ALS Environmental

CHEMICAL ANALYSIS REPORT

Date:	July 26, 2002
ALS File No.	P6911
Report On:	GLL20935 Soil Analysis Polaris
Report To:	**Gartner Lee Ltd.** Sperling Plaza Suite 490, 6400 Roberts Street Burnaby, BC V5G 4C9
Attention:	**Ms. Arlene Laudrum**
Received:	July 12, 2002

ALS ENVIRONMENTAL
per:

Brent C. Mack, B.Sc. - Project Chemist
Natasha Markovic-Mirovic, B.Sc. - Project Chemist

AURORA LABORATORY SERVICES LTD
1988 Triumph Street, Vancouver, BC Canada V5L 1K5
Phone: 604-253-4188 Fax: 604-253-6700 Website: www.alsenviro.com

File No. P6911
REMARKS

Qualifications for the QC Report Data:

1. Blanks - The Naphthalene data by GC-MS (ALS QC#295899) does not meet data quality objectives. The samples reported here are not affected by this, as the Naphthalene data for the sample identified as 'TP02-01-1' is orders of maginitude greater than the level of this analyte found in the Blank.

2. Reference Materials - CWS Fractions 2-4 - Final Data Quality Objectives have not been set for these analyses. There are no Certified values from NRC and, as such, a data set is being generated at ALS Environmental. Therefore, Internal Targets for NRC Marine Harbour Sediment, HS-3B, will vary over time.

All other QC data presented for these samples meets ALS Data Quality Objectives. For more information, contact your ALS service representative.

File No. P6911

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID	TP02-01-1	TP02-01-2	TP01-01-3	TP01-02-1
Sample Date	02 07 09	02 07 09	02 07 09	02 07 09
Sample Time	18:00	18:00	18:00	18:00
ALS ID	*1*	*2*	*3*	*4*
Physical Tests				
Moisture %	5.8	4.8	11.0	4.9
Non-Halogenated Volatiles				
Benzene	<0.04	-	-	-
CWS Fraction 1 (C6-10)	566	-	-	-
CWS Fraction 1-BTEX	546	-	-	-
Ethylbenzene	2.61	-	-	-
Styrene	<0.05	-	-	-
Toluene	1.24	-	-	-
meta- & para-Xylene	9.95	-	-	-
ortho-Xylene	5.95	-	-	-
Polycyclic Aromatic Hydrocarbons				
Acenaphthene	<2	-	-	-
Acenaphthylene	<0.5	-	-	-
Anthracene	<0.2	-	-	-
Benz(a)anthracene	<0.01	-	-	-
Benzo(a)pyrene	<0.01	-	-	-
Benzo(b)fluoranthene	<0.01	-	-	-
Benzo(g,h,i)perylene	<0.01	-	-	-
Benzo(k)fluoranthene	<0.01	-	-	-
Chrysene	<0.02	-	-	-
Dibenz(a,h)anthracene	<0.005	-	-	-
Fluoranthene	<0.04	-	-	-
Fluorene	1.9	-	-	-
Indeno(1,2,3-c,d)pyrene	<0.01	-	-	-
Naphthalene	18.7	-	-	-
Phenanthrene	2.4	-	-	-
Pyrene	0.1	-	-	-
2-Methylnaphthalene	39.1	-	-	-

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
CWS = CCME - Canada Wide Standards.

File No. P6911

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID			TP02-01-1	TP02-01-2	TP01-01-3	TP01-02-1
Sample Date			02 07 09	02 07 09	02 07 09	02 07 09
Sample Time			18:00	18:00	18:00	18:00
ALS ID			*1*	*2*	*3*	*4*
Extractable Hydrocarbons						
CWS Fraction 2 (C10-16)			9270	3710	3580	3010
CWS Fraction 2-Napth			9250	-	-	-
CWS Fraction 3 (C16-34)			2950	1200	1280	1570
CWS Fraction 3-PAH			2950	-	-	-
CWS Fraction 4 (C34-50)			87	98	94	75
Surrogate Standards						
1,2-Dichlorobenzene (SS)		%	101	-	-	-
3-Fluorotoluene (SS)		%	95	-	-	-
Particle Size						
Gravel	(>2.00mm)	(%)	-	-	-	58.6
Sand	(2.00mm - 0.063mm)	(%)	-	-	-	39.9
Silt	(0.063mm - 4um)	(%)	-	-	-	0.7
Clay	(<4um)	(%)	-	-	-	0.8

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
CWS = CCME - Canada Wide Standards.

File No. P6911

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID		TP01-02-3	TP01-03-1	TP01-03-2	TP01-11-1
Sample Date		02 07 09	02 07 09	02 07 09	02 07 09
Sample Time		18:00	18:00	18:00	18:00
ALS ID		*6*	*7*	*8*	*10*
Physical Tests					
Moisture	%	10.8	4.1	6.1	5.9

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
CWS = CCME - Canada Wide Standards.

File No. P6911

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID			TP01-02-3	TP01-03-1	TP01-03-2	TP01-11-1
Sample Date			02 07 09	02 07 09	02 07 09	02 07 09
Sample Time			18:00	18:00	18:00	18:00
ALS ID			*6*	*7*	*8*	*10*
Extractable Hydrocarbons						
CWS Fraction 2 (C10-16)			721	1670	3040	8420
CWS Fraction 2-Napth			-	-	-	-
CWS Fraction 3 (C16-34)			834	1110	1060	2730
CWS Fraction 3-PAH			-	-	-	-
CWS Fraction 4 (C34-50)			126	80	61	96
Particle Size						
Gravel	(>2.00mm)	(%)	82.9	-	-	-
Sand	(2.00mm - 0.063mm)	(%)	14.0	-	-	-
Silt	(0.063mm - 4um)	(%)	2.1	-	-	-
Clay	(<4um)	(%)	1.0	-	-	-

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
CWS = CCME - Canada Wide Standards.

File No. P6911

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID		TP01-11-2	TP01-11-3
Sample Date		02 07 09	02 07 09
Sample Time		18:00	18:00
ALS ID		*11*	*12*
Physical Tests			
Moisture	%	5.3	10.0

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
CWS = CCME - Canada Wide Standards.

File No. P6911

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID	TP01-11-2	TP01-11-3
Sample Date	02 07 09	02 07 09
Sample Time	18:00	18:00
ALS ID	*11*	*12*
Extractable Hydrocarbons		
CWS Fraction 2 (C10-16)	3820	3460
CWS Fraction 2-Napth	-	-
CWS Fraction 3 (C16-34)	1280	1210
CWS Fraction 3-PAH	-	-
CWS Fraction 4 (C34-50)	88	79

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
CWS = CCME - Canada Wide Standards.

File No. P6911

Appendix 1 - QUALITY CONTROL - Replicates

Sediment/Soil	TP02-01-1 02 07 09 18:00	TP02-01-1 QC # 295425
Physical Tests		
Moisture %	5.8	6.2
Non-Halogenated Volatiles		
Benzene	<0.04	<0.04
CWS Fraction 1 (C6-10)	566	858
CWS Fraction 1-BTEX	546	832
Ethylbenzene	2.61	3.53
Styrene	<0.05	<0.05
Toluene	1.24	1.57
meta- & para-Xylene	9.95	13.2
ortho-Xylene	5.95	7.99
Polycyclic Aromatic Hydrocarbons		
Acenaphthene	<2	<2
Acenaphthylene	<0.5	<0.5
Anthracene	<0.2	<0.2
Benz(a)anthracene	<0.01	<0.01
Benzo(a)pyrene	<0.01	<0.01
Benzo(b)fluoranthene	<0.01	<0.01
Benzo(g,h,i)perylene	<0.01	0.01
Benzo(k)fluoranthene	<0.01	<0.01
Chrysene	<0.02	<0.02
Dibenz(a,h)anthracene	<0.005	<0.005
Fluoranthene	<0.04	<0.04
Fluorene	1.9	2.3
Indeno(1,2,3-c,d)pyrene	<0.01	<0.01
Naphthalene	18.7	25.2
Phenanthrene	2.4	2.9
Pyrene	0.1	0.2
2-Methylnaphthalene	39.1	51.5

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
CWS = CCME - Canada Wide Standards.

File No. P6911

Appendix 1 - QUALITY CONTROL - Replicates

Sediment/Soil		TP02-01-1 02 07 09 18:00	TP02-01-1 QC # 295425
Extractable Hydrocarbons			
CWS Fraction 2 (C10-16)		9270	11700
CWS Fraction 2-Napth		9250	11700
CWS Fraction 3 (C16-34)		2950	3610
CWS Fraction 3-PAH		2950	3610
CWS Fraction 4 (C34-50)		87	105
Surrogate Standards			
1,2-Dichlorobenzene (SS)	%	101	125
3-Fluorotoluene (SS)	%	95	92

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
CWS = CCME - Canada Wide Standards.

File No. P6911

Appendix 1 - QUALITY CONTROL - Reference Materials

Sediment/Soil

	Result	Target	Units	DL	ALSQC#	Method
NRC Marine Harbour Sediment, HS-3B						
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	1.0	1.2	mg/kg	0.1	295898	a
Acenaphthylene	0.5	0.6	mg/kg	0.1	295898	a
Anthracene	1.8	2.8	mg/kg	0.1	295898	a
Benz(a)anthracene	6.1	7.9	mg/kg	0.1	295898	a
Benzo(a)pyrene	4.6	5.8	mg/kg	0.1	295898	a
Benzo(b)fluoranthene	9.1	9.4	mg/kg	0.1	295898	a
Benzo(g,h,i)perylene	3.4	3.9	mg/kg	0.1	295898	a
Benzo(k)fluoranthene	3.7	4.0	mg/kg	0.1	295898	a
Chrysene	7.1	8.8	mg/kg	0.1	295898	a
Dibenz(a,h)anthracene	1.0	0.9	mg/kg	0.1	295898	a
Fluoranthene	23.3	25.3	mg/kg	0.1	295898	a
Fluorene	1.5	2.4	mg/kg	0.1	295898	a
Indeno(1,2,3-c,d)pyrene	4.0	4.6	mg/kg	0.1	295898	a
Naphthalene	1.8	2.1	mg/kg	0.1	295898	a
Phenanthrene	17.1	18.8	mg/kg	0.1	295898	a
Pyrene	15.5	18.0	mg/kg	0.1	295898	a
Extractable Hydrocarbons						
CWS Fraction 2 (C10-16)	67	115	mg/kg	50	295848	b
CWS Fraction 2 (C10-16)	62	115	mg/kg	50	295898	b
CWS Fraction 3 (C16-34)	3370	3040	mg/kg	50	295848	b
CWS Fraction 3 (C16-34)	2060	3040	mg/kg	50	295898	b
CWS Fraction 4 (C34-50)	1820	1510	mg/kg	50	295848	b
CWS Fraction 4 (C34-50)	951	1510	mg/kg	50	295898	b

Methods:
a = ASE/GC-MS
b = ASE/GC-FID

File No. P6911

Appendix 1 - QUALITY CONTROL - Spikes

Sediment/Soil

	Result	Target	Units	DL	ALSQC#	Method
Non-Halogenated Volatiles						
Benzene	48.5	50.0	mg/kg	0.04	296013	a
Ethylbenzene	54.0	50.0	mg/kg	0.05	296013	a
Styrene	50.6	50.0	mg/kg	0.05	296013	a
Toluene	53.1	50.0	mg/kg	0.05	296013	a
meta- & para-Xylene	52.0	50.0	mg/kg	0.05	296013	a
ortho-Xylene	53.0	50.0	mg/kg	0.05	296013	a
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	0.169	0.200	mg/kg	0.005	296298	b
Acenaphthylene	0.119	0.200	mg/kg	0.005	296298	b
Anthracene	0.12	0.20	mg/kg	0.01	296298	b
Benz(a)anthracene	0.17	0.20	mg/kg	0.01	296298	b
Benzo(a)pyrene	0.14	0.20	mg/kg	0.01	296298	b
Benzo(b)fluoranthene	0.18	0.20	mg/kg	0.01	296298	b
Benzo(g,h,i)perylene	0.18	0.20	mg/kg	0.01	296298	b
Benzo(k)fluoranthene	0.17	0.20	mg/kg	0.01	296298	b
Chrysene	0.18	0.20	mg/kg	0.01	296298	b
Dibenz(a,h)anthracene	0.183	0.200	mg/kg	0.005	296298	b
Fluoranthene	0.18	0.20	mg/kg	0.01	296298	b
Fluorene	0.17	0.20	mg/kg	0.01	296298	b
Indeno(1,2,3-c,d)pyrene	0.18	0.20	mg/kg	0.01	296298	b
Naphthalene	0.17	0.20	mg/kg	0.01	296298	b
Phenanthrene	0.17	0.20	mg/kg	0.01	296298	b
Pyrene	0.18	0.20	mg/kg	0.01	296298	b
2-Methylnaphthalene	0.18	0.20	mg/kg	0.01	296298	b

Methods:
a = GC-FID-MS
b = ASE/GC-MS

File No. P6911

Appendix 1 - QUALITY CONTROL - Blanks

Sediment/Soil

	Result	Target	Units	DL	ALSQC#	Method
Non-Halogenated Volatiles						
Benzene	<0.04	<0.04	mg/kg	0.04	296012	a
CWS Fraction 1 (C6-10)	<20	<20	mg/kg	20	296341	b
Ethylbenzene	<0.05	<0.05	mg/kg	0.05	296012	a
Styrene	<0.05	<0.05	mg/kg	0.05	296012	a
Toluene	<0.05	<0.05	mg/kg	0.05	296012	a
meta- & para-Xylene	<0.05	<0.05	mg/kg	0.05	296012	a
ortho-Xylene	<0.05	<0.05	mg/kg	0.05	296012	a
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	<0.01	<0.01	mg/kg	0.01	295899	c
Acenaphthylene	<0.01	<0.01	mg/kg	0.01	295899	c
Anthracene	<0.01	<0.01	mg/kg	0.01	295899	c
Benz(a)anthracene	<0.01	<0.01	mg/kg	0.01	295899	c
Benzo(a)pyrene	<0.01	<0.01	mg/kg	0.01	295899	c
Benzo(b)fluoranthene	<0.01	<0.01	mg/kg	0.01	295899	c
Benzo(g,h,i)perylene	<0.01	<0.01	mg/kg	0.01	295899	c
Benzo(k)fluoranthene	<0.01	<0.01	mg/kg	0.01	295899	c
Chrysene	<0.01	<0.01	mg/kg	0.01	295899	c
Dibenz(a,h)anthracene	<0.01	<0.01	mg/kg	0.01	295899	c
Fluoranthene	<0.01	<0.01	mg/kg	0.01	295899	c
Fluorene	<0.01	<0.01	mg/kg	0.01	295899	c
Indeno(1,2,3-c,d)pyrene	<0.01	<0.01	mg/kg	0.01	295899	c
Naphthalene	0.01	<0.01	mg/kg	0.01	295899	c
Phenanthrene	<0.01	<0.01	mg/kg	0.01	295899	c
Pyrene	<0.01	<0.01	mg/kg	0.01	295899	c
2-Methylnaphthalene	<0.01	<0.01	mg/L	0.01	295899	c
Extractable Hydrocarbons						
CWS Fraction 2 (C10-16)	<50	<50	mg/kg	50	295847	d
CWS Fraction 2 (C10-16)	<50	<50	mg/kg	50	295899	d
CWS Fraction 3 (C16-34)	<50	<50	mg/kg	50	295847	d
CWS Fraction 3 (C16-34)	<50	<50	mg/kg	50	295899	d
CWS Fraction 4 (C34-50)	<50	<50	mg/kg	50	295847	d
CWS Fraction 4 (C34-50)	<50	<50	mg/kg	50	295899	d

Methods:
a = GC-FID-MS
b = GC-FID
c = ASE/GC-MS
d = ASE/GC-FID

File No. P6911

Appendix 2 - Methodology

Outlines of the methodologies utilized for the analysis of the samples submitted are as follows

Moisture in Sediment/Soil

This analysis is carried out gravimetrically by drying the sample at 103 C for a minimum of six hours.

Recommended Holding Time:
Sample: 14 days
Reference: Puget
For more detail see ALS Environmental "Collection & Sampling Guide"

Volatile Organic Compounds and Volatile Hydrocarbons in Sediment/Soil

This analysis involves the extraction of a subsample of the sediment/soil with methanol. Aliquots of the methanol extract are then analyzed for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID) and for specific Volatile Organic Compounds (VOC) by capillary column gas chromatography with mass spectrometric detection (GC/MS). The methanol extraction and VH analysis are carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Solids by GC/FID" (Version 2.1 July 1999). 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).

Recommended Holding Time:
Sample: 7 days Extract: 40 days
Reference: BCMELP
For more detail see ALS Environmental "Collection & Sampling Guide"

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.

CWS Fractions 2, 2-PAH, 3, 3-PAH, 4 and 4G-SG:

The procedure uses an automated system at high temperature and pressure (Accelerated Solvent Extractor - ASE) or a Soxhlet system to extract a subsample of the sediment/soil with a 1:1 mixture of hexane and acetone. The extract is concentrated and undergoes a silica-gel clean-up to remove polar material. The final extract is analysed by high temperature capillary column gas chromatography with flame ionization detection (GC/FID). CWS Fractions 4G and 4G-SG (Gravimetric Heavy Hydrocarbons) are analysed gravimetrically.

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
CWS Fraction 2 (C10-16):
sum of all petroleum hydrocarbon compounds that elute between nC10 and nC16 obtained by GC/FID analysis
CWS Fraction 2-PAH:
CWS Fraction 2 (C10-16), minus selected PAH compounds (Naphthalene)
CWS Fraction 3 (C16-34):
sum of all petroleum hydrocarbon compounds that elute between nC16 and nC34 obtained by GC/FID analysis
CWS Fraction 3-PAH:
CWS Fraction 3 (C16-34), minus selected PAH compounds
CWS Fraction 4 (C34-50):
sum of all petroleum hydrocarbon compounds that elute between nC34 and nC50 obtained by GC/FID analysis
CWS Fraction 4G (GHH):
Results obtained by gravimetric analysis.
CWS Fraction 4G-SG (GHH + SG):
Results obtained by gravimetric analysis after silica gel clean-up

Recommended Holding Time:

Sample: 7 days for CWS Fraction 1
14 days for CWS Fractions 2, 3, 4, 4G & 4G-SG
Extract: 7 days for all CWS Fractions
Reference: CCME
For more detail see ALS Environmental "Collection & Sampling Guide"

File No. P6911

Appendix 2 - Methodology

Polycyclic Aromatic Hydrocarbons in Sediment/Soil

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Methods 3545, 3630 & 8270, published by the United States Environmental Protection Agency (EPA). The procedure uses an automated system (Accelerated Solvent Extractor - ASE) to extract a subsample of the sediment/soil with a 1:1 mixture of hexane and acetone. The extract is then solvent exchanged to toluene and undergoes a silica gel clean-up to remove sample components that could potentially interfere with the analysis. The final extract is analysed by capillary column gas chromatography with mass spectrometric detection (GC/MS).

Recommended Holding Time:
Sample: 14 days Extract: 40 days
Reference: EPA
For more detail see ALS Environmental "Collection & Sampling Guide"

Particle Size Distribution in Sediment/Soil

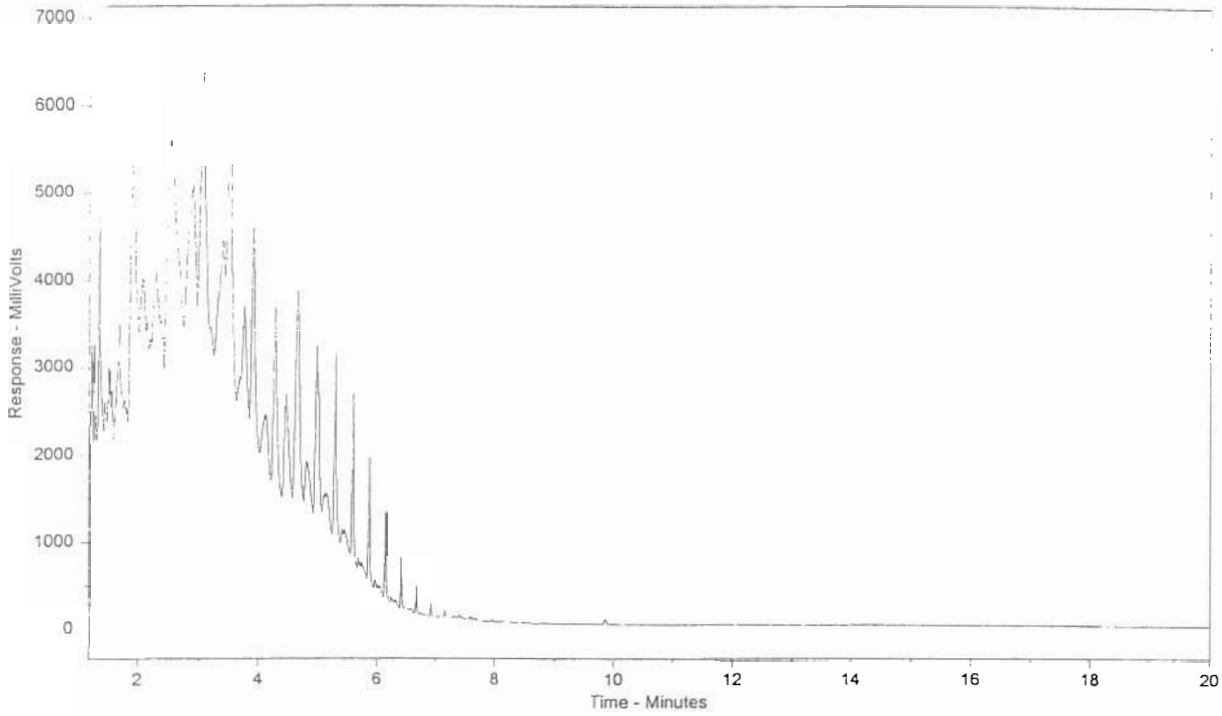
This analysis is carried out using a method adapted for Fisheries and Environment Canada, Ottawa, described in Walton, 1978. The procedure involves oven-drying and sample pre-treatment to remove organics, prior to using standard sieves for the sand and silt fractions and the pipette method for the clay fraction.

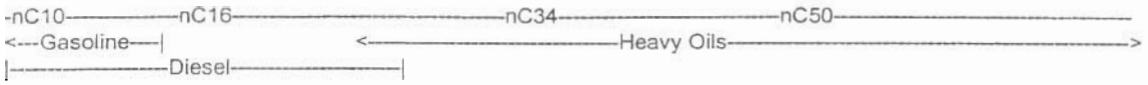
Note: Particle Size analysis is subcontracted.

End of Report

ALS - Hydrocarbon Distribution Report - Canada-Wide Standard version

Client Sample ID:
ASL Sample ID: P6911-T--1
File Name: i:\chrom\gc05\data\gc05_18julcws.0034.RAW
Run Information: 7/19/2002 11:17:47 AM





Sample Amount = 9.0 (g or mL) Dilution Factor = 2.0

Canada-Wide Standard Method - Hydrocarbon Distribution Report

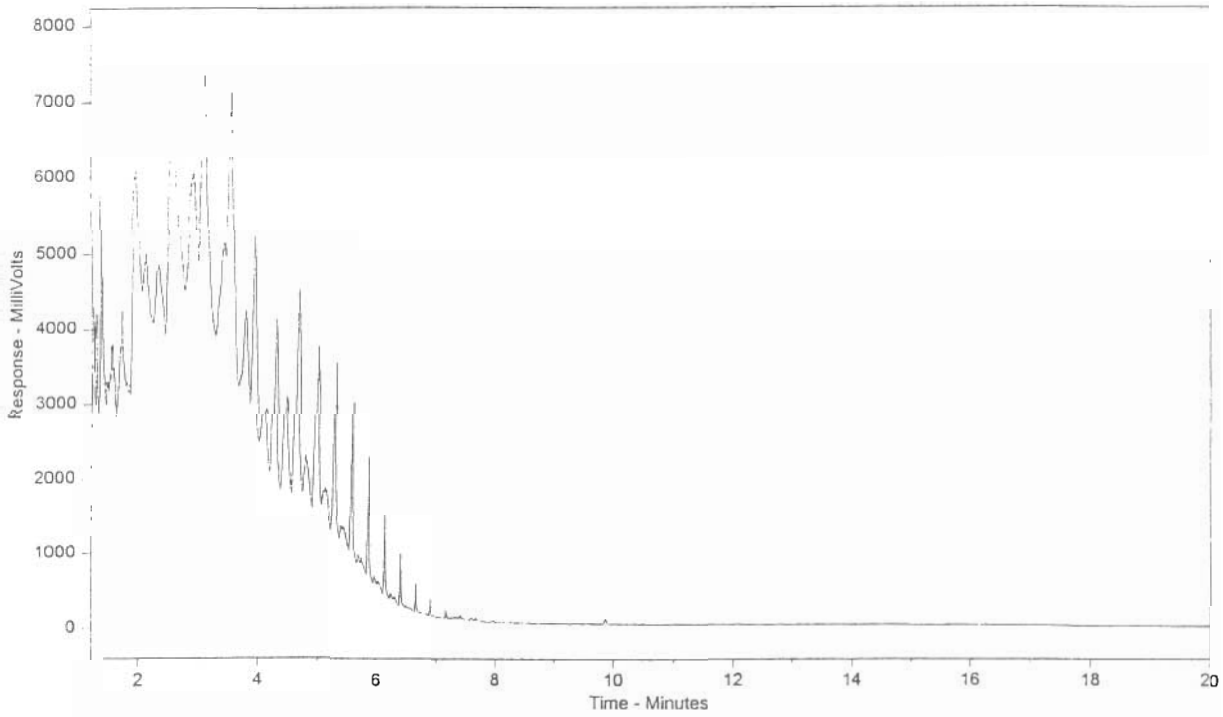
The Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and of four n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

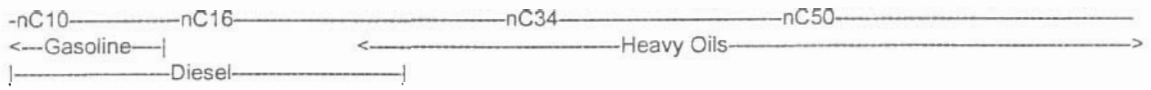
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (October 2000 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.

ALS - Hydrocarbon Distribution Report - Canada-Wide Standard version

Client Sample ID:
ASL Sample ID: **QC-T--295425#P6911-1 DUP**
File Name: i:\chrom\gc05\data\gc05_18julcws.0036.RAW
Run Information: 7/19/2002 1:27:19 PM





Sample Amount = 8.8 (g or mL) Dilution Factor = 2.0

Canada-Wide Standard Method - Hydrocarbon Distribution Report

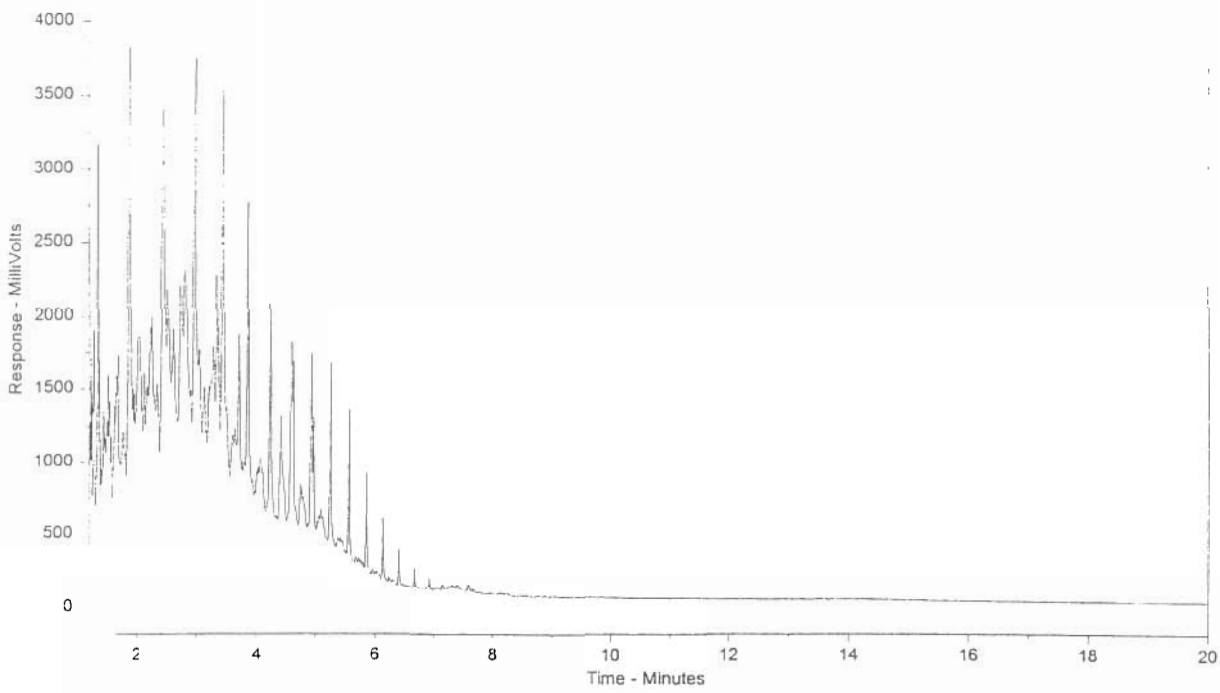
The Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and of four n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

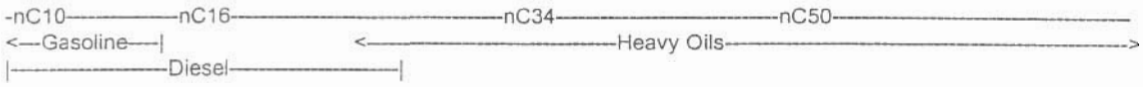
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (October 2000 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.

ALS - Hydrocarbon Distribution Report - Canada-Wide Standard version

Client Sample ID:
ASL Sample ID: P6911-T--2
File Name: i:\chrom\gc05\data\gc05_18julcws.0011.RAW
Run Information: 7/18/2002 11:42:19 PM





Sample Amount = 9.4 (g or mL) Dilution Factor = 2.0

Canada-Wide Standard Method - Hydrocarbon Distribution Report

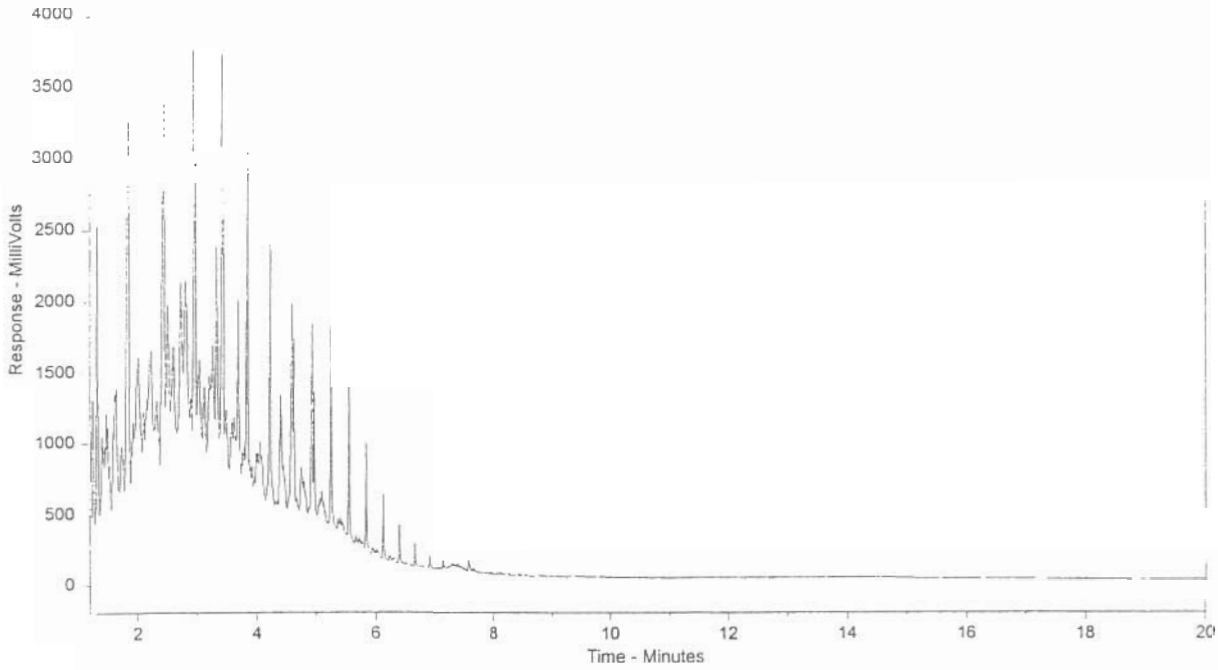
The Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and of four n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (October 2000 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.

ALS - Hydrocarbon Distribution Report - Canada-Wide Standard version

Client Sample ID:
ASL Sample ID: P6911-T--3
File Name: i:\chrom\gc05\data\gc05_18julcws.0012.RAW
Run Information: 7/19/2002 12:12:41 AM



-nC10----------nC16----------nC34----------nC50----------
<---Gasoline---|
|----------Diesel----------|
<----------Heavy Oils----------

Sample Amount = 8.4 (g or mL) Dilution Factor = 2.0

Canada-Wide Standard Method - Hydrocarbon Distribution Report

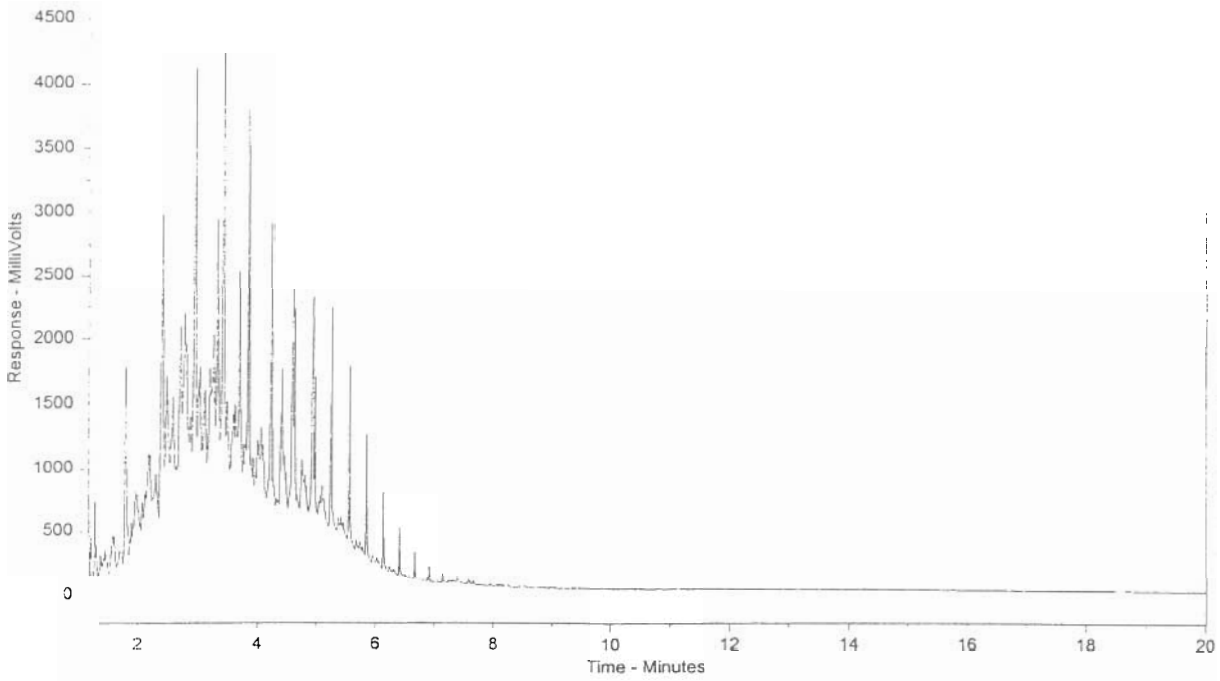
The Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and of four n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (October 2000 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.

ALS - Hydrocarbon Distribution Report - Canada-Wide Standard version

Client Sample ID:
ASL Sample ID: P6911-T--4
File Name: i:\chrom\gc05\data\gc05_18julcws.0014.RAW
Run Information: 7/19/2002 1:13:14 AM



-nC10----------nC16----------nC34----------nC50----------
<---Gasoline---| <----------Heavy Oils----------->
|----------Diesel----------|

Sample Amount = 8.9 (g or mL) Dilution Factor = 2.0

Canada-Wide Standard Method - Hydrocarbon Distribution Report

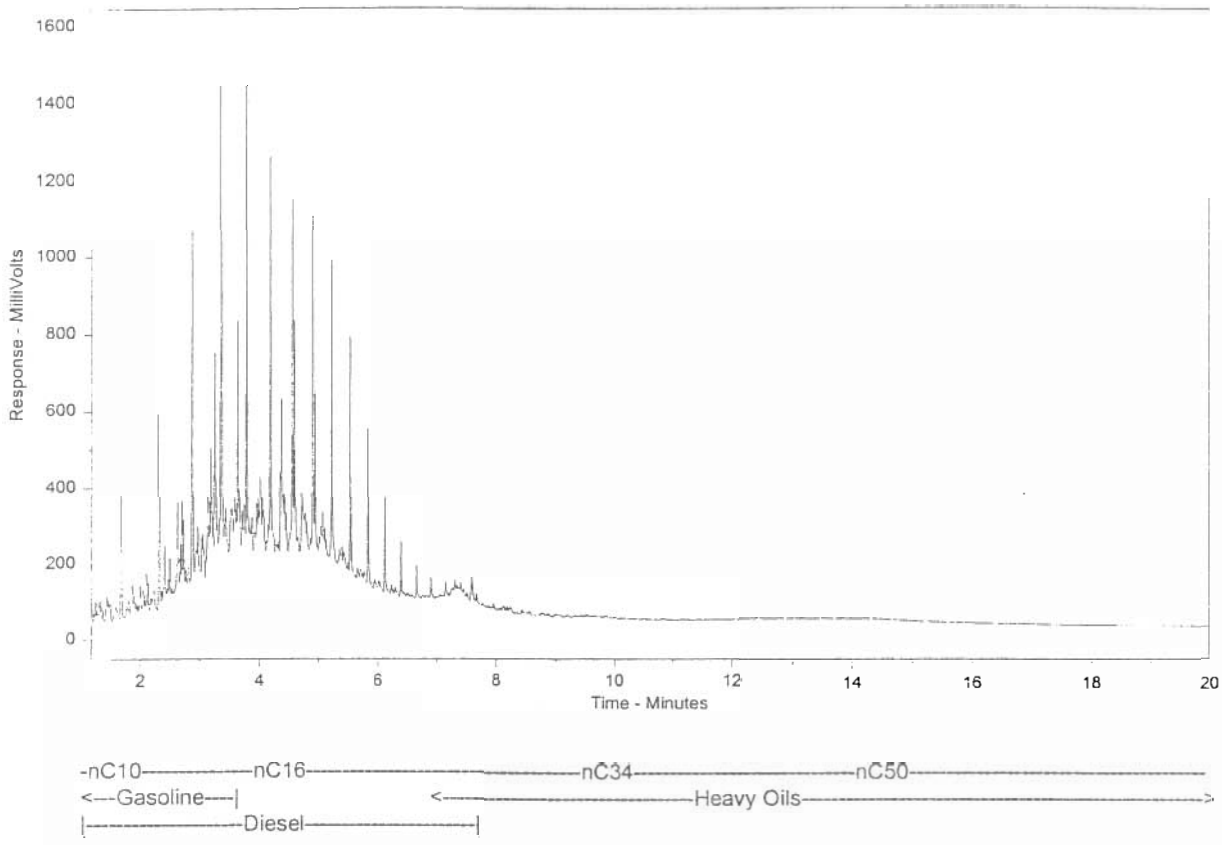
The Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and of four n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (October 2000 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.

ALS - Hydrocarbon Distribution Report - Canada-Wide Standard version

Client Sample ID:
ASL Sample ID: P6911-T--6
File Name: i:\chrom\gc05\data\gc05_18julcws.0016.RAW
Run Information: 7/19/2002 2:13:48 AM



Sample Amount = 6.9 (g or mL) Dilution Factor = 2.0

Canada-Wide Standard Method - Hydrocarbon Distribution Report

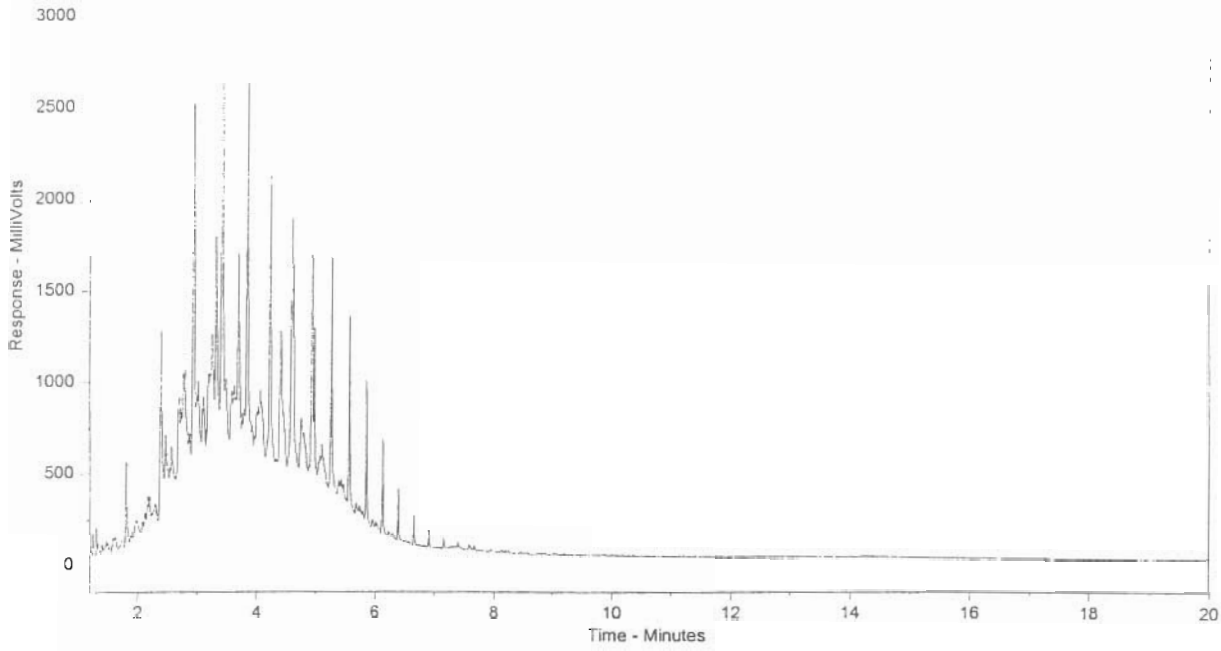
The Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and of four n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (October 2000 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.

ALS - Hydrocarbon Distribution Report - Canada-Wide Standard version

Client Sample ID:
ASL Sample ID: P6911-T--7
File Name: i:\chrom\gc05\data\gc05_18julcws.0017.RAW
Run Information: 7/19/2002 2:44:04 AM



-nC10----------nC16----------nC34----------nC50----------
<---Gasoline----| <----------Heavy Oils----------->
|----------Diesel----------|

Sample Amount = 9.4 (g or mL) Dilution Factor = 2.0

Canada-Wide Standard Method - Hydrocarbon Distribution Report

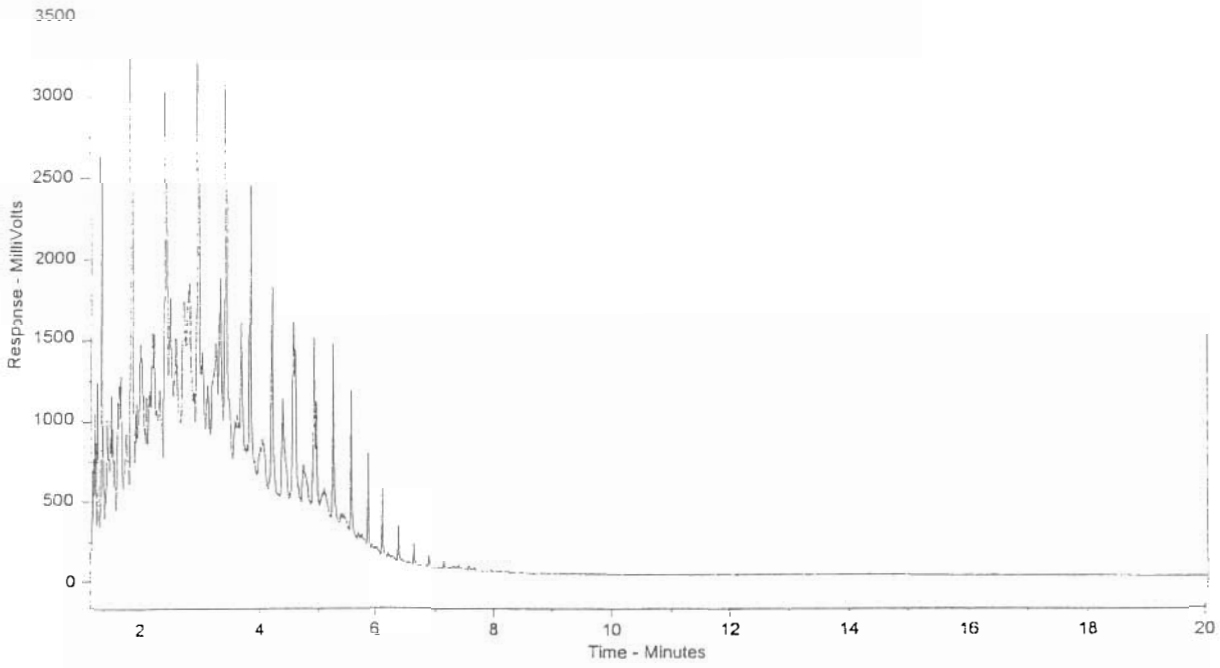
The Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and of four n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

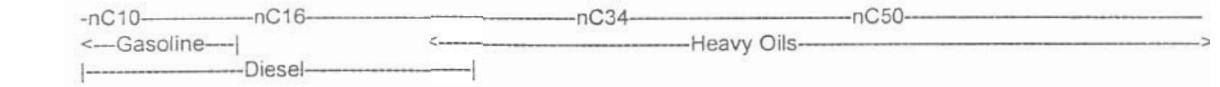
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (October 2000 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.

ALS - Hydrocarbon Distribution Report - Canada-Wide Standard version

Client Sample ID:
ASL Sample ID: P6911-T--8
File Name: i:\chrom\gc05\data\gc05_18julcws.0022.RAW
Run Information: 7/19/2002 5:15:12 AM





Sample Amount = 8.8 (g or mL) Dilution Factor = 2.0

Canada-Wide Standard Method - Hydrocarbon Distribution Report

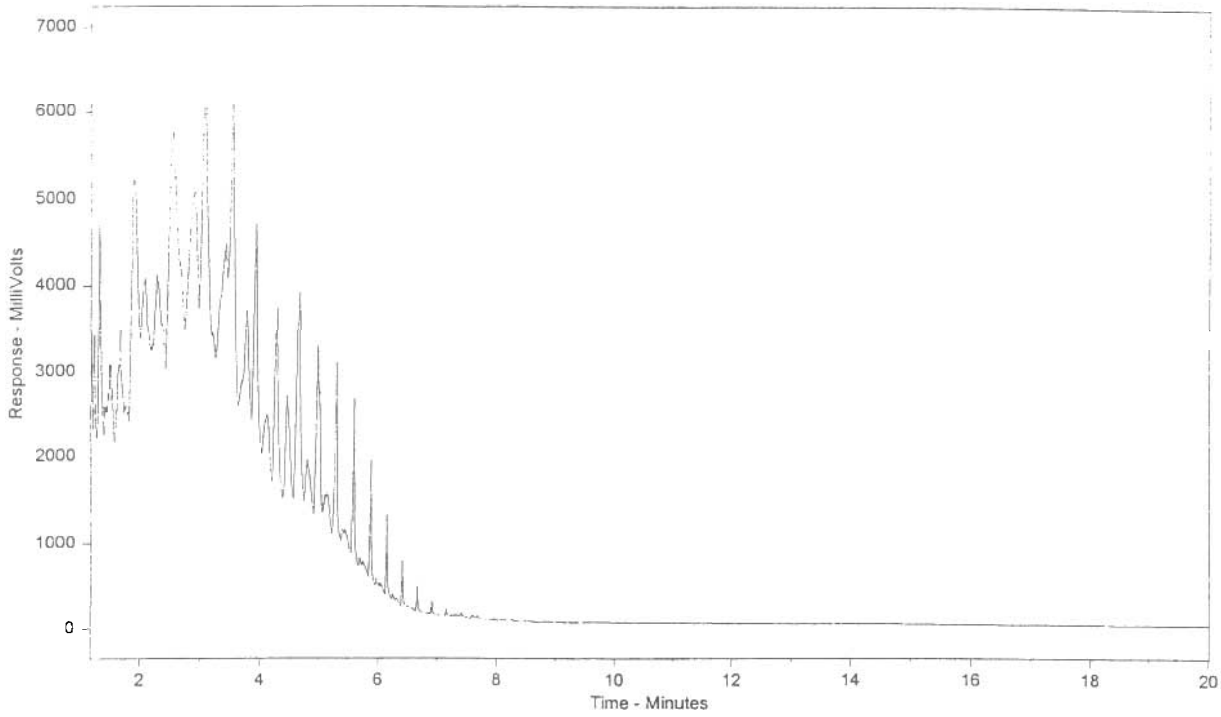
The Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and of four n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (October 2000 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.

ALS - Hydrocarbon Distribution Report - Canada-Wide Standard version

Client Sample ID:
ASL Sample ID: **P6911-T--10**
File Name: i:\chrom\gc05\data\gc05_18julcws.0023.RAW
Run Information: 7/19/2002 5:45:21 AM



-nC10----------nC16----------nC34----------nC50----------
<---Gasoline----| <----------Heavy Oils----------
|----------Diesel----------|

Sample Amount = 10.0 (g or mL) Dilution Factor = 2.0

Canada-Wide Standard Method - Hydrocarbon Distribution Report

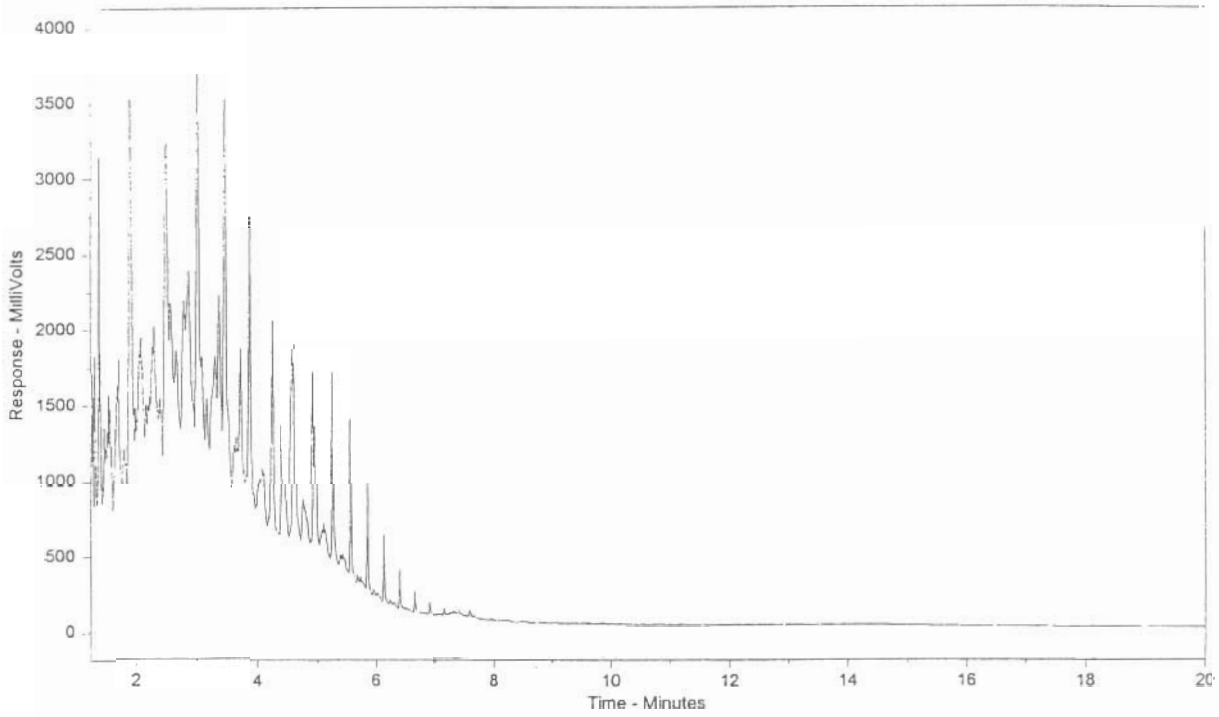
The Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and of four n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (October 2000 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.

ALS - Hydrocarbon Distribution Report - Canada-Wide Standard version

Client Sample ID:
ASL Sample ID: P6911-T--11
File Name: i:\chrom\gc05\data\gc05_18julcws.0025.RAW
Run Information: 7/19/2002 6:45:44 AM



Sample Amount = 9.4 (g or mL) Dilution Factor = 2.0

Canada-Wide Standard Method - Hydrocarbon Distribution Report

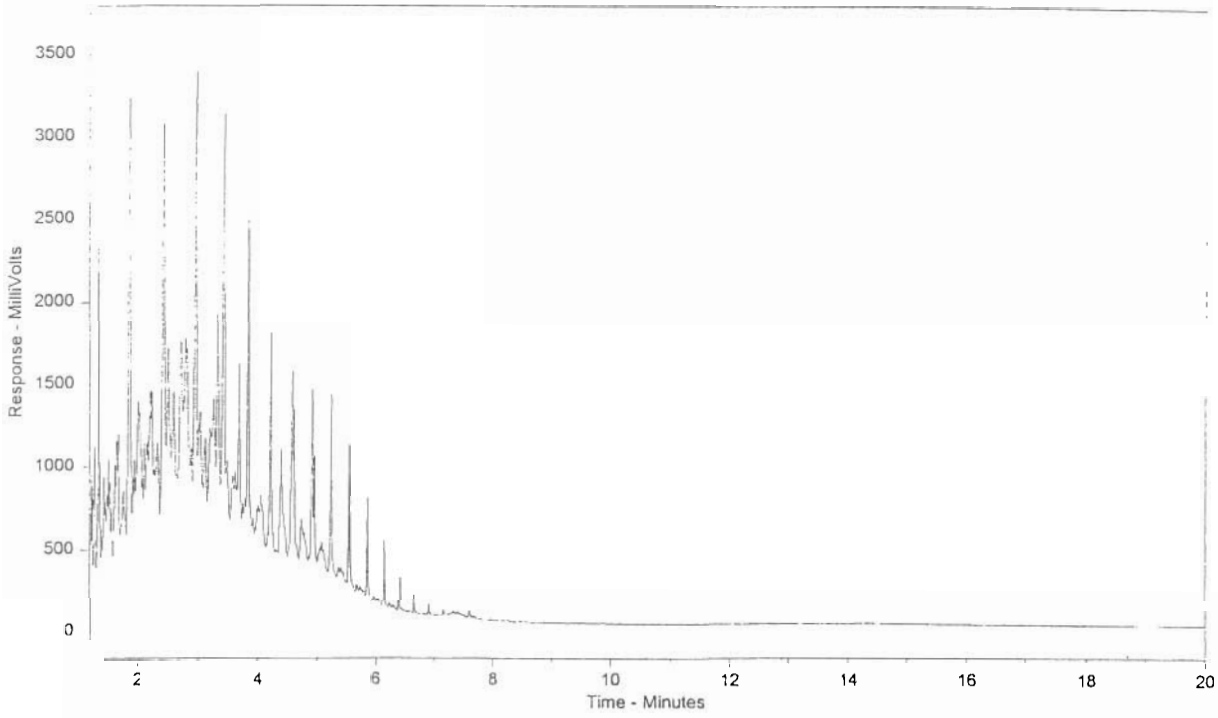
The Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and of four n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (October 2000 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.

ALS - Hydrocarbon Distribution Report - Canada-Wide Standard version

Client Sample ID:
ASL Sample ID: **P6911-T--12**
File Name: i:\chrom\gc05\data\gc05_18julcws.0026.RAW
Run Information: 7/19/2002 7:15:57 AM



-nC10----------nC16----------nC34----------nC50----------
<---Gasoline----| <----------Heavy Oils----------->
|----------Diesel----------|

Sample Amount = 7.2 (g or mL) Dilution Factor = 2.0

Canada-Wide Standard Method - Hydrocarbon Distribution Report

The Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and of four n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (October 2000 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.

CLIENT: Gartner Lee Limited
ADDRESS: Suite 490, 6400 Roberts St Burnaby
CONTACT: Arlene Laudrum / Alex Bath
TELEPHONE: 604 FAX:
PROJECT NAME/NO.: GLL 20935 - Polaris
QUOTE / P.O. NO.:
DATE SUBMITTED: 2002 07 10 ASL CONTACT: Brett Mack

Vancouver, BC
Canada V5L 1K5
TEL: (604) 253-4188
TOLL FREE: (800) 665-0243
FAX: (604) 253-6700
Specialists in
Environmental Chemistry
analytical service
laboratories ltd.

LAB USE ONLY: P691

FOR LAB USE ONLY

	SAMPLE IDENTIFICATION	DATE / TIME COLLECTED (Y M D)	MATRIX	T-1 & BETX	F2 - F4	F2 - F4 + PAHs		Grain Size								Hold	NOTES
1	TP02-01-1	02 07 09 6:00 AM/PM		X		X											
2	TP02-01-2	AM/PM			X												
3	TP02-01-3	AM/PM			X												
4	TP02-02-1	AM/PM			X			X									*
5	TP02-02-2	AM/PM														X	
6	TP02-02-3	AM/PM			X			X									#
7	TP02-03-1	AM/PM			X												
8	TP02-03-2	AM/PM			X												
9	TP02-03-3	AM/PM														X	
10	TP02-01-1	AM/PM			X												
11	TP02-11-2	AM/PM			X												
12	TP02-11-3	AM/PM			X												
		AM/PM															
		AM/PM															
		AM/PM															
		AM/PM															

TURN AROUND REQUIRED:
- ☐ ROUTINE (7 - 10 WORKING DAYS)
- ☐ RUSH (SPECIFY DATE):

SPECIAL INSTRUCTIONS:
email results to abath@gartnerlee.com
* bag for grain size included

SAMPLE CONDITION UPON RECEIPT:
- ☐ FROZEN
- ☐ COLD 14°
- ☐ AMBIENT

RELINQUISHED BY:	DATE / TIME	RECEIVED BY:	DATE / TIME
	DATE 2002 07 10 TIME 9:20 am		DATE TIME
RELINQUISHED BY:	DATE TIME	RECEIVED BY:	DATE 02 07 12 TIME 11:17

REPORT COPY