GROUNDWATER ANALYTICAL

October 3, 2005

Groundwater Analytical, Inc. P.O. Box 1200 228 Main Street Buzzards Bay, MA 02532

Telephone (508) 759-4441 FAX (508) 759-4475 www.groundwateranalytical.com

Mr. Kevin Trainer GeoInsight, Inc. 5 Lan Drive Second Floor Westford, MA 01886

LABORATORY REPORT

Project:

Buzzards Bay/3871-002

Lab ID:

87109

Received:

09-01-05

Dear Kevin:

Enclosed are the analytical results for the above referenced project. The project was processed for Standard turnaround.

This letter authorizes the release of the analytical results, and should be considered a part of this report. This report contains a sample receipt report detailing the samples received, a project narrative indicating project changes and non-conformances, a quality control report, and a statement of our state certifications.

The analytical results contained in this report meet all applicable NELAC standards, except as may be specifically noted, or described in the project narrative. This report may only be used or reproduced in its entirety.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Should you have any questions concerning this report, please do not hesitate to contact me.

Sincerely,

Eric H. Jensen

Operations Manager

EHJ/kh

Enclosures



Sample Receipt Report

Project:

Buzzards Bay/3871-002

Client:

Lab ID

87109-8

Con ID

Field ID

W3C04-P2-UIT-02

Container

C668168 120 mL Amber Glass

Geolnsight, Inc.

Lab ID: 87109

Delivery: Hand

Airbill: n/a

Lab Receipt: 09-01-05

Temperature: 6.8'C

Chain of Custody: Present Custody Seal(s): n/a

Notes

Lab ID	Field ID		Matrix	Sampled	Method	Total State Commission			Notes	
87109-1	W3C-04-P2-LIT 01	····	Soil	9/1/05 12:05	MA DEP EPH	with PAHs by	8270C-Mod SI	М		
Con ID	Container	Vendor	QC Lot	Preserv	QC Lot	Prep	Ship			
C668320	120 mL Amber Glass	Industrial	BX17923	None	n/a	n/a	n/a			
Lab ID	Field ID	Warren.	Matrix	Sampled	Method	. made Fryst His	Salah May 199		Notes	
87109-2	W1D01-P2-M-02		Soil	9/1/05 15:20	MA DEP EPH	with PAHs by	8270C-Mod SI	М		
Con ID	Container	Vendor	QC Lot	Preserv	QC Lot	Prep	Ship			
C668179	120 mL Amber Glass	Industrial	BX17912	None	n/a	n/a	n/a			
Lab ID	Field ID		Matrix	Sampled	Method				Notes	
87109-3	W1D01-P2-M-01		5oil	9/1/05 15:00	MA DEP EPH	with PAHs by	8270C-Mod SII	M		
Con ID	Container	Vendor	QC Lot	Preserv	QC Lot	Prep	Ship			And the second s
C668159	120 mL Amber Glass	Industrial	BX17912	None	n/a	n/a	n/a			
Lab ID	Field4D	que en en	Matrix	Sampled	Method	See See See			Notes	
87109-4	W3C04-P2-LIT-03 Soil 9/1/05 11:1:				MA DEP EPH	with PAHs by	8270C-Mod SII	М		
Con ID	Container	Vendor	QC Lot	Preserv	QC Lot	Prep	Ship			
C668161	120 mL Amber Glass	Industrial	BX17912	None	n/a	n/a	n/a			
Lab 1D	FieldiD	data.	Matrix	Sampled	Method	Augs Berg			Notes	
87109-5	W3C04-P2-UIT-01		Soil	9/1/05 11:50	MA DEP EPH	with PAHs by	8270C-Mod SI	М		
Con ID	Container	Vendor	QC Lot	Preserv	QC Lot	Prep	Ship			
C641980	500 mL Amber Glass	Proline	BX17255	None	n/a	n/a	n/a			
Lab ID	Field ID		Matrix	Sampled	Method				Notes	
87109-6	W3C04-P2-UIT-01 MS	5	Soil	9/1/05 11:50	MA DEP EPH			amoratic del la la lima del como de la como		
Con ID	Container	Vendor	QC Lot	Preserv	QC Lot	Prep	Ship			
C664619	500 mL Amber Glass	n/a	n/a	None	n/a	n/a	n/a			
Lab ID	Field ID		Matrix	Sampled	Method			Silver of the contract of	Notes	
	W3C04-P2-UIT-01 MS	,	Soil	9/1/05 11:50	PAHs by 8270	C-Mod SIM		······································		
87109-7					L					
87 109-7 Con ID	Container	Vendor	QC Lot	Preserv	QC Lot	Prep	Ship			

Lab ID	Field ID		Matrix	Sampled	Method				Notes	
87109-9	W3C04-P2-LIT-02		Soil	9/1/05 11:41	MA DEP EPH	with PAHs by	8270C-Mod S	IM		
Con ID	Container	Vendor	QC Lot	Preserv	QC Lot	Prep	Ship			
C668335	120 mL Amber Glass	Industrial	BX17922	None	n/a	n/a	n/a			
					***************************************			***************************************		

Method

QC Lot

MA DEP EPH with PAHs by 8270C-Mod SIM

Prep

Ship

Matrix

Soil

QC Lot

BX17912

Vendor

Industrial

Sampled

9/1/05 11:35

Preserv

None

Lab ID	Field ID	úr per	Matrix	Sampled	Method			Notes
87109-10	W3C04-P2-UIT-03		Soil	9/1/05 11:00	MA DEP EPH	with PAHs by 8	3270C-Mod S	IM
Con ID	Container	Vendor	QC Lot	Preserv	QC Lot	Prep	Ship	
C668165	120 mL Amber Glass	Industrial	BX17912	None	n/a	n/a	n/a	



Sample Receipt Report (Continued)

Project:

Lab ID: 87109

Buzzards Bay/3871-002

Client:

Geolnsight, Inc.

Delivery: Hand

Lab Receipt: 09-01-05

Airbill: n/a

Temperature: 6.8'C

Chain of Custody: Present

Custody Seal(s): n/a

Lab ID	Field ID	25,2-25,2-25,9-20	Matrix	Sampled	Method.		Symmetry	1, 154 (D. 101), 1245, 1546 <u>1</u>	Notes
87109-11	W1F05-P2-M-01		Soil	9/1/05 14:40	MA DEP EPH	with PAHs by	8270C-Mod S	IM	
Con ID	Container	Vendor	QC Lot	Preserv	QC Lot	Prep	Ship		
C668332	120 mL Amber Glass	Industrial	BX17922	None	n/a	n/a	n/a		

Lab ID	Field ID		Matrix	Sampled	Method			Notes
87109-12	W1E04-P2-UIT-02		Soil	9/1/05 12:52	MA DEP EPH	with PAHs by	8270C-Mod S	SIM
Con ID	Container	Vendor	QC Lot	Preserv	QC Lot	Prep	Ship	
C668318 1	120 mL Amber Glass	Industrial	BX17923	None	n/a	n/a	n/a	

Lab ID	Field ID		Matrix	Sampled	Method -	Annual Control of the	e de la composition		Notes
87109-13	W1E04-P2-LIT-02		Soil	9/1/05 12:59	MA DEP EPH	with PAHs by	8270C-Mod SI	M	
Con ID	Container	Vendor	QC Lot	Preserv	QC Lot	Prep	Ship		
C668180	120 mL Amber Glass	Industrial	BX17912	None	n/a	n/a	n/a		

Lab ID	Field ID		Matrix	Sampled	Method				Notes
87109-14	W1F05-P2-M-03		Soil	9/1/05 14:00	MA DEP EPH	with PAHs by i	8270C-Mod SI	М	
Con ID	Container	Vendor	QC Lot	Preserv	QC Lot	Prep	Ship		
C668175	120 mL Amber Glass	Industrial	BX17912	None	n/a	n/a	n/a		

Lab ID	Field#ID		Matrix	Sampled	Method			Notes
87109-15	W1F05-P2-M-02		Soil	9/1/05 14:25	MA DEP EPH	with PAHs by 8	8270C-Mod S	IM
Con ID	Container	Vendor	QC Lot	Preserv	QC Lot	Prep	Ship	
C668171	120 mL Amber Glass	Industrial	BX17912	None	n/a	n/a	n/a	

Lab ID	Field ID		Matrix	Sampled	Method			Notes
87109-16	DDD-P2-04		Soil	9/1/05 23:50	MA DEP EPH	with PAHs by 8	3270C-Mod S	IM
Con ID	Container	Vendor	QC Lot	Preserv	QC Lot	Prep	Ship	· ·
C668633	120 mL Amber Glass	Industrial	BX17916	None	n/a	n/a	n/a	

Lab ID	Field ID	AZIYAII	Matrix	Sampled	Method	White Maria		Notes
87109-17	DDD-P2-05		Soil	9/1/05 23:56	MA DEP EPH	with PAHs by	8270C-Mod S	IM
Con ID	Container	Vendor	QC Lot	Preserv	QC Lot	Prep	Ship	
C668314	120 mL Amber Glass	Industrial	BX17923	None	n/a	n/a	n/a	

Lab ID	Field ID		Matrix	Sampled	Method		arte e . L		Notes
87109-18	W3A05-P2-UIT-01		Soil	9/1/05 10:30	MA DEP EPH	with PAHs by	8270C-Mod S	IM	
Con ID	Container	Vendor	QC Lot	Preserv	QC Lot	Prep	Ship		
C668308	120 mL Amber Glass	Industrial	BX17923	None	n/a	n/a	n/a		

Lab ID	Field ID	13 - 4 Sa (1421) (143 14 - 4 Sa (1421) (143	Matrix	Sampled	Method	MADE:		Notes
87109-19	W3A05-P2-LIT-01		Soil	9/1/05 10:37	MA DEP EPH	with PAHs by 8	8270C-Mod S	IM
Con ID	Container	Vendor	QC Lot	Preserv	QC Lot	Prep	Ship	
C641986	500 mL Amber Glass	Proline	BX17255	None	n/a	n/a	n/a	

Lab ID	Field ID		Matrix	Sampled	Method		HORITA BOOK	Notes	System (Ca
87109-22	W3A05-P2-UIT-02		Soil	9/1/05 10:48	MA DEP EPH	with PAHs by 8	3270C-Mod S	IM	
Con ID	Container	Vendor	QC Lot	Preserv	QC Lot	Prep	Ship		Marie Commission of the Property of the American of the
C668322	120 mL Amber Glass	Industrial	BX17923	None	n/a	n/a	n/a		



Sample Receipt Report (Continued)

Client:

Project: Buzzards Bay/3871-002

Geolnsight, Inc.

Lab ID: 87109

Delivery: Hand

AirbiÍl: **n/a**

Temperature: 6.8°C

Chain of Custody: Present

Lab Receipt: 09-01-05 Custody Seal(s): n/a

V3A05-P2-LIT-02 Container O mL Amber Glass Field 1D V3A05-P2-UIT-03 Container O mL Amber Glass Field 1D V3A05-P2-LIT-03 Container O mL Amber Glass Field 1D V3A05-P2-LIT-03 Container O mL Amber Glass	Vendor Industrial Vendor Industrial Vendor Industrial	Soil QC Lot BX17923 Matrix Soil QC Lot BX17923 Matrix Soil QC Lot BX17923	9/1/05 10:53 Preserv None Sampled 9/1/05 11:24 Preserv None Sampled 9/1/05 11:30 Preserv	QC Lot n/a Method MA DEP EPH QC Lot n/a Method	Prep n/a	8270C-Mod SIM Ship n/a 8270C-Mod SIM Ship n/a	Notes	%.50y
Field ID //3A05-P2-UIT-03 Container //0 mL Amber Glass Field ID //3A05-P2-LIT-03 Container 0 mL Amber Glass Field ID	Vendor Industrial Vendor	Matrix Soil QC Lot BX17923 Matrix Soil QC Lot COLUMN	None Sampled 9/1/05 11:24 Preserv None Sampled 9/1/05 11:30	n/a Method MA DEP EPH QC Lot n/a Method	n/a with PAHs by Prep	n/a 8270C-Mod SIM Ship	Notes	4.50%
Field ID /3A05-P2-UIT-03 Container O mL Amber Glass Field ID /3A05-P2-LIT-03 Container O mL Amber Glass	Vendor Industrial	Matrix Soil QC Lot BX17923 Matrix Soil QC Lot	Sampled 9/1/05 11:24 Preserv None Sampled 9/1/05 11:30	Method MA DEP EPH QC Lot n/a Method	with PAHs by Prep	8270C-Mod SIM Ship	Notes	M. Targe
V3A05-P2-UIT-03 Container O mL Amber Glass Field ID V3A05-P2-LIT-03 Container O mL Amber Glass Field ID	Industrial Vendor	Soil QC Lot BX17923 -Matrix Soil QC Lot	9/1/05 11:24 Preserv None Sampled 9/1/05 11:30	MA DEP EPH QC Lot n/a Method	Prep	Ship	Notes	
Container O mL Amber Glass Field 1D /3A05-P2-LIT-03 Container O mL Amber Glass	Industrial Vendor	QC Lot BX17923 Matrix Soil QC Lot	Preserv None Sampled 9/1/05 11:30	QC Lot n/a	Prep	Ship		
Field ID /3A05-P2-LIT-03 Container 0 mL Amber Glass	Industrial Vendor	Matrix Soil QC Lot	None Sampled 9/1/05 11:30	n/a Method		 		
Field ID /3A05-P2-LIT-03 Container 0 mL Amber Glass	Vendor	Matrix Soil QC Lot	Sampled 9/1/05 11:30	Method	n/a	n/a		
/3A05-P2-LIT-03 Container 0 mL Amber Glass Field 1D	Vendor	Soil QC Lot	9/1/05 11:30	1 1 2 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		.,,,		
Container 0 mL Amber Glass		QC Lot		MA DEP EDM			Notes	ŊŁS:
0 mL Amber Glass			Preserv	INVIDER FELL	with PAHs by	8270C-Mod SIM		
Field ID	Industrial	BX17923	1	QC Lot	Prep	Ship		
<u> </u>	Was serviced the same		None	n/a	n/a	n/a		
3C04-P2-1 IIT-01 145		Matrix	Sampled	Method	74-15-11		Notes	
2007-12-011-01 MB	5D	Soil	9/1/05 11:50	MA DEP EPH				
Container	Vendor	QC Lot	Preserv	QC Lot	Prep	Ship		
250 mL Glass	n/a	n/a	None	n/a	n/a	n/a		
Field ID		Matrix	Sampled	Method			Notes	10 T 40
	;D			Windship Co., Trans.				
						Shin		
250 mL Glass	n/a	n/a	None	n/a	n/a	n/a		
er of district	20 23545 73	ona a Seus e el		I a contract out to				
				Commence afficial safe conflic	The state of the state of		Notes	17-54
						CI:		
						 		
250 IIIE Glass	100	11/4	None	IVa	11/4	Iva		
Field 1D	we in the state	Matrix	Sampled	Method			Notes	Barre e
3C-04-P2-LIT-01 MS		Soil	9/1/05 12:05	PAHs by 8270	C-Mod SIM			
Container	Vendor	QC Lot	Preserv	QC Lot	Prep	Ship		
250 mL Glass	n/a	n/a	None	n/a	n/a	n/a		
Field ID		Matrix	Sampled	Method			Notes	s 12.
3C-04-P2-LIT-01 MS!	D	Soil	9/1/05 12:05	MA DEP EPH	<u> </u>			
Container	Vendor	QC Lot	Preserv	QC Lot	Prep	Ship		
250 mL Glass	n/a	n/a	None	n/a	n/a	n/a		
Elejania.	and have dealer	Saali. I		40.00.01				
		A-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1			G-65/63 C-0-11		INOTES	
						0.1		
250 mL Glass	Vendor n/a	QC Lot	Preserv None	QC Lot	Prep n/a	Ship n/a		
333333333333333333333333333333333333333	Field ID 3C04-P2-UIT-01 MS Container 250 mL Glass Field ID 3C-04-P2-LIT-01 MS Container	Field ID 3C04-P2-UIT-01 MSD Container Vendor 250 mL Glass n/a Field ID 3C-04-P2-LIT-01 MS Container Vendor 250 mL Glass n/a Field ID 3C-04-P2-LIT-01 MS Container Vendor 250 mL Glass n/a Field ID 3C-04-P2-LIT-01 MSD Container Vendor 250 mL Glass n/a Field ID 3C-04-P2-LIT-01 MSD Container Vendor 250 mL Glass n/a Field ID 3C-04-P2-LIT-01 MSD Container Vendor 250 mL Glass N/a	Field ID	Field 1D Matrix Sampled 3C04-P2-UIT-01 MSD Soil 9/1/05 11:50 Container Vendor QC Lot Preserv 250 mL Glass n/a n/a None Field ID Matrix Sampled 3C-04-P2-LIT-01 MS Soil 9/1/05 12:05 Container Vendor QC Lot Preserv 250 mL Glass n/a None Field 1D Matrix Sampled 3C-04-P2-LIT-01 MS Soil 9/1/05 12:05 Container Vendor QC Lot Preserv 250 mL Glass n/a None Field 1D Matrix Sampled 3C-04-P2-LIT-01 MSD Soil 9/1/05 12:05 Container Vendor QC Lot Preserv 250 mL Glass n/a None Field ID Matrix Sampled 3C-04-P2-LIT-01 MSD Soil 9/1/05 12:05 Container Vendor QC Lot Preserv 250 mL Glass	Field ID Matrix Sampled Method 3C04-P2-UIT-01 MSD Soil 9/1/05 11:50 PAHs by 8270 Container Vendor QC Lot Preserv QC Lot 250 mL Glass n/a n/a None n/a Field ID Matrix Sampled Method 3C-04-P2-LIT-01 MS Soil 9/1/05 12:05 MA DEP EPH Container Vendor QC Lot Preserv QC Lot 250 mL Glass n/a n/a None n/a 3C-04-P2-LIT-01 MS Soil 9/1/05 12:05 PAHs by 8270 Container Vendor QC Lot Preserv QC Lot 250 mL Glass n/a n/a None n/a BC-04-P2-LIT-01 MSD Soil 9/1/05 12:05 MA DEP EPH Container Vendor QC Lot Preserv QC Lot BC-04-P2-LIT-01 MSD Soil 9/1/05 12:05 MA DEP EPH Container Vendor QC Lot Preserv QC Lot	Field 1D Matrix Sampled Method 3C04-P2-UIT-01 MSD Soil 9/1/05 11:50 PAHs by 8270C-Mod SIM Container Vendor QC Lot Preserv QC Lot Prep 250 mL Glass n/a n/a None n/a n/a Field ID Matrix Sampled Method Method 3C-04-P2-LIT-01 MS Soil 9/1/05 12:05 MA DEP EPH Container Vendor QC Lot Preserv QC Lot Prep 250 mL Glass n/a n/a None n/a Method 3C-04-P2-LIT-01 MS Soil 9/1/05 12:05 PAHs by 8270C-Mod SIM Container Vendor QC Lot Preserv QC Lot Prep 250 mL Glass n/a n/a None n/a n/a R-04-P2-LIT-01 MSD Soil 9/1/05 12:05 MA DEP EPH Container Vendor QC Lot Preserv QC Lot Prep Container Vendor QC Lot <t< td=""><td> Field ID</td><td> Field ID</td></t<>	Field ID	Field ID



Field ID:

W3C-04-P2-LIT 01

Project:

Buzzards Bay/3871-002

Client:

Geolnsight, Inc.

Laboratory ID:

87109-01

Sampled: Received:

Analyzed (AL):

09-01-05 12:05 09-01-05 21:15 09-15-05 07:00

09-23-05 22:15

09-23-05 22:59

Analyzed (AR): Analyst:

Extracted:

MM

Matrix: Container: Soil

120 mL Amber Glass

Preservation:

Cool

QC Batch ID:

EP-2147-M GC-7 HP 5890

Instrument ID: Sample Weight:

15 g

Final Volume:

1 mL

% Solids:

88

Yes

No

Aliphatic Dilution Factor: 1 Aromatic Dilution Factor: 1

EPH Ranges	Concentration No	ites Units	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	33
n-C19 to n-C36 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	33
n-C11 to n-C22 Aromatic Hydrocarbons † 0	BRL	mg/Kg	33

Unadjusted n-C	11 to n-C22 Aromatic Hydro	ocarbons †		BRL	mg/Kg	33
QC Surrogate C	ompound	Spiked	Measured	Recovery	Qı	Climits
Fractionation:	2-Fluorobiphenyl	3.0	2.0	68 %	40	- 140 %
	2-Bromonaphthalene	3.0	2.2	74 %	40	- 140 %
Extraction:	Chloro-octadecane	3.0	1.9	65 %	40	- 140 %
	ortho-Terphenyl	3.0	2.1	71 %	40	- 140 %

4 100 100 100		OA/	OC Certification

- 1. Were all QA/QC procedures required by the method followed?
- 2. Were all performance/acceptance standards for the required QA/QC procedures achieved?

3. Were any significant modifications made to the method, as specified in Section 11.3.1.1?

Method non-conformances indicated above are detailed below on this data report, or in the accompanying project narrative and project quality control report. Release of this data is authorized by the accompanying signed project cover letter. The accompanying cover letter, project narrative and quality control report are considered part of this data report.

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004).

Sample extraction performed by microwave accelerated solvent extraction technique. Results are reported on a dry weight basis.

- Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.
- Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.
- n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations.



Matrix Spike and Matrix Spike Duplicate MA DEP Extractable Petroleum Hydrocarbons by GC/FID

Field ID: Project:

W3C-04-P2-LIT 01

Client:

Buzzards Bay/3871-002 GeoInsight, Inc.

Matrix:

Soil

Container: Preservation: 250 mL Glass

Cool

Laboratory ID: Sampled:

Analyst:

QC Batch ID:

Instrument ID:

Sample Weight:

Final Volume:

% Solids:

09-01-05 12:05 09-01-05 21:15 Received: 09-15-05 07:00 Extracted: Analyzed (AL): Analyzed (AR):

09-24-05 22:15 09-24-05 22:59 мм

Parent Sample

87109-01

EP-2147-M GC-7 HP 5890

15 g 88

Aliphatic Dilution Factor: 1 Aromatic Dilution Factor: 1 Matrix Spike 87109-28 09-01-05 12:05 09-01-05 21:15 09-15-05 07:00

09-28-05 16:39

09-28-05 17:23

GC-9 Agilent 6890

мм

15 g

1 mL

88

EP-2148-M

87109-30 09-01-05 12:05 09-01-05 21:15 09-15-05 07:00 09-28-05 18:07 09-28-05 18:52 мм

Spike Duplicate

EP-2148-M GC-9 Agilent 6890

CAS Number	Analyte	Unspiked	MS	:MS	MS	MSD	MSD	MSD	RPD	QC Lir	nits
		Sample	Spiked	Measured	Recovery	Spiked	Measured	Recovery	ha sira	Spike	RPD
111-84-2	л-Nonane (С _в)	(mg/Kg) BRL	(mg/Kg) 3.7	(mg/Kg)	49 %	(mg/Kg)	(mg/Kg) 2.0	55 %	10 %	40 - 140%	50.0
	n-Decane (C ₁₀)	BRL		1.8		3.6		 	9 %		50 %
	n-Dodecane (C ₁₂)		3.7	2.2	60 %	3.6	2.4	66 %		40 - 140%	50 %
	n -DodeCarle (C_{12})	BRL	3.7	2.2	59 %	3.6	2.4	67 %	12 %	40 - 140%	50 %
	n-Hexadecane (C ₁₄)	BRL	3.7	2.3	61 %	3.6	2.5	68 %	11 %	40 - 140%	50 %
	. 10	BRL	3.7	2.5	68 %	3.6	2.6	72 %	7 %	40 - 140%	50 %
	n-Octadecane (C ₁₈)	BRL	3.7	2.9	79 %	3.6	3.0	83 %	9 %	40 - 140%	50 %
	n-C9 to n-C18 Group	BRL	22	14	64 %	22	15	68 %	5 %	40 - 140%	50 %
	n-Nonadecane (C ₁₉)	BRL	3.7	3.0	81 %	3.6	3.1	86 %	6 %	40 - 140%	50 %
	n-Eicosane (C ₂₀)	BRL	3.7	3.0	81 %	3.6	3.2	86 %	6 %	40 - 140%	50 %
	n -Docosane (C ₂₂)	BRL	3.7	3.0	81 %	3.6	3.2	87 %	7 %	40 - 140%	50 %
	n -Tetracosane (C ₂₄)	BRL	3.7	3.0	81 %	3.6	3.2	87 %	7 %	40 - 140%	50 %
1	n-Hexacosane (C ₂₆)	BRL	3.7	3.0	80 %	3.6	3.1	86 %	7 %	40 - 140%	50 %
	n-Octacosane (C ₂₈)	BRL	3.7	2.9	78 %	3.6	3.1	84 %	8 %	40 - 140%	50 %
638-68-6	n-Triacontane (C ₃₀)	BRL	3.7	2.9	77 %	3.6	3.0	83 %	8 %	40 - 140%	50 %
630-06-8	n-Hexatriacontane (C ₃₆)	BRL	3. <i>7</i>	2.3	61 %	3.6	2.4	65 %	7 %	40 - 140%	50 %
n/a	n-C19 to n-C36 Group	BRL	30	23	77 %	29	24	83 %	7 %	40 - 140%	50 %
91-20-3	Naphthalene	BRL	3. <i>7</i>	2.0	54 %	3.6	2.4	66 %	20 %	40 - 140%	50 %
91-57-6	2-Methylnaphthalene	BRL	3.7	2.1	57 %	3.6	2.5	70 %	21 %	40 - 140%	50 %
208-96-8	Acenaphthylene	BRL	3.7	2.3	63 %	3.6	2.7	75 %	18 %	40 - 140%	50 %
83-32-9	Acenaphthene	BRL	3 <i>.7</i>	2.1	58 %	3.6	2.5	70 %	16 %	40 - 140%	50 %
86-73-7	Fluorene	BRL	3.7	2.4	65 %	3.6	2.7	73 %	12 %	40 - 140%	50 %
85-01-8	Phenanthrene	BRL	3.7	2.7	74 %	3.6	2.9	79 %	7 %	40 - 140%	50 %
120-12-7	Anthracene	BRL	3.7	3.1	84 %	3.6	3.2	89 %	6 %	40 - 140%	50 %
206-44-0	Fluoranthene	BRL	3.7	3.2	86 %	3.6	3.3	91 %	7 %	40 - 140%	50 %
129-00-0	Pyrene	BRL	3.7	3.2	85 %	3.6	3.3	91 %	7 %	40 - 140%	50 %
56-55-3	Benzo[a]anthracene	BRL	3.7	3.2	87 %	3.6	3.4	94 %	8 %	40 - 140%	50 %
218-01-9	Chrysene	BRL	3.7	3.5	95 %	3.6	3.8	100 %	9 %	40 - 140%	50 %
205-99-2	Benzo[b]fluoranthene	BRL	3.7	2.9	77 %	3.6	3.0	83 %	8 %	40 - 140%	50 %
207-08-9	Benzo[k]fluoranthene	BRL	3.7	3.3	89 %	3.6	3.6	98 %	9 %	40 - 140%	50 %
50-32-8	Benzolajpyrene	BRL	3.7	3.0	81 %	3.6	3.2	88 %	8 %	40 - 140%	50 %
	Indeno[1,2,3-c,d]pyrene	BRL	3.7	2.1	56 %	3.6	2.2	61 %	8 %	40 - 140%	50 %
	Dibenzo(a,h)anthracene	BRL	3.7	2.6	71 %	3.6	2.8	77 %	9 %	40 - 140%	50 %
	Benzo[g,h,i]perylene	BRL	3.7	1.9	52 %	3.6	2.1	56 %	9 %	40 - 140%	50 %
	PAH Group	BRL	63	46	73 %	61	50	82 %	10 %	40 - 140%	50 %

QC Surrogate C	Sempound			Surr	ogate Recove	эгу			QC Limits
Fractionation:	2-Fluorobiphenyl	68%	3.0	2.1	72%	2.9	2.3	79%	40 - 140 %
	2-Bromonaphthalene	74%	3.0	2.0	66%	2.9	2.3	78%	40 - 140 %
Extraction:	Chloro-octadecane	65%	3.0	2.3	77%	2.9	2.4	83%	40 - 140 %
	ortho -Terphenyl	71%	3.0	2.2	73%	2.9	2.2	77%	40 - 140 %

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (1998).

Sample extraction performed by microwave accelerated solvent extraction. Results are reported on a dry weight basis.

Report Notations:



Field ID:

W3C-04-P2-LIT 01

Matrix:

Soil

Project:

Buzzards Bay/3871-002

Container: Preservation: 120 mL Amber Glass

Client:

Geolnsight, Inc.

ricscrvation

Cool

Laboratory ID: Sampled:

87109-01

QC Batch ID:

EP-2147-M

Received:

09-01-05 12:05 09-01-05 21:15 Instrument ID: Sample Volume:

MS-6 HP 6890

Extracted:

09-15-05 07:00

Final Volume:

15 g

Analyzed:

09-13-05 07:00

Percent Solids:

1 mL 88

Analyst:

JJT

Dilution Factor:

CAS Number	Analyte	Concentration Notes	Units	Reporting Limit
91-20-3	Naphthalene	7 j	ug/Kg	11
91-57-6	2-Methylnaphthalene	BRL	ug/Kg	11
208-96-8	Acenaphthylene	BRL	ug/Kg	11
83-32-9	Acenaphthene	BRL	ug/Kg	11
86-73-7	Fluorene	BRL	ug/Kg	11
85-01-8	Phenanthrene	13	ug/Kg	11
120-12-7	Anthracene	10 j	ug/Kg	11
206-44-0	Fluoranthene	25	ug/Kg	11
129-00-0	Pyrene	21	ug/Kg	11
56-55-3	Benzo[a]anthracene	BRL	ug/Kg	11
218-01-9	Chrysene	12	ug/Kg	11
205-99-2	Benzo[b]fluoranthene	BRL	ug/Kg	11
207-08-9	Benzo[k]fluoranthene	BRL	ug/Kg	11
50-32-8	Benzo[a]pyrene	BRL	ug/Kg	11
193-39-5	Indeno[1,2,3-c,d]pyrene	10 j	ug/Kg	11
53-70-3	Dibenzo[a,h]anthracene	BRL	ug/Kg	11
191-24-2	Benzo[g,h,i]perylene	BRL	ug/Kg	11

QC Surrogate Compound	Spiked	Measured	Recovery	QC Limits
ortho-Terphenyl	3,000	2,300	79 %	40 - 140 %

Method Reference:

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).

Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method.

Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons. Sample extraction performed by EPA Method 3546. Results are reported on a dry weight basis.

Report Notations:

L Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.

j Indicates an estimated value detected below the reporting limit for the analyte.



Matrix Spike and Matrix Spike Duplicate **EPA Method 8270C**

Field ID:

W3C-04-P2-LIT-01

Project:

Buzzards Bay/3871-002

Client: Matrix:

GeoInsight, Inc.

Container:

Soil

Preservation:

250 mL Glass

Cool

Laboratory ID:

Sampled: Received: Extracted: Analyzed:

Analyst:

QC Batch ID:

Instrument ID:

Final Volume:

Percent Solids:

Dilution Factor:

Sample Weight:

09-01-05 11:50

09-01-05 21:15 09-15-05 07:00 09-21-05 13:46 СММ

Parent Sample

87109-01

EP-2147-M MS 6 HP 6890

15 g 1 ml 88

MS 6 HP 6890 16g 1 mL 88

1

EP-2148-M

CMM

Matrix Spike

09-01-05 11:50

09-01-05 21:15

09-15-05 23:00

10-05-05 12:55

87109-29

MS 6 HP 6890 15 g 1 mL

EP-2148-M

CMM

Spike Duplicate

09-01-05 11:50

09-01-05 21:15

09-15-05 23:00

10-05-05 13:34

87109-31

88 1

CAS Number	Analyte	Unspiked	MS	MS Measured (ug/Kg)	M5	MSD	MSD	MSD	RPD	QC Lin	nits -
		Sample (ug/Kg)	Spiked (ug/Kg)		Recovery	Spiked (ug/Kg)	Measured (ug/Kg)	Recovery		Spike	RPD
91-20-3	Naphthalene	7	360	200	55 %	370	200	55 %	1 %	40 - 140%	50 %
91-57-6	2-Methylnaphthalene	BRL	360	230	63 %	370	230	62 %	1 %	40 - 140%	50 %
208-96-8	Acenaphthylene	BRL	360	250	69 %	370	250	67 %	1 %	40 - 140%	50 %
83-32-9	Acenaphthene	BRL	360	270	74 %	370	260	72 %	1 %	40 - 140%	50 %
86-73-7	Fluorene	BRL	360	260	71 %	370	250	67 %	3 %	40 - 140%	50 %
85-01-8	Phenanthrene	13	360	260	67 %	370	230	64 %	3 %	40 - 140%	50 %
120-12-7	Anthracene	10	360	260	71 %	370	250	67 %	3 %	40 - 140%	50 %
206-44-0	Fluoranthene	25	360	310	79 %	370	290	79 %	0 %	40 - 140%	50 %
129-00-0	Pyrene	21	360	290	75 %	370	280	76 %	1 %	40 - 140%	50 %
56-55-3	Benzo[a]anthracene	BRL	360	300	82 %	370	300	82 %	1 %	40 - 140%	50 %
218-01-9	Chrysene	12	360	300	78 %	370	290	79 %	2 %	40 - 140%	50 %
205-99-2	Benzo[b]fluoranthene	BRL	360	300	81 %	370	300	82 %	1 %	40 - 140%	50 %
207-08-9	Benzo[k]fluoranthene	BRL	360	310	83 %	370	310	85 %	2 %	40 - 140%	50 %
50-32-8	Benzo[a]pyrene	BRL	360	300	83 %	370	300	83 %	1%	40 - 140%	50 %
193-39-5	Indeno[1,2,3-c,d]pyrene	10	360	230	61 %	370	230	63 %	2 %	40 - 140%	50 %
53-70-3	Dibenzo[a,h]anthracene	BRL	360	220	60 %	370	230	62 %	3 %	40 - 140%	50 %
191-24-2	Benzo[g,h,i]perylene	BRL	360	220	60 %	370	230	62 %	3 %	40 - 140%	50 %

ortho-Terphenyl Method Reference:

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996). Sample extraction performed by EPA Method 3546. Results are reported on a dry weight basis.

2,000

2,900

79%

Report Notations:

Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.

2,900

40 - 140 %



Field ID:

W1D01-P2-M-02

Project:

Buzzards Bay/3871-002

Client:

Geolnsight, Inc.

09-01-05 15:20

09-01-05 21:15

09-15-05 07:00

09-23-05 23:42

87109-02

Laboratory ID: Sampled:

Received: Extracted:

Analyzed (AL): Analyzed (AR):

Analyst:

09-24-05 00:26 MM

Cool

15 g

1 mL

81

EP-2147-M

GC-7 HP 5890

Container:

120 mL Amber Glass

Preservation:

OC Batch ID:

Instrument ID:

Sample Weight:

Final Volume:

% Solids:

Aliphatic Dilution Factor: 1 Aromatic Dilution Factor: 1

EPH Ranges C	oncentration No	tes Units	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	36
n-C19 to n-C36 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	36
n-C11 to n-C22 Aromatic Hydrocarbons † °	BRL	mg/Kg	36
Upadjusted p-C11 to p-C22 Aromatic Hydrocarbons †	RRI	mg/Kg	26

QC Surrogate C	ompound	Spiked	Measured	Recovery	QC Limits
Fractionation:	2-Fluorobiphenyl	3.2	2.0	62 %	40 - 140 %
	2-Bromonaphthalene	3.2	2.1	67 %	40 - 140 %
Extraction:	Chloro-octadecane	3.2	1.9	59 %	40 - 140 %
	ortho-Terphenyl	3.2	2.0	62 %	40 - 140 %

QA/QC Certification

- 1. Were all QA/QC procedures required by the method followed?
- 2. Were all performance/acceptance standards for the required QA/QC procedures achieved?

Yes

3. Were any significant modifications made to the method, as specified in Section 11.3.1.1?

No

Method non-conformances indicated above are detailed below on this data report, or in the accompanying project narrative and project quality control report. Release of this data is authorized by the accompanying signed project cover letter. The accompanying cover letter, project narrative and quality control report are considered part of this data report.

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004).

Sample extraction performed by microwave accelerated solvent extraction technique. Results are reported on a dry weight basis.

- Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.
- Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.
- n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations.



Field ID:

W1D01-P2-M-02

Matrix:

Soil

Project:

Buzzards Bay/3871-002

Container:

120 mL Amber Glass

Client:

Geolnsight, Inc.

Preservation:

Cool

C....

Geomsigne, in

QC Batch ID:

EP-2147-M

Laboratory ID: Sampled:

87109-02 09-01-05 15:20 09-01-05 21:15

Instrument ID: Sample Volume: MS-6 HP 6890 15 g

Received: Extracted: Analyzed: 09-01-05 21:15 09-15-05 07:00 09-21-05 14:25

Final Volume:

1 mL 81

1

Analyst:

ijΤ

Percent Solids: Dilution Factor:

CAS Number	Analyte	Concentration Notes	_ Units	Reporting Limit
91-20-3	Naphthalene	BRL	ug/Kg	12
91-57-6	2-Methylnaphthalene	BRL	ug/Kg	12
208-96-8	Acenaphthylene	BRL	ug/Kg	12
83-32-9	Acenaphthene	BRL	ug/Kg	12
86-73-7	Fluorene	BRL	ug/Kg	12
85-01-8	Phenanthrene	BRL	ug/Kg	12
120-12-7	Anthracene	7 j	ug/Kg	12
206-44-0	Fluoranthene	6 j	ug/Kg	12
129-00-0	Pyrene	11 j	ug/Kg	12
56-55-3	Benzo[a]anthracene	10 j	ug/Kg	12
218-01-9	Chrysene	10 j	ug/Kg	12
205-99-2	Benzo[b]fluoranthene	10 j	ug/Kg	12
207-08-9	Benzo[k]fluoranthene	BRL	ug/Kg	12
50-32-8	Benzo[a]pyrene	10 j	ug/Kg	12
193-39-5	Indeno[1,2,3-c,d]pyrene	13.	ug/Kg	12
53-70-3	Dibenzo[a,h]anthracene	18	ug/Kg	12
191-24-2	Benzo[g,h,i]perylene	8 j	ug/Kg	12

QC Surrogate Compound	Spiked	Measured	Recovery	 -QC Limits
ortho-Terphenyl	3,200	2,100	65 %	40 - 140 %

Method Reference:

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).

Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method.

Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons. Sample extraction performed by EPA Method 3546. Results are reported on a dry weight basis.

Report Notations:

BRL Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.

Indicates an estimated value detected below the reporting limit for the analyte.



Field ID:

W1D01-P2-M-01

Matrix:

Soil

Project:

Buzzards Bay/3871-002

Container:

120 mL Amber Glass

Client:

Geolnsight, Inc.

Preservation:

Cool

Sampled:

87109-03 09-01-05 15:00

QC Batch ID: Instrument ID: EP-2157-M GC-9 Agilent 6890

Received:

09-01-05 21:15

Sample Weight:

16 g

Extracted: Analyzed (AL):

Laboratory ID:

09-26-05 13:00 09-28-05 06:30 Final Volume:

1 mL

Analyzed (AR):

09-28-05 07:14

% Solids:

79

Analyst:

MM

Aliphatic Dilution Factor: 1

Aromatic Dilution Factor: 1

EPH Ranges	Concentration No	tes Units	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	36
n-C19 to n-C36 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	36
n-C11 to n-C22 Aromatic Hydrocarbons † °	BRL	mg/Kg	36

<u>Unadjusted</u> n-C11 to n-C22 Aromatic Hydrocarbons [†]				BRL	mg/Kg	36
QC Surrogate C	ompound	Spiked	Measured	Recovery	e e Q	CLimits
Fractionation:	2-Fluorobiphenyl	3.2	2.4	74 %	40	- 140 %
	2-Bromonaphthalene	3.2	2.4	73 %	40	1 - 140 %
Extraction:	Chloro-octadecane	3.2	2.6	80 %	40	- 140 %
	antha Tambanul	2.2	2.0	DO 0/	AC	1.40.0/

QA/QC Certification

- 1. Were all QA/QC procedures required by the method followed?
- 2. Were all performance/acceptance standards for the required QA/QC procedures achieved?

Yes Yes

3. Were any significant modifications made to the method, as specified in Section 11.3.1.1?

Method non-conformances indicated above are detailed below on this data report, or in the accompanying project narrative and project quality control report. Release of this data is authorized by the accompanying signed project cover letter. The accompanying cover letter, project narrative and quality control report are considered part of this data report.

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004).

Sample extraction performed by microwave accelerated solvent extraction technique. Results are reported on a dry weight basis.

- Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.
- Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.
- n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations.



Field ID:

W1D01-P2-M-01

Matrix:

Soil

Project:

Buzzards Bay/3871-002

Container:

120 mL Amber Glass

Client:

GeoInsight, Inc.

Preservation:

Cool

Laboratory ID: Sampled:

87109-03 09-01-05 15:00 QC Batch ID:

EP-2147-M

Received:

09-01-05 13:00 09-01-05 21:15 09-15-05 07:00 Instrument ID: Sample Volume: MS-6 HP 6890

Extracted: Analyzed:

09-15-05 07:00 09-28-05 00:37 Sample Volume: Final Volume:

16 g 1 mL

Analyst:

СММ

Percent Solids: Dilution Factor:

79 1

CAS Number	Analyte	Concentration Notes	Units	Reporting Limit
91-20-3	Naphthalene	6 j	ug/Kg	12
91-57-6	2-Methylnaphthalene	BRL	ug/Kg	12
208-96-8	Acenaphthylene	BRL	ug/Kg	12
83-32-9	Acenaphthene	BRL	ug/Kg	12
86-73-7	Fluorene	BRL	ug/Kg	12
85-01-8	Phenanthrene	BRL	ug/Kg	12
120-12-7	Anthracene	BRL	ug/Kg	12
206-44-0	Fluoranthene	BRL	ug/Kg	12
129-00-0	Pyrene	BRL	ug/Kg	12
56-55-3	Benzo[a]anthracene	BRL	ug/Kg	12
218-01-9	Chrysene	BRL	ug/Kg	12
205-99-2	Benzo[b]fluoranthene	BRL	ug/Kg	12
207-08-9	Benzo[k]fluoranthene	BRL	ug/Kg	12
50-32-8	Benzo[a]pyrene	BRL	ug/Kg	12
193-39-5	Indeno[1,2,3-c,d]pyrene	BRL	ug/Kg	12
53-70-3	Dibenzo[a,h]anthracene	BRL	ug/Kg	12
191-24-2	Benzo[g,h,i]perylene	BRL	ug/Kg	12

QC Surrogate Compound	Spiked	Measured	Recovery	QC Limits
ortho-Terphenyl	3,200	2,500	77 %	40 - 140 %

Method Reference:

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).

Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method.

Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons. Sample extraction performed by EPA Method 3546. Results are reported on a dry weight basis.

Report Notations:

BRL Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.

indicates an estimated value detected below the reporting limit for the analyte.



Field ID:

W3C04-P2-LIT-03

Project:

Buzzards Bav/3871-002

Client:

Geolnsight, Inc.

Laboratory ID:

87109-04

Sampled: Received: 09-01-05 11:15 09-01-05 21:15 09-15-05 07:00

Extracted: Analyzed (AL): Analyzed (AR):

09-24-05 01:54 09-24-05 02:38

Analyst:

MM

Matrix:

Soil

Container:

120 mL Amber Glass

Preservation:

Cool

QC Batch ID:

Instrument ID:

EP-2147-M GC-7 HP 5890

Sample Weight:

16 g 1 mL

Final Volume: % Solids:

87

Aliphatic Dilution Factor: 1

Aromatic Dilution Factor: 1

EPH Ranges Go	oncentration No	ites Units	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons †	BRL	mg/Kg	33
n-C19 to n-C36 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	33
n-C11 to n-C22 Aromatic Hydrocarbons † 0	BRL	mg/Kg	33
Unadjusted n-C11 to n-C22 Aromatic Hydrocarbons †	BRI	mg/Kg	33

QC Surrogate Co	ompound	Spiked	Measured	Recovery	QC Limits
Fractionation:	2-Fluorobiphenyl	3.0	2.1	72 %	40 - 140 %
	2-Bromonaphthalene	3.0	2.3	76 %	40 - 140 %
Extraction:	Chloro-octadecane	3.0	1.8	61 %	40 - 140 %
	ortho-Terphenyl	3.0	1.9	64 %	40 - 140 %

PROFESSIONAL PROFE	Marie Y	CHARLES NO. 1887	SECTION AND ADDRESS.	Caronica Company of Co.
10000	100	1000	75 C 100	afion

- 1. Were all QA/QC procedures required by the method followed?
- 2. Were all performance/acceptance standards for the required QA/QC procedures achieved?

Yes Yes

3. Were any significant modifications made to the method, as specified in Section 11.3.1.1?

Method non-conformances indicated above are detailed below on this data report, or in the accompanying project narrative and project quality control report. Release of this data is authorized by the accompanying signed project cover letter. The accompanying cover letter, project narrative and quality control report are considered part of this data report.

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004).

Sample extraction performed by microwave accelerated solvent extraction technique. Results are reported on a dry weight basis.

- Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.
- Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.
- n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations.



Field ID:

W3C04-P2-LIT-03

Matrix:

Soil

Project:

Buzzards Bay/3871-002

Container:

120 mL Amber Glass

Client:

Geolnsight, Inc.

Preservation:

Cool

Laboratory ID: Sampled:

87109-04

QC Batch ID:

EP-2147-M

Received:

09-01-05 11:15 09-01-05 21:15

Benzo[k]fluoranthene

Indeno[1,2,3-c,d]pyrene

Dibenzola, hlanthracene

Benzo[g,h,i]perylene

Benzo[a]pyrene

Instrument ID: Sample Volume: MS-6 HP 6890

Extracted:

09-15-05 07:00

16 g

ug/Kg

ug/Kg

ug/Kg

ug/Kg

11

11

11

11

Analyzed:

09-21-05 15:04

Final Volume:

Analyst:

IIT

Percent Solids: Dilution Factor:

CAS Number	Analyte	Concentration Notes	Units	Reporting Limit
91-20-3	Naphthalene	BRL	ug/Kg	11
91-57-6	2-Methylnaphthalene	BRL	ug/Kg	11
208-96-8	Acenaphthylene	BRL	ug/Kg	11
83-32-9	Acenaphthene	BRL	ug/Kg	11
86-73-7	Fluorene	BRL	ug/Kg	11
85-01-8	Phenanthrene	BRL	ug/Kg	11
120-12-7	Anthracene	BRL	ug/Kg	11
206-44-0	Fluoranthene	BRL	ug/Kg	11
129-00-0	Pyrene	BRL	ug/Kg	11
56-55-3	Benzo[a]anthracene	BRL	ug/Kg	11
218-01-9	Chrysene	BRL	ug/Kg	11
205-99-2	Benzo[b]fluoranthene	BRL	ug/Kg	11

191-24-2	Benzo[g,h,i]perylene			BRL	ug/Kg	11
QC Surrogate C	ompound	Spiked	Measured	Recovery	Q	C Limits
ortho-Terphenyl		3,000	2,000	67 %	40	- 140 %

Method Reference:

207-08-9

193-39-5

50-32-8

53-70-3

191-24-2

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).

Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method.

Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons. Sample extraction performed by EPA Method 3546. Results are reported on a dry weight basis.

Report Notations:

BRL Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.

BRL

BRL

BRL

BRL



Field ID:

W3C04-P2-UIT-01

Buzzards Bay/3871-002

Matrix: Container: Soil

Project: Client:

Geolnsight, Inc.

Preservation:

500 mL Amber Glass

Laboratory ID:

87109-05

QC Batch ID:

Cool

Sampled:

09-01-05 11:50

Instrument ID:

EP-2147-M GC-7 HP 5890

Received:

09-01-05 21:15 09-15-05 07:00

Sample Weight:

15 g

Extracted: Analyzed (AL):

09-24-05 03:22

Final Volume:

1 mL 76

Analyzed (AR):

09-24-05 04:06

% Solids: Aliphatic Dilution Factor: 1

Analyst:

MM

Aromatic Dilution Factor: 1

EPH Ranges G	oncentration No	otes Units	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	39
n-C19 to n-C36 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	39
n-C11 to n-C22 Aromatic Hydrocarbons † 0	BRL	mg/Kg	39
Unadjusted n-C11 to n-C22 Aromatic Hydrocarbons †	BRL	mg/Kg	39

QC Surrogate G	ompound	Spiked	Measured	Recovery	QC Limits
Fractionation:	2-Fluorobiphenyl	3.5	2.5	72 %	40 - 140 %
	2-Bromonaphthalene	3.5	2.7	78 %	40 - 140 %
Extraction:	Chloro-octadecane	3.5	2.3	66 %	40 - 140 %
	ortho-Terphenyl	3.5	2.5	71 %	40 - 140 %

QA/QC Certification

- 1. Were all QA/QC procedures required by the method followed?
- 2. Were all performance/acceptance standards for the required QA/QC procedures achieved?

Yes Yes

3. Were any significant modifications made to the method, as specified in Section 11.3.1.1?

Method non-conformances indicated above are detailed below on this data report, or in the accompanying project narrative and project quality control report. Release of this data is authorized by the accompanying signed project cover letter. The accompanying cover letter, project narrative and quality control report are considered part of this data report.

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004).

Sample extraction performed by microwave accelerated solvent extraction technique. Results are reported on a dry weight basis.

- BRL Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.
- Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.
- n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations.



Matrix Spike and Matrix Spike Duplicate MA DEP Extractable Petroleum Hydrocarbons by GC/FID

Field ID:

W3C04-P2-UIT-01

Project: Client: Matrix:

Container:

Soil 250 mL Glass

Cool

Preservation:

Buzzards Bay/3871-002 Geolnsight, Inc.

Received: Extracted:

Sampled:

Analyzed (AL): Analyzed (AR): Analyst:

Laboratory ID:

QC Batch ID: Instrument ID: Sample Weight: Final Volume:

% Solids: 76 Aliphatic Dilution Factor: 1 Aromatic Dilution Factor: 1

Parent Sample 87109-05 09-01-05 11:50 09-01-05 21:15 09-15-05 07:00 09-24-05 03:22 09-24-05 04:06 мм

EP-2147-M GC-7 HP 5890 15 g 16 g 1 mL 1 mL 97 1

1

Matrix Spike Spike Duplicate 87109-06 87109-26 09-01-05 11:50 09-01-05 11:50 09-01-05 21:15 09-01-05 21:15 09-15-05 07:00 09-15-05 22:00 09-24-05 04:50 09-28-05 05:02 09-24-05 05:34 09-25-05 05:46 MM MM EP-2147-M FP-2148-M GC-7 HP 5890

GC-9 Agilenmt 6890 1 ml 76 1 1

CAS Number	Analyte	Unspiked	MS	MS	MS	MSD	MSD.	MSD	RPD.	-QC-Lin	iits
		Sample (mg/Kg)	Spiked (mg/Kg)	Measured (mg/Kg)	Recovery	Spiked (mg/Kg)	Measured (mg/Kg)	Recovery		Spike	RPD
111-84-2	n-Nonane (C ₉)	BRL	4.2	1.7	40 %	4.2	2.2	53 %	28 %	40 - 140%	50 %
124-18-5	n-Decane (C ₁₀)	BRL	4.2	2.0	48 %	4.2	2.7	65 %	30 %	40 - 140%	50 %
112-40-3	n-Dodecane (C ₁₂)	BRL	4.2	2.2	53 %	4.2	2.9	68 %	25 %	40 - 140%	50 %
629-59-4	n-Tetradecane (C ₁₄)	BRL	4.2	2.4	56 %	4.2	3.0	70 %	22 %	40 - 140%	50 %
544-76-3	n-Hexadecane (C ₁₆)	BRL	4.2	2.6	61 %	4.2	3.1	73 %	18 %	40 - 140%	50 %
593-45-3	n-Octadecane (C ₁₈)	BRL	4.2	2.9	68 %	4.2	3.4	80 %	22 %	40 - 140%	50 %
n/a	n-C9 to n-C18 Group	BRL	25	14	56 %	25	17	68.%	16 %	40 - 140%	50 %
629-92-5	n-Nonadecane (C ₁₉)	BRL	4.2	2.9	69 %	4.2	3.5	83 %	19 %	40 - 140%	50 %
112-95-8	n -Eicosane (C ₂₀)	BRL	4.2	2.9	70 %	4.2	3.4	81 %	14 %	40 - 140%	50 %
629-97-0	n-Docosane (C ₂₂)	BRL	4.2	3.0	71 %	4.2	3.5	83 %	15 %	40 - 140%	50 %
646-31-1	n-Tetracosane (C ₂₄)	BRL	4.2	3.1	73 %	4.2	3.4	80 %	10 %	40 - 140%	50 %
630-01-3	n-Hexacosane (C ₂₆)	BRL	4.2	3.1	73 %	4.2	3.3	79 %	7 %	40 - 140%	50 %
630-02-4	n-Octacosane (C ₂₈)	BRL	4.2	3.1	73 %	4.2	3.3	79 %	7 %	40 - 140%	50 %
638-68-6	n-Triacontane (C ₃₀)	BRL	4.2	3.1	74 %	4.2	3.3	79 %	7 %	40 - 140%	50 %
630-06-8	n-Hexatriacontane (C ₃₆)	BRL	4.2	3.0	72 %	4.2	3.0	72 %	0 %	40 - 140%	50 %
n/a	n-C19 to n-C36 Group	BRL	34	24	71 %	34	27	79 %	10 %	40 - 140%	50 %
91-20-3	Naphthalene	BRL	4.2	2.0	47 %	4.2	2.8	67 %	35 %	40 - 140%	50 %
91-57-6	2-Methylnaphthalene	BRL	4.2	2.3	54 %	4.2	3.0	71 %	27 %	40 - 140%	50 %
208-96-8	Acenaphthylene	BRL	4.2	2.4	57 %	4.2	3.2	75 %	27 %	40 - 140%	50 %
83-32-9	Acenaphthene	BRL	4.2	2.2	53 %	4.2	2.9	70 %	28 %	40 - 140%	50 %
86-73-7	Fluorene	BRL	4.2	2.4	57 %	4.2	3.1	74 %	25 %	40 - 140%	50 %
85-01-8	Phenanthrene	BRL	4.2	2.8	66 %	4.2	3.3	79 %	16 %	40 - 140%	50 %
120-12-7	Anthracene	BRL	4.2	3.0	72 %	4.2	3.6	86 %	16 %	40 - 140%	50 %
206-44-0	Fluoranthene	BRL	4.2	3.0	71 %	4.2	3.7	89 %	23 %	40 - 140%	50 %
129-00-0	Pyrene	BRL	4.2	2.9	70 %	4.2	3.7	88 %	23 %	40 - 140%	50 %
56-55-3	Benzo[a]anthracene	BRL	4.2	3.1	74 %	4.2	3.8	90 %	20 %	40 - 140%	50 %
218-01-9	Chrysene	BRL	4.2	3.3	78 %	4.2	3.8	90 %	14 %	40 - 140%	50 %
205-99-2	Benzo[b]fluoranthene	BRL	4.2	2.9	70 %	4.2	3.8	90 %	25 %	40 - 140%	50 %
207-08-9	Benzo[k]fluoranthene	BRL	4.2	3.1	73 %	4.2	3.7	88 %	18 %	40 - 140%	50 %
50-32-8	Benzo[a]pyrene	BRL	4.2	3.0	73 %	4.2	3.7	89 %	20 %	40 - 140%	50 %
193-39-5	Indeno[1,2,3-c,d]pyrene	BRL	4.2	3.1	75 %	4.2	3.6	86 %	14 %	40 - 140%	50 %
53-70-3	Dibenzo[a,h]anthracene	BRL	4.2	3.2	77 %	4.2	3.8	90 %	16 %	40 - 140%	50 %
191-24-2	Benzo[g,h,i]perylene	BRL	4.2	2.9	70 %	4.2	3.5	83 %	17 %	40 - 140%	50 %
n/a	PAH Group	BRL	71	48	68 %	71	59	83 %	21 %	40 - 140%	50 %

QC Surrogate 0	Sompound	- De Albert		Surr	ogate Recove	ery		وبدارية أتتري	QC Limits
Fractionation:	2-Fluorobiphenyl	72%	3.4	2.1	63%	3.4	2.7	79%	40 - 140 %
	2-Bromonaphthalene	78%	3.4	2.3	69%	3.4	2.6	76%	40 - 140 %
Extraction:	Chloro-octadecane	66%	3.4	1.9	56%	3.4	2.6	76%	40 - 140 %
	ortho -Terphenyl	71%	3.4	2.1	63%	3.4	2.6	78%	40 - 140 %

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (1998).

Sample extraction performed by microwave accelerated solvent extraction. Results are reported on a dry weight basis.

Report Notations:



Field ID:

W3C04-P2-UIT-01

Matrix:

Soil

Project: Client:

Buzzards Bay/3871-002

Container:

500 mL Amber Glass

GeoInsight, Inc.

Preservation:

Cool

Laboratory ID:

87109-05

QC Batch ID:

EP-2147-M

Sampled:

09-01-05 11:50 09-01-05 21:15 Instrument ID:

MS-6 HP 6890

Received: Extracted:

09-15-05 07:00

Sample Volume: Final Volume:

15 g 1 mL

Analyzed:

09-21-05 15:44

Percent Solids: Dilution Factor:

76 1

Analyst: JJT

CAS Number	Analyte	Concentration Notes	Units	Reporting Limit
91-20-3	Naphthalene	BRL	ug/Kg	13
91-5 <i>7</i> -6	2-Methylnaphthalene	BRL	ug/Kg	13
208-96-8	Acenaphthylene	BRL	ug/Kg	13
83-32-9	Acenaphthene	BRL	ug/Kg	13
86-73-7	Fluorene	BRL	ug/Kg	13
85-01-8	Phenanthrene	BRL	ug/Kg	13
120-12-7	Anthracene	BRL	ug/Kg	13
206-44-0	Fluoranthene	BRL	ug/Kg	13
129-00-0	Pyrene	BRL	ug/Kg	13
56-55-3	Benzo[a]anthracene	BRL	ug/Kg	13
218-01-9	Chrysene	BRL	ug/Kg	13
205-99-2	Benzo[b]fluoranthene	BRL	ug/Kg	13
207-08-9	Benzo[k]fluoranthene	BRL	ug/Kg	13
50-32-8	Benzo[a]pyrene	BRL	ug/Kg	13
193-39-5	Indeno[1,2,3-c,d]pyrene	BRL	ug/Kg	13
53-70-3	Dibenzo[a,h]anthracene	BRL	ug/Kg	13
191-24-2	Benzolg,h,ilperylene	BRI	ug/Kg	13

QC Surrogate Compound	Spiked	Measured	Recovery	QC Limits
ortho-Terphenyl	3,500	2,500	71 %	40 - 140 %

Method Reference:

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).

Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method.

Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons. Sample extraction performed by EPA Method 3546. Results are reported on a dry weight basis.

Report Notations:



Matrix Spike and Matrix Spike Duplicate **EPA Method 8270C**

Field ID:

W3C04-P2-UIT-01

Project:

Buzzards Bav/3871-002 Geolnsight, Inc.

Client: Matrix:

Soil

Container:

500 mL Amber Glass

Preservation:

Cool

Laboratory ID: Sampled: Received:

Extracted:

Analyzed:

QC Batch ID:

Instrument ID:

Final Volume:

Percent Solids:

Dilution Factor:

Sample Weight:

Analyst:

87109-05 09-01-05 11:50 09-01-05 21:15 09-15-05 07:00

09-28-05 18:05

CMM

15 g

1 mL

76

EP-2147-M

MS 6 HP 6890

Parent Sample

09-01-05 21:15 09-15-05 07:00 09-28-05 10:43

Matrix Spike

09-01-05 11:50

87109-07

CMM EP-2147-M

CMM EP-2148-M MS 6 HP 6890 MS 6 HP 6890 16 g

Spike Duplicate

09-01-05 11:50

09-01-05 21:15

09-15-05 23:00

10-05-05 12:15

87109-27

16 g 1 mL 1 mL 76 76 1 1

CAS Number	Analyte	Unspiked	MS	MS	MS	MSD	MSD	MSD	RPD	QC Lin	iits
		Sample (ug/Kg)	Spiked (ug/Kg)	Measured (ug/Kg)	Recovery	Spiked (ug/Kg)	Measured (ug/Kg)	Recovery		Spike	RPD
91-20-3	Naphthalene	BRL	410	270	65 %	420	230	54 %	10 %	40 - 140%	50 %
91-57-6	2-Methylnaphthalene	BRL	410	300	73 %	420	270	64 %	7 %	40 - 140%	50 %
208-96-8	Acenaphthylene	BRL	410	350	84 %	420	300	70 %	10 %	40 - 140%	50 %
83-32-9	Acenaphthene	BRL	410	380	92 %	420	320	77 %	10 %	40 - 140%	50 %
86-73-7	Fluorene	BRL	410	340	84 %	420	310	73 %	8 %	40 - 140%	50 %
85-01-8	Phenanthrene	BRL	410	330	80 %	420	300	72 %	6 %	40 - 140%	50 %
120-12-7	Anthracene	BRL	410	330	81 %	420	310	75 %	4 %	40 - 140%	50 %
206-44-0	Fluoranthene	BRL	410	410	100 %	420	380	90 %	6 %	40 - 140%	50 %
129-00-0	Pyrene	BRL	410	390	94 %	420	350	82 %	7 %	40 - 140%	50 %
56-55-3	Benzo[a]anthracene	BRL	410	390	95 %	420	370	88 %	3 %	40 - 140%	50 %
218-01-9	Chrysene	BRL	410	390	95 %	420	360	87 %	5 %	40 - 140%	50 %
205-99-2	Benzo[b]fluoranthene	BRL	410	380	93 %	420	370	88 %	2 %	40 - 140%	50 %
207-08-9	Benzo[k]fluoranthene	BRL	410	380	93 %	420	380	91 %	0 %	40 - 140%	50 %
50-32-8	Benzo[a]pyrene	BRL	410	390	94 %	420	380	91 %	1 %	40 - 140%	50 %
193-39-5	Indeno[1,2,3-c,d]pyrene	BRL	410	360	88 %	420	290	70 %	13 %	40 - 140%	50 %
53-70-3	Dibenzo[a,h]anthracene	BRL	410	340	82 %	420	280	66 %	12 %	40 - 140%	50 %
191-24-2	Benzo[g,h,i]perylene	BRL	410	390	94 %	420	280	67 %	20 %	40 - 140%	50 %

QC Surrogate Compound						Surre	gate Recov	ery	QC Limits
ortho-Terphenyl	62%	3,300	2,600	78%	3,400	2,300	69%		40 - 140 %

Method Reference:

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996). Sample extraction performed by EPA Method 3546. Results are reported on a dry weight basis.

Report Notations:



Field ID:

W3C04-P2-UIT-02

Buzzards Bay/3871-002

Project: Client:

Received:

Extracted:

Geolnsight, Inc.

87109-08

Laboratory ID: Sampled:

09-01-05 11:35 09-01-05 21:15 09-15-05 15:00

Analyzed (AL): Analyzed (AR):

09-24-05 07:45 09-24-05 08:29

Analyst: MM Matrix:

Container:

120 mL Amber Glass

Preservation:

Cool

QC Batch ID:

Instrument ID:

EP-2147-M GC-7 HP 5890 16 g

Sample Weight:

Final Volume:

1 mL 90

% Solids: Aliphatic Dilution Factor: 1

Aromatic Dilution Factor: 1

EPH Ranges «Co	ncentration No	ites Units	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons †	BRL	mg/Kg	32
n-C19 to n-C36 Aliphatic Hydrocarbons †	BRL	mg/Kg	32
n-C11 to n-C22 Aromatic Hydrocarbons † 0	BRL	mg/Kg	32
Unadjusted n-C11 to n-C22 Aromatic Hydrocarbons †	BRL	mg/Kg	32

QC Surrogate Co	ompound	Spiked	Measured	Recovery	QC Limits
	2-Fluorobiphenyl	2.8	2.1	74 %	40 - 140 %
	2-Bromonaphthalene	2.8	2.3	80 %	40 - 140 %
Extraction:	Chloro-octadecane	2.8	1.8	65 %	40 - 140 %
	ortho -Terphenyl	2.8	2.1	74 %	40 - 140 %

		QA/Q	

- 1. Were all QA/QC procedures required by the method followed?
- 2. Were all performance/acceptance standards for the required QA/QC procedures achieved?

Yes

3. Were any significant modifications made to the method, as specified in Section 11.3.1.1?

No

Method non-conformances indicated above are detailed below on this data report, or in the accompanying project narrative and project quality control report. Release of this data is authorized by the accompanying signed project cover letter. The accompanying cover letter, project narrative and quality control report are considered part of this data report.

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004). Sample extraction performed by microwave accelerated solvent extraction technique. Results are reported on a dry weight basis.

- Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.
- Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.
- n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations.



Field ID:

W3C04-P2-UIT-02

Matrix:

Project:

Buzzards Bay/3871-002

Container:

120 mL Amber Glass

Client:

GeoInsight, Inc.

Preservation:

Cool

Laboratory ID: Sampled:

87109-08 09-01-05 11:35 OC Batch ID: Instrument ID: EP-2147-M MS-6 HP 6890

Received: Extracted: 09-01-05 21:15 09-15-05 07:00

Sample Volume: Final Volume:

16 g 1 mL

Analyzed: Analyst:

09-21-05 16:23 IIT

Percent Solids: 90 Dilution Factor: 1

	<i>"</i>								
CAS Number	Analyte	Concentration Notes	Units	Reporting Limit					
91-20-3	Naphthalene	BRL	ug/Kg	11					
91-57-6	2-Methylnaphthalene	BRL	ug/Kg	11					
208-96-8	Acenaphthylene	BRL	ug/Kg	11					
83-32-9	Acenaphthene	BRL	ug/Kg	11					
86-73-7	Fluorene	BRL	ug/Kg	11					
85-01-8	Phenanthrene	BRL	ug/Kg	11					
120-12-7	Anthracene	BRL	ug/Kg	11					
206-44-0	Fluoranthene	BRL	ug/Kg	11					
129-00-0	Pyrene	BRL	ug/Kg	11					
56-55-3	Benzo[a]anthracene	BRL	ug/Kg	11					
218-01-9	Chrysene	BRL	ug/Kg	11					
205-99-2	Benzo[b]fluoranthene	BRL	ug/Kg	11					
207-08-9	Benzo[k]fluoranthene	BRL	ug/Kg	11.					
50-32-8	Benzo[a]pyrene	BRL	ug/Kg	11					
193-39-5	Indeno[1,2,3-c,d]pyrene	BRL	ug/Kg	11					
53-70-3	Dibenzo[a,h]anthracene	BRL	ug/Kg	11					
191-24-2	Benzo[g,h,i]perylene	BRL	ug/Kg	11					

QC Surrogate Compound	Spiked	Measured	Recovery	QC Limits
ortho-Terphenyl	2,800	2,200	77 %	40 - 140 %

Method Reference:

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).

Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method.

Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons. Sample extraction performed by EPA Method 3546. Results are reported on a dry weight basis.

Report Notations:



Field ID:

W3C04-P2-LIT-02

Matrix:

Soil

Project:

Buzzards Bay/3871-002

Container: Preservation: 120 mL Amber Glass

Client:

Geolnsight, Inc.

Cool

Laboratory ID: Sampled:

87109-09 09-01-05 11:41

QC Batch ID: Instrument ID: EP-2147-M GC-9 Agilent 6890

Received:

09-01-05 21:15

Sample Weight:

16 g

Extracted: Analyzed (AL):

09-15-05 15:00 09-27-05 16:27

Final Volume:

1 mL

Analyzed (AR):

09-27-05 17:08

% Solids:

76

Analyst:

MM

Aliphatic Dilution Factor: 1 Aromatic Dilution Factor: 1

EPH Ranges	Concentration Notes	Units	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	37
n-C19 to n-C36 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	37
n-C11 to n-C22 Aromatic Hydrocarbons + 0	BRL	mg/Kg	37
Unadjusted n-C11 to n-C22 Aromatic Hydrocarbons †	BRL	mg/Kg	37

QC Surrogate Co	ompound	Spiked	Measured	Recovery	QC/Limits
Fractionation:	2-Fluorobiphenyl	3.3	2.4	72 %	40 - 140 %
	2-Bromonaphthalene	3.3	2.3	70 %	40 - 140 %
Extraction:	Chloro-octadecane	3.3	2.7	81 %	40 - 140 %
	ortho-Terphenyl	3.3	2.5	76 %	40 - 140 %

QA/QC Certification

- 1. Were all QA/QC procedures required by the method followed?
- 2. Were all performance/acceptance standards for the required QA/QC procedures achieved?

Yes Yes

3. Were any significant modifications made to the method, as specified in Section 11.3.1.1?

Method non-conformances indicated above are detailed below on this data report, or in the accompanying project narrative and project quality control report. Release of this data is authorized by the accompanying signed project cover letter. The accompanying cover letter, project narrative and quality control report are considered part of this data report.

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004).

Sample extraction performed by microwave accelerated solvent extraction technique. Results are reported on a dry weight basis.

- Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.
- Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.
- n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations.



Field ID:

W3C04-P2-LIT-02

Matrix: Container: Soil

Project:

Buzzards Bay/3871-002

120 mL Amber Glass

QC Limits

40 - 140 %

Client:

Geolnsight, Inc.

Preservation:

Cool

Laboratory ID:

87109-09

QC Batch ID: Instrument ID: EP-2147-M

Sampled: Received: 09-01-05 11:41 09-01-05 21:15

Sample Volume:

MS-6 HP 6890 16 g

Extracted: Analyzed: 09-15-05 15:00 09-26-05 22:24

Final Volume:

1 mL

Analyst:

CMM

Percent Solids:

Dilution Factor:

76 1

CAS Number	Analyte	Concentration Notes	Units	Reporting Limit
91-20-3	Naphthalene	13	ug/Kg	12
91-57-6	2-Methylnaphthalene	BRL	ug/Kg	12
208-96-8	Acenaphthylene	BRL	ug/Kg	12
83-32-9	Acenaphthene	BRL	ug/Kg	12
86-73-7	Fluorene	BRL	ug/Kg	12
85-01-8	Phenanthrene	BRL	ug/Kg	12
120-12-7	Anthracene	BRL	ug/Kg	12
206-44-0	Fluoranthene	9 j	ug/Kg	12
129-00-0	Pyrene	8 j	ug/Kg	12
56-55-3	Benzo[a]anthracene	BRL	ug/Kg	12
218-01-9	Chrysene	BRL	ug/Kg	12
205-99-2	Benzo[b]fluoranthene	BRL	ug/Kg	12
207-08-9	Benzo[k]fluoranthene	BRL	ug/Kg	12
50-32-8	Benzo[a]pyrene	BRL	ug/Kg	12
193-39-5	Indeno[1,2,3-c,d]pyrene	8 j	ug/Kg	12
53-70-3	Dibenzo[a,h]anthracene	BRL	ug/Kg	12
191-24-2	Benzo[g,h,i]perylene	BRL	ug/Kg	12

ortho-Terphenyl
Method Reference:

QC Surrogate Compound

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).

Spiked Measured

3,300

Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method.

Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons. Sample extraction performed by EPA Method 3546. Results are reported on a dry weight basis.

2,500

Report Notations:

BRL Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.

Recovery

74 %

Indicates an estimated value detected below the reporting limit for the analyte.



Field ID:

W3C04-P2-UIT-03

Project:

Buzzards Bay/3871-002

Client:

Geolnsight, Inc.

09-27-05 17:52

09-27-05 18:36

Laboratory ID: 09-01-05 11:00

87109-10

Sampled: Received:

09-01-05 21:15 09-15-05 15:00

Extracted: Analyzed (AL): Analyzed (AR):

Analyst:

MM

Matrix:

Container:

120 mL Amber Glass

Preservation:

Cool

EP-2147-M

OC Batch ID:

Instrument ID: GC-9 Agilent 6890 Sample Weight:

16 g

Final Volume: % Solids:

1 mL 96

Aliphatic Dilution Factor: 1 Aromatic Dilution Factor: 1

EPH Ranges G	oncentration N	otes Units	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	30
n-C19 to n-C36 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	30
n-C11 to n-C22 Aromatic Hydrocarbons ^{† 0}	BRL	mg/Kg	30
Unadjusted n-C11 to n-C22 Aromatic Hydrocarbons †	BRL	mg/Kg	30

QC Surrogate C	ompound	Spiked	Measured	Recovery	QC Limits
Fractionation:	2-Fluorobiphenyl	2.6	2.2	84 %	40 - 140 %
	2-Bromonaphthalene	2.6	2.2	83 %	40 - 140 %
Extraction:	Chloro-octadecane	2.6	2.3	90 %	40 - 140 %
	ortho-Terphenyl	2.6	2.6	98 %	40 - 140 %

QA/QC Certification

- 1. Were all QA/QC procedures required by the method followed?
- 2. Were all performance/acceptance standards for the required QA/QC procedures achieved?

Yes Yes

No

3. Were any significant modifications made to the method, as specified in Section 11.3.1.1?

Method non-conformances indicated above are detailed below on this data report, or in the accompanying project narrative and project quality control report. Release of this data is authorized by the accompanying signed project cover letter. The accompanying cover letter, project narrative and quality control report are considered part of this data report.

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004).

Sample extraction performed by microwave accelerated solvent extraction technique. Results are reported on a dry weight basis.

- Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.
- Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.
- n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations.



Field ID:

W3C04-P2-UIT-03

Matrix:

Soil

Project:

Buzzards Bay/3871-002

Container:

120 mL Amber Glass

Client:

GeoInsight, Inc.

Preservation:

Cool

Laboratory ID:

87109-10

QC Batch ID:

EP-2147-M

Sampled: Received: 09-01-05 11:00 09-01-05 21:15

Instrument ID: Sample Volume: MS-6 HP 6890

Extracted: Analyzed: 09-15-05 15:00 09-26-05 23:04 Final Volume:

15 g 1 mL

Analyst:

CMM

D

ercent Solids:	9
ilution Factor:	1

CAS Number	Analyte	Concentration Notes	Units	Reporting Limit
91-20-3	Naphthalene	6 j	ug/Kg	10
91-57-6	2-Methylnaphthalene	BRL	ug/Kg	10
208-96-8	Acenaphthylene	BRL	ug/Kg	10
83-32-9	Acenaphthene	BRL	ug/Kg	10
86-73-7	Fluorene	BRL	ug/Kg	10
85-01-8	Phenanthrene	31	ug/Kg	10
120-12-7	Anthracene	7 j	ug/Kg	10
206-44-0	Fluoranthene	61	ug/Kg	10
129-00-0	Pyrene	45	ug/Kg	10
56-55-3	Benzo[a]anthracene	26	ug/Kg	10
218-01-9	Chrysene	25	ug/Kg	10
205-99-2	Benzo[b]fluoranthene	22	ug/Kg	10
207-08-9	Benzo[k]fluoranthene	12	ug/Kg	10
50-32-8	Benzo[a]pyrene	11	ug/Kg	10
193-39-5	indeno[1,2,3-c,d]pyrene	19	ug/Kg	10
53-70-3	Dibenzo[a,h]anthracene	14	ug/Kg	10
191-24-2	Benzo[g,h,i]perylene	12	ug/Kg	10

QC Surrogate Compound	Spiked	Measured	Recovery	QC Limits
ortho- Terphenyl	2,700	2,400	86 %	40 - 140 %

Method Reference:

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).

Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method.

Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons. Sample extraction performed by EPA Method 3546. Results are reported on a dry weight basis.

Report Notations:

Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.

Indicates an estimated value detected below the reporting limit for the analyte.



Field ID:

W1F05-P2-M-01

Project:

Buzzards Bay/3871-002

Client:

Geolnsight, Inc.

09-15-05 15:00

09-27-05 19:20

Laboratory ID: Sampled:

87109-11 09-01-05 14:40 09-01-05 21:15

Received: Extracted: Analyzed (AL):

Analyzed (AR):

09-27-05 20:05 Analyst: MM

Matrix:

Soil

Cool

Container:

120 mL Amber Glass

Preservation:

QC Batch ID:

Instrument ID:

EP-2147-M GC-9 Agilent 6890

Sample Weight:

Final Volume: % Solids:

15 g 1 mL 63

Aliphatic Dilution Factor: 1 Aromatic Dilution Factor: 1

EPH Ranges	Concentration Notes	Units	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	47
n-C19 to n-C36 Aliphatic Hydrocarbons †	BRL	mg/Kg	47
n-C11 to n-C22 Aromatic Hydrocarbons † 0	BRL	mg/Kg	47
<u>Unadjusted</u> n-C11 to n-C22 Aromatic Hydrocarbons [†]	BRL	mg/Kg	47

QC Surrogate C	ompound	Spiked	Measured	Recovery	QC Limits
Fractionation:	2-Fluorobiphenyl	4.2	2.7	64 %	40 - 140 %
	2-Bromonaphthalene	4.2	2.8	67 %	40 - 140 %
Extraction:	Chloro-octadecane	4.2	3.3	80 %	40 - 140 %
	ortho -Terphenyl	4.2	3.3	80 %	40 - 140 %

C Cer	

- 1. Were all QA/QC procedures required by the method followed?
- 2. Were all performance/acceptance standards for the required QA/QC procedures achieved?

Yes Yes

3. Were any significant modifications made to the method, as specified in Section 11.3.1.1?

No

Method non-conformances indicated above are detailed below on this data report, or in the accompanying project narrative and project quality control report. Release of this data is authorized by the accompanying signed project cover letter. The accompanying cover letter, project narrative and quality control report are considered part of this data report.

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004). Sample extraction performed by microwave accelerated solvent extraction technique. Results are reported on a dry weight basis.

- Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.
- Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.
- n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations.



Field ID:

W1F05-P2-M-01

Matrix:

Project:

Buzzards Bay/3871-002

Container: Preservation: 120 mL Amber Glass

QC Limits

40 - 140 %

Client:

Geolnsight, Inc.

OC Batch ID:

Cool

Laboratory ID: Sampled:

87109-11 09-01-05 14:40

Instrument ID: Sample Volume: EP-2147-M MS-6 HP 6890

Received: Extracted: 09-01-05 21:15 09-15-05 15:00

Final Volume:

15 g 1 mL

Analyzed:

09-26-05 23:43

Percent Solids: Dilution Factor:

63 1

CMM Analyst:

CAS Number	Analyte	Concentration Notes	Units	Reporting Limit
91-20-3	Naphthalene	BRL	ug/Kg	16
91-57-6	2-Methylnaphthalene	BRL	ug/Kg	16
208-96-8	Acenaphthylene	BRL	ug/Kg	16
83-32-9	Acenaphthene	BRL	ug/Kg	16
86-73-7	Fluorene	BRL	ug/Kg	16
85-01-8	Phenanthrene	BRL	ug/Kg	16
120-12-7	Anthracene	BRL	ug/Kg	16
206-44-0	Fluoranthene	BRL	ug/Kg	16
129-00-0	Pyrene	BRL	ug/Kg	16
56-55-3	Benzo[a]anthracene	BRL	ug/Kg	16
218-01-9	Chrysene	BRL	ug/Kg	16
205-99-2	Benzo[b]fluoranthene	BRL	ug/Kg	16
207-08-9	Benzo[k]fluoranthene	BRL	ug/Kg	16
50-32-8	Benzo[a]pyrene	BRL	ug/Kg	16
193-39-5	Indeno[1,2,3-c,d]pyrene	BRL	ug/Kg	16
53-70-3	Dibenzo[a,h]anthracene	BRL	ug/Kg	16
191-24-2	Benzo[g,h,i]perylene	BRL	ug/Kg	16

ortho-Terphenyl Method Reference:

QC Surrogate Compound

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).

Spiked Measured

4,200

Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method.

Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons. Sample extraction performed by EPA Method 3546. Results are reported on a dry weight basis.

2,900

Report Notations:

BRL Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.

70 %

Recovery



Field ID:

W1E04-P2-UIT-02

Matrix:

Soil

Cool

Project:

Buzzards Bay/3871-002

Container: Preservation: 120 mL Amber Glass

Client: Laboratory ID: GeoInsight, Inc. 87109-12

OC Batch ID:

EP-2147-M

Sampled:

09-01-05 12:52 09-01-05 21:15 Instrument ID: Sample Weight: GC-9 Agilent 6890 15 g

Received: Extracted:

Analyzed (AL):

09-15-05 15:00 09-27-05 20:49

Final Volume:

1 mL

Analyzed (AR): Analyst:

09-27-05 21:33 MM

% Solids:

Aliphatic Dilution Factor: 1 Aromatic Dilution Factor: 1

EPH Ranges	Goncentration Notes	Units	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons †	BRL	mg/Kg	31
n-C19 to n-C36 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	31
n-C11 to n-C22 Aromatic Hydrocarbons † 0	BRL	mg/Kg	31
<u>Unadjusted</u> n-C11 to n-C22 Aromatic Hydrocarbons [†]	BRL	mg/Kg	31

QC Surrogate C	ompound	Spiked	Measured	Recovery	QC Limits
Fractionation:	2-Fluorobiphenyl	2.7	2.2	82 %	40 - 140 %
	2-Bromonaphthalene	2.7	2.3	84 %	40 - 140 %
Extraction:	Chloro-octadecane	2.7	2.2	80 %	40 - 140 %
	ortho -Terphenyl	2.7	2.4	90 %	40 - 140 %

QA/QC Certification

- 1. Were all OA/OC procedures required by the method followed?
- 2. Were all performance/acceptance standards for the required QA/QC procedures achieved?

Yes

3. Were any significant modifications made to the method, as specified in Section 11.3.1.1?

Method non-conformances indicated above are detailed below on this data report, or in the accompanying project narrative and project quality control report. Release of this data is authorized by the accompanying signed project cover letter. The accompanying cover letter, project narrative and quality control report are considered part of this data report.

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004).

Sample extraction performed by microwave accelerated solvent extraction technique. Results are reported on a dry weight basis.

- BRL Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.
- Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.
- n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations.



Field ID:

W1E04-P2-UIT-02

Matrix:

Project:

Buzzards Bay/3871-002

Container: Preservation: 120 mL Amber Glass

Client:

GeoInsight, Inc.

Cool

Laboratory ID:

87109-12

QC Batch ID:

EP-2147-M

Sampled: Received: 09-01-05 12:52 09-01-05 21:15 Instrument ID: Sample Volume: MS-6 HP 6890

Extracted: Analyzed: 09-15-05 15:00 09-27-05 00:23

Final Volume:

15 g 1 mL 98

1

Analyst:

CMM

Percent Solids: Dilution Factor:

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CAS Number	Analyte	Goncentration Notes	Units	Reporting Limit			
91-20-3	Naphthalene	BRL	ug/Kg	13			
91-57-6	2-Methylnaphthalene	BRL	ug/Kg	13			
208-96-8	Acenaphthylene	BRL	ug/Kg	13			
83-32-9	Acenaphthene	BRL	ug/Kg	13			
86-73-7	Fluorene	BRL	ug/Kg	13			
85-01-8	Phenanthrene	BRL	ug/Kg	13			
120-12-7	Anthracene	BRL	ug/Kg	13			
206-44-0	Fluoranthene	BRL	ug/Kg	13			
129-00-0	Pyrene	BRL	ug/Kg	13			
56-55-3	Benzo[a]anthracene	BRL	ug/Kg	13			
218-01-9	Chrysene	BRL	ug/Kg	13			
205-99-2	Benzo[b]fluoranthene	BRL	ug/Kg	13			
207-08-9	Benzo[k]fluoranthene	BRL	ug/Kg	13			
50-32-8	Benzo[a]pyrene	BRL	ug/Kg	13			
193-39-5	Indeno[1,2,3-c,d]pyrene	BRL	ug/Kg	13			
53-70-3	Dibenzo[a,h]anthracene	BRL	ug/Kg	13			
191-24-2	Benzo[g,h,i]perylene	BRL	ug/Kg	13			

QC Surrogate Compound	Spiked	Measured	Recovery	QC Limits
ortho- Terphenyl	2,700	2,200	80 %	40 - 140 %

Method Reference:

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).

Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method.

Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons. Sample extraction performed by EPA Method 3546. Results are reported on a dry weight basis.

Report Notations:



Field ID:

W1E04-P2-LIT-02

Project:

Buzzards Bav/3871-002

Client:

GeoInsight, Inc.

09-27-05 22:17

09-27-05 23:02

Laboratory ID:

87109-13 09-01-05 12:59

Sampled: Received: Extracted:

09-01-05 21:15 09-15-05 15:00

Analyzed (AL):

Analyzed (AR): Analyst:

MM

Matrix:

Soil

Container:

120 mL Amber Glass

Preservation:

Cool

EP-2147-M

OC Batch ID:

Instrument ID: GC-9 Agilent 6890

Sample Weight:

Final Volume:

% Solids:

1 ml 85

15 g

Aliphatic Dilution Factor: 1 Aromatic Dilution Factor: 1

EPH Ranges	Concentration Notes	Units	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	34
n-C19 to n-C36 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	34
n-C11 to n-C22 Aromatic Hydrocarbons † 0	BRL	mg/Kg	34
Unadjusted n-C11 to n-C22 Aromatic Hydrocarbons †	BRL	mg/Kg	34

QC Surrogate C	ompound	Spiked	Measured	Recovery	QC Limits
Fractionation:	2-Fluorobiphenyl	3.1	2.5	81 %	40 - 140 %
	2-Bromonaphthalene	3.1	2.5	81 %	40 - 140 %
Extraction:	Chloro-octadecane	3.1	2.5	81 %	40 - 140 %
	ortho-Terphenyl	3.1	2.4	79 %	40 - 140 %

QA/QC Certification

- 1. Were all QA/QC procedures required by the method followed?
- 2. Were all performance/acceptance standards for the required QA/QC procedures achieved?

Yes

3. Were any significant modifications made to the method, as specified in Section 11.3.1.1?

No

Method non-conformances indicated above are detailed below on this data report, or in the accompanying project narrative and project quality control report. Release of this data is authorized by the accompanying signed project cover letter. The accompanying cover letter, project narrative and quality control report are considered part of this data report.

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004).

Sample extraction performed by microwave accelerated solvent extraction technique. Results are reported on a dry weight basis.

- Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.
- Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.
- n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations.



Field ID:

W1E04-P2-LIT-02

Buzzards Bay/3871-002

Container:

Soil

Cool

Project:

Preservation:

120 mL Amber Glass

Client:

Geolnsight, Inc.

QC Batch ID:

EP-2147-M

Laboratory ID: Sampled:

87109-13 09-01-05 12:59

Instrument ID:

Received:

09-01-05 21:15 09-15-05 15:00 Sample Volume:

MS-6 HP 6890

Extracted: Analyzed: 09-27-05 01:02

Final Volume:

15 g 1 mL

Analyst:

CMM

Percent Solids: Dilution Factor: 85 1

maryst.	Civii
CAS Numi	per Ar

CAS Number	Analyte	Goncentration Notes	Units	Reporting Limit
91-20-3	Naphthalene	6 j	ug/Kg	11
91-5 <i>7</i> -6	2-Methylnaphthalene	BRL	ug/Kg	11
208-96-8	Acenaphthylene	BRL	ug/Kg	11
83-32-9	Acenaphthene	BRL	ug/Kg	11
86-73-7	Fluorene	6 j	ug/Kg	11
85-01-8	Phenanthrene	37	ug/Kg	11
120-12-7	Anthracene	BRL	ug/Kg	11
206-44-0	Fluoranthene	23	ug/Kg	11
129-00-0	Pyrene	25	ug/Kg	11
56-55-3	Benzo[a]anthracene	11	ug/Kg	11
218-01-9	Chrysene	11	ug/Kg	11
205-99-2	Benzo[b]fluoranthene	BRL	ug/Kg	11
207-08-9	Benzo[k]fluoranthene	BRL	ug/Kg	11
50-32-8	Benzo[a]pyrene	BRL	ug/Kg	11
193-39-5	Indeno[1,2,3-c,d]pyrene	8 j	ug/Kg	11
53-70-3	Dibenzo[a,h]anthracene	BRL	ug/Kg	11
191-24-2	Benzo[g,h,i]perylene	BRL	ug/Kg	11

QC Surrogate Compound	Spiked	Measured	Recovery	QC Limits
ortho-Terphenyl	3,100	2,200	71 %	40 - 140 %

Method Reference:

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).

Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method.

Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons. Sample extraction performed by EPA Method 3546. Results are reported on a dry weight basis.

Report Notations:

BRL Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.

Indicates an estimated value detected below the reporting limit for the analyte.



Field ID:

W1F05-P2-M-03

Project:

Buzzards Bay/3871-002

Client:

Geolnsight, Inc.

09-01-05 14:00

09-01-05 21:15

09-15-05 15:00

09-28-05 00:30

Laboratory ID: Sampled:

87109-14

Received:

Extracted: Analyzed (AL):

Analyzed (AR):

Analyst:

09-28-05 01:14 MM

Matrix:

Soil

Container:

120 mL Amber Glass

Preservation:

Cool

OC Batch ID:

EP-2147-M Instrument ID:

GC-9 Agilent 6890 16 g

Sample Weight: Final Volume:

1 mL 85

% Solids: Aliphatic Dilution Factor: 1

Aromatic Dilution Factor: 1

EPH Ranges	Concentration Notes	Units	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	34
n-C19 to n-C36 Aliphatic Hydrocarbons †	BRL	mg/Kg	34
n-C11 to n-C22 Aromatic Hydrocarbons † 0	BRL	mg/Kg	34
<u>Unadjusted</u> n-C11 to n-C22 Aromatic Hydrocarbons [†]	BRL	mg/Kg	34

QC Surrogate C	ompound	Spiked	Measured	Recovery	QC Limits
Fractionation:	2-Fluorobiphenyl	3.0	2.1	71 %	40 - 140 %
	2-Bromonaphthalene	3.0	2.0	66 %	40 - 140 %
Extraction:	Chloro-octadecane	3.0	2.6	88 %	40 - 140 %
	ortho -Terphenyl	3.0	2.6	86 %	40 - 140 %

QA/QC Certification

- 1. Were all QA/QC procedures required by the method followed?
- 2. Were all performance/acceptance standards for the required QA/QC procedures achieved? 3. Were any significant modifications made to the method, as specified in Section 11.3.1.1?

Yes Yes

No

Method non-conformances indicated above are detailed below on this data report, or in the accompanying project narrative and project quality control report. Release of this data is authorized by the accompanying signed project cover letter. The accompanying cover letter, project narrative and quality control report are considered part of this data report.

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004). Sample extraction performed by microwave accelerated solvent extraction technique. Results are reported on a dry weight basis.

- Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.
- Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.
- n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations.



Field ID:

W1F05-P2-M-03

Matrix:

Soil

Project:

Buzzards Bay/3871-002

Container: Preservation: 120 mL Amber Glass

40 - 140 %

Client:

Geolnsight, Inc.

000 / 1 / 10

Cool

Laboratory ID:

87109-14

QC Batch ID: Instrument ID:

EP-2147-M

Sampled: Received: 09-01-05 14:00 09-01-05 21:15

Sample Volume:

MS-6 HP 6890 16 g

Extracted:

09-15-05 21:15 09-15-05 15:00 09-27-05 01:42

Final Volume:

1 mL

Analyzed: Analyst:

CMM

Percent Solids: Dilution Factor: 85 1

CAS Number	Analyte	Concentration Notes	Units	Reporting Limit
91-20-3	Naphthalene	BRL	ug/Kg	11
91-57-6	2-Methylnaphthalene	BRL	ug/Kg	11
208-96-8	Acenaphthylene	BRL	ug/Kg	11
83-32-9	Acenaphthene	BRL	ug/Kg	11
86-73-7	Fluorene	BRL	ug/Kg	11
85-01-8	Phenanthrene	BRL	ug/Kg	11
120-12-7	Anthracene	BRL	ug/Kg	11
206-44-0	Fluoranthene	BRL	ug/Kg	11
129-00-0	Pyrene	BRL	ug/Kg	11
56-55-3	Benzo[a]anthracene	BRL	ug/Kg	11
218-01-9	Chrysene	BRL	ug/Kg	11
205-99-2	Benzo[b]fluoranthene	BRL	ug/Kg	11
207-08-9	Benzo[k]fluoranthene	BRL	ug/Kg	11
50-32-8	Benzo[a]pyrene	BRL	ug/Kg	11
193-39-5	Indeno[1,2,3-c,d]pyrene	8 j	ug/Kg	11
53-70-3	Dibenzo[a,h]anthracene	BRL	ug/Kg	11
191-24-2	Benzo[g,h,i]perylene	BRL	ug/Kg	11

L	ortho-	Terphenyl
N.4	othod	Reference:

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).

3,000

Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method.

2,300

Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons. Sample extraction performed by EPA Method 3546. Results are reported on a dry weight basis.

Report Notations:

Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.

76 %

Indicates an estimated value detected below the reporting limit for the analyte.



Field ID:

W1F05-P2-M-02

Matrix:

Soil

Cool

Project:

Buzzards Bay/3871-002

Container: Preservation: 120 mL Amber Glass

Client:

Geolnsight, Inc.

EP-2147-M

Laboratory ID: Sampled:

87109-15 09-01-05 14:25 QC Batch ID: Instrument ID:

Received:

09-01-05 21:15 09-15-05 15:00

Sample Weight:

GC-9 Agilent 6890 15 g

Extracted: Analyzed (AL):

09-28-05 01:59

Final Volume: % Solids:

1 mL 68

Analyzed (AR):

09-28-05 02:43

Aliphatic Dilution Factor: 1

Analyst:

MM

Aromatic Dilution Factor: 1

EPH Ranges	Concentration Notes	Units	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	44
n-C19 to n-C36 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	44
n-C11 to n-C22 Aromatic Hydrocarbons † °	BRL	mg/Kg	44
<u>Unadjusted</u> n-C11 to n-C22 Aromatic Hydrocarbons †	BRL	mg/Kg	44

QC Surrogate C	ompound	Spiked	Measured	Recovery	QC Limits
Fractionation:	2-Fluorobiphenyl	3.9	3.2	81 %	40 - 140 %
	2-Bromonaphthalene	3.9	3.3	84 %	40 - 140 %
Extraction:	Chloro-octadecane	3.9	3.1	79 %	40 - 140 %
	ortho -Terphenyl	3.9	3.5	90 %	40 - 140 %

QA/QC Certification

- 1. Were all QA/QC procedures required by the method followed?
- 2. Were all performance/acceptance standards for the required QA/QC procedures achieved?

Yes Yes

3. Were any significant modifications made to the method, as specified in Section 11.3.1.1?

No

Method non-conformances indicated above are detailed below on this data report, or in the accompanying project narrative and project quality control report. Release of this data is authorized by the accompanying signed project cover letter. The accompanying cover letter, project narrative and quality control report are considered part of this data report.

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004). Sample extraction performed by microwave accelerated solvent extraction technique. Results are reported on a dry weight basis.

- Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.
- Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.
- n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations.



Field ID:

W1F05-P2-M-02

Matrix:

Soil

Project:

Buzzards Bay/3871-002

Container: Preservation: 120 mL Amber Glass

Client:

Geolnsight, Inc.

Cool

Laboratory ID: Sampled:

87109-15

OC Batch ID: Instrument ID: EP-2147-M

Received:

09-01-05 14:25 09-01-05 21:15

Sample Volume:

MS-6 HP 6890 15 g

Extracted:

09-15-05 15:00 09-27-05 02:21

Final Volume:

1 mL

Analyzed: Analyst:

CMM

Percent Solids: 68 Dilution Factor: 1

CAS Number	Analyte	Concentration Notes	Units	Reporting Limit
91-20-3	Naphthalene	BRL	ug/Kg	15
91-57-6	2-Methylnaphthalene	BRL	ug/Kg	15
208-96-8	Acenaphthylene	BRL	ug/Kg	15
83-32-9	Acenaphthene	BRL	ug/Kg	15
86-73-7	Fluorene	BRL	ug/Kg	15
85-01-8	Phenanthrene	BRL	ug/Kg	15
120-12-7	Anthracene	BRL	ug/Kg	15
206-44-0	Fluoranthene	BRL	ug/Kg	15
129-00-0	Pyrene	BRL	ug/Kg	15
56-55-3	Benzo[a]anthracene	BRL	ug/Kg	15
218-01-9	Chrysene	8 j	ug/Kg	15
205-99-2	Benzo[b]fluoranthene	BRL	ug/Kg	15
207-08-9	Benzo[k]fluoranthene	BRL	ug/Kg	15
50-32-8	Benzo[a]pyrene	BRL	ug/Kg	15
193-39-5	Indeno[1,2,3-c,d]pyrene	12 j	ug/Kg	15
53-70-3	Dibenzo[a,h]anthracene	19	ug/Kg	15
191-24-2	Benzo[g,h,i]perylene	BRL	ug/Kg	15

QC Surrogate Compound	Spiked	Measured	Recovery	QCLimits
ortho-Terphenyl	3,900	3,000	78 %	40 - 140 %

Method Reference:

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).

Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method.

Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons. Sample extraction performed by EPA Method 3546. Results are reported on a dry weight basis.

Report Notations:

Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.

Indicates an estimated value detected below the reporting limit for the analyte.



Field ID:

DDD-P2-04

Matrix:

Soil

Project:

Buzzards Bay/3871-002

Container:

120 mL Amber Glass

Client:

Geolnsight, Inc.

Preservation:

Cool

Laboratory ID: Sampled:

87109-16 09-01-05 23:50 OC Batch ID: Instrument ID: EP-2147-M

Received:

09-01-05 21:15

Sample Weight:

GC-9 Agilent 6890

Extracted:

09-15-05 15:00

Final Volume:

16 g 1 mL

96

Analyzed (AL): Analyzed (AR): 09-28-05 03:27 09-28-05 04:11 % Solids:

Aliphatic Dilution Factor: 1

Analyst:

MM

Aromatic Dilution Factor: 1

EPH Ranges	Concentration Note	s Units	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons †	BRL	mg/Kg	30
n-C19 to n-C36 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	30
n-C11 to n-C22 Aromatic Hydrocarbons † 0	BRL	mg/Kg	30
Unadjusted n-C11 to n-C22 Aromatic Hydrocarbons †	BRL	mg/Kg	30

QC Surrogate G	ompound	Spiked	Measured	Recovery	QC Limits
Fractionation:	2-Fluorobiphenyl	2.6	2.1	78 %	40 - 140 %
	2-Bromonaphthalene	2.6	1.8	70 %	40 - 140 %
Extraction:	Chloro-octadecane	2.6	2.1	78 %	40 - 140 %
	ortho-Terphenyl	2.6	2.3	86 %	40 - 140 %

	VOC Certification

- 1. Were all QA/QC procedures required by the method followed?
- 2. Were all performance/acceptance standards for the required QA/QC procedures achieved?

Yes Yes

3. Were any significant modifications made to the method, as specified in Section 11.3.1.1?

No

Method non-conformances indicated above are detailed below on this data report, or in the accompanying project narrative and project quality control report. Release of this data is authorized by the accompanying signed project cover letter. The accompanying cover letter, project narrative and quality control report are considered part of this data report.

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004). Sample extraction performed by microwave accelerated solvent extraction technique. Results are reported on a dry weight basis.

- Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.
- Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.
- n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations.



Field ID:

DDD-P2-04

Project:

Buzzards Bay/3871-002

Client:

Geolnsight, Inc.

Geoinsignt,

Laboratory ID: Sampled: Received: 87109-16 09-01-05 23:50 09-01-05 21:15 09-15-05 15:00

Extracted: Analyzed: Analyst:

09-27-05 03:00 CMM Matrix:

Soil

Container:

120 mL Amber Glass

Preservation:

QC Batch ID:

EP-2147-M

Instrument ID:

MS-6 HP 6890

Sample Volume:

16 g

Cool

Final Volume:

1 mL

Percent Solids: Dilution Factor:

96 1

CAS Number	Analyte	Concentration Notes	Units	Reporting Limit
91-20-3	Naphthalene	BRL	ug/Kg	10
91-57-6	2-Methylnaphthalene	BRL	ug/Kg	10
208-96-8	Acenaphthylene	BRL	ug/Kg	10
83-32-9	Acenaphthene	BRL	ug/Kg	10
86-73-7	Fluorene	BRL	ug/Kg	10
85-01-8	Phenanthrene	28	ug/Kg	10
120-12- <i>7</i>	Anthracene	5 j	ug/Kg	10
206-44-0	Fluoranthene	63	ug/Kg	10
129-00-0	Pyrene	47	ug/Kg	10
56-55-3	Benzo[a]anthracene	28	ug/Kg	10
218-01-9	Chrysene	24	ug/Kg	10
205-99-2	Benzo[b]fluoranthene	25	ug/Kg	10
207-08-9	Benzo[k]fluoranthene	13	ug/Kg	10
50-32-8	Benzo[a]pyrene	13	ug/Kg	10
193-39-5	Indeno[1,2,3-c,d]pyrene	19	ug/Kg	10
53 <i>-7</i> 0-3	Dibenzo[a,h]anthracene	13	ug/Kg	10
191-24-2	Benzo[g,h,i]perylene	13	ug/Kg	10

QC Surrogate Compound	Spiked	Measured	Recovery	QC'Limits QC'Limits
ortho- Terphenyl	2,600	2,000	76 %	40 - 140 %

Method Reference:

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).

Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method.

Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons. Sample extraction performed by EPA Method 3546. Results are reported on a dry weight basis.

Report Notations:

Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.

Indicates an estimated value detected below the reporting limit for the analyte.



Field ID:

DDD-P2-05

Matrix:

Soil

Project:

Buzzards Bay/3871-002

Container: Preservation:

120 mL Amber Glass Cool

Client:

Geolnsight, Inc.

QC Batch ID:

EP-2148-M

Laboratory ID: Sampled:

87109-17

Received:

09-01-05 23:56 09-01-05 21:15

Instrument ID: Sample Weight: GC-9 Agilent 6890 15 g

Extracted: Analyzed (AL):

09-15-05 22:00 09-27-05 20:55

Final Volume:

1 mL % Solids: 80

Analyzed (AR):

09-27-05 21:39

Aliphatic Dilution Factor: 1

Analyst:

MM

Aromatic Dilution Factor: 1

EPH Ranges	Concentration Notes	Units	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons †	BRL	mg/Kg	37
n-C19 to n-C36 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	37
n-C11 to n-C22 Aromatic Hydrocarbons † 0	BRL	mg/Kg	3 <i>7</i>
<u>Unadjusted</u> n-C11 to n-C22 Aromatic Hydrocarbons [†]	BRL	mg/Kg	37

QC Surrogate C	ompound	Spiked	Measured	Recovery	QC/Limits
Fractionation:	2-Fluorobiphenyl	3.3	2.8	86 %	40 - 140 %
	2-Bromonaphthalene	3.3	3.0	90 %	40 - 140 %
Extraction:	Chloro-octadecane	3.3	2.8	84 %	40 - 140 %
	ortho -Terphenyl	3.3	2.9	87 %	40 - 140 %

	Place Nove		Co. Herman	11:11.5	cation
e against a contact of the	77 77 7 3	4.01		. 44.	39 (2 sp. 20)
1000	12 7 14 18 18	3.74 (0)		17111	cation

- 1. Were all QA/QC procedures required by the method followed?
- 2. Were all performance/acceptance standards for the required QA/QC procedures achieved?

Yes Yes

3. Were any significant modifications made to the method, as specified in Section 11.3.1.1?

Method non-conformances indicated above are detailed below on this data report, or in the accompanying project narrative and project quality control report. Release of this data is authorized by the accompanying signed project cover letter. The accompanying cover letter, project narrative and quality control report are considered part of this data report.

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004). Sample extraction performed by microwave accelerated solvent extraction technique. Results are reported on a dry weight basis.

- Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.
- Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.
- n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations.



Field ID:

DDD-P2-05

Project:

Buzzards Bay/3871-002

Client:

Geolnsight, Inc.

Laboratory ID:

87109-17 09-01-05 23:56

Sampled: Received: Extracted:

09-01-05 21:15 09-15-05 23:00 09-27-05 03:40

Analyzed: Analyst:

СММ

Matrix:

Soil

Container:

120 mL Amber Glass

Preservation:

ation: Cool

QC Batch ID:

EP-2148-M

Instrument ID:

MS-6 HP 6890

Sample Volume:

15 g 1 mL

80

Final Volume: Percent Solids:

Dilution Factor: 1

CAS Number	Analyte	Concentration Notes	Units	Reporting Limit
91-20-3	Naphthalene	8 j	ug/Kg	12
91-57-6	2-Methylnaphthalene	BRL	ug/Kg	12
208-96-8	Acenaphthylene	BRL	ug/Kg	12
83-32-9	Acenaphthene	BRL	ug/Kg	12
86-73-7	Fluorene	BRL	ug/Kg	12
85-01-8	Phenanthrene	BRL	ug/Kg	12
120-12-7	Anthracene	BRL	ug/Kg	12
206-44-0	Fluoranthene	10 j	ug/Kg	12
129-00-0	Pyrene	8 j	ug/Kg	12
56-55-3	Benzo[a]anthracene	BRL	ug/Kg	12
218-01-9	Chrysene	BRL	ug/Kg	12
205-99-2	Benzo[b]fluoranthene	BRL	ug/Kg	12
207-08-9	Benzo[k]fluoranthene	BRL	ug/Kg	12
50-32-8	Benzo[a]pyrene	BRL	ug/Kg	12
193-39-5	Indeno[1,2,3-c,d]pyrene	11 j	ug/Kg	12
53-70-3	Dibenzo[a,h]anthracene	BRL	ug/Kg	12
191-24-2	Benzo[g,h,i]perylene	BRL	ug/Kg	12

QC Surrogate Compound	Spiked	Measured	Recovery	QC Limits
ortho- Terphenyl	3,300	2,700	82 %	40 - 140 %

Method Reference:

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996). Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method. Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons. Sample extraction performed by EPA Method 3546. Results are reported on a dry weight basis.

Report Notations:

Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.

Indicates an estimated value detected below the reporting limit for the analyte.



Field ID:

W3A05-P2-UIT-01

Matrix:

Soil

Project:

Buzzards Bay/3871-002

Container: Preservation: 120 mL Amber Glass Cool

Client:

Geolnsight, Inc.

Laboratory ID: Sampled:

87109-18

OC Batch ID: Instrument ID: EP-2147-M

Received:

09-01-05 10:30 09-01-05 21:15

Sample Weight:

BRL

GC-9 Agilent 6890

Extracted:

09-15-05 15:00

Final Volume:

15 g

mg/Kg

1 mL

98

Analyzed (AL):

09-28-05 04:56

% Solids:

Analyzed (AR):

09-28-05 05:40

Unadjusted n-C11 to n-C22 Aromatic Hydrocarbons

Aliphatic Dilution Factor: 1

Analyst:

MM

Aromatic Dilution Factor: 1

EPH Ranges	Goncentration Notes	Units	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	30
n-C19 to n-C36 Aliphatic Hydrocarbons †	BRL	mg/Kg	30
n-C11 to n-C22 Aromatic Hydrocarbons † °	BRL	mg/Kg	30

		Mosa 200 magaya waxay			1 Construction of the control of the
QC Surrogate C	ompound	Spiked	Measured	Recovery	QC Limits
Fractionation:	2-Fluorobiphenyl	2.7	2.1	77 %	40 - 140 %
	2-Bromonaphthalene	2.7	1.9	72 %	40 - 140 %
Extraction:	Chloro-octadecane	2.7	2.3	84 %	40 - 140 %
	ortho -Terphenyl	2.7	2.5	92 %	40 - 140 %

	QA/QC Certification
1.	Were all QA/QC procedures required by the method followed?
2.	Were all performance/acceptance standards for the required OA/OC procedures achieved?

3. Were any significant modifications made to the method, as specified in Section 11.3.1.1?

Yes No

Yes

30

Method non-conformances indicated above are detailed below on this data report, or in the accompanying project narrative and project quality control report. Release of this data is authorized by the accompanying signed project cover letter. The accompanying cover letter, project narrative and quality control report are considered part of this data report.

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004).

Sample extraction performed by microwave accelerated solvent extraction technique. Results are reported on a dry weight basis.

- Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.
- Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.
- n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations.



Field ID:

W3A05-P2-UIT-01

Project:

Buzzards Bay/3871-002

Client:

Geolnsight, Inc.

87109-18

Sampled: Received:

Laboratory ID:

09-01-05 10:30 09-01-05 21:15

Extracted: Analyzed: 09-15-05 15:00 09-27-05 04:19

Analyst:

CMM

Matrix:

Soil

Cool

Container:

120 mL Amber Glass

Preservation:

QC Batch ID:

EP-2147-M MS-6 HP 6890

Instrument ID: Sample Volume:

15 g

Final Volume: Percent Solids: 1 mL 98

Dilution Factor:

CAS Number	Analyte	Concentration Notes	Units	Reporting Limit
91-20-3	Naphthalene	6 j	ug/Kg	10
91-57-6	2-Methylnaphthalene	BRL	ug/Kg	10
208-96-8	Acenaphthylene	BRL	ug/Kg	10
83-32-9	Acenaphthene	BRL	ug/Kg	10
86-73-7	Fluorene	6 j	ug/Kg	10
85-01-8	Phenanthrene	19	ug/Kg	10
120-12-7	Anthracene	13	ug/Kg	10
206-44-0	Fluoranthene	35	ug/Kg	10
129-00-0	Pyrene	29	ug/Kg	10
56-55-3	Benzo[a]anthracene	27	ug/Kg	10
218-01-9	Chrysene	27	ug/Kg	10
205-99-2	Benzo[b]fluoranthene	20	ug/Kg	10
207-08-9	Benzo[k]fluoranthene	23	ug/Kg	10
50-32-8	Benzo[a]pyrene	16	ug/Kg	10
193-39-5	Indeno[1,2,3-c,d]pyrene	25	ug/Kg	10
53-70-3	Dibenzo[a,h]anthracene	25	ug/Kg	10
191-24-2	Benzo[g,h,i]perylene	21	ug/Kg	10

	QC Surrogate Compound	Spiked	Measured	Recovery	QC Limits
ortho-Terphenyl 2,700 2,100 77 % 40 - 140 %	ortho-Terphenyl	2,700	2,100	77 %	

Method Reference:

Test Methods for Evaluating Solid Waste, US EPA, 5W-846, Third Edition, Update III (1996).

Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method.

Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons. Sample extraction performed by EPA Method 3546. Results are reported on a dry weight basis.

Report Notations:

Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.

Indicates an estimated value detected below the reporting limit for the analyte.



Field ID:

W3A05-P2-LIT-01

Project: Buzzards Bay/3871-002

Client:

Geolnsight, Inc.

09-28-05 06:24

09-28-05 07:08

Laboratory ID: 87109-19

Sampled:

09-01-05 10:37 Received: 09-01-05 21:15 Extracted: 09-15-05 15:00

Analyzed (AL): Analyzed (AR): Analyst:

MM

Matrix:

Soil

Container: 500 mL Amber Glass

Cool

Preservation: QC Batch ID:

Instrument ID:

EP-2147-M GC-9 Agilent 6890

Sample Weight:

15 g

Final Volume:

1 mL 85

% Solids: Aliphatic Dilution Factor: 1 Aromatic Dilution Factor: 1

EPH Ranges	Goncentration Notes	Units	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	35
n-C19 to n-C36 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	35
n-C11 to n-C22 Aromatic Hydrocarbons † 0	BRL	mg/Kg	35
Unadjusted n-C11 to n-C22 Aromatic Hydrocarbons †	BRL	mg/Kg	35

QC Surrogate Co	ompound	Spiked	Measured	Recovery	QC/Limits
Fractionation:	2-Fluorobiphenyl	3.1	2.5	80 %	40 - 140 %
	2-Bromonaphthalene	3.1	2.4	79 %	40 - 140 %
Extraction:	Chloro-octadecane	3.1	2.5	81 %	40 - 140 %
	ortho-Terphenyl	3.1	2.6	85 %	40 - 140 %

QA/QC Certification

- 1. Were all QA/QC procedures required by the method followed?
- 2. Were all performance/acceptance standards for the required QA/QC procedures achieved?

Yes Yes

3. Were any significant modifications made to the method, as specified in Section 11.3.1.1?

Nο

Method non-conformances indicated above are detailed below on this data report, or in the accompanying project narrative and project quality control report. Release of this data is authorized by the accompanying signed project cover letter. The accompanying cover letter, project narrative and quality control report are considered part of this data report.

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004). Sample extraction performed by microwave accelerated solvent extraction technique. Results are reported on a dry weight basis.

- BRL Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.
- Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.
- n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations.



Field ID:

W3A05-P2-LIT-01

Soil

Project:

Buzzards Bay/3871-002

Container: Preservation: 500 mL Amber Glass

40 - 140 %

Client:

Geolnsight, Inc.

Cool

Laboratory ID: Sampled:

87109-19 09-01-05 10:37

QC Batch ID: Instrument ID: EP-2147-M

Received:

09-01-05 21:15

Sample Volume:

MS-6 HP 6890

Extracted:

09-15-05 07:00 09-28-05 01:16

Final Volume:

15 g 1 mL

Analyzed: Analyst:

CMM

Percent Solids: Dilution Factor:

85 1

CAS Number	Analyte	Concentration Notes	Units	Reporting Limit
91-20-3	Naphthalene	BRL	ug/Kg	12
91-5 <i>7</i> -6	2-Methylnaphthalene	BRL	ug/Kg	12
208-96-8	Acenaphthylene	BRL	ug/Kg	12
83-32-9	Acenaphthene	BRL	ug/Kg	12
86-73-7	Fluorene	BRL	ug/Kg	12
85-01-8	Phenanthrene	BRL	ug/Kg	12
120-12-7	Anthracene	BRL	ug/Kg	12
206-44-0	Fluoranthene	BRL	ug/Kg	12
129-00-0	Pyrene	BRL	ug/Kg	12
56-55-3	Benzo[a]anthracene	BRL	ug/Kg	12
218-01-9	Chrysene	BRL	ug/Kg	12
205-99-2	Benzo[b]fluoranthene	BRL.	ug/Kg	12
207-08-9	Benzo[k]fluoranthene	BRL	ug/Kg	12
50-32-8	Benzo[a]pyrene	BRL	ug/Kg	12
193-39-5	Indeno[1,2,3-c,d]pyrene	BRL	ug/Kg	12
53-70-3	Dibenzo[a,h]anthracene	BRL	ug/Kg	12
191-24-2	Benzo[g,h,i]perylene	BRL	ug/Kg	12

ortho-Terphenyl Method Reference:

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).

3,100

Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method.

2,300

Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons. Sample extraction performed by EPA Method 3546. Results are reported on a dry weight basis.

Report Notations:

Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.

75 %



Field ID:

W3A05-P2-UIT-02

Buzzards Bay/3871-002

Project: Client:

Geolnsight, Inc.

Laboratory ID:

87109-22

Sampled: Received: Extracted: 09-01-05 10:48 09-01-05 21:15 09-15-05 22:00

Analyzed (AL): Analyzed (AR):

09-27-05 22:24 09-27-05 23:08

Analyst:

MM

Matrix:

Soil Container:

120 mL Amber Glass

Preservation:

Cool

QC Batch ID:

EP-2148-M GC-9 Agilent 6890

Instrument ID:

16 g

Sample Weight: Final Volume:

1 mL 95

% Solids: Aliphatic Dilution Factor: 1

Aromatic Dilution Factor: 1

EPH Ranges C	oncentration No	otes Units	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	30
n-C19 to n-C36 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	30
n-C11 to n-C22 Aromatic Hydrocarbons ^{f 0}	BRL	mg/Kg	30
<u>Unadjusted</u> n-C11 to n-C22 Aromatic Hydrocarbons [†]	BRL	mg/Kg	30

QC Surrogate Co	ompound	Spiked	Measured	Recovery	QC Limits
Fractionation:	2-Fluorobiphenyl	2.6	2.0	77 %	40 - 140 %
	2-Bromonaphthalene	2.6	1.7	66 %	40 - 140 %
Extraction:	Chloro-octadecane	2.6	2.1	81 %	40 - 140 %
	ortho -Terphenyl	2.6	2.1	78 %	40 - 140 %

QA/QC Certification

- 1. Were all QA/QC procedures required by the method followed?
- 2. Were all performance/acceptance standards for the required QA/QC procedures achieved?

Yes Yes

3. Were any significant modifications made to the method, as specified in Section 11.3.1.1?

No

Method non-conformances indicated above are detailed below on this data report, or in the accompanying project narrative and project quality control report. Release of this data is authorized by the accompanying signed project cover letter. The accompanying cover letter, project narrative and quality control report are considered part of this data report.

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004). Sample extraction performed by microwave accelerated solvent extraction technique. Results are reported on a dry weight basis.

- BRL Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.
- Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.
- n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations.



Field ID:

W3A05-P2-UIT-02

Project:

Buzzards Bay/3871-002

Client:

Geolnsight, Inc.

Laboratory ID:

87109-22

Sampled: Received: 09-01-05 10:48 09-01-05 21:15 09-15-05 23:00

Extracted: Analyzed: Analyst:

09-28-05 01:55 CMM Matrix:

Soil

Container:

120 mL Amber Glass

Preservation:

Cool

QC Batch ID:

EP-2148-M

Instrument ID: Sample Volume: MS-6 HP 6890 16 g

Final Volume:
Percent Solids:

Dilution Factor:

1 mL 95

1

CAS Number	Analyte	Goncentration Notes	Units	Reporting Limit
91-20-3	Naphthalene	BRL	ug/Kg	10
91-57-6	2-Methylnaphthalene	BRL	ug/Kg	10
208-96-8	Acenaphthylene	BRL	ug/Kg	10
83-32-9	Acenaphthene	BRL	ug/Kg	10
86-73-7	Fluorene	BRL	ug/Kg	10
85-01-8	Phenanthrene	32	ug/Kg	10
120-12-7	Anthracene	6 j	ug/Kg	10
206-44-0	Fluoranthene	65	ug/Kg	10
129-00-0	Pyrene	47	ug/Kg	10
56-55-3	Benzo[a]anthracene	20	ug/Kg	10
218-01-9	Chrysene	23	ug/Kg	10
205-99-2	Benzo[b]fluoranthene	22	ug/Kg	10
207-08-9	Benzo[k]fluoranthene	12	ug/Kg	10
50-32-8	Benzo[a]pyrene	9 j	ug/Kg	10
193-39-5	Indeno[1,2,3-c,d]pyrene	17	ug/Kg	10
53-70-3	Dibenzo[a,h]anthracene	BRL	ug/Kg	10
191-24-2	Renzola h ilnervlene	11	ug/Vg	10

QC Surrogate Compound	Spiked	Measured	Recovery	QC Limits
ortho-Terphenyl	2,600	2,000	78 %	40 - 140 %

Method Reference:

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).

Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method.

Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons. Sample extraction performed by EPA Method 3546. Results are reported on a dry weight basis.

Report Notations:

L Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.

Indicates an estimated value detected below the reporting limit for the analyte.



Field ID:

W3A05-P2-LIT-02

Buzzards Bay/3871-002

Project: Client:

Geolnsight, Inc.

Laboratory ID:

87109-23 09-01-05 10:53

Sampled: Received: Extracted:

09-01-05 21:15 09-15-05 22:00 09-28-05 00:36 Analyzed (AL): 09-28-05 01:21

Unadjusted n-C11 to n-C22 Aromatic Hydrocarbons

Analyzed (AR): Analyst:

MM

Matrix: Container: Soil

120 mL Amber Glass

Preservation:

Cool

OC Batch ID:

EP-2148-M GC-9 Agilent 6890

mg/Kg

Instrument ID:

Sample Weight:

Final Volume:

16 g 1 ml

% Solids:

91

Aliphatic Dilution Factor: 1 Aromatic Dilution Factor: 1

EPH Ranges	Goncentration Notes	Units	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons †	BRL	mg/Kg	31
n-C19 to n-C36 Aliphatic Hydrocarbons †	BRL	mg/Kg	31
n-C11 to n-C22 Aromatic Hydrocarbons ^{† 0}	BRL	mg/Kg	31

QC Surrogate C	ompound	Spiked	Measured	Recovery	QC Limits
Fractionation:	2-Fluorobiphenyl	2.7	2.1	76 %	40 - 140 %
	2-Bromonaphthalene	2.7	2.1	77 %	40 - 140 %
Extraction:	Chloro-octadecane	2.7	2.2	80 %	40 - 140 %
	ortho -Terphenyl	2.7	2.1	78 %	40 - 140 %

			2.1	76 %	40 - 140 %
2	2-Bromonaphthalene	2.7	2.1	77 %	40 - 140 %
Extraction: C	Chloro-octadecane	2.7	2.2	80 %	40 - 140 %
C	ortho-Terphenyl	2.7	2.1	78 %	40 - 140 %

- 1. Were all QA/QC procedures required by the method followed?
- 2. Were all performance/acceptance standards for the required QA/QC procedures achieved?
- 3. Were any significant modifications made to the method, as specified in Section 11.3.1.1?

Yes Nο

31

Method non-conformances indicated above are detailed below on this data report, or in the accompanying project narrative and project quality control report. Release of this data is authorized by the accompanying signed project cover letter. The accompanying cover letter, project narrative and quality control report are considered part of this data report.

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004).

Sample extraction performed by microwave accelerated solvent extraction technique. Results are reported on a dry weight basis.

Report Notations:

BRL Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.

BRL

- Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.
- n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations.



Field ID:

Extracted:

W3A05-P2-LIT-02

Project: Client:

Buzzards Bay/3871-002

GeoInsight, Inc.

87109-23

Sampled: Received:

Laboratory ID:

09-01-05 10:53 09-01-05 21:15 09-15-05 23:00 09-28-05 02:34

Analyzed: Analyst: CMM Matrix:

Container: Preservation: 120 mL Amber Glass Cool

QC Batch ID:

EP-2148-M MS-6 HP 6890

Instrument ID: Sample Volume:

16 g

Final Volume: 1 mL Percent Solids: 91

Dilution Factor:

CAS Number	Analyte	Concentration	Notes Units Reporting Limit
91-20-3	Naphthalene	11	ug/Kg 10
91-57-6	2-Methylnaphthalene	8 j	ug/Kg 10
208-96-8	Acenaphthylene	6 j	ug/Kg 10
83-32-9	Acenaphthene	31	ug/Kg 10
86-73-7	Fluorene	38	ug/Kg 10
85-01-8	Phenanthrene	250	ug/Kg 10
120-12-7	Anthracene	93	ug/Kg 10
206-44-0	Fluoranthene	280	ug/Kg 10
129-00-0	Pyrene	210	ug/Kg 10
56-55-3	Benzo[a]anthracene	120	ug/Kg 10
218-01-9	Chrysene	92	ug/Kg 10
205-99-2	Benzo[b]fluoranthene	100	ug/Kg 10
207-08-9	Benzo[k]fluoranthene	42	ug/Kg 10
50-32-8	Benzo[a]pyrene	79	ug/Kg 10
193-39-5	Indeno[1,2,3-c,d]pyrene	50	ug/Kg 10
53-70-3	Dibenzo[a,h]anthracene	19	ug/Kg 10
191-24-2	Benzo[g,h,i]perylene	40	ug/Kg 10

QC Surrogate Compound	Spiked	Measured	Recovery	QC Limits
ortho-Terphenyl	2,700	2,500	92 %	40 - 140 %

Method Reference:

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).

Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method.

Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons. Sample extraction performed by EPA Method 3546. Results are reported on a dry weight basis.

Report Notations:

Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.

j Indicates an estimated value detected below the reporting limit for the analyte.



Field ID:

W3A05-P2-UIT-03

Buzzards Bay/3871-002

Project: Client:

Geolnsight, Inc. 87109-24

Laboratory ID: Sampled: Received:

09-01-05 11:24 09-01-05 21:15

Unadjusted n-C11 to n-C22 Aromatic Hydrocarbons

Extracted: Analyzed (AL):

09-15-05 22:00 09-28-05 02:05 Analyzed (AR): 09-28-05 02:49

Analyst:

MM

Matrix:

Soil

Container: Preservation:

120 mL Amber Glass Cool

QC Batch ID:

EP-2148-M

mg/Kg

Instrument ID:

GC-9 Agilent 6890

Sample Weight: Final Volume:

15 g 1 mL

% Solids:

Aliphatic Dilution Factor: 1

Aromatic Dilution Factor: 1

EPH Ranges	Concentration Notes	Units	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	32
n-C19 to n-C36 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	32
n-C11 to n-C22 Aromatic Hydrocarbons † o	BRL	mg/Kg	32

BRL

QC Surrogate Co	ompound	Spiked	Measured	Recovery	QC Limits
Fractionation:	2-Fluorobiphenyl	2.9	2.3	79 %	40 - 140 %
	2-Bromonaphthalene	2.9	2.0	70 %	40 - 140 %
Extraction: Chlo	Chloro-octadecane	2.9	2.3	81 %	40 - 140 %
	ortho -Terphenyl	2.9	2.2	76 %	40 - 140 %

QA/QC Certification

- 1. Were all QA/QC procedures required by the method followed?
- 2. Were all performance/acceptance standards for the required QA/QC procedures achieved?
- 3. Were any significant modifications made to the method, as specified in Section 11.3.1.1?

No

Yes

32

Method non-conformances indicated above are detailed below on this data report, or in the accompanying project narrative and project quality control report. Release of this data is authorized by the accompanying signed project cover letter. The accompanying cover letter, project narrative and quality control report are considered part of this data report.

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004).

Sample extraction performed by microwave accelerated solvent extraction technique. Results are reported on a dry weight basis.

Report Notations:

Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.

- Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.
- n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations



Field ID:

W3A05-P2-UIT-03

Project:

Buzzards Bay/3871-002

Client:

Geolnsight, Inc.

87109-24

Laboratory ID: 09-01-05 11:24

Sampled: Received: Extracted:

09-01-05 21:15 09-15-05 23:00 09-28-05 03:13

Analyzed: Analyst:

CMM

Matrix:

Soil

Cool

Container:

120 mL Amber Glass

Preservation:

QC Batch ID:

EP-2148-M

Instrument ID:

MS-6 HP 6890

Sample Volume:

15 g 1 mL

Final Volume: Percent Solids:

91

	CCITE .	2011431
Dil	ution	Factor:

CAS Number	Analyte	Concentration Notes	Units	Reporting Limit
91-20-3	Naphthalene	BRL	ug/Kg	12
91-57-6	2-Methylnaphthalene	BRL	ug/Kg	12
208-96-8	Acenaphthylene	BRL	ug/Kg	12
83-32-9	Acenaphthene	BRL	ug/Kg	12
86-73-7	Fluorene	BRL	ug/Kg	12
85-01-8	Phenanthrene	BRL	ug/Kg	12
120-12-7	Anthracene	BRL	ug/Kg	12
206-44-0	Fluoranthene	BRL	ug/Kg	12
129-00-0	Pyrene	BRL	ug/Kg	12
56-55-3	Benzo[a]anthracene	BRL	ug/Kg	12
218-01-9	Chrysene	BRL	ug/Kg	12
205-99-2	Benzo[b]fluoranthene	BRL	ug/Kg	12
207-08-9	Benzo[k]fluoranthene	BRL	ug/Kg	12
50-32-8	Benzo[a]pyrene	BRL	ug/Kg	12
193-39-5	Indeno[1,2,3-c,d]pyrene	BRL	ug/Kg	12
53-70-3	Dibenzo[a,h]anthracene	BRL	ug/Kg	12
191-24-2	Benzo[g,h,i]perylene	BRL	ug/Kg	12

QC Surrogate Compound	Spiked	Measured	Recovery	QC Limits
ortho-Terphenyl	2,900	2,200	78 %	40 - 140 %

Method Reference:

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).

Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method.

Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons. Sample extraction performed by EPA Method 3546. Results are reported on a dry weight basis.

Report Notations:

Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.

Indicates an estimated value detected below the reporting limit for the analyte.



Field ID:

W3A05-P2-LIT-03

Matrix:

Soil

Cool

Project:

Buzzards Bay/3871-002

Container: Preservation: 120 mL Amber Glass

Client:

GeoInsight, Inc.

Laboratory ID: Sampled:

87109-25

QC Batch ID: Instrument ID: EP-2148-M

Received:

09-01-05 11:30 09-01-05 21:15

Sample Weight:

GC-9 Agilent 6890

Extracted:

09-15-05 22:00 09-28-05 03:33

Final Volume:

16 g

Analyzed (AL):

% Solids:

Analyzed (AR):

09-28-05 04:18

Aliphatic Dilution Factor:

Analyst:

MM

Aromatic Dilution Factor: 1

EPH Ranges	Concentration Not	es Units	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	32
n-C19 to n-C36 Aliphatic Hydrocarbons †	BRL	mg/Kg	32
n-C11 to n-C22 Aromatic Hydrocarbons † 0	BRL	mg/Kg	32
<u>Unadjusted</u> n-C11 to n-C22 Aromatic Hydrocarbons †	BRL	mg/Kg	32

QC Surrogate C	ompound	Spiked	Measured	Recovery	QC Limits
Fractionation:	2-Fluorobiphenyl	2.8	2.1	75 %	40 - 140 %
	2-Bromonaphthalene	2.8	2.1	76 %	40 - 140 %
Extraction:	Chloro-octadecane	2.8	2.2	79 %	40 - 140 %
	ortho -Terphenyl	2.8	2.2	77 %	40 - 140 %

QA/QC Certification	
1. Were all QA/QC procedures required by the method followed? Yes	<u> </u>

Were all performance/acceptance standards for the required QA/QC procedures achieved? 3. Were any significant modifications made to the method, as specified in Section 11.3.1.1?

No

Method non-conformances indicated above are detailed below on this data report, or in the accompanying project narrative and project quality control report. Release of this data is authorized by the accompanying signed project cover letter. The accompanying cover letter, project narrative and quality control report are considered part of this data report.

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004). Sample extraction performed by microwave accelerated solvent extraction technique. Results are reported on a dry weight basis.

- Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.
- Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.
- n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations.



Field ID:

W3A05-P2-LIT-03

Matrix:

Soil

Project:

Buzzards Bay/3871-002

Container:

120 mL Amber Glass

Client:

Geolnsight, Inc.

Preservation:

Cool

Laboratory ID:

87109-25

OC Batch ID:

EP-2148-M

Sampled: Received: 09-01-05 11:30 09-01-05 21:15

Instrument ID: Sample Volume: MS-6 HP 6890

Extracted:

09-15-05 23:00

Final Volume:

16 g

Analyzed:

09-28-05 03:52

Percent Solids:

Analyst:

CMM

Dilution Factor:

CAS Number	Analyte	Concentration Notes	Units	Reporting Limit
91-20-3	Naphthalene	6 j	ug/Kg	11
91-57-6	2-Methylnaphthalene	BRL	ug/Kg	11
208-96-8	Acenaphthylene	BRL	ug/Kg	11
83-32-9	Acenaphthene	BRL	ug/Kg	11
86-73-7	Fluorene	6 j	ug/Kg	11
85-01-8	Phenanthrene	61	ug/Kg	11
120-12-7	Anthracene	26	ug/Kg	11
206-44-0	Fluoranthene	130	ug/Kg	11
129-00-0	Pyrene	97	ug/Kg	11
56-55-3	Benzo[a]anthracene	53	ug/Kg	11
218-01-9	Chrysene	44	ug/Kg	11
205-99-2	Benzo[b]fluoranthene	50	ug/Kg	11
207-08-9	Benzo[k]fluoranthene	23	ug/Kg	11
50-32-8	Benzo[a]pyrene	35	ug/Kg	11
193-39-5	Indeno[1,2,3-c,d]pyrene	30	ug/Kg	11
53-70-3	Dibenzo[a,h]anthracene	15	ug/Kg	11
191-24-2	Benzo[g,h,i]perylene	23	ug/Kg	11

QC Surrogate Compound	Spiked	Measured	Recovery	QC Limits
ortho-Terphenyl	2,800	2,200	77 %	40 - 140 %

Method Reference:

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).

Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method.

Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons. Sample extraction performed by EPA Method 3546. Results are reported on a dry weight basis.

Report Notations:

Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.

j Indicates an estimated value detected below the reporting limit for the analyte.



Project Narrative

Project: Client: Buzzards Bay/3871-002

GeoInsight, Inc.

Lab ID:

87109

Received:

09-01-05 21:15

A. Documentation and Client Communication

The following documentation discrepancies, and client changes or amendments were noted for this project:

1. No documentation discrepancies, changes, or amendments were noted.

B. Method Modifications, Non-Conformances and Observations

The sample(s) in this project were analyzed by the references analytical method(s), and no method modifications, non-conformances or analytical issues were noted, except as indicated below:

- 1. Project Non-conformance. Project 87109 was received at a temperature of 6.8'C. This measurement is outside the recommended range of 2-6'C.
- 2. Samples 87109-01 through -31 for analysis by MA DEP EPH with PAHs by 8270C-Mod SIM were composited upon receipt by the laboratory, as indicated on the Chain of Custody.
- 3. MA DEP EPH Note: Samples 87109-01 through -31. Polynuclear aromatic hydrocarbon (PAH) target analytes were identified and quantified by GC/MS-SIM, in accordance with the method provision for alternate determinative methodologies. GC/MS-SIM was used to achieve low quantification limits necessary for regulatory compliance. Target analytes were determined utilizing the same sample extract used for carbon range determination by GC/FID.

	s path analyzed to	end to BAB Labs	I wher compositing freeze the Alb	aliports	ARTC.		350-117 68-140 35m SE11 135	-	-	1800 (A1501-18) W OI B		+-	460 - M - EG - 10 01-1 0651	11	200 1127 04	8/	DATE IDENTIFICATION	Sampling	INSTRUCTIONS: Use separate line for each container (except replicates)	Kevin Trainer		Sampler Name:	Spt000)	Buzzands Bany	•	GROUNDW
	Monitoring on one	on did iee ONY			tC sumple	INSTRUCTIONS	LIT-035	LNF-03 A) m (01 C)		M (3) (-LIT OIC	- 1	A D T L	GROUNDWATER DRINKING WATE WASTEWATER SOIL SOLID OTHER SOLID DILORGANIC LII	Matrix	line for each container (excep	918-692	Telephone:	Lily strond, mit	=	- ⁹¹	(Scolvisight	Firm:	228 Main Street, P.C. Buzzards Bay, MA C. Telephone (508) 75: www.groundwaterar
	☐ Dredge Material	H ☐ Drinking Water ✓ ☐ Wastewater ☐ Waste Disposal		Standard	Regulatory Program	DAT						< ×	×	X	X3 X	× 3	COMPOSITE GRAB NUMBER 40mL VOA Via! 60mL/2 oz Glas: 120mL/4 oz Amber 250mL/6 oz Gi 1L/32 oz Amber (250mL/8 oz Pia 500mL/16 oz Pia	Glass Container(s)		h11). (- 1	m17 01886	Ninc		54		228 Main Street, P.O. Box 1200 Buzzards Bay, MA 02532 Telephone (508) 759-4441 • FAX (508) 759-4475 www.groundwateranalytical.com
C C C P. 28.7	Marix Spike Duplicate W3C4 P3 - LTT-01A	Project Specific QC Required Selection of QC Sample	In Malitix Spikes, allivel Malitix Spike Duplicates - Encourse y control project specific unless prearranged. Project specific Control Spikes are charged on a per sample basis. Each MS, MSD and Sample Duplicate requires an additional sample alliquot.		Project Specific QC	DATA QUALITY OBJECTIVES				- - - - - - - - - - - - - - - - - - -		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	工		X X /	×		Preservatio		☐ Purchase Order No.:	BILLING	Please FAX to:	(Rush requires Push Authorization Number)	☐ PRIORITY (5 Business Days) ☐ RUSH (RAN)	STANDARD (10 Business Days)	TURNAROUND	CHAIN-OF-CUSTODY H 3D AND WORK ORDER
	Method of Shipment. □ GWA Courier □ Express Mail	Helinquished by:	Relanguished by:	Relipquished by S	NOTE: All samples submitted subject to Standard Terms	CHAIN	•					→	Z ,	X 7		. *	BCRA/. I. I 82608 TCL-I (1 82608 NT PI (1 80218 Arom (1 8032 PCBs (1 1 8031 A Broil (1 803	ETROLEUM atics arbons only Cides cides BCP	☐ 624 ☐ 602+ ☐ 601/6 ☐ 625	02+MTBE WAHs only esticides CCBs	[] 525 [] 535 [] 531 [] 541	\$DWA 1.2.MTBE 5.2 5.1.508	L L L L L L L L L L L L L L L L L L L	DPTIOI TIC Search Acid Only BAN Only TIC Search	Volatiles Semivolatiles Pest/Hemprus	YSIS REQUEST	D
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		□Dredge	☐ Wastewater ☐ Waste Disposal	□ Drinking Water	MCP GW-2	Standard MCP GW-1/S-1	Regula		X	メ	<u> </u>	メー	₹	7	<u> </u>	メー	X -	ح س	Х3	と	COMPOSITE GRAB NUMBER	Type	plicates	F		MA	Drive	1	2	30x 1200 32 441 • FA /tical.con
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☐ Wastewater ☐ Waste Disposal ☐ Dredge Malerial ☐	MCP GW-2/S-2 NY STARS Drinking Water		DAT/ Regulatory Program		\$											COMPOSITE GRAB MUMBER 40mL VDA Vial 60mL/2 oz Giass 120mL/2 oz Amber Glas 250mL/8 oz Glass 1U/32 oz Amber Glas 1U/32 oz Amber Glas 500mL/16 oz Plastic 500mL/16 oz Plastic	Type Container(s)	pt replicates).	2-1114	1 4:	n MA DISSTO	DRIVE	IS(A)	1	228 Main Street, P.O. Box 1200 Buzzards Bay, MA 02532 Telephone (508) 759-4441 • FAX (508) 759-4475 www.groundwateranalytical.com
Project Specific OC Required Selecti Sample Duplicate Matrix Spike Matrix Spike Duplicate	manix opines, amou manix opine unjinates, Laturatury v.c. is not project specific OC samples are charged on a per sample basis. Each MS, MSD and Sample Duplicate requires an additional sample aliquot.		DATA QUALITY OBJECTIVES Project Specific QC		<											1L/32 oz Plastic 120ml. Sierile HCi HNO, H,50, NaOH Melhanol Sodium Bisultate ICE YES NO	Preservation Filtered		☐ Purchase Order No.:	BILLING	☐ Please FAX to:	RUSH (RAN	STANDARD (10 Business Days) PRIORITY (5 Business Days)	TURNAROUND	CHAIN-OF-CUSTODY AND WORK ORDER
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Meth	Relin	, 6	, 00 s		The state of the s	-								(1) 82608 TCL+MTBE (1) 82608 NH PETRO (1) 82608 (1) 80218 Aromatics	LEUM	J 624		D52	24.2+MTB		-	Search	Volatiles	ANA	
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Method of Shipment: ☐ GWA Courier ☐ Express Mail ☐ Federal Express ☐ UPS ☐ Hand ☐			2	NOTE: All samples							€		<u> </u>	© 8270C PAHs only © 8081A Pesticides I J 8082 PCBs	Į.	1625 PAH 1608 Pes 1608 PCs	ticides	1)5	31.1 15.1				Pesi/Herb Extractable	١.	
ir □ Express M	Date	Date	9.1.05	Date	CHAI									(1) 8011 EDB/DBCP (1) 8 RCRA (1) 5 RCRA (1) MA List Metals (2) TAL	二) 13 Prior Pollular		1150	04.1 EDB/ sad and Co	-	1	Samples	PCBs Metals		
ail ⊡ Fed	Time	Time	SIIE	Time	N-OF-									[] Specify:				l			(1 Tot	al solved			
eral Express	Received by Laboratory:	Received by:		submitted subject to Standard Terms and Conditions Date Time Received by:	CHAIN-OF-CUSTODY RECORD						3		×	I J TPH-IR To beset Range Organic Lift ETPH Think DEP EPH what Eithydrocarbon Fing In TPH by 60/FID (8) I Gasoline Range O MA DEP VPH what I TCLP I SPLP I I Corrosavity (as ph	il targets perprint (i D15B Mo Proenics (i Il targets 8 Metals	GEPH C GC/FID by d) Duantit GRO) I'I LIVPH C LIPb oni	arbon Range ASTM D332 alive Only ME GRO arbon range y (1) VOA (1); gnitability (a	s only Semi V	Aod.) OA () Pes	licides (Paint Filt	.) Herbici		Ext. TPH Vol. TPH Waste	-	
Custody Seal Number:	Shipping/Airbill Number:	Container Count:	1 ~	ons on reverse hereof. Receipt Temperature:										UT MA Basic Disposal UT Nitrate 1 Nitrat	Cyanide	Phosphor	oride () Suita kis () Total N ity gically Availa	ate I (as NC			nilability,	Reactivity			Nº 08467
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 2 PAH A	on di	Soil à		2. Asta	alig	i. Composite	REMARKS		M28			144	1400	1303	1301	1269	125/0	1 1264	11/05/1252	TI	ATE IME	Sampling	INSTRUCTION	Kevin	Project Manager	K2/	Sampler Name:	-1488	Project Number:	BUZZARDS	Project Name:	GROUNDY ANALYTIC
School on montering	on dry ice for a		A, BCC aliquots	hts composition, from the	vots,	A,Bocc	REMARKS / SPECIAL INSTRUCTIONS	430 W1F05-P2-M-02-C	W1F05-P2-M-02-B	MIF05-PZ-M-02-A	WIF05-P2-M-03-C	WIF15-12-111-03-B	W1805-P2-M-03-A	WIED4-P2-UT-02-C	WIEG4-PZ-UT-02-B	101E04-P2-LIT-02-A	101E09-P2-01T-02-C	WIEO4-PZ-VIT-02-B	WIEG4-PZ-VIT-02-A		SAMPLE IDENTIFICATION		IS: Use separate line t	Malnen)	RO		002		RDS BAY		NDW ER
11-67 IMA ONI	For archiving ORI		remaining XMA		State	Month	RUCTIONS	12-6	12-6	2A	13-C	3-6	5-A	02-5	02-8	02-A	52-6	2-8	02-A X	GF DF W	ROUNDWATER RINKING WATER VASTEWATER DIL / S THER SOLID	Matrix	INSTRUCTIONS: Use separate line for each container (except replicates)	978-692-1114	Telephone:	Westford,	City / State / Zip:	5 Lan h	Address:	Go Insight	Firm:	
/T □ Dredge Malerial	NY ☐ Waste Disposal		MA DNY STARS	MCP GW-1/S-1	Standard	Regulatory Program	DA												X	CC GI 40 66 12 56 11	IL/ORGANIC LIQUID DMPOSITE RAB UMBER DmL VOA Vial DmL/2 oz Glass 20mL/4 oz Amber Glass 50mL/4 oz Glass UMBER CmL/4 oz Amber Glass 50mL/6 oz Glass	Type Container(s)	ept replicates).	2-1114		-, Ma 11886		Drike	,	ht.		228 Main Street, P.O. Box 1200 Buzzards Bay, MA 02532 Telephone (508) 759-4441 • FAX (508) 759-4475 www.groundwaleranalytical.com
☐ Matrix Spike ☐ Matrix Spike Duplicate	☐ Sample Duplicate		samples are charged on a per and Sample Duplicate requi			Project	DATA QUALITY OBJECTIVES													1 1 1 1 H H H H H H M M M M M M M M M M	YES	Preservation Filters	☐ GWA Quote:	☐ Purchase Order No.:		BILLING		र्वा	☐ PRIORITY (5 Business Days)	STANDARD (10 Business Days)	TURNAROUND	CHAIN-OF-CUSTODY I
	☐ Please use sample:	Salaria of OC Sample	samples are charged on a per sample basis. Each MS, MSD and Sample Duplicate requires an additional sample aliquot	arranged. Project specific QC	Many regulatory programs and EPA methods require project specific QC includes Sample Duplicates, specific QC includes Sample Duplicates,	Project Specific QC					Section 2015						1				LABORATORY NUMBER (Lab Use Only) RCRAZIE		□ 624	1PDES		8DW			DPTIO: Search	ys)	DUND	DDY ()RD ER
Method of Shipme		Relinquished by:	t.		Helindulsned by	П															(1) 8260B (2) 8021B Aromatics (3) 8021B Halocarbon (1) 8021B (2) 8270C (3) 8270C PAHs only	ns.	∐ 602+ ∭ 601 ☐ 601/6	MTBE 602+MTBE PAHs only		525.2		□Ao	id Only	Volatiles Semiv		
Method of Shipment: ☐ GWA Courier ☐ Express Mail				A D	Sampler:	iti															S/M B081A Pesticides B082 PCBs B151A Herbicides B151A Herbicides			Pesticides	(a)	505 () 50 531.1 515.1 504.1 ED6			Search	Semivolatiles Pest/Herti/PCBS Extractable Vol		
Express Mail ☐ Fed		Date Time	Date		2.1.057321.5	s submitted subject	CHAIN-OF-CUSTODY														☐ 8 RCRA ☐ 5 RCRA ☐ MA List Metals ☐ 23 TAL ☐ Specify:		EJ 13 Pr Polk			Lead and	Copper	Wate C To	ify For r Sampi tal ssolved	Metals	ANALYSIS	
☐ Federal Express	2	Received by Laboratory	несвілед ву:		neceived by:	All samples submitted subject to Standard Terms and Conditions on reverse hereof	CUSTODY RECORD													-	C) TPH-IR L) Diesel Range Crr C) GWM AR AF EFF W/A AR AF EFF W/A C) Hydrocarbon Fing LITPH by GC/FID (8 C) Gasoline Range C L) MA CLE P VPH W/A C) TCLE P VPH W/A C) TCLE SPLP C1 C] Corrosivity (as p)	il target parprint 100 Mo Organics ill target B Meta	(GC/FID d) Quan (GRO) is (J VPI	Hative Only H Carbon ran only (□ VOA I⊐ Ignitabilit	3328-90 nges oni () Semi y (es Fia	-Mod.) VOA [] P) Paint F	ilter		Ext. TPH Vol.TPH Waste		
Custody Seal Number:	Number	Shipping/Airbill	Contract	2-6°C Recommended Container Count	□ Ice □ Refrigerated (Itions on reverse hereof. Receipt Temperature															☐ MA Basic Disposa ☐ Nitrate ☐ Nitrite ☐ Dissolved Prospi ☐ Ammonia ☐ TKN ☐ Olt & Grease ☐ COD ☐ TOC ☐ IBOD ☐ TOS ☐ ☐ ☐ Gyankie. Total ☐ ☐ pH ☐ Dissolved	CI Chio horus I (1) Tota SS (1) T	ride [] Phospi S [] Alk. Physical Physic	Fluoride () S horus (,) Tot afinity plogically Av	ai N (es			ignitability	, Reactiv	deneral caemany		। ग्रिथ्य १ म
				C	 わ																[] Total Coliform []	_										

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Quality Assurance/Quality Control

A. Program Overview

Groundwater Analytical conducts an active Quality Assurance program to ensure the production of high quality, valid data. This program closely follows the guidance provided by Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans, US EPA QAMS-005/80 (1980), and Test Methods for Evaluating Solid Waste, US EPA, SW-846, Update III (1996).

Quality Control protocols include written Standard Operating Procedures (SOPs) developed for each analytical method. SOPs are derived from US EPA methodologies and other established references. Standards are prepared from commercially obtained reference materials of certified purity, and documented for traceability.

Quality Assessment protocols for most organic analyses include a minimum of one laboratory control sample, one method blank, one matrix spike sample, and one sample duplicate for each sample preparation batch. All samples, standards, blanks, laboratory control samples, matrix spikes and sample duplicates are spiked with internal standards and surrogate compounds. All instrument sequences begin with an initial calibration verification standard and a blank; and excepting GC/MS sequences, all sequences close with a continuing calibration standard. GC/MS systems are tuned to appropriate ion abundance criteria daily, or for each 12 hour operating period, whichever is more frequent.

Quality Assessment protocols for most inorganic analyses include a minimum of one laboratory control sample, one method blank, one matrix spike sample, and one sample duplicate for each sample preparation batch. Standard curves are derived from one reagent blank and four concentration levels. Curve validity is verified by standard recoveries within plus or minus ten percent of the curve.

B. Definitions

Batches are used as the basic unit for Quality Assessment. A Batch is defined as twenty or fewer samples of the same matrix which are prepared together for the same analysis, using the same lots of reagents and the same techniques or manipulations, all within the same continuum of time, up to but not exceeding 24 hours.

Laboratory Control Samples are used to assess the accuracy of the analytical method. A Laboratory Control Sample consists of reagent water or sodium sulfate spiked with a group of target analytes representative of the method analytes. Accuracy is defined as the degree of agreement of the measured value with the true or expected value. Percent Recoveries for the Laboratory Control Samples are calculated to assess accuracy.

Method Blanks are used to assess the level of contamination present in the analytical system. Method Blanks consist of reagent water or an aliquot of sodium sulfate. Method Blanks are taken through all the appropriate steps of an analytical method. Sample data reported is not corrected for blank contamination.

Surrogate Compounds are used to assess the effectiveness of an analytical method in dealing with each sample matrix. Surrogate Compounds are organic compounds which are similar to the target analytes of interest in chemical behavior, but which are not normally found in environmental samples. Percent Recoveries are calculated for each Surrogate Compound.

GROUNDWATER ANALYTICAL

Quality Control Report Laboratory Control Samples

LCS

LCSD

Category:

MA DEP EPH Method

QC Batch ID: EP-2157-M

Matrix: Units: Soil mg/Kg Instrument ID: Extracted:

GC-9 Agilent 6890 09-26-05 13:00 Instrument ID: Extracted: GC-9 Agilent 6890 09-26-05 13:00

Analyzed (AL): Analyzed (AR): 09-27-05 10:03 09-27-05 10:43

Analyzed (AL): Analyzed (AR):

09-27-05 11:28 09-27-05 12:12

Analyst:

MM

Analyst:

MM

CAS Number	Analyte		LC	S		L(28 Duplicate	表现现分	QC Lim	its
		Spiked	Measured	Recovery	Spiked	Measured	Recovery	RPD	Spike	RPD
111-84-2	n-Nonane (C ₉)	3.3	1.8	55 %	3.3	1.8	54 %	2 %	30 - 140 %	25%
124-18-5	n-Decane (C ₁₀)	3.3	2.2	65 %	3.3	2.1	63 %	3 %	40 - 140 %	25%
112-40-3	n-Dodecane (C ₁₂)	3.3	2.2	66 %	3.3	2.1	63 %	5 %	40 - 140 %	25%
629-59-4	n-Tetradecane (C ₁₄)	3.3	2.2	65 %	3.3	2.1	63 %	4 %	40 - 140 %	25%
544-76-3	n-Hexadecane (C ₁₆)	3.3	2.4	73 %	3.3	2.3	71 %	2 %	40 - 140 %	25%
593-45-3	n-Octadecane (C ₁₈)	3.3	2.7	83 %	3.3	2.8	86 %	4 %	40 - 140 %	25%
n/a	n-C9 to n-C18 Group	20	13	68 %	20	13	67 %	2 %	40 - 140 %	25%
629-92-5	n-Nonadecane (C ₁₉)	3.3	2.7	83 %	3.3	2.9	87 %	5 %	40 - 140 %	25%
112-95-8	n -Eicosane (C ₂₀)	3.3	2.8	85 %	3.3	3.0	90 %	6 %	40 - 140 %	25%
629-97-0	n-Docosane (C ₂₂)	3.3	2.8	84 %	3.3	3.0	91 %	7 %	40 - 140 %	25%
646-31-1	n-Tetracosane (C ₂₄)	3.3	2.8	84 %	3.3	3.0	90 %	7 %	40 - 140 %	25%
630-01-3	n-Hexacosane (C ₂₆)	3.3	2.7	82 %	3.3	2.9	88 %	8 %	40 - 140 %	25%
630-02-4	n-Octacosane (C ₂₈)	3.3	2.7	81 %	3.3	2.9	87 %	8 %	40 - 140 %	25%
638-68-6	n-Triacontane (C ₃₀)	3.3	2.6	80 %	3.3	2.8	86 %	8 %	40 - 140 %	25%
630-06-8	n -Hexatriacontane (C ₃₆)	3.3	1.8	54 %	3.3	2.0	60 %	10 %	40 - 140 %	25%
n/a	n-C19 to n-C36 Group	26	21	79 %	26	22	85 %	7 %	40 - 140 %	25%
91-20-3	Naphthalene	3.3	2.0	62 %	3.3	2.0	61 %	1 %	40 - 140 %	25%
91-57-6	2-Methylnaphthalene	3.3	2.2	66 %	3.3	2.1	64 %	3 %	40 - 140 %	25%
208-96-8	Acenaphthylene	3.3	2.4	72 %	3.3	2.3	71 %	1 %	40 - 140 %	25%
83-32-9	Acenaphthene	3.3	2.2	67 %	3.3	2.2	67 %	1 %	40 - 140 %	25%
86-73-7	Fluorene	3.3	2.4	74 %	3.3	2.4	72 %	2 %	40 - 140 %	25%
85-01-8	Phenanthrene	3.3	2.8	84 %	3.3	2.7	83 %	1 %	40 - 140 %	25%
120-12-7	Anthracene	3.3	3.2	96 %	3.3	3.1	94 %	1 %	40 - 140 %	25%
206-44-0	Fluoranthene	3.3	3.2	96 %	3.3	3.3	99 %	3 %	40 - 140 %	25%
129-00-0	Pyrene	3.3	3.2	96 %	3.3	3.3	99 %	3 %	40 - 140 %	25%
56-55-3	Benzo[a]anthracene	3.3	3.2	98 %	3.3	3.2	98 %	1 %	40 - 140 %	25%
218-01-9	Chrysene	3.3	3.5	106 %	3.3	3.4	104 %	2 %	40 - 140 %	25%
205-99-2	Benzo[b]fluoranthene	3.3	2.9	89 %	3.3	3.0	92 %	3 %	40 - 140 %	25%
207-08-9	Benzo[k]fluoranthene	3.3	3.3	101 %	3.3	3.3	99 %	2 %	40 - 140 %	25%
50-32-8	Benzo[a]pyrene	3.3	3.1	93 %	3.3	3.1	93 %	0 %	40 - 140 %	25%
193-39-5	Indeno[1,2,3-c,d]pyrene	3.3	2.3	69 %	3.3	2.2	68 %	1 %	40 - 140 %	25%
53-70-3	Dibenzo[a,h]anthracene	3.3	2.7	83 %	3.3	2.6	79 %	5 %	40 - 140 %	25%
191-24-2	Benzo[g,h,i]perylene	3.3	2.2	66 %	3.3	2.0	61 %	7 %	40 - 140 %	25%
n/a	PAH Group	56	47	83 %	56	46	83 %	1 %	40 - 140 %	25%

QC Surrogate	Compound	Spiked	Measured	Recovery	Spiked	Measured	Recovery	QC Limits
Fractionation:	2-Fluorobiphenyl	2.7	2.0	74 %	2.7	2.2	81 %	40 - 140 %
	2-Bromonaphthalene	2.7	2.0	74 %	2.7	2.0	74 %	40 - 140 %
Extraction:	Chloro-octadecane	2.7	2.1	78 %	2.7	2.3	85 %	40 - 140 %
	ortho-Terphenyl	2.7	2.3	85 %	2.7	2.3	85 %	40 - 140 %

	Frac	tionation B	reakthrough Evalu	ation		QC Limits
91-20-3	Naphthalene	LCS	0 %	LCSD	0 %	5%
91-57-6	2-Methylnaphthalene	LCS	1 %	LCSD	0 %	5%

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004).

Method modified by use of microwave accelerated solvent extraction technique.

Report Notations:

All calculations performed prior to rounding. Quality Control Limits are defined by the methodology, or alternatively based upon the historical average recovery plus or minus three standard deviation units.

The LCS and LCSD are prepared from separate source standards than those used for calibration.



Quality Control Report Method Blank

Category: QC Batch ID: MA DEP EPH

Matrix:

EP-2157-M Soil Instrument ID:

GC-9 Agilent 6890

Extracted:

09-26-05 13:00

Analyzed (AL):

09-27-05 10:05 09-27-05 10:49

Analyzed (AR): Analyst:

MM

EPH Ranges	Concentration Notes	Units	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	30
n-C19 to n-C36 Aliphatic Hydrocarbons †	BRL	mg/Kg	30
n-C11 to n-C22 Aromatic Hydrocarbons † 0	BRL	mg/Kg	30
Unadjusted n-C11 to n-C22 Aromatic Hydrocarbons †	BRL	mg/Kg	30

QC Surrogate G	ompound	Spiked	Measured	Recovery	QC Limits
Fractionation:	2-Fluorobiphenyl	2.7	1.8	68 %	40 - 140 %
	2-Bromonaphthalene	2.7	1.8	68 %	40 - 140 %
Extraction:	Chloro-octadecane	2.7	2.0	74 %	40 - 140 %
	ortho-Terphenyl	2.7	1.7	63 %	40 - 140 %

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004).

Sample extraction performed by microwave accelerated solvent extraction technique.

- IRL Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.
- † Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.
- ♦ n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations.



Quality Control Report Laboratory Control Samples

LCS

Analyst:

LCSD

Extracted:

Analyst:

Instrument ID:

Category:

MA DEP EPH Method

QC Batch ID: EP-2147-M

Matrix: Units: Soil mg/Kg

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Analyzed (AL): Analyzed (AR):

Instrument ID: Extracted: Analyzed (AL): GC-9 Agilent 6890 09-15-05 07:00 09-19-05 19:57

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09-19-05 19:57 Analyzed (AL): **09-19-05 20:41** Analyzed (AR):

GC-9 Agilent 6890 09-15-05 07:00 09-19-05 21:26 09-19-05 22:10

MM

CAS Number	Analyte		- LC	36		L. L	CS Duplicate	Charles	QC Lim	its
		Spiked	Measured	Recovery	Spiked	Measured	Recovery	RPD	Spike	RPD
111-84-2	n-Nonane (C ₉)	3.3	2.0	59 %	3.3	2.0	61 %	3 %	30 - 140 %	25%
124-18-5	n-Decane (C ₁₀)	3.3	2.3	69 %	3.3	2.4	72 %	4 %	40 - 140 %	25%
112-40-3	n-Dodecane (C ₁₂)	3.3	2.4	74 %	3.3	2.5	76 %	3 %	40 - 140 %	25%
629-59-4	n -Tetradecane (C_{14})	3.3	2.6	80 %	3.3	2.7	81 %	2 %	40 - 140 %	25%
544-76-3	n-Hexadecane (C ₁₆)	3.3	2.9	88 %	3.3	2.9	88 %	0 %	40 - 140 %	25%
593-45-3	n -Octadecane (C ₁₈)	3.3	3.1	95 %	3.3	3.1	95 %	0 %	40 - 140 %	25%
n/a	n-C9 to n-C18 Group	20	15	77 %	20	16	79 %	2 %	40 - 140 %	25%
629-92-5	n-Nonadecane (C ₁₉)	3.3	3.1	94 %	3.3	3.1	94 %	1 %	40 - 140 %	25%
112-95-8	n-Eicosane (C ₂₀)	3.3	3.2	96 %	3.3	3.2	96 %	0 %	40 - 140 %	25%
629-97-0	n-Docosane (C ₂₂)	3.3	3.1	95 %	3.3	3.2	97 %	2 %	40 - 140 %	25%
646-31-1	n-Tetracosane (C ₂₄)	3.3	3.2	96 %	3.3	3.2	96 %	0 %	40 - 140 %	25%
630-01-3	n-Hexacosane (C ₂₆)	3.3	3.1	94 %	3.3	3.1	94 %	0 %	40 - 140 %	25%
630-02-4	n-Octacosane (C ₂₈)	3.3	3.1	93 %	3.3	3.1	94 %	0 %	40 - 140 %	25%
638-68-6	n-Triacontane (C ₃₀)	3.3	3.1	93 %	3.3	3.1	93 %	0 %	40 - 140 %	25%
630-06-8	n-Hexatriacontane (C ₃₆)	3.3	2.8	85 %	3.3	2.8	85 %	0 %	40 - 140 %	25%
n/a	n-C19 to n-C36 Group	26	25	93 %	26	25	94 %	0 %	40 - 140 %	25%
91-20-3	Naphthalene	3.3	2.3	68 %	3.3	2.2	67 %	2 %	40 - 140 %	25%
91-57-6	2-Methylnaphthalene	3.3	2.4	74 %	3.3	2.4	73 %	1 %	40 - 140 %	25%
208-96-8	Acenaphthylene	3.3	2.6	80 %	3.3	2.6	78 %	2 %	40 - 140 %	25%
83-32-9	Acenaphthene	3.3	2.5	<i>75</i> %	3.3	2.4	73 %	2 %	40 - 140 %	25%
86-73-7	Fluorene	3.3	2.6	80 %	3.3	2.6	78 %	3 %	40 - 140 %	25%
85-01-8	Phenanthrene	3.3	2.8	84 %	3.3	2.7	81 %	4 %	40 - 140 %	25%
120-12-7	Anthracene	3.3	3.0	92 %	3.3	2.9	89 %	3 %	40 - 140 %	25%
206-44-0	Fluoranthene	3.3	3.0	92 %	3.3	2.9	88 %	4 %	40 - 140 %	25%
129-00-0	Pyrene	3.3	3.0	91 %	3.3	2.9	88 %	4 %	40 - 140 %	25%
56-55-3	Benzo[a]anthracene	3.3	3.2	96 %	3.3	3.1	93 %	3 %	40 - 140 %	25%
218-01-9	Chrysene	3.3	3.2	97 %	3.3	3.1	94 %	3 %	40 - 140 %	25%
205-99-2	Benzo[b]fluoranthene	3.3	3.0	92 %	3.3	2.9	89 %	3 %	40 - 140 %	25%
207-08-9	Benzo[k]fluoranthene	3.3	3.1	95 %	3.3	3.0	91 %	4 %	40 - 140 %	25%
50-32-8	Benzo[a]pyrene	3.3	3.0	92 %	3.3	2.9	89 %	4 %	40 - 140 %	25%

QC Surrogate	Compound	Spiked	Measured	Recovery	Spiked	Measured	Recovery	QC Limits
Fractionation:	2-Fluorobiphenyl	2.7	2.1	7 8 %	2.7	2.1	78 %	40 - 140 %
	2-Bromonaphthalene	2.7	1.8	67 %	2.7	1.4	52 %	40 - 140 %
Extraction:	Chloro-octadecane	2.7	2.5	93 %	2.7	2.4	89 %	40 - 140 %
	ortho-Terphenyl	2.7	2.2	81 %	2.7	2.1	78 %	40 - 140 %

88 %

93 %

87 %

87 %

2.8

2.9

2.8

47

3.3

3.3

3.3

56

85 %

89 %

84 %

84 %

4 %

4 %

3 %

3 %

40 - 140 %

40 - 140 %

40 - 140 %

40 - 140 %

25%

25%

25%

25%

2.9

3.1

2.9

49

3.3

3.3

3.3

56

	#Fract	ionation I	Breakthrough Evalua	ition		-QC/Limits
91-20-3	Naphthalene	LCS	2 %	LCSD	5 %	5%
91-57-6	2-Methylnaphthalene	LCS	0 %	LCSD	1 %	5%

Method Reference:

193-39-5

53-70-3

n/a

191-24-2

Indeno[1,2,3-c,d]pyrene

Dibenzo[a,h]anthracene

Benzo[g,h,i]perylene

PAH Group

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004). Method modified by use of microwave accelerated solvent extraction technique.

Report Notations:

All calculations performed prior to rounding. Quality Control Limits are defined by the methodology, or alternatively based upon the historical average recovery plus or minus three standard deviation units.

The LCS and LCSD are prepared from separate source standards than those used for calibration.



Quality Control Report Method Blank

Category:

MA DEP EPH EP-2147-M

Unadjusted n-C11 to n-C22 Aromatic Hydrocarbons [†]

QC Batch ID: Matrix:

Soil

Instrument ID:

GC-9 Agilent 6890

Extracted:

09-15-05 07:00

Analyzed (AL):

09-19-05 18:28

mg/Kg

30

Analyzed (AR):

09-19-05 19:13

Analyst:

MM

EPH Ranges	Concentration Notes	Units	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons †	BRL	mg/Kg	30
n-C19 to n-C36 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	30
n-C11 to n-C22 Aromatic Hydrocarbons † 0	BRL	mg/Kg	30

Fractionation:	2-Fluorobiphenyl	2.7	2.2	82 %	40 - 140 %
	2-Bromonaphthalene	2.7	1.4	53 %	40 - 140 %
Extraction:	Chloro-octadecane	2.7	2.4	89 %	40 - 140 %
	ortho-Terphenyl	2.7	2.2	83 %	40 - 140 %

Method Reference:

Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (Revision 1.1, 2004).

Sample extraction performed by microwave accelerated solvent extraction technique.

Report Notations:

Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.

BRL

- Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.
- **◊** n-C11 to n-C22 Aromatic Hydrocarbons range data excludes the method target analyte concentrations.



Quality Control Report Laboratory Control Samples

LCS

LCSD

Category:

EPA 8270C Modified

QC Batch ID: EP-2147-M

Instrument ID: Extracted:

MS-6 HP 6890 09-15-05 07:00 Instrument ID: Extracted:

MS-6 HP 6890 09-15-05 07:00

Matrix:

Soil

Analyzed:

09-21-05 11:10

Analyzed:

09-13-05 07:00

Units:

ug/Kg

Analyst:

JJT

Analyst:

JJT

CAS Number	Analyte	LCS			175.6	¹L(QC Lim	its .		
		Spiked	Measured	Recovery	Spiked	Measured	Recovery	RPD	Spike	RPD
91-20-3	Naphthalene	330	200	61 %	330	190	58 %	5 %	40 - 140 %	20%
91-57-6	2-Methylnaphthalene	330	210	64 %	330	210	64 %	0 %	40 - 140 %	20%
85-01-8	Phenanthrene	330	240	73 %	330	240	73 %	0 %	40 - 140 %	20%
83-32-9	Acenaphthene	330	260	79 %	330	250	76 %	4 %	40 - 140 %	20%
208-96-8	Acenaphthylene	330	230	70 %	330	230	70 %	0 %	40 - 140 %	20%
86-73-7	Fluorene	330	240	73 %	330	240	73 %	0 %	40 - 140 %	20%
120-12-7	Anthracene	330	250	76 %	330	250	76 %	0 %	40 - 140 %	20%
206-44-0	Fluoranthene	330	300	91 %	330	300	91 %	0 %	40 - 140 %	20%
129-00-0	Pyrene	330	290	88 %	330	290	88 %	0 %	40 - 140 %	20%
56-55-3	Benzo[a]anthracene	330	290	88 %	330	290	88 %	0 %	40 - 140 %	20%
218-01-9	Chrysene	330	290	88 %	330	290	88 %	0 %	40 - 140 %	20%
205-99-2	Benzo[b]fluoranthene	330	280	85 %	330	280	85 %	0 %	40 - 140 %	20%
207-08-9	Benzo[k]fluoranthene	330	290	88 %	330	290	88 %	0 %	40 - 140 %	20%
50-32-8	Benzo[a]pyrene	330	280	85 %	330	280	85 %	0 %	40 - 140 %	20%
193-39-5	Indeno[1,2,3-c,d]pyrene	330	250	76 %	330	250	76 %	0 %	40 - 140 %	20%
53-70-3	Dibenzo[a,h]anthracene	330	240	73 %	330	240	73 %	0 %	40 - 140 %	20%
191-24-2	Benzo[g,h,i]perylene	330	260	79 %	330	250	76 %	4 %	40 - 140 %	20%

QC Surrogate Compound	Spiked	Measured	Recovery	Spiked	Measured	Recovery	QC/Limits
ortho -Terphenyl	2,700	1,800	67 %	2,700	1,800	67 %	40 - 140 %

Method Reference:

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).

Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method.

Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons.

Sample extraction performed by EPA Method 3510C.

Report Notations:

All calculations performed prior to rounding. Quality Control Limits are defined by the methodology, or alternatively based upon the historical average recovery plus or minus three standard deviation units.

The LCS and LCSD are prepared from separate source standards than those used for calibration.



Quality Control Report Method Blank

Category:

Matrix:

EPA Method 8270C (Mod.) - EPH PAHs by GC/MS-SIM

QC Batch ID:

EP-2147-M Soil -SIM

Instrument ID:

MS-6 HP 6890

Extracted: Analyzed:

09-15-05 07:00 09-21-05 10:31

Analyst:

JJT

CAS Number	Analyte	Concentration Notes	Units	Reporting Limit
91-20-3	Naphthalene	BRL	ug/Kg	10
91-57-6	2-Methylnaphthalene	BRL	ug/Kg	10
208-96-8	Acenaphthylene	BRL	ug/Kg	10
83-32-9	Acenaphthene	BRL	ug/Kg	10
86-73-7	Fluorene	BRL	ug/Kg	10
85-01-8	Phenanthrene	BRL	ug/Kg	10
120-12-7	Anthracene	BRL	ug/Kg	10
206-44-0	Fluoranthene	BRL	ug/Kg	10
129-00-0	Pyrene	BRL	ug/Kg	10
56-55-3	Benzo[a]anthracene	BRL	ug/Kg	10
218-01-9	Chrysene	BRL	ug/Kg	10
205-99-2	Benzo[b]fluoranthene	BRL	ug/Kg	10
207-08-9	Benzo[k]fluoranthene	BRL	ug/Kg	10
50-32-8	Benzo[a]pyrene	BRL	ug/Kg	10
193-39-5	Indeno[1,2,3-c,d]pyrene	BRL	ug/Kg	10
53-70-3	Dibenzo[a,h]anthracene	BRL	ug/Kg	10
191-24-2	Benzo[g,h,i]perylene	BRL	ug/Kg	10

.	QC Surrogate Compound	Spiked	Measured	Recovery	QC Limits
	ortho-Terphenyl	2,700	2,100	79 %	40 - 140 %

Method Reference:

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).

Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method.

Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons.

Sample extraction performed by EPA Method 3546.

Report Notations:

BRL Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.



Quality Control Report Laboratory Control Samples

LCS

LCSD

Category:

EPA 8270C Modified

QC Batch ID: EP-2148-M

MS-6 HP 6890 09-15-05 23:00 Instrument ID: Extracted:

MS-6 HP 6890 09-15-05 23:00

Matrix: Units: Soil ug/Kg Extracted: Analyzed: Analyst:

Instrument ID:

09-28-05 15:29

Analyzed:

09-28-05 16:08

CMM

Analyst:

CMM

CAS Number	Analyte	/LCS		LCS/Duplicate				QC Limits		
		Spiked	Measured	Recovery	Spiked	Measured	Recovery	RPD	Spike	RPD
91-20-3	Naphthalene	330	180	55 %	330	210	64 %	15 %	40 - 140 %	20%
91-57-6	2-Methylnaphthalene	330	200	61 %	330	230	70 %	14 %	40 - 140 %	20%
85-01-8	Phenanthrene	330	240	73 %	330	280	85 %	15 %	40 - 140 %	20%
83-32-9	Acenaphthene	330	230	70 %	330	280	85 %	20 %	40 - 140 %	20%
208-96-8	Acenaphthylene	330	220	67 %	330	260	79 %	17 %	40 - 140 %	20%
86-73-7	Fluorene	330	230	70 %	330	270	82 %	16 %	40 - 140 %	20%
120-12-7	Anthracene	330	250	76 %	330	290	88 %	15 %	40 - 140 %	20%
206-44-0	Fluoranthene	330	310	94 %	330	340	103 %	9 %	40 - 140 %	20%
129-00-0	Pyrene	330	300	91 %	330	320	97 %	6 %	40 - 140 %	20%
56-55-3	Benzo[a]anthracene	330	310	94 %	330	340	103 %	9 %	40 - 140 %	20%
218-01-9	Chrysene	330	310	94 %	330	340	103 %	9 %	40 - 140 %	20%
205-99-2	Benzo[b]fluoranthene	330	300	91 %	330	330	100 %	10 %	40 - 140 %	20%
207-08-9	Benzo[k]fluoranthene	330	320	97 %	330	340	103 %	6 %	40 - 140 %	20%
50-32-8	Benzo[a]pyrene	330	310	94 %	330	340	103 %	9 %	40 - 140 %	20%
193-39-5	Indeno[1,2,3-c,d]pyrene	330	290	88 %	330	310	94 %	7 %	40 - 140 %	20%
53-70-3	Dibenzo[a,h]anthracene	330	270	82 %	330	300	91 %	11 %	40 - 140 %	20%
191-24-2	Benzo[g,h,i]perylene	330	300	91 %	330	330	100 %	10 %	40 - 140 %	20%

QC Surrogate Compound	Spiked	Measured	Recovery	Spiked	Measured	Recovery	QC Limits
ortho-Terphenyl	2,700	2,000	74 %	2,700	2,200	81 %	40 - 140 %

Method Reference:

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).

Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method.

Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons.

Sample extraction performed by EPA Method 3510C.

Report Notations:

All calculations performed prior to rounding. Quality Control Limits are defined by the methodology, or alternatively based upon the historical average recovery plus or minus three standard deviation units.

The LCS and LCSD are prepared from separate source standards than those used for calibration.



Quality Control Report Method Blank

Category:

EPA Method 8270C (Mod.) - EPH PAHs by GC/MS-SIM

QC Batch ID: Matrix: EP-2148-M Soil Instrument ID:

MS-6 HP 6890

Extracted: Analyzed: 09-15-05 23:00 09-27-05 17:28

Analyst:

CMM

CAS Number	Analyte	Con	centration	Notes Units	Reporting Limit
91-20-3	Naphthalene		BRL	ug/Kg	11
91-57-6	2-Methylnaphthalene		BRL	ug/Kg	11
208-96-8	Acenaphthylene		BRL	ug/Kg	11
83-32-9	Acenaphthene		BRL	ug/Kg	11
86-73-7	Fluorene		BRL	ug/Kg	11
85-01-8	Phenanthrene		BRL	ug/Kg	11
120-12-7	Anthracene		BRL	ug/Kg	11
206-44-0	Fluoranthene		BRL	ug/Kg	11
129-00-0	Pyrene		BRL	ug/Kg	11
56-55-3	Benzo[a]anthracene		BRL	ug/Kg	11
218-01-9	Chrysene		BRL	ug/Kg	11
205-99-2	Benzo[b]fluoranthene		BRL	ug/Kg	11
207-08-9	Benzo[k]fluoranthene		BRL	ug/Kg	11
50-32-8	Benzo[a]pyrene		BRL	ug/Kg	11
193-39-5	Indeno[1,2,3-c,d]pyrene		BRL	ug/Kg	11
53-70-3	Dibenzo[a,h]anthracene		BRL	ug/Kg	11
191-24-2	Benzo[g,h,i]perylene		BRL	ug/Kg	11
QC Surrogate C	ompound Spiked	Measured	Recovery	Q.	C'Limits
ortho-Terphenyl	2,700	2,200	82 %		- 140 %

Method Reference:

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).

Method modified by use of selected ion monitoring (SIM) in accordance with Section 7.5.5 of the method.

Method protocol modified to include acidification and the surrogate compound in accordance with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons.

Sample extraction performed by EPA Method 3546.

Report Notations:

Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.



Certifications and Approvals

Groundwater Analytical maintains environmental laboratory certification in a variety of states. Copies of our current certificates may be obtained from our website:

http://www.groundwateranalytical.com/gualifications.htm

CONNECTICUT, Department of Health Services, PH-0586

Categories: Potable Water, Wastewater, Solid Waste and Soil

http://www.dph.state.ct.us/BRS/Environmental Lab/OutStateLabList.htm

FLORIDA, Department of Health, Bureau of Laboratories, E87643

Categories: SDWA, CWA, RCRA/CERCLA http://www.floridadep.org/labs/qa/dohforms.htm

MAINE, Department of Human Services, MA103

Categories: Drinking Water and Wastewater

http://www.state.me.us/dhs/eng/water/Compliance.htm

MASSACHUSETTS, Department of Environmental Protection, M-MA-103

Categories: Potable Water and Non-Potable Water http://www.state.ma.us/dep/bspt/wes/files/certlabs.pdf

NEW HAMPSHIRE, Department of Environmental Services, 202703

Categories: Drinking Water and Wastewater

http://www.des.state.nh.us/asp/NHELAP/labsview.asp

NEW YORK, Department of Health, 11754

Categories: Potable Water, Non-Potable Water and Solid Waste

http://www.wadsworth.org/labcert/elap/comm.html

PENNSYLVANIA, Department of Environmental Protection, 68-665

Environmental Laboratory Registration (Non-drinking water and Non-wastewater)

http://www.dep.state.pa.us/Labs/Registered/

RHODE ISLAND, Department of Health, 54

Categories: Surface Water, Air, Wastewater, Potable Water, Sewage

http://www.healthri.org/labs/labsCT_MA.htm

U.S. Department of Agriculture, Soil Permit, S-53921

Foreign soil import permit

VERMONT, Department of Environmental Conservation, Water Supply Division

Category: Drinking Water

http://www.vermontdrinkingwater.org/wsops/labtable.PDF