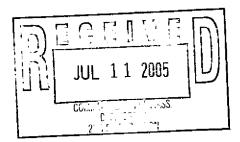
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REMEDIATION & ENVIRONMENTAL MANAGEMENT SERVICES, INC.







WINCHESTER, MA RTN 3-18598 SL=NA-C

PREPARED FOR: Bossi Realty Trust 12 Swanton Street Winchester, MA 01890

BOSSI REALTY TRUST 12 SWANTON STREET

PREPARED BY:

Remediation & Environmental Management Services, Inc. 35 Winthrop Street Winchester, MA 01890 781-721-4455

July 11, 2005

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RE	MSERU			
				Letter of Transmittal
TO:	MA DEP NERO-BWSC	•	DATE:	07/11/05
	1 Winter Street		PROJECT:	12 Swanton St.,Winchester
	9th Floor		- RS #:	RTN 3-18598
	Boston, MA 02108	3	_	
ATTN	J:		_	
WE T	RANSMIT:	- 11		
FOR	in accordanc	e with your red	quest	<u></u>
	in accordance YOUR: Proval record FOLLOWING:	distr.	ibution to partie	s signature and return
	YOUR: approval record FOLLOWING:	distr.	ibution to partie w & comment	
THE I COPI	YOUR: approval record FOLLOWING: <u>ES DATE</u> 07/05/05	DESCRIPT Phase III	ibution to partie ew & comment <u>ION</u> Remedial Act	use tion Plan
THE I	YOUR: approval record FOLLOWING: ES DATE	DESCRIPT Phase III BWSC-108	ibution to partie ew & comment <u>ION</u> Remedial Act	use tion Plan nion and copy of letter
THE I	YOUR: approval record FOLLOWING: <u>ES DATE</u> 07/05/05	DESCRIPT Phase III BWSC-108	ibution to partie w & comment ION Remedial Act with LSP opin	use tion Plan nion and copy of letter
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FAX (781) 721-4456

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Bureau of Waste Site Cleanup	BWSC108	Ŭ
COMPREHENSIVE RESPONSE ACTION TRANSMITTAL	Release Tracking Number	
FORM & PHASE I COMPLETION STATEMENT		
Pursuant to 310 CMR 40.0484 (Subpart D) and 40.0800 (Subpart H) A. SITE LOCATION:		
1. Site Name:	JUL 11 2005	
2. Street Address: 12 Swanton Street	Gt	
3. City/Town; Winchester 4. ZIP Code: 01890-	2015	
5. Check here if a Tier Classification Submittal has been provided to DEP for this disposa		
a. Tier IA 🗌 b. Tier IB 🔄 c. Tier IC 🖌 d. Tier II		
6. If applicable, provide the Permit Number:		I
B. THIS FORM IS BEING USED TO: (check all that apply)		1
1. Submit a Phase I Completion Statement, pursuant to 310 CMR 40.0484.		1
2. Submit a Revised Phase I Completion Statement, pursuant to 310 CMR 40.0484.		
3. Submit a Phase II Scope of Work, pursuant to 310 CMR 40.0834.		
 4. Submit an interim Phase II Report. This report does not satisfy the response action de 40.0500. 	adline requirements in 310 CMR	
5. Submit a final Phase II Report and Completion Statement, pursuant to 310 CMR 40.08	36.	
6. Submit a Revised Phase II Report and Completion Statement, pursuant to 310 CMR 40	.0836.	i
7. Submit a Phase III Remedial Action Plan and Completion Statement, pursuant to 310	CMR 40.0862.	
8. Submit a Revised Phase III Remedial Action Plan and Completion Statement, pursuar	it to 310 CMR 40.0862.	
9. Submit a Phase IV Remedy Implementation Plan, pursuant to 310 CMR 40.0874.		
10. Submit a Modified Phase IV Remedy Implementation Plan, pursuant to 310 CMR 40.	0874.	
11. Submit an As-Built Construction Report, pursuant to 310 CMR 40.0875.		
REC	EIVED 1 1 2005	
JUL	1 2005	
NORTHEAST RE	GIONAL OFFICE	

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Massachusetts Department of Environmental Protection BWSC108 Bureau of Waste Site Cleanup BWSC108
FORM & PHASE I COMPLETION STATEMENT 3 - 18598
Pursuant to 310 CMR 40.0484 (Subpart D) and 40.0800 (Subpart H)
B. THIS FORM IS BEING USED TO (cont.): (check all that apply)
12. Submit a Phase IV Final Inspection Report and Completion Statement, pursuant to 310 CMR 40.0878 and 40.0879.
Specify the outcome of Phase IV activities: (check one)
a. Phase V Operation, Maintenance or Monitoring of the Comprehensive Remedial Action is necessary to achieve a Response Action Outcome.
 b. The requirements of a Class A Response Action Outcome have been met. No additional Operation, Maintenance or Monitoring is necessary to ensure the integrity of the Response Action Outcome. A completed Response Action Outcome Statement and Report (BWSC104) will be submitted to DEP.
 c. The requirements of a Class C Response Action Outcome have been met. No additional Operation, Maintenance or Monitoring is necessary to ensure the integrity of the Response Action Outcome. A completed Response Action Outcome Statement and Report (BWSC104) will be submitted to DEP.
 d. The requirements of a Class C Response Action Outcome have been met. Further Operation, Maintenance or Monitoring of the remedial action is necessary to ensure that conditions are maintained and that further progress is made toward a Permanent Solution. A completed Response Action Outcome Statement and Report (BWSC104) will be submitted to DEP.
13. Submit a Revised Phase IV Final Inspection Report and Completion Statement, pursuant to 310 CMR 40.0878 and 40.0879.
14. Submit a periodic Phase V Inspection & Monitoring Report, pursuant to 310 CMR 40.0892.
15. Submit a Remedy Operation Status, pursuant to 310 CMR 40.0893.
16. Submit a periodic Inspection & Monitoring Report to maintain a Remedy Operation Status, pursuant to 310 CMR 40.0893(2).
17. Submit a Termination of a Remedy Operation Status, pursuant to 310 CMR 40.0893(5).
18. Submit a final Phase V Inspection & Monitoring Report and Completion Statement, pursuant to 310 CMR 40.0894.
Specify the outcome of Phase V activities: (check one)
 a. The requirements of a Class A Response Action Outcome have been met. No additional Operation, Maintenance or Monitoring is necessary to ensure the integrity of the Response Action Outcome. A completed Response Action Outcome Statement (BWSC104) will be submitted to DEP.
 b. The requirements of a Class C Response Action Outcome have been met. No additional Operation, Maintenance or Monitoring is necessary to ensure the integrity of the Response Action Outcome. A completed Response Action Outcome Statement and Report (BWSC104) will be submitted to DEP.
 c. The requirements of a Class C Response Action Outcome have been met. Further Operation, Maintenance or Monitoring of the remedial action is necessary to ensure that conditions are maintained and/or that further progress is made toward a Permanent Solution. A completed Response Action Outcome Statement and Report (BWSC104) will be submitted to DEP.
19. Submit a Revised Phase V Inspection & Monitoring Report and Completion Statement, pursuant to 310 CMR 40.0894.
20. Submit a Post-Response Action Outcome Inspection & Monitoring Report, pursuant to 310 CMR 40.0897.
(All sections of this transmittal form must be filled out unless otherwise noted above)

Revised: 04/22/2004

Page 2 of 5

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	Massachusetts Department of	Environment	al Protection	BWSC108
	Bureau of Waste Site Cleanup			
	COMPREHENSIVE RESPONSE FORM & PHASE I COMPLETIO	ACTION TR	ANSMITTAL NT	Release Tracking Number 3 - 18598
	Pursuant to 310 CMR 40.0484 (Subpart D			
C. LSP SIGNATURE	AND STAMP			
l attest under the pa including any and a of (i) the standard o (iii) the provisions o	ains and penalties of perjury that I have personant of person of the submittal of care in 309 CMR 4.02(1), (ii) the applicab of 309 CMR 4.03(3), to the best of my knowledge of the set of	In my profession le provisions of 30 adge, information	nal opinion and judg 9 CMR 4.02(2) and and belief,	ment based upon application (3), and 309 CMR 4.03(2), and
response action(s) the applicable provi purposes of such re	ates that a Phase I, Phase II, Phase III, Pha that is (are) the subject of this submittal (i) isions of M.G.L. c. 21E and 310 CMR 40.00 esponse action(s) as set forth in the applica e identified provisions of all orders, permits	has (have) been 00, (ii) is (are) app able provisions of	developed and imple propriate and reasor M.G.L. c. 21E and 3	emented in accordance with hable to accomplish the \$10 CMR 40.0000, and (iii)
response action(s) provisions of M.G.L response action(s)	ates that a Phase II Scope of Work or a Ph that is (are) the subject of this submittal (i) c. 21E and 310 CMR 40.0000, (ii) is (are) as set forth in the applicable provisions of th is of all orders, permits, and approvals iden	has (have) been appropriate and re A.G.L. c. 21E and	developed in accord easonable to accorr 310 CMR 40.0000,	ance with the applicable plish the purposes of such
Operation Status i implemented in acc reasonable to acco	ates that an As-Built Construction Report , is being submitted, the response action(s) t cordance with the applicable provisions of N omplish the purposes of such response act , and (iii) comply(ies) with the identified prov	hat is (are) the su 1.G.L. c. 21E and ion(s) as set forth	bject of this submitt 310 CMR 40.0000, in the applicable pr	al (i) is (are) being (ii) is (are) appropriate and ovisions of M.G.L. c. 21E and
I am aware that sig information which I	inificant penatties may result, including, but I know to be false, inaccurate or materially i	not limited to, po ncomplete.	ssible fines and imp	risonment, if I submit
1. LSP #: 1698				
2. First Name: <u> </u>	homas	3. Last Name:	Simmons	
4. Telephone: <u>(</u> 7	(81) 721-4455 5. Ext.: _		(781) 721-44	
7. Signature:	Amon			TH OF MASS
8. Date:(n	7 08 05 nm/dd/yyyy	9	. LSP Stamp:	THOMAS SIMMONS No. 1698
				A STREET OF AN AND A STREET OF
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Revised: 04/22/2004

Page 3 of 5

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	Pursuant to 310 CMR 40.0484 (Subpart		
D. PERSON	UNDERTAKING RESPONSE ACTIONS:		c. change in the person
	that apply: 🔲 a. change in contact name	b. change of address	undertaking response a
2. Name of (Drganization: Bossi Realty Trust		
1		4. Last Name: Bossi	
		6. Title: Trustee/Not I	Personally
5. Street:	12 Swanton Street	6. Title:	<u> </u>
7. City/Town		8. State: MA 9. Zi	
10. Telepho	ne: (781) 721-0162 11. Ext.:	12. F AX :	
E. RELATIO	NSHIP TO SITE OF PERSON UNDERTAKING RESI	PONSE ACTIONS:	
1. RP	or PRP 📝 a. Owner 🔲 b. Operator [c. Generator d. Transpo	nter
	e. Other RP or PRP Specify:		
	iciary, Secured Lender or Municipality with Exem		
			,
	ncy or Public Utility on a Right of Way (as defined		
4. Any	Other Person Undertaking Response Actions	Specify Relationship:	
F. REQUIRE	DATTACHMENT AND SUBMITTALS:		
and/or	ack here if the Response Action(s) on which this approval(s) issued by DEP or EPA. If the box is o ons thereof.		
	eck here to certify that the Chief Municipal Officer ase Reports to DEP.	and the Local Board of Health have be	en notified of the submitte
	eck here to certify that the Chief Municipal Officer III Remedial Action Plan.	and the Local Board of Health have be	en notified of the availabili
	eck here to certify that the Chief Municipal Officer IV Remedy Implementation Plan.	and the Local Board of Health have be	en notified of the availabili
	ack here to certify that the Chief Municipal Officer ng the implementation of a Phase IV Remedial A		en notified of any field wor
	,		Cond compations to
6. Che	eck here if any non-updatable information provide legional Office.	ed on this form is incorrect, e.g. Site N	ame. Send corrections to
6. Che DEP R	eck here if any non-updatable information provide		

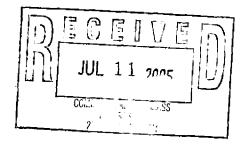
Revised: 04/22/2004

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Massachusetts Department of Environ Bureau of Waste Site Cleanup	nmental Protection	BWSC108
	ON TRANSMITTAL	Release Tracking Nur
FORM & PHASE I COMPLETION STAT	TEMENT	3 - 18598
Pursuant to 310 CMR 40.0484 (Subpart D) and 40.0	800 (Subpart H)	
G. CERTIFICATION OF PERSON UNDERTAKING RESPONSE ACTIONS:		
1. 1, John Bossi , attest under the examined and am familiar with the information contained in this submit transmittal form, (ii) that, based on my inquiry of those individuals immered information contained in this submittal is, to the best of my know that I am fully authorized to make this attestation on behalf of the entity entity on whose behalf this submittal is made am/is aware that there a possible fines and imprisonment, for willfully submitting false, inaccura 2. By:	ttal, including any and all doci ediately responsible for obtair owledge and belief, true, accu legally responsible for this sul re significant penalties, includ	uments accompanying t ning the information, the rate and complete, and bmittal. I/the person or ling, but not limited to,
Signature		
Recei Bolty Trust	~	7-1-05
4. For: Bossi Realty Trust (Name of person or entity recorded in Section D)	5. Date:	(mm/dd/yyyy)
8. City/Town: 9 11. Telephone: 12. Ext.:		
11. Telephone: 12. Ext.: YOU ARE SUBJECT TO AN ANNUAL COMPLIANCE BILLABLE YEAR FOR THIS DISPOSAL SITE. YOU MI SECTIONS OF THIS FORM OR DEP MAY RETURN TH	ASSURANCE FEE OF UP TO SUST LEGIBLY COMPLETE ALL HE DOCUMENT AS INCOMPLE	510,000 PER . RELEVANT TE. IF YOU
11. Telephone: 12. Ext.: YOU ARE SUBJECT TO AN ANNUAL COMPLIANCE BILLABLE YEAR FOR THIS DISPOSAL SITE. YOU M	ASSURANCE FEE OF UP TO SUST LEGIBLY COMPLETE ALL HE DOCUMENT AS INCOMPLE	510,000 PER . RELEVANT TE. IF YOU
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REMEDIATION & ENVIRONMENTAL MANAGEMENT SERVICES, INC.





July 11, 2005

Mr. Melvin Kleckner Town Manager 2nd Floor, Town Hall 71 Mt. Vernon Street Winchester, MA 01890 Ms. Jennifer Murphy Director, Board of Health Lower Level, Town Hall 71 Mt. Vernon Street Winchester, MA 01890

RE: Notice of Phase III Remedial Action Plan Bossi Realty Trust 12 Swanton Street Winchester, MA 01890 RTN 3-18598

Dear Sir and Madam:

The purpose of this letter is to inform you that on July 11, 2005, a Phase III Remedial Action Plan regarding a petroleum release was filed with the MADEP Northeast Regional Office for the above-referenced property. If you have any questions or would like to obtain a copy of the Phase III report, please contact Mr. Thomas P. Simmons, 35 Winthrop Street, Winchester, MA, 01890, 781-721-4455.

Sincerely, REMSERV, Inc.

Thomas P. Simmons

cc: MADEP-NERO

Remediation & Environmental Management Services, Inc. 35 Winthrop Street Winchester, MA 01890 Phone (781) 721-4455 • Fax (781) 721-4456 www.remserv.com



July 11, 2005

MADEP-NERO Bureau of Waste Site Cleanup 1 Winter Street Boston, MA 02108

RE: LSP Opinion Phase III Remedial Action Plan Bossi Realty Trust 12 Swanton Street Winchester, MA 01890-2015 RTN 3-18598

To Whom It May Concern:

This letter will serve as the LSP Opinion required under Section F.7. of the MADEP Comprehensive Response Action Transmittal Form & Phase I Completion Statement (form BWSC108) attesting to the veracity of the material facts, data and other information attached.

If you need further information, please call me at 781-721-4455.

Sincerely, REMSERY, Inc. Tom Simmons, LSP

Remediation & Environmental Management Services, Inc. 35 Winthrop Street Winchester, MA 01890 Phone (781) 721-4455 • Fax (781) 721-4456 www.remserv.com

REMEDIATION & ENVIRONMENTAL MANAGEMENT SERVICES, INC.

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Appendix I	Soil Boring Logs and Monitoring Well Reports
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REM SERU

1.0 Introduction

REMSERV Inc. has conducted a Phase III Feasibility Evaluation and completed a Phase III Remedial Action Plan for the Bossi Realty Trust (Bossi) site in accordance with 310 CMR 40.0850: Phase III - Identification, Evaluation and Selection of Comprehensive Remedial Action Alternatives and 310 CMR 40.0861: Remedial Action Plan. The site has not yet achieved a Response Action Outcome (RAO) because ground water and soil at the site have not met applicable standards due to the presence of gasoline components. The Phase III evaluation includes

- The identification and evaluation of remedial action alternatives that are reasonably likely to achieve a level of No Significant Risk for gasoline contaminated soil and ground water considering the site-specific characteristics;
- An assessment of the likelihood of achieving a permanent solution through the use of a remedial action alternative(s);
- An assessment of whether a Temporary Solution would be more cost-effective and timely than the implementation of a feasible Permanent Solution; and
- The possibility of achieving or approaching background levels for the gasoline components and mixtures dissolved in ground water. The feasibility of approaching background is conducted in accordance with 310 CMR 40.0860 for sites where remedial actions have been taken and background levels are not achieved.

The Phase III evaluation focuses on the screening of remedial action alternatives for their effectiveness, implementability, and cost. The purpose of the screening is to identify the remedial technologies that are reasonably feasible to achieve a level of No Significant Risk for the release tracking number (RTN) 3-18598. At the conclusion of the screening process, a detailed evaluation of the applicable alternatives will be conducted in order to identify the best remedial action alternative for the site. The results of the screening and detailed evaluation are presented in this Phase III Remedial Action Plan (RAP). The Phase III RAP will document the selection process and identification of the proposed remedial action alternative.

2.0 Site Location

The site is located in UTM Zone 19 at coordinates 4702910 mN and 324875 mE (Figure 1). These coordinates denote the approximate center of the property. The site is located in the Mystic River Drainage Basin. Storm water from the site is drained through a series of catch basins along the southern side of Swanton Street that discharge to the Aberjona River, located approximately 2,000 feet west of the site (Figure 1). The Aberjona River drains to the Mystic Lakes, which drain to the Mystic River and ultimately to Boston Harbor. The Mystic River is designated as a Class B Waterway.

The site is not located within 500 feet of an Area of Critical Environmental Concern (ACEC), vernal pools, reservoirs, private wells, a mapped Zone II area, a Zone A of a Class A surface water body, a priority productive aquifer, a sole source aquifer, fish habitats, or habitats of species of Special Concern or Threatened or Endangered Species (5, 8, 9, 15) (Figure 1). Middlesex Fells Reservation is located approximately 1,200 feet east of the site (Figure 1). Three (3) reservoirs located within Middlesex Fells provide drinking water to the town of Winchester (7).

The site is located within 500 feet of a medium yield (100-300 gpm) Non-Potential Drinking Water Source Area (NPDWSA) (Figure 1).

The property is bordered to the north by Swanton Street; the west by a commercial building housing a dry cleaning facility and an Italian restaurant; the south by a commercial parking lot; and the east by a commercial building housing a convenience store, a laundromat, and a photograph developing facility. The land use opposite Swanton Street to the north and the commercial parking lot to the south is residential (Figure 3).



3.0 Physical Site Description

The site is currently known as Bossi's Auto Repair and occupied by an automotive repair and used car sales facility. The property consists of one (1) 1,806-square-foot building on an 0.31-acre lot and is entirely paved with asphalt (11). The site formerly dispensed gasoline and diesel fuel.

The site is located at an elevation of approximately 49 feet above Mean Sea Level (based upon the National Geodetic Vertical Datum of 1929). The topography is relatively flat with a mild grade from east to west. Storm water falling on the property drains to the west and discharges to the Aberjona River and ultimately to Boston Harbor. Regionally, the topography to the east rises sharply in elevation culminating in the Middlesex Fells Reservation located approximately 1,200 feet east of the site. The area to the west slopes gently to the Aberjona River approximately 2,000 feet west of the site (Figure 1).

Six (6) underground storage tanks (USTs) were removed from the site in May 1999 under permits from the Winchester Fire Department, including four (4) gasoline USTs, one (1) 500-gallon waste oil UST and one (1) 500-gallon heating oil UST (13). The site is connected to the Winchester Municipal Water System and does not rely on an on-site water supply well. The site is connected to the Winchester Municipal Sewer System.

4.0 Release History

On May 26 and 27, 1999, six (6) USTs were removed by Craftsman Construction Company from the site under permits provided by the Winchester Fire Department. Both Captain David Dalton and Lieutenant Peter Skerry of the Winchester Fire Department noted in their reports that the soils produced during the UST excavation had a "strong odor." Captain Dalton requested that the soil be stockpiled, sampled, and analyzed for contamination (10). On July 8, 1999, Subsurface Remedial Technologies, Inc. (SRT) collected samples from the soil stockpile. Using the jar headspace method, SRT identified a 72-hour reportable condition when PID readings of up to 275 parts per million (ppm) were obtained from these soils. On September 5, 1999, SRT notified the Massachusetts Department of Environmental Protection (MADEP) of the condition. The MADEP assigned Release Tracking Number (RTN) 3-18598. On November 19, 1999, the MADEP issued a Notice of Responsibility (NOR) to Bossi Realty Trust for a gasoline release associated with the UST system.

Soil samples collected by Web Engineering Associates, Inc. (Web) in October 2000 identified contaminated soils exceeding site applicable standards (S-1, S-2, and S-3) at approximately 15 feet (Table 1). Soil samples collected by REMSERV, Inc. in February 2005 also identified similarly contaminated soils at approximately 15 feet, albeit at contaminant concentrations that had decreased since Web analyzed site soils. Web and REMSERV, Inc. also identified ground water concentrations in excess of site applicable standards (GW-2 and GW-3) in 2000 and 2005, respectively. Again, the REMSERV, Inc. analytical results identified decreasing contaminant concentrations with time since Web samples were analyzed in 2000 (Table 2).

5.0 Previous Remedial Activity

Web has submitted a Release Notification Form and Immediate Response Action Plan, an Immediate Response Action Completion Report, and a Phase I Initial Site Investigation Report and Tier Classification to the MADEP for RTN 3-18598.



Release Notification and Immediate Response Action Plan

On December 18, 2000, Web submitted a Release Notification and Immediate Response Action Plan to the MADEP. The IRA Plan proposed sampling and disposing of the approximately 20 cubic yards of stockpiled soil and conducting a subsurface investigation to determine the extent of soil and ground water contamination at the site (12).

Immediate Response Action Completion Report

On April 3, 2001, Web submitted an Immediate Response Action Completion Report to the MADEP. As part of the IRA activities, Web collected a composite sample from the soil stockpile on December 18, 2000 and submitted the sample for laboratory analysis according to the soil disposal parameters of Aggregate Industries (AI) in Stoughton, MA. Based on the laboratory analytical results, the soils were transported for asphalt batch recycling to AI on March 29, 2001 under an MADEP Bill of Lading (13). In order to determine the extent of soil and ground water contamination, Web advanced four (4) soil borings at the site on October 13, 2000. Soil samples were collected at five-foot intervals in all borings. All four (4) soil borings were completed as ground water monitoring wells. One monitoring well was destroyed by a tow truck shortly after installation. The remaining three (3) monitoring wells were sampled on October 24, 2000. The soil and ground water samples were submitted for laboratory analysis. Based on the analytical data, Web concluded that the contamination was limited to the ground water and subsurface soils at the site. Web determined that further response actions were required at the site, but no further IRA work was necessary (13).

Phase I Initial Site Investigation Report and Tier Classification

On April 3, 2001, Web submitted a Phase I Initial Site Investigation Report and Tier Classification to the MADEP. The Phase I Initial Site Investigation was conducted to provide sufficient information to meet the requirements of the Numerical Ranking System and Tier Classification Process as described in 310 CMR 40.0500. The Phase I activities included the installation of ground water monitoring wells, the sampling and analysis of soils and ground water, a visual site inspection, and a MADEP file review. On October 13, 2000, four (4) soil borings were advanced and completed as ground water monitoring wells (one monitoring well was destroyed shortly after installation). Soil samples were collected at five-foot intervals in all borings and screened using the jar headspace method. Readings of more that 1,000 ppm were obtained from the saturated soils (>13 feet below grade) in MW-3 and MW-4. Laboratory analysis indicated "that the contaminant levels in the soils at the site are relatively low." Only total xylenes in MW-4 exceeded the applicable S-3/GW-2 standards. Analysis of ground water samples identified that concentrations of volatile petroleum hydrocarbons (VPH) exceeded the GW-2 standards in all three (3) monitoring wells. GW-2 standards for toluene and total xylenes were also exceeded in monitoring wells MW-3 and MW-4. Web concluded that the release was not recent due to the "relatively low concentrations of MTBE" at the site. Web also concluded that further response actions would be required to achieve a condition of No Significant Risk at the site.

Based on the findings of the Phase I Initial Site Investigation, Web used the Numerical Ranking System (NRS) to classify the site. The site received a score of 138 and did not meet any of the Tier I Inclusionary Criteria. Therefore, the site was classified as a Tier II site.

6.0 Findings of the Phase II Comprehensive Site Assessment

A Phase II Comprehensive Site Assessment was completed at the site in May 2005 in order to assess the nature and extent of site soil and ground water contamination. As part of the Phase II assessment activities,

REMEDIATION & ENVIRONMENTAL MANAGEMENT SERVICES, INC.

REMSERV, Inc. observed the advancing of six (6) soil borings at the site. Four (4) of these borings were completed as ground water monitoring wells. Soil and ground water samples were submitted for laboratory analysis. Similar to results obtained during the Phase I activities, analytical results identified soil and ground water contamination in excess of the site applicable standards. However, the 2005 contaminant concentrations are less than those identified in 2000 (Tables 1 and 2).

The Phase II activities included an assessment of the risks to human health, public safety, and the environment by completing a Method 1 Risk Characterization. The Risk Characterization assumed unrestricted uses. The results of the Risk Characterization indicate that a condition of No Significant Risk <u>has not yet been achieved</u>.

7.0 Contaminants to Be Considered During the Phase III

Gasoline is a complex mixture of many petroleum compounds. Therefore, there is no one compound that defines gasoline's behavior characteristics or toxicological properties. Certain target components or analytes have been selected based on their mobility in the environment, the percent composition they represent of gasoline, and the toxicological effects they have for human or environmental exposures. The DEP has developed an analytical procedure to analyze gasoline by separating the mixture into three fractions of hydrocarbons. VPH analyses include benzene, toluene, ethylbenzene, total xylenes, MTBE and naphthalene as the target analytes. These compounds, except for MTBE, are characterized by moderate solubility, moderate vapor pressure (moderate Henry's constants), and a moderate affinity for soil attenuation in soils high in organic content. The VPH contaminants have a moderate to high migration potential as soil vapor and when dissolved in ground water. The bio-attenuation and breakdown of these contaminants occurs primarily under aerobic conditions. The aromatic VPH range gasoline components are more readily biodegraded under aerobic conditions.

With the advent of reformulated gasoline (RFG) in the mid 1990s, an attempt was made to reduce carbon monoxide emissions to the atmosphere by lowering the volatile organic compound (VOC) content and promoting more complete combustion by adding oxygenates such as MTBE. MTBE is more soluble in water than most other components of gasoline and is more volatile than other gasoline components.

8.0 Identification of Remedial Action Alternatives

REMSERV, Inc. has identified applicable in-situ remediation technologies based on the site contaminant types and the physical characteristics. The following technologies have been selected based on their historic success in addressing dissolved gasoline contamination in shallow, coarse-grained water table aquifers. These technologies have been screened to determine their potential feasibility to reduce the toxicity, mobility, and volume of the contaminants at the site and achieve a temporary or permanent solution.

Ex-situ remediation technologies were not considered given the limited area of the disposal site and the proximity to nearby structures.

8.1 Soil Vapor Extraction with Air Sparging

Soil Vapor Extraction (SVE) is applied to soils located above the water table. SVE extracts VOCs from the soil in the vadose zone (the area located above water table) by placing a vacuum on the subsurface with a vacuum blower connected to vertical or horizontal extraction wells. The technology is applicable to contaminants that are absorbed on soil and have a tendency to volatilize or evaporate quickly in the vadose zone. As soil vapor is pulled through the



spaces between the soil grains, the VOCs vaporize and are induced to flow into the extraction wells and are treated above ground.

Air injection wells are often installed to increase the airflow and improve the removal rate of the contaminant vapor. When pressurized air is injected below the water table, contaminants can be stripped from the saturated zone of soil that lies below the water table. This is called air sparging. Air sparging works best with soil in the saturated zone that is loose such as sand, gravel, and coarse-grained soil. When the compressed air passes through permeable pathways in the soil on its way to the extraction wells, contaminants evaporate out of the spaces between the soil particles and are driven by the air toward the water table surface. The soil gas then flows to the extraction wells and is removed.

8.2 Ground Water Pumping and Treatment

A ground water pumping and treatment system is a conventional ground water remediation technology that relies on the withdrawal of ground water from the subsurface for treatment at the surface. A ground water extraction well is installed and screened in the aquifer, and ground water is pumped from the aquifer. The hydraulic pressure is reduced in the area around the extraction well and ground water flows into the extraction well. The flow induces ground water to carry the dissolved and sorbed contaminants into the extraction well. As water is removed from within the soil pore spaces, contaminants sorbed onto soil grains desorb and enter into solution. The contaminated ground water is pumped to the surface; treated; and either re-infiltrated, discharged to a storm sewer, or discharged to a surface water body.

8.3 Bioventing

Bioventing is an in-situ technique to create and stimulate a favorable environment for microorganisms to grow and use contaminants as a food and energy source. Bioventing is a common form of in-situ bioremediation. Bioventing uses wells installed in the contaminated area to permit atmospheric air to recharge and circulate through the ground. This is combined with the injection of a combination of nutrients, electron donors, electron receptors, and in some cases, microbes to stimulate and control the use of the contaminant as a food source.

8.4 Dual Phase Extraction

Also known as multi-phase extraction, this method applies a vacuum gradient to simultaneously remove soil vapor and ground water contaminated with volatile organic compounds. The applied vacuum pressures are sufficient to dewater the soils in the vicinity of the extraction well. The dewatered soils expose a greater thickness of contamination and induce soil vapors to volatilize and migrate to the extraction well. The technology removes various combinations of contaminated ground water, separate-phase petroleum product, and vapors from the subsurface. The system lowers the water table around the well, exposing more of the formation. Contaminants in the newly exposed vadose zone are then accessible to vapor extraction. Once above ground, the extracted vapors or liquid-phase organics and ground water are separated and treated.

8.5 Chemical Oxidation

Chemical oxidation is a process by which an oxidant is added to the subsurface to destroy the contaminant in-situ or without having to extract the contaminated media to the ground surface for treatment. The most common types of oxidants are ozone, peroxide, or permanganate. Both ozone and peroxide reactions are fairly rapid. Permanganate may produce longer oxidative conditions due to second-order reactions. All three oxidants have the potential to produce heat and gas as a reaction byproduct. One or more of the



oxidants may produce colloidal size particles that may reduce the formation permeability, potentially limiting the effectiveness of repeat applications.

Regenesis has recently produced a product that results in oxidation of petroleum products without producing the exothermic conditions common with some of the above oxidants. The product RegenOx is a sodium percarbonate (2NaCO₃) chemical oxidant in solid powder form designed to degrade source zones for petroleum contaminated soils and ground water. Regenox is designed to be injected using a direct push technology to obtain access to the source zone contaminants. In the case of Bossi, the source zone does not exhibit LNAPL. RegenOx has been selected based on the manufacturer's claim that it is highly effective for the oxidation of petroleum hydrocarbons and MTBE in soils and ground water. The product has an insitu reactivity half-life effectiveness of up to one month.

8.6 Monitored Natural Attenuation

Monitored natural attenuation (MNA) is an alternative method of reaching the remediation goals of a temporary or permanent solution within a reasonable time frame. MNA is the reliance on natural processes at work in the subsurface to retard the migration of vapor, soil, and/or dissolved phase contaminants. The MNA approach achieves the remedial goals with an approach that is less active and less intrusive than other in-situ methods. These natural processes include physical, chemical, and/or biological processes that, under unaugmented subsurface conditions, act to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil or ground water. These processes include biodegradation; dispersion; dilution; sorption; volatilization; radioactive decay; and chemical or biological stabilization, transformation, or destruction of contaminants.

MNA may be used alone or in consort with other remediation technologies such as a ground water pump and treat system.

9.0 Screening Analysis of the Remedial Action Alternatives

REMSERV, Inc. has established criteria for evaluating the alternative technologies listed in the identification section (Section 8.0) of this Phase III report. The criteria have been developed using the screening evaluation guidance developed by the US EPA and are consistent with the US EPA guidance document for conducting a feasibility analysis under CERCLA (EPA/540/G-89/004). REMSERV, Inc. has identified six (6) technologies that are applicable to the site contaminants and conditions. To screen these technologies in greater detail, REMSERV, Inc. has used five (5) criteria to rank each technology according to their effectiveness, time to complete, implementability, and cost.

The effectiveness evaluation is separated into short-term and long-term effectiveness. The short-term effectiveness is evaluated during the construction and implementation period. The technology is evaluated for its effectiveness for remediating the areas of the site that are contaminated and the potential impacts to the surrounding receptors during the construction and implementation phase. The long-term effectiveness evaluation includes the technology's ability to achieve and maintain the remediation goals after the technology has been implemented.

Implementability is a measure of the technical feasibility of constructing, operating, and maintaining the technology after it has been implemented. Implementability is also a measure of the estimated time for the technology to achieve the desired remediation goals.

Costs include the design costs, costs to construct the system, equipment costs, and operation and maintenance costs. REMSERV, Inc. has developed a cost estimate based on prior estimates for the implementation of the six (6)



technologies based on good judgements of engineering costs, subcontractor costs that include contingencies, and published literature values.

		RANKING SY Screening of R Phase III		n Alternatives		
Remediation Technology	Short-Term Effectiveness	Long-Term Effectiveness	Remediation Time to Complete	Implementability	Cost Evaluation	Total Rating
Soil Venting with Air Sparging	4	4	3	5	2	3.6
Ground Water Pump & Treat	1 <u> </u>	3	1	5	1	2.4
Bioventing	2	4	2	5	2	3.0
Dual Phase Extraction	3	3	2	4	2	2.8
Chemical Oxidation	5	5	4	5	3	4.4
Monitored Natural Attenuation	3	5	1	5	5	3.8

9.1 Screening Results

REMSERV, Inc. has developed a ranking system that assigns a rating from one (1) to five (5). A greater score is assigned to each technology for greater effectiveness in the individual categories. For example, a score of "5" under the cost evaluation indicates that the technology is less costly than the alternative technologies that are being screened. Each criterion is given equal weight. The "Total Ranking" score is an arithmetic average of the individual criteria scores. The score for each criterion are based on published values available in the literature and relevant project experience. The screening results are provided in the Ranking System Results Table.

The highest ranking and most desirable alternative is in-situ chemical oxidation of the contaminants. Chemical oxidation relies on the rapid degradation of the contaminants in the source zone in the initial application. Post-application monitoring of ground water contaminant reduction and indicator parameters is used to identify the effectiveness of the oxidation process and aid in the assessment of repeat applications as necessary. The final remediation goals may be achieved through the use of indigenous bacteria that work to reduce the toxicity, mobility, and volume of the contaminants.

Monitoring will consist of dissolved hydrocarbon analyses to identify the plume dimension. Long term monitoring will include sampling the commonly identified electron acceptors such as sulfate, nitrate, and carbon dioxide. Soil

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sampling and analysis for petroleum compounds as part of the temporary solution offered for the site will augment the long-term monitoring.

9.1.1 Discussion

Other technologies scored lower than chemical oxidation. The technology with the next highest rank was monitored natural attenuation (MNA). As evident from the discussion above, MNA may provide a cost effective role in achieving the final desired remediation goals for the site. MNA has been occurring at the site as evidenced by the reduction in dissolved VPH fractions in soils and ground water from the analytical results obtained in 2000 to the most recent sampling results in 2005.

The operation of the SVE/AS system is economically infeasible given the mechanical systems costs, the utility consumption, the carbon use byproducts, and the disruption to the day-to-day site operations. As a result, the cost to operate this technology resulted in a lower overall ranking.

Dual phase extraction has similar cost disadvantages to SVE/AS for reductions in concentrations of dissolved contaminants. Dual phase extraction relies on the removal of ground water and soil vapor simultaneously as the soils in the vicinity of the extraction well are periodically dewatered under high vacuum pressures. A technical disadvantage for dual phase extraction in medium to high yield aquifers is the large volume of water that is removed from the subsurface. This technology begins to resemble a pump and treat system performance under these criteria.

Bioventing is best applied to petroleum products that are moderate in weight such as diesel fuels and No. 2 heating oil. Lighter weight petroleum products such as gasoline have a higher vapor pressure and are more suitable to evaporation using SVE/AS technology. Bioventing is applicable for heavier petroleum products such as motor oil at extended remediation time frames.

A ground water pumping and treatment system is most effective when implemented for plume containment. Pump and treat is not appropriate as a stand-alone remediation technology for ground water restoration. Pump and treat is greatly affected by variations in geology and types of contaminants. Contaminants sorbed onto soils desorb slowly as ground water is pumped from the subsurface. The continued presence of dissolved contaminants extends the duration of pump and treat operations and results in increased costs. Once the pump and treat technology has been stopped, the sorbed contaminants will "rebound" and the dissolved contaminant concentrations will increase. Under the screening evaluation, the cost criteria and the time to complete resulted in a low ranking for this technology for the site.

The technologies and the reasons for the ranking are discussed in each category as follows.

Short-Term Effectiveness

Chemical oxidation performs the best in this category is since there is no exposure of contaminated media to potential receptors.

With the exception of MNA, the other technologies involve accessing the contaminated media through drilling and excavation activities. Soil vapor extraction and air sparging, dual phase vacuum extraction and ground water pump and treat may require trenching through contaminated media. All three technologies require drilling which generates soil cuttings that must be managed and disposed of. All three technologies require management of waste streams at above ground treatment systems may require trenching



Long-Term Effectiveness

Chemical oxidation ranks with MNA as the highest scoring technology in this category. Chemical oxidation relies on in-situ destruction of the contaminant as opposed to MNA which relies on intrinsic bioactivity to reduce the contaminant concentrations through the use of naturally occurring process that may be augmented to accelerate the rate of degradation. Chemical oxidation followed by MNA has the capability of sustaining the remediation goals after the regulatory cleanup standards have been met and the destructive phase of the operation is terminated.

With the remaining technologies, heterogeneity in the subsurface geology and contaminant distribution produce a rebound effect. Rebound is when the technology operation and maintenance is terminated and the sorbed contaminants left in place desorb and go into solution. The resultant dissolved concentrations are greater than the concentrations achieved at the point of termination of the remedial system. This is most noticeable in pump and treat technology where desorption of contaminants continues to occur after the recovery system has been shut down.

Remediation Time to Complete

Chemical oxidation is a rapid process of achieving contaminant destruction in-situ. Therefore the approach is aggressive and the destruction occurs rapidly as the injected oxidant front reacts with the contaminants in soils and ground water.

The more aggressive technologies usually achieve more significant contaminant concentration reduction in a shorter time span. The technologies that rely on moderate alteration of the static subsurface conditions require longer operating periods. These include bioventing, MNA, and ground water pump and treat. MNA alone is an effective remediation technology in the long-term but require substantial time to achieve the remediation goals when the initial contaminant concentrations are elevated. Dual phase extraction and soil venting with air sparging rely on altering the subsurface conditions that exist within the shallow subsurface. These accelerate the time to remove volatile and dissolved contaminants. The large pressure gradients produced by applying vacuum to the contaminated subsurface accelerates the processes of volatilization and dissolution. The rates at which these processes take place are greatly accelerated and a rapid reduction in the contaminant concentrations is observed.

Implementability

All of the technologies have been implemented with success on a large number of sites with similar site contaminants and conditions. Dual phase extraction ranks lower in this category because the permeable nature of these soils will produce large volumes of water that will require treatment and management. This will require additional issues to be managed as part of the system construction and operation and maintenance.

Cost Evaluation

Natural Attenuation ranks the highest in this category due to the absence of capital equipment costs and the limited operation and maintenance required. Chemical oxidation ranks second in this category due to the absence of mechanical components, operation and maintenance costs or utility costs associated with continued operation of the equipment. The other technologies have equipment costs that are dependant on the system size, the number and size of the components and the structures in which they are contained. The duration of system operation and maintenance can extend the costs of a remedial system far above the installation and equipment costs. Sole technology applications of pump and treat technology have operation and maintenance costs that have been documented in the millions of dollars.



10.0 Detailed Evaluation of the Remedial Action Alternatives

A detailed evaluation of the remedial action alternatives is not required when the initial screening has identified technologies that have a proven, effective performance remediating gasoline compounds on site with similar conditions (310 CMR 40.0857 (2)(a)).

11.0 Selection of Remedial Action Alternative

Based on the screening of potential remedial action alternatives, REMSERV, Inc. has selected chemical oxidation as the preferred remedial action alternative for this site. As part of the chemical oxidation pilot test, ground water monitoring will be conducted to determine the effectiveness of this remedial action alternative. Based on the pilot test results, a full-scale implementation will be undertaken along with post-application monitoring as part of the Phase IV Remedy Implementation Plan.

12.0 Feasibility of Achieving a Permanent Solution

The overall decreasing trend in dissolved contaminant concentrations at the site indicates a shrinking plume. Chemical oxidation is an accelerated remediation method to reduce the cleanup times associated with MNA as a stand-alone remediation strategy. MNA is considered an effective approach for the contaminants associated with this release after one or more applications of the chemical oxidant. Using this combination of technologies, a permanent solution should be achieved within an accelerated time frame for the contaminated soils and ground water at 12 Swanton Street, Winchester, MA.

13.0 Feasibility of Achieving Background

Ground water monitoring should continue to include sampling and analyses for VPH fractions and target analytes, and natural attenuation parameters including dissolved oxygen, nitrate, sulfate and ferrous and ferric iron. Soil sampling should also be conducted within the plume area to assess the residual soil contaminant levels.

14.0 References

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- 6. http://ma.water.usgs/gov.
- 7. REMSERV, Inc. personal communication with Ms. Anne Dyrne of the Winchester Public Works Department on April 27, 2005.



- 8. Potential Drinking Water Source Areas (PDWSA): Department of Environmental Protection (DEP), 2005.
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- 11. http://winchester.patriotproperties.com.
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- 13. "Immediate Response Action Completion Report," completed by Web Engineering Associates, Inc., April 3, 2001.
- 14. "Phase I Initial Site Investigation Report and Tier Classification Submittal," completed by Web Engineering Associates, Inc., April 3, 2001.
- Estimated Habitats for Rare Wildlife: Natural Heritage & Endangered Species Program (NHESP),
 2005. ("NHESP 1999-2001 Estimated Habitats of Rare Wildlife: Use with Wetlands Protection Act")

TABLE 1 - SOIL ANALYTICAL RESULTS Bossi Realty Trust 12 Swanton Street Winchester, MA

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С ₁₁ -С ₂₂ Аготайся (ту/вт)	800	2,000	5,000	BDL	BDL	BDL	120	BDL	BDL	40.6	57.3	27.24
С ₁₉ -С ₃₆ Айрлянся (mg/kg)	2,500	5,000	5,000	BDL.	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
C ₉ -C ₁₈ Aliphatics (mg/kg)	1,000	2,500	5,000	BDL	BDL	BDL	350	BDI,	BDL	43.3	129	65.29
Cy-Cj ₁ Aromatica (mg/kg)	100	500	500	BDI,	NA	1.4	2,400	8.66	BDL	280	216	415
С _у -С ₁₃ Айраайся (та⊀жа)	1,000	2,500	5,000	1.9	ΝA	2.2	BDL	6.08	BDL	217	350	82.45
C₂-C ^g Aliphatics (mg/kg)	001	500	500	BDL	NA	2.0	2,100	16.4	BDL	639	1,130	555
2-աéկիչիացիլիցվես Հ-աéկիչիացին Հեր	500	1,000	2,000	BDL	BDL	BDL,	26	0.162	BDL	3.99	1.66	3.98
Naphthakene (by MA EPH) (mg/kg)	100	2,500	2,500	BDL	BDL	BDL	29	BDL	BDL	3.92	0.642	4.20
(HTV AM yd) susiadiddav (24/2m)	100	2,500	2,500	BDL	NA	BDL	60	0.332	BDL	9,55	5.82	10.81
T 0tal Xylenes (202/42)	500	1,000	2,500	BDL	NA	BDL	840	BDL.	BDL	127.8	11.72	140
(डैभ्/डिपा) २ग्रभु⊼ूर-d∓m	NS	NS	SN	BDL	NA	BDL	NR	BDL	BDL	92.4	9.10	1
(Зη/Яш) эиэү∆х-о	NS	NS	NS	BDL	NA	BDL	NR	BDL	BDL	35.4	2.62	1
(34/5m) (34/5m)	100	500	500	BDL	νv	BDL	10	BDL	BDL	BDL	BDL	1.43
(Sy/Sm) ənəzuəq(áqıg	500	1,000	2,500	BDL	NA	BDL	170	BDL	BDL	24.2	2.72	28.13
(ទ្ទរ/ទ្ធ៣) ទំរាទរាoT	500	1,000	2,500	BDL	VN	BDL	470	0.14	BDL	39.6	5.99	73.68
(34/2m) əuəzuəg	40	05	200	BDL	NA	BDL	BDL	BDL	BDL	1.75	BDL	0.25
(wdd) DId	1	1	1	110	0.0	828	>1,000	376	0.0	520	72.6	t
Sample Depth (feet)	1	1		12	12	12	16	15	12	15	14	
ətaU gniiqmeZ		1		10/13/00	10/13/00	10/13/00	10/13/00	02/28/05	02/28/05	02/28/05	02/28/05	1
(II əlqms2	Method 1 S-1	Method 1 S-2	Method 1 S-3	•MW-1 (10'-12')	*MW-2 (10'-12')	*MW-3 (10'-12')	•MW-4 (15'-15.5')	B101 S4 13-15	B102 SIB 11.5-12	B103 S1 13-15	B104-S1 13-15	EPC.

LEGEND

Below Laboratory Detection Limits	No Standard Published	Not Analyzed	Not Reported	Soil Exposure Point Concentration
BDL	NS	NA	NR	EPC

Sample Collected by Web Engineering
 Bolded values indicate concentrations above site applicable standards.
 Note: All concentrations and standards reported in mg/kg.

TABLE 2 - GROUND WATER ANALYTICAL RESULTS Bossi Realty Trust 12 Swanton Street Winchester, MA

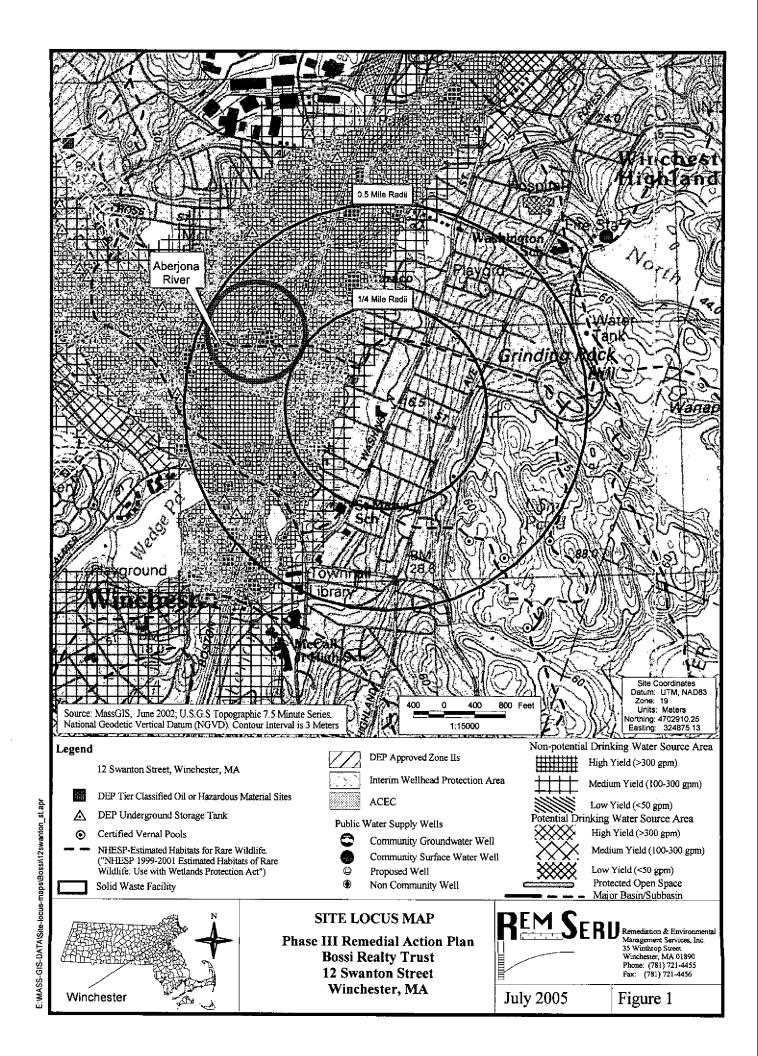
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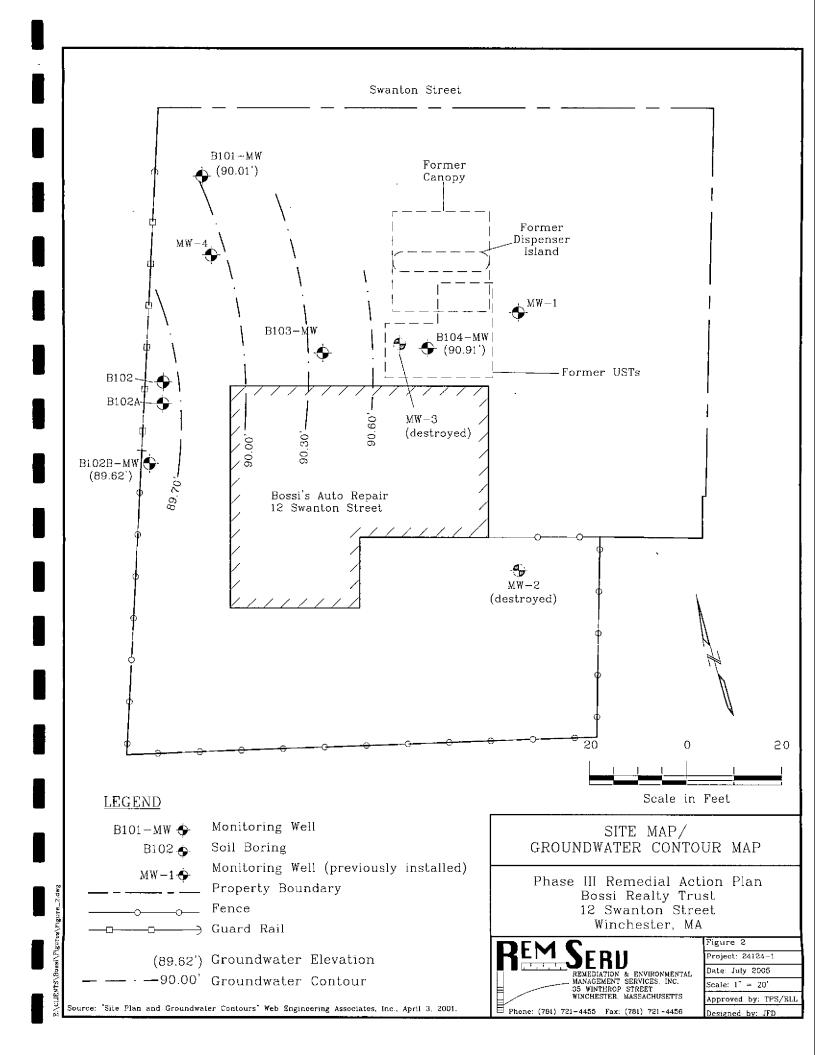
												<u> </u>	
C ₁₁ -C ₂₂ Aromatics (ug/L)	200	50,000	30,000	BDL	BDL	630	800	400	600	500	600	400	
C ₁₉ -C ₃₆ Aliphatics (ug/L)	5,000	NS	20,000	BDL									
C9-C18 Aliphatics (U/20)	4,000	1,000	20,000	BDL	BDL	1,500	1,300	4,200	300	400	2,400	400	
Cy-C ₁₀ Aromatics (Ug/L)	200	5,000	4,000	440	300	17,000	18,000	16,200	4,230	6,910	8,950	3,750	
C9-C12 Aliphatics (ug/L)	4,000	1,000	20,000	340	159	21,000	29,000	5,830	1,110	2,250	2,560	1,520	
csitanqilA ₈ D-2D (J\gu)	400	1,000	4,000	1,400	753	30,000	47,000	22,400	1,110	4,620	17,400	8,890	
Ջ-№ քիդի ոցիքիաննուց (ՍՁ/Ն)	10	10,000	3,000	1.4	BDL	140	170	108	96.3	30.6	105	48.3	
Naphthalene (by EPH) (ug/L)	20	6,000	6,000	2.3	BDL	170	280	379	44.5	114	165	88.1	
(HAV γd) εαθικήτη αργ (U'gu)	20	6,000	6,000	BDL	10.8	830	1,100	1,090	92.4	368	392	181	
(n&\L) MTBE	70	50,000	50,000	16	BDL	BDL	3,500	BDL	BDL	87.4	BDL	38.6	İ
Total Xylenes (ug/L)	10,000	6,000	50,000	138	60.4	24,200	32,000	25,140	224.3	4,470	8,570	2,860	
(Ц'ди) эпэlүХ-о	NS	NS	NS	NR	9.6	NR	NR	7,640	12.3	1,910	2,480	780	
(၂/ឆីn) əuəլxX- q+m	NS	NS	NS	NR	50.8	NR	NR	17,500	212	2,560	6,090	2,080	
(nä\r) Ethyldenzene	700	30,000	4,000	37	26.8	4,500	6,200	4,480	58.5	680	1,790	843	
ənəuloT (J'gu)	1,000	6,000	50,000	40	12.4	23,000	41,000	1,950	7.2	1,600	4,560	338	
Benzene Benzene	5	2,000	7,000	11	11.4	1,900	1,900	BDL	BDL	230	168	36.8	
Groundwater Elevation (feet)			1		ł	;			90.01	89.62	90.65	90.91	
Depth to Water (feet)		ł	1	13.70	10.87	13.20	13.34	10.43	96.6	11.35	10.39	10.77	
PVC Casing Elevation (feet)		ł		MM	MN	MM	MN	MN	100.00	100.97	101.04	101.68	
əte U gnilqme2		1		10/24/00	04/01/05	10/24/00	10/24/00	04/01/05	04/01/05	04/01/05	04/01/05	04/01/05	
UI əlqms2	GW-1 Standard	GW-2 Standard	GW-3 Standard	I-WM*		*MW-3	*MW-4		B101-MW	B102B-MW	B103-MW	B104-MW	

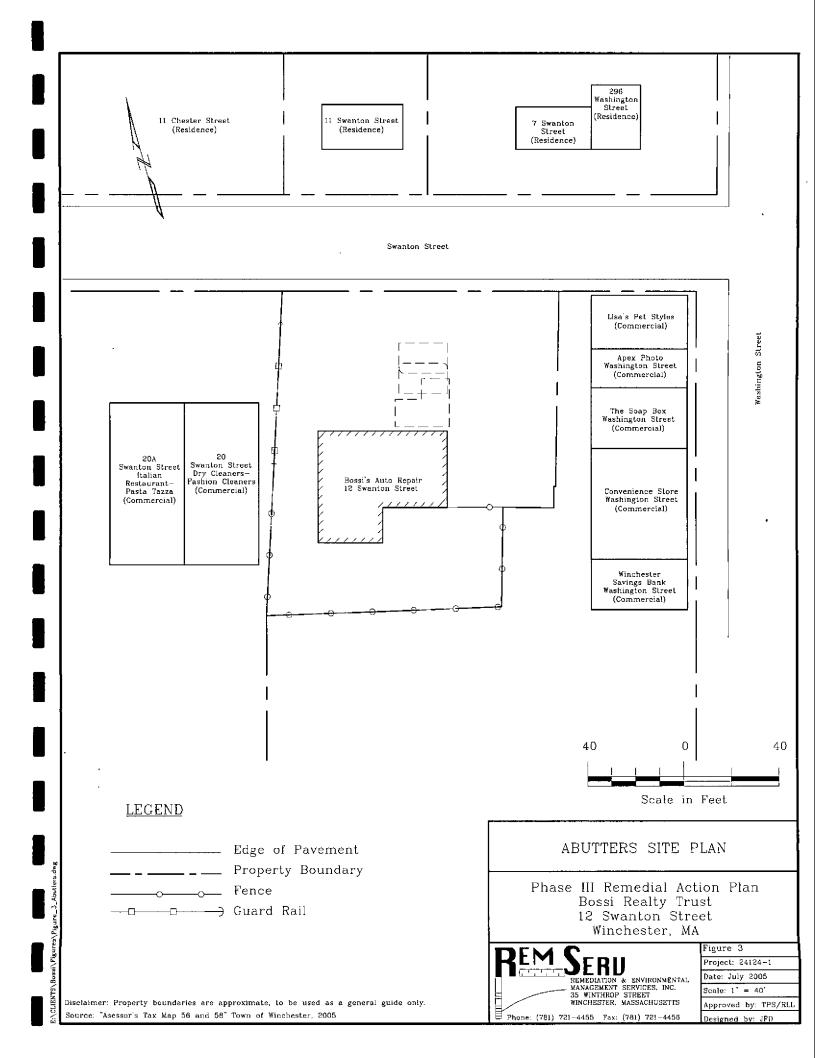
LEGEND

	Below Laboratory Detection Limits	No Standard Published	Not Measured	Not Reported	Monitoring well installed by previous o
n raban	BDL	SN	MN	NR	¥

 Monitoring well installed by previous consultant Bolded values indicate concentrations above site applicable standards. Note: All concentrations and standards reported in ug/L. ·• ·







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			ose, 4 - 10	1			'E (Лат)	CAS	SING SAMI		Έ
esive:	: 0-2 V S	Soft, 2 -	-	-8 M Stiff Some	20 to 35%	HAM	LE (IN) MER WGT (LB)		. 140	S/S 40 Lb	
5 Stift	<u>f_ 15-30</u>	<u>V. Stif</u>	<u> 6_30 + Ha</u>	ard. And	35% to 50%	HAM	MER FALL (IN)	-		30"]

	sas Constant Soil	L Expla	oration (and a state of the	TEST BO					, SHÈ	ET 2	
÷ .		Geotechn	nical Drilli er Monitor	ing	Web Ei Site: Bossi's	ngineerin Service (ī	-	BORI	NG B-M	₩-2	
		eominste	meer Drive er, MA 01			nton Stre		.+5	PROJ	ECT NO.	,	
	<u> </u>	978 8 d Eleva	840-0391		Winch	ester, MA	k	CROID	TANTAT		October 19, 2000	
	Ĩ	la Eleva Date Sta ate Finis	rted:	October 13, 20 October 13, 20			DATE	DEPT			VATIONS STABILIZATIO	DN
	Enginee	r/Geolo		TF	•	• •						-
Depth Ft.	Casing bl/ft	No.	Pen/Rec	Sample. Depth	Blows/6"	Strata		-		dentification	•	
		110.		Сосра	DIOWS/G	Strata	1	0	(Sou and /	or Rock Samp	16	
1		1		0'0"-2'0"	Taken from flight 10-3-3-2		Leose, gray, inorganic sil	, dry, fine t.	to mediu	m sand, some	e coarse sand, trace	
5									•	. `		
•					•				×			
10	-					8'6"	Refusal at 8'	'6" with h	ollow ste	m auger.		
	-								-			
15										۰.	•	
				· · ·		•		· .	•			
20				• • • •			ı			· ·	•	
									•	•	· -	
25									·	•		
				· ·					1. K. K. 1.			-
30									·			
									•			
35								,				
			·									
lotes:	Hollow S	Stem At	uger Size	- 4-1/4"	- <u>+ </u>	<u> </u>	······································		· · · · ·	• 34 1 1	· · · · · · ·	·
0 -30 M ohesive:	Dense, 30 0 -2 V 8	0 -50 De	ose, 4 - 10 onse, 50+ 4 Soft, 4 -	V Dense. Litti	e 10 to 20%	ID SIZI HAMM	E (IN) ER WGT (LB)	CA	SING	SAMPLE S/S. 140 Lb	CORE TYPE	

· · ·			- -		en en en en en en en en en en en en en e			· ·		
				T ST	EST BC	RIN	<u> HOC</u>		SI	DETA . 14
	i e	eotechn	ration ical Drilli r Monitor	ng .	Web E Site: Bossi's	ngineerin ₍ Service C	-		BORING B-	·2-A
		ominste	neer Driv 1, MA 01	453	12 Swa	anton Stre	et		PROJECT N	
		978 8 I Elevat	40-0391		Winch	ester, MA		CDOUR		E: October 19, 2000
	D	ate Star te Finis	rted:	October 13, 2000 October 13, 2000		•	DATE	DEPTH	DWATER OBS	SERVATIONS STABILIZATIO
	Engineer		ller: gist:	TF						
Depth Ft.	Casing bl/ft	No.	Pen/Rec	Sample Depth	Blows/6"	Strata	<u>`</u>		Visual Identificati	
		110.		Depai	DIUWS/0	Suara	<u> </u>	01	Soil and / or Rock S	ample
1									sand, medium to and boulders, gla	coarse sand, fine to cial till.
								· .		
5										•
10		[.] 1		10'0"-12'0"	70-71-81-96			· . ·	•	
		÷							· .	· ·
15		2		15'0"-16'0"	38-105	16'6"				
		••				100	Refusal at 16 Water level a Set well point	t 13'0" up	ollow stem auger on completion.	· ·
20									•	
25									•	•
							· · ·			· ·
30										
35	·									• •
		-			-					
Notes:	Hollow S	tem An	iger Size	- 4-]/4"			· · · · · ·		<u></u>	
	iless: 0-4				0 to 10%					YE CORT
l0 -30 M Cohesive	I Dense, 30 : 0 -2 V S <u>f, 15 -</u> 30) -50 Dei oft, 2 -4	nse, 50+ Soft, 4	V Dense. Little 8 M Stiff Some	0 to 10% 10 to 20% 20 to 35% 35% to 50%		E (IN) ER WGT (LB) ER FALL (IN)	CAS	14	PLE CORE TYPE //S 0 Lb 0"
			·	, <u>,,,,,</u> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						<u> </u>

					EST BO	KIN	<u>reog</u>		S. S. SHI	EET 5	
.·			ration C			ngineering		BC	ORING B-3		
	Grou	ndwater	Monitor	Well	Site: Bossi's	Service C	enter				
			1eer Drive r, MA 014	, ,	12 Swa	nton Stre	et	PR	OJECT NO	•	•
		978 84	40-0391		Winch	ester, MA				: October 19	-
	Ground			October 13, 2000				ROUNDW DEPTH	ATER OBSE CASING	RVATIONS	
		ate Star e Finisł		October 13, 2000 October 13, 2000						JIRDILI.	
		Dri	ller:	TF	•			,		· .	
Soil I	Engineer/ Casing	(Geolog	gist:	Sample		Ţ	r	Vi	sual Identification	<u>}</u>	
jun t	bł/ft	No.	Pen/Rec	Depth	Blows/6"	Strata			and / or Rock Sar		·
		1		0'0"-2'0"	Taken from Flight		Leose, gray, d fine gravel, lit	iry, fine sand tle inorganic	l, some medium : silt. Fill	to coarse san	d, little
ļ										,	
		2	.	5'0"-7'0 "	4-3-3-2	1					
			ļl					. •			
ĺ			,		· ·	8'0"			·15		
		3		10'0"-12'0"	35-52-68-85		Very dense, gr	ray, glacial t	ui. , .	4	-
		-						•			
				-			•				
		4		15'0"-16'5"	10-32-120/5"		· ·	•			-
		-				-					
						18'0"	·				
*						-	Refusal at 18' Water level at Set well point	13'6" upon		u	
	ľ				· ·			· ·			
										•	
}					i			•			
	[]	.			· · .		i			ب	
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	· · [-	· ·					·	
	l			~ _							
ŀ	.				•						
								. <u></u>			. , <u> </u>
es:	Hollow	Stem A	uger Size	e - 4-1/4"					-		
30 M . esive:	Dense, 3 0 -2 V S	0 -50 De Soft, 2 -		V Dense. Little -8 M Stiff Some	10 to 20%		IER WGT (LB)	CASEN	S/		E TYPE
			30 + Ha		35% to 50%		IER FALL (IN)		30		

		-	•		• • •	•				
					TEST BO	RING	LOG		SHI - SHI	ET.3
	G	eotechni	ration (ical Drillin Monitor	ng	Web Ei Site: Bossi's	ngineering		В	ORING B-M	ſW- \$4
		148 Pior	neer Drive , MÄ 014	3.		nnton Stree		P	ROJECT NO	0. 00-1028
	Ground	978 84	40-0391		Winch	ester, MA	· · · · · · · · · · · · · · · · · · ·	GROUNDY	DATE.	Cotober 19, 2000
	D	ate Star te Finisl	ted:	October 13, 20 October 13, 20			DATE	DEPTH	CASING	STABILIZATIO
Soil	Engineer	Dri	ller:	TF	,	· ·				
Depth Ft.	Casing bl/ft	No.	Pen/Rec	Sample Depth	Blows/6"	Strata	······································		isual Identification I and / or Rock Sar	
		140.			DIVWAG	0'3"	Asphalt - 0'			
1	 						Fill	•		
			-				Glacial till	•		
5				•.		7'0"				
10	•						Refusal at 7'	"0" with hollo	ow stem auger.	-
10							Water		at 16'5", then se 6" upon completi 6'5"	
15					4			on point at 1		
							· ·	- L		н · ·
20								· ·		
25									• •	· · ·
30								-		
35				n n an					· · ·	· · · ·
								·	• •	
Notes:	Hollow	Stem A	uger Siz	e - 4-1/4"		<u> </u>	<u> </u>			<u> </u>
	iless: 0 -			0 Loose, Tra V Dense. Lit		ID SIZI	E (IN)	CASI	NG SAMPI S/	
Cohesive		Soft, 2	-4 Soft, 4	-8 M Stiff Sor		HAMM	ER WGT (LB) ER FALL (IN)		140	
			۰.	، ۲. •.	• .			<i>.</i> .	•	•

	BORING	LOCA	ATION:	See	Plar		;		Start: 2/28/05		TTOT DO	
	Ground							— Drilled	Finish: <u>2/28/05</u> By: <u>S Garside</u>		PAGE	RING LOG
	Ground	Wate				Date:		Logge	d By: <u>TPS</u>		1 of 1	B101
	DEPTH FT.	Type & No.	SAMPI Blows /6 In.		Rec In.	REMARKS		PID Back/Read	SOIL AND	ROCK	DESCRIPTIO	NS
	_				ŀ				- ASP	HALT -	<u></u> .	
									NO SAMPLES		·	
	-											ĸ
	-											
	-											
	5		28						tan medium to fin	e SAND.	little coors	se sand.
	-	S1.	? 48	24	14			0/0	little silt		,	io bana,
	_		?	10	18			0/0	same as above			
			37					-7 -	auger pasted obstr	uction		
	- - - 10	53	38 83 33	24	10			0/0.4	dense tan, medium little silt, trace clay	to fine	e SAND, littl	e gravel,
	_								augered to 13 ft.			
	_											
	-											
	_	S4	24 30	24	15			0/376	dense, gray coarse clay, little gravel (I	to fine	e SAND, son	ne silt, little
	-	34	35 40		15			0/3/6	15-16' gray coars	e to fin	e SAND, so	me fine
ŀ	— 15 — -	S5	⁹ 14	18			-	0/156	gravel (mild petro 16—16.5' very dens	odor) e browi	n fine SAND	l l
	-		47 50		<u> </u>		-		trace gravel (no pe	etro)		•
ļ	-								advance auger to			h refusal
ļ	-								Bottom of Explorat	ion at i	1.6.5 ft.	
ļ	-											
ł	- 20											
ł	-		_									
ł	-		_									
ł	-											
$\left \right $	-											
F	-25					•		[[
F	-											
F	-											
ŀ	-		i								,	
ļ	-											
, È	- 30											
	Blows pe	r 6 In	. of a '	140 L	b. Ha	mmer falling	NO	DTES:				
-	30 In. t Spoon S	o Drive Sample	e a 1—3 r.	3/8 li	nch [[) Split	-	Drilling rig is	^s : Mobil B53			
						Barrel Penetration			4 1/4 HSA 1 7/8 Split Spee	-		
	Rec-Length of Recovered Sample RQD-Length of Sound Core Sections >4 In./Length Cored %							1 7/8 Split Spoon 140 ib Hammer				
	>4 In./l S-Split S	ength	Cored	%								
	JHS-Jar	Headsi	bace Sc	reenin	ig for	VOCs with		•	Bossi's			
	PID with 又 Groun			(as b	enzer	ne)	ith Bossi's REMEDIATION & ENVIRONMENTAL 12 Swonton Street MANAGEMENT SERVICES, INC. Winchester, MA					ICES, INC.
Ĺ										Project	t No: 24124	1—1

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	BORING			See	Plan	•		Date	Start: 2/28/05			
	Ground					Datum:		— Date	Finish: 2/28/05		TEST BOI	RING LOG
	Ground		-			Date:		- Urilled Logge	By: <u>S Garside</u> d By: <u>TPS</u>		PAGE 1 of 1	B102
			SAMPL									
	DEPTH	T				REMARKS		PID Back/Read	SOIL	AND ROCK	DESCRIPTIO	NS
	FT.	Type & No.	Blows /6 In.	Pen In.	Rec			Back/ Nedg				
	-								- 4	ASPHALT -		
	-										-	
	_						-				· .	
									auger to 3 ft. — moved rig to 5 ·	- met with ff to the	i refusal, southwest	
	-										ooutinoot	
	5			1								
	-											
	– <u> </u>											
									NO SA	MPLES TO	10 ft.	
	-	S1	49 75	24	22			0/0				
			75 78 95		22			0/0	very dense fine	SAND, litt	le coarse to	medium
			35						sand, little clay, 6" denser and e	little grav avhibit fair	vel st potro colo	-
	F I								advance auger t	to 12 ft.	and meet wi	n. Th refusal
			•						move boring to	10 ft. to	the south -	_
									advance to 12 cobble and mee			
									11.5 ft.			
									Auger Refusal a	+ 115 ft		
	F								Bottom of Explo	ration at	12 ft.	
	-											
	_											
	— 20		:									
			i									
,	-											
	-											
	-											
	- 25				ŀ							
	_											
	-											
	-											
	-											
-												
2.dw	<u> </u>				· · ·		NO					
E:\CLENIS\Bossi\Boring_Jogs_Wws\B102.dwg	Blows pe 30 In.	Blows per 6 In. of a 140 Lb. Hammer falling 30 In. to Drive a 1~3/8 Inch 1D Split						TES:				
MW.	Spoon S	Spoon Sampler.						Urilling rig	is : Mobil B53	· ·		
-egor		Pen—Length of Sampler or Core Barrel Penetrat Rec—Length of Recovered Sample							4 1/4 HSA 1 7/8 Split Sj	noon		
bur i					•			•	140 lb Hamm			
	RQD-Len			%								
	S-Split S			raan:-	101 F	VOCa with						
	PID with					· VOCs with ne)		12	Bossi's Swanton Street		NATION & ENV AGEMENT SERV	
	또 Grour	nd Wate	٢						inchester, MA		t No: 24124	

	BORING Ground	Elevo	rtion (F	-t):		Datum:	Date	Start: 2/28/05 Finish: 2/28/05 By: <u>S Garside</u> d By: <u>TPS</u>	TEST B	ORING LOG
	Ground DEPTH		SAMPI	LE		Date:	PID		1 of 1	B103
	FŤ.	Type & No.	Blows /6 In.	Pen In.	Rec In.	REMARKS	Back/Read	· · · · · · · · · · · · · · · · · · ·		IONS
	-							ASPH	IALI -	、
	-						-			
	- - 5									
								NO SAMPLI	ES	
	-							augers to 13 ft.		<i>.</i>
	-							petro odor on drill c returns at 13 ft.	uttings/auger	
	— 10 									
	-									•
	- - 	\$1	13 19 24 35				0/520	gray to black silty f	fine SAND, little	clay
	-					- -		Auger Refusal at 15 Bottom of Exploratio	5 ft. on at 15 ft.	
	-									
	_ 							、		
							•			
	- -									
	-									
}	- 25									
	- - -									
ŀ	-									·
1	- - 									
	Spoon S	o Driv Sample gth of	e a 1—3 r. Samplei	3/8 lr r or (ich IE Core E	mmer falling Split Barrel Penetration	<u>NOTES:</u> – Drilling rig i	^{is} : Mobil B53 4 1/4 HSA 1 7/8 Split Spoon		
	RQD-Len >4 In./I S-Split S	gth of _ength	Sound Cored			ons		140 lb Hammer		
		Heads 11.7e	oace Sc V Bulb	reenin (as b	g for enzen	VOCs with e)		Bossi's Swanton Street nchester, MA	REMEDIATION & EI MANAGEMENT SE Project No: 241	RVICES, INC.

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BORING				Plan			Date 3	Start:	2/28/05 2/28/05		TEST BO	RING LOG
Ground Ground		,			Datum: Date:		— Drilled	Bv:	S. Garside		PAGE	
Ground	wate				Date:			d By:	<u>IPS</u>	<u> </u>	1 of 1	8104
DEPTH FT.	Type & No.	SAMPI Blows /6 In.		Rec	REMARKS		PID Back/Read		SOIL AND	ROCK	DESCRIPTIO	NS
F									– ASPI	HALT		• ·
												,
5												
									NO SAMPI	LES		
10 - -												
	S1	13 19					0/72.6	dense	e black silty fi	ne SAN	D	
- 15 -		24 35 13	1					(petro	o odor)			
E	S2	29 50<1"	18				0/144.9	sand,	silty fine SANE little gravel,	trace c	lay	neaium
								Botto	m of Explorati	ion at	16 ft.	
- 20												
_ _												
E F												
25												
												-
- 30												
Blows pe 30 In. Spoon S	to Driv	e a 1—3	140 L 3/8 li	b. Ha nch II	mmer falling) Split		<u>TES:</u> Drilling rig i	s : Mat				
	gth of	Sample			Barrel Penetration		<u>6</u> .,	4 1	I/4 HSA I/8 Split Spool	ń		
RQD-Len >4 In./	gth of Length	Sound Cored		•	ons			140) ib Hammer	:-		
SSplit S JHS-Jar PID with	Heads	pace Sc	reenin	g for	VOCs with			Bossi			ATION & ENVI	
PID with 又 Grour			(us D	enzer				Swanton ncheste	Street r, MA		GEMENT SERVI t No: 24124	

GROUND WATER OBSERVATION WELL REPORT					
PROJECT	Bossi's			PROJECT NO.	24124-1
LOCATION	12 Swanton Street			BORING NO.	B101-MW
CLIENT	Bossi Realty Trust			ELEVATION -	<u> </u>
CONTRACTOR	Expedition Drilling	DRILLER	S. Garside	TOP OF PVC	100'
OBSERVED BY	TPS	 DATE	02/25/05	LOCATION	See Plan
CHECKED BY	TPS			1	· · · ·
				· ·	
DEPTH	0.0 ft	GROUND EL.	ft (approximate)		
GENERAL SOIL	-	SURFACE SEAL		•	
CONDITIONS		TYPE (indicate any additional seals)			_Cement Grout
(not to scale)		THICKNESS			0.5 ft.
·		SURFACE CASING			
		TYPE			Readway Rev
					Roadway Box 3 in.
		DEPTH OF BOTTOM			
		RISER PIPE			
		TYPE			Sch. 40 PVC
		Size			2 in. nominal
		BACKFILL ARC	OUND RISER PIPE		Borehole Cuttings
		BOREHOLE/WELL SEAL			
TYPE					
See Boring Log		DEPTH OF TOP			
DEPTH OF B			MOTT		-
					Bentonite
					<u>4.3 ft.</u>
					<u> </u>
					Sch. 40 PVC
	ID and OD				2 in. nominal
	DESCRIBE OPENIN		ENINGS		0.010 in.
					0.3 ft.
	BACKFILL AROUND SCREEN			Silica Sand	
	DEPTH OF BOTTOM OF SCREEN			16.3 ft.	
	DEPTH OF TOP OF SAND COLUM		P OF SAND COLUMN		5.3 ft.
· · · · · · · · · · · · · · · · · · ·		DEPTH OF BO	DEPTH OF BOTTOM OF SAND COLUMN		16.3 ft.
	···-				
,	TYPE OF BACKFILL BELOW PERVIOUS SE			CTION	
16.3 ft.		BOREHOLE			
		DIAMETER			<u> </u>
		DEPTH OF BO	ттом	-	16.3 ft
NOTES: 1. Survey Datum:					
REMEDIATION & ENVIRONMENTAL MANAGEMENT SERVICES, INC.					
				WENT SERVIC	JES, INC.

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			· · · · · · · · · · · · · · · · · · ·	
	ATER OBSERVATIO	N WELL REPORT		<u> </u>
PROJECT	Bossi's		PROJECT NO.	· · · · · · · · · · · · · · · · · · ·
LOCATION	12 Swanton Street		BORING NO.	B102B-MW
	Bossi Realty Trust		ELEVATION -	
11	Expedition Drilling	DRILLER <u>S. Garside</u>		100.97'
		DATE02/25/05		See Plan
CHECKED BY	TPS			
DEPTH	0.0 ft	GROUND EL. ft (approx	imate)	
GENERAL SOI		SURFACE SEAL		
CONDITIONS		TYPE (indicate any additional	seals)	Cement Grout
(not to scale)		THICKNESS		0.5 ft.
		SURFACE CASING		
		TYPE		Roadway Box
		INNER DIAMETER		<u> </u>
		DEPTH OF BOTTOM		<u> </u>
		RISER PIPE		
		TYPE		Sch. 40 PVC
		Size		2 in. nominal
		BACKFILL AROUND RISER F	PIPE	Borehole Cuttings
			•	
		BOREHOLE/WELL SEAL		D h
See Pering Les		TYPE		Bentonite
See Boring Log		DEPTH OF TOP		5.25 ft.
		DEPTH OF BOTTOM		<u>6.25 ft.</u>
		TYPE DEPTH OF TOP		
		DEPTH OF BOTTOM		
		BEI IITOF BOTTOM		
		SCREENED SECTION		
		TYPE		Sch. 40 PVC
		ID and OD		2 in. nominal
		DESCRIBE OPENINGS		0.010 in.
		DEPTH OF TOP OF SCREEN	l	7.25 ft.
		BACKFILL AROUND SCREE		Silica Sand
		DEPTH OF BOTTOM OF SCR	REEN	12.25 ft.
		DEPTH OF TOP OF SAND C	OLUMN	6.25 ft.
		DEPTH OF BOTTOM OF SAM	ID COLUMN	12.25 ft.
		TYPE OF BACKFILL BELOW PERVI	OUS SECTION	
12.25ft		BOREHOLE		
·	· · · · · · · · · · · · · · · · · · ·	DIAMETER		8 in.
		DEPTH OF BOTTOM		12.25 ft.
	·			
NOTES: 1. Survey	Datum:	•	······	
			EDIATION & ENVIR	
		MAN	AGEMENT SERVI	CES, INC.

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		ATER OBSERVATIO			
	PROJECT	Bossi's			24124-1
		12 Swanton Street		BORING NO.	B103-MW
	CLIENT	Bossi Realty Trust		ELEVATION -	404 041
	OBSERVED BY	Expedition Drilling	DRILLER <u>S. Garside</u> DATE 02/25/05	LOCATION	101.04' See Plan
	CHECKED BY	TPS _	* DATE		See Plan
		110			
	DEPTH	0.0 ft	GROUND EL. ft (approximat	e)	
	GENERAL SOIL		SURFACE SEAL		
	CONDITIONS		TYPE (indicate any additional seals	5)	Cement Grou
	(not to scale)		THICKNESS		0.5 ft.
			SURFACE CASING		
			TYPE		Roadway Box
			INNER DIAMETER		3 in.
			DEPTH OF BOTTOM		10 in.
			RISER PIPE		
			TYPE		Sch. 40 PVC
			Size		2 in. nomina
			BACKFILL AROUND RISER PIPE		Borehole Cuttir
			BOREHOLE/WELL SEAL		
	0 0 1		TYPE		Bentonite
	See Boring Log		DEPTH OF TOP		<u>3.5 ft.</u>
			DEPTH OF BOTTOM		4.5 ft.
			TYPE		
			DEPTH OF TOP		<u> </u>
			DEPTH OF BOTTOM		-
			SCREENED SECTION		
			TYPE		Sch. 40 PVC
			ID and OD		2 in. nominal
			DESCRIBE OPENINGS		0.010 in.
			DEPTH OF TOP OF SCREEN		5.5 ft.
			BACKFILL AROUND SCREEN		Silica Sand
			DEPTH OF BOTTOM OF SCREEN	I	15.5 ft.
			DEPTH OF TOP OF SAND COLUM		4.5 ft.
			DEPTH OF BOTTOM OF SAND C		15.5 ft.
			•		
			TYPE OF BACKFILL BELOW PERVIOUS	SECTION	-
1554			BOREHOLE		
15.5 ft. ·			DIAMETER		8 in.
			DEPTH OF BOTTOM		15.5 ft.
	NOTES: 1. Survey	Datum:			
	·		REMEDI	ATION & ENVIR	ONMENTAL
				EMENT SERVIC	DES INO

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PROJECT	TER OBSERVATIO		<u> </u>	PROJECT NO.	24124-1
LOCATION	12 Swanton Street			BORING NO.	B104-MV
CLIENT	Bossi Realty Trust		- · · · · · · · · · · · · · · · · · · ·	ELEVATION -	
CONTRACTOR	Expedition Drilling	DRILLER	S. Garside	TOP OF PVC	101.68'
OBSERVED BY		DATE	02/25/05	LOCATION	See Plar
CHECKED BY	TPS	······································			
DEPTH	0.0 ft	GROUND EL.	ft (approximate		
GENERAL SOIL		SURFACE SEAL			
CONDITIONS		TYPE (indicate	any additional seals)		Cement Gro
(not to scale)		THICKNESS			0.5 ft.
		SURFACE CASING			
		TYPE			Roadway Bo
•		INNER DIAME	TER ,		3 in.
		DEPTH OF BO	моттом	· ·	10 in.
		RISER PIPE			
		TYPE			Sch. 40 PV
		Size			2 in. nomin
		BACKFILL AR	OUND RISER PIPE		Borehole Cutt
		BOREHOLE/WELL S	ËAL		
		TYPE		•	Bentonite
See Boring Log		DEPTH OF TO	P		4 ft.
		DEPTH OF BC	ттом		5 ft.
		TYPE			
		DEPTH OF TO	IP		
		DEPTH OF BO	ттом		
		SCREENED SECTION	N	·	
		TYPE			Sch. 40 PV
,		ID and OD			2 in. nomin
	1	DESCRIBE OP	ENINGS		0.010 in.
		DEPTH OF TO	P OF SCREEN		6 ft.
		BACKFILL ARC	OUND SCREEN		Silica Sand
		DEPTH OF BO	TTOM OF SCREEN		16 ft.
		DEPTH OF TO	P OF SAND COLUMN		5 ft.
		DEPTH OF BO	TTOM OF SAND COL	UMN	16 ft.
	• • • • • •	TYPE OF BACKFILL E	BELOW PERVIOUS SE	CTION	
16.8		BOREHOLE			
16 ft. ————		DIAMETER			8 in.
		DEPTH OF BO	ттом		16 ft.
NOTES: 1. Survey D	atum:		PEMEDIA	TION & ENVIR	
				MENT SERVIC	

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

Telephone (508) 759-4441 FAX (508) 759-4475

October 30, 2000

Mr. Steve Rumba WEB Engineering 106 Longwater Drive Norwell, MA 02061

Project:Bossi's Service Center/00-E-033Lab ID:36733Sampled:10-13-00

Dear Steve:

Enclosed are the Extractable Petroleum Hydrocarbons and Volatile Petroleum Hydrocarbons Analyses performed for the above referenced project. This project was processed for Standard Two Week turnaround.

This letter authorizes the release of the analytical results, and should be considered a part of this report. This report contains a project narrative indicating project changes and non-conformances, a brief description of the Quality Assurance/Quality Control procedures employed by our laboratory, and a statement of our state certifications.

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,

Jonathan R. Sanford President

JRS/pmb Enclosures

Massachusetts DEP EPH Method Extractable Petroleum Hydrocarbons by GC/FID

Field ID:	MW-1 (10'-12')	Laboratory ID:	36733-01
Project:	Bossi's Service Center/00-E-033	QC Batch ID:	EP-1037-M
Client:	WEB Engineering	Sampled:	10-13-00
Container:	250 mL Glass	Received:	10-16-00
Preservation:	Cool	Extracted:	10-19-00
Matrix:	Soil	Analyzed:	10-26-00
% Moisture:	8	Dilution Factor:	Aliphatic: 1 Aromatic: 1

EPH Ranges		Concentration T	- Jounits	Reporting Limit
n-C9 to n-C18 A	liphatic Hydrocarbons [†]	BRL	mg/Kg	31
	Aliphatic Hydrocarbons ⁺	BRL	mg/Kg	31
n-C11 to n-C22.	Aromatic Hydrocarbons † •	BRL	mg/Kg	31
Unadjusted n-C11	to n-C22 Aromatic Hydrocarbons *	BRL	mg/Kg	31
CAS Number	Target Analytes 📲 🖓 🖧	Concentration	- Units -	Reporting Limit
91-20-3	Naphthalene	BRL	mg/Kg	0.51
91-57-6	2-Methylnaphthalene	BRL	mg/Kg	0.51
85-01-8	Phenanthrene	BRL	mg/Kg	0.51
83-32-9	Acenaphthene	BRL	mg/Kg	0.51
QC STOC	Surrogate Compounds	Recovery	₩ C #QC	Limits 🚬 🖤 🖉
Fractionation:	2-Fluorobiphenyl	95 %	40 -	140 %
	2-Bromonaphthalene	83 %	40 -	140 %
Extraction:	Chloro-octadecane	73 %	: 40 -	140 %
	ortho-Terphenyl	76 %	40 -	140 %
	A CALL CONTRACTOR OF CONTRACTOR	QC Certification		
	C procedures required by the method fo		•	Yes
2. Were all perfor	2. Were all performance/acceptance standards for the required QA/QC procedures achieved?			Yes

Were any performance/acceptance standards for the required Q/QC procedures achieved;
 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 (1998). Results are calculated on a dry weight basis. Method modified by use of microwave accelerated solvent extraction technique.

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 dilution, percent moisture and sample size.

+ Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting it that range.

Yes

Massachusetts DEP EPH Method Extractable Petroleum Hydrocarbons by GC/FID

Field ID:	MW-2 (10'-12')	Laboratory ID:	36733-02
Project:	Bossi's Service Center/00-E-033	QC Batch ID:	EP-1037-M
Client:	WEB Engineering	Sampled:	10-13-00
Container:	250 mL Glass	Received:	10-16-00
Preservation:	Cool	Extracted:	10-19-00
Matrix:	Soil	Analyzed:	10-26-00
% Moisture:	10	Dilution Factor:	Aliphatic: 1 Aromatic: 1

EPH Ranges		Concentration	式 王 · 」Units + J	Reporting Limi
	liphatic Hydrocarbons [†]	BRL	mg/Kg	31
	Aliphatic Hydrocarbons [†]	BRL	mg/Kg	31
n-C11 to n-C22	Aromatic Hydrocarbons ^{+ o}	BRL	mg/Kg	31
Unadjusted n-C11	to n-C22 Aromatic Hydrocarbons ⁺	BRL	mg/Kg	31
-* CAS Number	Target Analytes.	Concentration 5	The Units -	ReportingLimit
91-20-3	Naphthalene	BRL	mg/Kg	0.52
91-57-6	2-Methylnaphthalene	BRL	mg/Kg	0.52
85-01-8	Phenanthrene	BRL	mg/Kg	0.52
83-32-9	Acenaphthene	BRL	mg/Kg	0.52
QC	Surrogate Compounds	Recovery	<u></u>	Limits 🖓 🖓
Fractionation:	2-Fluorobiphenyl	91 %	40 - 1	140 %
	2-Bromonaphthalene	88 %	40 -	140 %
Extraction:	Chloro-octadecane	79 %	40 - 1	140 %
	ortho-Terphenyl	80 %	40 - 1	40 %

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

Yes

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 (1998). Results are calculated on a dry weight basis. Method modified by use of microwave accelerated solvent extraction technique.

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 dilution, percent moisture and sample size.

+ Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.

Massachusetts DEP EPH Method Extractable Petroleum Hydrocarbons by GC/FID

Field ID: Project: Client: Container: Preservation: Matrix: % Moisture:	MW-3 (10'-12') Bossi's Service Center/00-E-033 WEB Engineering 250 mL Glass Cool Soil 5	Laboratory ID: QC Batch ID: Sampled: Received: Extracted: Analyzed: Dilution Factor:	36733-03 EP-1037-M 10-13-00 10-16-00 10-19-00 10-26-00 Aliphatic: 1 A	romatic: 1
-EPH Ranges		Concentration	Units	Reporting Limit
n-C9 to n-C18 A	liphatic 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
Unadjusted n-C11	to n-C22 Aromatic Hydrocarbons [†]	BRL	mg/Kg	30
CAS Number		Concentration	EEUnits,	Reporting Limit
91-20-3	Naphthalene	BRI.	mg/Kg	0.50
91-57-6	2-Methylnaphthalene	BRL	mg/Kg	0.50
85-01-8	Phenanthrene	BRL	mg/Kg	0.50
83-32-9	Acenaphthene	BRL	mg/Kg	0.50
	Surrogate Compounds	Recovery		Limits 2
Fractionation:	2-Fluorobiphenyl	92 %	40 -	140 %
1	2-Bromonaphthalene	89 %	40 -	140 % .
Extraction:	Chloro-octadecane	75 %	40 -	140 %
	ortho -Terphenyl	76 %	40 -	140 %
ternet to be a light of the standard standard state				1

QA/QC Certification

BRL

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

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 (1998). Results are calculated on a dry weight basis. Method modified by use of 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 dilution, percent moisture and sample size.

Yes Yes

Yes

+ Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.

Massachusetts DEP EPH Method Extractable Petroleum Hydrocarbons by GC/FID

Field ID:	MW-4 (15'-15.5')	Laboratory ID:	36733-04
Project:	Bossi's Service Center/00-E-033	QC Batch ID:	EP-1037-M
Client:	WEB Engineering	Sampled:	10-13-00
Container:	250 mL Glass	Received:	10-16-00
Preservation:	Cool	Extracted:	10-19-00
Matrix:	Soil	Analyzed:	10-26-00
% Moisture:	11 .	Dilution Factor:	Aliphatic: 1 Aromatic: 1

EPH Ranges	Concentration	S. Units F.	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons [†]	350	mg/Kg	. 33
n-C19 to n-C36 Aliphatic Hydrocarbons	BRL	mg/Kg	33
n-C11 to n-C22 Aromatic Hydrocarbons + 0	120	mg/Kg	33
Unadjusted n-C11 to n-C22 Aromatic Hydrocarbons *	180	mg/Kg	33

CAS'Numbe	Target Analytes 41	Concentration	Cal w. Units	Reporting U
91-20-3	Naphthalene	29	ĭmg/Kg	0.55
91-57-6	2-Methylnaphthalene	26	mg/Kg	0.55
85-01-8	Phenanthrene	BRL	mg/Kg	0.55
83-32-9	Acenaphthene	BRL	mg/Kg	0.55

C ALL POC	Surrogate Compounds	Recovery Desired	ラコ 、1、QC注Imits、デージ ョ
Fractionation:	2-Fluorobiphenyl	94 %	40 - 140 %
	2-Bromonaphthalene	88 %	40 - 140 %
Extraction:	Chloro-octadecane	64 %	40 - 140 %
	ortho-Terphenyl	76 %	40 - 140 %

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

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 (1998). Results are calculated on a dry weight basis. Method modified by use of microwave accelerated solvent extraction technique.

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 dilution, percent moisture and sample size.

+ Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting it that range.



Massachusetts DEP VPH Method Volatile Petroleum Hydrocarbons by GC/PID/FID

Field ID:	MW-1 (10'-12')	Laboratory ID:	36733-05	
Project:	Bossi's Service Center/00-E-033	QC Batch ID:	VG1-1140-E	
Client:	WEB Engineering	Sampled:	10-13-00	
Container:	60 mL Glass Vial	Received:	10-16-00	
Preservation:	Methanol / Cool	Analyzed:	10-23-00	
Matrix:	Soil	Dilution Factor:	1	
% Moisture:	8		× ×	
WDUD Common	STATES AND AND AND A COLLEGA	Alternation in the second	1 Minute All Report	

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n-C5 to n-C8 Aliphatic Hydrocarbons † •	BRL	mg/Kg	1.0
n-C9 to n-C12 Aliphatic Hydrocarbons **	1.9	mg/Kg	1.0
n-C9 to n-C10 Aromatic Hydrocarbons [†]	BRL	mg/Kg	1.0
Unadjusted n-C5 to n-C8 Aliphatic Hydrocarbons ⁺	BRL	mg/Kg	1.0
Unadjusted n-C9 to n-C12 Aliphatic Hydrocarbons [†]	3.1	mg/Kg	1.0

GAS Number	Log Carget Analytes	Concentration	Units,	Reporting Limi
1634-04-4	Methyl tert-butyl Ether #	BRL	mg/Kg	0.10
71-43-2	Benzene *	BRL	mg/Kg	0.10
108-88-3	Toluene "	BRL	mg/Kg	0.10
100-41-4	Ethylbenzene [‡]	BRL	mg/Kg	0.10
108-38-3 and 106-42-3	meta- Xylene and para - Xylene [‡]	0.13	mg/Kg	0.10
95-47-6	ortho- Xylene *	BRL	mg/Kg	0.10
91-20-3	Naphthalene	BRL	mg/Kg	0.50

QC Surrog	ate Compounds	Recovery Recovery	学会 る a PQC+Limits また。
2,5-Dibror	notoluene (PID)	109 %	70 - 130 %
2,5-Dibror	notoluene (FID)	129 %	70 - 130 %

QA/QC Certification	
 Were all QA/QC procedures required by the method followed? 	Yes
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 11.3.2.1?	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 Volatile Petroleum Hydrocarbons, MA DEP (1998). Results are calculated 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 dilution, percent moisture and sample size.

+ Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.

n-C5 to n-C8 Aliphatic Hydrocarbons range data excludes the method target analyte concentrations.

n-C9 to n-C12 Aliphatic Hydrocarbons range data excludes the method target analyte concentrations and the concentration for the n-C9 to n-C10 Aromatic Hydrocarbons range.

- # Analyte elutes in the n-C5 to n-C8 Aliphatic Hydrocarbons range.
- + Analyte elutes in the n-C9 to n-C12 Aliphatic Hydrocarbons range.

Massachusetts DEP VPH Method Volatile Petroleum Hydrocarbons by GC/PID/FID

Field ID: Project: Client: Container: Preservation: Matrix: % Moisture:	MW-3 (10'-12') Bossi's Service Center/00-E-033 WEB Engineering 60 mL Glass Vial Methanol / Cool Soil 5	Laboratory ID: QC Batch ID: Sampled: Received: Analyzed: Dilution Factor:	36733-06 VG1-1140-E 10-13-00 10-16-00 10-23-00 1	
A.V.R.H.Ranges_		Goncentration	de Mits	Reporting Limit
	iphatic Hydrocarbons **	2.0	mg/Kg	1.0
n-C9 to n-C12 A	Niphatic Hydrocarbons ^{+ &}	2.2	mg/Kg	1.0
л-С9 to n-С10 А	Aromatic Hydrocarbons ⁺	1.4	mg/Kg	1.0
Unadjusted n-C5	to n-C8 Aliphatic Hydrocarbons [†]	2.0	mg/Kg	1.0
Unadjusted n-C9	to n-C12 Aliphatic Hydrocarbons [†]	3.6	mg/Kg	1.0
CAS Number	Target Analytes	Concentration	Units	Reporting Limit
1634-04-4	Methyl tert -butyl Ether	BRL	mg/Kg	0.10
71-43-2	Benzene	BRL	mg/Kg	0.10
108-88-3	Toluene #	BRL	mg/Kg	0.10
100-41-4	Ethylbenzene *	BRL	mg/Kg	0.10
108-38-3 and	meta- Xylene and para -	BRL	mg/Kg	0.10
106-42-3	Xylene [‡]			
95-47-6	ortho- Xylene *	BRL	mg/Kg	0.10
91-20-3	Naphthalene	BRL	mg/Kg	0.50
Series GerQC	Surrogate Compounds 🖘 🖉 💷 🕾	Recovery	S. Salt QCI	imits
2,5-	Dibromotoluene (PID)	106 %	70 - 1	130 % .
2,5-	Dibromotoluene (FID)	92 %	· 70 - 1	130 %
2. Were all perfo	QC procedures required by the method prmance/acceptance standards for the re- ificant modifications made to the method	quired QA/QC procedures achieved?		Yes Yes No
and project qualit	ty control report. Release of this data is	below on this data report, or in the accompan authorized by the accompanying signed pro lity control report are considered part of this	ject cover letter.	

Method Reference: Method for the Determination of Volatile Petroleum Hydrocarbons, MA DEP (1998). Results are calculated 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 dilution, percent moisture and sample size.

+ Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.

n-C5 to n-C8 Aliphatic Hydrocarbons range data excludes the method target analyte concentrations.

n-C9 to n-C12 Aliphatic Hydrocarbons range data excludes the method target analyte concentrations and the concentration for the n-C9 to n-C10 Aromatic Hydrocarbons range.

- Analyte elutes in the n-C5 to n-C8 Aliphatic Hydrocarbons range.
- # Analyte elutes in the n-C9 to n-C12 Aliphatic Hydrocarbons range.



Massachusetts DEP VPH Method Volatile Petroleum Hydrocarbons by GC/PID/FID

MW-4 (15'-5.5')
Bossi's Service Center/00-E-033
WEB Engineering
60 mL Glass Vial
'Methanol / Cool
Soil
11

Laboratory ID:	36733-07
QC Batch ID:	VG1-1140-£
Sampled:	10-13-00
Received:	10-1 6-0 0
Analyzed:	10-24-00
Dilution Factor:	40

FVPH Ranges		Concentration 4 45 - 20 %		Reporting Limi
	phatic Hydrocarbons	2,100	mg/Kg	33
	liphatic Hydrocarbons 18	BRL	mg/Kg	33
n-C9 to n-C10 A	romatic Hydrocarbons ⁺	2,400	mg/Kg	33
	o n-C8 Aliphatic Hydrocarbons *	2,600	mg/Kg	33
Unadjusted n-C9 to	o n-C12 Aliphatic Hydrocarbons [†]	3,000	mg/Kg	33
CAS Number	Target Analytes	Zotation	🐛 Units 🎗	Reporting Limi
1634-04-4	Methyl tert-butyl Ether #	10	mg/Kg	3.3
71-43-2	Benzene #	BRL	mg/Kg	3.3
108-88-3	Toluene [#]	470	mg/Kg	3.3
100-41-4	Ethylbenzene [‡]	170	mg/Kg	3.3
108-38-3 and 106-42-3	<i>meta</i> - Xylene and <i>para</i> - Xylene [‡]	620	rng/Kg	3.3
95-47-6	ortho- Xylene [‡]	260	mg/Kg	3.3
91-20-3	Naphthalene	60	mg/Kg	16
QC S	urrogate:Compounds2 *** <***	Recovery test of the	A REAL	limits
2,5-0)ibromotoluene (PID)	d		130 %
2,5-E	Dibromotoluene (FID)	d	70 - 1	130 %
	General Contraction of the second	A/QE Certification	and the second second second second second second second second second second second second second second second	
	C procedures required by the method			Yes
2. Were all perfor	mance/acceptance standards for the re	quired QA/QC procedures achieved?		No ·
	ficant modifications made to the method			No
and project quality	control report. Release of this data is	below on this data report, or in the accompar authorized by the accompanying signed proj lity control report are considered part of this	ect cover letter.	rrative
Aethod Reference:		blatile Petroleum Hydrocarbons, MA DEP (19	· · · · · · ·	e calculated

Method Reference: Method for the Determination of Volatile Petroleum Hydrocarbons, MA DEP (1998). Results are calculated 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 dilution, percent moisture and sample size:

+ Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.

n-C5 to n-C8 Aliphatic Hydrocarbons range data excludes the method target analyte concentrations.

In-C9 to n-C12 Aliphatic Hydrocarbons range data excludes the method target analyte concentrations and the concentration for the n-C9 to n-C10 Aromatic Hydrocarbons range.

- Analyte elutes in the n-C5 to n-C8 Aliphatic Hydrocarbons range.
- # Analyte elutes in the n-C9 to n-C12 Aliphatic Hydrocarbons range.

d Indicates surrogate recovery outside recommended limits due to required sample dilution.



Project Narrative

Project: Bossi's Service Center/00-E-033 Client: WEB Engineering Lab ID: 36733 Received: 10-16-00

A. Physical Condition of Sample(s)

This project was received by the laboratory in satisfactory condition. The sample(s) were received undamaged in appropriate containers with the correct preservation.

B: Project Documentation

This project was accompanied by satisfactory Chain of Custody documentation. The sample container label(s) agreed with the Chain of Custody.

G: Analysis of Sample(s)

No analytical anomalies or non-conformances were noted by the laboratory during the processing of these sample(s). All data contained within this report are released without qualification.

	228 Main Street, P.O. Box 1200 Buzzards Bay, MA 02532 Telephone (508) 759-4441 FAX (508) 759-4475	CHAIN-OF-CUSTODY RECORD AND WORK ORDER				Nº 41299
	1	TURNAROUND		ANALYSIS REQUES	L	
Project Number) Business Days)	Volatilas Semivolatitas Pestitienb/PCB	3 Metals Petraleum Xydibranh 01. Ext. TPH V	al YPH Wasie Ocne	General Chemistry Oth
-033 106L	CAPINETER DE.	CPRIORITY (5 Business Days) RUSH (RAN- Rush Authorization Number) Rush requires Rush Authorization Number)	رسهه کړ کې ۱۹۹۹ کې بوس ۱۹۹۹ کې د کو بوس ۱۹۹۹ کې د کو بوس ۱۹۹۹ کې ۱۹۹۹ ې ۱۹۹۹	voi yficadi eaignied valew istof C jarviozziG ()		
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<u>いまたいのと、人々からみ したん、それらして</u> INSTRUCTIONS: Use separate line for each container (except replicates)	De c cates).	Purchase Order No.: GWA Reference No.:	400 82 3100 82 400 1144 400 1144 3014 3014 3014 3014	1000 0000 0000 0000 0000 0000 0000 000	지 (1997) 1993 (1997) 1993 1991) 1993 (1997) 1994 1994 (1997) 1995 (1997)	
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$\frac{m_{u} - 1}{(v_{u} - 3)} \frac{1}{(v_{u} - 12)} \frac{1}$						
M. 24 (52. 15.5) X X 1						
REMARKS / SPECIAL INSTRUCTIONS	DAT	DATA QUALITY OBJECTIVES		CHAIN-OF-CUSTODY RECORD	Y RECORD	$\frac{1}{2}$
	Regulatory Program Safe Drinking Water Act	Project Specific QC	WOTE: A)	samplas submitted subject to Standard Terms and Conditions on reverse hereof	rms and Conditions on	reverse hereof.
	0 MA DEP Form 0 NPDES/Clean Water Act Specily State: 0 RCRA/Haz, Waste Char.	Marty regulatory programs and EFA methods require project profile CC. Project specific CC; induese Sample Duplicates, Martix Spikes, and/or Martix Spike Duplicates, Laboratory QC is not project specific undess prearmaged. Project specific CC samples are charged on a per sample basis. For water samples,	Relinguistied by Samplar:	Date Time Received by: <u> </u>	maddiga	Receipt Temperature: 2. Shibolnor/Aithilt
	MA MCP (310 CMR 40) Reportable Concentrations A 20000	eacri MS, MSU and Sample Duplicate requires an additionat sample aliquot.			>	Number:
₽ ₽ ₽ ₩ L L	L HUGW -1 C HCS - 1 C HCGW - 2 I PICS - 2 C MH C RID C F C ME Specify Calegory:	Project Specific QC Required Sefection of QC Sampla Cample Duplicate C Required Sefected by laboratory Matrix Spike Ouplicate C Please Use sample: Matrix Spike Ouplicate	Relinquished by:	Date Time Received by Laboratory. 10/16/20/57.30 CANNO 9-LU 10 Express Mail: 0 Federal Express	1941 OUTU	Custody Seal/ Cooler Serial Number:
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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.

Quality Control Report Laboratory Control Sample

Category: MA DEP EPH Method

QC Batch ID: EP-1037-M - Matrix: Soil

Units: mg/Kg

CASINumbe	n - Terrer Analyte	Spiked=1+	Measured	Recovery	QCLimits
111-84-2	n-Nonane (C9)	5.0	2.4	47 %	40 - 140 %
629-59-4	n-Tetradecane (C14)	5.0	2.9	59 %	40 - 140 %
629-92-5	n-Nonadecane (C19)	5.0	3.4	69 %	40 - 140 %
112-95-8	n-Eicosane (C20)	5.0	3.6	72 %	40 - 140 %
630-02-4	n-Octacosane (C28)	5.0	3.5	70 %	40 - 140 %
91-20-3	Naphthalene	5.0	2.7	53 %	40 - 140 %
83-32-9	Acenaphthene	5.0	3.0	60 %	40 - 140 %

Recovery R

Fractionation:	2-Fluorobiphenyl	85 %	40 - 140 %
	2-Bromonaphthalene	83 %	40 - 140 %
Extraction:	Chloro-octadecane	73 %	40 - 140 %
	ortho-Terphenyl	69 %	40 - 140 %

Method Reference:

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

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.



Quality Control Report Method Blank

Category: MA DEP EPH Method QC Batch ID: EP-1037-M Matrix: Soil

#EPH Ranges Concentration Reporting Limit ²Units n-C9 to n-C18 Aliphatic Hydrocarbons BRL mg/Kg 30 BRL n-C19 to n-C36 Aliphatic Hydrocarbons mg/Kg 30 n-C11 to n-C22 Aromatic Hydrocarbons ** BRL 30 mg/Kg BRL mg/Kg 30 Unadjusted n-C11 to n-C22 Aromatic Hydrocarbons +

CAS Numbe	n Target Analytes	Concentration	入 ¹ Units	Reporting Limit
91-20-3	Naphthalene	BRL	mg/Kg	0.50
91-57-6	2-Methylnaphthalene	BRL	mg/Kg	0.50
85-01-8	Phenanthrene	BRL	mg/Kg	0.50
83-32-9	Acenaphthene	BRL	mg/Kg	0.50

₹ # <u>7</u> 2 %200	Surrogate Compounds	Recovery	QCUmits r
Fractionation:	2-Fluorobiphenyl	80 %	40 - 140 %
	2-Bromonaphthalene	76 %	40 - 140 %
Extraction:	Chloro-octadecane	82 %	40 - 140 %
	ortho-Terphenyl	75 %	40 - 140 %

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

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 dilution, percent moisture and sample size.

+ Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting ir that range.

Quality Control Report Laboratory Control Sample

Category: MA DEP VPH Method

QC Batch ID: VG1-1140-E Matrix: Soil

Units: mg/Kg

CAS Number	Analyte Analyte	Spiked Spiked	• Measured .*	E: Recovery	L.QC Limits
1634-04-4	Methyl tert-butyl Ether	2.5	2.3	92%	
71-43-2	Benzene	2.5	2.4	96%	70 - 130 %
108-88-3	Toluene	2.5	2.6	106%	70 - 130 %
100-41-4	Ethylbenzene	2.5	2.5	101%	70 - 130 %
108-38-3 and	meta- Xylene and para -	5.0	5.5	110%	70 - 130 %
106-42-3	Xylene				
95-47-6	ortho- Xylene	2.5	2.6	106%	70 - 130 %
91-20-3	Naphthalene	2.5	2.6	104%	70 - 130 %

Compounds	Recovery -	QGllimits
2,5-Dibromotoluene (PID)	100 %	70 - 130 %
2,5-Dibromotoluene (FID)	99 %	70 - 130 %

Method Reference:

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

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."



Report Notations:

Quality Control Report Method Blank

Category: MA DEP VPH Method QC Batch ID: VG1-1140-E Matrix: Soil

VPH Ranges	Concentration ***	Contraction of the second second	Reporting Limit
n-C5 to n-C8 Aliphatic Hydrocarbons ^{* •}	BRL	mg/Kg	1.0
n-C9 to n-C12 Aliphatic Hydrocarbons *	BRL	mg/Kg	1.0
n-C9 to n-C10 Aromatic Hydrocarbons ⁺	BRL	mg/Kg	1.0
Unadjusted n-C5 to n-C8 Aliphatic Hydrocarbons *	BRL	mg/Kg	1.0
Unadjusted n-C9 to n-C12 Aliphatic Hydrocarbons [†]	BRL	mg/Kg	1.0

CAS Number	Target Analytes	Concentration	-,±-(\Units - } .	Reporting Limi
1634-04-4	Methyl tert -butyl Ether "	BRL	mg/Kg	0.10
71-43-2	Benzene *	BRL	mg/Kg	0.10
108-88-3	Toluene ¹	BRL	mg/Kg	0.10
100-41-4	Ethylbenzene [‡]	BRL	mg/Kg	0.10
108-38-3 and 106-42-3	<i>meta-</i> Xylene and <i>para</i> - Xylene [‡]	BRL	mg/Kg	0.10
95-47-6	ortho- Xylene *	BRL	mg/Kg	0.10
91-20-3	Naphthalene	BRL	mg/Kg	0.50

20 ALL PQC Surrogate Compounds	Recovery: Sector 2015	C limits → QC Limits → Atta
2,5-Dibromotoluene (PID)	123 %	70 - 130 %
2,5-Dibromotoluene (FID)	118 %	70 - 130 %

Method Reference: Method for the Determination of Volatile Petroleum Hydrocarbons, MA DEP (1998).

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 dilution, percent moisture and sample size.

+ Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.

n-C5 to n-C8 Aliphatic Hydrocarbons range data excludes the method target analyte concentrations.

In-C9 to n-C12 Aliphatic Hydrocarbons range data excludes the method target analyte concentrations and the concentration for the n-C9 to n-C10 Aromatic Hydrocarbons range.

Analyte elutes in the n-C5 to n-C8 Aliphatic Hydrocarbons range.

Analyte elutes in the n-C9 to n-C12 Aliphatic Hydrocarbons range.

Certifications and Approvals

CONNECTICUL Department of Health Services, PH=0586

Potable Water, Wastewater/Trade Waste, Sewage/Effluent, and Soil

pH, Conductivity, Acidity, Alkalinity, Hardness, Chloride, Fluoride, Ammonia, Kjeldahl Nitrogen, Nitrate, Nitrite, Orthophosphate, Total Dissolved Solids, Cyanide, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Total Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Tin, Titanium, Vanadium, Zinc, Purgeable Halocarbons, Purgeable Aromatics, Pesticides, PCBs, PCBs in Oil, Ethylene Dibromide, Phenols, Oil and Grease.

MAINE Department of Human Services, MAT03

Drinking Water

Reciprocal certification in accordance with Massachusetts certification for drinking water analytes.

Waste Water

Reciprocal certification in accordance with Massachusetts certification for waste water analytes.

MASSAGHUSEITS: Department of Environmental Protection /M-MA-103

Potable Water

Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Thaliium, Nitrate-N, Nitrite-N, Fluoride, Sodium, Sulfate, Cyanide, Turbidity, Residual Free Chlorine, Calcium, Total Alkalinity, Total Dissolved Solids, pH, Trihalomethanes, Volatile Organic, Compounds, 1,2-Dibromoethane, 1,2-Dibromo-3-chloropropane, Total Coliform, Fecal Coliform, Heterotrophic Plate Count, E-Coli

Non-Potable Water

Aluminum, Antimony, Arsenic, Beryllium, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Mercury, Molybdenum, Nickel, Selenium, Silver, Strontium, Thallium, Titanium, Vanadium, Zinc, pH, Specific Conductance, Total Dissolved Solids, Total Hardness, Calcium, Magnesium, Sodium, Potassium, Total Alkalinity, Chloride, Fluoride, Sulfate, Ammonia-N, Nitrate-N, Kjeldahl-N, Orthophosphate, Total Phosphorus, Chemical Oxygen Demand, Biochemical Oxygen Demand, Total Cyanide, Non-Filterable Residue, Total Residual Chlorine, Oii and Grease, Total Phenolics, Volatile Halocarbons, Volatile Aromatics, Chlordane, Aldrin, Dieldrin, DDD, DDE, DDT, Heptachlor, Heptachlor Epoxide, Polychlorinated Biphenyls (water), Polychlorinated Biphenyls (oil).

MICHIGAN, Department of Environmental Quality

Drinking Water

Trihalomethanes, Regulated and Unregulated Volatile Organic Compounds by EPA Method 524.2; 1,2-Dibromoethane, 1,2-Dibromo-3chloropropane by EPA Method 504.1

NEW HAMPSHIRE Department of Environmental Services, 202798

Drinking Water

Metals by Graphite Furnace, Metals by ICP, Mercury, Nitrite-N, Orthophosphate, Residual Free Chlorine, Turbidity, Total Filterable Residue, Calcium Hardness, pH, Alkalinity, Sodium, Sulfate, Total Cyanide, Insecticides, Herbicides, Base/Neutrals, Trihalomethanes, Volatile Organics, Vinyl Chloride, DBCP, EDB, Nitrate-N.

Wastewater

Metals by Graphite Fumace, Metals by ICP, Mercury, pH, Specific Conductivity, TDS, Total Hardness, Calcium, Magnesium, Sodium, Potassium, Total Alkalinity, Chloride, Fluoride, Sulfate, Ammonia-N, Nitrate-N, Orthophosphate, TKN, Total Phosphorus, COD, BOD, Non-Filterable Residue, Oil & Grease, Total Phenolics, Total Residual Chlorine, PCBs in Water, PCBs in Oil, Pesticides, Volatile Organics, Total Cyanide.

RHODE ISLAND, Department of Health, 54

Surface Water, Air, Wastewater, Potable Water, Sewage

Chemistry: Organic and Inorganic



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

Telephone (508) 759-4441 FAX (508) 759-4475

November 8, 2000

Mr. Steve Rumba WEB Engineering 106 Longwater Drive Norwell, MA 02061

 Project:
 Bossi's/00-E-033

 Lab ID:
 36958

 Sampled:
 10-24-00

Dear Steve:

Enclosed are the Extractable Petroleum Hydrocarbons, Volatile Petroleum Hydrocarbons, and Semivolatile Organics Analyses performed for the above referenced project. This project was processed for Standard Two Week turnaround.

This letter authorizes the release of the analytical results, and should be considered a part of this report. This report contains a project narrative indicating project changes and non-conformances, a brief description of the Quality Assurance/Quality Control procedures employed by our laboratory, and a statement of our state certifications.

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,

Jonathan R. Sanford President

JRS/pmb Enclosures

Massachusetts DEP EPH Method Extractable Petroleum Hydrocarbons by GC/FID

		Dilution Factor:	Aliphatic: 1 Aromatic: 1
Matrix:	Aqueous	Analyzed:	11-07-00
Preservation:	H2SO4 / Cool	Extracted:	11-01-00
Container:	1 L Amber Glass	Received:	10-25-00
Client:	WEB Engineering	Sampled:	10-24-00
Project:	Bossi's/00-E-033	QC Batch ID:	EP-0754-F
Field ID:	MW-1	Laboratory ID:	36958-01

EPH Ranges	Concentration	📑 Units 🔄	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons	BRL	ug/L	560
n-C19 to n-C36 Aliphatic Hydrocarbons	BRL	ug/L	560
n-C11 to n-C22 Aromatic Hydrocarbons **	BRL	ug/L	200
Unadjusted n-C11 to n-C22 Aromatic Hydrocarbons *	BRL	ug/L	200

QC	Surrogate Compounds	Recovery	🚓 🖓 QC Limits 🛬 🏹 🦡
Fractionation:	2-Fluorobiphenyl	77 %	40 - 140 %
	2-Bromonaphthalene	79 %	40 - 140 %
Extraction:	Chloro-octadecane	70 %	40 - 140 %
1 · · · · ·	ortho-Terphenyl	71 %	40 - 140 %

QA/QC Certification Yes

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?

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 (1998). Extraction performed utilizing separatory funnel technique.

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 dilution and sample size.

Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.

Yes

No

Massachusetts DEP EPH Method Extractable Petroleum Hydrocarbons by GC/FID

Field ID:	MW-3	Laboratory ID:	36958-02
Project:	Bossi's/00-E-033	QC Batch ID:	EP-0754-F
Client:	WEB Engineering	Sampled:	10-24-00
Container:	1 L Amber Glass	Received:	10-25-00
Preservation:	H2SO4 / Cool	Extracted:	11-01-00
Matrix:	Aqueous	Analyzed:	11-07-00
	,	Dilution Factor:	Aliphatic: 1 Aromatic: 1
STATE OF STATES			

EPH Ranges		Concentration	Units Reporting Lin
n-C9 to n-C18 A	liphatic Hydrocarbons [†]	1,500	ug/L 630
n-C19 to n-C36	Aliphatic Hydrocarbons	BRL	ug/L 630
n-C11 to n-C22	Aromatic Hydrocarbons **	630	ug/L 250
Unadjusted n-C11	to n-C22 Aromatic Hydrocarbons t	1,100	ug/L 250
<u>્ર</u> ્યુટ્ટ નં Q G	Surrogate Compounds	Recovery	QC Limits
Fractionation:	2-Fluorobiphenyl	65 %	40 - 140 %
	2-Bromonaphthalene	65 %	40 - 140 %
Extraction:	Chloro-octadecane	47 %	40 - 140 %
•	ortho-Terphenyl	67 %	40 - 140 %

QA/QC Certification

1. Were all QA/QC procedures required by the method followed?

Were all performance/acceptance standards for the required QA/QC procedures achieved?
 Were any significant modifications made to the method, as specified in Section 11.3?

Yes

Yes

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 (1998). Extraction performed utilizing separatory funnel technique.

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 dilution and sample size.

+ Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range:

Massachusetts DEP EPH Method Extractable Petroleum Hydrocarbons by GC/FID

Field ID:	MW-4	Laboratory ID:	36958-03
Project:	Bossi's/00-E-033	QC Batch ID:	EP-0754-F
Client:	WEB Engineering	Sampled:	10-24-00
Container:	1 L Amber Glass	Received:	10-25-00
Preservation:	H2SO4 / Cool	Extracted:	11-01-00
Matrix:	Aqueous	Analyzed:	11-07-00
		Dilution Factor:	Aliphatic: 1 Aromatic: 1

1-C9 to n-C18 A	liphatic Hydrocarbons ⁷	1,300	ug/L	1,100
1-C19 to n-C36 /	Aliphatic Hydrocarbons [†]	BRL	ug/L	1,100
n-C11 to n-C22 Aromatic Hydrocarbons ⁺		800	ug/L	440
Jnadjusted n-C11	to n-C22 Aromatic Hydrocarbons [†]	1,400	ug/L	440
¥.∵SiQC	Surrogate Compounds	Same den Recovery 2 State	QCI	imits
Fractionation: 2-Fluorobiphenyl		71 %	40 - 1	the second second second second second second second second second second second second second second second s
	2-Bromonaphthalene	74 %	40 - 1	40 %
Extraction:	Chloro-octadecane	61 %	40 - 1	40 %
LAHACHUNE				
	ortho-Terphenyl	66 %	40 - 1	40 %
				40 %
1. Were all QA/Q	C procedures required by the method follow	Certification //		40 %
1. Were all QA/Q 2. Were all perfor		Certification		

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 (1998). Extraction performed utilizing separatory funnel technique.

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 dilution and sample size.

t Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.

Massachusetts DEP VPH Method Volatile Petroleum Hydrocarbons by GC/PID/FID

Field ID: Project: Client: Container: Preservation: Matrix:	WEB 40 m HCl / Aque	's/00-E-033 Engineering L Glass Vial Cool ous	C S R A E	aboratory ID: QC Batch ID: ampled: Received: Analyzed: Dilution Factor:	36958-04 VG3-1291-W 10-24-00 10-25-00 10-28-00 1	,
VPH Ranges		ې د د د د د د د د د د د د د د د د د د د	Concentra	tion	🔨 Units 🔤	Reporting Limit
n-C5 to n-C8 A!		-	1,400		ug/L	. 20
n-C9 to n-C12 A	-	-	340	<u> </u>	ug/L .	20
n-C9 to n-C10 A	romati	c Hydrocarbons ⁺	440		ug/L	20
Unadjusted n-C5 t	o n-C8 /	Aliphatic Hydrocarbons †	1,500		ug/L	20
Unadjusted n-C9 to n-C12 Aliphatic Hydrocarbons [†]		960		ug/L	20	
CAS Number		Target Analytes	Concentra	fion	Units	Reporting Limit
1634-04-4		hyl tert-butyl Ether "	16	an an an an an an an an an an an an an a	ug/L	.5
71-43-2	Ben	zene	11		ug/L	1
108-88-3	Tolu	iene ^a	40		ug/L	5
100-41-4	Ethy	lbenzene [‡]	37		ug/1	5
108-38-3 and		- Xylene and para-	110		ug/L	5
106-42-3	Xyle				_	
95-47-6	orth	o- Xylene [‡]	28 -		ug/L	. 5
91-20-3	Nap	hthalene	В	RL	ug/L	5
V STATES QC	Surroga	te Compounds	Recover	yzha Parnak	MAN OCT	imits
2,5-1	Dibrom	otoluene (PID)	90 %)	70 - 1	CONTRACTOR OF A DESCRIPTION OF A DESCRIP
2,5-1	Dibrom	otoluene (FID)	76 %	•	70 - 1	30 %
 Were all performance Were any signition Method non-confict and project quality 	C proce mance/ ficant m prmance y contro	Question of the second state of the second sta	quired QA/QC procedures a d, as specified in Section 1 below on this data report, o authorized by the accompa	achieved? 1.3.2.1? r in the accompany nying signed proje	ving project narra ct cover letter.	Yes Yes No ative
Method Reference:		od for the Determination of Vo	·····		•	-,J
Report Notations:	BRL		y, is below reporting limit for ably quantified under routin	or analyte. Reporti 1e laboratory opera	ng limit is the lo	west
	+	Hydrocarbon range data exclution that range.	udes concentrations of any	surrogate(s) and/or	internal standard	ds eluting in
	٥.	n-C5 to n-C8 Aliphatic Hydro	carbons range data exclude	es the method targe	et analyte concer	trations.
	8	n-C9 to n-C12 Aliphatic Hydr the concentration for the n-C9	ocarbons range data exclud	ies the method tar		
	ц	Analyte elutes in the n-C5 to r		•		
	+	Analyte elutes in the n-C9 to r		-		
	-	,				

Massachusetts DEP VPH Method Volatile Petroleum Hydrocarbons by GC/PID/FID

		,		
Field ID:	MW-3	Laboratory ID:	36958-05	
Project:	Bossi's/00-E-033	QC Batch ID:	VG3-1291-W	
Client:	WEB Engineering	Sampled:	10-24-00	
Container:	40 mL Glass Vial	Received:	10-25-00	
Preservation:	HCI / Cool	Analyzed:	10-27-00	
Matrix:	Aqueous	Dilution Factor:	50	
VPH Ranges		Concentration	Units	Reporting Limit
n-C5 to n-C8 Ali	phatic Hydrocarbons ^{+ 0}	30,000	ug/L	1,000
n-C9 to n-C12 A	liphatic Hydrocarbons	21,000	ug/L	1,000
n-C9 to n-C10 Aromatic Hydrocarbons ⁺		17,000	ug/L	1,000
Unadjusted n-C5 to	n-C8 Aliphatic Hydrocarbons *	55,000	ug/L	1,000
Unadjusted n-C9 to	n-C12 Aliphatic Hydrocarbons [†]	67,000	ug/L	1,000
CAS Number	🖁 🕺 Target Analytes	Concentration	Units a	Reporting Limit
1634-04-4	Methyl tert-butyl Ether "	BRL	ug/L	250
71-43-2	Benzene [#]	1,900	ug/L	50
108-88-3	Toluene [#]	23,000	ug/L	250
100-41-4	Ethylbenzene *	4,500	ug/L	250
108-38-3 and	meta- Xylene and para-	17,000	ug/L	250
106-42-3	Xylene [‡]	,	-0-	
95-47-6	ortho- Xylene *	7,200	ug/L	250
91-20-3	Naphthalene	830	ug/L	250
	urrogate Compounds 🖮 🖘 🐑	Recovery and the second	₩ • • • • • • • • • • • • •	imits 🕸 😽 🗧
2,5-0	Dibromotoluene (PID)	98 %	70 - 1	30 %
2,5-0	Dibromotoluene (FID)	94 %	70 - 1	30 %
	C C	A/QC Certification		T REES
	C procedures required by the method		Ŷ	es ·
	mance/acceptance standards for the re			es
	icant modifications made to the metho			10
Method non-confo	rmances indicated above are detailed	below on this data report, or in the accompan	ying project narra	tive
The accompanying	control report. Release or this data is	authorized by the accompanying signed proje ality control report are considered part of this o	ect cover letter.	
Method Reference:		platile Petroleum Hydrocarbons, MA DEP (199		
Report Notations:	•			
	concentration that can be rel	y, is below reporting limit for analyte. Report iably quantified under routine laboratory oper for sample dilution and sample size.	ing limit is the lov ating conditions.	vest
		ludes concentrations of any surrogate(s) and/or	r internal standard	ls eluting in
		, 0		

- Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.
- n-C5 to n-C8 Aliphatic Hydrocarbons range data excludes the method target analyte concentrations.
- n-C9 to n-C12 Aliphatic Hydrocarbons range data excludes the method target analyte concentrations and the concentration for the n-C9 to n-C10 Aromatic Hydrocarbons range.
- # Analyte elutes in the n-C5 to n-C8 Aliphatic Hydrocarbons range.
- Analyte elutes in the n-C9 to n-C12 Aliphatic Hydrocarbons range.

Massachusetts DEP VPH Method Volatile Petroleum Hydrocarbons by GC/PID/FID

Field ID: Project: Client: Container: Preservation: Matrix:	MW-4 Bossi's/00-E-033 WEB Engineering 40 mL Glass Vial HCI / Cool Aqueous	Laboratory ID: QC Batch ID: Sampled: Received: Analyzed: Dilution Factor:	36958-06 VG3-1291-V 10-24-00 10-25-00 10-27-00 100	V .
VPH Ránges		Concentration Transmission	J Units .	Reporting Limit
Contraction of the second state of the second	phatic Hydrocarbons +0	47,000	ug/L	2,000
n-C9 to n-C12 A	liphatic Hydrocarbons	29,000	ug/L	2,000
n-C9 to n-C10 A	romatic Hydrocarbons ⁺	18,000	ug/L	2,000
Unadjusted n-C5 to	n-C8 Aliphatic Hydrocarbons †	94,000	ug/L	2,000
	o n-C12 Aliphatic Hydrocarbons ⁺	89,000	ug/L	2,000
	Target Analytes			
1634-04-4	Methyl tert-butyl Ether	Concentration 3,500	Units 🖓	Reporting Limit
71-43-2	Benzene	1,900	ug/L	500
108-88-3	Toluene *	41,000	ug/L	100
100-41-4	Ethylbenzene *	6,200	ug/L	500
108-38-3 and	meta- Xylene and para-	25,000	ug/L	500
106-42-3	Xylene [‡]	25,000	ugr	
95-47-6	ortho- Xylene *	12,000	ug/L	500
91-20-3	Naphthalene	1,100	ug/L	500
	urrogate Compounds 🖉 🛬	Recovery		Limits
	Dibromotoluene (PID)	97 %	STATISTICS AND ADDRESS TO THE ADDRESS	130 %
	Dibromotoluene (FID)	93 %		130 %
 Were all QA/Qe Were all perform Were any signif 	C procedures required by the method for nance/acceptance standards for the req icant modifications made to the metho	uired QA/QC procedures achieved? d, as specified in Section 11.3.2.1?		Yes Yes Yes No
and project quality The accompanying	control report. Release of this data is a cover letter, project narrative and qual	velow on this data report, or in the accompa authorized by the accompanying signed pro lity control report are considered part of this	ject cover letter. data report.	rative
Method Reference: Report Notations:	BRL Indicates concentration, if any concentration that can be relia	fatile Petroleum Hydrocarbons, MA DEP (19 7, is below reporting limit for analyte. Repo- ably quantified under routine laboratory ope for sample dilution and sample size.	rting limit is the lo	owest

- + Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.
- o' n-C5 to n-C8 Aliphatic Hydrocarbons range data excludes the method target analyte concentrations.
- n-C9 to n-C12 Aliphatic Hydrocarbons range data excludes the method target analyte concentrations and the concentration for the n-C9 to n-C10 Aromatic Hydrocarbons range.
- # Analyte elutes in the n-C5 to n-C8 Aliphatic Hydrocarbons range.
- + Analyte elutes in the n-C9 to n-C12 Aliphatic Hydrocarbons range.

EPA Method 8270C (Modified) MA DEP EPH Polynuclear Aromatic Hydrocarbons by GC/MS-SIM

Field ID:	MW-1	Laboratory ID:	36958-01
Project:	Bossi's/00-E-033	QC Batch ID:	EP-0754-F
Client:	WEB Engineering	Sampled:	10-24-00
Container:	1L Amber Glass	Preserved:	10-25-00
Preservation:	H ₂ SO ₄ / Cool	Received:	10-25-00
Matrix:	Aqueous	Extracted:	11-01-00
		Analyzed:	11-03-00
		Dilution Factor:	1.

CASINumbe	r. 🖒 Analyte	Concentration	Units	Reporting Limi
91-20-3	Naphthalene	2.3	ug/L	0.5
91-57-6	- 2-Methylnaphthalene	1.4	ug/L	0.5
208-96-8	Acenaphthylene	BRL	ug/L	0.5
83-32-9	Acenaphthene	BRL	ug/L	0.5
86-73-7	Fluorene	BRL	ug/L	0.5
85-01-8	Phenanthrene	BRL	ug/L	0.5
120-12-7	Anthracene	BRL	ug/L	0.5
206-44-0	Fluoranthene	BRL	ug/L	0.5
129-00-0	Pyrene	BRL	ug/L	0.5
56-55-3	Benzo[a]anthracene	BRL	ug/L	0.1
218-01-9	Chrysene	BRL	ug/L	0.1
205-99-2	Benzo[b]fluoranthene	BRL	ug/L	0.1
207-08-9	Benzo[k]fluoranthene	BRL	ug/L	0.1
50-32-8	Benzo[a]pyrene	BRL	ug/L	0.1
193-39-5	Indeno[1,2,3-c,d]pyrene	BRL	ug/L	0.1
53-70-3	Dibenzo[a,h]anthracene	BRL	ug/L	0.1
191-24-2	Benzo[g,h,i]perylene	BRL	ug/L	0.1
	2C Surrogate Compound	Recovery:		Limits 🔿 😤 🛬
ortho-Terpher	ıyl	76 %	40 -	140 %

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996). Analyte list as specified by the target analytes of the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons. 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 Determination of accordance with the DETERMENT of the Method Protocol modified to include acidification and the surrogate compound in accordance with the DETERMENT of the Method Protocol modified of the Determination of the surrogate compound in accordance with the DETERMENT of the Method Protocol modified of the Determination of the Determination of the Method Protocol modified to include acidification and the surrogate compound in accordance with the Determination of the Method Protocol modified to include acidification and the surrogate compound in accordance with the Determination of the Method Protocol modified to include acidification and the surrogate compound in accordance with the Determination of the Method Protocol modified to include acidification and the surrogate compound in accordance with the Determination of the Method Protocol modified to include acidification and the surrogate compound in accordance with the Determination of the Method Protocol modified to include acidification and the surrogate compound in accordance with the Determination of the Method Protocol modified to the Determination of the Method Protocol modified to the Determination of the Method Protocol modified to include acidification and the surrogate compound in accordance with the Method Protocol modified to the Determination of the Method Protocol modified to the Protocol modified to the Protocol modified to the Protocol modified to the Protocol modified to the Protocol modified to the Protocol modified to the Protocol modified to the Protocol modified to the Protocol modified to the Protocol modified to Method Reference: with the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons.

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 dilution and sample size.

EPA Method 8270C (Modified) MA DEP EPH Polynuclear Aromatic Hydrocarbons by GC/MS-SIM

Field ID:	MW-3	Laboratory ID:	36958-02
Project:	Bossi's/00-E-033	QC Batch ID:	EP-0754-F
Client:	WEB Engineering	Sampled:	10-24-00
Container:	1L Amber Glass	Preserved:	10-25-00
Preservation:	H ₂ SO ₄ / Cool	Received:	10-25-00
Matrix:	Aqueous	Extracted:	11-01-00
		Analyzed:	11-03-00
		Dilution Factor:	1

CAS Number	Analyte	2 Concentration	· C Units ?	Reporting Lim
91-20-3	Naphthalene		ee ug/L	13 /
91-57-6	2-Methylnaphthalene	140	ee ug/L	13
208-96-8	Acenaphthylene	BRL	ug/L	0.6
83-32-9	Acenaphthene	BRL	ug/L	0.6
86-73-7	Fluorene	1.1	ug/L	0.6
85-01-8	Phenanthrene	1.4	ug/L	0.6
120-12-7	Anthracene	BRL	ug/L	0.6
206-44-0	Fluoranthene	BRL	ug/L	0.6
129-00-0	Pyrene	BRL	ug/L	0.6
56-55-3	Benzo[a]anthracene	0.1	ug/L V	0.1
218-01-9	Chrysene	BRL	ug/L	0.1
205-99-2	Benzo[b]fiuoranthene	BRL	ug/L	0.1
207-08-9	Benzo[k]fluoranthene	BRL	ug/L	0.1
50-32-8	Benzo[a]pyrene	BRL	ug/L	0.1
193-39-5	Indeno[1,2,3-c,d]pyrene	BRL	ug/L	0.1
53-70-3	Dibenzo[a,h]anthracene	BRL	ug/L	0.1
191-24-2	Benzo[g,h,i]perylene	BRL	ug/L	0.1

 OC Surrogate Compound
 Recovery
 OC Limits

 ortho-Terphenyl
 72 %
 40 - 140 %

 Method Reference:
 Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996), Analyte list

hod Reference: Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996). Analyte list as specified by the target analytes of the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons. 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.

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 dilution and sample size.

ee Analyte response exceeded calibration range. Analyte result was quantified on the basis of a separate analytical run with the mass spectrometer operating in the full scan mode.

EPA Method 8270C (Modified) MA DEP EPH Polynuclear Aromatic Hydrocarbons by GC/MS-SIM

Field ID:	MW-4	Laboratory ID:
Project:	Bossi's/00-E-033	QC Batch ID:
Client:	WEB Engineering	Sampled:
Container:	11 Amber Glass	Preserved:
Preservation:	H ₂ SO ₄ / Cool	Received:
Matrix:	Aqueous	Extracted:
		Analyzed:
		Dilution Factor:

CAS Number	Analyte	Concentration	👔 🖓 🖞 🖓 Units 🔊	Reporting Lim
91-20-3	Naphthalene	280 ee		22
91-57-6	2-Methylnaphthalene	170 ee	ug/L	22
208-96-8	Acenaphthylene	BRL	ug/L	1.1
83-32-9	Acenaphthene	BRL	ug/L	1.1
86-73-7	Fluorene	1.3	ug/L	1.1
85-01-8	Phenanthrene	1.7	ug/L	1.1
120-12-7	Anthracene	e BRL	ug/L	1.1
206-44-0	Fluoranthene	BRL	ug/L	1.1
129-00-0	Pyrene	BRL	ug/L	0.2 *
56-55-3	Benzo[a]anthracene	BRL	ug/L	0.2
218-01-9	Chrysene	BRL	ug/L	0.2
205-99-2	Benzo[b]fluoranthene	BRL	üg/L	0.2
207-08-9	Benzo[k]fluoranthene	BRL	ug/L	0.2
50-32-8	Benzo[a]pyrene	BRL	ug/L	0.2
193-39-5	Indeno[1,2,3-c,d]pyrene	BRL	ug/L	0.2
53-70-3	Dibenzo[a,h]anthracene	BRL	ug/L	0.2
191-24-2	Benzo[g,h,i]perylene	BRL	ug/L	0.2

ortho-Terphenyl		73 %	40 - 140 %
Method Reference:	as specified by the target analytes of th	te, US EPA, SW-846, Third Edition, Updat e MA DEP Method for the Determination ise of selected ion monitoring (SIM) in acc	of Extractable Petroleum

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.

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 dilution and sample size.

Analyte response exceeded calibration range. Analyte result was quantified on the basis of a ee separate analytical run with the mass spectrometer operating in the full scan mode.

36958-03

EP-0754-F

10-24-00

10-25-00

10-25-00

11-01-00 11-03-00 1



Project Narrative

Project: Bossi's/00-E-033 Client: WEB Engineering

Lab ID: 36958 Received: 10-25-00

A. Physical Condition of Sample(s)

This project was received by the laboratory in satisfactory condition. The sample(s) were received undamaged in appropriate containers with the correct preservation.

B. Project Documentation

This project was accompanied by satisfactory Chain of Custody documentation. The sample container label(s) agreed with the Chain of Custody.

No analytical anomalies or non-conformances were noted by the laboratory during the processing of these sample(s). All data contained within this report are released without qualification.

C. Analysis of Sample(s)

GROUNDWATER Buzzards Bay, MA 02532 ANALYTICAL FAS(500) 759-441 FAS(500) 759-441	CHAIN-OF-CUSTODY RECORD AND WORK ORDER		Nº 46430
e: Fim:	TURNAROUND	ANALYSIS REQUEST	
Docsers Well	K STANDARD (10 Business Dave)	Votalites Seculorialine Pessivient/PCB, Majals Printerally Antaine Ata, Gener	General Chemistry Other
Project Number: Address:	usiness Days)		
City / State / Zio:	ush Authorization Number)		
Mame.	Please FAXYESNO	1906) 30 (44) 1933 1947 () 4100 5760	
Telephone:	BILLING	An beau (
1)11-313 181 AMUN.2	<u> </u>		
INSTRUCTIONS: Use separate line for each container (except replicates).	MDDE2	Lange Carlor Car	As As Astala
Sampling Matrix Type Container(s)	Preservation Ritered	Kara (Kara ())))))))))))))))))))))))))))))))))	1992.019
31150-7	1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	المراجع مراجع المراجع ا مراجع المراجع ا مراجع المراجع	arrang
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$M_{M} \sim A$			
REMARKS / SPECIAL INSTRUCTIONS	2		
Regulatory Program	_	NOTE: All samples subr	i reverse hereof
C MA DEP Form C NPDES/Clean Water Act Sonorty State-	Marry regulatory programs and EPA methods require project specific OC. Project specific QC includes Sample Duplicates, Maintx Spikes, and/or Matrix Spike Duplicates. Laboratory QC Is Maintx Spikes.	Pallhauished by Sampler: Date Time Received by:	Receipt Temperature: 3,6
C MA MCF 1310 CMA MCF 1310 CMA MCF 1310 CMA 40)		Relinquished by: Date Time Received by:	Shipping/Airbill Number:
		Relinquished by: 11:00 UL OUL MANAU COLOCULAR	Circlada Saal/
DRCGW - 2 CHCS - 2 CMA Dredge Disposal	- 2 D Semple Duplicate D Matrix Spike D Matrix Soke Duplicate	URACIANUM 1425 1145 1445 1445 1445 1445 1445 1445	Cooler Serial Cooler Serial Number:
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Quality Assurance/Quality Control

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.

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.

B. Definitions

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.



Quality Control Report Laboratory Control Sample

Category: EPA Method 8270C (Modified) - EPH PAHs by GC/MS-SIM QC Batch ID: EP-0754-FL

Matrix: Aqueous

Units: ug/L

CAS Numbe	Naphthalene	5.0	Measured 2.8	Recovery 55 %	40 - 140 %
83-32-9	Acenaphthene	5.0	2.7	53 %	40 - 140 %
120-12-7	Anthracene	5.0	3.7	74 %	40 - 140 %
129-00-0	Pyrene	5.0	3.4	68 %	40 - 140 %
218-01-9	Chrysene	5.0	3.6	73 %	40 - 140 %

Method Reference:

Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996). Analyte list as specified by the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons. 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.

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.

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Quality Control Report Method Blank

Category: EPA Method 8270C (Modified) - EPH PAHs by GC/MS-SIM QC Batch ID: EP-0754-FB

Matrix: Aqueous

,CAS Number	Analyte	Concentration	Units	Reporting Limi
91-20-3	Naphthalene	BRL	ug/L	0.5
91-57-6	2-Methylnaphthalene	BRL	ug/L	0.5
208-96-8	Acenaphthylene	BRL	ug/L	0.5
83-32-9/-	Acenaphthene	BRL	ug/L	0.5
86-73-7	Fiuorene	BRL	ug/L	0.5
85-01-8	Phenanthrene	BRL	ug/L	0.5
120-12-7	Anthracene	BRL	ug/L	0.5
206-44-0	Fluoranthene	BRL	ug/L	0.5
129-00-0	Ругеле	BRL	ug/L	0.5
56-55-3	Benzo[a]anthracene	BRL	ug/L	0.1
218-01-9	Chrysene	BRL	ug/L	0.1
205-99-2	Benzo[b]fluoranthene	BRL	ug/L	0.1
207-08-9	Benzo[k]fluoranthene	BRL	ug/L	0.1
50-32-8	Benzo[a]pyrene	BRL	ug/L	0.1
193-39-5	Indeno[1,2,3-c,d]pyrene	BRL	ug/L	0.1
53-70-3	Dibenzo[a,h]anthracene	BRL	ug/L	0.1
191-24-2	Benzo[g,h,i]perylene	BRL	ug/L	0.1
ŵ Sin Str	C Surrogate Compound	Recovery	QCQC	Limits States
ortho-Terpher	yl	107 %	40 -	140 %

Method Reference: Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996). Analyte list as specified by the target analytes of the MA DEP Method for the Determination of Extractable Petroleum Hydrocarbons. 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.

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 dilution and sample size.



Quality Control Report Laboratory Control Sample

Category: MA DEP EPH Method QC Batch ID: EP-0754-F

Matrix: Water

Units: ug/L

CAS Numbe	Analyte	Spiked	Measured ?	Recovery	A QC Limits
111-84-2	n-Nonane (C9)	50	22	44 %	40 - 140 %
629-59-4	n-Tetradecane (C14)	50	29	58 %	40 - 140 %
629-92-5	n-Nonadecane (C19)	50	35	70 %	40 - 140 %
112-95 - 8	n-Eicosane (C20)	50	36 .	72 %	40 - 140 %
630-02-4	n-Octacosane (C28)	50	33	67 %	40 - 140 %

ૼૼૼૼૼૼૢૺૢ૽ૣૻ૽ૢૼૣ૽ૼૣ૽QCS	rrogate Compounds	Recovery essays	QC limits
Fractionation:	2-Fluorobiphenyl	80 %	40 - 140 %
	2-Bromonaphthalene	82 %	40 - 140 %
Extraction:	Chloro-octadecane	71 %	40 - 140 %
	ortho-Terphenyl	80 %	40 - 140 %

Method Reference: Report Notations: Method for the Determination of Extractable Petroleum Hydrocarbons, MA DEP (1998).

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.

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Quality Control Report Method Blank

Category: MA DEP EPH Method QC Batch ID: EP-0754-F Matrix: Water

EPH Ranges	Concentration	Units 🔦	Reporting Limit
n-C9 to n-C18 Aliphatic Hydrocarbons ⁺	BRL	ug/L	500
n-C19 to n-C36 Aliphatic Hydrocarbons	BRL	ug/L	500
n-C11 to n-C22 Aromatic Hydrocarbons + •	BRL	ug/L	200
Unadjusted n-C11 to n-C22 Aromatic Hydrocarbons [†]	BRL	ug/L	200

90 , 👘	Surrogate Compounds	Recovery	QCLimits ?
Fractionation:	2-Fluorobiphenyl	82 %	40 - 140 %
	2-Bromonaphthalene	84 %	40 - 140 %
Extraction:	Chloro-octadecane	76.%	40 - 140 %
	ortho-Terphenyl	84 %	40 - 140 %

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

Method Reference:

.

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 dilution and sample size.

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



Quality Control Report Laboratory Control Sample

Category: MA DEP VPH Method QC Batch ID: VG3-1291-W Matrix: Aqueous Units: ug/L

CAS Number	Analyte :	Spiked Spiked	Measured 🕤	Recovery	QC Limits
1634-04-4	Methyl tert-butyl Ether	50	43	86%	70 - 130 %
71-43-2	Benzene	50	53	106%	70 - 130 %
108-88-3	Toluene	50	57	114%	70 - 130 %
100-41-4	Ethylbenzene	50	52	104%	70 - 130 %
108-38-3 and 106-42-3	<i>meta-</i> Xylene and <i>para-</i> Xylene	100	120	117%	70 - 130 %
95-47-6	ortho- Xylene	50	58	115%	70 - 130 %
91-20-3	Naphthalene	50	63	127%	70 - 130 %

GC Surrogate Compounds	Recovery	QC'limits
2,5-Dibromotoluene (PID)	101 %	70 - 130 %
2,5-Dibromotoluene (FID)	97 %	70 - 130 %

Method Reference: Met

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

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.



Quality Control Report Method Blank

Category: MA DEP VPH Method QC Batch ID: VG3-1291-W Matrix: Aqueous

VPH Ranges	Concentration	Units 🖓	Reporting Limit
n-C5 to n-C8 Aliphatic Hydrocarbons	BRL	ug/L	20
n-C9 to n-C12 Aliphatic Hydrocarbons	BRL	ug/L	20
n-C9 to n-C10 Aromatic Hydrocarbons [†]	BRL	ug/L	20
Unadjusted n-C5 to n-C8 Aliphatic Hydrocarbons [†]	BRL	ug/L	20
Unadjusted n-C9 to n-C12 Aliphatic Hydrocarbons ⁺	BRL	ug/L	20

CAS Number	Target Analytes	Concentration	Hack S-Units Ref	Reporting Life
1634-04-4	Methyl tert-butyl Ether *	BRL	ug/L	5
71-43-2	Benzene "	BRL	ug/L	1
108-88-3	. Toluene "	BRL	ug/L	5
100-41-4	Ethylbenzene *	BRL	ug/L	5
108-38-3 and	meta- Xylene and para-	BRL	ug/L	5
106-42-3	Xylene [‡]			
95-47-6	ortho- Xylene *	BRL	ug/L	5
91-20-3	Naphthalene	BRL	ug/L	5

QC Surrogate Compounds	Recovery	QC L'imits 1, 213 1
2,5-Dibromotoluene (PID)	116 %	70 - 130 %
2,5-Dibromotoluene (FID)	109 %	70 - 130 %

Method Reference:

Report Notations:

Method for the Determination of Volatile Petroleum Hydrocarbons, MA DEP (1998).
 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 dilution and sample size.

t Hydrocarbon range data excludes concentrations of any surrogate(s) and/or internal standards eluting in that range.

n-C5 to n-C8 Aliphatic Hydrocarbons range data excludes the method target analyte concentrations.

n-C9 to n-C12 Aliphatic Hydrocarbons range data excludes the method target analyte concentrations and the concentration for the n-C9 to n-C10 Aromatic Hydrocarbons range.

Analyte elutes in the n-C5 to n-C8 Aliphatic Hydrocarbons range.

Analyte elutes in the n-C9 to n-C12 Aliphatic Hydrocarbons range.



Certifications and Approvals

CONNECTICUT, Department of Health Services, PH-0586

Potable Water, Wastewater/Trade Waste, Sewage/Effluent, and Soil

pH, Conductivity, Acidity, Alkalinity, Hardness, Chloride, Fluoride, Ammonia, Kjeldahl Nitrogen, Nitrate, Nitrite, Orthophosphate, Total Dissolved Solids, Cyanide, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Total Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Tin, Titanium, Vanadium, Zinc, Purgeable Halocarbons, Purgeable Aromatics, Pesticides, PCBs, PCBs in Oil, Ethylene Dibromide, Phenols, Oil and Grease.

MAINE Department of Human Services, MA103

Drinking Water

Reciprocal certification in accordance with Massachusetts certification for drinking water analytes.

Waste Water

Reciprocal certification in accordance with Massachusetts certification for waste water analytes.

MASSAGHUSEITS, Department of Environmental Protection, M=MA-103

Potable Water

Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Thallium, Nitrate-N, Nitrite-N, Fluoride, Sodium, Sulfate, Cyanide, Turbidity, Residual Free Chlorine, Calcium, Total Alkalinity, Total Dissolved Solids, pH, Trihalomethanes, Volatile Organic Compounds, 1,2-Dibromoethane, 1,2-Dibromo-3-chloropropane, Total Coliform, Fecal Coliform, Heterotrophic Plate Count, E-Coli

Non-Potable Water

Aluminum, Antimony, Arsenic, Beryllium, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Mercury, Molybdenum, Nickel, Selenium, Silver, Strontium, Thallium, Titanium, Vanadium, Zinc, pH, Specific Conductance, Total Dissolved Solids, Total Hardness, Calcium, Magnesium, Sodium, Potassium, Total Alkalinity, Chloride, Fluoride, Sulfate, Ammonia-N, Nitrate-N, Kjeldahl-N, Orthophosphate, Total Phosphorus, Chemical Oxygen Demand, Biochemical Oxygen Demand, Total Cyanide, Non-Filterable Residue, Total Residual Chlorine, Oil and Grease, Total Phenolics, Volatile Halocarbons, Volatile Aromatics, Chlordane, Aldrin, Dieldrin, DDD, DDF, DDT, Heptachlor, Heptachlor Epoxide, Polychlorinated Biphenyls (water), Polychlorinated Biphenyls (oil).

MICHIGAN, Department of Environmental Quality

Drinking Water

Trihalomethanes, Regulated and Unregulated Volatile Organic Compounds by EPA Method 524.2; 1,2-Dibromoethane, 1,2-Dibromo-3chloropropane by EPA Method 504.1

NEW HAMPSHIRE, Department of Environmental Services, 202798

Drinking Water

Metals by Graphite Furnace, Metals by ICP, Mercury, Nitrite-N, Orthophosphate, Residual Free Chlorine, Turbidity, Total Filterable Residue, Calcium Hardness, pH, Alkalinity, Sodium, Sulfate, Total Cyanide, Insecticides, Herbicides, Base/Neutrals, Trihalomethanes, Volatile Organics, Vinyl Chloride, DBCP, EDB, Nitrate-N.

Wastewater

Metals by Graphite Fumace, Metals by ICP, Mercury, pH, Specific Conductivity, TDS, Total Hardness, Calcium, Magnesium, Sodium, Potassium, Total Alkalinity, Chloride, Fluoride, Sulfate, Ammonia-N, Nitrate-N, Orthophosphate, TKN, Total Phosphorus, COD, BOD, Non-Filterable Residue, Oil & Grease, Total Phenolics, Total Residual Chlorine, PCBs in Water, PCBs in Oil, Pesticides, Volatile Organics, Total Cyanide.

RHODE ISLAND, Department of Health, 54

Surface Water, Air, Wastewater, Potable Water, Sewage Chemistry: Organic and Inorganic

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

Telephone (508) 759-4441 FAX (508) 759-4475

January 5, 2001

Mr. Steve Rumba WEB Engineering 106 Longwater Drive Norwell, MA 02061

 Project:
 Bossi/00-E-033

 Lab ID:
 38130

 Sampled:
 12-18-00

Dear Steve:

Enclosed are the Volatile Organics, PCBs, Hydrocarbon Fingerprint, Metals, Reactivity, Corrosivity and Ignitability Analyses performed for the above referenced project. This project was processed for Standard Two Week turnaround.

This letter authorizes the release of the analytical results, and should be considered a part of this report. This report contains a project narrative indicating project changes and non-conformances, a brief description of the Quality Assurance/Quality Control procedures employed by our laboratory, and a statement of our state certifications.

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,

Jonathan R. Sanford President

JRS/myr Enclosures

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EPA Method 8260B TCL Volatile Organics by GC/MS

Field ID:	Stockpile	Laboratory ID:	38130-01	
Project:	Bossi/00-E-033	QC Batch ID:	VM4-1614-E	
Client:	WEB Engineering	Sampled:	12-18-00	
Container:	120 mL Glass	Received:	12-20-00	
Preservation:	Methanol / Cool	Analyzed:	12-29-00	
Matrix:	Soil	Dilution Factor:	1	
% Moisture:	11			
		Concentration		
74-87-3 ·	Chloromethane	BRL	ug/Kg	500
75-01-4	Vinyl Chloride	BRL	ug/Kg	500
74-83-9	Bromomethane	BRL	ug/Kg	500
75-00-3	Chloroethane	BRL	ug/Kg	500
75-35-4	1,1-Dichloroethene	BRL	ug/Kg	250
67-64-1	Acetone	BRL	ug/Kg	2,500
75-15-0	Carbon Disulfide	BRL	ug/Kg	2,500
75-09-2	Methylene Chloride	BRL	ug/Kg	1,000
156-60-5	trans-1,2-Dichloroethene	BRL	ug/Kg	250
75-34-3	1,1-Dichloroethane	BRL	ug/Kg	250
156-59-2	cis- 1,2-Dichloroethene	BRL	ug/Kg	250
78-93-3	2-Butanone (MEK)	BRL	ug/Kg	2,500
67-66-3	Chloroform	BRL	ug/Kg	250
71-55-6	1,1,1-Trichloroethane	BRL	ug/Kg	250
56-23-5	Carbon Tetrachloride	BRL	ug/Kg	250
71-43-2	Benzene	BRL	ug/Kg	250
107-06-2	1,2-Dichloroethane	BRL	ug/Kg	250
79-01-6	Trichloroethene	BRL '	ug/Kg	250
78-87-5	1,2-Dichloropropane	BRL	ug/Kg	250
75-27-4	Bromodichloromethane	BRL	ug/Kg	250
10061-01-5	cis-1,3-Dichloropropene	BRL	ug/Kg	250
108-10-1	4-Methyl-2-Pentanone (MIBK)	BRL	ug/Kg	2,500
108-88-3	Toluene	BRL	ug/Kg	250
10061-02-6	trans-1,3-Dichloropropene	BRL	ug/Kg	250
79-00-5	1,1,2-Trichloroethane	BRL	ug/Kg	250
127-18-4	Tetrachloroethene	BRL	ug/Kg	250
591-78-6	2-Hexanone	BRL	ug/Kg	2,500
124-48-1	Dibromochloromethane	BRL	ug/Kg	2,500
108-90-7	Chlorobenzene	BRL	ug/Kg	250
100-41-4	Ethylbenzene	BRL	ug/Kg	250
		BRL		250
08-38-3/106-42-3	meta-Xylene and para-Xylene ortho-Xylene		ug/Kg	
95-47-6		BRL	ug/Kg	250
100-42-5	Styrene	BRL	ug/Kg	250
75-25-2	Bromoform	BRL	ug/Kg	250
79-34-5	1,1,2,2-Tetrachloroethane	BRL	ug/Kg	250
the second second second second second second second second second second second second second second second s	ourrogate Compounds 511 345 556		Contraction of the second structure of the second	and the second second second
Dibromofluorometh		106 %	80 - 1.	
1,2-Dichloroethane	-d ₄	98 %	80 - 12	
Toluene-d ₆		98 %	81 - 1	
4-Bromofluorobenz	ene	100 %	74 - 1	21 %
Method Reference:	as specified by the Target Compound	te, US EPA, SW-846, Third Edition, Upd List (TCL) of the US EPA Contract Labor ysis performed utilizing methanol extract	atory Program. R	

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 dilution, percent moisture and sample size.

EPA Method 8082 Polychlorinated Biphenyls (PCBs) by GC/ECD

Field ID:	Stockpile	Laboratory ID:	38130-02	
Project:	Bossi/00-E-033	QC Batch ID:	PB-1207-M	
Client:	WEB Engineering	Sampled:	12-18-00	
Container:	250 mL Glass	Received:	12-20-00	
Preservation:	Cool	Extracted:	12-29-00	
Matrix:	Soil	Analyzed:	01-03-01	
% Moisture:	11	Dilution Factor:	. 1	
CAS Number	Analyte	Concentration	Units	Reporting Limit
12674-11-2	Aroclor 1016	BRL	ug/Kg	88
11104-28-2	Aroclor 1221	BRL	ug/Kg	88
11141-16-5	Aroclor 1232	BRL	ug/Kg	88
53469-21-9	Aroclor 1242	BRL	ug/Kg	88
12672-29-6	Aroclor 1248	BRL	ug/Kg	88
11097-69-1	Aroclor 1254	BRL	ug/Kg	88
11096-82-5	Aroclor 1260	BRL	ug/Kg	88
Q	Surrogate Compound	Recovery	QC	Limits 🔄 📲
Tetrachloro-m -		85 %		121 %
Decachlorobip		106 %	28 -	138 %
Method Reference	: Test Methods for Evaluating Solid	Waste, US EPA, SW-846, Third Edition, Upd	ate III (1996). A	nalyte list

Method Reference: Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996). Analyte list as Aroclor analytes formerly specified by EPA Method 8080A. 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 towest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample dilution, percent moisture and sample size.

ASTM Method D3328-90 (Modified) Hydrocarbon Fingerprinting by GC/FID

Field ID:	Stockpile	Laboratory ID:	38130-02
Project:	Bossi/00-E-033	QC Batch ID:	HF-1430-M
Client:	WEB Engineering	Sampled:	12-18-00
Container:	250 mL Glass	Received:	12-20-00
Preservation:	Cool	Extracted:	12-29-00
Matrix:	Soil	Analyzed:	01-04-01
% Moisture:	11	Dilution Factor:	1
	Qualitativelde	ntification	

This sample has GC/FID characteristics that are similar to:

- 1. Petroleum products in the n-C16 to n-C36 range.
- 2. 3 through 5 ring polynuclear aromatic hydrocarbons.

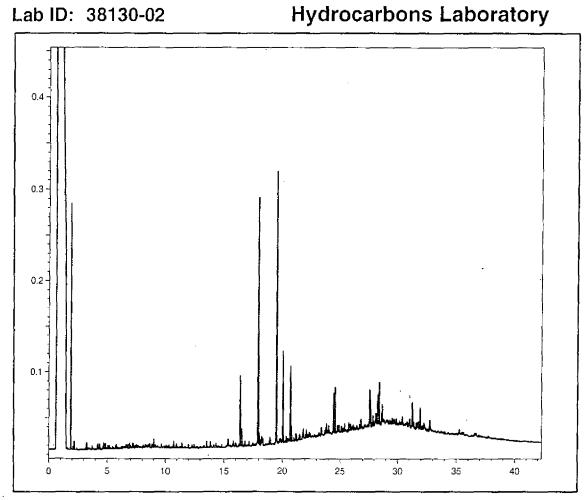
Añalyte	Concentration	-Units	Reporting Limit.
Total Petroleum Hydrocarbons	110	mg/Kg	66
Sector Supervision State Compound	Recovery 22 Stars		CLimits
ortho -Terphenyl	93 %	60	- 140 %

Method Reference: Comparison of Waterborne Petroleum Oils by Gas Chromatography, Volume 11.02, Water, American Society for Testing and Materials (1990). Analytical protocol modified by use of an internal standard. Results are quantified on the basis of 5α -androstane. Sample preparation protocol modified by use of microwave accelerated solvent extraction. 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 dilution and sample size.

ASTM METHOD D3328-90 (Modified) Hydrocarbon Fingerprinting by GC/FID



Lab ID: 38130-02

Retention Time (Minutes)

Trace Metals by ICP-AES and CVAA

Field ID:	Stockpile	Laboratory ID:	38130-02
Project:	Bossi/00-E-033	Sampled:	12-18-00
Client:	WEB Engineering	Received:	12-20-00
Container:	250 mL Glass	% Solids	89
Preservation:	Cool		
Matrix:	Soil		

CAS Number Analyte Concentration Units Reporting Analyzed QCBatch Method

7440-38-2	Arsenic, Total	BRL	mg/Kg	5.8	01-02-01	MM-01194-S	6010B
7440-43-9	Cadmium, Total	BRL	mg/Kg	0.58	01-02-01	MM-01194-5	6010B
7440-47-3	Chromium, Total	13	mg/Kg	12	01-02-01	MM-01194-5	6010B
7439-92-1	Lead, Total	24	mg/Kg	12	01-02-01	MM-01194-5	6010B
7439-97-6	Mercury, Total	BRL	mg/Kg	0.058	12-22-00	MP-0902-S	7471A

Method Reference: Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996). 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 dilution and sample size.

RCRA Hazardous Waste Characterization

Field ID:StockpileProject:Bossi/00-E-033Client:WEB EngineeringContainer:250 mL GlassPreservation:CoolMatrix:Solid

Report Notations:

Laboratory ID:	38130-02
Sampled:	12-18-00
Received:	12-20-00

Analyte	Result	Ünits	Reporting	RCRA Limit	Analyzed	Method
Corrosivity (as pH)	7.2	рH	2.0	>2.0 and <12.5	01-02-01	EPA 9045C
Ignitability (as Flashpoint)	> 165	۰F	70	+	01-02-01	EPA 1010-Mod
Reactive Cyanide	BRL	mg/Kg	5	250 °	01-02-01	SW-846 Chp. 7.3.1
Reactive Sulfide	BRL	mg/Kg	25	500 °	01-02-01	SW-846 Chp. 7.3.4

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

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

+ When ignited, burns so vigorously and persistently that it creates a hazard (40 C.F.R. 261.22).

Current EPA guidance level (SW-846).



Project Narrative

Project: Bossi/00-E-033 Client: WEB Engineering

Lab ID: 38130 Received: 12-20-00

A. Physical Condition of Sample(s

This project was received by the laboratory in satisfactory condition. The sample(s) were received undamaged in appropriate containers with the correct preservation.

B. Project Documentation

This project was accompanied by satisfactory Chain of Custody documentation. The sample container label(s) agreed with the Chain of Custody.

C: Analysis of Sample(s).

No analytical anomalies or non-conformances were noted by the laboratory during the processing of these sample(s). All data contained within this report are released without qualification.

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Retinduished by: Date Time Received by Laboratory: Method of Shipment: DGWA Counter DExpress Mail D Federal Express Method of Shipment: DCWA Counter DExpress Mail D Federal Express		Anty regulatory programs and EPA methods require pro- product CXC. Produces Sample Duplics faints Shikes, and/or Matrix Sohle Duplicstess. Laborator is project speedic unless prearranged. Project specific C and/es are charged on a part sample basis. For water sis and MS, MSD and Sample Duplicate requires an addition.	- \/	Sampler:	Date 22000	Time Re 1493 - 149	ceived by: July Unerry	Receipt Temp 4, 0 Shipping/Autoi Number:	eratue.
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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.

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na internet a present	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.

Quality Control Report Laboratory Control Sample

Category: Metals Matrix: Soil

CAS Number	Analyte	Method	QC Batch	Units	4 Spiked	Measured	Recovery	QCLimits
7440-38-2	Arsenic	6010B	MM-1194-SL	mg/Kg	100	89	89 %	80 - 120 %
7440-43-9	Cadmium	6010B	MM-1194-SL	mg/Kg	100	87	87 %	80 - 120 %
7440-47-3	Chromium	6010B	MM-1194-SL	mg/Kg	100	85	85 %	80 - 120 %
7439-92-1	Lead	6010B	MM-1194-SL	mg/Kg	100	87	87 %	80 - 120 %
7439-97-6	Mercury	7471A	MP-0902-SL	mg/Kg	0.25	0.26	105 %	80 - 120 %

Method References: Test Methods for Evaluating Solid Waste, SW-846; Third Edition, Update III (1996).

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.

Quality Control Report Method Blank

Category:	Metals
Matrix:	Soil

-CAS Number	Analyte	Result	Units	Reporting	QC Batch	Method
7440-38-2	Arsenic	BRL	mg/Kg	5	MM-1194-SB	6010B
7440-43-9	Cadmium	BRL	mg/Kg	0.5	MM-1195-SB	6010B
7440-47-3	Chromium	BRL	mg/Kg	10.0	MM-1196-SB	6010B
7439-92-1	Lead	BRL	mg/Kg	10	MM-1197-SB	6010B
7439-97-6	Mercury	BRI.	mg/Kg	0.05	MP-0902-\$B	7471A

Method References:

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

Report Notations:

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



Quality Control Report Laboratory Control Sample

Category: ASTM Method D3328-90 (Modified)

QC Batch ID: HF-1430-M

Matrix: Soil

Units: mg/Kg

Analyte	Spiked,	Measured	Recovery	QG Limits
Fuel Oil No. 2	130	110	83 %	60 - 140 %
QC Surrogate Compound	Rêco	very	ŎĊ I	imits 🔪 🗸 👘
ortho-Terphenyl	96	%	60 - 1	140 %

Method Reference:

Comparison of Waterborne Petroleum Oils by Gas Chromatography, Volume 11.02, Water, American Society for Testing and Materials (1990). Analytical protocol modified by use of an internal standard. Results are quantified on the basis of 5α -androstane. Sample preparation protocol modified by use of microwave accelerated solvent extraction. Results are reported on a dry weight basis.

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.



Quality Control Report Method Blank

Category: ASTM Method D3328-90 (Modified) QC Batch ID: HF-1430-M Matrix: Soil

Analyte	Concentration	Units	Reporting Limit
Total Petroleum Hydrocarbons	BRL	mg/Kg	60
QC Surrogate Compound	Recovêry	QEI	imits
ortho -Terphenyl	93 %	60 - 1	40 %

Comparison of Waterborne Petroleum Oils by Gas Chromatography, Volume 11.02, Water, American Method Reference: Society for Testing and Materials (1990). Analytical protocol modified by use of an internal standard. Results are quantified on the basis of 5α -androstane. Sample preparation protocol modified by use of microwave accelerated solvent extraction. Results are reported on a dry weight basis. on a dry weight basis.

Report Notations:

BRI. 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 dilution and sample size.



Quality Control Report Laboratory Control Sample

Category: EPA Method 8082 QC Batch ID: PB-1207-M Matrix: Soil Units: ug/Kg

CAS Number	-Spiked	Measured 😽	Recovery	QGLimits 7
11097-69-1 Aroclor 1254	330	310	92%	70 - 130 %
QC Surrogate Compound		Recovery		QC Limits
Tetrachloro-m-xylene		77%		25 - 121 %
Decachlorobiphenyl		93%		28 - 138 %

Method Reference: Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996). Results are calculated on a dry weight basis.

Keport 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.



Quality Control Report Laboratory Control Sample

Category: EPA Method 8260B QC Batch ID: VM4-1614-EL Matrix: Soil Units: ug/Kg

CAS Numbe 75-35-4	1,1-Dichloroethene	2,500	2,400	Recovery 96 %	70 - 130 %
71-43-2	Benzene	2,500	2,400	96 %	70 - 130 %
79-01-6	Trichloroethene	2,500	2,500	98 %	70 - 130 %
108-88-3	Toluene	2,500	2,300	93 %	70 - 130 %
108-90-7	Chlorobenzene	2,500	2,300	93 %	70 - 130 %

QCSurrogate Compounds	Kecovery C. Road	QC Limits & Wige
Dibromofluoromethane	112.%	80 - 120 %
1,2-Dichloroethane-d ₄	98 %	80 - 120 %
Toluene-d ₈	99 %	81 - 117 %
4-Bromofluorobenzene	102 %	74 - 121 %

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

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.

Groundwater Analytical, Inc., P.O. Box 1200, 228 Main Street, Buzzande Ray, MA 02532



Quality Control Report Method Blank

Category: EPA Method 8260B QC Batch ID: VM4-1614-EB Matrix: Soil

ACAS Number, *	4 Analyte	Concentration	Units .	Reporting Limi
74-87-3	Chloromethane	BRL	ug/Kg	500
75-01-4	Vinyl Chloride	BRL	ug/Kg	500
74-83-9	Bromomethane	BRL	ug/Kg	500
75-00-3	Chloroethane	BRL	ug/Kg	500
75-35-4	1,1-Dichloroethene	BRL	ug/Kg	250
67-64-1	Acetone	BRL	ug/Kg	2,500
75-15-0	Carbon Disulfide	BRL	ug/Kg	2,500
75-09-2	Methylene Chloride	BRL	ug/Kg	1000
156-60-5	trans-1,2-Dichloroethene	BRL	ug/Kg	250
1634-04-4	Methyl tert-butyl Ether (MTBE) •	BRL	ug/Kg	250
75-34-3	1,1-Dichloroethane	BRL	ug/Kg	250
156-59-2	cis-1,2-Dichloroethene	BRL	ug/Kg	250
78-93-3	2-Butanone (MEK)	BRL	ug/Kg	2,500
67-66-3	Chloroform	BRL	ug/Kg	250
71-55-6	1,1,1-Trichloroethane	BRL	ug/Kg	250
56-23-5	Carbon Tetrachloride	BRL	ug/Kg	250
71-43-2	Benzene	BRL	ug/Kg	250
107-06-2	1,2-Dichloroethane	BRL	ug/Kg	250
79-01-6	Trichloroethene	BRL	ug/Kg	250
78-87-5	1,2-Dichloropropane	BRL	ug/Kg	250
75-27-4	Bromodichloromethane	BRL	ug/Kg	250
10067-01-5	cis-1,3-Dichloropropene	BRL	ug/Kg	250
108-10-1	4-Methyl-2-Pentanone (MIBK)	BRL	ug/Kg	2,500
108-88-3	Toluene	BRL	ug/Kg	250
10061-02-6	trans-1,3-Dichloropropene	BRL	ug/Kg	250
79-00-5	1,1,2-Trichloroethane	BRL	ug/Kg	250
127-18-4	Tetrachloroethene	BRL	ug/Kg	250
591-78-6	2-Hexanone	8RL	ug/Kg	2,500
124-48-1	Dibromochloromethane	BRL	ug/Kg	250
108-90-7	Chlorobenzene	BRL	ug/Kg	250
100-41-4	Ethylbenzene	BRL	ug/Kg	250
108-38-3/106-42-3	meta-Xylene and para-Xylene	BRL	ug/Kg	250
95-47-6	ortho- Xylene	BRL	ug/Kg	250
100-42-5	Styrene	BRL	ug/Kg	250
75-25-2	Bromoform	BRL	ug/Kg	250
79-34-5	1,1,2,2-Tetrachloroethane	BRL	ug/Kg	250
SAL DOC S	urrogate Compounds	Recovery	State OC	limits 5
Dibromofluoromet		110 %		120 %
1,2-Dichloroethan		97 %		120 %
Toluene-d ₈		98 %		11.7 %
4-Bromofluoroben	zene	102 %		121 %
Method Reference:		Vaste, US EPA, SW-846, Third Edition, Update		

thod Reference: Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996). Analyte list as specified by the Target Compound List (TCL) of the US EPA Contract Laboratory Program. 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 dilution, percent moisture and sample size.

Indicates additional target analyte.

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

Certifications and Approvals

CONNECTIGUT, Department of Health Services, PH-0586

Potable Water, Wastewater/Trade Waste, Sewage/Effluent, and Soil

pH, Conductivity, Acidity, Alkalinity, Hardness, Chloride, Fluoride, Ammonia, Kjeldahl Nitrogen, Nitrate, Nitrite, Orthophosphate, Total Dissolved Solids, Cyanide, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Total Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thalfium, Tin, Titanium, Vanadium, Zinc, Purgeable Halocarbons, Purgeable Aromatics, Pesticides, PCBs, PCBs in Oil, Ethylene Dibromide, Phenols, Oil and Grease.

MAINE, Department of Human Services, MA103

Drinking Water

Reciprocal certification in accordance with Massachusetts certification for drinking water analytes.

Waste Water

Reciprocal certification in accordance with Massachusetts certification for waste water analytes.

MASSACHUSETTS, Department of Environmental Protection, MEMA-103

Potable Water

Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Thallium, Nitrate-N, Nitrite-N, Fluoride, Sodium, Sulfate, Cyanide, Turbidity, Residual Free Chlorine, Calcium, Total Alkalinity, Total Dissolved Solids, pH, Trihalomethanes, Volatile Organic Compounds, 1,2-Dibromoethane, 1,2-Dibromo-3-chloropropane, Total Coliform, Fecal Coliform, Heterotrophic Plate Count, E-Coli

Non-Potable Water

Aluminum, Antimony, Arsenic, Beryilium, Cadmium, Chromium, Cobalt, Copper, iron, Lead, Manganese, Mercury, Molybdenum, Nickel, Selenium, Silver, Strontium, Thallium, Titanium, Vanadium, Zinc, pH, Specific Conductance, Total Dissolved Solids, Total Hardness, Calcium, Magnesium, Sodium, Potassium, Total Alkalinity, Chloride, Fluoride, Sulfate, Ammonia-N, Nitrate-N, Kjeldahl-N, Orthophosphate, Total Phosphorus, Chemical Oxygen Demand, Biochemical Oxygen Demand, Total Cyanide, Non-Filterable Residue, Total Residual Chlorine, Oil and Grease, Total Phenolics, Volatile Halocarbons, Volatile Aromatics, Chlordane, Aldrin, Dieldrin, DDD, DDE, DDT, Heptachlor, Heptachlor Epoxide, Polychlorinated Biphenyls (oil).

MICHIGAN, Department of Environmental Quality

Drinking Water

Trihalomethanes, Regulated and Unregulated Volatile Organic Compounds by EPA Method 524.2; 1,2-Dibromoethane, 1,2-Dibromo-3chloropropane by EPA Method 504.1

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Drinking Water

Metals by Graphite Furnace, Metals by ICP, Mercury, Nitrite-N, Orthophosphate, Residual Free Chlorine, Turbidity, Total Filterable Residue, Calcium Hardness, pH, Alkalinity, Sodium, Sulfate, Total Cyanide, Insecticides, Herbicides, Base/Neutrals, Trihalomethanes, Volatile Organics, Vinyl Chloride, DBCP, EDB, Nitrate-N.

Wastewater

Metals by Graphite Furnace, Metals by ICP, Mercury, pH, Specific Conductivity, TDS, Total Hardness, Calcium, Magnesium, Sodium, Potassium, Total Alkalinity, Chloride, Fluoride, Sulfate, Ammonia-N, Nitrate-N, Orthophosphate, TKN, Total Phosphorus, COD, BOD, Non-Filterable Residue, Oil & Grease, Total Phenolics, Total Residual Chlorine, PCBs in Water, PCBs in Oil, Pesticides, Volatile Organics, Total Cyanide.

RHODE ISLAND, Department of Health, 54

Surface Water, Air, Wastewater, Potable Water, Sewage Chemistry: Organic and Inorganic Report Date: 07-Mar-05 15:20



Final Report □ Re-Issued Report □ Revised Report

SPECTRUM ANALYTICAL, INC. Featuring HANIBAL TECHNOLOGY

Laboratory Report

REMSERV, Inc. 35 Winthrop Street Winchester, MA 01890 Attn: Tom Simmons

USDA # S-51435

Vermont # VT-11393

Project: Bossi's-12 Swanton St-MA Project #: [none]

Laboratory ID	Client Sample ID	Matrix	Date Sampled	Date Received
SA24677-01	B101 S4 13-15	Soil	28-Feb-05 00:00	01-Mar-05 14:50
SA24677-02	B102 S1B 11.5-12	Soil	28-Feb-05 00:00	01-Mar-05 14:50
SA24677-03	B103 S1 13-15	Soil	28-Feb-05 00:00	01-Mar-05 14:50
SA24677-04	B104 S1 13-15	Soil	28-Feb-05 00:00	01-Mar-05 14:50

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. All applicable NELAC requirements have been met.

Please note that this report contains 17 pages of analytical data plus Chain of Custody document(s).

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Massachusetts Certification # M-MA138/MA1110 Connecticut # PH-0777 Florida # E87600/E87936 Maine # MA138 New Hampshire # 2538/2972 New York # 11393/11840 Rhode Island # 98



withorized b Hanibal *C* / Tayeh, Ph.D. President/Laboratory Director

Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Spectrum is currently accredited for the specific method indicated. Please refer to our "Quality" webpage at www.spectrum-analytical.com for a full listing of our current certifications.

ENVIRONMENTAL ANALYSES

B101 S4 SA2467		<u>Cli</u>	ent Project <u>#</u> [none]	<u>Matr</u> Soi		lection Da 8-Feb-05			<u>eceived</u> -Mar-0	-
	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
	Organic Compounds	•••								
	VOC Extraction	Field extracted	N/A	1	VOC	01-Mar-05	01-Mar-05	5030088	ES	
VPH Ali	phatic/Aromatic Carbon Rang	es	Prepared by meth	od VPH						VOCI
	C5-C8 Aliphatic Hydrocarbons		1.34 mg/kg dry	100	+MADEP 5/2004 Rev. 1.1	03-Mar-05	03-Mar-05	5030179	\$\$	
	C9-C12 Aliphatic Hydrocarbons	6.08	0.446 mg/kg dry	100	" "	**	H	"	*1	
	C9-C10 Aromatic Hydrocarbons	8.66	0.446 mg/kg dry	100	н	н	"	II	N	
	Unadjusted C5-C8 Aliphatic Hydrocarbons	16.7	1.34 mg/kg dry	100	"	u	н	"	н	
	Unadjusted C9-C12 Aliphatic Hydrocarbons	14.7	0.446 mg/kg dry	100	38	u.	ļ	Ħ	"	
VPH Tai	rget Analytes		Prepared by meth	od VPH						voci
71-43-2	Benzene	BRL	89.3 µg/kg dry	100	"	"		н	"	
100-41-4	Ethylbenzene	BRL	89.3 μg/kg dry	100	"	"		IJ	н	
1634-04-4	Methyl tert-butyl ether	BRL	89.3 μg/kg dry	100	"		**	н	'n	
91-20-3	Naphthalene	332	89.3 μg/kg dry	100	**	**	*1	h	п	
108-88-3	Toluene	140	89.3 μg/kg dry	100	••	"	**	н		
1330-20-7	m,p-Xylene	BRL	179 µg/kg dry	100	10	**	"	и	н	
95-47-6	o-Xylene	BRL	89.3 µg/kg dry	100	"	"	п	"	н	
Surrogate	e recoveries:									
615-59-8	2,5-Dibromotoluene (FID)	118	70-130 %		tr	п	н	"	н	
615-59-8	2,5-Dibromotoluene (PID)	104	70-130 %		**	н	н		п	
			/0 100 /0							
	able Petroleum Hydrocarbo	15	D	. 1 .011/0	16 25 45 4					
<u>EPH Au</u>	phatic/Aromatic Ranges		Prepared by meth							
	C9-C18 Aliphatic Hydrocarbons	BRL	29.6 mg/kg dry	1	+MADEP 5/2004 R	03-Mar-05	06-Mar-05 :		M,B	
	C19-C36 Aliphatic Hydrocarbons	BRL	29.6 mg/kg dry	1	**	н	11	"	*1	
	C11-C22 Aromatic Hydrocarbons	BRL	29.6 mg/kg dry	1	п	и	10	"	**	
	Unadjusted C11-C22 Aromatic Hydrocarbons		29.6 mg/kg dry	I	n	и	11	11	81	
	Total Petroleum Hydrocarbons		29.6 mg/kg dry	1		n	и	"	n	
	Unadjusted Total Petroleum Hydrocarbons	BRL	29.6 mg/kg dry	I	п	n	и	".	п	
<u>EPH Tar</u>	rget PAH Analytes		Prepared by meth	od SW8	46 3545A					
91-20-3	Naphthalene	BRL	147 µg/kg dry	1		"	"	и	"	
91-57-6	2-Methylnaphthalene	162	147 µg/kg dry	1	**	"	*	u	11	
208-96-8	Acenaphthylene	BRL	147 µg/kg dry	I	n	н	H		*1	
01 10 0	Acenaphthene	BRL	147 µg/kg dry	1	**	u	a	н	"	
83-32-9	Fluorene	BRL	147 µg/kg dry	1	11	п	п	"	ų	
83-32-9 86-73-7	/	BRL	147 µg/kg dry	1	tt.	'n	н	"	u	
	Phenanthrene			1	н	"			u	
86-73-7	Phenanthrene Anthracene	BRL	147 μg/kg dry	•						
86-73-7 85-01-8		BRL BRL		t	Ш	н	н		Ð	
86-73-7 85-01-8 120-12-7	Anthracene		147 µg/kg dry		н	н	и	" "	Ð	
86-73-7 85-01-8 120-12-7 206-44-0	Anthracene Fluoranthene Pyrene	BRL	147 μg/kg dry 147 μg/kg dry	t		H				
86-73-7 85-01-8 120-12-7 206-44-0 129-00-0	Anthracene Fluoranthene	BRL BRL	147 µg/kg dry	t I		H H H		"	п	

<u>Sample</u> B101 S 4 SA2467			<u>Client Project #</u> [none]	<u>Matr</u> Soi		llection Da 8-Feb-05			<u>eceived</u> -Mar-05	į
CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
Extract	able Petroleum Hydrocar	bons								
EPH Ta	rget PAH Analytes		Prepared by meth	nod SW8	46 3545A					
207-08-9	Benzo (k) fluoranthene	BRL	147 μg/kg dry	1	+MADEP 5/2004 R	03-Mar-05	06-Mar-05	5030185	M.B	
50-32-8	Benzo (a) pyrene	BRL	147 μg/kg dry	1	n	n	и	н	"	
193-39-5	Indeno (1,2,3-cd) pyrene	BRL	147 μg/kg dry	1	H	н	71		**	
53-70-3	Dibenzo (a,h) anthracene	BRL	147 μg/kg dry	I	н			U U	11	
191-24-2	Benzo (g,h,i) perylene	BRL	147 μg/kg dry	1	**	*	п	п	н	
Surrogate	e recoveries:									
3386-33-2	1-Chlorooctadecane	61.0	40-140 %		u	"	U	н	**	
84-15-1	Ortho-Terphenyl	68.3	40-140 %		11	"		10	"	
580-13-2	2-Bromonaphthalene	65.1	40-140 %			н	41	н	**	
321-60-8	2-Fluorobiphenyl	76.6	40-140 %		n	**	н	и	**	
General	Chemistry Parameters % Solids	89.9	%	1	SM2540 G	01-Mar-05	02-Mar-05	5020086	AJ	
	, o contag	07.7	70	L	Mod.	vi-iviai-02	vz=iviai=03	5030080	AJ	

	<u>Identification</u> B 11.5-12 7-02	<u>Cli</u>	<u>ent Project #</u> [none]	<u>Matr</u> Soi		lection Da 8-Feb-05			<u>eceived</u> -Mar-0:	
CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
Volatile	Organic Compounds		 N/A	I	voc	01 Mor 05	01-Mar-05	5020088	ES	
TROFT 474	VOC Extraction	Field extracted		-		VI-Mat-VJ	01-14141-05	2020000	LS	
<u>VPH All</u>	phatic/Aromatic Carbon Rang		Prepared by meth							
	C5-C8 Aliphatic Hydrocarbons		0.940 mg/kg dry	50	+MADEP 5/2004 Rev. 1.1	03-Mar-05	03-Mar-05	5030179	55	
	C9-C12 Aliphatic Hydrocarbons	BRL BRL	0.313 mg/kg dry 0.313 mg/kg dry	50 50	18			н		
	C9-C10 Aromatic Hydrocarbons	DKL	0.515 mg/kg ury	50						
	Unadjusted C5-C8 Aliphatic Hydrocarbons	BRL	0.940 mg/kg dry	50	u	n	п	"	н	
	Unadjusted C9-C12 Aliphatic Hydrocarbons	BRL	0.313 mg/kg dry	50	11		"	"	n	
<u>VPH Ta</u>	rget Analytes		Prepared by meth	od VPH						
71-43-2	Benzene	BRL	62.7 μg/kg dry	50	"	n	"		n	
100-41-4	Ethylbenzene	BRL	62.7 μg/kg dry	50	"	11	"	н	и	
1634-04-4	Methyl tert-butyl ether	BRL	62.7 μg/kg dry	50	и	••	U	H	t e	
91-20-3	Naphthalene	BRL	62.7 μg/kg dry	50			"	*1	"	
108-88-3	Toluene	BRL	62.7 μg/kg dry	50	н	**	н	"	*1	
1330-20-7	m,p-Xylene	BRL	125 µg/kg dry	50	11	п	"	11	14	
95-47-6	o-Xylene	BRL	62.7 μg/kg dry	50	"		н	٠	11	
Surrogate	recoveries:									
615-59-8	2,5-Dibromotoluene (FID)	115	70-130 %		11	*	ц	U.	u	
615-59-8	2,5-Dibromotoluene (PID)	102	70-130 %		n	h	"	11		
Extract	able Petroleum Hydrocarbor	15								
	phatic/Aromatic Ranges		Prepared by meth	od SW8	46 3545A					
<u>171 11 1116</u>	C9-C18 Aliphatic	BRL	30.0 mg/kg dry	1	+MADEP	03-Mar-05	06-Mar-05	5030185	M.B	
	Hydrocarbons				5/2004 R					
	C19-C36 Aliphatic Hydrocarbons	BRL	30.0 mg/kg dry	1	u	Uf.	"	11	н	
	C11-C22 Aromatic Hydrocarbons	BRL	30.0 mg/kg dry	1	99	"	u	H	π	
	Unadjusted C11-C22 Aromatic Hydrocarbons		30.0 mg/kg dry	1	14	н	78	н		
	Total Petroleum Hydrocarbons		30.0 mg/kg dry	1	н	"	и	IF	н	
	Unadjusted Total Petroleum Hydrocarbons	BRL	30.0 mg/kg dry	1	11	u	'n	"		
<u>EPH Tai</u>	r <u>get PAH Analytes</u>		Prepared by meth	od SW8	46 3545A					
91-20-3	Naphthalene	BRL	149 µg/kg dry	1	и	*1	*	11	"	
91-57-6	2-Methylnaphthalene	BRL	149 μg/kg dry	1	*	н	•	n	"	
208-96-8	Acenaphthylene	BRL	149 µg/kg dry	1	tt.	43	н	"	41	
83-32-9	Acenaphthene	BRL	149 μg/kg dry	1	н	n	11	H.	п	
86-73-7	Fluorene	BRL	149 µg/kg dry	1	1.	"		"		
85-01-8	Phenanthrene	BRL	149 µg/kg dry	1	н	"	U.		11	
120-12-7	Anthracene	BRL	149 μg/kg dry	1	'n	"	н		ч	
206-44-0	Fluoranthene	BRL	149 µg/kg dry	1	**	п	я	ч	и	
129-00-0	Pyrene	BRL	149 μg/kg dry	1	u	"	n	н.	"	
				,	н	77	н	н	ų	
\$6-55-3	Benzo (a) anthracene	BRL	149 μg/kg dry	1						
56-55-3 218-01-9	Benzo (a) anthracene Chrysene	BRL BRL	149 μg/kg dry 149 μg/kg dry	1	п	**	*	н	я	

	Identification B 11.5-12 7-02		<u>Client Project #</u> [none]	<u>Matr</u> Soi		llection Da 28-Feb-05			<u>Received</u> I-Mar-05
CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst Flag
Extracta	ble Petroleum Hydrocar	bons	·····						
<u>EPH Tar</u>	rget PAH Analytes		Prepared by meth	nod SW8	46 3545A				
207-08-9	Benzo (k) fluoranthene	BRL	149 μg/kg dry	1	+MADEP 5/2004 R	03-Mar-05	06-Mar-05	5030185	M.B
50-32-8	Benzo (a) pyrene	BRL	149 µg/kg dry	1	**	н	71	U	**
193-39-5	Indeno (1,2,3-cd) pyrene	BRL	149 µg/kg dry	1	14	"			п
53-70-3	Dibenzo (a,h) anthracene	BRL	149 µg/kg dry	1	**	*1	"	"	
191-24-2	Benzo (g,h,i) perylene	BRL	149 μg/kg dry	1	41	Ħ	n	н	11
Surrogate	recoveries:								
3386-33-2	1-Chlorooctadecane	76.7	40-140 %		*	"	**	-11	н
84-15-1	Ortho-Terphenyl	73.3	40-140 %		u	n	U	υ	IF.
580-13-2	2-Bromonaphthalene	60.9	40-140 %		n		"		
321-60-8	2-Fluorobiphenyl	77.6	40-140 %		**	н	н	п	It
General	Chemistry Parameters								
	% Solids	90.8	%	1	SM2540 G Mod.	01-Mar-05	02-Mar-05	5030086	AJ

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B103 S1 SA2467		<u>Cli</u>	<u>ent Project #</u> [none]	<u>Matı</u> Soi		<u>lection Da</u> 8-Feb-03			eceived -Mar-0	
	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analysi	t Flag
Volatile	Organic Compounds									
	VOC Extraction	Field extracted	N/A	1	VOC	01-Mar-05	01-Mar-05	5030088	ES	
<u>VPH Ali</u>	phatic/Aromatic Carbon Rang		Prepared by meth							VOCI
	C5-C8 Aliphatic Hydrocarbons		22.4 mg/kg dry	2000	+MADEP 5/2004 Rev. 1.1	03-Mar-05	03-Mar-05	5030179	SS	
	C9-C12 Aliphatic Hydrocarbons	217	7.48 mg/kg dry	2000	*	"	"	n	н	
	C9-C10 Aromatic Hydrocarbons	280	7.48 mg/kg dry	2000	"	'n	п	"	14	
	Unadjusted C5-C8 Aliphatic Hydrocarbons	832	22.4 mg/kg dry	2000	n	н	*	7	۳	
	Unadjusted C9-C12 Aliphatic Hydrocarbons	497	7.48 mg/kg dry	2000	k	n	н	H	It	
VPH Tai	rget Analytes		Prepared by meth	od VPH						VOCI
71-43-2	Benzene	1,750	748 μg/kg dry	2000	r,		н			
100-41-4	Ethylbenzene	24,200	748 μg/kg dry	2000	J#		н	11	n	
1634-04-4	Methyl tert-butyl ether	BRL	748 μg/kg dry	2000	er.	н	**	u	n	
91-20-3	Naphthalene	9,550	748 μg/kg dry	2000	n	n	n		и	
108-88-3	Toluene	39,600	748 μg/kg dry 748 μg/kg dry	2000	U	14	н	*1		
1330-20-7	m,p-Xylene	92,400	1500 μg/kg dry	2000	u.	••		н		
95-47-6	o-Xylene	35,400	748 μg/kg dry	2000	н	**		н	14	
Surrogate	recoveries:		710 PB/x8 419							
615-59-8	2,5-Dibromotoluene (FID)	110	70-130 %		и	n		н	17	
615-59-8	2,5-Dibromotoluene (PID)	97.0	70-130 %		"	11	"		ŀ	
Extracts	able Petroleum Hydrocarbon		,0150,0							
	•	13	Duran and It is at	1 03370	16 25151					
<u>EPTI Au</u>	phatic/Aromatic Ranges		Prepared by meth							
	C9-C18 Aliphatic Hydrocarbons	43.3	35.3 mg/kg dry	1	+MADEP 5/2004 R		06-Mar-05 :	50 30185	M.B	
	C19-C36 Aliphatic Hydrocarbons	BRL	35.3 mg/kg dry	1	P	**	н	•	H	
	C11-C22 Aromatic Hydrocarbons	40.6	35.3 mg/kg dry	1	*	14	17		"	
	Unadjusted C11-C22 Aromatic Hydrocarbons		35.3 mg/kg dry	1	п		н	n	ņ	
	•	84.0	35.3 mg/kg dry	1	н		"	п		
	Unadjusted Total Petroleum Hydrocarbons	91.9	35.3 mg/kg dry	1	и	11	"	N	H	
<u>EPH Tar</u>	r <u>get PAH Analytes</u>		Prepared by meth-	od SW84	46 3545A					
91-20-3	Naphthalene	3,920	176 µg/kg dry	1	R	п	"	н	ŀŕ	
91-57-6	2-Methylnaphthalene	3,990	176 μg/kg dry	1	w	ч	"	IJ	H.	
208-96-8	Acenaphthylene	BRL	176 μg/kg dry	í	n	н		u	"	
83-32-9	Acenaphthene	BRL	176 μg/kg dry	ł	"	U	"	U		
86-73-7	Fluorene	BRL	176 µg/kg dry	I	"	н	"	Ð		
85-01-8	Phenanthrene	BRL	176 μg/kg dry	l	n		"	n		
120-12-7	Anthracene	BRL	176 µg/kg dry	1	IJ		u	н	n	
206-44-0	Fluoranthene	BRL	176 μg/kg dry	1	ti.	"	u	н	*	
129-00-0	Ругепе	BRL	176 µg/kg dry	1	и	"	н	HT.	я	
56-55-3	Benzo (a) anthracene	BRL	176 µg/kg dry	1	17		n	*	7	
218-01-9	•	BRL	176 µg/kg dry	1	n	н		11	"	
205-99-2	Benzo (b) fluoranthene	BRL	176 μg/kg dry	1	11	••	"	tí	π	

<u>Sample I</u> B103 S1 SA2467			<u>Client Project #</u> [none]	<u>Matr</u> Soi		llection Da 8-Feb-05			leceived -Mar-0	
CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
Extracta	able Petroleum Hydrocar	bons	-							
<u>EPH Tar</u>	rget PAH Analytes		Prepared by meth	od SW8	46 3545A					
207-08-9	Benzo (k) fluoranthene	BRL	176 µg/kg dry	1	+MADEP 5/2004 R	03-Mar-05	06-Mar-05	5030185	M.B	
50-32-8	Benzo (a) pyrene	BRL	176 μg/kg dry	1	17			"	н	
193-39-5	Indeno (1,2,3-cd) pyrene	BRL	176 μg/kg dry	1	n	*	н	U	"	
53-70-3	Dibenzo (a,h) anthracene	BRL	176 µg/kg dry	1	n	*	n	н	11	
191-24-2	Benzo (g,h,i) perylene	BRL	176 µg/kg d r y	1		"	н	n	"	
Surrogate	e recoveries:					•			•••	
3386-33-2	1-Chlorooctadecane	53.7	40-140 %		"	"	**	•	"	
84-15-i	Ortho-Terphenyl	56.0	40-140 %			н	H		н	
580-13-2	2-Bromonaphthalene	53.0	40-140 %		19	н		**	"	
321-60-8 [.]	2-Fluorobiphenyl	76.8	40-140 %) *	Ш	п	u	Ħ	
General	Chemistry Parameters									
	% Solids	91.9	%	1	SM2540 G Mod.	01-Mar-05	02-Mar-05	5030086	AJ	

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B104 S1 SA2467		<u>Cli</u>	ent Project # [none]	<u>Matr</u> Soi		lection Da 8-Feb-05			eceived -Mar-0:	
CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
Volatile	Organic Compounds	m ¹ .13		1	voc	01 Mar 05	01 May 06	5020000	FO	
	VOC Extraction	Field extracted	N/A	-		01-Mar-05	01-Mar-05	2020088		
<u>VPH Ali</u>	iphatic/Aromatic Carbon Rang		Prepared by meth							VOCI
	C5-C8 Aliphatic Hydrocarbons		11.9 mg/kg dry	1000	+MADEP 5/2004 Rev. 1.1		03-Mar-05	5030179	SS "	
	C9-C12 Aliphatic Hydrocarbons	350	3.96 mg/kg dry	1000 1000		"	"	"	"	
	C9-C10 Aromatic Hydrocarbons	216	3.96 mg/kg dry	1000						
	Unadjusted C5-C8 Aliphatic Hydrocarbons	1,150	11.9 mg/kg dry	1000	71	"	n	н	#	
	Unadjusted C9-C12 Aliphatic Hydrocarbons	565	3.96 mg/kg dry	1000	"	n	н	r	н	
<u>VPH Ta</u>	rget Analytes		Prepared by meth	od VPH					,	voci
71-43-2	Benzene	BRL	793 μg/kg dry	1000	11	**	**	н	*1	
100-41-4	Ethylbenzene	2,720	793 µg/kg dry	1000		"	н		н	
1634-04-4	Methyl tert-butyl ether	BRL	793 μg/kg dry	1000	11	11	н		н	
91-20-3	Naphthalene	5,820	793 μg/kg dry	1000			и	"		
108-88-3	Toluene	5,990	793 μg/kg dry	1000	и	н		W	17	
1330-20-7	m,p-Xylene	9,100	1590 μg/kg dry	1000	n	н		я	н	
95-47-6	o-Xylene	2,620	793 μg/kg dry	1000	"	n	**	н	11	
Surrogate	e recoveries:									
615-59-8	2,5-Dibromotoluene (FID)	101	70-130 %		"	"	n	n		
615-59-8	2,5-Dibromotoluene (PID)	91.6	70-130 %		н	"	п	в		
Extract	able Petroleum Hydrocarboi	15								
	iphatic/Aromatic Ranges		Prepared by meth	od SW8	46 3545 A					
<u>DI 11 /111</u>	C9-C18 Aliphatic	129		I	+MADEP	02 Mar 05	06-Mar-05 :	5030105	M.B	
	Hydrocarbons		36.1 mg/kg dry		5/2004 R	03-IVIAI-03	. uo-mai-uj		WI.D	
	C19-C36 Aliphatic Hydrocarbons	BRL	36.1 mg/kg dry	1	~	u.	ĸ			
	C11-C22 Aromatic Hydrocarbons	57.3	36.1 mg/kg dry	1	Ħ	п		•	"	
	Unadjusted C11-C22 Aromatic Hydrocarbons	59.5	36.1 mg/kg dry	1	"	н		n	n	
	Total Petroleum Hydrocarbons	200	36.1 mg/kg dry	1	"	71	"	и	U	
I	Unadjusted Total Petroleum Hydrocarbons	202	36.1 mg/kg dry	1	*1	и	Ŧ	н	н	
<u>EPH Ta</u>	rget PAH Analytes		Prepared by meth	od SW8	46 3545A					
91-20-3	Naphthalene	642	180 µg/kg dry	1	u	-1	"	h	"	
91-57-6	2-Methylnaphthalene	1,660	180 µg/kg dry	1	н	*1		n	v	
208-96-8	Acenaphthylene	BRL	180 µg/kg dry	1	*1	'n		n	"	
83-32-9	Acenaphthene	BRL	180 µg/kg dry	1	"	п	*	n		
86-73-7	Fluorene	BRL	180 µg/kg dry	1	u	"	#	0	n	
85-01-8	Phenanthrene	BRL	180 µg/kg dry	1	н	и	*	п	"	
120-12-7	Anthracene	BRL	180 µg/kg dry	1		r(Ħ	*1	H	
	Fluoranthene	BRL	180 µg/kg dry	1	n	'n		н	"	
206-44-0	7	BRL	180 µg/kg dry	1	u	n	*	11	"	
206-44-0 129-00-0	Pyrene	DICL								
	Pyrene Benzo (a) anthracene	BRL	180 µg/kg dry	1	u	и	*	M	"	
129-00-0	•				u **	"	74 19	74 51	"	

<u>Sample I</u> B104 S1 SA24673			<u>Client Project #</u> [none]	<u>Matr</u> Soi		llection Da 28-Feb-05		_	<u>teceived</u> -Mar-05
CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst Flag
Extracta	able Petroleum Hydrocarl	bons							
<u>EPH Tar</u>	rget PAH Analytes		Prepared by meth	od SW8	46 3545A				
207-08-9	Benzo (k) fluoranthene	BRL	180 µg/kg dry	1	+MADEP 5/2004 R	03-Mar-05	06-Mar-05	5030185	M.B
50-32-8	Benzo (a) pyrene	BRL	180 µg/kg dry	1	н	н.	и	14	н
193-39-5	Indeno (1,2,3-cd) pyrene	BRL	180 μg/kg dry	1	"	17	11	"	п
53-70-3	Dibenzo (a,h) anthracene	BRL	180 µg/kg dry	1	n	19	H	"	n
191-24-2	Benzo (g,h,i) perylene	BRL	180 µg/kg dry	1	п	17	"	"	
Surrogate	e recoveries:		,						
3386-33-2	1-Chlorooctadecane	109	40-140 %		п	*	11	н	17
84-15-1	Ortho-Terphenyl	71.2	40-140 %		и		"	н	m
580-13-2	2-Bromonaphthalene	56.5	40-140 %		п	**	u	п	n
321-60-8	2-Fluorobiphenyl	78.7	40-140 %		и	**	"	n	u.
General	Chemistry Parameters								
	% Solids	89.2	%	1	SM2540 G Mod.	01-Mar-05	02-Mar-05	5030086	AJ

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Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flay
Batch 5030179 - VPH									1 14
Blank (5030179-BLK1)			Prepared a	Pr Anolyza	d. 02 Ma	- 05			
C5-C8 Aliphatic Hydrocarbons	BRL	0.750 mg/kg wet	Trepared	& Allalyze	u. 05-iviai	-05		-	
C9-C12 Aliphatic Hydrocarbons	BRL	0.250 mg/kg wet							
C9-C10 Aromatic Hydrocarbons	BRL	0.250 mg/kg wet							
Unadjusted C5-C8 Aliphatic Hydrocarbons	BRL	0.750 mg/kg wet							
Unadjusted C9-C12 Aliphatic Hydrocarbons	BRL	0.250 mg/kg wet							
Benzene	BRL	50.0 μg/kg wet							
Ethylbenzene	BRL	50.0 μg/kg wet							
Methyl tert-butyl ether	BRL	50.0 µg/kg wet							
Naphthalene	BRL	50.0 μg/kg wet							
Toluene	BRL	50.0 µg/kg wet							
m,p-Xylene	BRL	100 µg/kg wet							
o-Xyiene	BRL	- 50.0 μg/kg wet							
Surrogate: 2,5-Dibromotoluene (FID)	65.0	μg/kg wet	50.0		130	70-130			
Surrogate: 2,5-Dibromotoluene (PID)	58.3	μg/kg wet	50.0		117	70-130			
LCS (5030179-BS1)			Prepared &	& Analyze	d: 03-Mar	-05			
C5-C8 Aliphatic Hydrocarbons	170	mg/kg wet	180		94.4	70-130			
C9-C12 Aliphatic Hydrocarbons	59.1	mg/kg wet	80.0		73.9	70-130			
C9-C10 Aromatic Hydrocarbons	32.2	mg/kg wet	30.0		107	70-130			
Unadjusted C5-C8 Aliphatic Hydrocarbons	278	mg/kg wet	320		86.9	70-130			
Unadjusted C9-C12 Aliphatic Hydrocarbons	91.4	mg/kg wet	110		83.1	70-130			
Benzene	15.2	μg/kg wet	20.0		76.0	70-130			
Ethylbenzene	15.1	μg/kg wet	20.0		75.5	70-130			
Methyl tert-butyl ether	16.5	μg/kg wet	20.0		82.5	70-130			
Naphthalene	18.1	μg/kg wet	20.0		90.5	70-130			
Toluene	15.2	μg/kg wet	20.0		76.0	70-130			
m,p-Xylene	30.1	μg/kg wet	40.0		75.2	70-130			
o-Xylene	15.4	μg/kg wet	20.0		77.0	70-130			
2-Methylpentane n-Nonane	15.5	μg/kg wet	20.0		77.5	70-130			
n-Pentane	14.8	μg/kg wet	20.0		74.0	70-130			
1,2,4-Trimethylbenzene	16.3 15.9	μg/kg wet	20.0		81.5	70-130			
2,2,4-Trimethylpentane	15.5	µg/kg wet	20.0		79.5	70-130			
n-Butylcyclohexane	15.5	μg/kg wet	20.0		77.5	70-130			
n-Decane	16.2	μg/kg wet μg/kg wet	20.0		78.5	70-130			
Surrogate: 2,5-Dibromotoluene (FID)			20.0		81.0	70-130		·	
Surrogate: 2,5-Dibromotoluene (FID) Surrogate: 2,5-Dibromotoluene (PID)	62.9 55.6	μg/kg wet	50.0		126	70-130			
-	55.6	μg/kg wet	50.0		111	70-130			
LCS Dup (5030179-BSD1)			Prepared 8	z Analyze					
C5-C8 Aliphatic Hydrocarbons	159	mg/kg wet	180		88.3	70-130	6.68	25	
C9-C12 Aliphatic Hydrocarbons	58.0	mg/kg wet	80.0		72.5	70-130	1.91	25	
C9-C10 Aromatic Hydrocarbons	28.0	mg/kg wet	30.0		93.3	70-130	13.7	25	
Unadjusted C5-C8 Aliphatic Hydrocarbons	262	mg/kg wet	320		81.9	70-130	5.92	25	
Unadjusted C9-C12 Aliphatic Hydrocarbons	86.0	mg/kg wet	110		78.2	70-130	6.08	25	
Benzene	14.9	μg/kg wet	20.0		74.5	70 120	1.00	26	
Ethylbenzene	14.2	μg/kg wet	20.0		74.5 71.0	70-130 70-130	1.99 6.14	25 25	
Methyl tert-butyl ether	17.0	μg/kg wet	20.0		85.0	70-130	0.14 2.99	25 25	
Naphthalene	16.9	μg/kg wet	20.0		83.0 84.5	70-130	2.99 6.86	25 25	
Toluene	14.4	μg/kg wet	20.0		72.0	70-130	5.41	25	
m,p-Xylene	28.1	μg/kg wet	40.0		70.2	70-130	6.88	25 25	
o-Xylene	14.5	μg/kg wet	20.0		72.5	70-130	6.02	25	
2-Methylpentane	14.5	μg/kg wet	20,0		72.5	70-130	6.67	25	
n-Nonane	14.3	μg/kg wet	20.0		71.5	70-130	3,44	25	

Volatile Organic Compounds - Quality Control

This laboratory report is not valid without an authorized signature on the cover page.

* Reportable Detection Limit

BRL = Below Reporting Limit

Volatile Organic Compounds - Quality Control

			Spike	Source	0/10-0	%REC		RPD	
Analyte(s)	Result	*RDL Units	Level	Result	%REC	Limits	RPD	Limit	Fla
Batch 5030179 - VPH									
LCS Dup (5030179-BSD1)			Prepared	& Analyz	ed: 03-Ma	r-05			
n-Pentane	15.0	μg/kg wet	20.0	-	75.0	70-130	8.31	25	
1,2,4-Trimethylbenzene	14.7	μg/kg wet	20.0		73.5	70-130	7.84	25	
2,2,4-Trimethylpentane	14.2	µg/kg wet	20.0		71.0	70-130	8.75	25	
n-Butylcyclohexane	15.2	μg/kg wet	20.0		76.0	70-130	3.24	25	
n-Decane	15.4	μg/kg wet	20.0		77.0	70-130	5.06	25	
Surrogate: 2,5-Dibromotoluene (FID)	54.0	µg/kg wet	50.0		108	70-130			
Surrogate: 2,5-Dibromotoluene (PID)	47.0	μg/kg wet	50.0		94.0	70-130			
Duplicate (5030179-DUP1)	Sou	rce: SA24708-01	Prepared	& Analyza	ed: 03-Mai	-05			
C5-C8 Aliphatic Hydrocarbons	7.88	0.907 mg/kg dry		6.48			19.5	50	
C9-C12 Aliphatic Hydrocarbons	3.65	0.302 mg/kg dry		2.81			26.0	50	
C9-C10 Aromatic Hydrocarbons	1.37	0.302 mg/kg dry		1.33			2.96	50	
Unadjusted C5-C8 Aliphatic Hydrocarbons	8.68	0.907 mg/kg dry		7.25			18.0	50	
Unadjusted C9-C12 Aliphatic Hydrocarbons	5.02	0.302 mg/kg dry		4.13			19.5	50	
Benzene	BRL	60.5 µg/kg dry		BRL				50	
Ethylbenzene	BRL	60.5 μg/kg dry		BRL				50	
Methyl tert-butyl ether	684	60.5 μg/kg dry		681			0.440	50	
Naphthalene	64.6	60.5 μg/kg dry		40.3			46.3	50	
Toluene	BRL	60.5 µg/kg dry		33.3			18.5	50	
m,p-Xylene	BRL	121 μg/kg dry		52.7			30.0	50	
o-Xylene	BRL	60.5 µg/kg dry		BRL				50	
Surrogate: 2,5-Dibromotoluene (FID)	52.2	μg/kg dry	50.0		104	70-130			
Surrogate: 2,5-Dibromotoluene (PID)	48.8	μg/kg dry	50.0		97.6	70-130			
Matrix Spike (5030179-MS1)	Sou	rce: SA24708-04	Prepared of	& Analyze	ed: 03-Mai	-05			
Benzene	16.9	μg/kg dry	20.0	BRL	84.5	70-130			
Ethylbenzene	16.6	μg/kg dry	20.0	BRL	83.0	70-130			
Methyl tert-butyl ether	18.3	μg/kg dry	20.0	BRL	91.5	70-130			
Naphthalene	17.4	µg/kg dry	20,0	BRL	87.0	70-130			
Toluene	17.3	μg/kg dry	20.0	BRL	86.5	70-130			
m,p-Xylene	33.6	μg/kg dry	40.0	BRL	84.0	70-130			
o-Xylene	16.8	μg/kg dry	20.0	BRL	84.0	70-130			
2-Methylpentane	20.0	μg/kg dry	20,0	BRL	100	70-130			
n-Nonane	19.7	µg/kg dry	20.0	BRL	98.5	70-130			
n-Pentane	23.5	μg/kg dry	20.0	BRL	118	70-130			
1,2,4-Trimethylbenzene	16.9	μg/kg dry	20.0	BRL	84.5	70-130			
2,2,4-Trimethylpentane	21.0	μg/kg dry	20.0	BRL	105	70-130			
n-Butylcyclohexane	20.5	μg/kg dry	20.0	0.0	102	70-130			
n-Decane	22.4	μg/kg dry	20.0	0.0	112	70- 130			
Surrogate: 2,5-Dibromotoluene (FID)	54.3	μg/kg dry	50.0		109	70-130			
Surrogate: 2,5-Dibromotoluene (PID)	47.7	µg/kg dry	50.0		95.4	70-130			

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Fla
Batch 0503019 - 5030185	n an air an an an an an an an an an an an an an				· - · · ·				
Calibration Check (0503019-CCV1)			Prepared:	03-Mar-0	5 Analyze	d: 04-Mar	-05		
C9-C18 Aliphatic Hydrocarbons	0.671	mg/kg wet	0.600	<u> </u>	112	75-125	-00		
C19-C36 Aliphatic Hydrocarbons	0,896	mg/kg wet	0.800		112	75-125			
C11-C22 Aromatic Hydrocarbons	1.54	mg/kg wet	1.70		90.6	75-125			
Naphthalene	90.9	μg/kg wet	100		90.9	80-120			
2-Methylnaphthalene	94.7	μg/kg wet	100		94.7	80-120			
Acenaphthylene	89.2	μg/kg wet	100		89.2	80-120			
Acenaphthene	89.9	μg/kg wet	100		89.9	80-120			
Fluorene	92.8	μg/kg wet	100		92.8	80-120			
Phenanthrene	91.4	μg/kg wet	100		91.4	80-120			
Anthracene	90.2	μg/kg wet	100		90.2	80-120			
Fluoranthene	106	µg/kg wet	100		106	80-120			
Pyrene	100	μg/kg wet	100		100	80-120			
Benzo (a) anthracene	102	μg/kg wet	100		102	80-120			
Chrysene	105	μg/kg wet	100		105	80-120			
Benzo (b) fluoranthene	86.7	μg/kg wet	100		86.7	80-120			
Benzo (k) fluoranthene	119	μg/kg wet	100		119	80-120			
Benzo (a) pyrene	101	µg/kg wet	100		101	80-120			
Indeno (1,2,3-cd) pyrene	84.5	µg/kg wet	100		84.5	80-120			
Dibenzo (a,h) anthracene	84.7	µg/kg wet	100		84.7	80-120			
Benzo (g,h,i) perylene	80.6	μg/kg wet	100		80.6	80-120			
Calibration Check (0503019-CCV2)			Prepared:	03-Mar-05	Analyzed		05		
C9-C18 Aliphatic Hydrocarbons	0.711	mg/kg wet	0.600		118	75-125			
C19-C36 Aliphatic Hydrocarbons	0.957	mg/kg wet	0.800		120	75-125			
C11-C22 Aromatic Hydrocarbons	1,53	mg/kg wet	1.70		90.0	75-125			
Naphthalene	98.1	μg/kg wet	100		98.1	80-120			
2-Methylnaphthalene	94.8	μg/kg wet	100		94.8	80-120			
Acenaphthylene	95.1	μg/kg wet	100		95.1	80-120			
Acenaphthene	93.1	μg/kg wet	100		93.1	80-120			
Fluorene	96. 6	μg/kg wet	100		96.6	80-120			
Phenanthrene	96.9	μg/kg wet	100		96.9	80-120			
Anthracene	92.4	μg/kg wet	100		92.4	80-120			
Fluoranthene	109	μg/kg wet	100		109	80-120			
Pyrene	97.6	μg/kg wet	100		97.6	80-120			
Benzo (a) anthracene	89.8	μg/kg wet	100		89.8	80-120			
Chrysene	99.4	μg/kg wet	100		85.8 99.4	80-120			
Benzo (b) fluoranthene	76.7	μg/kg wet	100		76.7	80-120			QC-
Benzo (k) fluoranthene	95.2	μg/kg wet	100		95.2	80-120			20-
Benzo (a) pyrene	84.6	μg/kg wet	100		84.6	80-120			
Indeno (1,2,3-cd) pyrene	. 92.8	µg/kg wet	100		92.8	80-120			
Dibenzo (a,h) anthracene	89.0	μg/kg wet	100		89.0	80-120			
Benzo (g,h,i) perylene	98.3	μg/kg wet	100		98.3	80-120			
atch 5030185 - SW846 3545A									
Blank (5030185-BLK1)			Prepared: (3-Mar-05	Analyzed	· 04-Mar-(15		
C9-C18 Aliphatic Hydrocarbons	BRL	13.4 mg/kg wet	<u>riepureu</u>	<i>55 Mill</i> 05	/ mary zeo		, <u>,</u> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
C19-C36 Aliphatic Hydrocarbons	BRL	13.4 mg/kg wet							
C11-C22 Aromatic Hydrocarbons	BRL	13.4 mg/kg wet							
Jnadjusted C11-C22 Aromatic Hydrocarbons	BRL	13.4 mg/kg wet							
Fotal Petroleum Hydrocarbons	BRL	13.4 mg/kg wet							
Jnadjusted Total Petroleum Hydrocarbons	BRL	13.4 mg/kg wet							
vaphthalene	BRL	66.5 μg/kg wet							
-Methylnaphthalene	BRL	66.5 μg/kg wet							
		r.o							

Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch 5030185 - SW846 3545A	<u> </u>			_					
Blank (5030185-BLK1)			Prenared:	03-Mar-0	5 Analyze	d: 04-Mar	-05		
Acenaphthene	BRL	66.5 µg/kg wet					<u> </u>		
Fluorene	BRL	66.5 μg/kg wet							
Phenanthrene	BRL	66.5 μg/kg wet							
Anthracene	BRL	66.5 µg/kg wet							
Fluoranthene	BRL	66.5 µg/kg wet							
Pyrene	BRL	66.5 µg/kg wet							
Benzo (a) anthracene	BRL	66.5 µg/kg wet							
Chrysene	BRL	66.5 µg/kg wet							
Benzo (b) fluoranthene	BRL	66.5 µg/kg wet							
Benzo (k) fluoranthene	BRL	66.5 µg/kg wet							
Benzo (a) pyrene	BRL	66.5 µg/kg wet							
Indeno (1,2,3-cd) pyrene	BRL	66.5 µg/kg wet							
Dibenzo (a,h) anthracene	BRL	66.5 µg/kg wet							
Benzo (g,h,i) perylene	BRL	66.5 µg/kg wet							
Surrogate: 1-Chlorooctadecane	2690	μg/kg wet	3330		80.8	40-140			
Surrogate: Ortho-Terphenyl	2260	μg/kg wet	3330		67.9	40-140			
Surrogate: 2-Bromonaphthalene	613	μg/kg wet	2670		23.0	40-140			S-G(
Surrogate: 2-Fluorobiphenyl	1780	μg/kg wet	2670		66.7	40-140			
LCS (5030185-BS1)		10 0		03-Mar-0	5 Analyzed	1· 04-Mar.	.05		
C9-C18 Aliphatic Hydrocarbons	32.7	13.4 mg/kg wet	40.0	05-11111-0	81.8	40-140	<u> </u>		
CI9-CI8 Aliphatic Hydrocarbons	62.9	13.4 mg/kg wet	53.3		118	40-140			
C11-C22 Aromatic Hydrocarbons	70.7	13.4 mg/kg wet	113		62.6	40-140			
Naphthalene	2790	66.5 μg/kg wet	6670		41.8	40-140			
2-Methylnaphthalene	3300	66.5 μg/kg wet	6670		49.5	40-140			
Acenaphthylene	3330	66.5 μg/kg wet	6670		49.9	40-140			
Acenaphthene	3550	66.5 μg/kg wet	6670		53.2	40-140			
Fluorene	4220	66.5 μg/kg wet	6670		63.3	40-140			
Phenanthrene	4400	66.5 μg/kg wet	6670		66.0	40-140			
Anthracene	4120	66.5 μg/kg wet	6670		61.8	40-140			
Fluoranthene	5510	66.5 μg/kg wet	6670		82.6	40-140			
Pyrene	4960	66.5 μg/kg wet	6670		74.4	40-140			
Benzo (a) anthracene	4990	66.5 μg/kg wet	6670		74.8	40-140			
Chrysene	5560	66.5 μg/kg wet	6670		83.4	40-140			
Benzo (b) fluoranthene	4620	66.5 μg/kg wet	6670		69.3	40-140			
Benzo (k) fluoranthene	5090	66.5 μg/kg wet	6670		76.3	40-140			
Benzo (a) pyrene	3920	66.5 μg/kg wet	6670		58.8	40-140			
Indeno (1,2,3-cd) pyrene	3100	66.5 µg/kg wet	6670		46.5	40-140			
Dibenzo (a,h) anthracene	3250	66.5 μg/kg wet	6670		48.7	40-140			
Benzo (g,h,i) perylene	2610	66.5 μg/kg wet	6670		39.1	40-140			QC-1
Naphthalene (aliphatic fraction)	0.00667	μg/kg wet	6670		0.000100	0-200			QU-1
2-Methylnaphthalene (aliphatic fraction)	0.00667	μg/kg wet	6670		0.000100	0-200			
Surrogate: 1-Chlorooctadecane	3080	μg/kg wet	3330		92.5	40-140			
Surrogate: Ortho-Terphenyl	2340	μg/kg wet	3330		70.3	40-140			
Surrogate: 2-Bromonaphthalene	1190	μg/kg wet	2670		44.6	40-140			
Surrogate: 2-Eromonaphinatene Surrogate: 2-Fluorobiphenyl	1720	μg/kg wet	2670		64.4	40-140 40-140			
Naphthalene Breakthrough	0,00	%				0-5			
Naphtnalene Breakthrough 2-Methylnaphthalene Breakthrough	0.00	70 %				0-5			
· ·		70	Dag	0. A	4.0234				
Fractionation Check Standard (50301)		104		∝ Analyze	ed: 03-Mar				
C9-C18 Aliphatic Hydrocarbons	23.1	13.4 mg/kg wet	40.0		57.8	40-140			
C19-C36 Aliphatic Hydrocarbons	47.5	13.4 mg/kg wet	53.3		89.1	40-140			
C11-C22 Aromatic Hydrocarbons	84.0	13.4 mg/kg wet	113		74.3	40-140			
Naphthalene	3590	66.5 μg/kg wet	6670		53.8	40-140			
2-Methylnaphthalene	4010	66.5 μg/kg wet	6670		60.1	40-140			

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Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch 5030185 - SW846 3545A								-	
Fractionation Check Standard (50301)	85-BS2)		Prepared	& Analyze	ed: 03-Mai	-05			
Acenaphthylene	4190	66.5 μg/kg wet	6670		62.8	40-140			
Acenaphthene	4090	66.5 µg/kg wet	6670		61.3	40-140			
Fluorene	4530	66.5 μg/kg wet	6670		67.9	40-140			
Phenanthrene	4560	66.5 µg/kg wet	6670		68.4	40-140			
Anthracene	4530	66.5 µg/kg wet	6670		67.9	40-140			
Fluoranthene	5610	66.5 µg/kg wet	6670		84.I	40-140			
Pyrene	5140	66.5 µg/kg wet	6670		77.L	40-140			
Benzo (a) anthracene	5320	66.5 µg/kg wet	6670		79.8	40-140			
Chrysene	5710	66.5 µg/kg wet	6670		85.6	40-140			
Benzo (b) fluoranthene	4740	66.5 μg/kg wet	6670		71.1	40-140			
Benzo (k) fluoranthene	5640	66.5 µg/kg wet	6670		84.6	40-140			
Benzo (a) pyrene	4990	66.5 μg/kg wet	6670		74.8	40-140			
Indeno (1,2,3-cd) pyrene	4310	66.5 µg/kg wet	6670		64.6	40-140			
Dibenzo (a,h) anthracene	4300	66.5 µg/kg wet	6670		64.5	40-140			
Benzo (g,h,i) perylene	4040	66.5 μg/kg wet	6670		60.6	40-140			
Naphthalene (aliphatic fraction)	0.00667	μg/kg wet	6670		0.000100	0-200			
2-Methylnaphthalene (aliphatic fraction)	0.00667	μg/kg wet	6670		0.000100	0-200			
Surrogate: 1-Chlorooctadecane	2460	μg/kg wet	3330		73.9	40-140			
Surrogate: Ortho-Terphenyl	2330	μg/kg wet	3330		70.0	40-140			
Surrogate: 2-Bromonaphthalene	2010	μg/kg wet	2670		75.3	40-140			
Surrogate: 2-Fluorobiphenyl	1950	μg/kg wet	2670		73.0	40-140			
LCS Đup (5030185-BSD1)			Prepared:	03-Mar-0	5 Analyze	d: 04-Mar	-05		
C9-C18 Aliphatic Hydrocarbons	30.5	13.4 mg/kg wet	40.0		76.2	40-140	7.09	25	
C19-C36 Aliphatic Hydrocarbons	56.5	13.4 mg/kg wet	53.3		106	40-140	10.7	25	
C11-C22 Aromatic Hydrocarbons	68.7	13.4 mg/kg wet	113		60.8	40-140	2.92	25	
Naphthalene	2640	66.5 µg/kg wet	6670		39.6	40-140	5.41	30	QC-
2-Methylnaphthalene	3330	66.5 µg/kg wet	6670		49.9	40-140	0.805	30	•
Acenaphthylene	3380	66.5 μg/kg wet	6670		50.7	40-140	1.59	30	
Acenaphthene	3580	66.5 µg/kg wet	6670		53.7	40-140	0.935	30	
Fluorene	4190	66.5 μg/kg wet	6670		62.8	40-140	0.793	30	
Phenanthrene	4160	66.5 µg/kg wet	6670		62.4	40-140	5.61	30	
Anthracene	3970	66.5 µg/kg wet	6670		59.5	40-140	3.79	30	
Fluoranthene	5120	66.5 µg/kg wet	6670		76.8	40-140	7.28	30	
Pyrene	4420	66.5 µg/kg wet	6670		66.3	40-140	11.5	30	
Benzo (a) anthracene	5250	66.5 µg/kg wet	6670		78.7	40-140	5.08	30	
Chrysene	4580	66.5 µg/kg wet	6670		68.7	40-140	19.3	30	
Benzo (b) fluoranthene	4530	66.5 µg/kg wet	6670		67.9	40-140	2.04	30	
Benzo (k) fluoranthene	4760	66.5 µg/kg wet	6670		71.4	40-140	6.64	30	
Benzo (a) pyrene	3780	66.5 µg/kg wet	6670		56.7	40-140	3.64	30	
Indeno (1,2,3-cd) pyrene	3230	66.5 μg/kg wet	6670		48.4	40-140	4.00	30	
Dibenzo (a,h) anthracene	3370	66.5 μg/kg wet	6670		50.5	40-140	3.63	30	
Benzo (g,h,i) perylene	2730	66.5 μg/kg wet	6670		40.9	40-140	4.50	30	
Naphthalene (aliphatic fraction)	0.00667	μg/kg wet	6670		0.000100	0-200	0.00	200	
2-Methylnaphthalene (aliphatic fraction)	0.00667	μg/kg wet	6670		0.000100	0-200	0.00	200	
Surrogate: I-Chlorooctadecane	2730	μg/kg wet	3330		82.0	40-140			
Surrogate: Ortho-Terphenyl	2260	μg/kg wet	3330		67.9	40-140			
Surrogate: 2-Bromonaphthalene	799	μg/kg wet	2670		29.9	40-140			S-(
Surrogate: 2-Fluorobiphenyl	1740	μg/kg wet	2670		65.2	40-140			
Naphthalene Breakthrough	0.00	%				0-5			
2-Methylnaphthalene Breakthrough	0.00	%				0-5			

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch 5030086 - General Preparation									
Duplicate (5030086-DUP1)	Sou	rce: SA24677-04	Prepared:	01-Mar-0	d: 02-Mar	-05		-	
% Solids	87.9	%		89.2			1.47	20	

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General Chemistry Parameters - Quality Control

Notes and Definitions

QC-1 Analyte out of acceptance range.

S-GC Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.

vext2 Field extracted

VOC10 The VOC field preserved soil sample is not within the 1:1 weight to volume ratio as recommended by SW846 methods 5030 and 5035 but may be within the 1:1 volume to volume ratio.

- BRL Below Reporting Limit Analyte NOT DETECTED at or above the reporting limit
- dry Sample results reported on a dry weight basis
- NR Not Reported
- RPD Relative Percent Difference

A plus sign (+) in the Method Reference column indicates the method is not accredited by NELAC.

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

<u>Matrix Spike</u>: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

<u>Method Blank</u>: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

<u>Method Detection Limit (MDL</u>): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

<u>Reportable Detection Limit (RDL)</u>: The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

<u>Surrogate</u>: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Validated by: Hanibal C. Tayeh, Ph.D. Nicole Brown The following outlines the condition of all VPH samples contained within this report upon laboratory receipt.

Matrix	□ Aqueous	, E	Soil	□ Sediment	□ Other				
Containers	D Satisfact	ory [□ Broken	Leaking					
Comula	Aqueous (acid-preserved)		□ pH≤2	□ pH>2	Comment				
Sample Preservative	Soil or	Soil or DN/A Samples not received in Methanol or air-tight container							
	Sediment	-Sample	es received in	Methanol: 🖵 co	vering soil/sediment	D 1:4' +/-25%			
				□ no	ot covering soil/sediment				
		□ Sample	es received in	air-tight containe	r:				
Temperature	□ Received	on ice 🕻	Received a	$t 4 \pm 2 \degree C \Box Oth$	ier: °C				

Were all QA/QC procedures followed as required by the VPH method? Yes <u>No</u> No Were any significant modifications made to the VPH method as specified in section 11.3? No *see below

Were all performance/acceptance standards for required QA/QC procedures achieved? Yes

* Yes, if PID and FID surrogate recoveries are listed as n/a, then that sample was run via GCMS using all QC criteria specified in the method

The following outlines the condition of all EPH samples contained within this report upon laboratory receipt.

Matrix		lueous	E So	il 🗖	Sediment	□ Other		
Containers	t Sa	tisfactory	🗆 Br	oken 🛛	Leaking		•	-
Aqueous Prese	rvative	B-N/A	□ pH≤2	□ pH>2	🗅 pH adjust	ted to <2 in lab	Comment	
Temperature		eceived on id	e 🖬 Rec	eived at $4 \pm$	2 °C □ Othe	r:	°C	

Were all QA/QC procedures followed as required by the EPH method? Yes No Were any significant modifications made to the EPH method as specified in Section 11.3? No Were all performance/acceptance standards for required QA/QC procedures achieved? Yes No

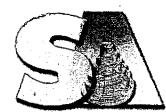
I attest that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Authorized by:

Hanibal C. Tayeh, Ph.D. President/Laboratory Director

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の			CHAIN O		CUS	TOD	Y R	F CUSTODY RECORD	C Standard	Special Handling TAT - 7 to 10 busin T - Date Needed: $\underline{2}$	Standard TAT - 7 to 10 business days Rush TAT - Date Needed: 346/05 All TATs are subject to laboratory approval
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Project Mgr.:	- TPSimon	2	P.O.	P.O. No.:		RQN:		Sampler(s):	. Salt		
1=Na ₂ S ₂ O ₃ 2=1 7=CH ₃ OH 8=N	$\frac{2=HCI}{8=NaHSO_4} = \frac{3=H_2SO_4}{9=-4}$	4=HNO3 5	5=NaOH 6=A5 10=	6=Ascorbic Acid		Containers:	.s.	Analyses.	2:	-	Notes:
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Report Date: 08-Apr-05 15:23



Final Report Re-Issued Report Revised Report

file

SPECTRUM ANALYTICAL, INC. Featuring HANIBAL TECHNOLOGY

Laboratory Report

REMSERV, Inc. 35 Winthrop Street Winchester, MA 01890 Attn: Tom Simmons

Project: Bossi's-12 Swanton St-MA Project #: 24124-1

Laboratory ID	<u>Client Sample ID</u>	Matrix	Date Sampled	Date Received
SA26066-01	B101-MW	Ground Water	01-Apr-05 10:45	05-Apr-05 15:10
SA26066-02	B103-MW	Ground Water	01-Apr-05 12:15	05-Apr-05 15:10
SA26066-03	B104-MW	Ground Water	01-Apr-05 12:45	05-Apr-05 15:10
SA26066-04	MW-1	Ground Water	01-Apr-05 13:45	05-Apr-05 15:10
SA26066-05	MW-4	. Ground Water	01-Apr-05 13:00	05-Apr-05 15:10
SA26066-06	B102B	Ground Water	01-Apr-05 14:00	05-Apr-05 15:10
SA26066-07	B102B	Ground Water	04-Apr-05 09:45	05-Apr-05 15:10

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. All applicable NELAC requirements have been met.

Please note that this report contains 20 pages of analytical data plus Chain of Custody document(s).

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Hanibal (7 Tayeh, Ph.D. President/Laboratory Director

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ENVIRONMENTAL ANALYSES

B101-M SA2606			<u>Client Project #</u> 24124-1	<u>Matr</u> Ground		lection Da 1-Apr-05			eceived Apr-05
CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst Fla
Volatile	Organic Compounds		····						
<u>VPH Ali</u>	phatic/Aromatic Carbon Rang	es	Prepared by me	thod VPH					
	C5-C8 Aliphatic Hydrocarbons	1.11	0.150 mg/l	10	+MADEP	06-Apr-05	07-Apr-05	5040231	KW
	C9-C12 Aliphatic Hydrocarbons	1.11	0.0500 mg/l	10	5/2004 Rev. 1.1	"	н	n	•
	C9-C10 Aromatic Hydrocarbons	4.23	0.0500 mg/l	10	n		"	я	н
	Unadjusted C5-C8 Aliphatic Hydrocarbons	1.40	0.150 mg/l	10	II	n	rt	"	1ł
	Unadjusted C9-C12 Aliphatic Hydrocarbons	5.34	0.0500 mg/l	10	II	n	п	"	u
VPH Ta	rget Analytes		Prepared by me	thod VPH					
71-43-2	Benzene	BRL	5.0 μg/l	10	ш	н	17	11	10
100-41-4	Ethylbenzene	58.5	5.0 μg/l	10	н	н	11	"	
1634-04-4	Methyl tert-butyl ether	BRL	5.0 μg/l	10	п	н	и	. 11	10
91-20-3	Naphthalene	92.4	5.0 μg/l	10	н	н	н	"	и
108-88-3	Toluene	7.2	5.0 μg/l	10	**	"	U.	H	h
1330-20-7	m,p-Xylene	212	10.0 μg/l	10	**	n	n	"	n
95-47-6	o-Xylene	12.3	5.0 μg/l	10	**	"	N	4	и
Surrogate	e recoveries:								
615-59-8	2,5-Dibromotoluene (FID)	105	70-130 %		**	••	н	"	и
615-59-8	2,5-Dibromotoluene (PID)	105	70-130 %		11	"		11	н
Extract	able Petroleum Hydrocarbo	15							
	phatic/Aromatic Ranges		Prepared by me	thod SW8	46 3510C				
	C9-C18 Aliphatic Hydrocarbons	0.3	0.2 mg/l	I	+MADEP 5/2004 R	06-Apr-05	08-Apr-05	5040219	M.B
	C19-C36 Aliphatic	BRL	0.2 mg/l	t	n				
	Hydrocarbons	Ditt	0.2 mg 1	1			'n		"
	Hydrocarbons C11-C22 Aromatic Hydrocarbons	0.6	0.2 mg/l	l	U	II	"		14
	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons	0.6 0.8	0.2 mg/l 0.2 mg/l	I	"				и и
	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons	0.6 0.8 0.9	0.2 mg/l 0.2 mg/l 0.2 mg/l	l 1		II		14 14 14 14	" " "
	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons	0.6 0.8	0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l	1 1 1	11 11 11	II		10 14 14 14	n
<u>EPH Ta</u>	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <i>rget PAH Analytes</i>	0.6 0.8 0.9	0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l Prepared by me	1 1 1	11 11 11	II			11
	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons rget PAH Analytes Naphthalene	0.6 0.8 0.9 1.1 44.5	0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l	1 1 1	" " " 46 3510C "	11 11 14 14 14 14 14 14 14 14 14 14 14 1			11
91-20-3	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <i>rget PAH Analytes</i>	0.6 0.8 0.9 1.1	0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l Prepared by me 5.56 µg/l 5.56 µg/l	1 1 1	" " 46 3510C "	11 14 14 14 14 14 14 14 14 14 14 14 14 1	р ч ч	"	11 11 44 39
91-20-3 91-57-6 208-96-8	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <i>rget PAH Analytes</i> Naphthalene 2-Methylnaphthalene Acenaphthylene	0.6 0.8 0.9 1.1 44.5 96.3 BRL	0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l Prepared by me 5.56 μg/l 5.56 μg/l	I I I thod SW8 I	" " 46 3510C " "	11 11 14 14 14 14 14 14 14 14 14 14 14 1	" " "	# 17	11 11 44 19 11
91-20-3 91-57-6 208-96-8 83-32-9	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <i>rget PAH Analytes</i> Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene	0.6 0.8 0.9 1.1 44.5 96.3 BRL BRL	0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l Prepared by me 5.56 μg/l 5.56 μg/l 5.56 μg/l	1 1 thod SW8 1 1 1 1	" " 46 3510C "	11 14 14 14 14 14 14 14 14 14 14 14 14 1	• • • •	fr 17 11	1) 11 14 14 17 11
91-20-3 91-57-6 208-96-8 83-32-9 86-73-7	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <i>rget PAH Analytes</i> Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene	0.6 0.8 0.9 1.1 44.5 96.3 BRL BRL BRL	0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l Prepared by me 5.56 μg/l 5.56 μg/l 5.56 μg/l 5.56 μg/l	1 1 thod SW8 1 1 1 1 1	" " 46 3510C " "	11 12 14 14 14 14 14 14 14 14 14 14 14 14 14	" " " "	er 17 11 13	11 11 14 14 17 17 17 17 17 17 17 17 17 17 17 17 17
91-20-3 91-57-6 208-96-8 83-32-9 86-73-7 85-01-8	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <i>rget PAH Analytes</i> Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene	0.6 0.8 0.9 1.1 44.5 96.3 BRL BRL BRL BRL	0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l Prepared by me 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l	1 1 thod SW8 1 1 1 1 1 1	" " 46 3510C " "	11 12 14 14 14 14 14 14 14 14 14 14 14 14 14		fr 17 11	11 11 14 19 11 11 11 11 11 11 11
91-20-3 91-57-6 208-96-8 83-32-9 86-73-7 85-01-8 120-12-7	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <i>rget PAH Analytes</i> Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene	0.6 0.8 0.9 1.1 44.5 96.3 BRL BRL BRL BRL BRL	0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l Prepared by me 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l	1 1 thod SW8 1 1 1 1 1 1 1 1	" " 46 3510C " "	11 11 12 14 14 14 14 14 14 14 14 14 14 14 14 14	" " " "	er 17 11 13	1) 11 12 14 14 14 14 14 14 14 14 14 14 14 14 14
91-20-3 91-57-6 208-96-8 83-32-9 86-73-7 85-01-8 120-12-7 206-44-0	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <i>rget PAH Analytes</i> Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene	0.6 0.8 0.9 1.1 44.5 96.3 BRL BRL BRL BRL BRL BRL BRL	0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l Prepared by me 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l	1 1 thod SW8 1 1 1 1 1 1 1 1 1	" " 46 3510C " "	11 11 12 14 14 15 14 14 14 14 14 14 14 14 14 14 14 14 14	• • • • • • • • • • • • • • • • • • •	er 17 11 13	11 11 12 14 14 14 14 14 14 14 14 14 14 14 14 14
91-20-3 91-57-6 208-96-8 83-32-9 86-73-7 85-01-8 120-12-7 206-44-0 129-00-0	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <i>rget PAH Analytes</i> Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene	0.6 0.8 0.9 1.1 44.5 96.3 BRL BRL BRL BRL BRL BRL BRL BRL	0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l Prepared by me 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l	I 1 1 1 1 1 1 1 1 1 1 1 1 1 1	" " 46 3510C " " " " " " " " "		" " " " " " " "	er 17 11 13	11 11 14 19 10 10 10 11 11 11 11 11 11 11 11 11 11
91-20-3 91-57-6 208-96-8 83-32-9 86-73-7 85-01-8 120-12-7 206-44-0 129-00-0 56-55-3	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <i>rget PAH Analytes</i> Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene Benzo (a) anthracene	0.6 0.8 0.9 1.1 44.5 96.3 BRL BRL BRL BRL BRL BRL BRL BRL BRL	0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l Prepared by me 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	" " 46 3510C " " " " " " " " "		• • • • • • • • • • • • • • • • • • •	er 17 11 11	11 11 14 14 15 15 15 15 15 15 15 15 15 15 15 15 15
91-20-3 91-57-6 208-96-8 83-32-9 86-73-7 85-01-8 120-12-7 206-44-0 129-00-0 56-55-3 218-01-9	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <u>rget PAH Analytes</u> Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene Benzo (a) anthracene Chrysene	0.6 0.8 0.9 1.1 44.5 96.3 BRL BRL BRL BRL BRL BRL BRL BRL BRL BRL	0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l Prepared by me 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l	I 1 1 1 1 1 1 1 1 1 1 1 1 1 1	" " 46 3510C " " " " " " " " " " " " "		" " " " " " " "	er 17 11 11	11 11 12 14 14 14 14 14 14 14 14 14 14 14 14 14
91-20-3 91-57-6 208-96-8 83-32-9 86-73-7 85-01-8 120-12-7 206-44-0 129-00-0 56-55-3	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <i>rget PAH Analytes</i> Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene Benzo (a) anthracene	0.6 0.8 0.9 1.1 44.5 96.3 BRL BRL BRL BRL BRL BRL BRL BRL BRL	0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l Prepared by me 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l 5.56 µg/l	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	" " 46 3510C " " " " " " " " "		P N 1 1 1 1 1 1 1 1 1 1	44 17 17 17 17 17 17 17 17 17 17 17 17 17	11 11 17 17 17 17 17 17 17 17 17 17 17 1

<u>Sample I</u> B101-M SA26066			<u>Client Project #</u> 24124-1	<u>Matr</u> Ground		llection Da 11-Apr-05			eceived -Apr-05
CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst Flag
Extracta	ible Petroleum Hydrocar	bons							
<u>EPH Tar</u>	get PAH Analytes		Prepared by me	thod SW8	46 3510C				
50-32-8	Benzo (a) pyrene	BRL	5.56 µg/l	1	+MADEP 5/2004 R	06-Apr-05	08-Apr-05	5040219	M.B
193-39-5	Indeno (1,2,3-cd) pyrene	BRL	5.56 μg/l	1	н	**	11	н	"
\$3-70-3	Dibenzo (a,h) anthracene	BRL	5.56 µg/l	1	11	н		"	5
191-24-2	Benzo (g,h,i) perylene	BRL	5.56 µg/l	1	**	."	н	N	
Surrogate	recoveries:								
3386-33-2	1-Chlorooctadecane	73.4	40-140 %		и	n	"		н
84-15-1	Ortho-Terphenyl	64.2	40-140 %		"	н	п	Ħ	u
580-13-2	2-Bromonaphthalene	68.5	40-140 %		¥	40	"	n	n
321-60-8	2-Fluorobiphenyl	82.4	40-140 %			**	"	и	U

SA2606	<u>Identification</u> W 6-02		<u>Client Project #</u> 24124-1	<u>Matr</u> Ground		lection <u>Da</u> 1-Apr-05			eceived 5-Apr-05
CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst Fla
Volatile	Organic Compounds								
<u>VPH Ali</u>	phatic/Aromatic Carbon Rang	zes	Prepared by me	thod VPH		·			
	C5-C8 Aliphatic Hydrocarbons	17.4	0.750 mg/l	50	+MADEP 5/2004 Rev. 1.1		07-Apr-05	5040231	ĸw
	C9-C12 Aliphatic Hydrocarbons	2.56	0.250 mg/l	50	*	н	U	"	"
	C9-C10 Aromatic Hydrocarbons	8.95	0.250 mg/l	50	19	n	*	"	M
	Unadjusted C5-C8 Aliphatic Hydrocarbons	32.5	0.750 mg/l	50	n	и	IJ	n	n
	Unadjusted C9-C12 Aliphatic Hydrocarbons	11.5	0.250 mg/l	50	n	**	n	n	n
<u>VPH Tar</u>	rget Analytes		Prepared by met	hođ VPH					
71-43-2	Benzene	168	50.0 μg/l	50	**	**	n	н	
100-41-4	Ethylbenzene	1,790	50.0 μg/l	50	п	"		"	н
1634-04-4	Methyl tert-butyl ether	BRL	50.0 µg/l	50	н	н	19	"	11
91-20-3	Naphthalene	392	50.0 μg/l	50	H	"			"
108-88-3	Toluene	4,560	50.0 μg/l	50	н	11	"	н	н
1330-20-7	m,p-Xylene	6,090	100 μg/l	50	**	**	"	п	м
95-47-6	o-Xylene	2,480	50.0 μg/l	50	н	TT .	"	н	IF.
Surrogate	e recoveries:								
	2,5-Dibromotoluene (FID)	104	70-130 %		17	10	14		н
615-59-8	-,	- + •	/0 100 /0						
	2,5-Dibromotoluene (PID)	102	70-130 %		10	11	14	*	n
615-59-8		102			**	H	*	*	n
615-59-8 Extracta	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbor	102	70-130 %	hod SW84	" 46 3510C	19	17	**	n
615-59-8 Extracta	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon <u>phatic/Aromatic Ranges</u> C9-C18 Aliphatic	102		hod SW84 1	" 46 3510C +MADEP 5/2004 R	" 06-Apr-05	* 08-Apr-05 :	* 50402i9	" M.B
515-59-8 Extracta	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbor phatic/Aromatic Ranges	102 ns	70-130 % Prepared by met	hod SW84 1 1	+MADEP	" 06-Apr-05 "	" 08-Apr-05 :	" 5040219 "	
515-59-8 Extracta	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon ohatic/Aromatic Ranges C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic	102 ns 2.4	70-130 % Prepared by met 0.2 mg/l	1	+MADEP 5/2004 R	_	" 08-Apr-05 : "	" 5040219 "	
615-59-8 Extracta	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon <u>phatic/Aromatic Ranges</u> C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons	102 ns 2.4 BRL 0.6 0.9	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l	1	+MADEP 5/2004 R	_	" 08-Apr-05 : " "	т 5040219 н н	
515-59-8 Extracta	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon <u>phatic/Aromatic Ranges</u> C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons	102 ns 2.4 BRL 0.6 0.9 3.0	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l	1 1 1	+MADEP 5/2004 R "	_	" 08-Apr-05 : " "	4 11	M.B "
615-59-8 Extracta EPH Alij	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon <u>ohatic/Aromatic Ranges</u> C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons	102 ns 2.4 BRL 0.6 0.9	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l	1 1 1 1	+MADEP 5/2004 R " "	n H		4 11 11	M.B "
615-59-8 Extracta EPH Alij	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon <u>phatic/Aromatic Ranges</u> C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum	102 ns 2.4 BRL 0.6 0.9 3.0	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l	1 1 1 1 1 1 1	+MADEP 5/2004 R " " "	n H	0 0 0	9 11 11	M.B "
615-59-8 Extracta <u>EPH Ali</u> g	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon <u>ohatic/Aromatic Ranges</u> C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons	102 ns 2.4 BRL 0.6 0.9 3.0	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l	1 1 1 1 1 1 1	+MADEP 5/2004 R " " "	n H	0 0 0	9 11 11	M.B "
615-59-8 Extracta <u>EPH Ali</u> <u>EPH Tar</u> ⁰¹⁻²⁰⁻³	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon <u>phatic/Aromatic Ranges</u> C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <u>get PAH Analytes</u>	102 ns 2.4 BRL 0.6 0.9 3.0 3.2	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	+MADEP 5/2004 R " " "	n H	n 11 11 11	9 11 11	M.B "
615-59-8 Extracta E <u>PH Alig</u> P1-20-3 P1-57-6	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon <u>phatic/Aromatic Ranges</u> C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <u>Get PAH Analytes</u> Naphthalene	102 ns 2.4 BRL 0.6 0.9 3.0 3.2 165	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l Prepared by met 5.26 μg/l	1 1 1 1 1 1 1 1 1 1 1 1 1	+MADEP 5/2004 R " " "	п н ч	n 11 11 11	9 11 11	M.B "
615-59-8 Extracta <u>EPH Alig</u> D1-20-3 D1-57-6 208-96-8	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon <u>ohatic/Aromatic Ranges</u> C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <u>get PAH Analytes</u> Naphthalene 2-Methylnaphthalene	102 ns 2.4 BRL 0.6 0.9 3.0 3.2 165 105	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l Prepared by met 5.26 μg/l 5.26 μg/l	1 1 1 1 1 1 1 1 1	+MADEP 5/2004 R " " "	п Н Ч Ч	n 11 11 11	9 11 11	M.B "
615-59-8 Extracta <u>EPH Alip</u> 91-20-3 91-57-6 208-96-8 33-32-9	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon <u>phatic/Aromatic Ranges</u> C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <u>get PAH Analytes</u> Naphthalene 2-Methylnaphthalene Acenaphthylene	102 ns 2.4 BRL 0.6 0.9 3.0 3.2 165 105 BRL	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l	1 1 1 1 1 1 1 1 1	+MADEP 5/2004 R " " "	11 14 14 14 14 14 14 14 14 14 14 14 14 1	n 11 11 11	9 11 11	M.B "
615-59-8 Extracta EPH Alig D1-20-3 D1-57-6 208-96-8 33-32-9 36-73-7	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon <u>phatic/Aromatic Ranges</u> C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <u>get PAH Analytes</u> Naphthalene 2-Methylnaphthalene Acenaphthylene	102 ns 2.4 BRL 0.6 0.9 3.0 3.2 165 105 BRL BRL	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 5.26 μg/l 5.26 μg/l 5.26 μg/l	1 1 1 1 1 1 1 1 1	+MADEP 5/2004 R " " "	" " " " " " " "	n 11 11 11	9 11 11	M.B 11 17 18 18 18 18 19 17 17 17 17 17 17 17 17 17 17 17 17 17
615-59-8 Extracta <u>EPH Alig</u> 91-20-3 91-57-6 208-96-8 33-32-9 36-73-7 35-01-8	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon <u>ohatic/Aromatic Ranges</u> C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <u>get PAH Analytes</u> Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene	102 ns 2.4 BRL 0.6 0.9 3.0 3.2 165 105 BRL BRL BRL BRL	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 5.26 μg/l 5.26 μg/l 5.26 μg/l 5.26 μg/l	1 1 1 1 1 1 1 1 1 1 1 1	+MADEP 5/2004 R " " "	п Ч Ф Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц	n 11 11 11	9 11 11	M.B " " " " " " "
615-59-8 Extracta EPH Alig DI-20-3 DI-57-6 208-96-8 33-32-9 36-73-7 35-01-8 20-12-7	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon <u>ohatic/Aromatic Ranges</u> C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <u>get PAH Analytes</u> Naphthalene 2-Methylnaphthalene Acenaphthene Fluorene Phenanthrene	102 ns 2.4 BRL 0.6 0.9 3.0 3.2 165 105 BRL BRL BRL BRL BRL	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 5.26 μg/l 5.26 μg/l 5.26 μg/l 5.26 μg/l 5.26 μg/l	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	+MADEP 5/2004 R " " "	п Ч Ф Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц	n 11 11 11	9 11 11	M.B 11 17 18 18 18 18 19 17 17 17 17 17 17 17 17 17 17 17 17 17
615-59-8 Extracta EPH Alip PI-20-3 PI-20-3 PI-57-6 208-96-8 33-32-9 36-73-7 35-01-8 120-12-7 206-44-0	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon <u>phatic/Aromatic Ranges</u> C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <u>get PAH Analytes</u> Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene	102 ns 2.4 BRL 0.6 0.9 3.0 3.2 165 105 BRL BRL BRL BRL BRL BRL BRL	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	+MADEP 5/2004 R " " "	п Ч Ф Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц	n 11 11 11	9 11 11	M.B " " " " " " "
615-59-8 Extracta <u>EPH Alip</u> 91-20-3 91-57-6 208-96-8 33-32-9 36-73-7 35-01-8 120-12-7 206-44-0 29-00-0	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbor <u>phatic/Aromatic Ranges</u> C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <i>get PAH Analytes</i> Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene	102 ns 2.4 BRL 0.6 0.9 3.0 3.2 165 105 BRL BRL BRL BRL BRL BRL BRL BRL	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l 5.26 μg/l 5.26 μg/l 5.26 μg/l 5.26 μg/l 5.26 μg/l 5.26 μg/l 5.26 μg/l 5.26 μg/l	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	+MADEP 5/2004 R " " " " " " " " " " " " " " " " " " "	п Ч Ф Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц	n 11 11 11	9 11 11	M.B 11 12 13 14 14 14 14 14 14 14 14 14 14 14 14 14
615-59-8 Extracta <u>EPH Alig</u> P1-20-3 P1-20-3 P1-57-6 208-96-8 83-32-9 86-73-7 85-01-8 120-12-7 206-44-0 129-00-0 56-55-3	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon <u>ohatic/Aromatic Ranges</u> C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <u>get PAH Analytes</u> Naphthalene 2-Methylnaphthalene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene	102 ns 2.4 BRL 0.6 0.9 3.0 3.2 165 105 BRL BRL BRL BRL BRL BRL BRL BRL BRL BRL	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 5.26 μg/l 5.26 μg/l 5.26 μg/l 5.26 μg/l 5.26 μg/l 5.26 μg/l 5.26 μg/l 5.26 μg/l 5.26 μg/l	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	+MADEP 5/2004 R " " " " " 5/2004 R " " " " " " " " " " " " " " " "	п Ч Ф Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц	0 11 11 11 12 13 14 14 14 14 14 14 14 14 14 14 14 14 14	9 11 11	M.B 11 12 13 14 14 14 14 14 14 14 14 14 14 14 14 14
EPH Alig EPH Tar 91-20-3 91-57-6 208-96-8 83-32-9 86-73-7 35-01-8 120-12-7 206-44-0 129-00-0 56-55-3 218-01-9	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon <u>ohatic/Aromatic Ranges</u> C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <u>get PAH Analytes</u> Naphthalene 2-Methylnaphthalene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene Benzo (a) anthracene	102 ns 2.4 BRL 0.6 0.9 3.0 3.2 165 105 BRL BRL BRL BRL BRL BRL BRL BRL BRL BRL	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 5.26 μg/l 5.26 μg/l	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	+MADEP 5/2004 R " " " " " " " " " " " " " " " " " " "	п Ч Ф Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц Ц	0 0 10 11 11 11 11 12 14 14 14 14 14 14 14 14 14 14 14 14 14	9 11 11	M.B 11 10 10 10 10 10 11 11 11 11 11 11 11

<u>Sample</u> B103-M SA2606			<u>Client Project #</u> 24124-1	<u>Matr</u> Ground		llection Da 11-Apr-05			<u>eceived</u> -Apr-0:	-
CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
Extract	able Petroleum Hydrocar	bons					• •			
<u>EPH Ta</u>	rget PAH Analytes		Prepared by me	thod SW8	46 3510C					
50-32-8	Benzo (a) pyrene	BRL	5.26 μg/l	1	+MADEP 5/2004 R	06-Apr-05	08-Apr-05	5040219	M,B	+
193-39-5	Indeno (1,2,3-cd) pyrene	BRL	5.26 μg/l	1	н	"	н	и	14	
53-70-3	Dibenzo (a,h) anthracene	BRL	5.26 μg/l	I	"	н	11	*	*	
191-24-2	Benzo (g,h,i) perylene	BRL	5.26 μg/l	1	"		"	n	U	
Surrogate	e recoveries:									
3386-33-2	1-Chlorooctadecane	65.4	40-140 %		n	*1	n	"	н	
84-15-1	Ortho-Terphenyl	63.1	40-140 %		"	u	11	н		
580-13-2	2-Bromonaphthalene	35.6	40-140 %		*	"	"	11		S-GC
321-60-8	2-Fluorobiphenyl	83.4	40-140 %		**	"	n	18	u.	

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SA2606	Identification W 6-03		<u>Client Project #</u> 24124-1	<u>Matr</u> Ground Y	_	lection Da 1-Apr-05			eceived -Apr-05
CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst Flag
Volatile	Organic Compounds	-							
VPH Ali	phatic/Aromatic Carbon Rang	<u>es</u>	Prepared by me	thod VPH					
	C5-C8 Aliphatic Hydrocarbons	8.89	0.300 mg/l	20	+MADEP	06-Apr-05	07-Apr-05	5040231	KW
	C9-C12 Aliphatic Hydrocarbons	1.52	0.100 mg/l	20	5/2004 Rev. 1.1	•	п	"	u
	C9-C10 Aromatic Hydrocarbons	3.75	0.100 mg/l	20	n	н	**	17	18
	Unadjusted C5-C8 Aliphatic Hydrocarbons	13.0	0.300 mg/l	20	n	"	IJ	'n	n
	Unadjusted C9-C12 Aliphatic Hydrocarbons	5.27	0.100 mg/l	20	"		n	п	**
VPH Ta	rget Analytes		Prepared by me	thod VPH					
71-43-2	Benzene	36.8	20.0 μg/l	20	*	"	н	п	**
100-41-4	Ethylbenzene	843	20.0 μg/l	20	19	n	п	IJ	**
1634-04-4	Methyl tert-butyl ether	38.6	20.0 μg/l	20	**	**	"	и	"
91-20-3	Naphthalene	181	20.0 μg/l	20	11		19	н	11
108-88-3	Toluene	338	20.0 μg/l	20	н	**		14	н
1330-20-7	m,p-Xylene	2,080	40.0 μg/l	20	n	н	**	18	и
95-47-6	o-Xylene	780	20.0 μg/l	20	н	"	77	**	n
Surrogate	e recoveries:								
515-59-8	2,5-Dibromotoluene (FID)	9 7.0	70-130 %		н	"	**		11
515-59-8	2,5-Dibromotoluene (PID)	95.2	70-130 %		н	н	n	"	"
Extract:	able Petroleum Hydrocarboi	15							
EPH Ali	phatic/Aromatic Ranges		Prepared by met	thod SW84	46 3510C				
	C9-C18 Aliphatic Hydrocarbons	0.4	0.2 mg/l	1	+MADEP 5/2004 R	06-Apr-05	08-Apr-05	5040219	M.B
	C19-C36 Aliphatic	BRL	0.2 mg/l						
	Hydrocarbons		0.2 mg/1	l	**	**	n	11	n
	Hydrocarbons C11-C22 Aromatic Hydrocarbons	0.4	0.2 mg/l	1	"	**	11	H	n
	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons	0.5	0.2 mg/l	1		••	11	"	tt 11
	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons	0.5 0.8	0.2 mg/l 0.2 mg/l 0.2 mg/l	1 1 1	"	Ŧ	11	" "	n 11
	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons	0.5	0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l	1 1 1 1	" " "	** ** ** **			tt 11
EPH Ta	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum	0.5 0.8	0.2 mg/l 0.2 mg/l 0.2 mg/l	1 1 1 1	" " "	Ŧ	11		n 11
	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons	0.5 0.8	0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l	1 1 1 1	" " "	Ŧ	11		n 11
91-20-3	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons rget PAH Analytes	0.5 0.8 1.0	0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l Prepared by met	1 1 1 2:hod SW84	" " "	Ŧ	11		n 11
91-20-3 91-57-6	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons rget PAH Analytes Naphthalene	0.5 0.8 1.0 88.1	0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l Prepared by met 5.00 μg/l	1 1 1 2hod SW84 1	" " 16 3510C "	Ŧ	11 11		n 11 11
91-20-3 91-57-6 208-96-8	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons rget PAH Analytes Naphthalene 2-Methylnaphthalene	0.5 0.8 1.0 88.1 48.3	0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l Prepared by met 5.00 μg/l 5.00 μg/l	1 1 1 1 2 1 1 1	" " 46 3510C "	Ŧ	• • •		" " "
91-20-3 91-57-6 208-96-8 33-32-9 36-73-7	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons rget PAH Analytes Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene	0.5 0.8 1.0 88.1 48.3 BRL BRL BRL	0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l	1 1 1 2 1 1 1 1 1	" " 46 3510C "	11 11 14 14 14 14 14 14 14 14 14 14 14 1	" " " "		
91-20-3 91-57-6 208-96-8 33-32-9 36-73-7 35-01-8	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons rget PAH Analytes Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene	0.5 0.8 1.0 88.1 48.3 BRL BRL BRL BRL	0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l	1 1 1 2 1 1 1 1 1 1	" " 46 3510C " " " "		" " " "	" " " "	
91-20-3 91-57-6 208-96-8 83-32-9 86-73-7 85-01-8 120-12-7	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons rget PAH Analytes Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene	0.5 0.8 1.0 88.1 48.3 BRL BRL BRL BRL BRL	0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 9repared by met 5.00 µg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l	1 1 2hod SW84 1 1 1 1 1 1 1	" " 16 3510C " "	47 14 14 14 14 14 14 14 14 14 14 14 14 14			
91-20-3 91-57-6 208-96-8 33-32-9 36-73-7 35-01-8 120-12-7 206-44-0	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons rget PAH Analytes Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene	0.5 0.8 1.0 88.1 48.3 BRL BRL BRL BRL BRL BRL BRL	0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l	1 1 2:hod SW84 1 1 1 1 1 1 1	" " 46 3510C " " " "				
91-20-3 91-57-6 208-96-8 83-32-9 86-73-7 85-01-8 120-12-7 206-44-0 129-00-0	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons rget PAH Analytes Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthylene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene	0.5 0.8 1.0 88.1 48.3 BRL BRL BRL BRL BRL BRL BRL BRL	0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	" " 46 3510C " " " "			•	
91-20-3 91-57-6 208-96-8 83-32-9 86-73-7 85-01-8 120-12-7 206-44-0 129-00-0 56-55-3	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons rget PAH Analytes Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene Benzo (a) anthracene	0.5 0.8 1.0 88.1 48.3 BRL BRL BRL BRL BRL BRL BRL BRL BRL	0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l	1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	" " 46 3510C " " " "		" " " " " " " "		
91-20-3 91-57-6 208-96-8 83-32-9 86-73-7 85-01-8 120-12-7 206-44-0 129-00-0 56-55-3 218-01-9	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons rget PAH Analytes Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene Benzo (a) anthracene Chrysene	0.5 0.8 1.0 88.1 48.3 BRL BRL BRL BRL BRL BRL BRL BRL BRL BRL	0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 5.00 µg/l 5.00 µg/l	1 1 1 2hod SW84 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	" " 46 3510C " " " "	T T T T T T T T T T			
EPH Tai 91-20-3 91-57-6 208-96-8 83-32-9 86-73-7 85-01-8 120-12-7 206-44-0 129-00-0 56-55-3 218-01-9 205-99-2 207-08-9	Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons rget PAH Analytes Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene Benzo (a) anthracene	0.5 0.8 1.0 88.1 48.3 BRL BRL BRL BRL BRL BRL BRL BRL BRL	0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l	1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	" " 46 3510C " " " "		" " " " " " " "	•	

<u>Sample 1</u> B104-M SA2606			<u>Client Project #</u> 24124-1	<u>Matr</u> Ground		llection Da 11-Apr-05			eceived -Apr-05
CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst Flag
Extracta	able Petroleum Hydrocar	bons							
<u>EPH Ta</u>	rget PAH Analytes		Prepared by me	thod SW8	46 3510C				
50-32-8	Benzo (a) pyrene	BRL	5.00 μg/l	1	+MADEP 5/2004 R	06-Apr-05	08-Apr-05	5040219	M.B
193-39-5	Indeno (1,2,3-cd) pyrene	BRL	5.00 μg/l	1	**	n		*	n
53-70-3	Dibenzo (a,h) anthracene	BRL	5.00 μg/l	1	14	11	и	и	
191-24-2	Benzo (g,h,i) perylene	BRL	5.00 µg/I	1	**	**	"	"	P
Surrogate	e recoveries:								
3386-33-2	1-Chlorooctadecane	77.8	40-140 %		h	**	н		
84-15-1	Ortho-Terphenyl	66.8	40-140 %		w	ri -	**	4	н
580-13-2	2-Bromonaphthalene	59.2	40-140 %				rr	u	"
321-60-8	2-Fluorobiphenyl	83.0	40-140 %		н	11	n	н	"

.

MW-1 SA2606	<u>Identification</u> 6-04		<u>Client Project #</u> 24124-1	<u>Matr</u> Ground		lection Da 1-Apr-05			<u>eceived</u> -Apr-05
CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst Flag
Volatile	Organic Compounds								
<u>VPH Ali</u>	phatic/Aromatic Carbon Rang	<u>es</u>	Prepared by me	thod VPH					
	C5-C8 Aliphatic Hydrocarbons	0.753	0.0750 mg/l	5	+MADEP 5/2004 Rev. 1.1	06-Apr-05	06-Apr-05	5040231	KW
	C9-C12 Aliphatic Hydrocarbons	0.159	0.0250 mg/l	5	tt.	**	**	"	n
	C9-C10 Aromatic Hydrocarbons	0.300	0.0250 mg/l	5	n	u	II	14	*1
	Unadjusted C5-C8 Aliphatic Hydrocarbons	0.864	0.0750 mg/l	5	74	и	n	"	
	Unadjusted C9-C12 Aliphatic Hydrocarbons	0.459	0.0250 mg/l	5	tr.	u	n	11	n
VPH Ta	rget Analytes		Prepared by met	thod VPH					
71-43-2	Benzene	11.4	5.0 μg/l	5	"	٣	н	4	n
100-41-4	Ethylbenzene	26.8	5.0 μg/l	5	"	"		++	н
1634-04-4	Methyl tert-butyl ether	BRL	5.0 μg/l	5	tr	n	11		14
91-20-3	Naphthalene	10.8	5.0 μg/l	5			11		
108-88-3	Toluene	12.4	5.0 μg/l	5	н	н	"	н	
1330-20-7	m,p-Xylene	50.8	10.0 μg/l	5	п	11	"	н	*
95-47-6	o-Xylene	9.6	5.0 μg/l	5	n	19	n	н	n
Surrogate	e recoveries:								
515-59-8	2,5-Dibromotoluene (FID)	86.6	70-130 %		*	*	17	11	n
015-55-0		00.0	10 100 70						
615-59-8	2,5-Dibromotoluene (PID)	86.0	70-130 %		Ħ	"	14		19
615-59-8	2,5-Dibromotoluene (PID)	86.0			R	")#		и
515-59-8 Extracta		86.0	70-130 %	thod SW84	" 46 3510C	"	14	"	17
515-59-8 Extracta	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon <u>phatic/Aromatic Ranges</u> C9-C18 Aliphatic	86.0		thod SW84	" 46 3510C +MADEP 5/2004 R	" 06-Apr-05	* 08-Apr-05 :	" 5040219	" M.B
515-59-8 Extracta	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon phatic/Aromatic Ranges C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic	86.0 1s	70-130 % Prepared by met	thod SW84 1	+MADEP	" 06-Apr-05 "	" 08-Apr-05 : "	" 5040219 "	" M.B
515-59-8 Extracta	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon phatic/Aromatic Ranges C9-C18 Aliphatic Hydrocarbons	86.0 15 BRL	70-130 % Prepared by met 0.2 mg/l	1	+MADEP 5/2004 R	" 06-Apr-05 "	* 08-Apr-05 : "	" 5040219 "	" M.B "
615-59-8 Extracta	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon phatic/Aromatic Ranges C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic	86.0 ns BRL BRL BRL	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l	1	+MADEP 5/2004 R	" 06-Apr-05 "	" 08-Apr-05 : " "	" 5040219 " "	" M.B "
515-59-8 Extracta	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon <u>phatic/Aromatic Ranges</u> C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons	86.0 ns BRL BRL BRL	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l 0.2 mg/l	1 1 1	+MADEP 5/2004 R "	" 06-Apr-05 " "	H	11 12	n
515-59-8 Extracta	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon phatic/Aromatic Ranges C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons	86.0 DRL BRL BRL BRL BRL	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l	1 1 1 1	+MADEP 5/2004 R " "	" 06-Apr-05 " " "	8	u v	11 11
515-59-8 Extracta EPH Ali	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon <u>phatic/Aromatic Ranges</u> C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum	86.0 DS BRL BRL BRL BRL 0.2	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l	1 1 1 1 1 1	+MADEP 5/2004 R " " " "	" 06-Apr-05 " " "	н Н	u v	11 11 11
615-59-8 Extract s <u>EPH Ali</u>	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon <u>phatic/Aromatic Ranges</u> C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons rget PAH Analytes	86.0 DS BRL BRL BRL BRL 0.2	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l	1 1 1 1 1 1	+MADEP 5/2004 R " " " "	" 06-Apr-05 " " "	н Н	u v	" " "
615-59-8 Extract : <u>EPH Ali</u> <u>EPH Tar</u> 91-20-3	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon <u>phatic/Aromatic Ranges</u> C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons rget PAH Analytes Naphthalene	86.0 BRL BRL BRL BRL 0.2 0.2 BRL	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l	1 1 1 1 1 1 1 1	+MADEP 5/2004 R " " " " 46 3510C	" 06-Apr-05 " " "	 	11 12 13	" " "
515-59-8 Extracts <u>EPH Ali</u> 91-20-3 91-57-6	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon <u>phatic/Aromatic Ranges</u> C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <u>rget PAH Analytes</u> Naphthalene 2-Methylnaphthalene	86.0 IS BRL BRL BRL 0.2 0.2 BRL BRL	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l	1 1 1 1 1 1 1 1 1 1 1	+MADEP 5/2004 R " " " " 46 3510C			11 12 13 14 14 14 14 14 14 14 14 14 14 14 14 14	4 4 11 13
615-59-8 Extracts EPH Ali P1-20-3 P1-57-6 208-96-8	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon <u>phatic/Aromatic Ranges</u> C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <u>rget PAH Analytes</u> Naphthalene 2-Methylnaphthalene Acenaphthylene	86.0 BRL BRL BRL BRL 0.2 0.2 BRL	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l 5.00 µg/l 5.00 µg/l	1 1 1 1 1 1 1 1 1	+MADEP 5/2004 R " " " " 46 3510C "		4 11 11 11 11 11 11 11 11	11 13 19 19 19 19 19 19 19 19 19 19 19 19 19	N N N N
515-59-8 Extracts EPH Ali D1-20-3 D1-57-6 208-96-8 33-32-9	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon <u>phatic/Aromatic Ranges</u> C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <u>rget PAH Analytes</u> Naphthalene 2-Methylnaphthalene	86.0 BRL BRL BRL BRL 0.2 0.2 BRL BRL BRL BRL	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l	1 1 1 1 1 1 2 1 1 1	+MADEP 5/2004 R " " " 46 3510C " "		8 11 11 11 11 11 11 11 11 11 11 11 11 11	11 12 13 14 14 14 14 14 14 14 14 14 14 14 14 14	" " " "
515-59-8 Extracts EPH Ali P1-20-3 P1-57-6 208-96-8 33-32-9 36-73-7	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon <u>phatic/Aromatic Ranges</u> C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <u>rget PAH Analytes</u> Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene	86.0 BRL BRL BRL BRL 0.2 0.2 D.2 BRL BRL BRL BRL BRL BRL	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l 5.00 µg/l 5.00 µg/l	1 1 1 1 1 1 1 1 1	+MADEP 5/2004 R " " " 46 3510C " "		8 11 11 11 11 11 11 11 11 11 11 11 11 11	11 11 11 11 11 11 11 11 11 11 11 11 11	11 12 13 14 14 14 14 14 14 14 14 14 14 14 14 14
515-59-8 Extracts EPH Ali D1-20-3 D1-57-6 208-96-8 33-32-9 36-73-7 35-01-8	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon phatic/Aromatic Ranges C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons rget PAH Analytes Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene	86.0 BRL BRL BRL BRL 0.2 0.2 BRL BRL BRL BRL BRL BRL	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l	1 1 1 1 1 1 1 1 1 1 1	+MADEP 5/2004 R " " " 46 3510C " "		8 11 11 11 11 11 11 11 11 11 11 11 11 11	11 11 11 11 11 11 11 11 11 11 11 11 11	N N N N N
515-59-8 Extracts EPH Ali 91-20-3 91-57-6 208-96-8 33-32-9 36-73-7 35-01-8 (20-12-7	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon <u>phatic/Aromatic Ranges</u> C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <u>rget PAH Analytes</u> Naphthalene 2-Methylnaphthalene Acenaphthene Fluorene Phenanthrene	86.0 BRL BRL BRL BRL 0.2 0.2 BRL BRL BRL BRL BRL BRL BRL BRL	70-130 % Prepared by met 0.2 mg/l 0.2 mg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l	1 1 1 1 1 1 1 1 1 1 1	+MADEP 5/2004 R " " " 46 3510C " "		4 11 11 11 11 11 11	11 12 12 13 14 14 14 14 14 14 14 14 14 14 14 14 14	" " " " " "
615-59-8 Extract : <u>EPH Ali</u>	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon phatic/Aromatic Ranges C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons rget PAH Analytes Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene	86.0 BRL BRL BRL BRL 0.2 0.2 0.2 BRL BRL BRL BRL BRL BRL BRL BRL	70-130 % Prepared by met 0.2 mg/l 0.2 µg/l 5.00 µg/l	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	+MADEP 5/2004 R " " " 46 3510C " "		8 11 11 11 11 11 11 11 11 11 11 11 11 11	11 11 11 11 11 11 11 11 11 11 11 11 11	N N N N N N N N
615-59-8 Extract <i>EPH Ali</i> <i>PI-20-3</i> 91-57-6 208-96-8 83-32-9 36-73-7 85-01-8 120-12-7 206-44-0	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon phatic/Aromatic Ranges C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons rget PAH Analytes Naphthalene 2-Methylnaphthalene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene	86.0 BRL BRL BRL BRL 0.2 0.2 0.2 BRL BRL BRL BRL BRL BRL BRL BRL	70-130 % Prepared by met 0.2 mg/l 0.2 µg/l 5.00 µg/l	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	+MADEP 5/2004 R " " " " 46 3510C " " " " " " " " "		8 11 11 11 11 11 11 11 11 11 11 11 11 11		N N N N N N N N N N N N N
615-59-8 Extract <i>EPH Ali</i> <i>P1-20-3</i> <i>P1-57-6</i> 208-96-8 83-32-9 86-73-7 85-01-8 (20-12-7 206-44-0 (29-00-0	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon phatic/Aromatic Ranges C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons rget PAH Analytes Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene	86.0 BRL BRL BRL BRL 0.2 0.2 0.2 BRL BRL BRL BRL BRL BRL BRL BRL	70-130 % Prepared by met 0.2 mg/l 0.2 µg/l 5.00 µg/l	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	+MADEP 5/2004 R " " " 46 3510C " " " " " " " " " " " "		8 11 11 11 11 11 11 11 11 11 11 11 11 11	11 11 11 11 11 11 11 11 11 11 11 11 11	
615-59-8 Extracts <i>EPH Ali</i> <i>P1-20-3</i> <i>P1-20-3</i> <i>P1-57-6</i> <i>208-96-8</i> <i>83-32-9</i> <i>86-73-7</i> <i>85-01-8</i> <i>120-12-7</i> <i>206-44-0</i> <i>129-00-0</i> <i>56-55-3</i>	2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon <u>phatic/Aromatic Ranges</u> C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <u>rget PAH Analytes</u> Naphthalene 2-Methylnaphthalene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene Benzo (a) anthracene	86.0 BRL BRL BRL BRL 0.2 0.2 BRL BRL BRL BRL BRL BRL BRL BRL	70-130 % Prepared by met 0.2 mg/l 0.2 µg/l 5.00 µg/l	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	+MADEP 5/2004 R " " " 46 3510C " " " " " " " " " " " " "		8 11 11 11 11 11 11 11 11 11 11 11 11 11	11 12 12 14 15 16 17 17 17 17 17 17 17 17 17 17 17 17 17	

<u>Sample]</u> MW-1 SA2606	<u>Identification</u> 6-04		<u>Client Project #</u> 24124-1	<u>Matr</u> Ground		<u>llection Da</u> 01-Apr-05			eceived -Apr-05
CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref	Prepared	Analyzed	Batch	Analyst Flag
Extract	able Petroleum Hydrocar	bons							
<u>EPH Ta</u>	rget PAH Analytes		Prepared by me	thod SW8	46 3510C				
50-32-8	Benzo (a) pyrene	BRL	5.00 μg/l	1	+MADEP 5/2004 R	06-Apr-05	08-Apr-05	5040219	M.B
193-39-5	Indeno (1,2,3-cd) pyrene	BRL	5.00 μg/l	1	п	n		н	11
53-70-3	Dibenzo (a,h) anthracene	BRL	5.00 μg/l	1	n	*	14	н	10
191-24-2	Benzo (g,h,i) perylene	BRL	5.00 μg/l	1	n	**	19	н	Ħ
Surrogate	e recoveries:	-	•	·					·
3386-33-2	1-Chlorooctadecane	67.2	40-140 %		и		н	*	h
84-15-1	Ortho-Terphenyl	63.6	40-140 %			n	n	u	11
580-13-2	2-Bromonaphthalene	71.5	40-140 %		"	п		"	
321-60-8	2-Fluorobiphenyl	80.5	40-140 %		н	и		"	**

MW-4 SA26060	Identification 6-05		<u>Client Project #</u> 24124-1	<u>Matr</u> Ground		<u>lection Da</u> 1-Apr-05		_	eceived -Apr-0:	
CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
Volatile	Organic Compounds									
VPH Ali	phatic/Aromatic Carbon Rang	es	Prepared by me	thod VPH						
	C5-C8 Aliphatic Hydrocarbons	22.4	3.00 mg/l	200	+MADEP 5/2004 Rev. 1.1		07-Apr-05	5040231	KW	
	C9-C12 Aliphatic Hydrocarbons	5.83	1.00 mg/l	200	11	11	14	n	**	
	C9-C10 Aromatic Hydrocarbons	16.2	1.00 mg/l	200	h	и	H	u	н	
	Unadjusted C5-C8 Aliphatic Hydrocarbons	53.9	3.00 mg/l	200	**	u	н	"	ч	
	Unadjusted C9-C12 Aliphatic Hydrocarbons	22.0	1.00 mg/l	200	11	**	4 1	"	11	
<u>VPH Ta</u>	rget Analytes		Prepared by me	thod VPH						
71-43-2	Benzene	BRL	200 µg/l	200		tt	н	77	Ir.	
100-41-4	Ethylbenzene	4,480	200 μg/t	200		п	и		и	
1634-04-4	Methyl tert-butyl ether	BRL	200 μg/l	200	*	н			"	
91-20-3	Naphthalene	1,090	200 μg/l	200	n	"	n	"	н	
108-88-3	Toluene	1,950	200 µg/l	200		"	u –		и	
1330-20-7	m,p-Xylene	17,500	400 μg/l	200	"	п	**	14	۳	
95-47-6	o-Xylene	7,640	200 μg/l	200	N	*	N		11	
Surragati	e recoveries:									
-		100	70 130 0/		*		"		**	
615-59-8	2,5-Dibromotoluene (FID)	100	70-130 %		19	"	"	"	"	
615-59-8 615-59-8	2,5-Dibromotoluene (FID) 2,5-Dibromotoluene (PID)	95.6	70-130 % 70-130 %		19 72			"		
615-59-8 615-59-8	2,5-Dibromotoluene (FID)	95.6	70-130 %		17 72			11		
615-59-8 615-59-8 Extract	2,5-Dibromotoluene (FID) 2,5-Dibromotoluene (PID)	95.6		thod SW8	* * 46 3510C					
615-59-8 615-59-8 Extract	2,5-Dibromotoluene (FID) 2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon iphatic/Aromatic Ranges C9-C18 Aliphatic	95.6	70-130 %	thod SW8	" " 46 3510C +MADEP 5/2004 R	"			u	
615-59-8 615-59-8 Extract	2,5-Dibromotoluene (FID) 2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon iphatic/Aromatic Ranges C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic	95.6 as	70-130 % Prepared by me		+MADEP	"	10		u	
615-59-8 615-59-8 Extract	2,5-Dibromotoluene (FID) 2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon iphatic/Aromatic Ranges C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic	95.6 as 4.2	70-130 % Prepared by me 0.2 mg/l	1	+MADEP 5/2004 R	"	10		u	
615-59-8 615-59-8 Extract	2,5-Dibromotoluene (FID) 2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon iphatic/Aromatic Ranges C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic	95.6 as 4.2 BRL 0.4	70-130 % Prepared by me 0.2 mg/l 0.2 mg/l	1	+MADEP 5/2004 R "	"	" 08-Apr-05 *	5040219 "	" M.B "	
615-59-8 615-59-8 Extract	2,5-Dibromotoluene (FID) 2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon iphatic/Aromatic Ranges C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons	95.6 as 4.2 BRL 0.4	70-130 % Prepared by me 0.2 mg/l 0.2 mg/l 0.2 mg/l	1 1	+MADEP 5/2004 R "	" 06-Apr-05 "	" 08-Apr-05 <i>"</i>	5040219 "	" M.B "	
615-59-8 615-59-8 Extract	2,5-Dibromotoluene (FID) 2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon iphatic/Aromatic Ranges C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons	95.6 ns 4.2 BRL 0.4 0.9	70-130 % Prepared by me 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l	1 1 1	+MADEP 5/2004 R "	" 06-Apr-05 " "	" 08-Apr-05 " "	5040219 "	" M.B "	
615-59-8 615-59-8 Extract : <u>EPH Ali</u>	2,5-Dibromotoluene (FID) 2,5-Dibromotoluene (FID) able Petroleum Hydrocarbon iphatic/Aromatic Ranges C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum	95.6 ns 4.2 BRĽ 0.4 0.9 4.6	70-130 % Prepared by me 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l	1 1 1 1 1	+MADEP 5/2004 R " " "	" 06-Apr-05 " " "	" 08-Apr-05 " "	5040219 " " "	" M.B "	
615-59-8 615-59-8 <i>Ехtract</i> : <i>ЕРН <u>А</u>Ц</i>	2,5-Dibromotoluene (FID) 2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon iphatic/Aromatic Ranges C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons	95.6 ns 4.2 BRĽ 0.4 0.9 4.6 5.1	70-130 % Prepared by me 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l	1 1 1 1 1	+MADEP 5/2004 R " " "	" 06-Apr-05 " " "	" 08-Apr-05 " "	5040219 " " "	" M.B "	
615-59-8 615-59-8 Extract : <u>EPH Alt</u> 91-20-3	2,5-Dibromotoluene (FID) 2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon iphatic/Aromatic Ranges C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <i>rget PAH Analytes</i> Naphthalene	95.6 ns 4.2 BRL 0.4 0.9 4.6 5.1 379	70-130 % Prepared by me 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l Prepared by me 5.00 µg/l	I I 1 1 1 1 2 5W8	+MADEP 5/2004 R " " "	" 06-Apr-05 " " "	" 08-Apr-05 " "	5040219 " " "	" M.B "	
615-59-8 615-59-8 Extract : <u>EPH Ali</u> 91-20-3 91-57-6	2,5-Dibromotoluene (FID) 2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon iphatic/Aromatic Ranges C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons rotal Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons rget PAH Analytes Naphthalene 2-Methylnaphthalene	95.6 ns 4.2 BRL 0.4 0.9 4.6 5.1 379 108	70-130 % Prepared by me 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 5.00 μg/l 5.00 μg/l	I I 1 1 1 1 2 5W8	+MADEP 5/2004 R " " " " 46 3510C "	" 06-Apr-05 " " "	" 08-Apr-05 " "	5040219 " " "	" M.B " " "	
615-59-8 615-59-8 Extract <u>EPH Ali</u> 91-20-3 91-57-6 208-96-8	2,5-Dibromotoluene (FID) 2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon iphatic/Aromatic Ranges C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons reget PAH Analytes Naphthalene 2-Methylnaphthalene Acenaphtylene	95.6 ns 4.2 BRL 0.4 0.9 4.6 5.1 379 108 BRL	70-130 % Prepared by me 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 5.00 µg/l 5.00 µg/l	I I 1 1 1 1 2 5W8	+MADEP 5/2004 R " " " " 46 3510C " "	" 06-Apr-05 " " "	" 08-Apr-05 " " " "	5040219 " " "	" M.B " " " "	
615-59-8 615-59-8 Extract <i>EPH Ali</i> 91-20-3 91-57-6 208-96-8 83-32-9	2,5-Dibromotoluene (FID) 2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon iphatic/Aromatic Ranges C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <i>rget PAH Analytes</i> Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene	95.6 ns 4.2 BRL 0.4 0.9 4.6 5.1 379 108 BRL BRL	70-130 % Prepared by me 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l	1 1 1 1 1 1 1 1 1 2 1 1	+MADEP 5/2004 R " " " " 46 3510C " "	" 06-Apr-05 " " "	" 08-Apr-05 " " " " "	5040219 " " "	" M.B " " " "	
615-59-8 615-59-8 Extract : <u>EPH Alt</u> 91-20-3 91-57-6 208-96-8 83-32-9 86-73-7	2,5-Dibromotoluene (FID) 2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon iphatic/Aromatic Ranges C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <i>Total Petroleum Hydrocarbons</i> Unadjusted Total Petroleum Hydrocarbons <i>trget PAH Analytes</i> Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene	95.6 ns 4.2 BRL 0.4 0.9 4.6 5.1 379 108 BRL BRL BRL BRL	70-130 % Prepared by me 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l 5.00 μg/l	1 1 1 1 1 1 1 1 1 2 1 1	+MADEP 5/2004 R " " " " 46 3510C " "	" 06-Apr-05 " " " " "	" 08-Apr-05 " " " " " "	5040219 " " " " " " " " "	" M.B " " " " " "	
615-59-8 615-59-8 Extract <i>EPH Ali</i> 91-20-3 91-57-6 208-96-8 83-32-9 86-73-7 85-01-8	2,5-Dibromotoluene (FID) 2,5-Dibromotoluene (PID) able Petroleum Hydrocarbon iphatic/Aromatic Ranges C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons rotal Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons rget PAH Analytes Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene	95.6 as 4.2 BRL 0.4 0.9 4.6 5.1 379 108 BRL BRL BRL BRL BRL	70-130 % Prepared by me 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l	1 1 1 1 1 1 1 1 1 2 1 1	+MADEP 5/2004 R " " " " 46 3510C " "	" 06-Apr-05 " " " " " " "	" 08-Apr-05 " " " " " "	5040219 " " " " " " " " "	" M.B " " " " " " "	
615-59-8 615-59-8 Extract <i>EPH Ali</i> 91-20-3 91-57-6 208-96-8 83-32-9 86-73-7 85-01-8 120-12-7	2,5-Dibromotoluene (FID) 2,5-Dibromotoluene (FID) able Petroleum Hydrocarbon iphatic/Aromatic Ranges C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <i>rget PAH Analytes</i> Naphthalene 2-Methylnaphthalene Acenaphthene Fluorene Phenanthrene Anthracene	95.6 ns 4.2 BRĽ 0.4 0.9 4.6 5.1 379 108 BRL BRL BRL BRL BRL BRL BRL	70-130 % Prepared by me 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	+MADEP 5/2004 R " " " " 46 3510C " "	" 06-Apr-05 " " " " " " " "	" 08-Apr-05 " " " " " "	5040219 " " " " " " " " " "	" M.B " " " " " " "	
615-59-8 615-59-8 Extract <i>EPH Alt</i> 91-20-3 91-57-6 208-96-8 83-32-9 86-73-7 85-01-8 120-12-7 206-44-0	2,5-Dibromotoluene (FID) 2,5-Dibromotoluene (FID) able Petroleum Hydrocarbon iphatic/Aromatic Ranges C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <i>trget PAH Analytes</i> Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene	95.6 ns 4.2 BRL 0.4 0.9 4.6 5.1 379 108 BRL BRL BRL BRL BRL BRL BRL BRL BRL	70-130 % Prepared by me 0.2 mg/l 0.2 mg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	+MADEP 5/2004 R " " " " 46 3510C " "	" 06-Apr-05 " " " " " " " " " "	" 08-Apr-05 " " " " " " " "	5040219 " " " " " " " " " " "	" M.B " " " " " " "	
615-59-8 615-59-8 Extract : <u>EPH Alt</u> 91-20-3 91-57-6 208-96-8 83-32-9 86-73-7 85-01-8 120-12-7 206-44-0 129-00-0	2,5-Dibromotoluene (FID) 2,5-Dibromotoluene (FID) able Petroleum Hydrocarbon iphatic/Aromatic Ranges C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <i>trget PAH Analytes</i> Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene	95.6 as 4.2 BRL 0.4 0.9 4.6 5.1 379 108 BRL BRL BRL BRL BRL BRL BRL BRL	70-130 % Prepared by me 0.2 mg/l 0.2 mg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l	I 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	+MADEP 5/2004 R " " " " 46 3510C " " " " " " " " " " "	" 06-Apr-05 " " " " " " " " " " " "	" 08-Apr-05 " " " " " " " " " " " " " " " " " "	5040219 " " " " " " " " " " " "	" M.B " " " " " " " "	
615-59-8 615-59-8 Extract <i>EPH Alt</i> <i>EPH Ta</i> 91-20-3 91-57-6 208-96-8 83-32-9 86-73-7 85-01-8 120-12-7 206-44-0 129-00-0 56-55-3	2,5-Dibromotoluene (FID) 2,5-Dibromotoluene (FID) able Petroleum Hydrocarbon iphatic/Aromatic Ranges C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <i>trget PAH Analytes</i> Naphthalene 2-Methylnaphthalene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene Benzo (a) anthracene	95.6 as 4.2 BRL 0.4 0.9 4.6 5.1 379 108 BRL BRL BRL BRL BRL BRL BRL BRL	70-130 % Prepared by me 0.2 mg/l 0.2 mg/l 5.00 µg/l 5.00 µg/l	I 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	+MADEP 5/2004 R " " " " " 446 3510C " " " " " " " " " " " " " " " " "	" 06-Apr-05 " " " " " " " " " " " "	" O8-Apr-05 " U U U U U U U U U U U U U U U U U U	5040219 " " " " " " " " " " " "	" M.B " " " " " " " " "	
615-59-8 615-59-8 Extract : <u>EPH Alt</u> 91-20-3 91-57-6 208-96-8 83-32-9 86-73-7 85-01-8 120-12-7 206-44-0 129-00-0	2,5-Dibromotoluene (FID) 2,5-Dibromotoluene (FID) able Petroleum Hydrocarbon iphatic/Aromatic Ranges C9-C18 Aliphatic Hydrocarbons C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons Unadjusted C11-C22 Aromatic Hydrocarbons Total Petroleum Hydrocarbons Unadjusted Total Petroleum Hydrocarbons <i>trget PAH Analytes</i> Naphthalene 2-Methylnaphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene	95.6 as 4.2 BRL 0.4 0.9 4.6 5.1 379 108 BRL BRL BRL BRL BRL BRL BRL BRL	70-130 % Prepared by me 0.2 mg/l 0.2 mg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l 5.00 µg/l	I 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	+MADEP 5/2004 R " " " " " " " " " " " " " " " " " " "	" 06-Apr-05 " " " " " " " " " " " " " "	" O8-Apr-05 " U U U U U U U U U U U U U U U U U U	5040219 " " " " " " " " " " " "	" M.B " " " " " " " " "	

<u>Sample 1</u> MW-4 SA26066	Identification 6-05		Client Project # 24124-1	<u>Matr</u> Ground		<u>llection Da</u>)1-Apr-05			eceived 5-Apr-05
CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst Flag
Extracta	able Petroleum Hydrocar	bons	<u>-</u>						
<u>EPH Tar</u>	rget PAH Analytes		Prepared by me	thod SW8	46 3510C				
50-32-8	Benzo (a) pyrene	BRL	5.00 μg/l	1	+MADEP 5/2004 R	06-Apr-05	08-Apr-05	5040219	M.B
193-39-5	Indeno (1,2,3-cd) pyrene	BRL	5.00 μg/l	1	71	и	19		н
53-70-3	Dibenzo (a,h) anthracene	BRL	5.00 μg/l	1		11	**	"	и
191-24-2	Benzo (g,h,i) perylene	BRL	5.00 μg/l	1	u.	n	п		H
Surrogate	e recoveries:		· · · · · · · · · · · · · · · · · · ·						
3386-33-2	I-Chlorooctadecane	71.0	40-140 %		11	r.	*		**
84-15-1	Ortho-Terphenyl	68.0	40-140 %		"	+1	"	"	m
580-13-2	2-Bromonaphthalene	41.2	40-140 %		"	n	н	"	11
321-60-8	2-Fluorobiphenyl	83.8	40-140 %		n	11	"	н	4r

B102B	Sample Identification B102B SA26066-06		<u>Client Project #</u> 24124-1			Collection Date/Time 01-Apr-05 14:00			eceived -Apr-05
CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst Flag
Volatile	Organic Compounds								
<u>VPH Alij</u>	phatic/Aromatic Carbon Rang	es	Prepared by metho	d VPH					
	C5-C8 Aliphatic Hydrocarbons	4.62	0.150 mg/l	10	+MADEP 5/2004 Rev. 1,1	06-Apr-05	07-Apr-05	5040231	KW
	C9-C12 Aliphatic Hydrocarbons	2.25	0.0500 mg/l	10	'n	U	н	H	II.
	C9-C10 Aromatic Hydrocarbons	6.91	0.0500 mg/l	10	19	"	r	и	"
	Unadjusted C5-C8 Aliphatic Hydrocarbons	11.7	0.150 mg/l	10	н	**	"	n	ŋ
	Unadjusted C9-C12 Aliphatic Hydrocarbons	9.16	0.0500 mg/l	10	u.	n	19	п	н
<u>VPH Tar</u>	rget Analytes		Prepared by metho	d VPH					
71-43-2	Benzene	230	10.0 µg/l	10	**		"	n	u .
100-41-4	Ethylbenzene	680	10,0 μg/l	10	п	**			n
1634-04-4	Methyl tert-butyl ether	87.4	10.0 µg/l	10		н	н	*1	n
91-20-3	Naphthalene	368	10.0 µg/l	10	n		**	н	n
108-88-3	Toluene	1,600	10.0 µg/l	10	н		"	٠	
1330-20-7	m,p-Xylene	2,560	20.0 µg/l	10	"		11	"	11
95-47-6	o-Xylene	1,910	10.0 μg/l	10	••	n	"	n	n
Surrogate	recoveries:			_					
615-59-8	2,5-Dibromotoluene (FID)	94.6	70-130 %		11	11	н	Ħ	"
615-59-8	2,5-Dibromotoluene (PID)	92.4	70-130 %		17	п	"	"	

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B102B SA26060	dentification 5-07		<u>Client Project #</u> 24124-1	<u>Matr</u> Ground		<u>lection Da</u> 4-Apr-05			eceived -Apr-05
CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst F
Extracta	ble Petroleum Hydrocarbo	ns						•	
<u>EPH Alij</u>	phatic/Aromatic Ranges		Prepared by me	thod SW8	46 3510C				
	C9-C18 Aliphatic	0.4	0.2 mg/l	1	+MADEP	06-Apr-05	08-Apr-05	5040219	M.B
	Hydrocarbons			-	5/2004 R "	11			u
	C19-C36 Aliphatic Hydrocarbons	BRL	0.2 mg/l	1	"	"		n	"
	C11-C22 Aromatic	0.5	0.2 mg/l	1	"	14	"	19	
	Hydrocarbons	010		-					
	Unadjusted C11-C22 Aromatic Hydrocarbons	0.6	0.2 mg/l	1	"	**	п	"	н
	Total Petroleum Hydrocarbons	0.9	0.2 mg/l	1	11	**	11	U	u .
	Unadjusted Total Petroleum Hydrocarbons	1.0	0.2 mg/l	1	n	н	"	'n	"
EPH Tar	get PAH Analytes		Prepared by me	thod SW84	46 3510C				
91-20-3	Naphthalene	114	5.00 μg/l	1	**			n	
91-57-6	2-Methylnaphthalene	30.6	5.00 μg/l	1	W	"	17	*	H
208-96-8	Acenaphthylene	BRL	5.00 μg/l	1	**	"	77		14
83-32-9	Acenaphthene	BRL	5.00 μg/l	1	**	"		ч	"
86-73-7	Fluorene	BRL	5.00 μg/l	1	**	"	*	-	"
85-01-8	Phenanthrene	BRL	5.00 μg/l	1	n	**	п	*1	и
120-12-7	Anthracene	BRL	5.00 μg/l	1	Ħ		11	4	11
206-44-0	Fluoranthene	BRL	5.00 μg/l	1	n	п	u	н	11
129-00-0	Pyrene	BRL	5.00 μg/l	1	u	u.	н	н	"
56-55-3	Benzo (a) anthracene	BRL	5.00 μg/l	1	u	11	n	u	н
218-01-9	Chrysene	BRL	5.00 μg/l	1		n	п	u	11
205-99-2	Benzo (b) fluoranthene	BRL	5.00 μg/l	1	li -	tr	"	ħ	н
207-08-9	Benzo (k) fluoranthene	BRL	5.00 µg/l	1	н	n	н	н	n
50-32-8	Benzo (a) pyrene	BRL	5.00 µg/l	1	Ш	ш	н	4	н
193-39-5	Indeno (1,2,3-cd) pyrene	BRL	5.00 μg/l	1	и	11	11	n	"
53-70-3	Dibenzo (a,h) anthracene	BRL	5.00 μg/l	1		14	и	"	
191-24-2	Benzo (g,h,i) perylene	BRL	5.00 µg/1	1	U	n	и	u	tı
Surrogate	recoveries:								
3386-33-2	1-Chlorooctadecane	67.2	40-140 %		н	н	и	н	u
84-15-1	Ortho-Terphenyl	63.2	40-140 %		н	n	"	"	"
580-13-2	2-Bromonaphthalene	69.0	40-140 %		н	п	п		*1
321-60-8	2-Fluorobiphenyl	85.2	40-140 %		н	и	U		"

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Fla
Batch 5040231 - VPH									
Blank (5040231-BLK1)			Prepared	& Analyze	d: 06- An	- 05			
C5-C8 Aliphatic Hydrocarbons	BRL	0.0750 mg/l	Tioparea	<u></u>	u. 00-Api	-05			
C9-C12 Aliphatic Hydrocarbons	BRL	0.0250 mg/l							
C9-C10 Aromatic Hydrocarbons	BRL	0.0250 mg/l							
Unadjusted C5-C8 Aliphatic Hydrocarbons	BRL	0.0750 mg/l							
Unadjusted C9-C12 Aliphatic	BRL	0.0250 mg/l							
Hydrocarbons Benzene	BRL	_							
Ethylbenzene	BRL	5.0 μg/l							
Methyl tert-butyl ether	BRL	5.0 µg/l							
Naphthalene	BRL	5.0 μg/l							
Toluene		5.0 μg/l							
m,p-Xylene	BRL	5.0 μg/l							
o-Xylene	BRL	10.0 μg/l							
	BRL	5.0 μg/l			<u> </u>				
Surrogate: 2,5-Dibromotoluene (FID)	52.6	μg/l	50.0		105	70-130			
Surrogate: 2,5-Dibromotoluene (PID)	51.5	μg/l	50.0		103	70-130			
LCS (5040231-BS1)			Prepared &	& Analyze	d: 06-Apr	-05			
C5-C8 Aliphatic Hydrocarbons	129	mg/l	140		92.1	70-130			
C9-C12 Aliphatic Hydrocarbons	53.5	mg/l	55.0		97.3	70-130			
C9-C10 Aromatic Hydrocarbons	30.9	mg/l	30.0		103	70-130			
Unadjusted C5-C8 Aliphatic Hydrocarbons	246	mg/l	280		87.9	70-130			
Unadjusted C9-C12 Aliphatic Hydrocarbons	84.4	mg/l	85.0		99.3	70-130			
Benzene	16.8	μg/l	20.0		84.0	70-130			
Ethylbenzene	16.2	μg/I	20,0		81.0	70-130			
Methyl tert-butyl ether	19.0	μg/l	20.0		95.0	70-130			
Naphthalene	17.0	μ <u>g</u> /l	20.0		85.0	70-130			
Toluene	16.4	μ <u>g</u> /l	20.0		82.0	70-130			
m,p-Xylene	32.2	μg/l	40.0		80.5	70-130			
o-Xylene	16.8	μg/I	20.0		84.0	70-130			
2-Methylpentane	17.7	нд/I	20.0		88.5	70-130			
n-Nonane	15.5	μg/l	20.0		77.5	70-130			
n-Pentane	17.8	μ <u>g</u> /l	20.0		89.0	70-130			
1,2,4-Trimethylbenzene	16.6	μg/l	20.0		83.0	70-130			
2,2,4-Trimethylpentane	17.7	μg/1	20.0		88.5	70-130 70-130			
n-Butylcyclohexane	16.3	μg/l	20.0		81.5	70-130			
n-Decane	15.2	μ <u>g</u> /l	20.0		76.0	70-130			
					· · ·				
Surrogate: 2,5-Dibromotoluene (FID)	37.3	μg/l	50.0		74.6	70-130			
Surrogate: 2,5-Dibromotoluene (PID)	37.5	μg/l	50.0		75.0	70-130			
LCS Dup (5040231-BSD1)			Prepared: (06-Apr-05		: 07-Apr-0)5		
C5-C8 Aliphatic Hydrocarbons	141	mg/l	140		101	70-130	9.22	25	
C9-C12 Aliphatic Hydrocarbons	56.0	mg/l	55.0		102	70-130	4.72	25	
C9-C10 Aromatic Hydrocarbons	35.0	mg/l	30.0		117	70-130	12.7	25	
Unadjusted C5-C8 Aliphatic Hydrocarbons	275	mg/l	280		98.2	70-130	11.1	25	
Unadjusted C9-C12 Aliphatic Hydrocarbons	91.0	mg/l	85.0		107	70-130	7.46	25	
Benzene	18.7	μg/l	20.0		93.5	70-130	10.7	25	
Ethylbenzene	19.1	μg/l	20.0		95.5	70-130	16.4	25	
Methyl tert-butyl ether	20.4	μg/]	20.0		102	70-130	7.11	25	
Naphthalene	21.7	μg/l	20.0		108	70-130	23.8	25	
Toluene	18.9	μg/l	20.0		94.5	70-130	14.2	25	
m,p-Xylene	37.6	μg/l	40.0			70-130	15.5	25	
o-Xylene	19.4	μg/1	20.0		97.0	70-130	14.4	25	
2-Methylpentane	18.6	μg/l	20.0		93.0	70-130	4.96	25	
n-Nonane	17.9	μg/l	20.0		89.5	70-130	14,4	25	

Volatile Organic Compounds - Quality Control

Volatile	Organic	Compounds -	Quality	Control
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			Spike	Source		%REC		RPD	
Analyte(s)	Result	*RDL Units	Level	Result	%REC	Limits	RPD	Limit	Flag
Batch 5040231 - VPH									
LCS Dup (5040231-BSD1)			Prepared:	06-Apr-0	5 Analyze	d: 07-Apr-	05		
n-Pentane	18.7	μg/l	20.0		93.5	70-130	4.93	25	
1,2,4-Trimethylbenzene	19.9	μg/l	20.0		99.5	70-130	18.1	25	
2,2,4-Trimethylpentane	18.9	μg/l	20.0		94.5	70-130	6.56	25	
n-Butylcyclohexane	19.7	μ g /]	20.0		98.5	70-130	18.9	25	
n-Decane	19,7	μg/)	20.0		98.5	70-130	25.8	25	QR-0
Surrogate: 2,5-Dibromotoluene (FID)	49.7	μg/l	50.0		99.4	70-130			
Surrogate: 2,5-Dibromotoluene (PID)	48.5	μg/l	50.0		97.0	70-130			
Duplicate (5040231-DUP1)	Sou	rce: SA26067-04	Prepared	& Analyze	ed: 06-Api	r-05			
C5-C8 Aliphatic Hydrocarbons	BRL	0.0750 mg/l		0.00641			0.312	50	
C9-C12 Aliphatic Hydrocarbons	BRL	0.0250 mg/l		0.000272			23.4	50	
C9-C10 Aromatic Hydrocarbons	BRL	0.0250 mg/l		0.00192			3.17	50	
Unadjusted C5-C8 Aliphatic Hydrocarbons	BRL	0.0750 mg/l		0.00641			0.312	50	
Unadjusted C9-C12 Aliphatic	BRL	0.0250 mg/l		0.00219			0.456	50	
Hydrocarbons									
Benzene	BRL	5.0 μg/l		BRL				50	
Ethylbenzene	BRL	5.0 μg/l		BRL				50	
Methyl tert-butyl ether	BRL	5.0 μg/l		BRL				50	
Naphthalene	BRL	5.0 μg/l		BRL				50	
Toluene	BRL	5.0 μg/l		BRL				50	
m,p-Xylene	BRL	10.0 μg/l		BRL				50	
o-Xylene	BRL	5,0 μg/l		BRL				50	
Surrogate: 2,5-Dibromotoluene (FID)	44.8	µg/l	50.0		89.6	70-130			
Surrogate: 2,5-Dibromotoluene (PID)	44.3	μg/l	50.0		88. 6	70-130			
Matrix Spike (5040231-MS1)	Sou	rce: SA26067-04	Prepared	& Analyze	ed: 06-Apr	-05			-
Benzene	17.9	μg/l	20.0	BRL	89.5	70-130			
Ethylbenzene	17.8	µg/l	20.0	BRL	89.0	70-130			
Methyl tert-butyl ether	17.7	μg/l	20.0	BRL	88.5	70-130			
Naphthalene	15.3	μg/l	20.0	BRL,	76.5	70-130			
Toluene	18.0	µg/l	20,0	BRL	90.0	70-130			
m,p-Xylene	35.2	µg/I	40.0	BRL	88.0	70-130			
o-Xylene	18.3	μg/l	20.0	BRL	91.5	70-130			
2-Methylpentane	15.1	μg/l	20.0	BRL	75.5	70-130			
n-Nonane	14.6	μg/l	20.0	BRL	73.0	70-130			
n-Pentane	17.6	μg/l	20.0	BRL	88.0	70-130			
1,2,4-Trimethylbenzene	18.1	μg/l	20.0	BRL	90.5	70-130			
2,2,4-Trimethylpentane	16.3	μg/l	20.0	BRL	81.5	70-130			
n-Butylcyclohexane	16.2	μg/l	20,0	0.0	81.0	70-130			
n-Decane	14.8	μg/l	20.0	0.0	74.0	70-130			
Surrogate: 2,5-Dibromotoluene (FID)	29.5	μg/l	50.0		59.0	70-130			S-0
Surrogate: 2,5-Dibromotoluene (PID)	28.5	μg/l	50.0		57.0	70-130			S-0

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Fla
Batch 0504027 - 5040219		<u> </u>						2000	1 10
Calibration Check (0504027-CCV1)			Prenared	06-Apr-04	5 Analuze	d: 07-Apr-	05		
C9-C18 Aliphatic Hydrocarbons	0.661	mg/kg wet	0.600	00-710-0.	110	75-125	03		
C19-C36 Aliphatic Hydrocarbons	0.760	mg/kg wet	0.800		95.0	75-125			
C11-C22 Aromatic Hydrocarbons	2.12	mg/kg wet	1.70		125	75-125			
Naphthalene	86.9	μg/kg wet	100		86.9	80-120			
2-Methylnaphthalene	85.4	μg/kg wet	100		85.4	80-120			
Acenaphthylene	88.4	μg/kg wet	100		88.4	80-120			
Acenaphthene	90.8	µg/kg wet	100		90.8	80-120			
Fluorene	89.9	µg/kg wet	100		89.9	80-120			
Phenanthrene	94.7	μg/kg wet	100		94.7	80-120			
Anthracene	83.3	μg/kg wet	100		83.3	80-120			
Fluoranthene	107	μg/kg wet	100		107	80-120			
Pyrene	102	μg/kg wet	100		102	80-120			
Benzo (a) anthracene	129	μg/kg wet	100		129	80-120			QC-
Chrysene	108	μg/kg wet	100		108	80-120			
Benzo (b) fluoranthene	109	µg∕kg wet	100		109	80-120			
Benzo (k) fluoranthene	129	µg∕kg wet	100		129	80-120			QC
Benzo (a) pyrene	114	μg/kg wet	100		114	80-120			-
Indeno (1,2,3-cd) pyrene	97.0	μg/kg wet	100		97.0	80-120			
Dibenzo (a,h) anthracene	99.0	μg/kg wet	100		99.0	80-120			
Benzo (g,h,i) perylene	86.7	μg/kg wet	100		86.7	80-120			
Calibration Check (0504027-CCV2)			Prepared:	06-Apr-05	Analyzed	i: 07-Apr-0)5		
C9-C18 Aliphatic Hydrocarbons	0.603	mg/kg wet	0.600		100	75-125			
C19-C36 Aliphatic Hydrocarbons	0.674	mg/kg wet	0.800		84.2	75-125			
C11-C22 Aromatic Hydrocarbons	1.73	mg/kg wet	1.70		102	75-125			
Naphthalene	86.8	µg∕kg wet	100		86.8	80-120			
2-Methylnaphthalene	92.9	μg/kg wet	100		92.9	80-120			
Acenaphthylene	89,4	μg/kg wet	100		89.4	80-120			
Acenaphthene	86.8	μg/kg wet	100		86.8	80-120			
Fluorene	88.1	μg/kg wet	100		88.1	80-120			
Phenanthrene	96.1	μg/kg wet	100		96.1	80-120			
Anthracene	90.1	μg/kg wet	001		90.1	80-120			
Fluoranthene	104	μg/kg wet	100		104	80-120			
Pyrene	103	μg/kg wet	100		103	80-120			
Benzo (a) anthracene	123	μg/kg wet	100		123	80-120			QC-
Chrysene	122	μg/kg wet	100		122	80-120			QC-
Benzo (b) fluoranthene	122	μg/kg wet	100		122	80-120			QC-
Benzo (k) fluoranthene	120	μg/kg wet	100		120	80-120			
Benzo (a) pyrene	122	µg/kg wet	100		122	80-120			QC-
Indeno (1,2,3-cd) pyrene	100	μg/kg wet	100		100	80-120			
Dibenzo (a,h) anthracene	104	μg/kg wet	100		104	80-120			
Benzo (g,h,i) perylene Batch 5040219 - SW846 3510C	90.2	μg/kg wet	100		90.2	80-120			
Blank (5040219-BLK1)			Prepared: (06-Apr-05	Analyzed	: 07-Apr-0	5		
C9-C18 Aliphatic Hydrocarbons	BRL	0.2 mg/l							
C19-C36 Aliphatic Hydrocarbons C11-C22 Aromatic Hydrocarbons	BRL	0.2 mg/l							
Unadjusted C11-C22 Aromatic Hydrocarbons	BRL BRL	0.2 mg/l 0.2 mg/l							
Total Petroleum Hydrocarbons	BRL	0.2 mall							
Unadjusted Total Petroleum Hydrocarbons	BRL	0.2 mg/t							
Naphthalene	BRL	0.2 mg/l							
2-Methylnaphthalene	BRL	2.50 µg/l 2.50 µg/l							
Acenaphthylene	BRL								
. computery retto	DKL	2.50 μg/l							

Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch 5040219 - SW846 3510C						·		<u></u>	
Blank (5040219-BLK1)			Prenared:	06-Apr-0	5 Analyze	d: 07-Apr-	05		
Acenaphthene	BRL	2.50 μg/l				P			·,
Fluorene	BRL	2.50 μg/l							
Phenanthrene	BRL	2.50 μg/l							
Anthracene	BRL	2.50 μg/l							
Fluoranthene	BRL	2.50 μg/l							
Pyrene	BRL	2.50 μg/l							
Benzo (a) anthracene	BRL	2.50 μg/l							
Chrysene	BRL	2.50 μg/l							
Benzo (b) fluoranthene	BRL	2.50 μg/l							
Benzo (k) fluoranthene	BRL	2,50 μg/l							
Benzo (a) pyrene	BRL	2.50 µg/l							
Indeno (1,2,3-cd) pyrene	BRL	2.50 µg/l							
Dibenzo (a,h) anthracene	BRL	2.50 μg/l							
Benzo (g,h,i) perylene	BRL	2.50 μg/l							
Surrogate: 1-Chlorooctadecane	33.7	µg/l	50.0		67.4	40-140			
Surrogate: Ortho-Terphenyl	30.6	, ε μg/l	50.0		61.2	40-140			
Surrogate: 2-Bromonaphthalene	20.6	μg/1	40.0		51.5	40-140			
Surrogate: 2-Fluorobiphenyl	27.7	μg/l	40.0		69.2	40-140			
LCS (5040219-BS1)		1.0		06-Apr-0*		d: 07-Apr-0	05		
C9-C18 Aliphatic Hydrocarbons	0.356	0.2 mg/l	0.600	00-1101 0.	59.3	40-140			
C19-C18 Aliphatic Hydrocarbons	0.504	0.2 mg/l	0.800		63.0	40-140			
	1.66	0.2 mg/l	1.70		97.6	40-140			
C11-C22 Aromatic Hydrocarbons	54.2	0.2 mg/l 2.50 μg/l	100		54.2	40-140			
Naphthalene 2-Methylnaphthalene	58.6	2.50 μg/l 2.50 μg/l	100		58.6	40-140			
Acenaphthylene	64.8	2.50 μg/l 2.50 μg/l	100		64.8	40-140			
Acenaphthene	67.0	2.50 μg/l 2.50 μg/l	100		67.0	40-140			
Fluorene	69.4	2.50 μg/l 2.50 μg/l	100		69,4	40-140			
Phenanthrene	75.4	2.50 µg/l	100		75.4	40-140			
Anthracene	72.0	2.50 μg/l 2.50 μg/l	100		72.0	40-140			
Fluoranthene	79.7	2.50 μg/l	100		79.7	40-140			
Pyrene	84.0	2.50 μg/l	100		84.0	40-140			
Benzo (a) anthracene	101	2.50 μg/l	100		101	40-140			
Chrysene	91.8	2.50 μg/l	100		91.8	40-140			
Benzo (b) fluoranthene	95.4	2.50 μg/l	100		95.4	40-140			
Benzo (k) fluoranthene	102	2,50 μg/l	100		102	40-140			
Benzo (a) pyrene	98.2	2.50 μg/l	100		98.2	40-140			
Indeno (1,2,3-cd) pyrene	83.5	2.50 μg/l	100		83.5	40-140			
Dibenzo (a,h) anthracene	84.9	2.50 μg/l	100		84.9	40-140			
Benzo (g,h,i) perylene	76.7	2.50 μg/l	100		76.7	40-140			
Naphthalene (aliphatic fraction)	0.645	μg/l	100		0.645	0-200			
2-Methylnaphthalene (aliphatic fraction)	1.21	µg/1	100		1.21	0-200			
Surrogate: 1-Chlorooctadecane	35.4	μg/l	50.0		70.8	40-140			
Surrogate: Ortho-Terphenyl	35.7	μg/l	50.0		71.4	40-140			
Surrogate: 2-Bromonaphthalene	20.4	μg/l	40.0		51.0	40-140			
Surrogate: 2-Fluorobiphenyl	32.7	μg/l	40.0		81.8	40-140			
Naphthalene Breakthrough	1.18	%		<u> </u>		0-5			
2-Methylnaphthalene Breakthrough	2.02	%				0-5			
Fractionation Check Standard (50402	219-BS2)		Prepared:	06-Apr-0	5 Analyze	d: 07-Apr-	05		
C9-C18 Aliphatic Hydrocarbons	0.362	0.2 mg/l	0.600		60.3	40-140			
C19-C36 Aliphatic Hydrocarbons	0.471	0.2 mg/l	0.800		58.9	40-140			
C11-C22 Aromatic Hydrocarbons	1.66	0.2 mg/l	1.70		97.6	40- 140			
Naphthalene	66.8	2.50 μg/l	100		66.8	40-140			
2-Methylnaphthalene	71,1	2.50 μg/l	100		71.1	40-140			

Extractable Petroleum Hydrocarbons - Quality Control

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* Reportable Detection Limit

BRL = Below Reporting Limit

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
	Result	KDL Omis	Level		%KEC		KPD		<u>г</u> іа
Batch 5040219 - SW846 3510C									
Fractionation Check Standard (504021			Prepared:	06-Apr-0:	5 Analyze	d: 07-Apr-	05		
Acenaphthylene	72.4	2.50 μg/l	100		72.4	40-140			
Acenaphthene	76.7	2.50 μg/l	100		76.7	40-140			
Fluorene	78.0	2.50 μg/l	100		78.0	40-140			
Phenanthrene	84.6	2.50 μg/l	100		84.6	40-140			
Anthracene	80.6	2.50 μg/l	100		80.6	40-140			
Fluoranthene	88.8	2.50 μg/l	100		88.8	40-140			
Pyrene	91.4	2.50 μg/l	100		91,4	40-140			
Benzo (a) anthracene	113	2.50 μg/l	100		113	40-140			
Chrysene	105	2.50 μg/l	100		105	40-140			
Benzo (b) fluoranthene	94.5	2.50 μg/l	100		94.5	40-140			
Benzo (k) fluoranthene	83.4	2.50 μg/l	100		83.4	40-140			
Benzo (a) pyrene	108	2.50 μg/l	100		108	40-140			
Indeno (1,2,3-cd) pyrene	92.8	2.50 μg/l	100		92.8	40-140			
Dibenzo (a,h) anthracene	94.6	2.50 μg/l	100		94.6	40-140			
Benzo (g,h,i) perylene	84.2	2.50 μg/l	100		84.2	40-140			
Naphthalene (aliphatic fraction)	0.813	μg/l	100		0.813	0-200			
2-Methylnaphthalene (aliphatic fraction)	0.986	μg/l	100		0.986	0-200			
Surrogate: 1-Chlorooctadecane	34.3	μg/l	50.0		68.6	40-140			
Surrogate: Ortho-Terphenyl	39.2	μ <u>g</u> /l	50.0		78.4	40-140			
Surrogate: 2-Bromonaphthalene	20.8	μg/l	40.0		52.0	40-140			
Surrogate: 2-Fluorobiphenyl	34.1	μg/l	40.0		85.2	40-140			
LCS Dup (5040219-BSD1)		r8-		06-Apr-0	5 Analyze		05		
C9-C18 Aliphatic Hydrocarbons	0.361	0.2 mg/l	0.600	00 1101 0.	60.2	40-140	1.51	25	
• •		_	0.800		64.4	40-140	2.20	25	
C19-C36 Aliphatic Hydrocarbons	0.515 1.73	0.2 mg/l 0.2 mg/l	1.70		102	40-140	4.41	25	
CI1-C22 Aromatic Hydrocarbons	54.2	=	1.70		54.2	40-140	0.00	20	
Naphthalene	54.2 59.1	2.50 μg/l	100		59.1	40-140	0.850	20	
2-Methylnaphthalene		2.50 μg/l			65.8				
Acenaphthylene	65.8	2.50 μg/l	100			40-140	1.53	20 20	
Acenaphthene	68.2	2.50 μg/l	100		68.2	40-140	1.78		
Fluorene	71.8	2.50 μg/l	100		71.8	40-140	3.40	20	
Phenanthrene	81.1	2.50 µg/l	100		81.1	40-140	7.28	20	
Anthracene	75.5	2.50 μg/l	100		75,5	40-140	4.75	20	
Fluoranthene	85.9	2.50 μg/l	100		85.9	40-140	7.49	20	
Ругепе	89.6	2.50 μg/l	100		89.6	40-140	6.45	20	
Benzo (a) anthracene	108	2.50 μg/l	100		108	40-140	6.70	20	
Chrysene	105	2.50 μg/l	100		105	40-140	13.4	20	
Benzo (b) fluoranthene	98.1	2.50 μg/l	100		98.1	40-140	2.79	20	
Benzo (k) fluoranthene	116	2.50 µg/l	100		116	40-140	12.8	20	
Benzo (a) pyrene	104	2.50 μg/l	100		104	40-140	5.74	20	
Indeno (1,2,3-cd) pyrene	90. 6	2.50 μg/l	100		90.6	40-140	8.16	20	
Dibenzo (a,h) anthracene	91.8	2.50 μg/l	100		91.8	40-140	7.81	20	
Benzo (g,h,i) perylene	82.7	2.50 μg/l	100		82.7	40-140	7,53	20	
Naphthalene (aliphatic fraction)	0.689	μg/l	100		0.689	0-200	6.60	200	
2-Methylnaphthalene (aliphatic fraction)	0.603	μg/l	100		0.603	0-200	67.0	200	
Surrogate: 1-Chlorooctadecane	36,5	μg/1	50.0		73.0	40-140	_		_
Surrogate: Ortho-Terphenyl	36.9	μg/l	50.0		7 3 .8	40-140			
Surrogate: 2-Bromonaphthalene	23.4	μg/l	40.0		58.5	40-140			
Surrogate: 2-Fluorobiphenyl	34.0	μg/l	40.0		85.0	40-140			
Naphthalene Breakthrough	1.26	%				0-5			
2-Methylnaphthalene Breakthrough	1.01	%				0-5			

This laboratory report is not valid without an authorized signature on the cover page. * Reportable Detection Limit

Notes and Definitions

QC-1 Analyte out of acceptance range.

- QR-02 The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
- S-04 The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
- S-GC Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.
- BRL Below Reporting Limit Analyte NOT DETECTED at or above the reporting limit
- dry Sample results reported on a dry weight basis
- NR Not Reported
- RPD Relative Percent Difference

A plus sign (+) in the Method Reference column indicates the method is not accredited by NELAC.

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

<u>Matrix Spike</u>: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

<u>Method Blank</u>: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

<u>Method Detection Limit (MDL)</u>: The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

<u>Reportable Detection Limit (RDL)</u>: The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

<u>Surrogate</u>: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Validated by: Hanibal C. Tayeh, Ph.D. Nicole Brown The following outlines the condition of all VPH samples contained within this report upon laboratory receipt.

Matrix	- Aqueous	5	🗆 Soil	Sediment	• Other	
Containers	Satisfact	ory	D Broken	Leaking	-	
Samala	Aqueous (acid-preserved)	□ N/A	₽ pH≤2	□ pH>2	Comment	
Sample Preservative	Soil or	B N/A	Samples no	t received in Meth	hanol or air-tight contair	
	Sediment	□ Sampl	les received in		overing soil/sediment ot covering soil/sediment	□ 1:1 +/-25% □ Other:
		Sample	les received in	air-tight containe	r:	
Temperature	Received	on ice	Received at	4 ± 2 ℃ 🖢 Oth	er: / °C	

Were all QA/QC procedures followed as required by the VPH method? Yes <u>No</u> Were any significant modifications made to the VPH method as specified in section 11.3? No *see below Were all performance/acceptance standards for required QA/QC procedures achieved? Yes <u>No</u> * Yes, if PID and FID surrogate recoveries are listed as n/a, then that sample was run via GCMS using all QC criteria specified in the method

The following outlines the condition of all EPH samples contained within this report upon laboratory receipt.

Matrix	Aqueous Satisfactory		🗖 Soil		Sediment	□ Other	· · · · · ·	
Containers			🗆 Br	oken	Leaking			
Aqueous Preservative DN/A		₽ pH≤2	□ pH>2	pH adjust	ed to <2 in lab	Comment		
Temperature	D R	eceived on i	ce 🗆 Rec	ceived at 4	±2°C B-Othe	r: /	°C	

Were all QA/QC procedures followed as required by the EPH method? Yes <u>No</u> Were any significant modifications made to the EPH method as specified in Section 11.3? No Were all performance/acceptance standards for required QA/QC procedures achieved? Yes <u>No</u>

I attest 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.

Authorized by:

Hanibal C. Tayeh, Ph.D. President/Laboratory Director

A Deserver		4-1	te v	ten St, Wrinchester	QA Reporting Notes: (check if needed)	State specific reporting standards If applicable, pleave list below.	Provide MCP CAM Report Were all field QC requirements met as per MADEP CAM Section 2.0?	LJ Yes D No (Response required for CAM report)							WELOT 1045	a Y/slos ich	+
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	SPECTRUM ANAL TECHNOLOGY		35 WINThey	Project Mgr.: Themas Simmers	1=Na ₂ S2O ₃ 2=HCl 3=H ₂ SO ₄ 4=HNO ₃ 7=CH ₃ OH 8= NaHSO ₄ 9=	DW=Drinking Water GW=Groundwater O=Oil SW= Surface Water SO=Soil X1=X2=	G=Grab C=C		5 - CA B103	1	1-01 MW-1	/ CS MW-9	1 - C) BIORB		ロチax results when available to (フをリ) フ るノー リ イジ る	EDD Format	Condition upon receipt:

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