR IMPAIRMENT OF OTHER ASSETS) INCURRED BY CUSTOMER OR ANY THIRD PARTY, ARISING OUT OF BREACH OR FAILURE OF EXPRESS OR IMPLIED WARRANTY, BREACH OF CONTRACT, BREACH OF WARRANTY, MISREPRESENTATION, NEGLIGENCE, STRICT LIABILITY IN TORT OR OTHERWISE, EVEN IF THE OTHER PARTY OR ANY OTHER PERSON HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN ANY EVENT, THE LIABILITY OF ALS ARISING FROM LEGAL RESPONSIBILITY SHALL BE LIMITED TO THE COST OF TESTING THE SAMPLE AS REQUESTED IN THE CHAIN OF CUSTODY FORM UNDER WHICH THE SAMPLE WAS ORIGINALLY DEPOSITED. NOTWITHSTANDING THE FOREGOING, NO LIABILITY SHALL ATTACH TOALS UNLESS NOTICE IN WRITING OF LOSS OR DAMAGE, TOGETHER WITH FULL AND DETAILED PARTICULARS THEREOF, IS GIVEN TO ALS BY THE CUSTOMER WITHIN THIRTY DAYS AFTER ANALYSIS OF THE SAMPLE GIVING RISE TO SUCH LIABILITY. THE PROVISIONS OF THIS PARAGRAPH ALLOCATE THE RISKS UNDER THIS AGREEMENT BETWEEN THE CUSTOMER AND ALS. THE FEES PROVIDED FOR IN THIS AGREEMENT REFLECT THIS ALLOCATION OF RISKS AND THE LIMITATION OF LIABILITY SPECIFIED HEREIN.

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Environmental Division

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

CANADA TOLL FREE 1-800-668-9878

www.alsenviro.com

COC # A018194

REPORT TO:	REPORT FORMAT / DISTRIBUTION	SERVICE REQUESTED
COMPANY: Gartner Lee Limited	STANDARD ✓ OTHER ____	✓ REGULAR SERVICE (DEFAULT)
CONTACT: Ken Boldt	PDF ✓ EXCEL ✓ CUSTOM ____ FAX ____	RUSH SERVICE (2-3 DAYS)
ADDRESS: 300 Town Centre Blvd. Suite 300	EMAIL 1: kboldt@gartnerlee.com	PRIORITY SERVICE (1 DAY or ASAP)
Markham, ON, L3R 5Z6	EMAIL 2: mherrell@gartnerlee.com	EMERGENCY SERVICE (<1 DAY / WEEKEND) - CONTACT ALS
PHONE: 905-477-8400x351 FAX: 905-477-1456		ANALYSIS REQUEST
INVOICE TO: SAME AS REPORT ? YES / (NO)	INDICATE BOTTLES: FILTERED / PRESERVED (F/P) → → →	
COMPANY: Kitikmeot Projects Inc	CLIENT / PROJECT INFORMATION:	
CONTACT: Ed Powell	JOB #: 70516	
ADDRESS: Box 92 Cambridge Bay, Nu. X0B 0C0	PO /AFE:	
	Legal Site Description: PIN-3	
PHONE: 867-983-7500 FAX: 867-983-7501	QUOTE #: ALSEQ07-487	
Lab Work Order # (lab use only): L548829	SAMPLER (Initials): KB	

Sample #	SAMPLE IDENTIFICATION (This description will appear on the report)	DATE	TIME	SAMPLE TYPE	Total Metals-CCME	Total PCB	CCME-CWS F1 incl BTEX	CCME-CWS F2, F3, F4	HAZARDOUS ?	HIGHLY CONTAMINATED ?	NUMBER OF CONTAINERS
	P3-17-1	Aug 21.07		Soil							2
	P3-18-2	Aug 21.07		Soil							2
	P3-19-2	Aug 22.07		Soil							2
	P3-20-2	Aug 22.07		Soil							2
	P3-21-2	Aug 22.07		Soil							2
	P3-22-2	Aug 22.07		Soil							2

GUIDELINES / REGULATIONS	SPECIAL INSTRUCTIONS / HAZARDOUS DETAILS

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RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:
[signature]	Aug 24.07	[signature]	Aug 30/07 15:39
RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:

SAMPLE CONDITION (lab use only)	
TEMPERATURE: 21°C	SAMPLES RECEIVED IN GOOD CONDITION ? YES / NO (If no provide details)

TERMS AND CONDITIONS:

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ANALYTICAL REPORT

GARTNER LEE LTD.

ATTN: KEN BOLDT

Reported On: 25-SEP-07 03:08 PM

300 TOWN CENTRE BOULVARD
SUITE 300
MARKHAM ON L3R 5Z6

Lab Work Order #: **L548832** **Date Received:** **30-AUG-07**

Project P.O. #: ALSEQ07-487
Job Reference: 70516
Legal Site Desc:
CofC Numbers: A018188, A018189, A018190, A018233

Other Information:

Comments: Please note that certain Metals as well as Polychlorinated Biphenyls detection limits have been increased for some of the samples due to the interferences encountered during the analysis.

Timothy Guy Crowther
General Manager, Vancouver

For any questions about this report please contact your Account Manager:

NATASHA MARKOVIC-MIROVIC

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L548832-1	L548832-2	L548832-3	L548832-4	L548832-5
	Description					
	Sampled Date	21-AUG-07	21-AUG-07	21-AUG-07	21-AUG-07	21-AUG-07
	Sampled Time					
	Client ID	P3-MW-5-1	P3-MW-5-2	P3-MW-6-1	P3-MW-6-2	P3-MW-7-1
Grouping	**Analyte**					
SOIL						
Physical Tests	% Moisture (%)	31	16	40	7.9	2.7
	pH (pH)	7.68	7.70	7.70	7.08	8.46
Metals	Antimony (Sb) (mg/kg)	<10	<10	<10	<10	<10
	Arsenic (As) (mg/kg)	0.508	0.841	0.949	3.15	1.31
		<5.0	<5.0	<5.0	<5.0	<5.0
	Barium (Ba) (mg/kg)	23.0	28.9	54.2	52.4	25.0
	Beryllium (Be) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Cadmium (Cd) (mg/kg)	<0.50	<0.50	<0.50	0.55	<0.50
	Chromium (Cr) (mg/kg)	3.9	4.8	6.2	5.4	6.8
	Cobalt (Co) (mg/kg)	<2.0	2.7	2.4	3.2	2.6
	Copper (Cu) (mg/kg)	11.8	16.8	12.0	19.2	11.5
	Lead (Pb) (mg/kg)	<30	<30	<30	<30	<30
	Mercury (Hg) (mg/kg)	0.0051	<0.0050	0.0225	<0.0050	<0.0050
	Molybdenum (Mo) (mg/kg)	<4.0	<4.0	<4.0	4.0	<4.0
	Nickel (Ni) (mg/kg)	<5.0	<5.0	6.0	8.0	<5.0
	Selenium (Se) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Silver (Ag) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Thallium (Tl) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Tin (Sn) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Vanadium (V) (mg/kg)	13.3	27.4	13.9	28.5	24.9
	Zinc (Zn) (mg/kg)	5.8	7.9	8.0	9.3	9.5
Non-Halogenated Volatiles	Benzene (mg/kg)	<0.040	<0.040	<0.040	<0.040	<0.040
	Ethylbenzene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Methyl t-butyl ether (MTBE) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Styrene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Toluene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	meta- & para-Xylene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	ortho-Xylene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Xylenes (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	F1-BTEX (mg/kg)	<10	<10	<10	<10	<10
	Surrogate: 4-Bromofluorobenzene (SS) (%)	94	118	115	121	121
	Surrogate: 2,4-Dichlorotoluene (SS) (%)	90	89	73	87	95
	Surrogate: Fluorobenzene (SS) (%)	97	100	99	99	102
Extractable Hydrocarbons	F1 (C6-C10) (mg/kg)	<10	<10	<10	<10	<10
	F2 (C10-C16) (mg/kg)	26	<5		<5	<5
	F3 (C16-C34) (mg/kg)	180	22	170	15	24
	F4 (C34-C50) (mg/kg)	180	17	48	12	17
	Surrogate: 2-Bromobenzotrifluoride (%)	97	85	50	137	124

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L548832-6	L548832-7	L548832-8	L548832-9	L548832-10
	Description					
	Sampled Date	21-AUG-07	21-AUG-07	21-AUG-07	21-AUG-07	21-AUG-07
	Sampled Time					
	Client ID	P3-MW-7-2	P3-MW-8-1	P3-MW-8-2	P3-MW-9-1	P3-MW-9-2
Grouping	**Analyte**					
SOIL						
Physical Tests	% Moisture (%)	4.0	6.1	3.0	3.9	13
	pH (pH)	8.41	7.83	7.92	8.73	7.63
Metals	Antimony (Sb) (mg/kg)	<10	<10	<10	<10	<10
	Arsenic (As) (mg/kg)	1.15	0.331	0.521	1.31	1.57
		<5.0	<5.0	<5.0	<5.0	<5.0
	Barium (Ba) (mg/kg)	27.5	14.6	15.8	46.4	49.8
	Beryllium (Be) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Cadmium (Cd) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Chromium (Cr) (mg/kg)	4.3	3.6	3.8	5.7	5.8
	Cobalt (Co) (mg/kg)	<2.0	<2.0	<2.0	2.8	3.1
	Copper (Cu) (mg/kg)	8.0	4.0	4.5	10.0	14.0
	Lead (Pb) (mg/kg)	<30	<30	<30	<30	<30
	Mercury (Hg) (mg/kg)	<0.0050	<0.0050	<0.0050	<0.0050	0.0254
	Molybdenum (Mo) (mg/kg)	<4.0	<4.0	<4.0	<4.0	<4.0
	Nickel (Ni) (mg/kg)	<5.0	<5.0	<5.0	<5.0	5.2
	Selenium (Se) (mg/kg)	<2.0	<3.0	<3.0	<2.0	<3.0
	Silver (Ag) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Thallium (Tl) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Tin (Sn) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Vanadium (V) (mg/kg)	16.0	10.9	11.6	20.7	19.2
	Zinc (Zn) (mg/kg)	8.1	5.0	4.8	9.0	16.4
Non-Halogenated Volatiles	Benzene (mg/kg)	<0.040	<0.040	<0.040	<0.040	<0.040
	Ethylbenzene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Methyl t-butyl ether (MTBE) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Styrene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Toluene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	meta- & para-Xylene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	ortho-Xylene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Xylenes (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	F1-BTEX (mg/kg)	<10	<10	<10	<10	<10
	Surrogate: 4-Bromofluorobenzene (SS) (%)	120	126	122	124	110
	Surrogate: 2,4-Dichlorotoluene (SS) (%)	91	98	94	94	75
	Surrogate: Fluorobenzene (SS) (%)	99	100	101	99	89
Extractable Hydrocarbons	F1 (C6-C10) (mg/kg)	<10	<10	<10	<10	<10
	F2 (C10-C16) (mg/kg)	<5	<5	<5	<5	<5
	F3 (C16-C34) (mg/kg)	31	19	18	20	31
	F4 (C34-C50) (mg/kg)	<5	6	15	<5	21
	Surrogate: 2-Bromobenzotrifluoride (%)	130	125	130	97	107

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L548832-11	L548832-12	L548832-13	L548832-14	L548832-15
	Description					
	Sampled Date	21-AUG-07	21-AUG-07	21-AUG-07	21-AUG-07	21-AUG-07
	Sampled Time					
	Client ID	P3-MW-10-1	P3-MW-10-2	P3-MW-11-1	P3-MW-11-2	P3-MW-12-1
Grouping	**Analyte**					
SOIL						
Physical Tests	% Moisture (%)	14	1.9	5.4	4.1	33
	pH (pH)	7.76	8.27	8.04	7.80	7.76
Metals	Antimony (Sb) (mg/kg)	<10	<10	<10	<10	<10
	Arsenic (As) (mg/kg)	0.891	1.09	0.679	0.904	1.63
		<5.0	<5.0	<5.0	<5.0	<5.0
	Barium (Ba) (mg/kg)	23.9	18.4	27.8	15.6	59.4
	Beryllium (Be) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Cadmium (Cd) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Chromium (Cr) (mg/kg)	5.9	5.2	4.6	4.7	5.8
	Cobalt (Co) (mg/kg)	2.2	2.3	2.0	2.3	<2.0
	Copper (Cu) (mg/kg)	11.9	9.8	4.9	7.4	21.6
	Lead (Pb) (mg/kg)	<30	<30	<30	<30	<30
	Mercury (Hg) (mg/kg)	0.0087	<0.0050	<0.0050	<0.0050	0.0398
	Molybdenum (Mo) (mg/kg)	<4.0	<4.0	<4.0	<4.0	<4.0
	Nickel (Ni) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Selenium (Se) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Silver (Ag) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Thallium (Tl) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Tin (Sn) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Vanadium (V) (mg/kg)	12.8	15.5	11.6	14.6	9.4
	Zinc (Zn) (mg/kg)	7.2	6.6	5.4	7.1	27.7
Non-Halogenated Volatiles	Benzene (mg/kg)	<0.040	<0.040	<0.040	<0.040	<0.040
	Ethylbenzene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Methyl t-butyl ether (MTBE) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Styrene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Toluene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	meta- & para-Xylene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	ortho-Xylene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Xylenes (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	F1-BTEX (mg/kg)	<10	<10	<10	<10	<10
	Surrogate: 4-Bromofluorobenzene (SS) (%)	96	124	126	127	125
	Surrogate: 2,4-Dichlorotoluene (SS) (%)	92	86	95	98	76
	Surrogate: Fluorobenzene (SS) (%)	102	102	100	100	98
Extractable Hydrocarbons	F1 (C6-C10) (mg/kg)	<10	<10	<10	<10	<10
	F2 (C10-C16) (mg/kg)	<5	<5	13	<5	<5
	F3 (C16-C34) (mg/kg)	29	14	41	<5	190
	F4 (C34-C50) (mg/kg)	17	<5	23	<5	230
	Surrogate: 2-Bromobenzotrifluoride (%)	105	107	121	87	153

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	Sample ID	L548832-16	L548832-17	L548832-18	L548832-19	L548832-20
	Description					
	Sampled Date	21-AUG-07	20-AUG-07	20-AUG-07	22-AUG-07	22-AUG-07
	Sampled Time					
	Client ID	P3-MW-12-2	P3-MW-13-1	P3-MW-13-2	P3-MW-14-1	P3-MW-14-2
Grouping	**Analyte**					
SOIL						
Physical Tests	% Moisture (%)	3.8	10	3.3	52	5.1
	pH (pH)	7.87	8.18	7.90	7.35	7.85
Metals	Antimony (Sb) (mg/kg)	<10	<10	<10	<10	<10
	Arsenic (As) (mg/kg)	1.03	0.884	0.998	1.20	3.31
		<5.0	<5.0	<5.0	<5.0	<5.0
	Barium (Ba) (mg/kg)	22.1	45.4	30.2	53.7	24.8
	Beryllium (Be) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Cadmium (Cd) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Chromium (Cr) (mg/kg)	4.3	5.2	4.4	3.7	3.5
	Cobalt (Co) (mg/kg)	2.1	<2.0	2.1	<2.0	<2.0
	Copper (Cu) (mg/kg)	6.4	6.0	8.0	22.0	3.9
	Lead (Pb) (mg/kg)	<30	<30	<30	<30	<30
	Mercury (Hg) (mg/kg)	<0.0050	0.0100	<0.0050	0.0559	<0.0050
	Molybdenum (Mo) (mg/kg)	<4.0	<4.0	<4.0	<4.0	<4.0
	Nickel (Ni) (mg/kg)	<5.0	<5.0	<5.0	6.7	<5.0
	Selenium (Se) (mg/kg)	<3.0	<3.0	<2.0	<3.0	<2.0
	Silver (Ag) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Thallium (Tl) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Tin (Sn) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Vanadium (V) (mg/kg)	12.1	11.8	14.9	8.1	18.4
	Zinc (Zn) (mg/kg)	6.0	10.2	7.0	54.1	6.7
Non-Halogenated Volatiles	Benzene (mg/kg)	<0.040	<0.040	<0.040	<0.040	<0.040
	Ethylbenzene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Methyl t-butyl ether (MTBE) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Styrene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Toluene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	meta- & para-Xylene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	ortho-Xylene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Xylenes (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	F1-BTEX (mg/kg)	<10	<10	<10	<10	<10
	Surrogate: 4-Bromofluorobenzene (SS) (%)	124	98	113	82	101
	Surrogate: 2,4-Dichlorotoluene (SS) (%)	91	90	91	75	93
	Surrogate: Fluorobenzene (SS) (%)	99	102	104	75	95
Extractable Hydrocarbons	F1 (C6-C10) (mg/kg)	<10	<10	<10	<10	<10
	F2 (C10-C16) (mg/kg)	<5	11	5	<5	<5
	F3 (C16-C34) (mg/kg)	<5	180	190	110	<5
	F4 (C34-C50) (mg/kg)	<5	37	<5	130	<5
	Surrogate: 2-Bromobenzotrifluoride (%)	91	121	122	80	106

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	Sample ID	L548832-21	L548832-22	L548832-23	L548832-24	L548832-25
	Description					
	Sampled Date	22-AUG-07	22-AUG-07	22-AUG-07	22-AUG-07	22-AUG-07
	Sampled Time					
	Client ID	P3-MW-15-1	P3-MW-15-2	P3-MW-16-1	P3-MW-16-2	P3-1-1
Grouping	**Analyte**					
SOIL						
Physical Tests	% Moisture (%)	20	2.9	21	15	43
	pH (pH)	7.89	8.59	7.89	7.94	7.66
Metals	Antimony (Sb) (mg/kg)	<10	<10	<10	<10	<10
	Arsenic (As) (mg/kg)	0.489	0.957	1.10	1.07	2.32
		<5.0	<5.0	<5.0	<5.0	<5.0
	Barium (Ba) (mg/kg)	25.2	25.9	22.2	9.2	33.7
	Beryllium (Be) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Cadmium (Cd) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Chromium (Cr) (mg/kg)	3.6	4.2	4.2	3.6	5.2
	Cobalt (Co) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Copper (Cu) (mg/kg)	9.1	8.8	6.9	4.4	11.9
	Lead (Pb) (mg/kg)	<30	<30	<30	<30	<30
	Mercury (Hg) (mg/kg)	0.0120	<0.0050	0.0117	0.0098	0.0566
	Molybdenum (Mo) (mg/kg)	<4.0	<4.0	<4.0	<4.0	<4.0
	Nickel (Ni) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Selenium (Se) (mg/kg)	<2.0	<2.0	<3.0	<4.0	<2.0
	Silver (Ag) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Thallium (Tl) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Tin (Sn) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Vanadium (V) (mg/kg)	9.7	13.6	10.6	8.9	11.9
	Zinc (Zn) (mg/kg)	10.0	5.5	9.0	7.4	19.5
Non-Halogenated Volatiles	Benzene (mg/kg)	<0.040	<0.040	<0.040	<0.040	<0.040
	Ethylbenzene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Methyl t-butyl ether (MTBE) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Styrene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Toluene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	meta- & para-Xylene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	ortho-Xylene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Xylenes (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	F1-BTEX (mg/kg)	<10	<10	<10	<10	<10
	Surrogate: 4-Bromofluorobenzene (SS) (%)	111	120	119	111	113
	Surrogate: 2,4-Dichlorotoluene (SS) (%)	90	92	86	73	78
	Surrogate: Fluorobenzene (SS) (%)	103	103	100	97	100
Extractable Hydrocarbons	F1 (C6-C10) (mg/kg)	<10	<10	<10	<10	<10
	F2 (C10-C16) (mg/kg)	<5	<5	<5	<5	24
	F3 (C16-C34) (mg/kg)	12	<5	19	39	700
	F4 (C34-C50) (mg/kg)	17	<5	<5	11	790
	Surrogate: 2-Bromobenzotrifluoride (%)	104	109	74	115	133

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	Sample ID	L548832-26	L548832-27	L548832-28	L548832-29	L548832-30
	Description					
	Sampled Date	22-AUG-07	22-AUG-07	22-AUG-07	22-AUG-07	22-AUG-07
	Sampled Time					
	Client ID	P3-1-2	P3-2-1	P3-2-2	P3-3-1	P3-3-2
Grouping	**Analyte**					
SOIL						
Physical Tests	% Moisture (%)	5.4	4.0	1.9	28	2.1
	pH (pH)	7.87	8.47	8.54	7.88	8.21
Metals	Antimony (Sb) (mg/kg)	<10	<10	<10	<10	<10
	Arsenic (As) (mg/kg)	1.60	1.17	0.984	2.94	1.15
		<5.0	<5.0	<5.0	<5.0	<5.0
	Barium (Ba) (mg/kg)	25.8	25.2	46.3	49.7	45.6
	Beryllium (Be) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Cadmium (Cd) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Chromium (Cr) (mg/kg)	4.1	6.1	5.4	5.4	6.7
	Cobalt (Co) (mg/kg)	<2.0	2.4	2.4	2.3	2.8
	Copper (Cu) (mg/kg)	3.9	10.2	8.4	13.1	7.5
	Lead (Pb) (mg/kg)	<30	<30	<30	<30	<30
	Mercury (Hg) (mg/kg)	0.0059	<0.0050	<0.0050	0.0350	<0.0050
	Molybdenum (Mo) (mg/kg)	<4.0	<4.0	<4.0	<4.0	<4.0
	Nickel (Ni) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Selenium (Se) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Silver (Ag) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Thallium (Tl) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Tin (Sn) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Vanadium (V) (mg/kg)	15.6	16.6	15.4	12.8	16.5
	Zinc (Zn) (mg/kg)	7.6	9.2	8.0	20.0	8.9
Non-Halogenated Volatiles	Benzene (mg/kg)	<0.040	<0.040	<0.040	<0.040	<0.040
	Ethylbenzene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Methyl t-butyl ether (MTBE) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Styrene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Toluene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	meta- & para-Xylene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	ortho-Xylene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Xylenes (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	F1-BTEX (mg/kg)	<10	<10	<10	<10	<10
	Surrogate: 4-Bromofluorobenzene (SS) (%)	102	109	109	85	122
	Surrogate: 2,4-Dichlorotoluene (SS) (%)	90	96	95	86	95
	Surrogate: Fluorobenzene (SS) (%)	96	100	101	92	101
Extractable Hydrocarbons	F1 (C6-C10) (mg/kg)	<10	<10	<10	<10	<10
	F2 (C10-C16) (mg/kg)	5	6	<5	9	<5
	F3 (C16-C34) (mg/kg)	5	<5	<5	200	<5
	F4 (C34-C50) (mg/kg)	<5	<5	<5	170	<5
	Surrogate: 2-Bromobenzotrifluoride (%)	112	101	90	51	57

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	Sample ID	L548832-31	L548832-32	L548832-33	L548832-34	L548832-35
	Description					
	Sampled Date	22-AUG-07	22-AUG-07	22-AUG-07	22-AUG-07	22-AUG-07
	Sampled Time					
	Client ID	P3-4-1	P3-4-2	P3-5-1	P3-5-2	P3-6-1
Grouping	**Analyte**					
SOIL						
Physical Tests	% Moisture (%)	66	16	5.4	4.2	48
	pH (pH)	7.57	7.85	8.07	8.22	7.45
Metals	Antimony (Sb) (mg/kg)	<20	<10	<10	<10	<10
	Arsenic (As) (mg/kg)	1.61	3.08	1.58	1.24	0.491
		<10	<5.0	<5.0	<5.0	<5.0
	Barium (Ba) (mg/kg)	51.1	73.2	25.2	36.1	51.2
	Beryllium (Be) (mg/kg)	<1.0	<0.50	<0.50	<0.50	<0.50
	Cadmium (Cd) (mg/kg)	<1.0	<0.50	<0.50	<0.50	<0.50
	Chromium (Cr) (mg/kg)	7.0	4.9	5.7	4.6	3.2
	Cobalt (Co) (mg/kg)	<4.0	<2.0	2.9	<2.0	<2.0
	Copper (Cu) (mg/kg)	13.2	10.0	7.1	8.1	124
	Lead (Pb) (mg/kg)	<60	<30	<30	<30	<30
	Mercury (Hg) (mg/kg)	0.0377	0.0704	0.0093	<0.0050	0.0543
	Molybdenum (Mo) (mg/kg)	<8.0	<4.0	<4.0	<4.0	<4.0
	Nickel (Ni) (mg/kg)	<10	<5.0	<5.0	<5.0	9.1
	Selenium (Se) (mg/kg)	<4.0	<2.0	<2.0	<2.0	<2.0
	Silver (Ag) (mg/kg)	<4.0	<2.0	<2.0	<2.0	<2.0
	Thallium (Tl) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
	Tin (Sn) (mg/kg)	<10	<5.0	<5.0	<5.0	<5.0
	Vanadium (V) (mg/kg)	12.1	6.5	18.7	19.1	7.1
	Zinc (Zn) (mg/kg)	37.4	9.9	9.7	6.7	6.1
Non-Halogenated Volatiles	Benzene (mg/kg)	<0.060	<0.040	<0.040	<0.040	<0.040
	Ethylbenzene (mg/kg)	<0.075	<0.050	<0.050	<0.050	<0.050
	Methyl t-butyl ether (MTBE) (mg/kg)	<0.30	<0.20	<0.20	<0.20	<0.20
	Styrene (mg/kg)	<0.075	<0.050	<0.050	<0.050	<0.050
	Toluene (mg/kg)	<0.25	<0.050	<0.050	<0.050	<0.060
	meta- & para-Xylene (mg/kg)	0.291	<0.050	<0.050	<0.050	<0.050
	ortho-Xylene (mg/kg)	<0.15	<0.050	<0.050	<0.050	<0.050
	Xylenes (mg/kg)	0.29	<0.10	<0.10	<0.10	<0.10
	F1-BTEX (mg/kg)	<10	<10	<10	<10	<10
	Surrogate: 4-Bromofluorobenzene (SS) (%)	102	104	105	103	101
	Surrogate: 2,4-Dichlorotoluene (SS) (%)	74	93	96	98	73
	Surrogate: Fluorobenzene (SS) (%)	102	104	103	104	99
Extractable Hydrocarbons	F1 (C6-C10) (mg/kg)	<10	<10	<10	<10	<10
	F2 (C10-C16) (mg/kg)	13	<5	<5	<5	13
	F3 (C16-C34) (mg/kg)	<5	5	<5	<5	120
	F4 (C34-C50) (mg/kg)	<5	18	<5	<5	130
	Surrogate: 2-Bromobenzotrifluoride (%)	8	108	103	105	57

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	Sample ID	L548832-36				
	Description					
	Sampled Date	22-AUG-07				
	Sampled Time					
	Client ID	P3-6-2				
Grouping	**Analyte**					
SOIL						
Physical Tests	% Moisture (%)	1.6				
	pH (pH)	7.88				
Metals	Antimony (Sb) (mg/kg)	<10				
	Arsenic (As) (mg/kg)	1.36				
		<5.0				
	Barium (Ba) (mg/kg)	54.1				
	Beryllium (Be) (mg/kg)	<0.50				
	Cadmium (Cd) (mg/kg)	<0.50				
	Chromium (Cr) (mg/kg)	5.5				
	Cobalt (Co) (mg/kg)	2.6				
	Copper (Cu) (mg/kg)	7.5				
	Lead (Pb) (mg/kg)	<30				
	Mercury (Hg) (mg/kg)	<0.0050				
	Molybdenum (Mo) (mg/kg)	<4.0				
	Nickel (Ni) (mg/kg)	<5.0				
	Selenium (Se) (mg/kg)	<2.0				
	Silver (Ag) (mg/kg)	<2.0				
	Thallium (Tl) (mg/kg)	<1.0				
	Tin (Sn) (mg/kg)	<5.0				
	Vanadium (V) (mg/kg)	15.8				
	Zinc (Zn) (mg/kg)	8.3				
Non-Halogenated Volatiles	Benzene (mg/kg)	<0.040				
	Ethylbenzene (mg/kg)	<0.050				
	Methyl t-butyl ether (MTBE) (mg/kg)	<0.20				
	Styrene (mg/kg)	<0.050				
	Toluene (mg/kg)	<0.050				
	meta- & para-Xylene (mg/kg)	<0.050				
	ortho-Xylene (mg/kg)	<0.050				
	Xylenes (mg/kg)	<0.10				
	F1-BTEX (mg/kg)	<10				
	Surrogate: 4-Bromofluorobenzene (SS) (%)	102				
	Surrogate: 2,4-Dichlorotoluene (SS) (%)	93				
	Surrogate: Fluorobenzene (SS) (%)	101				
Extractable Hydrocarbons	F1 (C6-C10) (mg/kg)	<10				
	F2 (C10-C16) (mg/kg)	<5				
	F3 (C16-C34) (mg/kg)	<5				
	F4 (C34-C50) (mg/kg)	<5				
	Surrogate: 2-Bromobenzotrifluoride (%)	96				

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	Sample ID	L548832-1	L548832-2	L548832-3	L548832-4	L548832-5
	Description					
	Sampled Date	21-AUG-07	21-AUG-07	21-AUG-07	21-AUG-07	21-AUG-07
	Sampled Time					
	Client ID	P3-MW-5-1	P3-MW-5-2	P3-MW-6-1	P3-MW-6-2	P3-MW-7-1
Grouping	**Analyte**					
SOIL						
Extractable Hydrocarbons	Surrogate: Hexatriacontane (%)	93	74	86	119	112
	Chromatogram to baseline at nC50	NO	NO	NO	NO	NO
Polychlorinated Biphenyls	PCB-1016 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1221 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1232 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1242 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1248 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1254 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1260 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1262 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1268 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Total Polychlorinated Biphenyls (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L548832-6	L548832-7	L548832-8	L548832-9	L548832-10
	Description					
	Sampled Date	21-AUG-07	21-AUG-07	21-AUG-07	21-AUG-07	21-AUG-07
	Sampled Time					
	Client ID	P3-MW-7-2	P3-MW-8-1	P3-MW-8-2	P3-MW-9-1	P3-MW-9-2
Grouping	**Analyte**					
SOIL						
Extractable Hydrocarbons	Surrogate: Hexatriacontane (%)	120	113	98	105	103
	Chromatogram to baseline at nC50	YES	NO	NO	YES	NO
Polychlorinated Biphenyls	PCB-1016 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1221 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1232 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1242 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1248 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1254 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1260 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1262 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1268 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Total Polychlorinated Biphenyls (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L548832-11	L548832-12	L548832-13	L548832-14	L548832-15
	Description					
	Sampled Date	21-AUG-07	21-AUG-07	21-AUG-07	21-AUG-07	21-AUG-07
	Sampled Time					
	Client ID	P3-MW-10-1	P3-MW-10-2	P3-MW-11-1	P3-MW-11-2	P3-MW-12-1
Grouping	**Analyte**					
SOIL						
Extractable Hydrocarbons	Surrogate: Hexatriacontane (%)	107	102	118	74	156
	Chromatogram to baseline at nC50	NO	YES	NO	YES	NO
Polychlorinated Biphenyls	PCB-1016 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1221 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1232 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1242 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1248 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1254 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1260 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1262 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1268 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Total Polychlorinated Biphenyls (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L548832-16	L548832-17	L548832-18	L548832-19	L548832-20
	Description					
	Sampled Date	21-AUG-07	20-AUG-07	20-AUG-07	22-AUG-07	22-AUG-07
	Sampled Time					
	Client ID	P3-MW-12-2	P3-MW-13-1	P3-MW-13-2	P3-MW-14-1	P3-MW-14-2
Grouping	**Analyte**					
SOIL						
Extractable Hydrocarbons	Surrogate: Hexatriacontane (%)	210	241	177	77	208
	Chromatogram to baseline at nC50	YES	NO	YES	NO	YES
Polychlorinated Biphenyls	PCB-1016 (mg/kg)	<0.010	<0.010	<0.010	<0.014	<0.010
	PCB-1221 (mg/kg)	<0.010	<0.010	<0.010	<0.014	<0.010
	PCB-1232 (mg/kg)	<0.010	<0.010	<0.010	<0.014	<0.010
	PCB-1242 (mg/kg)	<0.010	<0.010	<0.010	<0.014	<0.010
	PCB-1248 (mg/kg)	<0.010	<0.010	<0.010	<0.014	<0.010
	PCB-1254 (mg/kg)	<0.010	<0.010	<0.010	0.014	<0.010
	PCB-1260 (mg/kg)	<0.010	<0.010	<0.010	<0.014	<0.010
	PCB-1262 (mg/kg)	<0.010	<0.010	<0.010	<0.014	<0.010
	PCB-1268 (mg/kg)	<0.010	<0.010	<0.010	<0.014	<0.010
	Total Polychlorinated Biphenyls (mg/kg)	<0.010	<0.010	<0.010	0.014	<0.010

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L548832-21	L548832-22	L548832-23	L548832-24	L548832-25
	Description					
	Sampled Date	22-AUG-07	22-AUG-07	22-AUG-07	22-AUG-07	22-AUG-07
	Sampled Time					
	Client ID	P3-MW-15-1	P3-MW-15-2	P3-MW-16-1	P3-MW-16-2	P3-1-1
Grouping	**Analyte**					
SOIL						
Extractable Hydrocarbons	Surrogate: Hexatriacontane (%)	219	190	80	193	133
	Chromatogram to baseline at nC50	NO	YES	YES	NO	NO
Polychlorinated Biphenyls	PCB-1016 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1221 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1232 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1242 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1248 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1254 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1260 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1262 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1268 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Total Polychlorinated Biphenyls (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L548832-26	L548832-27	L548832-28	L548832-29	L548832-30
	Description					
	Sampled Date	22-AUG-07	22-AUG-07	22-AUG-07	22-AUG-07	22-AUG-07
	Sampled Time					
	Client ID	P3-1-2	P3-2-1	P3-2-2	P3-3-1	P3-3-2
Grouping	**Analyte**					
SOIL						
Extractable Hydrocarbons	Surrogate: Hexatriacontane (%)	91	93	84	59	46
	Chromatogram to baseline at nC50	YES	YES	YES	NO	YES
Polychlorinated Biphenyls	PCB-1016 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1221 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1232 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1242 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1248 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1254 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1260 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1262 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	PCB-1268 (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Total Polychlorinated Biphenyls (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L548832-31	L548832-32	L548832-33	L548832-34	L548832-35
	Description					
	Sampled Date	22-AUG-07	22-AUG-07	22-AUG-07	22-AUG-07	22-AUG-07
	Sampled Time					
	Client ID	P3-4-1	P3-4-2	P3-5-1	P3-5-2	P3-6-1
Grouping	**Analyte**					
SOIL						
Extractable Hydrocarbons	Surrogate: Hexatriacontane (%)	38	89	85	85	54
	Chromatogram to baseline at nC50	YES	NO	YES	YES	NO
Polychlorinated Biphenyls	PCB-1016 (mg/kg)	<0.022	<0.011	<0.010	<0.010	<0.010
	PCB-1221 (mg/kg)	<0.022	<0.011	<0.010	<0.010	<0.010
	PCB-1232 (mg/kg)	<0.022	<0.011	<0.010	<0.010	<0.010
	PCB-1242 (mg/kg)	<0.022	<0.011	<0.010	<0.010	<0.010
	PCB-1248 (mg/kg)	<0.022	<0.011	<0.010	<0.010	<0.010
	PCB-1254 (mg/kg)	<0.022	<0.011	<0.010	<0.010	<0.010
	PCB-1260 (mg/kg)	<0.022	<0.011	<0.010	<0.010	<0.010
	PCB-1262 (mg/kg)	<0.022	<0.011	<0.010	<0.010	<0.010
	PCB-1268 (mg/kg)	<0.022	<0.011	<0.010	<0.010	<0.010
	Total Polychlorinated Biphenyls (mg/kg)	<0.022	<0.011	<0.010	<0.010	<0.010

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L548832-36				
	Description					
	Sampled Date	22-AUG-07				
	Sampled Time					
	Client ID	P3-6-2				
Grouping	**Analyte**					
SOIL						
Extractable Hydrocarbons	Surrogate: Hexatriacontane (%)	76				
	Chromatogram to baseline at nC50	YES				
Polychlorinated Biphenyls	PCB-1016 (mg/kg)	<0.010				
	PCB-1221 (mg/kg)	<0.010				
	PCB-1232 (mg/kg)	<0.010				
	PCB-1242 (mg/kg)	<0.010				
	PCB-1248 (mg/kg)	<0.010				
	PCB-1254 (mg/kg)	<0.010				
	PCB-1260 (mg/kg)	<0.010				
	PCB-1262 (mg/kg)	<0.010				
	PCB-1268 (mg/kg)	<0.010				
	Total Polychlorinated Biphenyls (mg/kg)	<0.010				

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
RAMB	Result Adjusted For Method Blank
SOL:MI	Surrogate recovery outside acceptable limits due to matrix interference

Samples with Qualifiers for Individual Parameters as listed above:

Sample Number	Client Sample ID	Qualifier
L548832-2	P3-MW-5-2	RAMB
L548832-4	P3-MW-6-2	RAMB
L548832-5	P3-MW-7-1	RAMB
L548832-6	P3-MW-7-2	RAMB
L548832-9	P3-MW-9-1	RAMB
L548832-10	P3-MW-9-2	RAMB
L548832-11	P3-MW-10-1	RAMB
L548832-12	P3-MW-10-2	RAMB
L548832-13	P3-MW-11-1	RAMB
L548832-14	P3-MW-11-2	RAMB
L548832-15	P3-MW-12-1	RAMB
L548832-16	P3-MW-12-2	RAMB
L548832-16	P3-MW-12-2	SOL:MI
L548832-17	P3-MW-13-1	RAMB
L548832-17	P3-MW-13-1	SOL:MI
L548832-18	P3-MW-13-2	RAMB
L548832-18	P3-MW-13-2	SOL:MI
L548832-19	P3-MW-14-1	RAMB
L548832-20	P3-MW-14-2	RAMB
L548832-20	P3-MW-14-2	SOL:MI
L548832-21	P3-MW-15-1	RAMB
L548832-21	P3-MW-15-1	SOL:MI
L548832-22	P3-MW-15-2	RAMB
L548832-22	P3-MW-15-2	SOL:MI
L548832-24	P3-MW-16-2	RAMB
L548832-24	P3-MW-16-2	SOL:MI
L548832-26	P3-1-2	RAMB
L548832-27	P3-2-1	RAMB
L548832-30	P3-3-2	RAMB
L548832-31	P3-4-1	SOL:MI
L548832-32	P3-4-2	RAMB
L548832-33	P3-5-1	RAMB
L548832-34	P3-5-2	RAMB
L548832-36	P3-6-2	RAMB

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)
AS-CSR-HVAAS-VA	Soil	As in Soil by HVAAS (CSR SALM)	BCMELP CSR SALM Method 8

This analysis is carried out using procedures from CSR Analytical Method 8 "Strong Acid Leachable Metals (SALM) in Soil", BC Ministry of Environment, Lands and Parks, 26 June 2001, and procedures adapted from "Test Methods for Evaluating Solid Waste", SW-846 Method 3050B United States Environmental Protection Agency (EPA). The sample is manually homogenized, dried at 60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve, and a representative subsample of the dry material is weighed. The sample is then digested at 90 degrees Celsius for 2 hours by block digester using a 1:1 ratio of concentrated nitric and hydrochloric acids. Instrumental analysis is by atomic absorption spectrophotometry (EPA Method 7000 series).

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

ETL-TEH-CCME-ED	Soil	CCME Total Extractable Hydrocarbons	CCME CWS-PHC Dec-2000 - Pub# 1310
ETL-TVH,TEH-CCME-ED	Soil	CCME Total Hydrocarbons	CCME CWS-PHC Dec-2000 - Pub# 1310

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

Hydrocarbon results are expressed on a dry weight basis.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F1-BTX-CALC-VA	Soil	F1-Total BTX	CCME CWS PHC TIER 1 (2001)

Petroleum Hydrocarbons in Sediment/Soil (Canada-Wide Standard) This analysis is carried out in accordance with the "Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil - Tier 1 Method, Canadian Council of Ministers of the Environment, December 2000." The various extraction fractions are analysed as follows:

CWS Fractions 1 and 1-BTEX:
This procedure involves the extraction of a subsample of the sediment/soil with methanol. Aliquots of the methanol extract are then analysed by capillary column gas chromatography with flame-ionization detection (GC/FID) for CWS Fraction 1, and by capillary column gas chromatography with mass spectrometric detection (GC/MS) for the BTEX compounds.

Reported results may include any or all of the following:
CWS Fraction 1 (C6-10): sum of all petroleum hydrocarbon compounds that elute between nC6 and nC10 obtained by GC/FID analysis CWS Fraction 1-BTEX:CWS Fraction 1 (C6-10), minus BTEX compounds

F1-MET-PT-FID-VA	Soil	CCME by Purge and Trap with GCMS	EPA 8260B & 524.2

Volatile Organic Compounds (VOC) are extracted from sediment or soil with methanol, following a procedure from the British Columbia Ministry of Water Land and Air Protection (BCWLAP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Solids by GC/FID" (Version 2.1 July 1999). Aliquots of the extract are analyzed by direct injection capillary column gas chromatography with mass spectrometric detection (GC/MS), using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8260B, published by the United States Environmental Protection Agency (EPA).

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)
HG-CCME-CVAFS-VA	Soil	CVAFS Hg in Soil (CCME)	CCME

This analysis is carried out using procedures from CSR Analytical Method 8 "Strong Acid Leachable Metals (SALM) in Soil", BC Ministry of Environment, Lands and Parks, 26 June 2001, and procedures adapted from "Test Methods for Evaluating Solid Waste", SW-846 Method 3050B United States Environmental Protection Agency (EPA). The sample is manually homogenized, dried at 60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve, and a representative subsample of the dry material is weighed. The sample is then digested at 90 degrees Celsius for 2 hours by block digester using a 1:1 ratio of concentrated nitric and hydrochloric acids. Instrumental analysis is by atomic fluorescence spectrophotometry (EPA Method 7000 series).

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

MET-CSR-FULL-ICP-VA	Soil	Metals in Soil by ICPOES (CSR SALM)	BCMELP CSR SALM METHOD 8

This analysis is carried out using procedures from CSR Analytical Method 8 "Strong Acid Leachable Metals (SALM) in Soil", BC Ministry of Environment, Lands and Parks, 26 June 2001, and procedures adapted from "Test Methods for Evaluating Solid Waste", SW-846 Method 3050B United States Environmental Protection Agency (EPA). The sample is manually homogenized, dried at 60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve, and a representative subsample of the dry material is weighed. The sample is then digested at 90 degrees Celsius for 2 hours by block digester using a 1:1 ratio of concentrated nitric and hydrochloric acids. Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

PCB-SE-ECD-VA	Soil	PCB by Extraction with GCECD	EPA 3630/8082 GCECD

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Methods 3500, 3620, 3630, 3660, 3665 & 8082, published by the United States Environmental Protection Agency (EPA). The procedure involves a solid-liquid extraction of a subsample of the sediment/soil using a mixture of hexane and acetone. Water is added to the extract and the resulting hexane extract undergoes one or more of the following clean-up procedures (if required): florisil clean-up, silica gel clean-up, sulphur clean-up and/or sulphuric acid clean-up. The final extract is analysed by capillary column gas chromatography with electron capture detection (GC/ECD).

PH-1:2-VA	Soil	CSR pH by 1:2 Water Leach	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL

This analysis is carried out in accordance with procedures described in the BC WLAP method: pH, Electrometric, Soil and Sediment. The procedure involves mixing the dried (at <60°C) and seived (10 mesh/2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water. The pH of the solution is then measured using a standard pH probe.

PREP-MOISTURE-ED	Soil	% Moisture	Oven dry 105C-Gravimetric
TL-CSR-MS-VA	Soil	ICPMS Tl in Soil by CSR SALM	BCMELP CSR SALM Method 8

This analysis is carried out using procedures from CSR Analytical Method 8 "Strong Acid Leachable Metals (SALM) in Soil", BC Ministry of Environment, Lands and Parks, 26 June 2001, and procedures adapted from "Test Methods for Evaluating Solid Waste", SW-846 Method 3050B United States Environmental Protection Agency (EPA). The sample is manually homogenized, dried at 60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve, and a representative subsample of the dry material is weighed. The sample is then digested at 90 degrees Celsius for 2 hours by either hotplate or block digester using a 1:1 ratio of concentrated nitric and hydrochloric acids. Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

VOC7-MET-PT-MS-VA	Soil	BTEX by MeOH with Purge and Trap GCMS	EPA 8260B & 524.2

Volatile Organic Compounds (VOC) are extracted from sediment or soil with methanol, following a procedure from the British Columbia Ministry of Water Land and Air Protection (BCWLAP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Solids by GC/FID" (Version 2.1 July 1999). Aliquots of the extract are analyzed by direct injection capillary column gas chromatography with mass spectrometric detection (GC/MS), using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8260B, published by the United States Environmental Protection Agency (EPA). Surrogate recoveries may not be reported in cases where interferences from the sample matrix prevent accurate quantitation.

XYLENES-CALC-VA	Soil	CSR VOC7 by MeOH with DI GCMS	EPA 8260B & 524.2

Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero.

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)

The DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** Laboratory Methods employed follow in-house procedures, which are generally based on nationally or internationally accepted methodologies.
The last two letters of the above ALS Test Code column indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
ED	ALS LABORATORY GROUP - EDMONTON, ALBERTA, CANADA	VA	ALS LABORATORY GROUP - VANCOUVER, BC, CANADA

GLOSSARY OF REPORT TERMS
Surr - A surrogate is an organic compound that is similar to the target analyte(s) in chemical composition and behavior but not normally detected in enviromental samples. Prior to sample processing, samples are fortified with one or more surrogate compounds.
The reported surrogate recovery value provides a measure of method efficiency.
mg/kg (units) - unit of concentration based on mass, parts per million
mg/L (units) - unit of concentration based on volume, parts per million
N/A - Result not available. Refer to qualifier code and definition for explanation

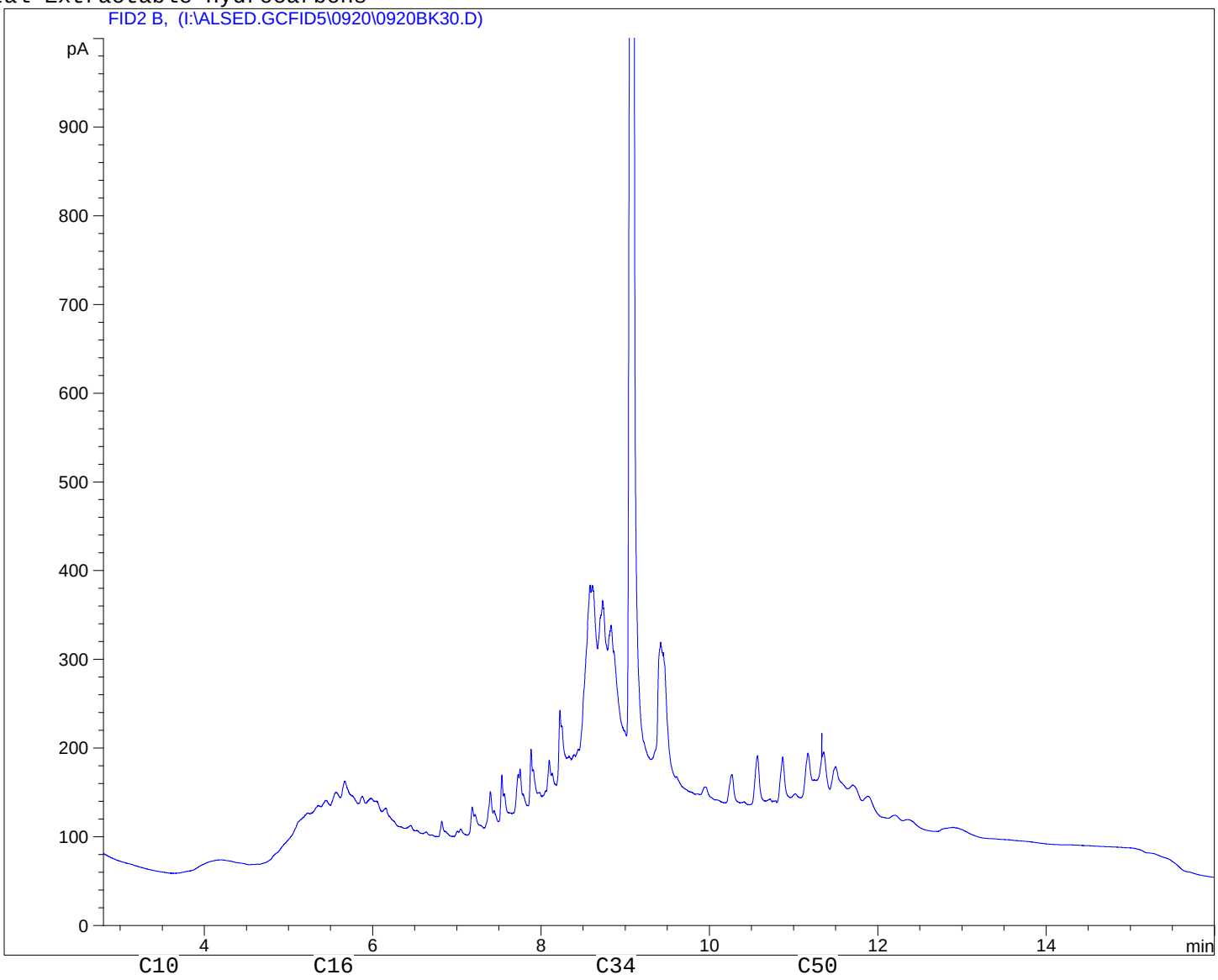
Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Although test results are generated under strict QA/QC protocols, any unsigned test reports, faxes, or emails are considered preliminary.

ALS Laboratory Group has an extensive QA/QC program where all analytical data reported is analyzed using approved referenced procedures followed by checks and reviews by senior managers and quality assurance personnel. However, since the results are obtained from chemical measurements and thus cannot be guaranteed, ALS Laboratory Group assumes no liability for the use or interpretation of the results.

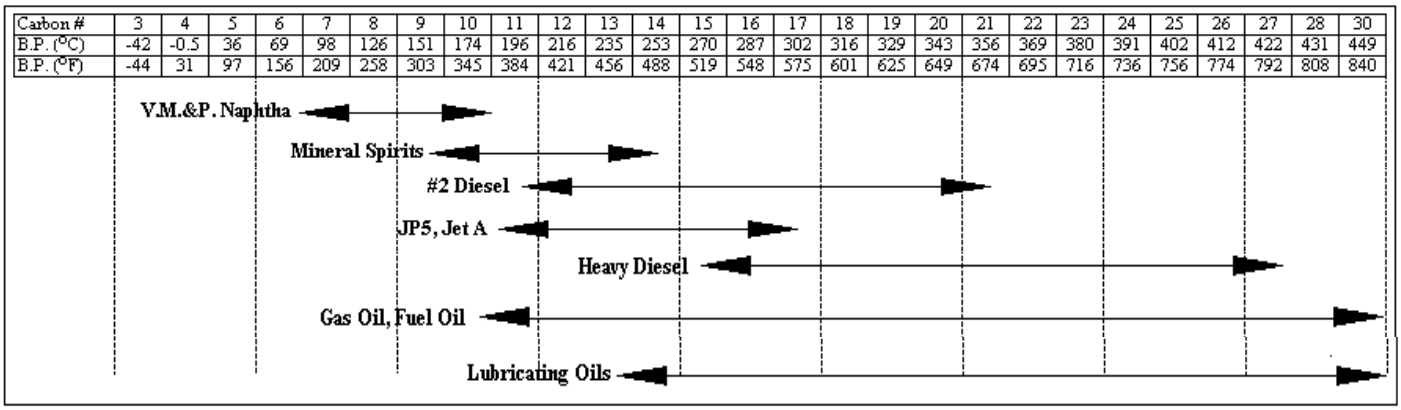
Client ID: P3-MW-5-1

Sample ID: L548832- 1 4
Injection Date: 9/21/2007 8:42:59 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

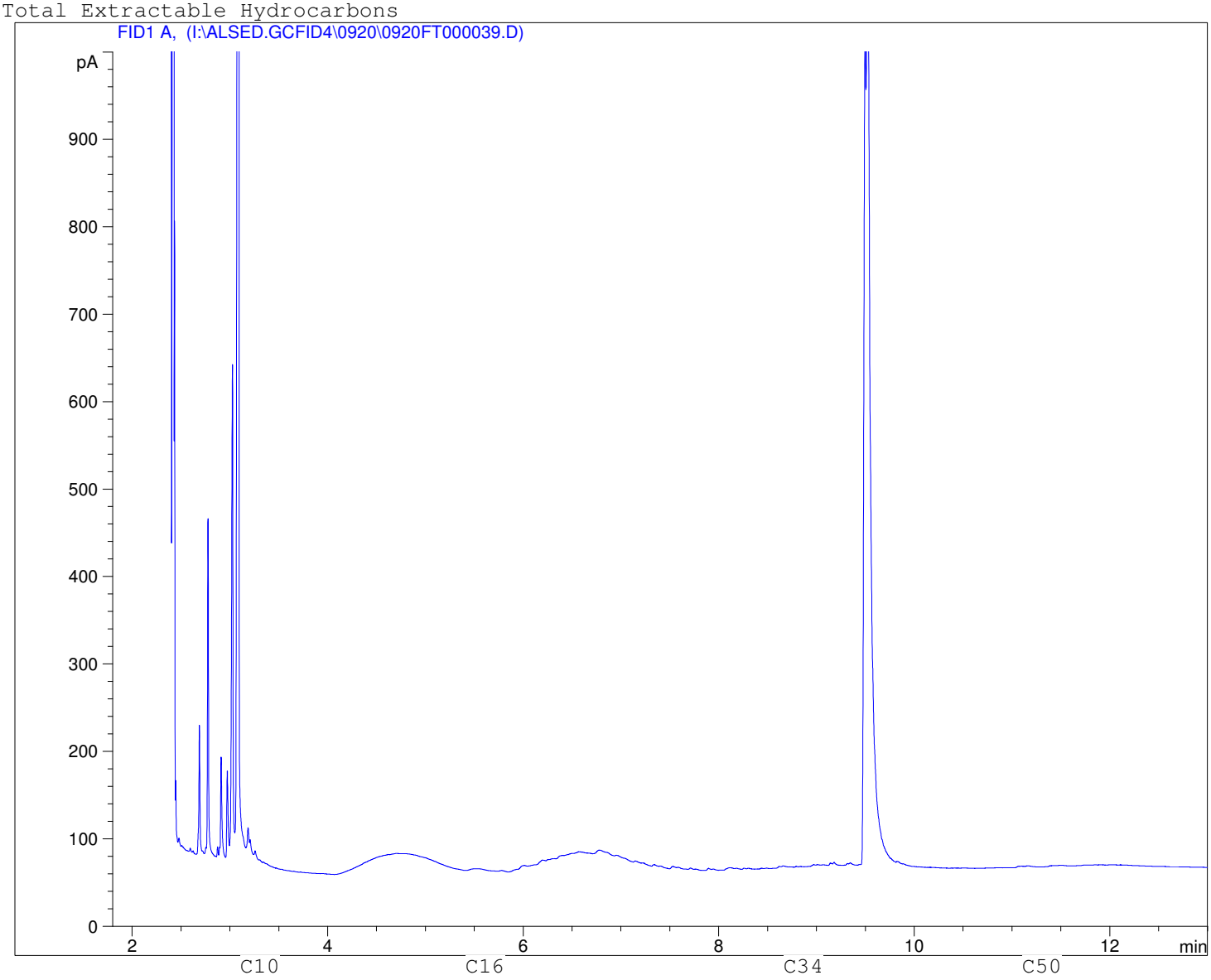


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-MW-5-2

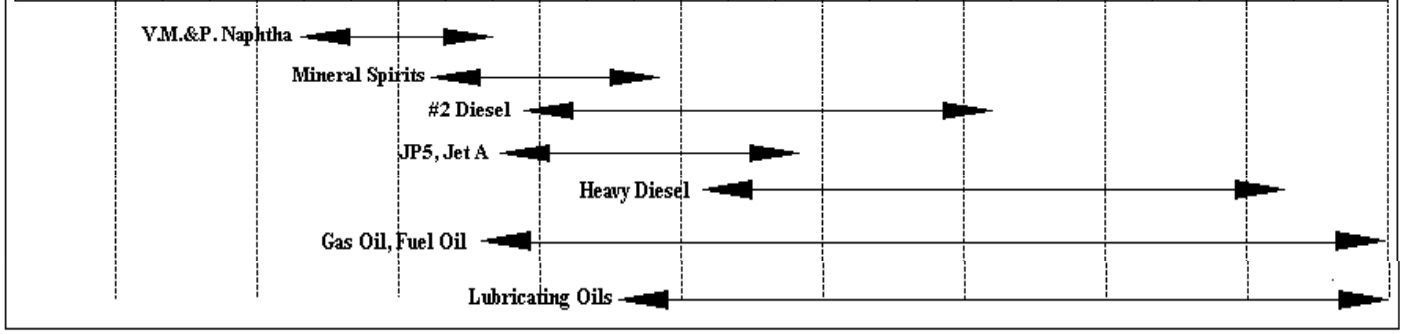
Sample ID: L548832-2 4
Injection Date: 9/21/2007 1:41:21 PM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

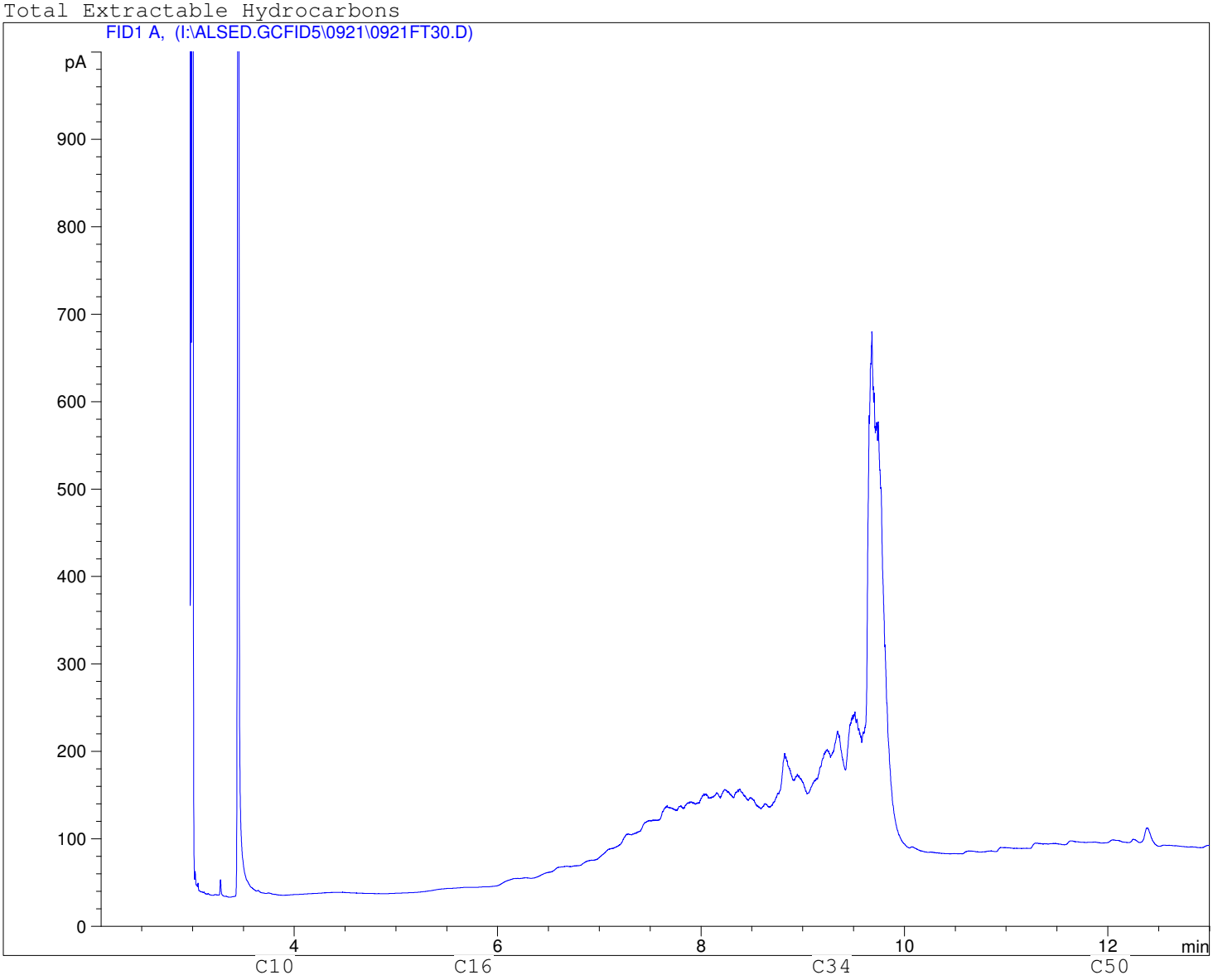


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-MW-6-1

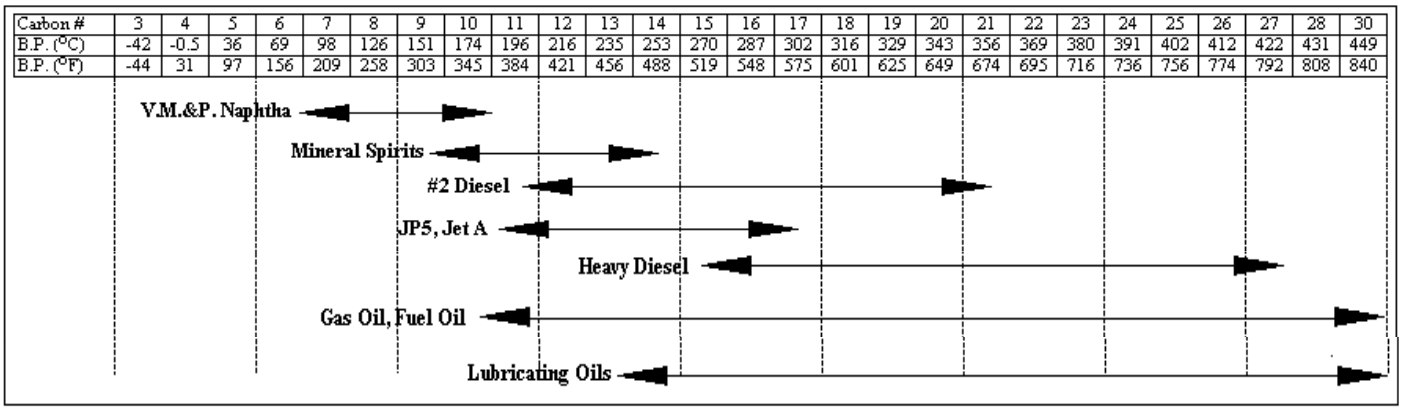
Sample ID: L548832-3 4
Injection Date: 9/22/2007 9:44:01 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

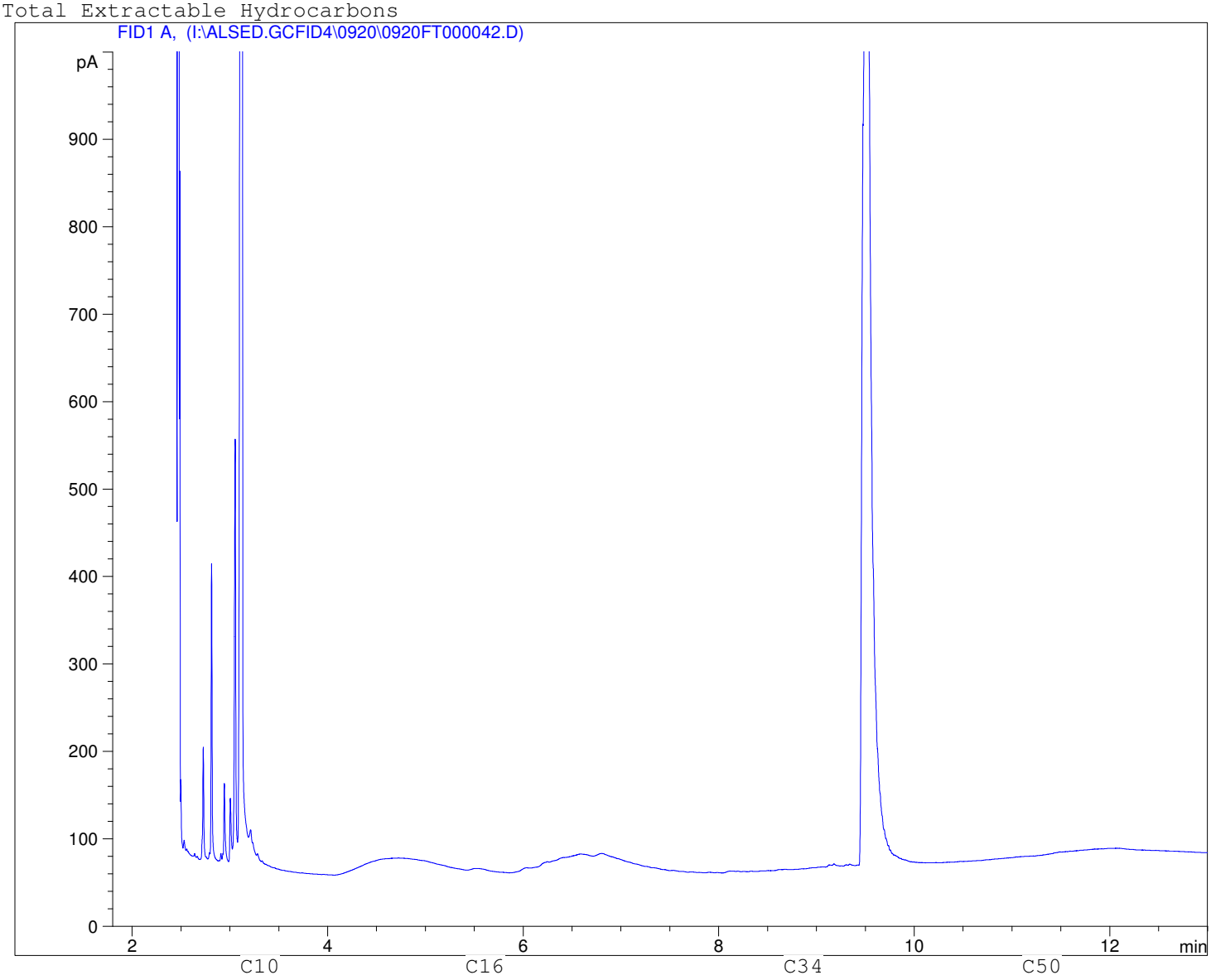


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-MW-6-2

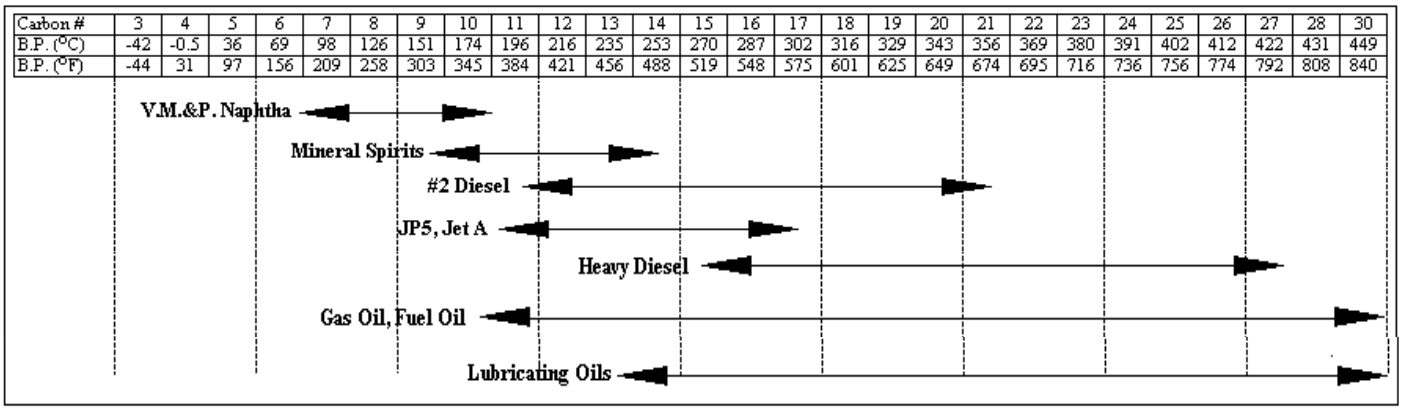
Sample ID: L548832-4 4
Injection Date: 9/21/2007 2:57:37 PM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

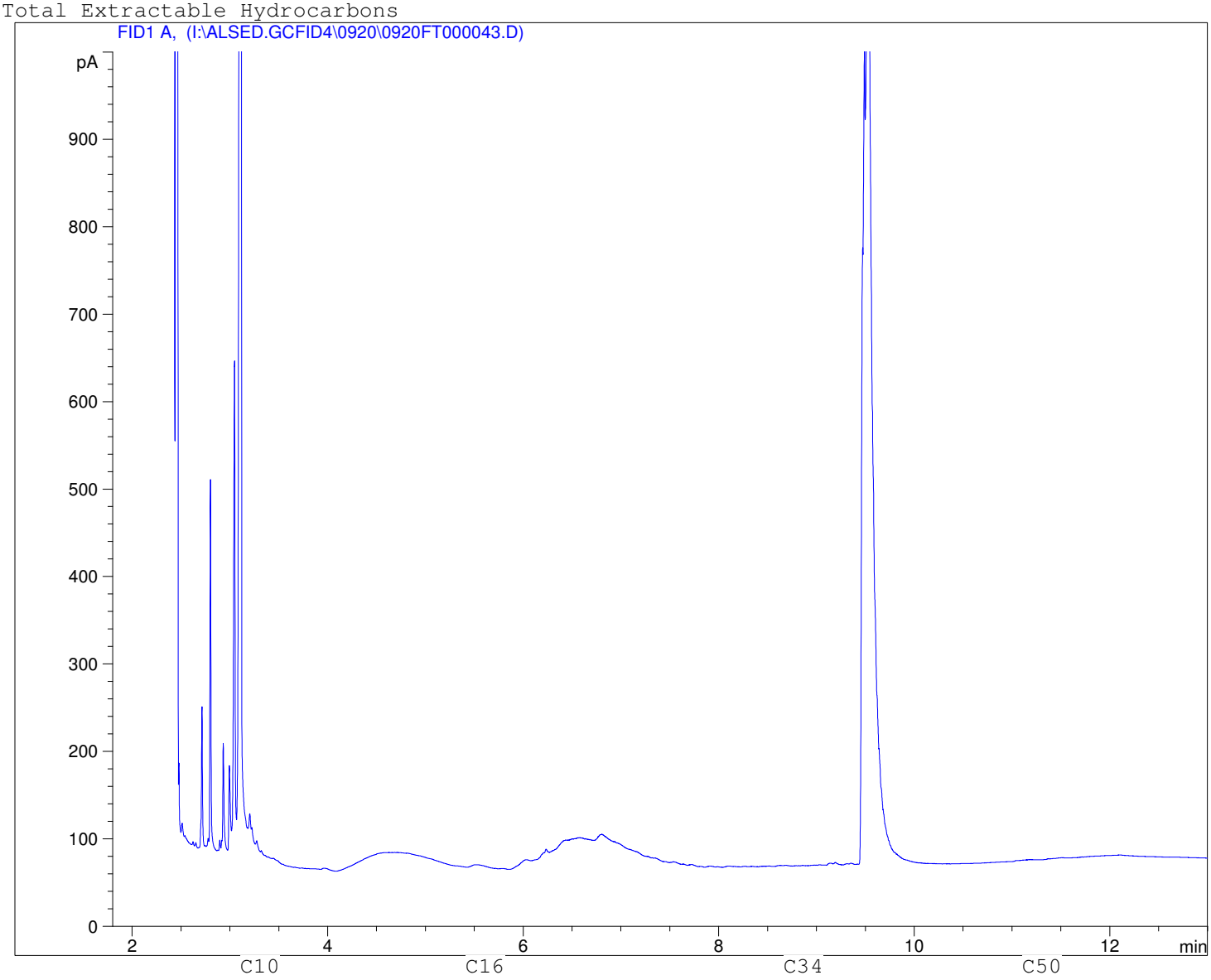


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-MW-7-1

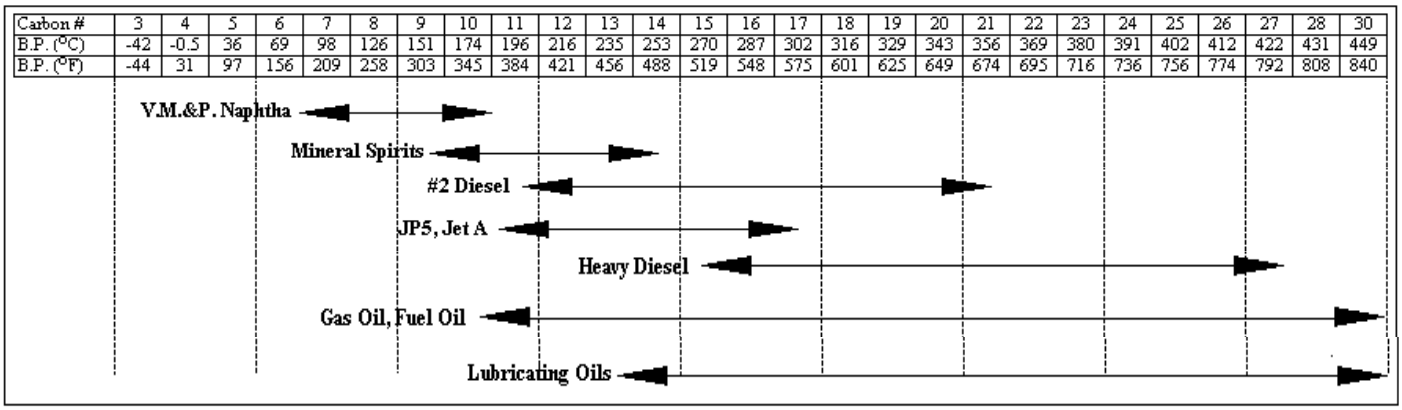
Sample ID: L548832-5 4
Injection Date: 9/21/2007 3:23:07 PM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

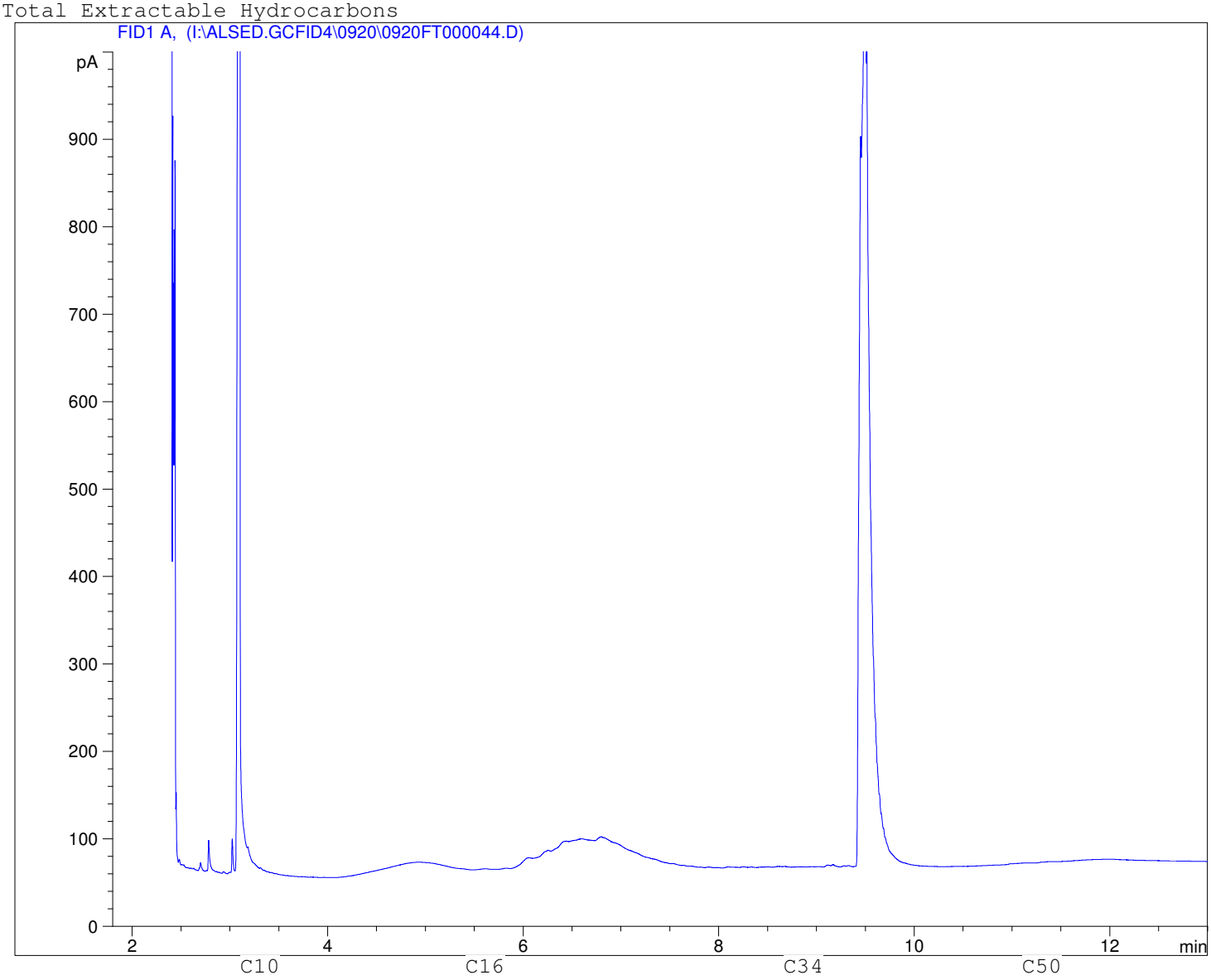


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-MW-7-2

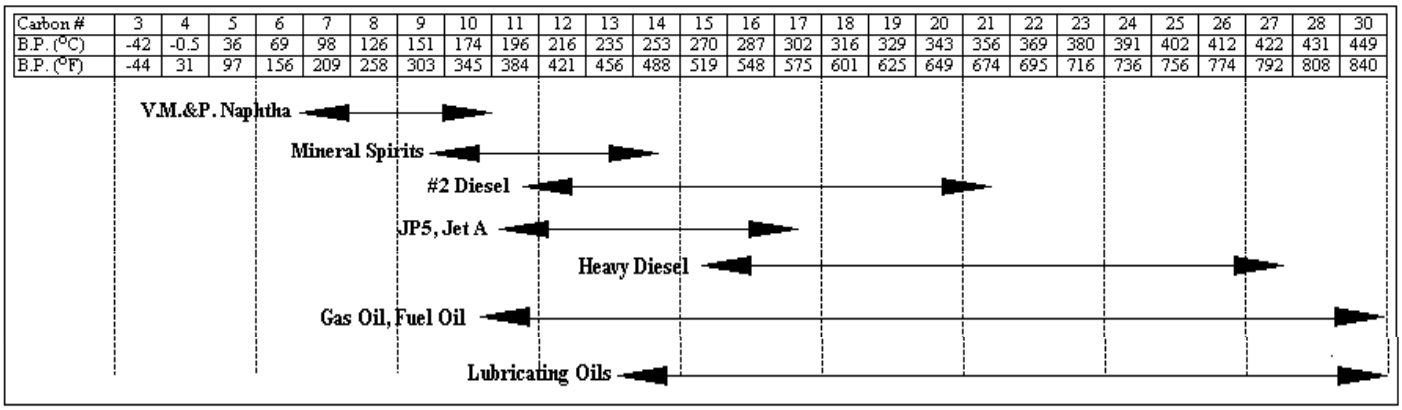
Sample ID: L548832-6 4
Injection Date: 9/21/2007 3:48:23 PM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

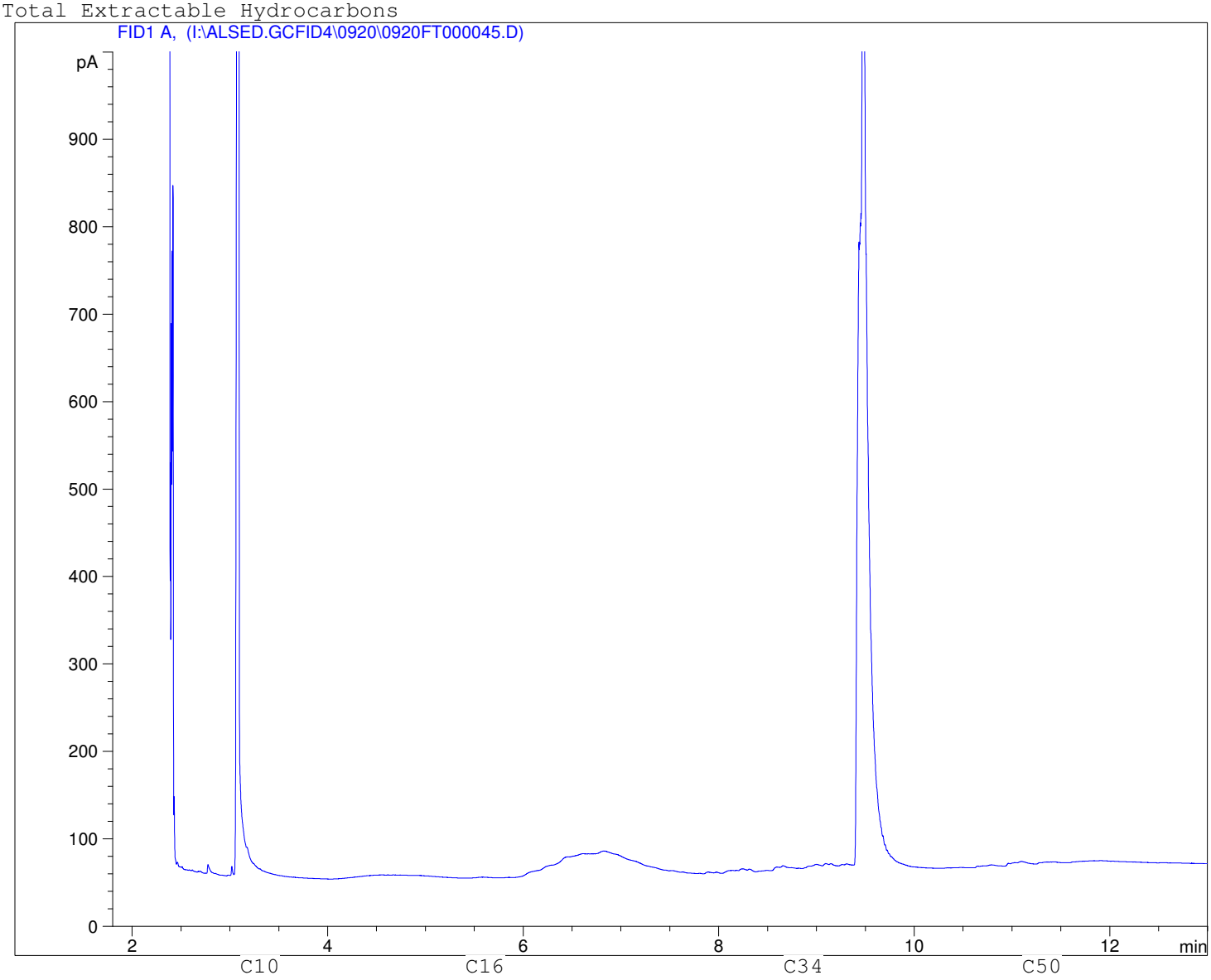


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-MW-8-1

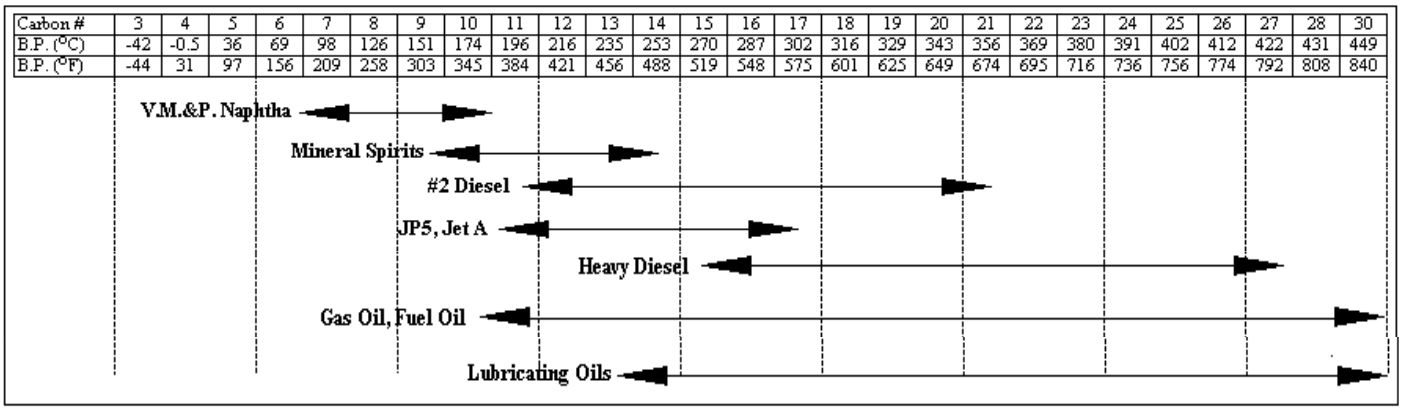
Sample ID: L548832-7 4
Injection Date: 9/21/2007 4:13:40 PM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

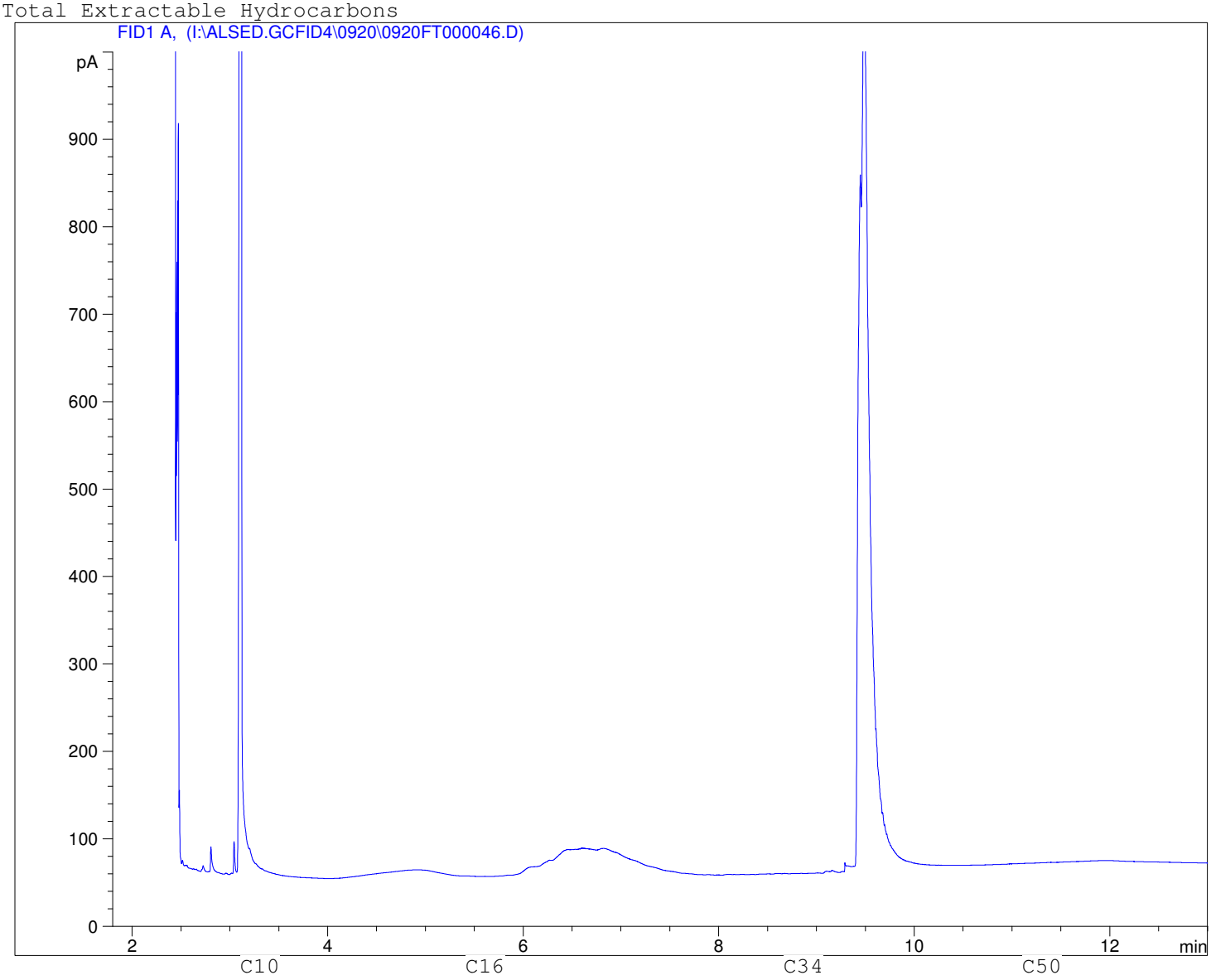


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-MW-8-2

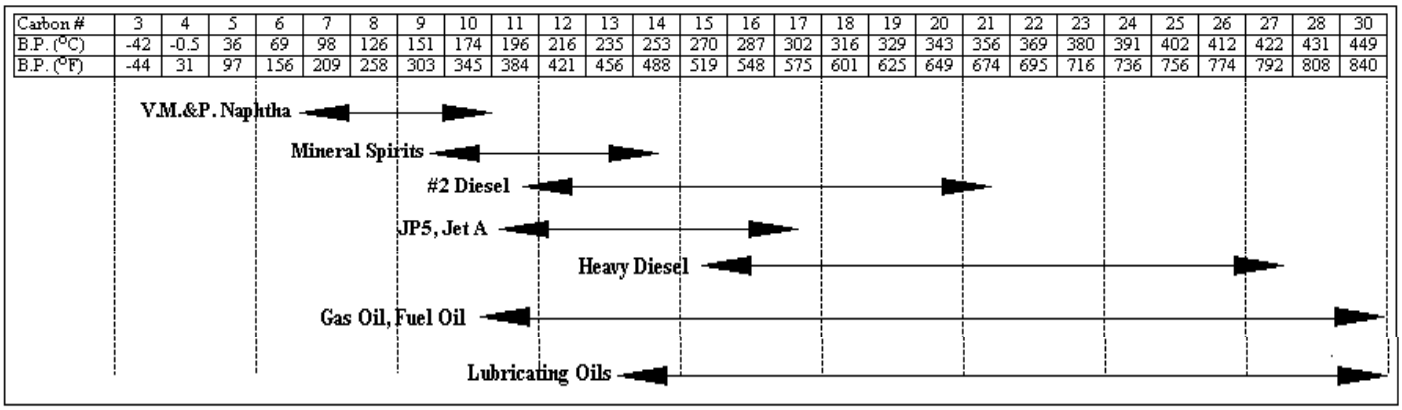
Sample ID: L548832-8 4
Injection Date: 9/21/2007 4:39:11 PM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

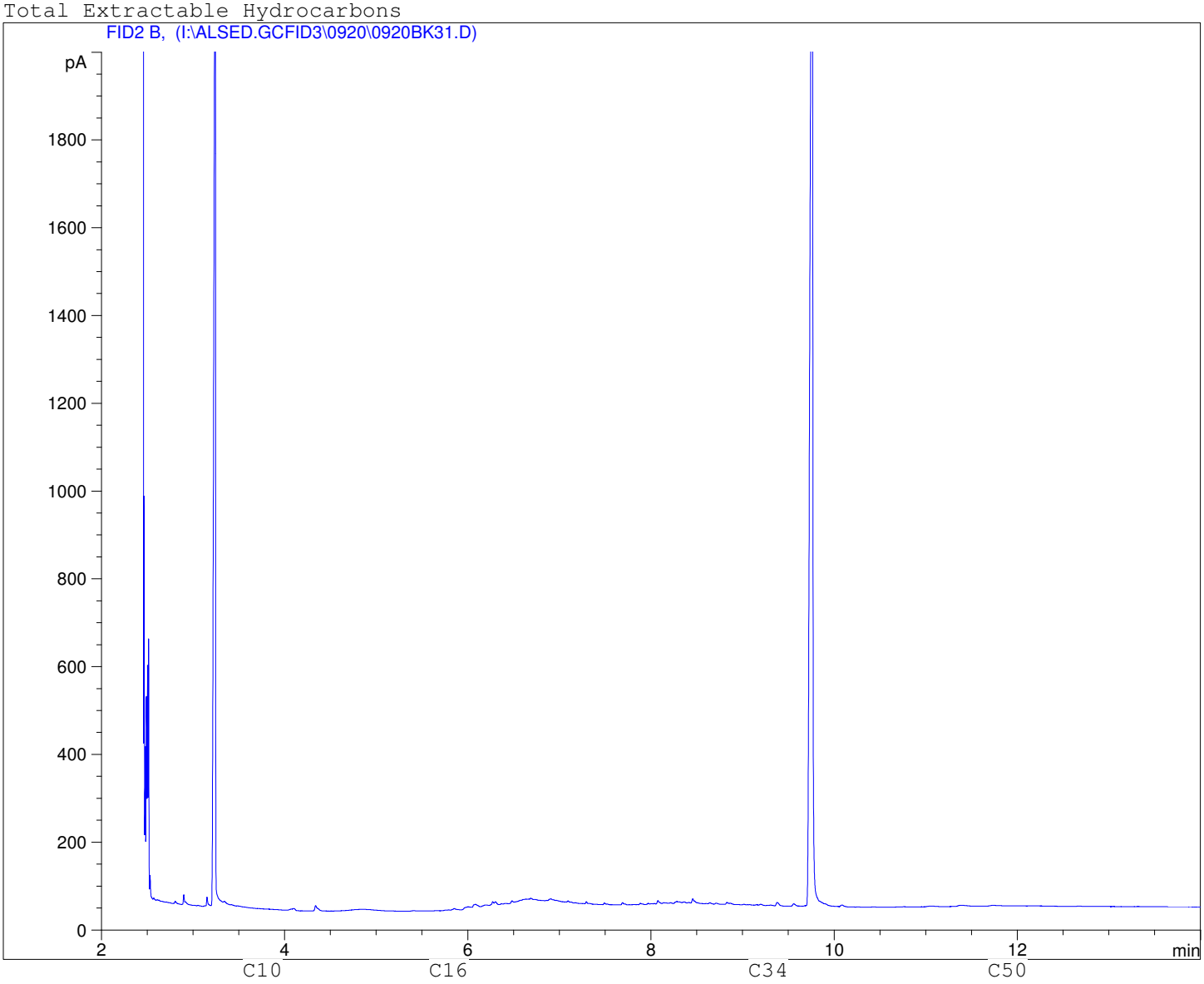


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-MW-9-1

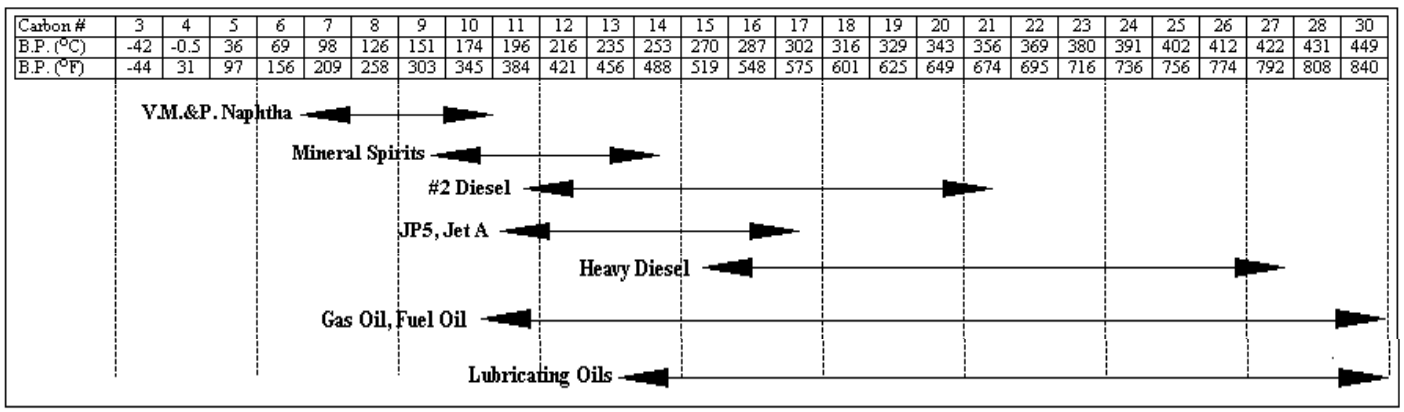
Sample ID: L548832-9 4
Injection Date: 9/21/07 9:42:11 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

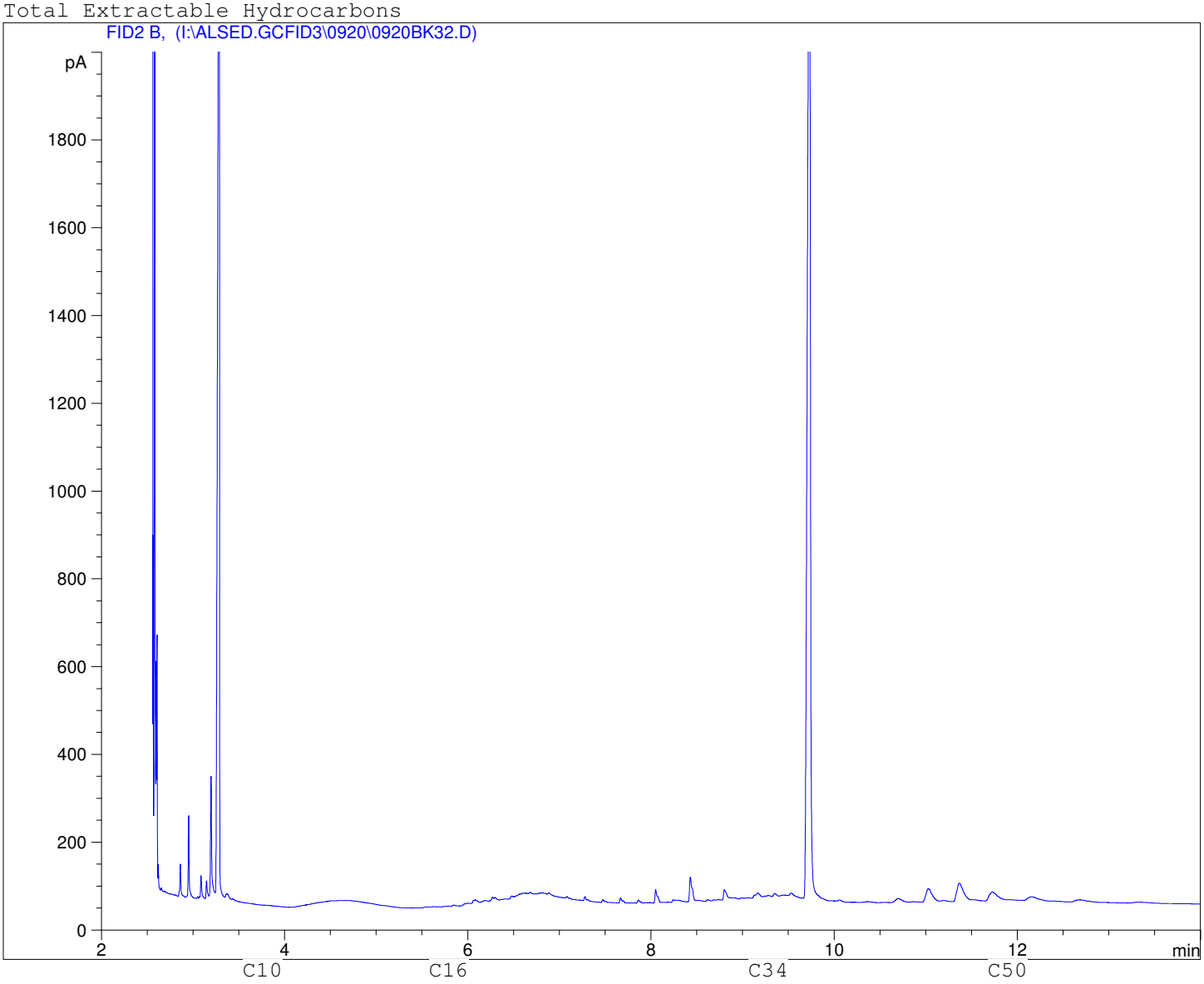


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-MW-9-2

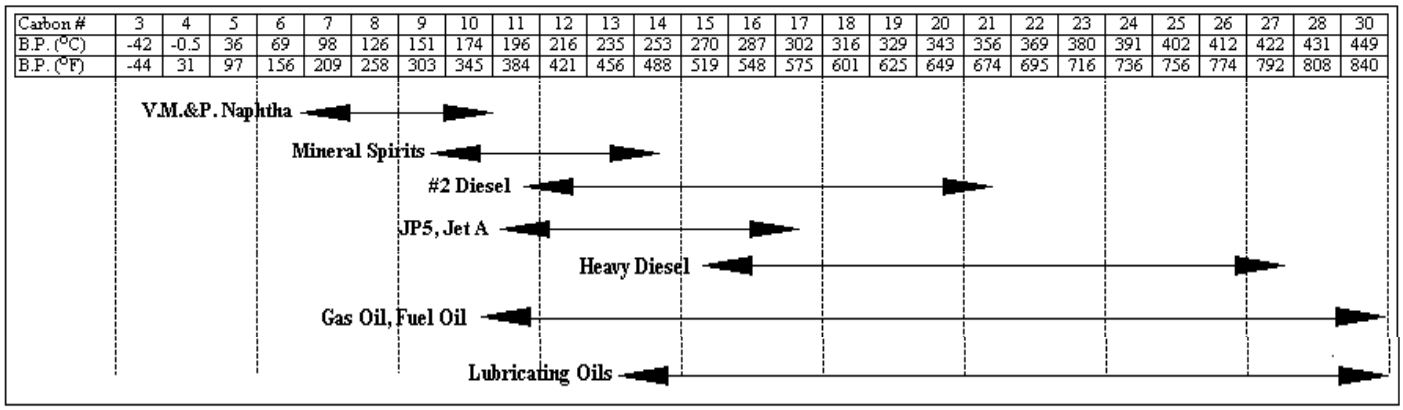
Sample ID: L548832-10 4
Injection Date: 9/21/07 10:07:53 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

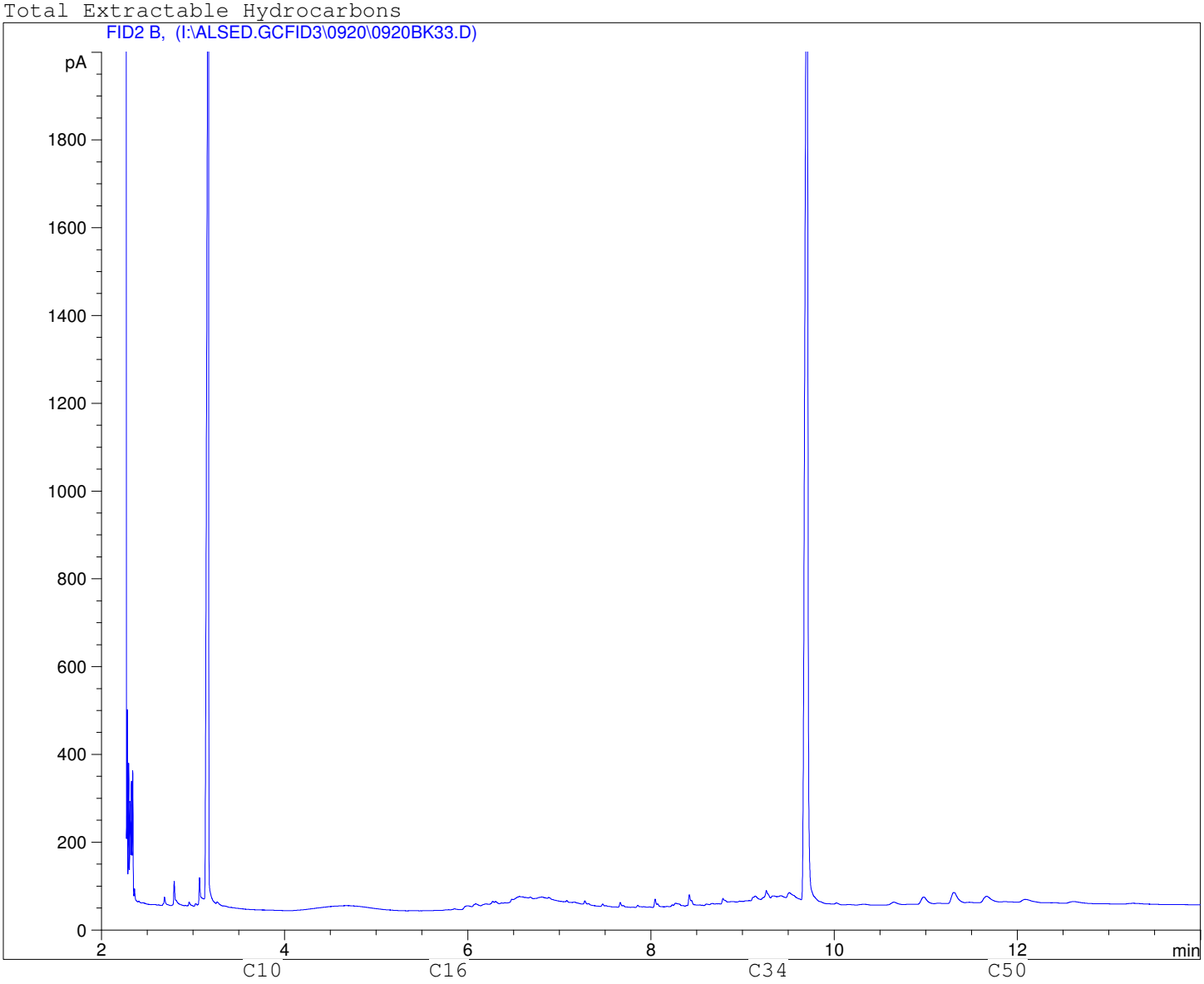


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-MW-10-1

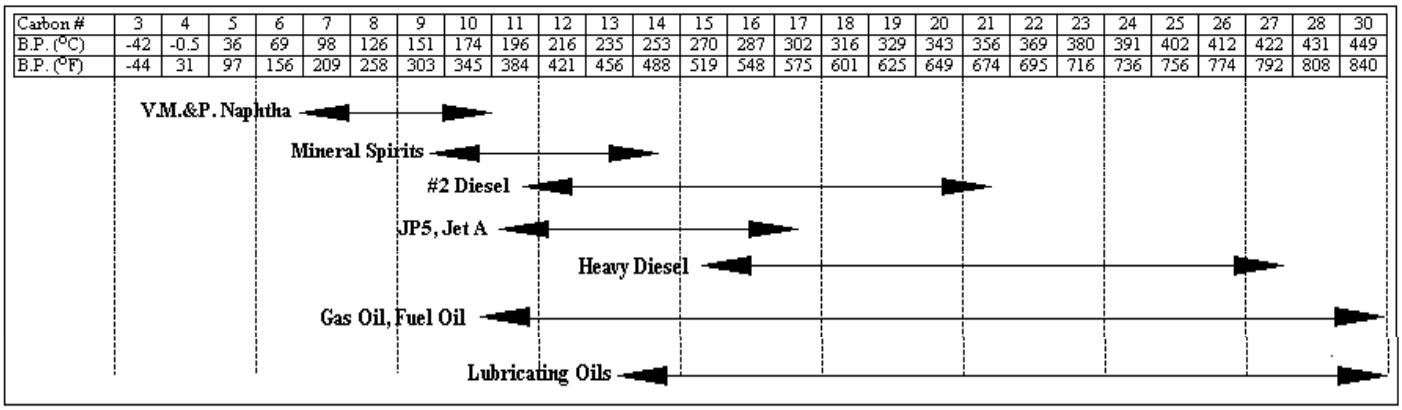
Sample ID: L548832-11 4
Injection Date: 9/21/07 10:33:37 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

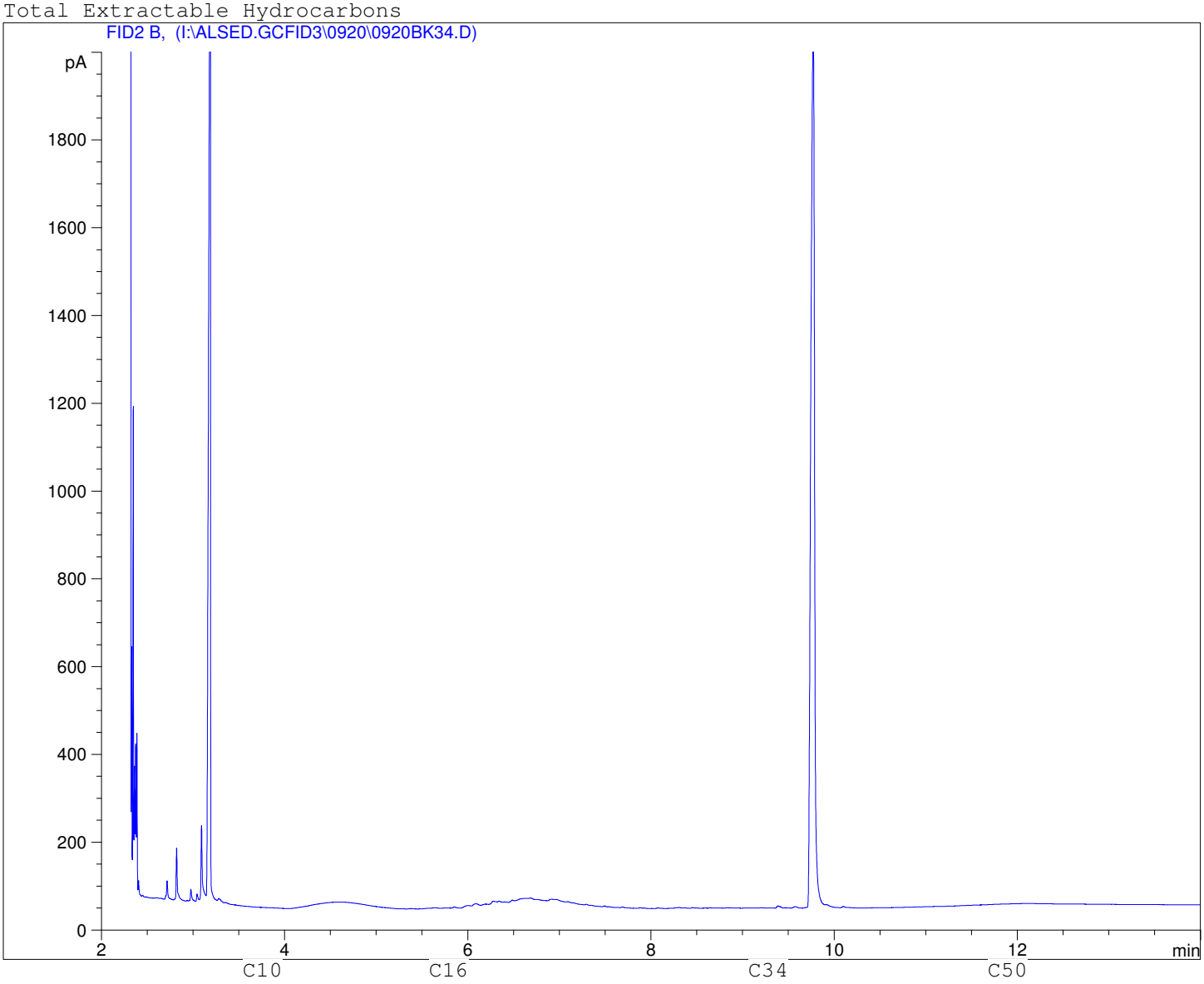


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-MW-10-2

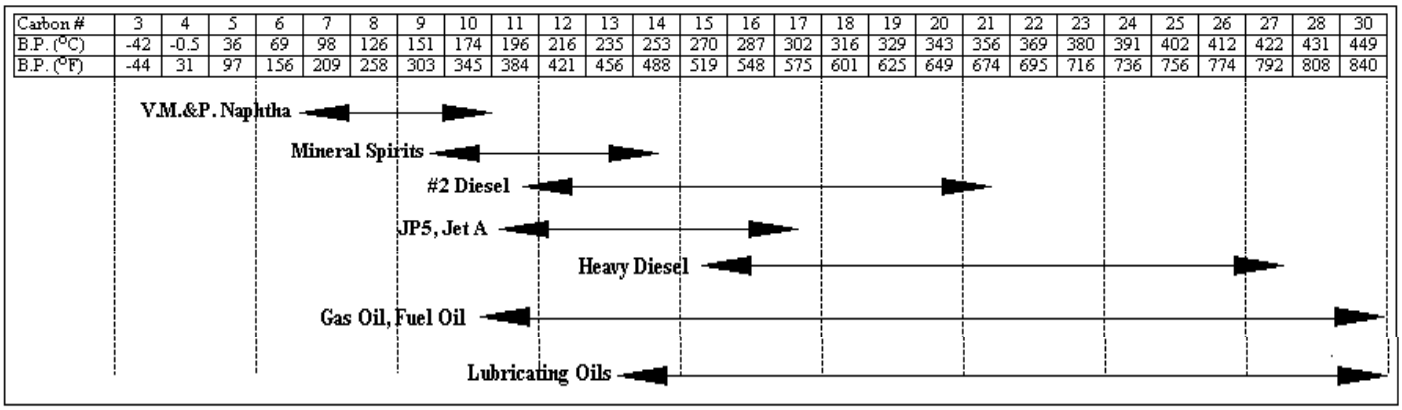
Sample ID: L548832-12 4
Injection Date: 9/21/07 10:59:33 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

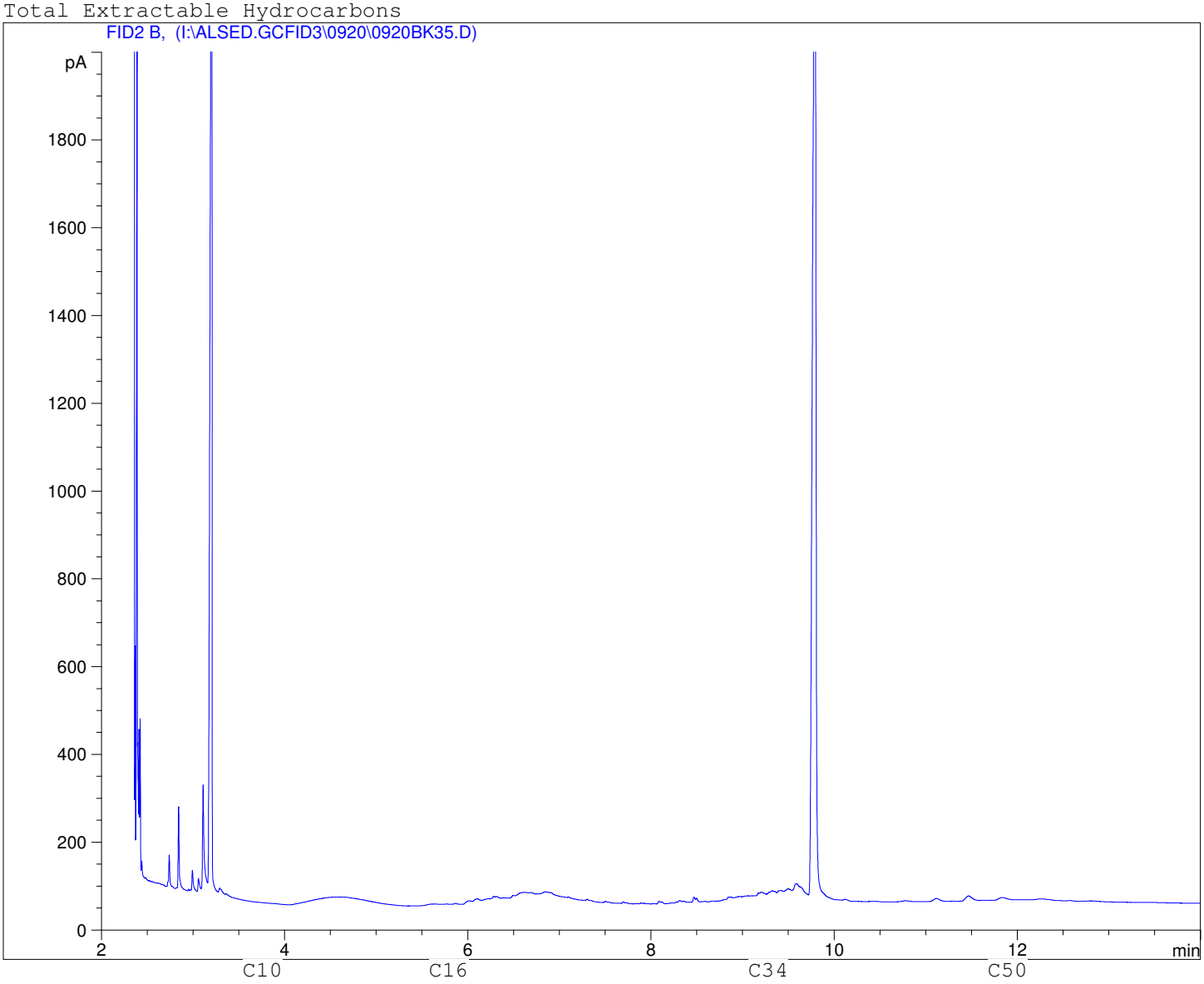


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-MW-11-1

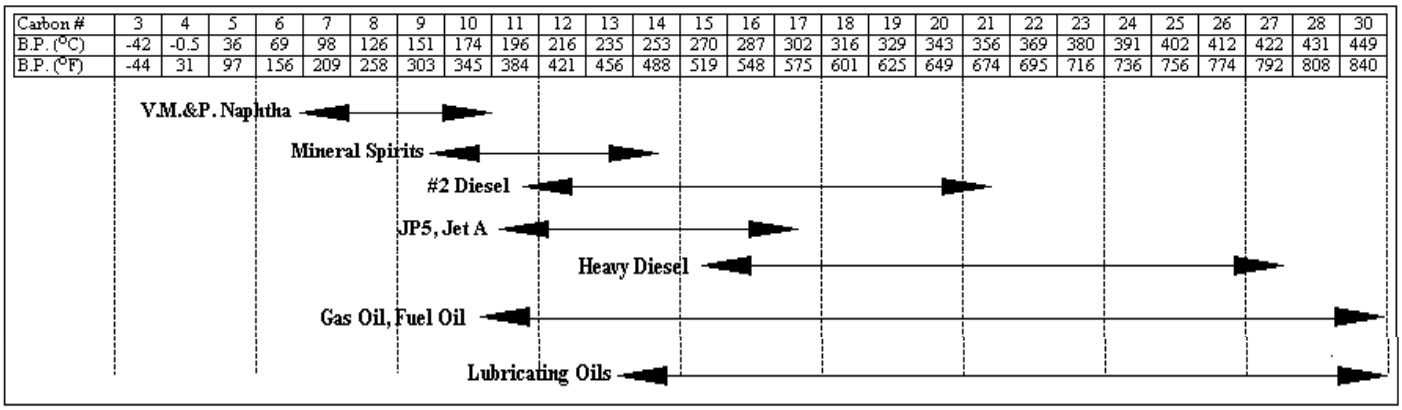
Sample ID: L548832-13 4
Injection Date: 9/21/07 11:25:14 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

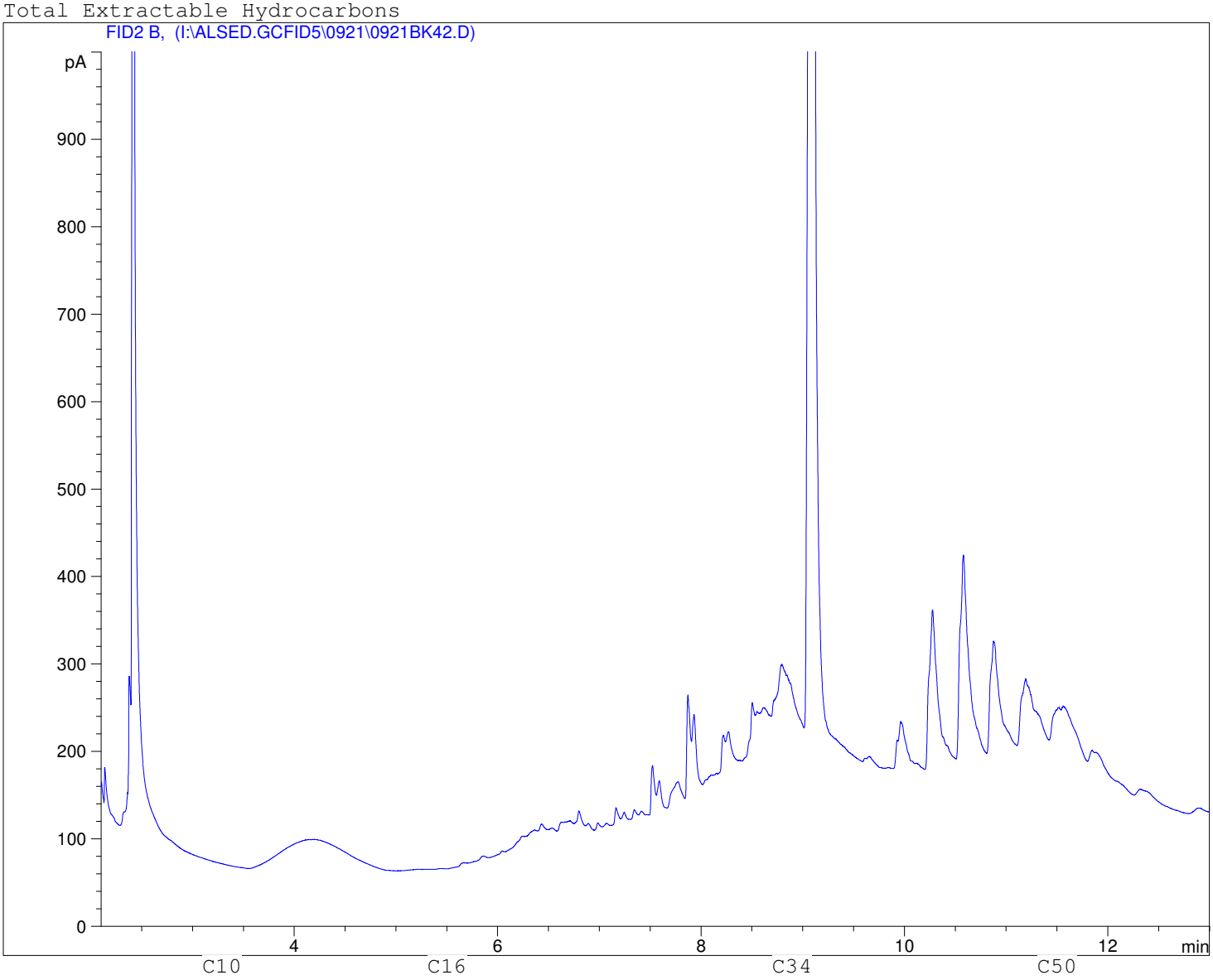


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-MW-12-1

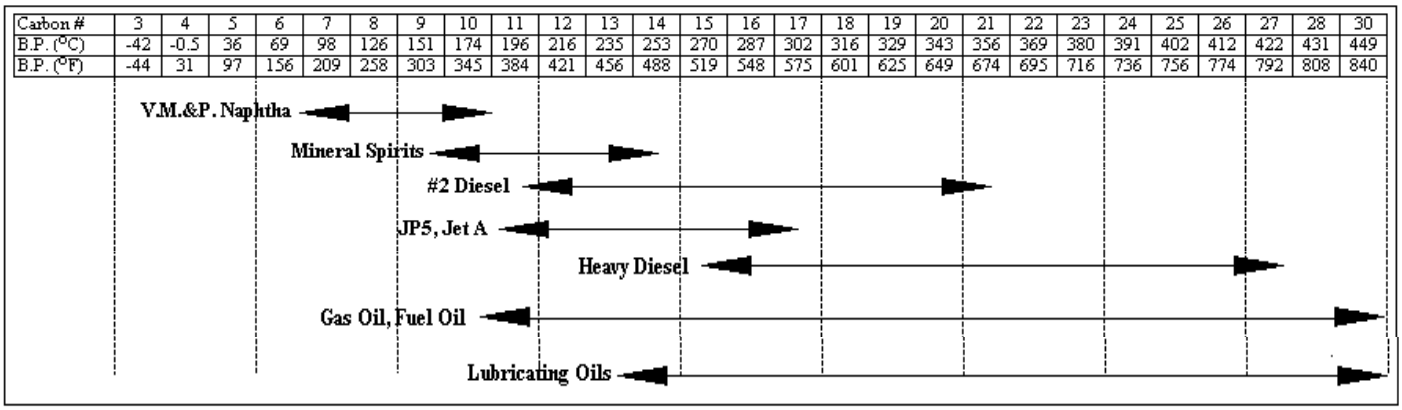
Sample ID: L548832-15 4
Injection Date: 9/22/2007 3:00:22 PM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

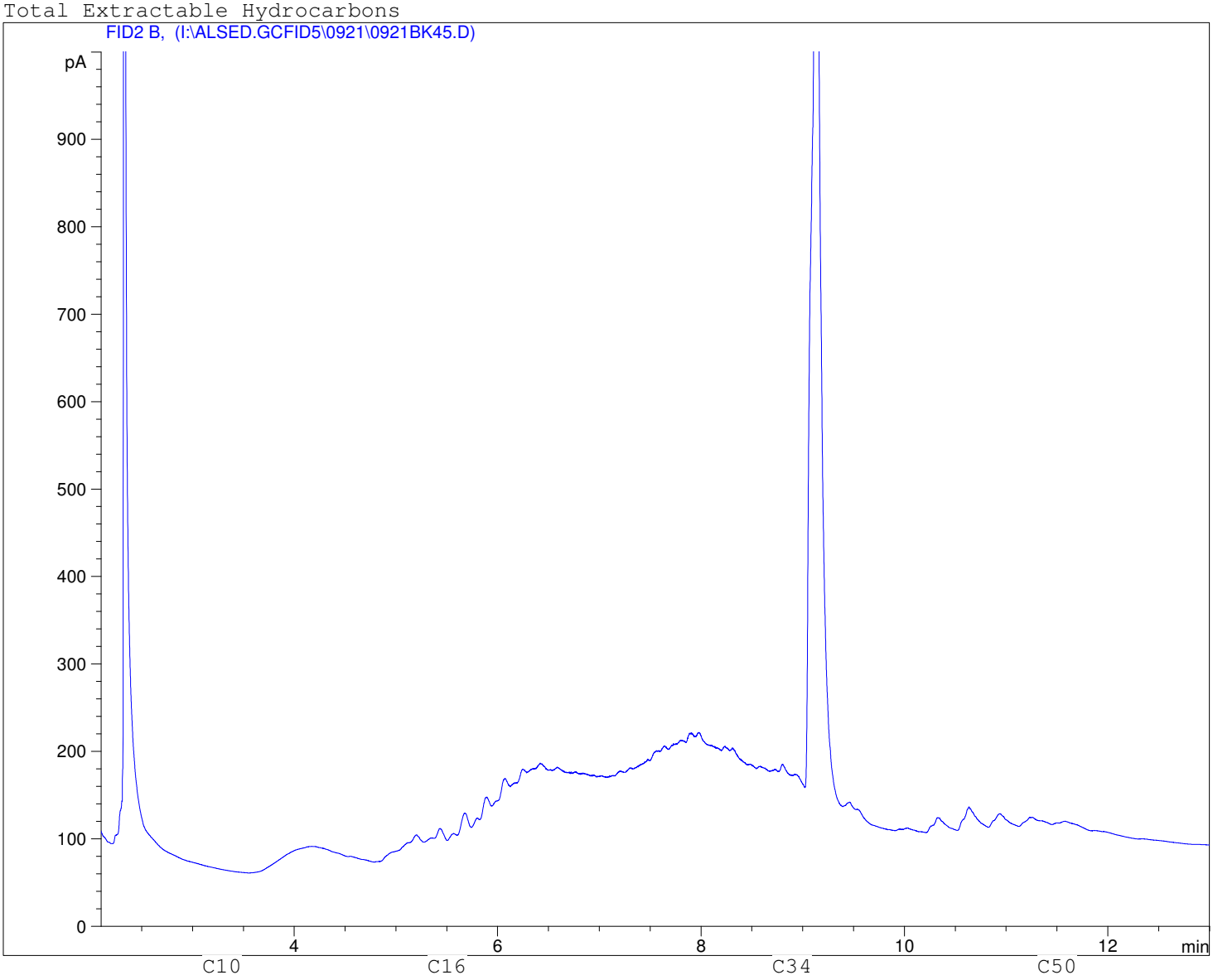


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-MW-13-1

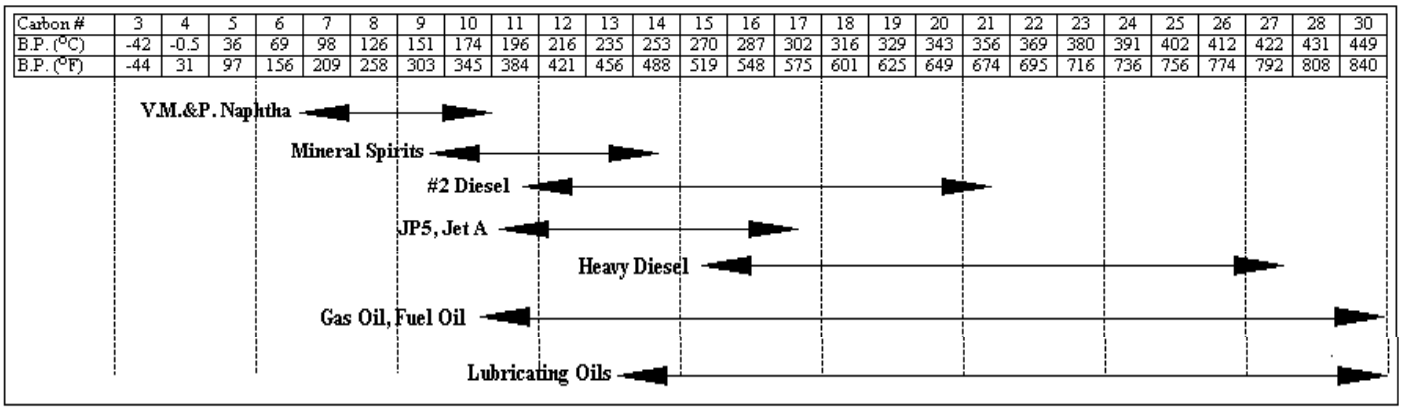
Sample ID: L548832-17 4
Injection Date: 9/22/2007 4:17:28 PM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

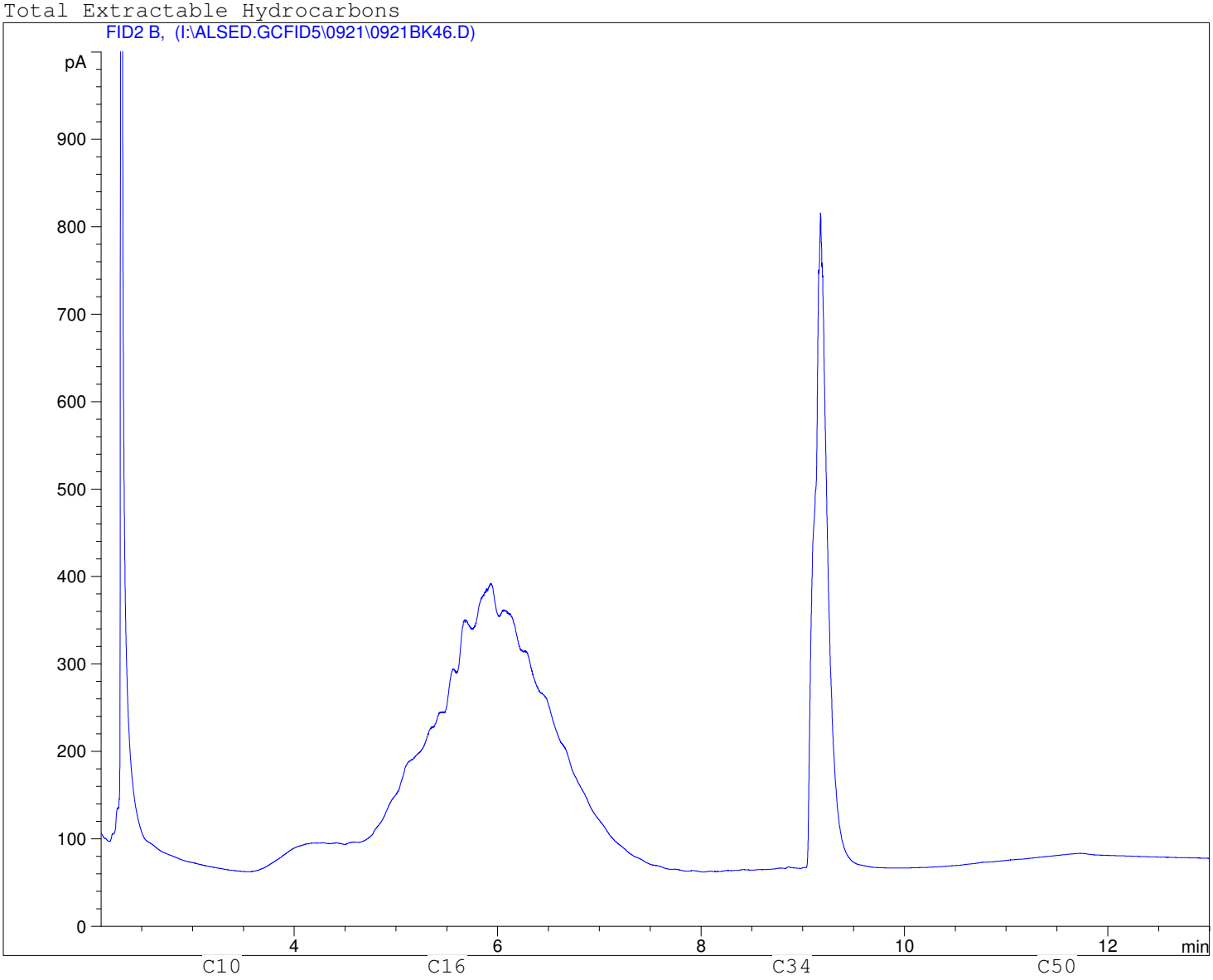


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-MW-13-2

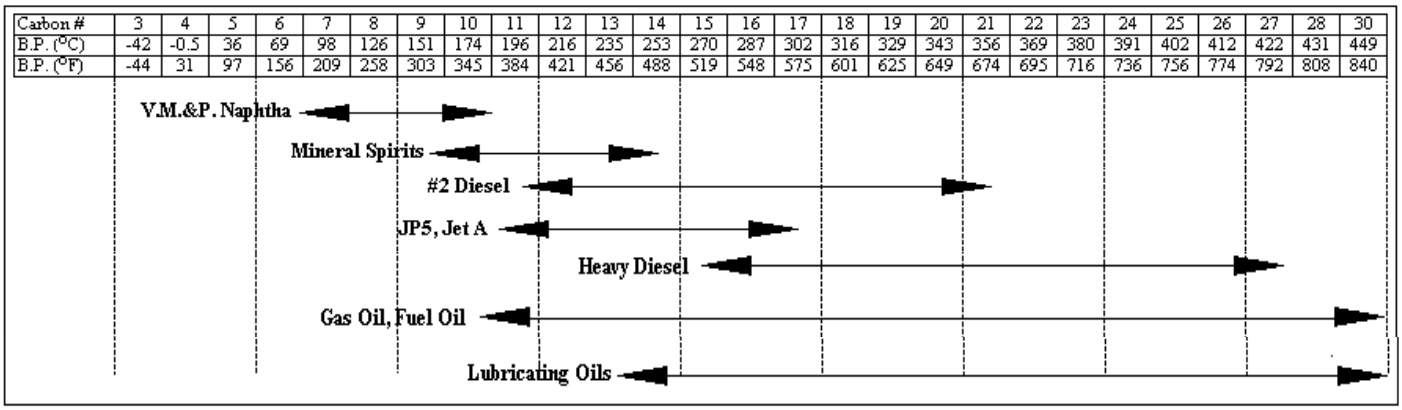
Sample ID: L548832-18 4
Injection Date: 9/22/2007 4:42:59 PM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

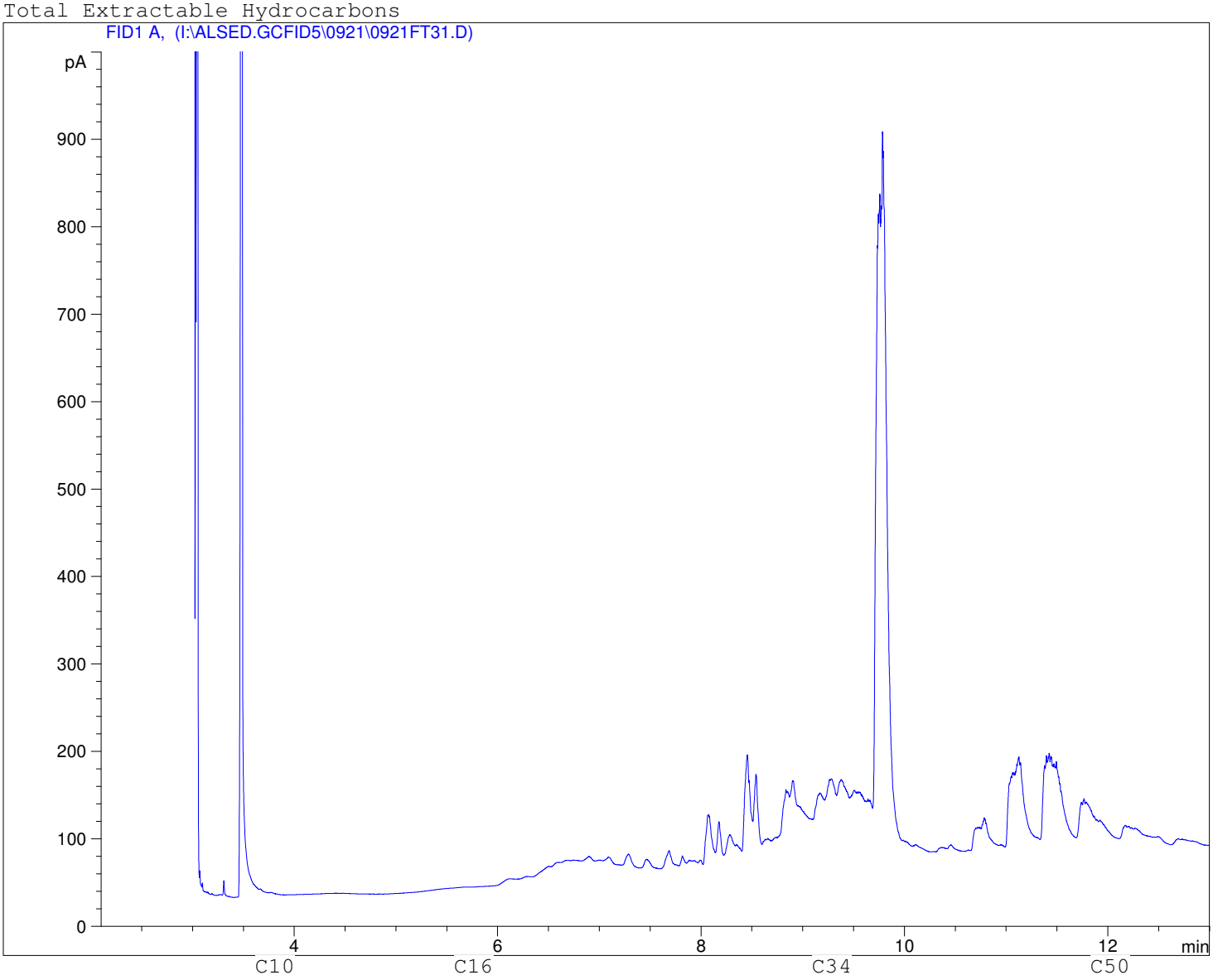


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-MW-14-1

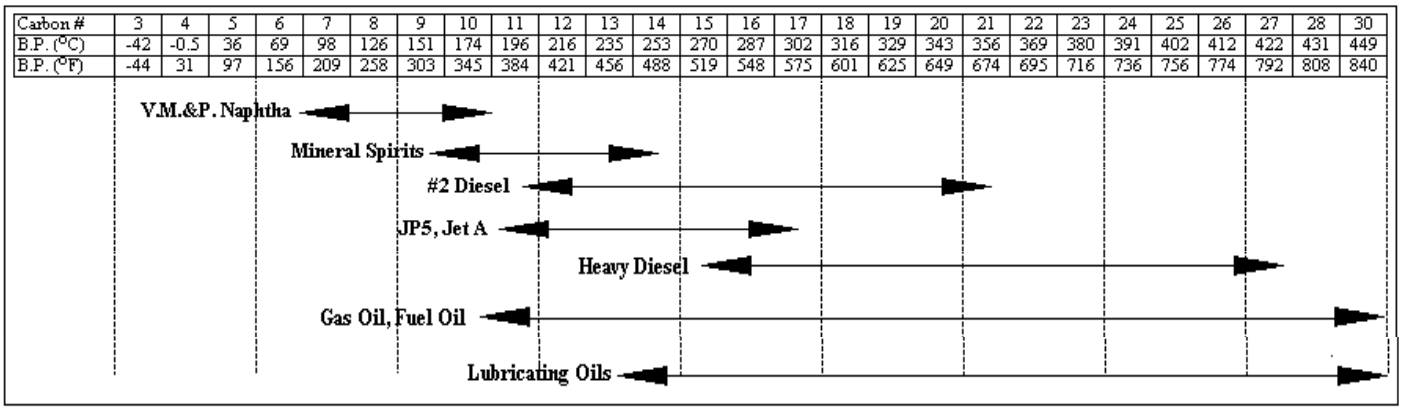
Sample ID: L548832-19 4
Injection Date: 9/22/2007 10:16:53 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

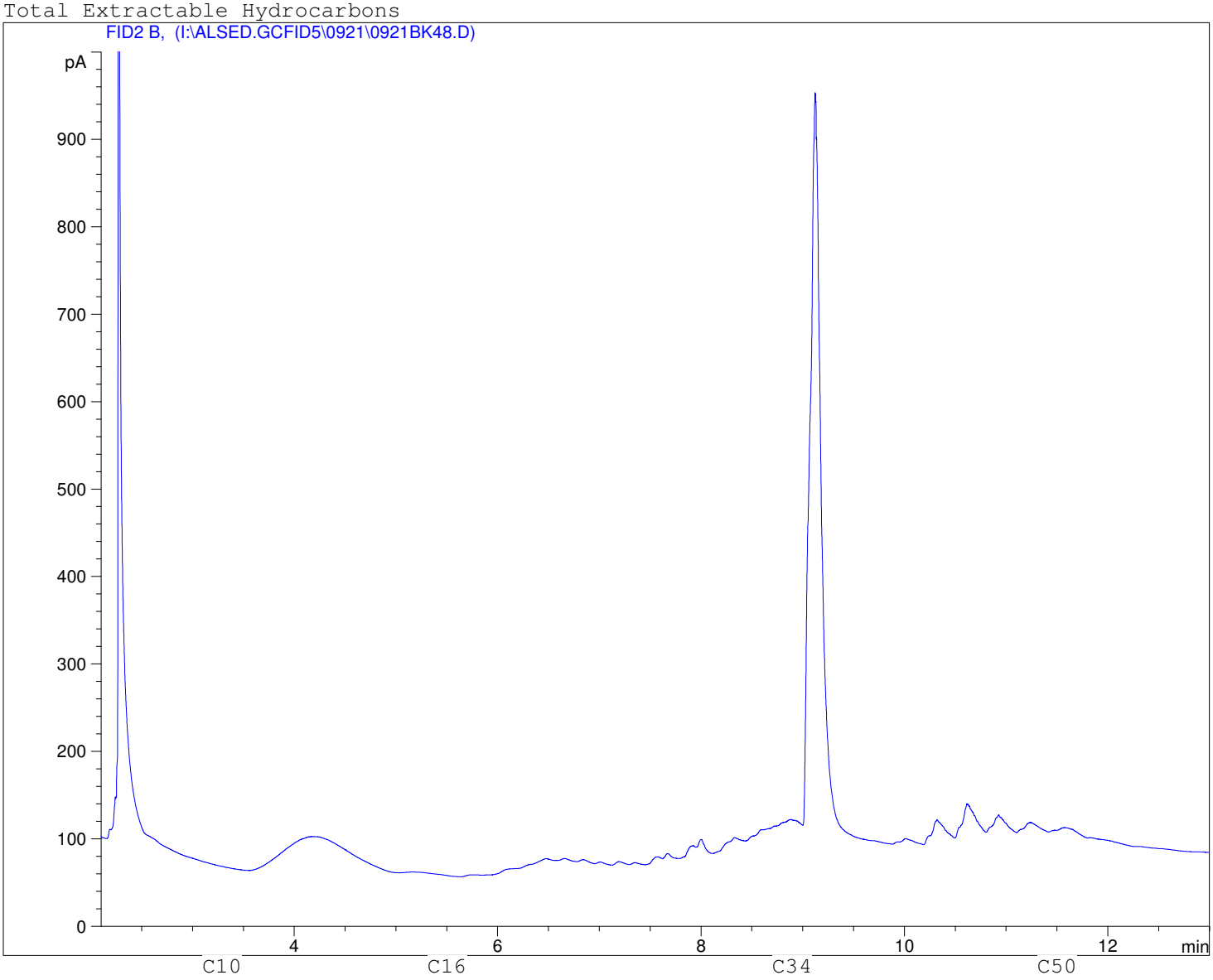


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-MW-15-1

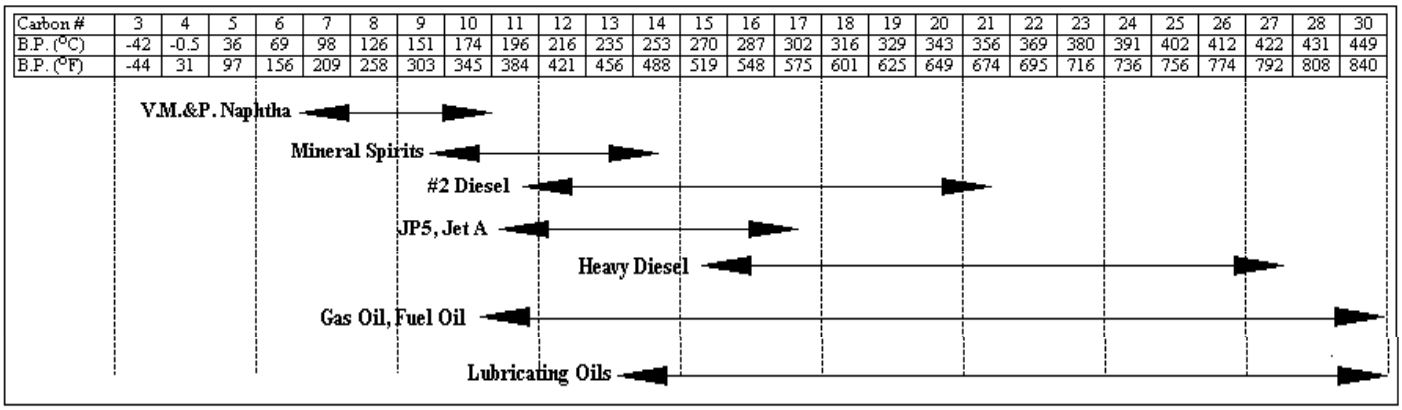
Sample ID: L548832-21 4
Injection Date: 9/22/2007 5:33:51 PM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

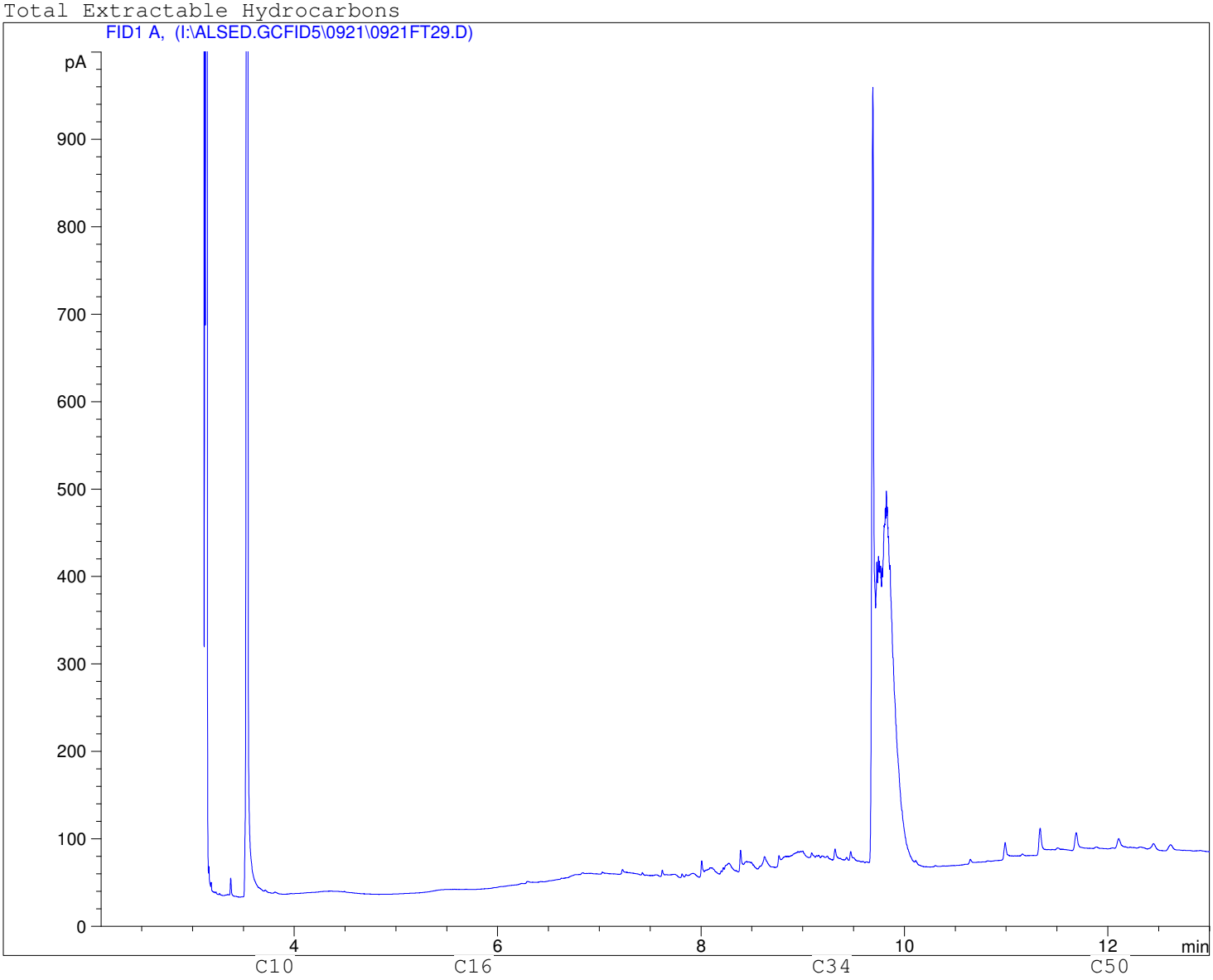


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-MW-16-1

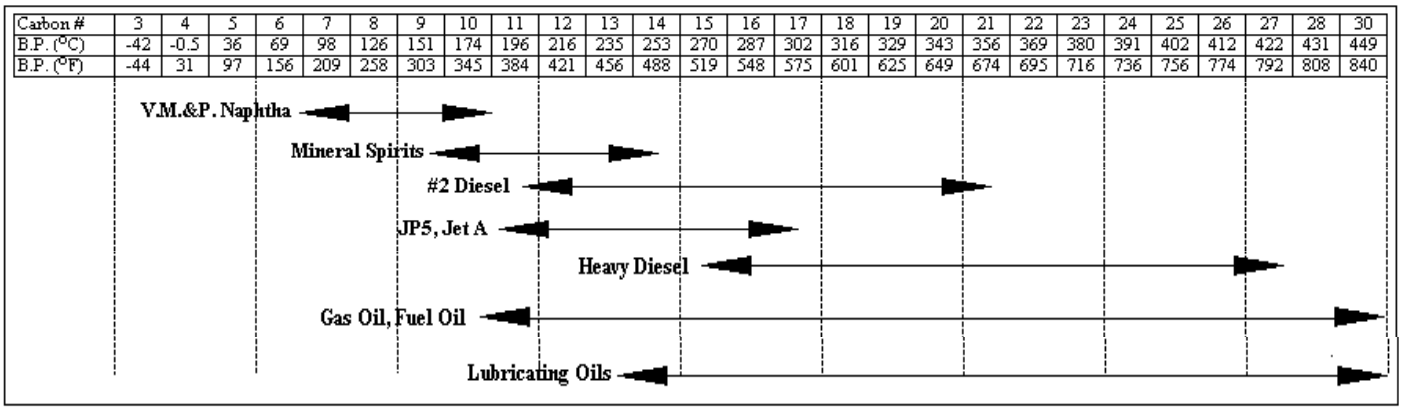
Sample ID: L548832-23 4
Injection Date: 9/22/2007 9:18:00 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

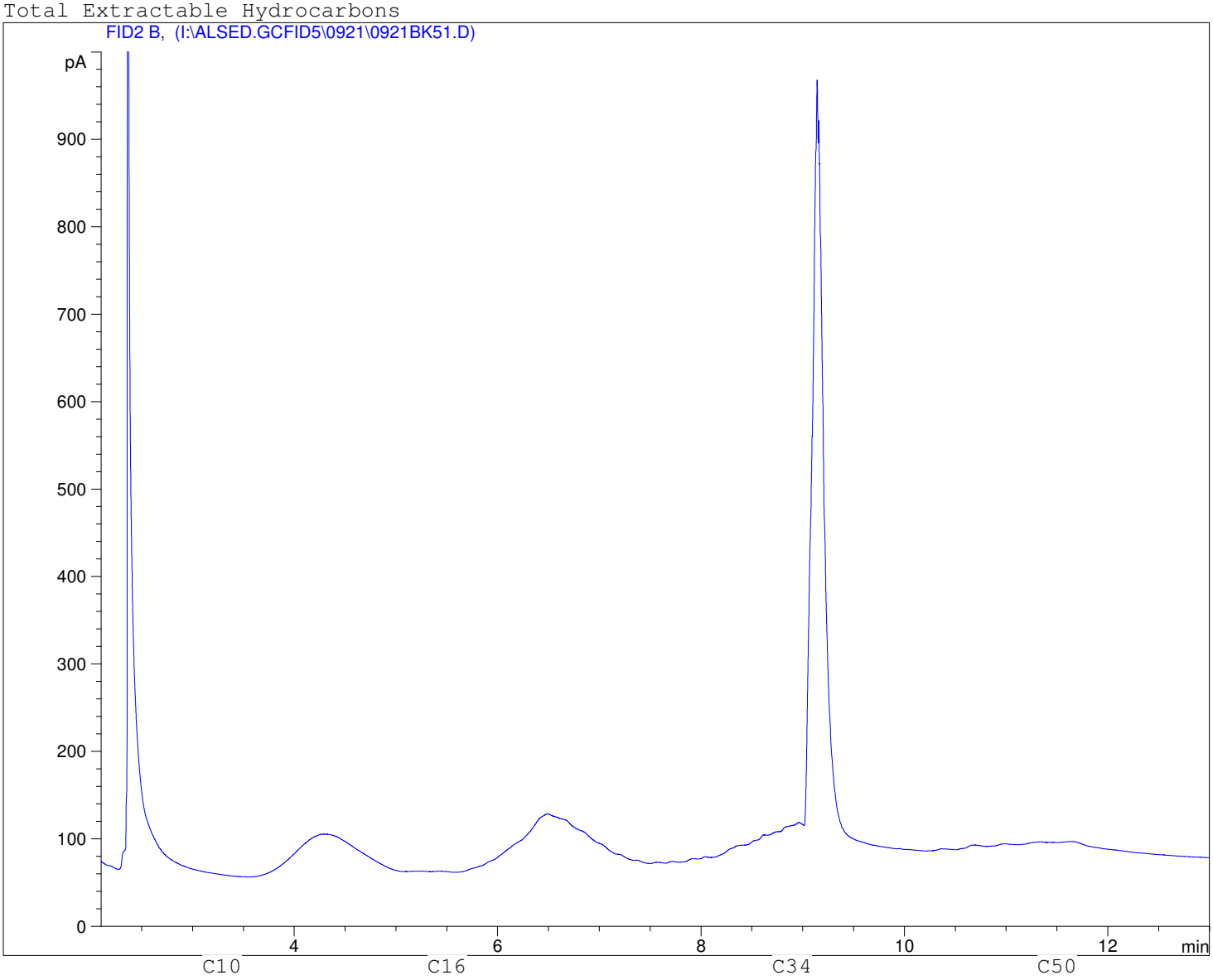


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-MW-16-2

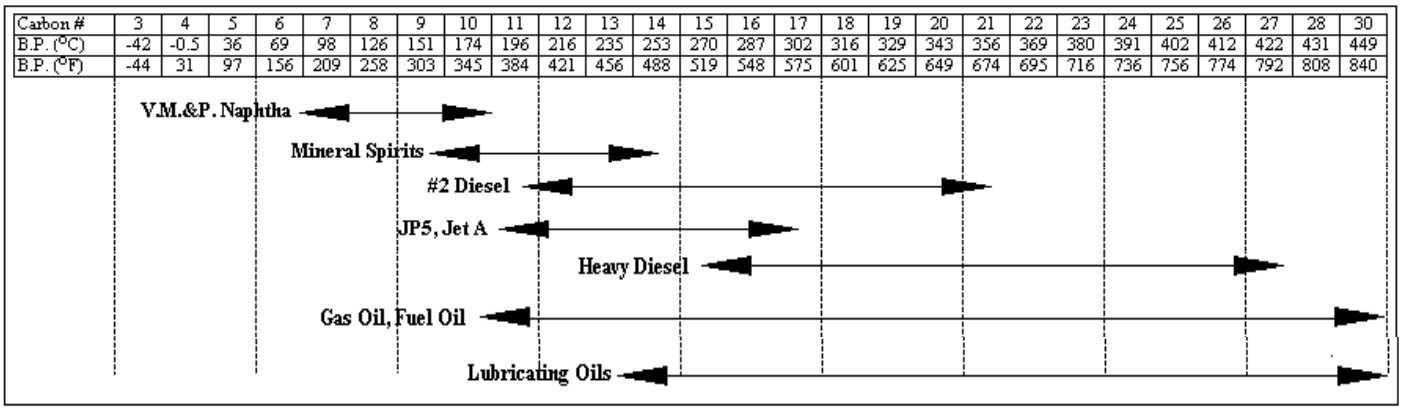
Sample ID: L548832-24 4
Injection Date: 9/22/2007 6:50:09 PM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

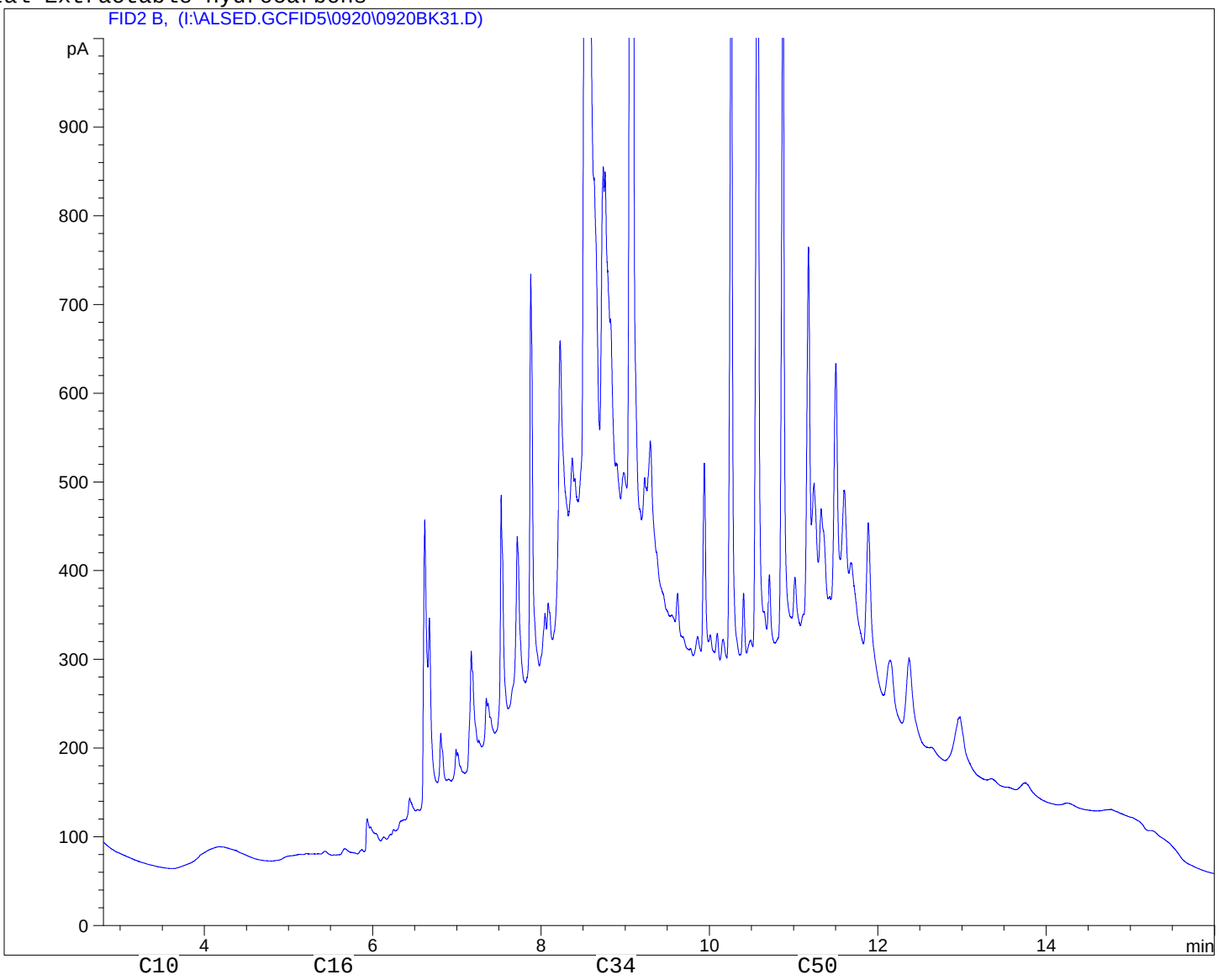


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

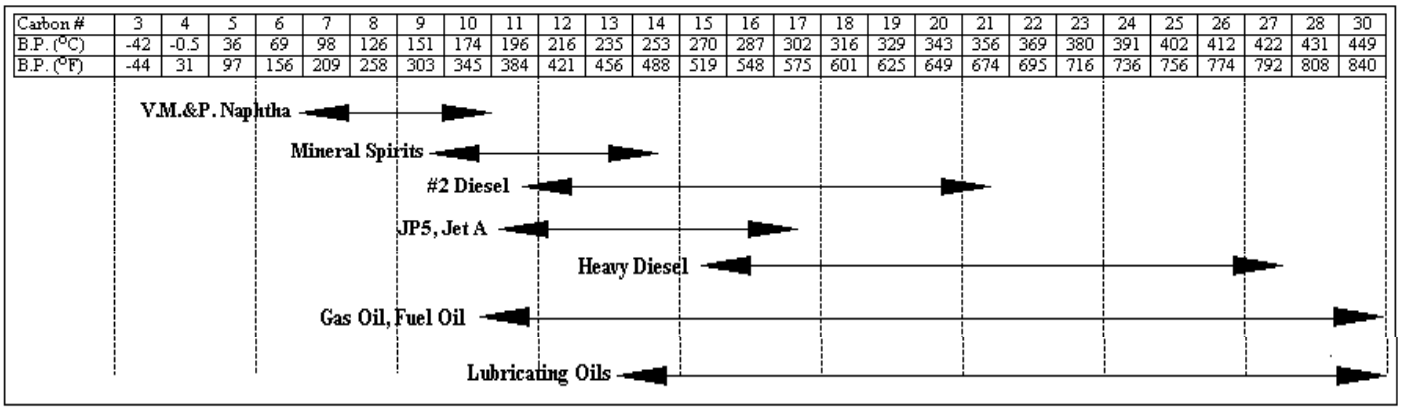
Client ID: P3-1-1

Sample ID: L548832- 25 4
Injection Date: 9/21/2007 9:08:57 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

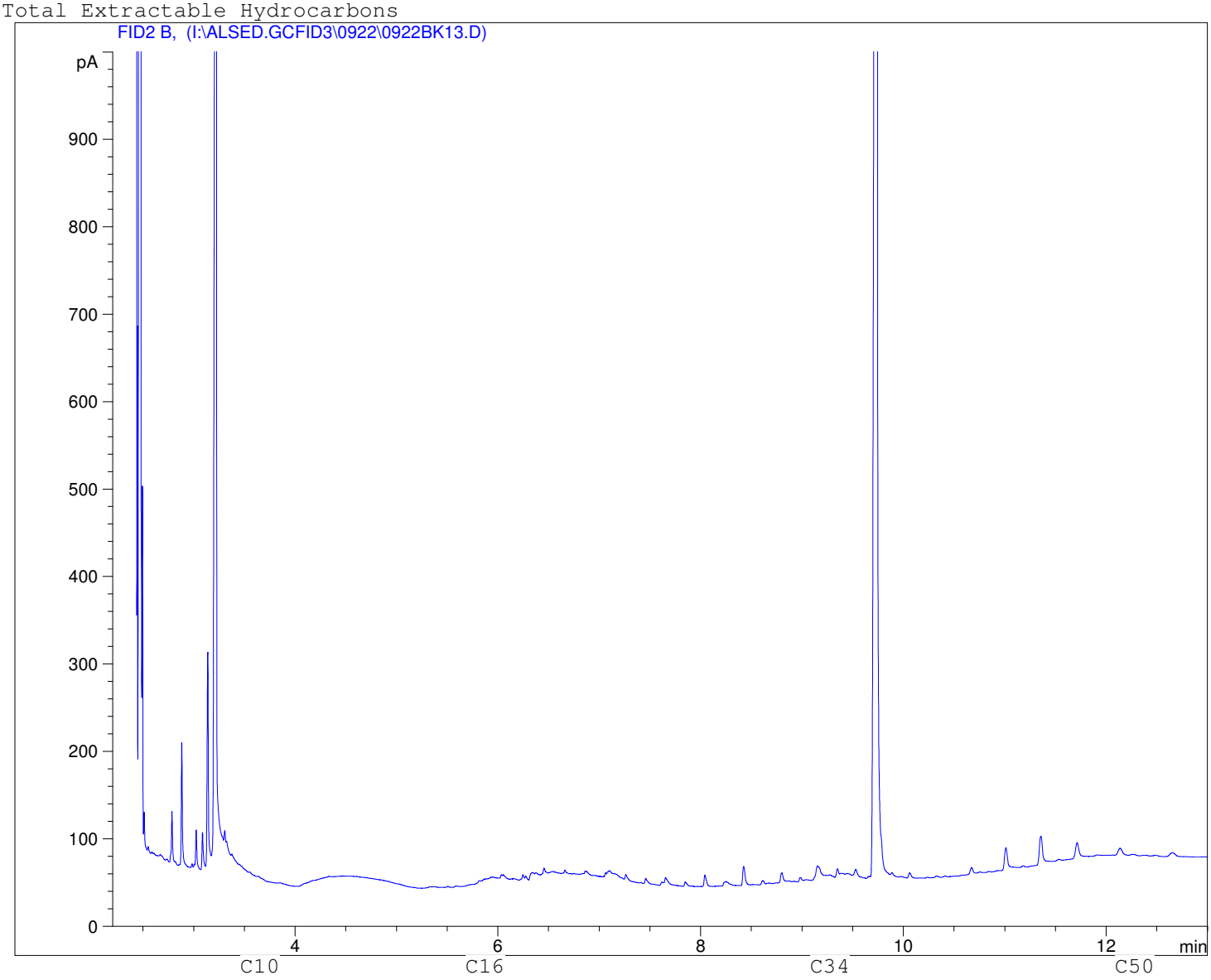


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-1-2

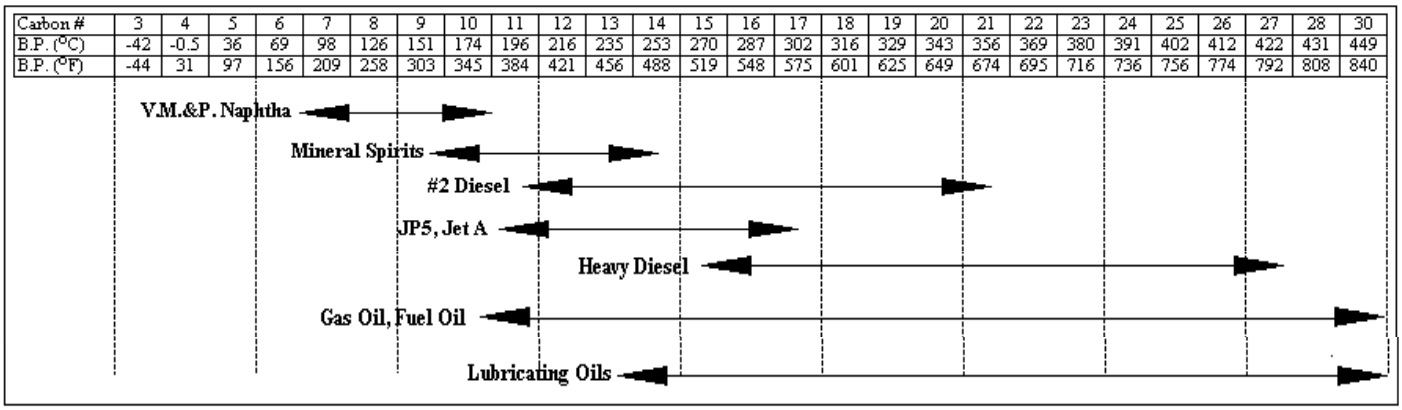
Sample ID: L548832-26 4
Injection Date: 9/22/07 11:44:36 PM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

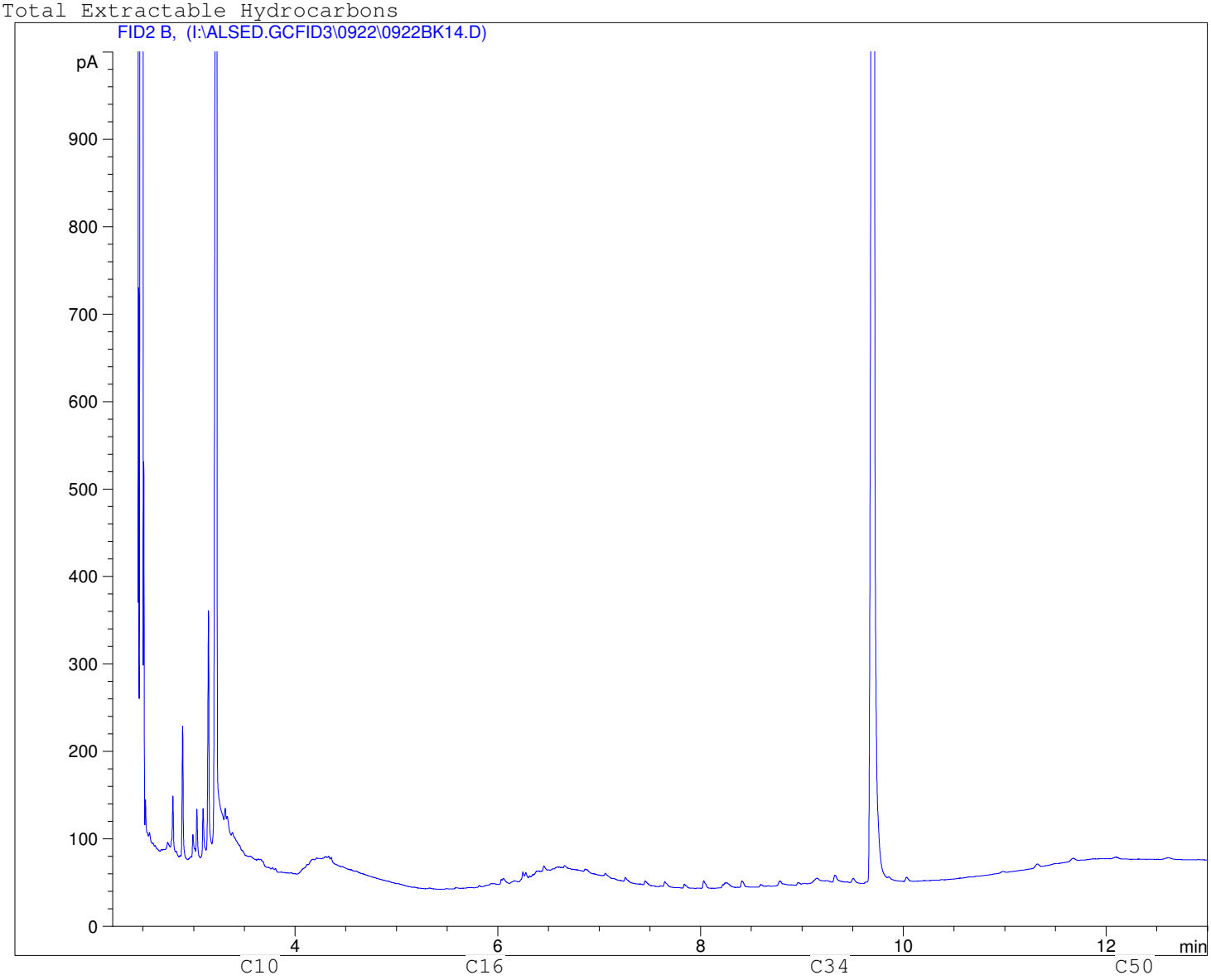


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-2-1

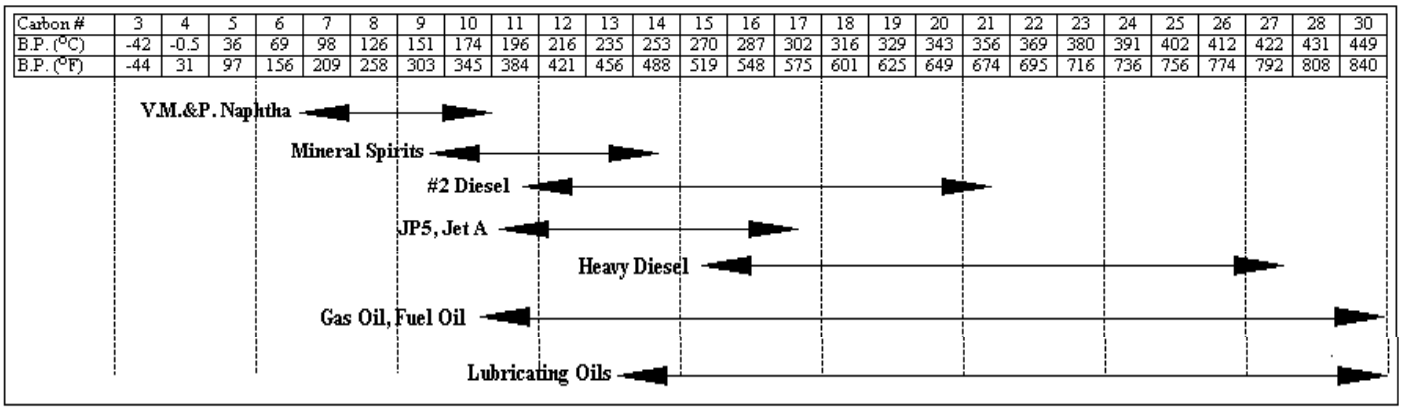
Sample ID: L548832-27 4
Injection Date: 9/23/07 12:10:15 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

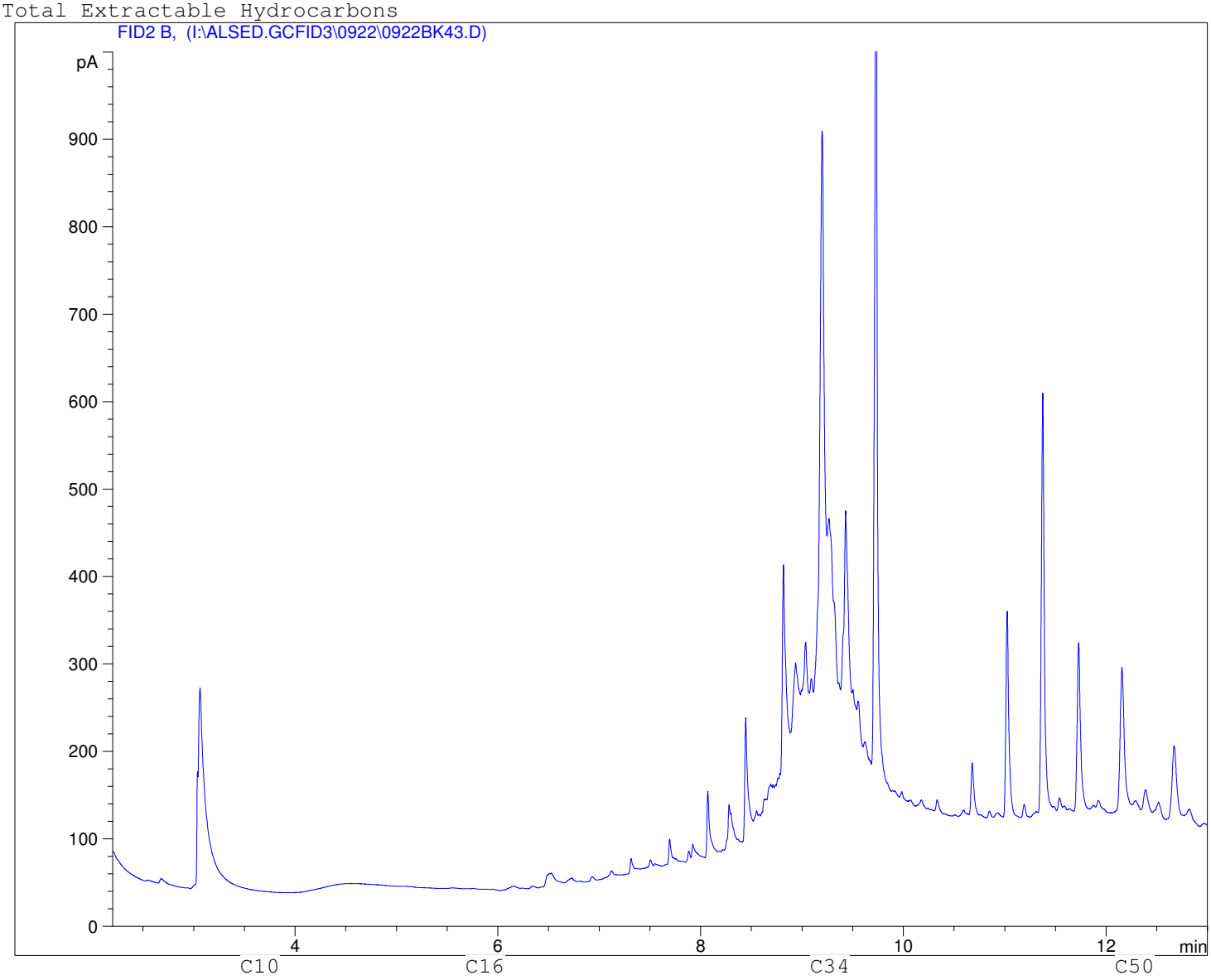


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-3-1

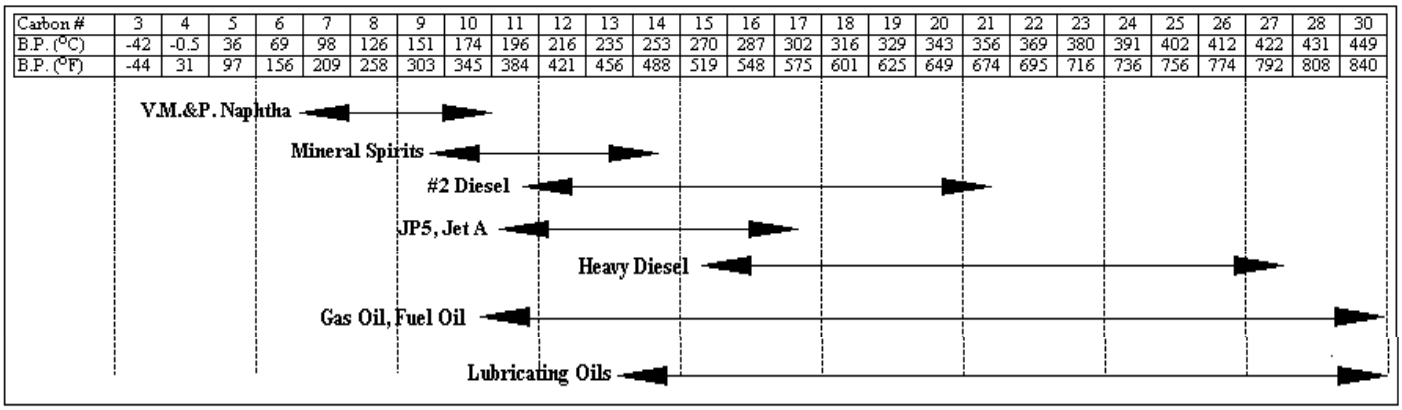
Sample ID: L548832-29 4
Injection Date: 9/23/07 12:29:13 PM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

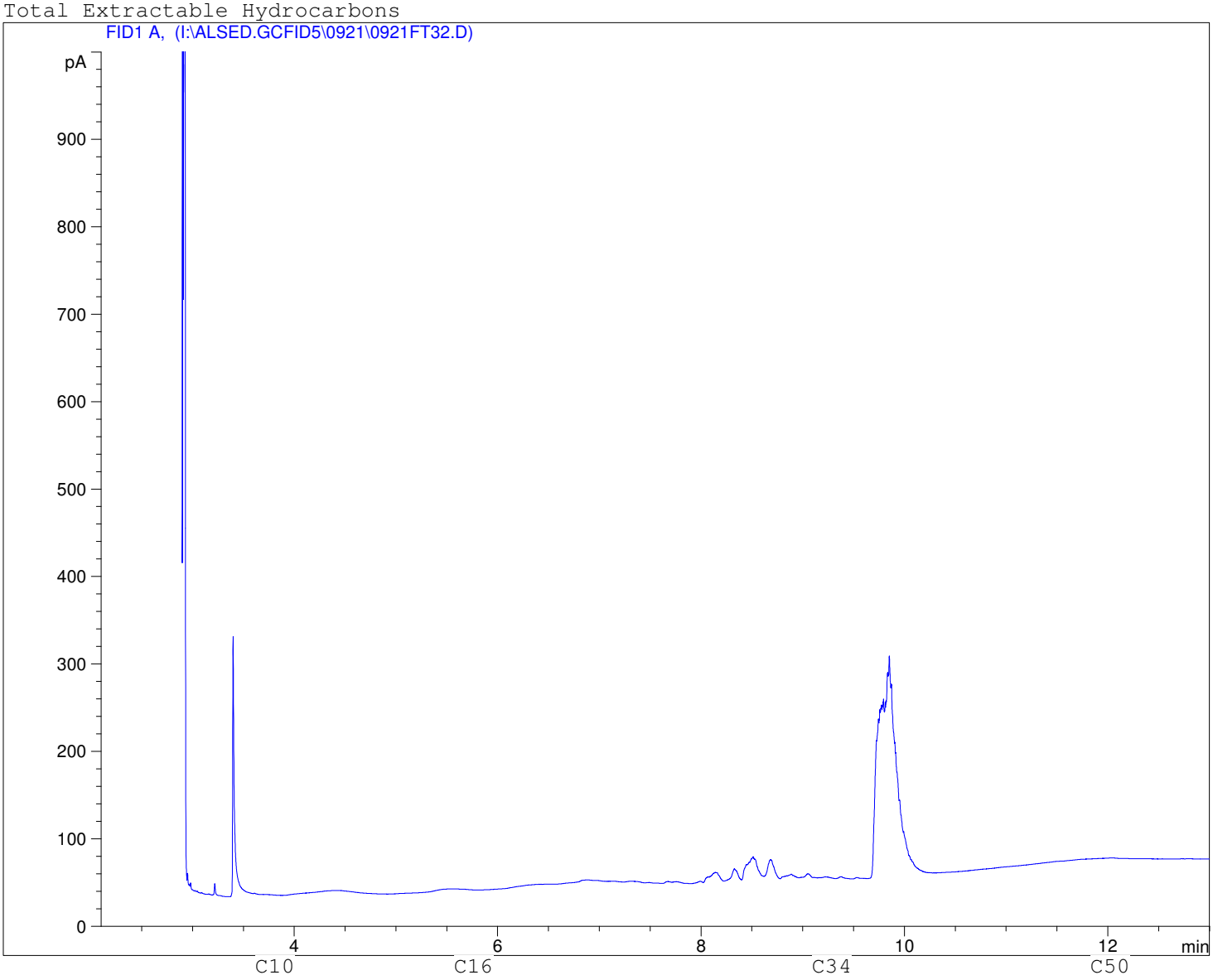


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-4-1

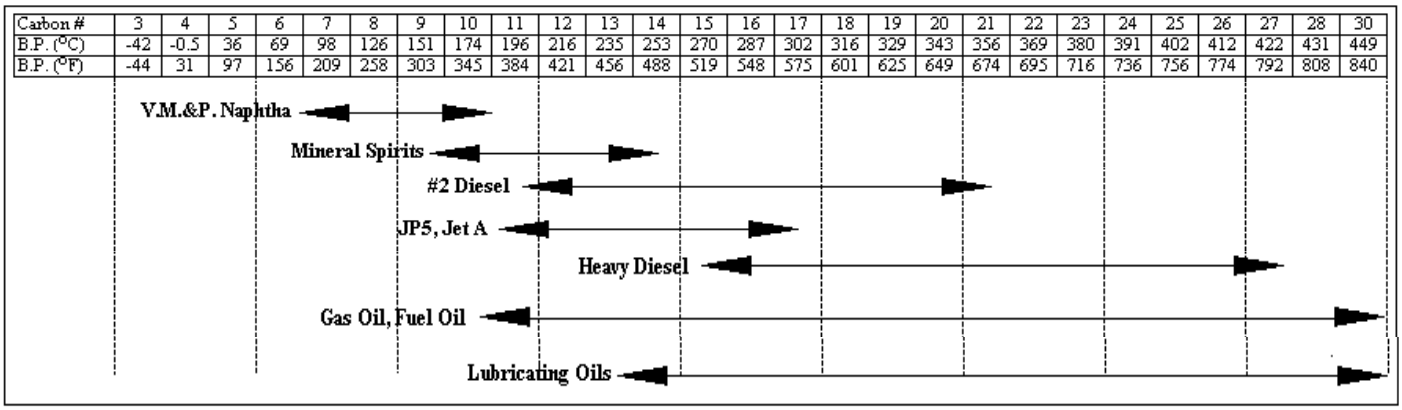
Sample ID: L548832-31 4
Injection Date: 9/22/2007 10:42:34 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

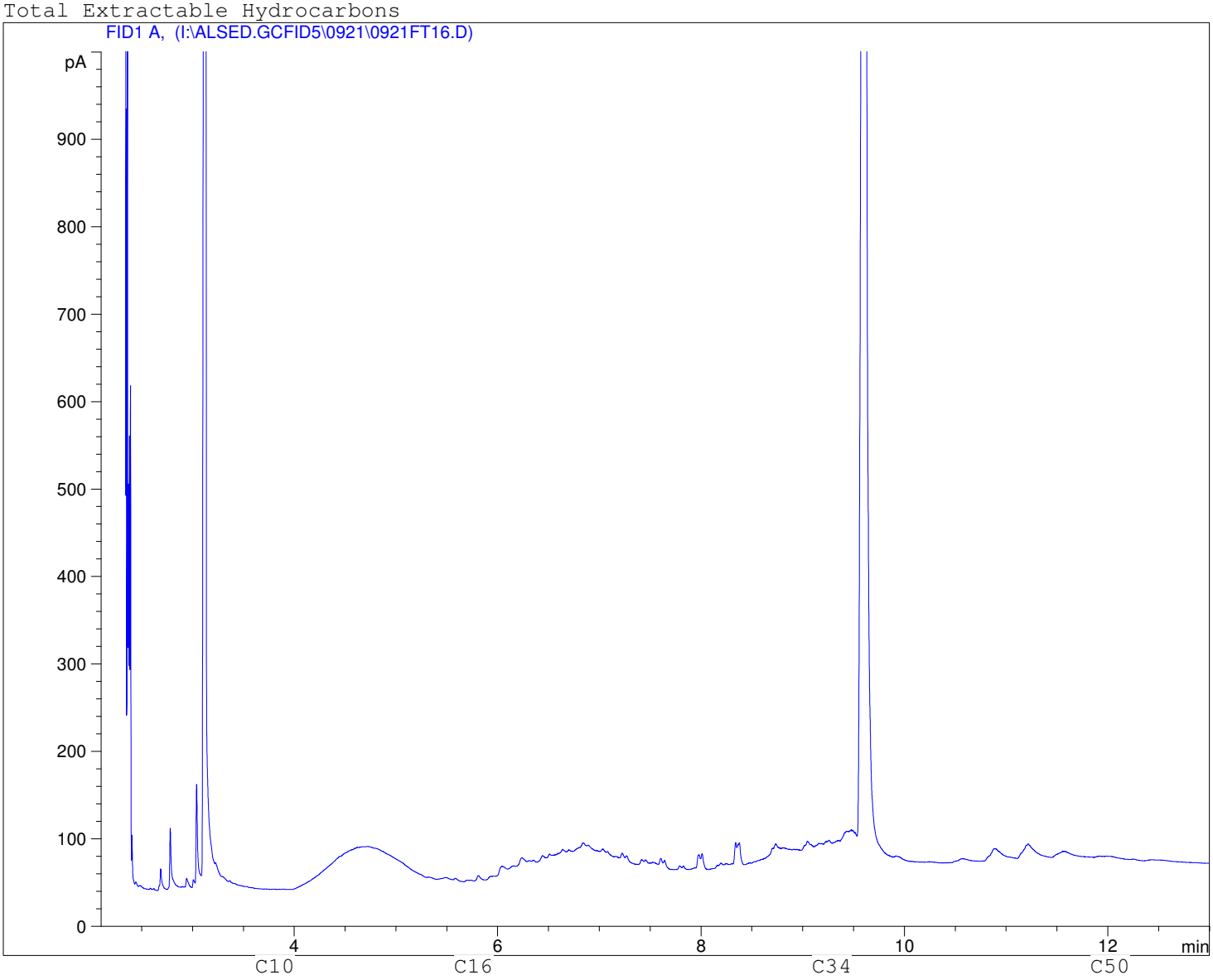


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-4-2

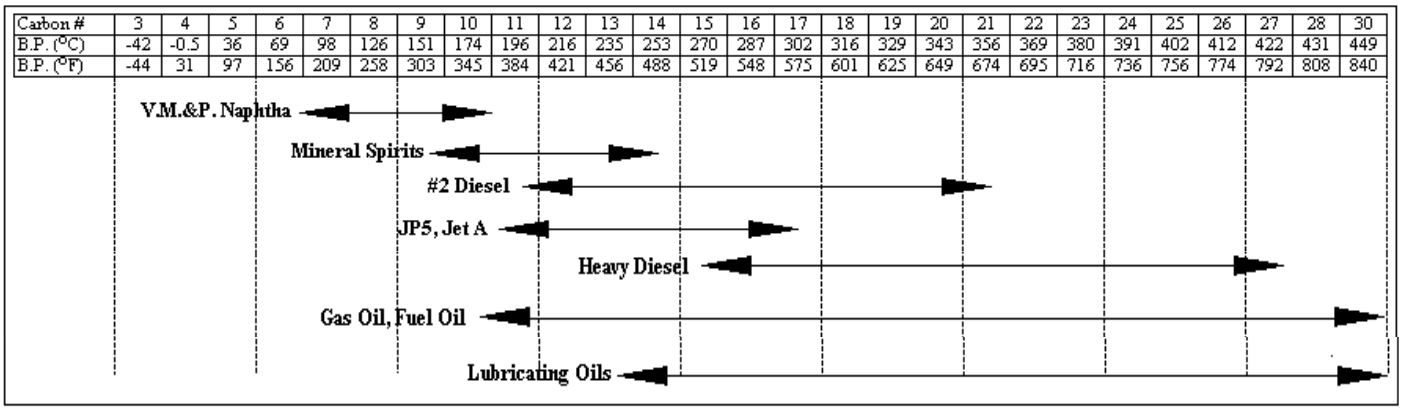
Sample ID: L548832-32 4
Injection Date: 9/22/2007 3:42:31 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840

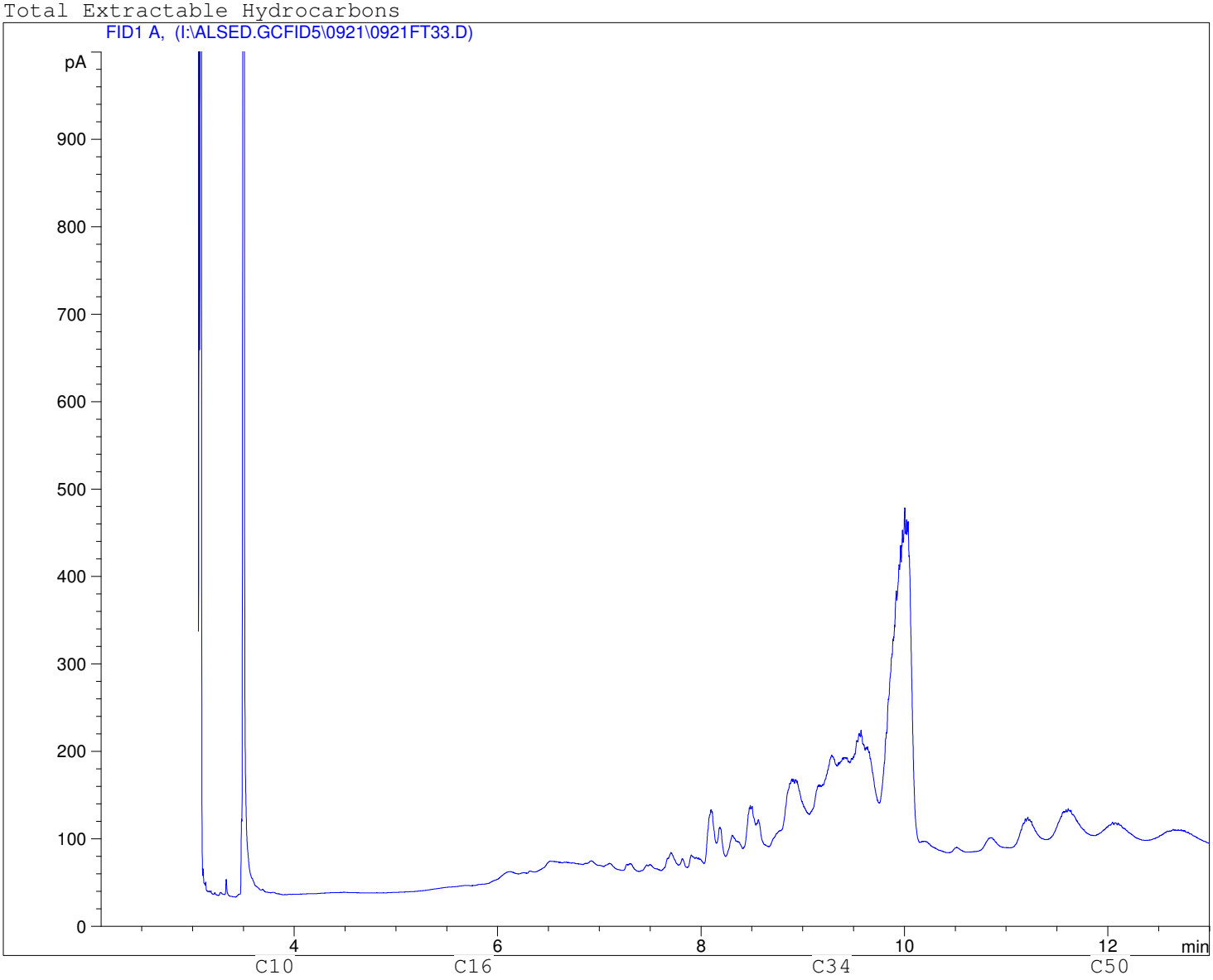


Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

Client ID: P3-6-1

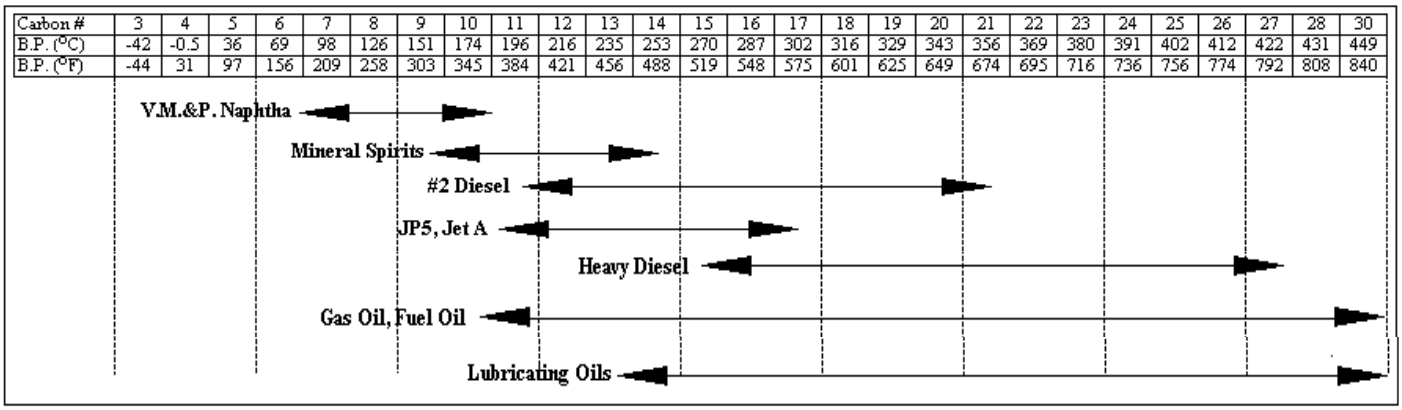
Sample ID: L548832-35 4
Injection Date: 9/22/2007 11:08:17 AM
Instrument: 6890

Total Extractable Hydrocarbons



Boiling Point Distribution Range of Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840



Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

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REPORT TO:
COMPANY: Gartner Lee Limited
CONTACT: Ken Boldt
ADDRESS: 300 Town Centre Blvd, Suite 300
Markham, ON L3R 5Z6
PHONE: 905-477-8400 x 351 FAX: 905-477-1456

INVOICE TO: SAME AS REPORT ? YES / NO
COMPANY: Kitnuna Projects Inc
CONTACT: Ed Powell
ADDRESS: Box 92 Cambridge Bay, Nu
X0B 0C0
PHONE: 867-983-7500 FAX: 867-983-7501

Lab Work Order # (lab use only): L548832

REPORT FORMAT / DISTRIBUTION
STANDARD ✓ OTHER ____
PDF ✓ EXCEL ✓ CUSTOM ____ FAX ____
EMAIL 1: kboldt@gartnerlee.com
EMAIL 2: mherrell@gartnerlee.com

INDICATE BOTTLES: FILTERED / PRESERVED (F/P)

CLIENT / PROJECT INFORMATION:
JOB #: 70516
PO /AFE:
Legal Site Description: PIN-3
QUOTE #: ALSEQ07-487
SAMPLER (Initials): KB

✓ RE...
RUSH SER...
PRIORITY SERVIC...
EMERGENCY SERVICE (...

ANALYSIS ...

Sample #	SAMPLE IDENTIFICATION (This description will appear on the report)	DATE	TIME	SAMPLE TYPE	Total Metals - CCME	Total PCB	CCME - CWS Hydrocarbons F1 MOTBEX	CCME - CWS F2, F3, F4	HAZARDOUS ?	HIGHLY CONTAMINATED ?	NUMBER OF CONTAINERS
	P3-MW-5-1	Aug 21.07		Soil							2
	P3-MW-5-2	Aug 21.07		Soil							2
	P3-MW-6-1	Aug 21.07		Soil							2
	P3-MW-6-2	Aug 21.07		Soil							2
	P3-MW-7-1	Aug 21.07		Soil							2
	P3-MW-7-2	Aug 21.07		Soil							2
	P3-MW-8-1	Aug 21.07		Soil							2
	P3-MW-8-2	Aug 21.07		Soil							2
	P3-MW-9-1	Aug 21.07		Soil							2
	P3-MW-9-2	Aug 21.07		Soil							2

GUIDELINES / REGULATIONS

SPECIAL INSTRUCTIONS / HAZARDOUS DETAILS

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the reverse page of the white report copy.

RELINQUISHED BY: Ken Boldt
DATE & TIME: Aug 24.07
RECEIVED BY: Sherry Gallagher 1330
DATE & TIME: Aug 24/07
DATE & TIME: Aug 30/07 13:31

SAMPLE CONDITION (lab use only)
TEMPERATURE: 22°C
SAMPLES RECEIVED IN GOOD CONDITION ? YES / (If no provide details)

REFER TO BACK PAGE FOR REGIONAL LOCATIONS AND SAMPLING INFORMATION

WHITE - REPORT COPY, PINK - FILE COPY, YELLOW - CLIENT COPY

GENF1

TERMS AND CONDITIONS

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

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REPORT TO:	REPORT FORMAT / DISTRIBUTION	SERVICE REQUESTED
COMPANY: Gartner Lee Limited	STANDARD ✓ OTHER	✓ REGULAR SERVICE (DEFAULT)
CONTACT: Ken Boldt	PDF ✓ EXCEL ✓ CUSTOM FAX	RUSH SERVICE (2-3 DAYS)
ADDRESS: 300 Town Centre Blvd. Suite 300	EMAIL 1: kboldt@gartnerlee.com	PRIORITY SERVICE (1 DAY or ASAP)
Markham, ON, L3R 5Z6	EMAIL 2: mherrell@gartnerlee.com	EMERGENCY SERVICE (<1 DAY / WEEKEND) - CONTACT ALS
PHONE: 905-477-8100 x351 FAX: 905-477-1456		ANALYSIS REQUEST
INVOICE TO: SAME AS REPORT ? YES / (NO)	INDICATE BOTTLES: FILTERED / PRESERVED (F/P) → → →	
COMPANY: Kitnuna Projects Inc.	CLIENT / PROJECT INFORMATION:	
CONTACT: Ed Powell	JOB #: 70516	
ADDRESS: Box 92 Cambridge Bay, Nu	PO /AFE:	
X0B 0C0	Legal Site Description: P/N-3	
PHONE: 867-983-7500 FAX: 867-983-7501	QUOTE #: ALSEQ07 - 487	
Lab Work Order # (lab use only): L548832	SAMPLER (Initials): K.B	

Sample #	SAMPLE IDENTIFICATION (This description will appear on the report)	DATE	TIME	SAMPLE TYPE	Total Metals - CCME	Total PCB	CCME-CWS F1 incl BTEX	CCME-CWS F2,F3,F4	HAZARDOUS ?	HIGHLY CONTAMINATED ?	NUMBER OF CONTAINERS
	P3-MW-10-1	Aug 21.07		Soil							2
	P3-MW-10-2	Aug 21.07		Soil							2
	P3-MW-11-1	Aug 21.07		Soil							2
	P3-MW-11-2	Aug 21.07		Soil							2
	P3-MW-12-1	Aug 21.07		Soil							2
	P3-MW-12-2	Aug 21.07		Soil							2
	P3-MW-13-1	Aug 20.07		Soil							2
	P3-MW-13-2	Aug 20.07		Soil							2
	P3-MW-14-1	Aug 22.07		Soil							2
	P3-MW-14-2	Aug 22.07		Soil							2

GUIDELINES / REGULATIONS	SPECIAL INSTRUCTIONS / HAZARDOUS DETAILS

Failure to complete all portions of this form may delay analysis. Please fill in this form *LEGIBLY*.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the reverse page of the white report copy.

RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	SAMPLE CONDITION (lab use only)	
Ken Boldt	Aug 24.07	AG	Aug 30/07 13:3	TEMPERATURE	SAMPLES RECEIVED IN GOOD CONDITION ? YES / NO (If no provide details)
RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	22°C	

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

CANADA TOLL FREE 1-800-668-9878

www.alsenviro.com

COC # A018189

REPORT TO:	REPORT FORMAT / DISTRIBUTION	SERVICE REQUESTED
COMPANY: Gartner Lee Limited	STANDARD ✓ OTHER	✓ REGULAR SERVICE (DEFAULT)
CONTACT: Ken Boldt	PDF ✓ EXCEL ✓ CUSTOM FAX	RUSH SERVICE (2-3 DAYS)
ADDRESS: 300 Town Centre Blvd, Suite 300	EMAIL 1: kboldt@gartnerlee.com	PRIORITY SERVICE (1 DAY or ASAP)
Markham, ON, L3R 5Z6	EMAIL 2: mherrell@gartnerlee.com	EMERGENCY SERVICE (<1 DAY / WEEKEND) - CONTACT ALS
PHONE: 905-477-8400 x351 FAX: 905-477-1456		ANALYSIS REQUEST
INVOICE TO: SAME AS REPORT ? YES / (NO)	INDICATE BOTTLES: FILTERED / PRESERVED (F/P) → → →	
COMPANY: Kitikmeot Projects Inc.	CLIENT / PROJECT INFORMATION:	
CONTACT: Ed Powell	JOB #: 70516	
ADDRESS: Box 92 Cambridge Bay, Nu X0B 0C0	PO /AFE:	
	Legal Site Description: PIN-3	
PHONE: 867-983-7500 FAX: 867-983-7501	QUOTE #: ALSEG07-487	
Lab Work Order # (lab use only): L548832	SAMPLER (Initials): KB	

Sample #	SAMPLE IDENTIFICATION (This description will appear on the report)	DATE	TIME	SAMPLE TYPE	Total Metals - CCME	Total PCB	CCME-CWS F1 incl BTEX	CCME-CWS F2,F3,F4	HAZARDOUS ?	HIGHLY CONTAMINATED ?	NUMBER OF CONTAINERS
	P3-MW-15-1	Aug 22.07		Soil							2
	P3-MW-15-2	Aug 22.07		Soil							2
	P3-MW-16-1	Aug 22.07		Soil							2
	P3-MW-16-2	Aug 22.07		Soil							2
	P3-1-1	Aug 22.07		Soil							2
	P3-1-2	Aug 22.07		Soil							2
	P3-2-1	Aug 22.07		Soil							2
	P3-2-2	Aug 22.07		Soil							2
	P3-3-1	Aug 22.07		Soil							2
	P3-3-2	Aug 22.07		Soil							2

GUIDELINES / REGULATIONS	SPECIAL INSTRUCTIONS / HAZARDOUS DETAILS

Failure to complete all portions of this form may delay analysis. Please fill in this form *LEGIBLY*.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the reverse page of the white report copy.

RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	SAMPLE CONDITION (lab use only)	
Ken Boldt	Aug 24, 07	AL	Aug30/07 13:31	TEMPERATURE: 22°C	SAMPLES RECEIVED IN GOOD CONDITION ? (YES) / NO (If no provide details)
RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:		

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

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Page 4 of 4

REPORT TO: Ken Boldt	REPORT FORMAT / DISTRIBUTION	SERVICE REQUESTED
COMPANY: Gartner Lee Limited	STANDARD ✓ OTHER ____	✓ REGULAR SERVICE (DEFAULT)
CONTACT: Ken Boldt	PDF ✓ EXCEL ✓ CUSTOM ____ FAX ____	RUSH SERVICE (2-3 DAYS)
ADDRESS: 300 Town Centre Blvd, Suite 300	EMAIL 1: kboldt@gartnerlee.com	PRIORITY SERVICE (1 DAY or ASAP)
Markham, On, L3R 5Z6	EMAIL 2: mherrell@gartnerlee.com	EMERGENCY SERVICE (<1 DAY / WEEKEND) - CONTACT ALS
PHONE: 905-477-8400x351 FAX: 905-477-1456		ANALYSIS REQUEST
INVOICE TO: SAME AS REPORT ? YES / (NO)	INDICATE BOTTLES: FILTERED / PRESERVED (F/P) → → →	
COMPANY: Kitnuna Projects Inc	CLIENT / PROJECT INFORMATION:	
CONTACT: Ed Powell	JOB #: 70516	
ADDRESS: Box 92 Cambridge Bay, Nu X0B 0C0	PO /AFE:	
	Legal Site Description: P/N-3	
PHONE: 867-983-7500 FAX: 867-983-7501	QUOTE #: ALSEQ07-487	
Lab Work Order # (lab use only): L548832	SAMPLER (Initials): KB	

Sample #	SAMPLE IDENTIFICATION (This description will appear on the report)	DATE	TIME	SAMPLE TYPE	Total Metals - CCME	Total PCB	CCME-CWS F1 incl B-TEX	CCME-CWS F2, F3, F4	HAZARDOUS ?	HIGHLY CONTAMINATED ?	NUMBER OF CONTAINERS
	P3-4-1	Aug 22.07		Soil							2
	P3-4-2	Aug 22.07		Soil							2
	P3-5-1	Aug 22.07		Soil							2
	P3-5-2	Aug 22.07		Soil							2
	P3-6-1	Aug 22.07		Soil							2
	P3-6-2	Aug 22.07		Soil							2

GUIDELINES / REGULATIONS	SPECIAL INSTRUCTIONS / HAZARDOUS DETAILS

Failure to complete all portions of this form may delay analysis. Please fill in this form *LEGIBLY*.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the reverse page of the white report copy.

RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	SAMPLE CONDITION (lab use only)	
Ken Boldt	Aug 24. 07	AG	Aug 30/07 15:31	TEMPERATURE: 22°	SAMPLES RECEIVED IN GOOD CONDITION ? YES / NO (If no provide details)
RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:		

REFER TO BACK PAGE FOR REGIONAL LOCATIONS AND SAMPLING INFORMATION

WHITE - REPORT COPY, PINK - FILE COPY, YELLOW - CLIENT COPY

GENF14.00

ANALYTICAL REPORT

GARTNER LEE LTD.

ATTN: KEN BOLDT

Reported On: 24-SEP-07 10:06 AM

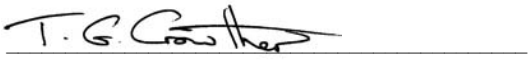
300 TOWN CENTRE BOULVARD
SUITE 300
MARKHAM ON L3R 5Z6

Lab Work Order #: **L548640** **Date Received:** **30-AUG-07**

Project P.O. #: ALSEQ07-487
Job Reference: 70516
Legal Site Desc: PIN-3
CofC Numbers: A018191

Other Information:

Comments: Please note that certain metals detection limits have been increased due to the interferences encountered during the analysis.



Timothy Guy Crowther
General Manager, Vancouver

For any questions about this report please contact your Account Manager:

NATASHA MARKOVIC-MIROVIC

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L548640-1				
	Description					
	Sampled Date	21-AUG-07				
	Sampled Time	14:45				
	Client ID	P3-MW-18				
Grouping	**Analyte**					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	2090				
Total Metals	Aluminum (Al)-Total (mg/L)	0.43				
	Antimony (Sb)-Total (mg/L)	<0.025				
	Arsenic (As)-Total (mg/L)	<0.025				
	Barium (Ba)-Total (mg/L)	<0.10				
	Beryllium (Be)-Total (mg/L)	<0.050				
	Boron (B)-Total (mg/L)	<0.50				
	Cadmium (Cd)-Total (mg/L)	<0.00085				
	Calcium (Ca)-Total (mg/L)	287				
	Chromium (Cr)-Total (mg/L)	<0.050				
	Cobalt (Co)-Total (mg/L)	<0.015				
	Copper (Cu)-Total (mg/L)	<0.050				
	Iron (Fe)-Total (mg/L)	3.05				
	Lead (Pb)-Total (mg/L)	<0.025				
	Lithium (Li)-Total (mg/L)	<0.25				
	Magnesium (Mg)-Total (mg/L)	334				
	Manganese (Mn)-Total (mg/L)	0.161				
	Mercury (Hg)-Total (mg/L)	<0.000020				
	Molybdenum (Mo)-Total (mg/L)	0.063				
	Nickel (Ni)-Total (mg/L)	<0.050				
	Potassium (K)-Total (mg/L)	75				
	Selenium (Se)-Total (mg/L)	<0.050				
	Silver (Ag)-Total (mg/L)	<0.0010				
	Sodium (Na)-Total (mg/L)	2150				
	Thallium (Tl)-Total (mg/L)	<0.010				
	Tin (Sn)-Total (mg/L)	<0.025				
	Titanium (Ti)-Total (mg/L)	<0.050				
	Uranium (U)-Total (mg/L)	0.014				
	Vanadium (V)-Total (mg/L)	<0.15				
	Zinc (Zn)-Total (mg/L)	<0.25				
Non-Halogenated Volatiles	Benzene (mg/L)	<0.00050				
	Ethylbenzene (mg/L)	<0.00050				
	Methyl t-butyl ether (MTBE) (mg/L)	<0.0010				
	Styrene (mg/L)	<0.00050				
	Toluene (mg/L)	<0.0010				
	meta- & para-Xylene (mg/L)	<0.00050				
	ortho-Xylene (mg/L)	<0.00050				
	Xylenes (mg/L)	<0.0010				
	Volatile Hydrocarbons (VH6-10) (mg/L)	<0.10				

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L548640-1				
	Description					
	Sampled Date	21-AUG-07				
	Sampled Time	14:45				
	Client ID	P3-MW-18				
Grouping	**Analyte**					
WATER						
Non-Halogenated Volatiles	VPH (C6-C10) (mg/L)	<0.10				
	Surrogate: 4-Bromofluorobenzene (SS) (%)	96				
	Surrogate: 2,4-Dichlorotoluene (SS) (%)	98				
	Surrogate: Fluorobenzene (SS) (%)	97				
Extractable Hydrocarbons	TEH10-30 (mg/L)	<0.25				
Polychlorinated Biphenyls	Total Polychlorinated Biphenyls (mg/L)	<0.0010				

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)
EPH-SF-FID-VA	Water	EPH in Water by GCFID	BCMOE EPH GCFID

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999). The procedure involves extraction of the entire water sample with dichloromethane. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness is calculated from Calcium and Magnesium concentrations, and is expressed as calcium carbonate equivalents.

HG-TOT-CCME-CVAFS-VA	Water	Total Mercury in Water by CVAFS (CCME)	EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-TOT-CCME-ICP-VA	Water	Total Metals in Water by ICPOES (CCME)	EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-TOT-CCME-MS-VA	Water	Total Metals in Water by ICPMS (CCME)	EPA SW-846 3005A/6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

PCB-SF-ECD-VA	Water	PCB by Extraction with GCECD	EPA 3510/8082 Liq-Liq GCECD

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Methods 3510, 3620, 3660, 3665 & 8082, published by the United States Environmental Protection Agency (EPA). The procedure involves a liquid-liquid extraction of the entire water sample using dichloromethane. The extract is then solvent exchanged to hexane followed by one or more of the following clean-up procedures (if required): florisil clean-up, sulphur clean-up and/or sulphuric acid clean-up. The final extract is analysed by capillary column gas chromatography with electron capture detection (GC/ECD).

VH-PT-FID-VA	Water	VH by Purge Trap GCFID	EPA 8260b, BCMELP CSR Method

This procedure involves the purge and trap extraction of the sample prior to analysis for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID). The VH analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999).

VOC7-PT-MS-VA	Water	BTEX by Purge Trap GCMS	EPA 8260b, BCMELP CSR Method

This procedure involves the purge and trap extraction of the sample prior to analysis for specific Volatile Organic Compounds (VOC) by capillary column gas chromatography with mass spectrometric detection (GC/MS). The VOC analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8260, published by the United States Environmental Protection Agency (EPA). Note: For chlorinated waters certain conditions may cause the formation of trihalomethanes after sample collection. Appropriate chemical treatment of chlorinated waters will prevent trihalomethane formation in the samples. Surrogate recoveries may not be reported in cases where interferences from the sample matrix prevent accurate quantitation.

VPH-CALC-VA	Water	BC MOE Laboratory Manual (2005)	BC MOE LABORATORY MANUAL (2005)

These results are determined according to the British Columbia Ministry of Environment, Lands, and Parks Analytical Method for Contaminated Sites "Calculation of Volatile Petroleum Hydrocarbons in Solids or Water" (Version 2.1, July 20, 1999). According to this method, the concentrations of specific Monocyclic Aromatic Hydrocarbons (Benzene, Toluene, Ethylbenzene, Xylenes and Styrene) are subtracted from the collective concentration of Volatile Hydrocarbons (VH) that elute between n-hexane (nC6) and n-decane (nC10). Analysis of Volatile Hydrocarbons adheres to all prescribed elements of BCMELP method "Volatile Hydrocarbons in Solids by GC/FID" (Version 2.1, July 20, 1999).

XYLENES-CALC-VA	Water	CSR VOC7 by MeOH with DI GCMS	CALCULATION

Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero.

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)

The DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** Laboratory Methods employed follow in-house procedures, which are generally based on nationally or internationally accepted methodologies.
The last two letters of the above ALS Test Code column indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
VA	ALS LABORATORY GROUP - VANCOUVER, BC, CANADA		

GLOSSARY OF REPORT TERMS
Surr - A surrogate is an organic compound that is similar to the target analyte(s) in chemical composition and behavior but not normally detected in enviromental samples. Prior to sample processing, samples are fortified with one or more surrogate compounds.
The reported surrogate recovery value provides a measure of method efficiency.
mg/kg (units) - unit of concentration based on mass, parts per million
mg/L (units) - unit of concentration based on volume, parts per million
N/A - Result not available. Refer to qualifier code and definition for explanation

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Although test results are generated under strict QA/QC protocols, any unsigned test reports, faxes, or emails are considered preliminary.

ALS Laboratory Group has an extensive QA/QC program where all analytical data reported is analyzed using approved referenced procedures followed by checks and reviews by senior managers and quality assurance personnel. However, since the results are obtained from chemical measurements and thus cannot be guaranteed, ALS Laboratory Group assumes no liability for the use or interpretation of the results.

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Environmental Division

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Page 1 of 1

REPORT TO:	REPORT FORMAT / DISTRIBUTION	SERVICE REQUESTED
COMPANY: Gartner Lee Limited	STANDARD ✓ OTHER	✓ REGULAR SERVICE (DEFAULT)
CONTACT: Ken Boldt	PDF ✓ EXCEL ✓ CUSTOM FAX	RUSH SERVICE (2-3 DAYS)
ADDRESS: 300 Town Centre Blvd, Suite 300	EMAIL 1: kboldt@gartnerlee.com	PRIORITY SERVICE (1 DAY or ASAP)
Markham, ON, L3R 5Z6	EMAIL 2: mherrell@gartnerlee.com	EMERGENCY SERVICE (<1 DAY / WEEKEND) - CONTACT ALS
PHONE: 905-477-8400x351 FAX: 905-477-8456		ANALYSIS REQUEST
INVOICE TO: SAME AS REPORT ? YES / (NO)	INDICATE BOTTLES: FILTERED / PRESERVED (F/P) → → →	
COMPANY: Kitmura Projects Inc	CLIENT / PROJECT INFORMATION:	
CONTACT: Ed Powell	JOB #: 70516	
ADDRESS: Box 92 Cambridge Bay, Nu X0B 0C0	PO /AFE:	
	Legal Site Description: PIN-3	
PHONE: 867-983-7500 FAX: 867-9837501	QUOTE #: ALSEQ07-487	
Lab Work Order # (lab use only): L5498640	SAMPLER (Initials): K.B	

Sample #	SAMPLE IDENTIFICATION (This description will appear on the report)	DATE	TIME	SAMPLE TYPE	Total Metals - CCME	Total PCB	BTEX/TVH (C6-10 or BTEX)	TEH C10-32	Filtration for dissolved Metals						HAZARDOUS ?	HIGHLY CONTAMINATED ?	NUMBER OF CONTAINERS
	P3-MW-18	Aug 21, 07	2:45PM	Water	X	X	X	X	X								7

GUIDELINES / REGULATIONS

SPECIAL INSTRUCTIONS / HAZARDOUS DETAILS

Failure to complete all portions of this form may delay analysis. Please fill in this form *LEGIBLY*.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the reverse page of the white report copy.

RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:
[signature]	Aug 24.07	Kerry Gillingham 12:30	Aug 24/07
RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:
		[signature]	Aug 30/07 13:43

SAMPLE CONDITION (lab use only)

TEMPERATURE	SAMPLES RECEIVED IN GOOD CONDITION ? YES / NO (If no provide details)
21°C	

REFER TO BACK PAGE FOR REGIONAL LOCATIONS AND SAMPLING INFORMATION

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ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

ANALYTICAL REPORT

GARTNER LEE LTD.

ATTN: KEN BOLDT

Reported On: 18-SEP-07 03:34 PM

300 TOWN CENTRE BOULVARD
SUITE 300
MARKHAM ON L3R 5Z6

Lab Work Order #: **L548641** **Date Received:** **30-AUG-07**

Project P.O. #: ALSEQ07-487
Job Reference: 70516
Legal Site Desc:
CofC Numbers: A018192

Other Information:

Comments: Please note that certain metals detection limits have been increased due to the high levels of Calcimu and Soidium in the samples.

Timothy Guy Crowther
General Manager, Vancouver

For any questions about this report please contact your Account Manager:

NATASHA MARKOVIC-MIROVIC

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L548641-1	L548641-2	L548641-3	L548641-4	
	Description					
	Sampled Date	22-AUG-07	22-AUG-07	22-AUG-07	21-AUG-07	
	Sampled Time	08:20	09:00	09:45	08:25	
	Client ID	P3-MW-14	P3-MW-15	P3-MW-16	P3-MW-17	
Grouping	**Analyte**					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	1320	1440	1120	1610	
Total Metals	Aluminum (Al)-Total (mg/L)	8.18	0.057	2.32	0.028	
	Antimony (Sb)-Total (mg/L)	<0.0025	<0.0025	<0.0025	<0.0025	
	Arsenic (As)-Total (mg/L)	<0.0025	<0.0025	<0.0025	<0.0025	
	Barium (Ba)-Total (mg/L)	0.065	0.054	0.067	0.057	
	Beryllium (Be)-Total (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	
	Boron (B)-Total (mg/L)	0.32	0.52	0.10	0.40	
	Cadmium (Cd)-Total (mg/L)	0.000250	<0.000085	0.000297	0.000282	
	Calcium (Ca)-Total (mg/L)	356	386	255	345	
	Chromium (Cr)-Total (mg/L)	0.0155	<0.0050	0.0089	<0.0050	
	Cobalt (Co)-Total (mg/L)	<0.0015	0.0095	<0.0015	0.0138	
	Copper (Cu)-Total (mg/L)	<0.0050	<0.0050	<0.0050	0.0092	
	Iron (Fe)-Total (mg/L)	1.93	9.65	0.861	0.202	
	Lead (Pb)-Total (mg/L)	<0.0025	<0.0025	<0.0025	<0.0025	
	Lithium (Li)-Total (mg/L)	<0.025	<0.025	<0.025	<0.025	
	Magnesium (Mg)-Total (mg/L)	104	115	118	182	
	Manganese (Mn)-Total (mg/L)	0.0571	0.659	0.0119	1.08	
	Mercury (Hg)-Total (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	
	Molybdenum (Mo)-Total (mg/L)	<0.0050	<0.0050	<0.0050	0.0125	
	Nickel (Ni)-Total (mg/L)	0.0156	0.0154	0.0061	0.0394	
	Potassium (K)-Total (mg/L)	10.9	17.4	5.8	16.5	
	Selenium (Se)-Total (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	
	Silver (Ag)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Sodium (Na)-Total (mg/L)	40.7	45.1	24.1	91.2	
	Thallium (Tl)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Tin (Sn)-Total (mg/L)	<0.0025	<0.0025	<0.0025	<0.0025	
	Titanium (Ti)-Total (mg/L)	0.215	<0.010	0.104	<0.010	
	Uranium (U)-Total (mg/L)	0.0125	0.0245	0.0088	0.0303	
	Vanadium (V)-Total (mg/L)	<0.030	<0.030	<0.030	<0.030	
	Zinc (Zn)-Total (mg/L)	<0.025	<0.025	<0.025	<0.025	
Non-Halogenated Volatiles	Benzene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Ethylbenzene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Methyl t-butyl ether (MTBE) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Styrene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Toluene (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	meta- & para-Xylene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	ortho-Xylene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Xylenes (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Volatile Hydrocarbons (VH6-10) (mg/L)	<0.10	<0.10	<0.10	<0.10	

ALS LABORATORY GROUP ANALYTICAL REPORT

Grouping	Analyte	Sample ID: L548641-1 Description: Sampled Date: 22-AUG-07 Sampled Time: 08:20 Client ID: P3-MW-14	L548641-2 22-AUG-07 09:00 P3-MW-15	L548641-3 22-AUG-07 09:45 P3-MW-16	L548641-4 21-AUG-07 08:25 P3-MW-17	
WATER						
Non-Halogenated Volatiles	VPH (C6-C10) (mg/L)	<0.10	<0.10	<0.10	<0.10	
	Surrogate: 4-Bromofluorobenzene (SS) (%)	94	93	92	94	
	Surrogate: 2,4-Dichlorotoluene (SS) (%)	117	108	115	102	
	Surrogate: Fluorobenzene (SS) (%)	90	93	94	93	
Extractable Hydrocarbons	TEH10-30 (mg/L)	<0.25	<0.25	<0.25	10.1	
Polychlorinated Biphenyls	PCB-1016 (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	PCB-1221 (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	PCB-1232 (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	PCB-1242 (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	PCB-1248 (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	PCB-1254 (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	PCB-1260 (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	PCB-1262 (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	PCB-1268 (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Total Polychlorinated Biphenyls (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)
EPH-SF-FID-VA	Water	EPH in Water by GCFID	BCMOE EPH GCFID

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999). The procedure involves extraction of the entire water sample with dichloromethane. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness is calculated from Calcium and Magnesium concentrations, and is expressed as calcium carbonate equivalents.

HG-TOT-CCME-CVAFS-VA	Water	Total Mercury in Water by CVAFS (CCME)	EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-TOT-CCME-ICP-VA	Water	Total Metals in Water by ICPOES (CCME)	EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-TOT-CCME-MS-VA	Water	Total Metals in Water by ICPMS (CCME)	EPA SW-846 3005A/6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

PCB-SF-ECD-VA	Water	PCB by Extraction with GCECD	EPA 3510/8082 Liq-Liq GCECD

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Methods 3510, 3620, 3660, 3665 & 8082, published by the United States Environmental Protection Agency (EPA). The procedure involves a liquid-liquid extraction of the entire water sample using dichloromethane. The extract is then solvent exchanged to hexane followed by one or more of the following clean-up procedures (if required): florisil clean-up, sulphur clean-up and/or sulphuric acid clean-up. The final extract is analysed by capillary column gas chromatography with electron capture detection (GC/ECD).

VH-PT-FID-VA	Water	VH by Purge Trap GCFID	EPA 8260b, BCMELP CSR Method

This procedure involves the purge and trap extraction of the sample prior to analysis for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID). The VH analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999).

VOC7-PT-MS-VA	Water	BTEX by Purge Trap GCMS	EPA 8260b, BCMELP CSR Method

This procedure involves the purge and trap extraction of the sample prior to analysis for specific Volatile Organic Compounds (VOC) by capillary column gas chromatography with mass spectrometric detection (GC/MS). The VOC analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8260, published by the United States Environmental Protection Agency (EPA). Note: For chlorinated waters certain conditions may cause the formation of trihalomethanes after sample collection. Appropriate chemical treatment of chlorinated waters will prevent trihalomethane formation in the samples. Surrogate recoveries may not be reported in cases where interferences from the sample matrix prevent accurate quantitation.

VPH-CALC-VA	Water	BC MOE Laboratory Manual (2005)	BC MOE LABORATORY MANUAL (2005)

These results are determined according to the British Columbia Ministry of Environment, Lands, and Parks Analytical Method for Contaminated Sites "Calculation of Volatile Petroleum Hydrocarbons in Solids or Water" (Version 2.1, July 20, 1999). According to this method, the concentrations of specific Monocyclic Aromatic Hydrocarbons (Benzene, Toluene, Ethylbenzene, Xylenes and Styrene) are subtracted from the collective concentration of Volatile Hydrocarbons (VH) that elute between n-hexane (nC6) and n-decane (nC10). Analysis of Volatile Hydrocarbons adheres to all prescribed elements of BCMELP method "Volatile Hydrocarbons in Solids by GC/FID" (Version 2.1, July 20, 1999).

XYLENES-CALC-VA	Water	CSR VOC7 by MeOH with DI GCMS	CALCULATION

Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero.

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)

The DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** Laboratory Methods employed follow in-house procedures, which are generally based on nationally or internationally accepted methodologies.
The last two letters of the above ALS Test Code column indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
VA	ALS LABORATORY GROUP - VANCOUVER, BC, CANADA		

GLOSSARY OF REPORT TERMS
Surr - A surrogate is an organic compound that is similar to the target analyte(s) in chemical composition and behavior but not normally detected in enviromental samples. Prior to sample processing, samples are fortified with one or more surrogate compounds.
The reported surrogate recovery value provides a measure of method efficiency.
mg/kg (units) - unit of concentration based on mass, parts per million
mg/L (units) - unit of concentration based on volume, parts per million
N/A - Result not available. Refer to qualifier code and definition for explanation

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Although test results are generated under strict QA/QC protocols, any unsigned test reports, faxes, or emails are considered preliminary.

ALS Laboratory Group has an extensive QA/QC program where all analytical data reported is analyzed using approved referenced procedures followed by checks and reviews by senior managers and quality assurance personnel. However, since the results are obtained from chemical measurements and thus cannot be guaranteed, ALS Laboratory Group assumes no liability for the use or interpretation of the results.

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Environmental Division

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Page 1 of 1

REPORT TO:	REPORT FORMAT / DISTRIBUTION	SERVICE REQUESTED
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CONTACT: Ken Boldt	PDF ✓ EXCEL ✓ CUSTOM FAX	RUSH SERVICE (2-3 DAYS)
ADDRESS: 300 Town Centre Blvd. Suite 300	EMAIL 1: kboldt@gartnerlee.com	PRIORITY SERVICE (1 DAY or ASAP)
Markham, ON, L3R 5Z6	EMAIL 2: mherrell@gartnerlee.com	EMERGENCY SERVICE (<1 DAY / WEEKEND) - CONTACT ALS
PHONE: ~~905-477-8400 x 351~~ FAX: 905-477-1456		ANALYSIS REQUEST
INVOICE TO: SAME AS REPORT ? YES / (NO)	INDICATE BOTTLES: FILTERED / PRESERVED (F/P) → → →	
COMPANY: Kitnuna Projects Inc	CLIENT / PROJECT INFORMATION:	
CONTACT: Ed Powell	JOB #: 70516	
ADDRESS: Box 92 Cambridge Bay, Nu	PO /AFE:	
X0B 0C0	Legal Site Description: PIN-3	
PHONE: 867-983-7500 FAX: 867-983-7501	QUOTE #: ALSEQ07-487	
Lab Work Order # (lab use only): L548641	SAMPLER (Initials): KB	

Sample #	SAMPLE IDENTIFICATION (This description will appear on the report)	DATE	TIME	SAMPLE TYPE	Total Metals - CCME	Total PCB	BTEX/TVH (C6-10 + BTEX)	TEH C10-32	Filtration for dissolved metals	HAZARDOUS ?	HIGHLY CONTAMINATED ?	NUMBER OF CONTAINERS
	P3-MW-14	Aug 22.07	8:20 AM	Water								7
	P3-MW-15	Aug 22.07	9:00 AM	Water								7
	P3-MW-16	Aug 22.07	9:45 AM	Water								7
	P3-MW-17	Aug 21.07	8:25 AM	Water								7

GUIDELINES / REGULATIONS	SPECIAL INSTRUCTIONS / HAZARDOUS DETAILS

Failure to complete all portions of this form may delay analysis. Please fill in this form *LEGIBLY*.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the reverse page of the white report copy.

RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	SAMPLE CONDITION (lab use only)
[signature]	Aug 24.07	[signature] 13:30	Aug.24/07	TEMPERATURE: 20°C; SAMPLES RECEIVED IN GOOD CONDITION ? (YES) / NO (If no provide details)
RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME: 13:40 Aug30/07	

REFER TO BACK PAGE FOR REGIONAL LOCATIONS AND SAMPLING INFORMATION

WHITE - REPORT COPY, PINK - FILE COPY, YELLOW - CLIENT COPY

GENF14.00

Appendix H

QA / QC

Table H1. Soil QA/QC

	Sample Ident.	Sample Location	Depth (m)	Laboratory	Arsenic (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Cobalt (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Zinc (mg/kg)	Petroleum Hydrocarbons				PCB Total Aroclors (mg/kg)
														TPH C6-C34 (mg/kg)	C6-C10 (mg/kg)	C10-C16 (mg/kg)	C16-C34 (mg/kg)	
	P3-MW-5-1	MW-5	0.1	ALS	0.508	<0.50	3.9	<2.0	11.8	<30	0.0051	<5.0	5.8	206	<10	26	180	<0.010
	P3-17-1*	MW-5	0.1	ALS	1.53	<0.50	5.8	3.1	6.7	<30	0.0071	<5.0	9.6	9	<10	<5	9	<0.050
	P3-17-1*	MW-5	0.1	Cantest	< 10	< 0.5	5	3	4	< 5	< 0.01	4	8	24	< 5	< 80	< 250	< 0.03
Average					-	-	4.90	-	7.50	-	-	-	7.80	80	-	-	-	-
RSD					-	-	19%	-	52.8%	-	-	-	24%	138%	-	-	-	-
	P3-MW-11-2	MW-11	0.5	ALS	0.904	<0.50	4.7	2.3	7.4	<30	<0.0050	<5.0	7.1	0	<10	<5	<5	<0.010
	P3-18-2*	MW-11	0.5	ALS	0.777	<0.50	4.6	<2.0	7	<30	<0.0050	<5.0	5	0	<10	<5	<5	<0.050
	P3-18-2*	MW-11	0.5	Cantest	< 10	< 0.5	3	2	6	< 5	< 0.01	3	5	< 20	< 5	< 80	< 250	< 0.03
Average					-	-	4.10	-	6.80	-	-	-	5.70	-	-	-	-	-
RSD					-	-	23%	-	10.6%	-	-	-	21%	-	-	-	-	-
	P3-MW-15-2	MW-15	0.5	ALS	0.957	<0.50	4.2	<2.0	8.8	<30	<0.0050	<5.0	5.5	0	<10	<5	<5	<0.010
	P3-19-2*	MW-15	0.5	ALS	1.07	<0.50	4.2	2.1	6.2	<30	0.01	<5.0	7.1	0	<10	<5	<5	<0.050
	P3-19-2*	MW-15	0.5	Cantest	< 10	< 0.5	4	2	3	< 5	< 0.01	3	6	< 20	< 5	< 80	< 250	< 0.03
Average					-	-	4.13	-	6.00	-	-	-	6.20	-	-	-	-	-
RSD					-	-	3%	-	48.4%	-	-	-	13%	-	-	-	-	-
	P3-2-2	P3-2	0.5	ALS	0.984	<0.50	5.4	2.4	8.4	<30	<0.0050	<5.0	8	0	<10	<5	<5	<0.010
	P3-20-2*	P3-2	0.5	ALS	1	<0.50	5.2	2.4	9.2	<30	<0.0050	<5.0	7.9	0	<10	<5	<5	<0.050
	P3-20-2*	P3-2	0.5	Cantest	< 10	< 0.5	5	2	4	< 5	< 0.01	3	7	< 20	< 5	< 80	< 250	< 0.03
Average					-	-	5.20	2.27	7.20	-	-	-	7.63	-	-	-	-	-
RSD					-	-	4%	10%	38.9%	-	-	-	7%	-	-	-	-	-
	P3-8-2	P3-8	0.5	ALS	0.901	<0.50	4.3	2	8.8	<30	<0.0050	<5.0	7.1	0	<10	<5	<5	<0.050
	P3-21-2*	P3-8	0.5	ALS	1.03	<0.50	3.8	<2.0	7.2	<30	0.0064	<5.0	6.3	32	<10	<5	32	<0.050
	P3-21-2*	P3-8	0.5	Cantest	< 10	< 0.5	4	2	7	< 5	< 0.01	3	7	< 20	< 5	< 80	< 250	< 0.03
Average					-	-	4.03	-	7.67	-	-	-	6.80	-	-	-	-	-
RSD					-	-	6.2%	-	12.9%	-	-	-	6.4%	-	-	-	-	-
	P3-9-2	P3-9	0.5	ALS	1.15	<0.50	4.8	2.7	10.2	<30	<0.0050	<5.0	8.3	66	<10	26	40	<0.050
	P3-22-2*	P3-9	0.5	ALS	1.06	<0.50	5.8	2.9	9.4	<30	<0.0050	<5.0	8.9	230	<10	120	110	<0.050
	P3-22-2*	P3-9	0.5	Cantest	< 10	< 0.5	5	3	6	< 5	< 0.01	4	9	140	< 5	< 80	< 250	< 0.03
Average					-	-	5.20	2.87	8.53	-	-	-	8.73	145.33	-	-	-	-
RSD					-	-	10.2%	5.3%	26.1%	-	-	-	4.3%	56.5%	-	-	-	-

Notes: *Relative Standard Deviation (RSDs) calculated by dividing the standard deviation of the comparitive set by the average.*

** Denotes duplicate sample*

xx% *Exceeds QA/QC goal of 20% for inorganics or 30% for organics.*

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Table H2. Water QA/QC

	Sample Ident.	Sample Location	Laboratory	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Lead (mg/L)	Mercury (mg/L)	Nickel (mg/L)	Zinc (mg/L)	Petroleum Hydrocarbons				PCB Total Aroclors (mg/L)
													TPH C6-C34 (mg/L)	C6-C10 (mg/L)	C10-C16 (mg/L)	C16-C34 (mg/L)	
	P3-MW-5	MW-5	ALS	< 0.05	< 0.001	< 0.005	0.016	0.0131	< 0.01	< 0.001	0.0421	< 0.005	13.3				< 0.003
	P3-MW-17*	MW-5	ALS	< 0.05	< 0.001	< 0.005	0.0138	0.0092	< 0.01	< 0.001	0.0394	< 0.025	10.1				< 0.003
	P3-MW-17*	MW-5	Cantest	< 0.05	< 0.001	< 0.005	0.01	0.006	< 0.01	< 0.001	0.023	0.017	< 1		0.26	< 0.25	< 0.003
Average				-	-	-	0.013	0.009	-	-	0.035	-	-	-	-	-	-
RPD				-	-	-	22.9%	37.7%	-	-	29.7%	-	-	-	-	-	-
	P3-MW-11	MW-11	ALS	< 0.05	< 0.001	< 0.005	< 0.005	< 0.005	< 0.01	< 0.001	< 0.01	< 0.005	< 1				< 0.003
	P3-MW-18*	MW-11	ALS	< 0.05	< 0.001	< 0.005	< 0.005	< 0.005	< 0.01	< 0.001	< 0.01	< 0.005	< 1				< 0.003
	P3-MW-18*	MW-11	Cantest	< 0.05	< 0.001	< 0.005	< 0.005	< 0.005	< 0.01	< 0.001	< 0.01	0.012	< 1		< 0.1	< 0.25	< 0.003
Average				-	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes: *Relative Standard Deviation (RSDs) calculated by dividing the standard deviation of the comparitive set by the average.*

** Denotes duplicate sample*

xx% *Exceeds QA/QC goal of 20% for inorganics or 30% for organics.*

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