

FEBRUARY 20, 2024

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Mr. Michael Lindstrom
Deputy Town Manager
Town of Andover
36 Bartlet Street
Andover, MA 01810

**RE: Letter Report on Soil Sampling and Analysis
Haggetts Pond Rail Trail**

Dear Mr. Lindstrom :

BSC Group, Inc. (BSC) is pleased to submit this letter report on the soil sampling and analyses undertaken at the Haggetts Pond Rail Trail west of Haggetts Pond in Andover, Massachusetts. The purpose of the sampling and analyses was to evaluate shallow soil conditions in support of permitting for Haggetts Pond Rail Trail. We understand that some public comments have raised a concern that potentially contaminated soil from the former rail bed could be hazardous to construction workers and/or abutters or could runoff into Haggetts Pond.

Soil Sampling and Analyses

Four shallow soil samples were collected on January 26, 2024. The sample collection times are indicated on the chain-of-custody appended to the laboratory report. The samples were collected between ground surface and approximately 6-inches in depth from the center of the trail from small excavations approximately 4-inches in diameter. The small excavations were backfilled following sample collection.

The soil sample locations are shown on Figure 1, attached. The soil samples were placed in laboratory-provided 8-ounce amber glass jars and placed in a cooler with ice. The soil samples were transported under chain-of-custody protocols to an Independent, third-party Massachusetts-certified analytical testing laboratory for analyses. Since the concern for potentially contaminated runoff into Haggetts Pond had been expressed, the soil sampling locations were biased to be where the trail is closest to the surface water.

The soil samples were analyzed for the RCRA 8 metals including Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium and Silver, and for total petroleum hydrocarbons (TPH). The Massachusetts Department of Environmental Protection's (MassDEP) study of old rail beds has found that certain metals are often present, particularly Arsenic, from the past use this metal for preservation of wooden cross ties in the railroad track structure. Petroleum hydrocarbons can also be present from leaked motor oil and/or diesel fuel from locomotives.

Laboratory Test Results

The soil samples were analyzed by ESS Laboratory of Cranston, Rhode Island. The results of the laboratory testing of the four soil samples are summarized in Table 1. The laboratory report is included as Attachment A.

The soil analytical results suggest that the shallow soil beneath the Haggetts Pond trail contain non-detectable to very low concentrations of TPH, and certain metals that are consistent with "Background" concentrations, which MassDEP defines as those levels that would exist in the absence of a disposal site of concern. All of the concentrations detected are below MassDEP's respective Reportable Concentrations in soil as set forth in the Massachusetts Contingency Plan (MCP, 310 CMR 40.0000).

Findings and Recommendations

The results of the soil sampling and analyses found no exceedance of a Reportable Concentration and suggest minimal concern for contaminated soil to be hazardous to construction workers or abutters, as well as for impacts to Haggetts Pond. We recommend that the construction contractor utilize best management practices for erosion and sedimentation control during construction.

BSC appreciates the opportunity to submit this letter report summarizing the findings of the soil sampling and analyses for the Haggetts Pond Rail Trail. If you have any questions, please feel free to call me at 781.267.3390.

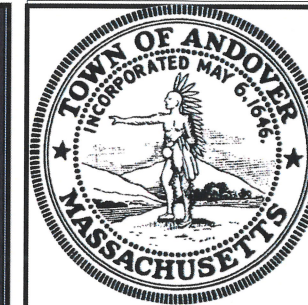
Very truly yours,

BSC Group, Inc.



Michael P. Clark, P.E., LSP
Vice President

Figure



HAGGETTS POND
RAIL TRAIL

IN
ANDOVER,
MASSACHUSETTS

FIGURE 1
SOIL SAMPLE
LOCATION PLAN

NOVEMBER 7, 2023

REVISIONS:

NO.	DATE	DESCRIPTION
1	12/21/23	REDUCED ENV. IMPACTS

PREPARED FOR:
TOWN OF ANDOVER
36 BARTLET STREET
ANDOVER, MA, 01810

BSC GROUP
300 Brickstone Square, Suite 203
Andover, Massachusetts
01810
617 896 4300

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SCALE: 1" = 80'
0 40 80 160 FEET

FILE: P:\8998501\ENV\ENV soil sample plan
DWG.:
JOB. NO: 8-9985.01 SHEET 2 OF 2

PLAN VIEW
SCALE: 1" = 80'
0 40 80 160 FEET

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Table

Table 1 Summary of Soil Analytical Results Haggetts Pond Rail Trail							
Analyte	Units	MassDEP MCP Reportable Concentrations		24A0847-01	24A0847-02	24A0847-03	24A0847-04
		RCS-1	RCS-2	S-1 (0-0.5')	S-2 (0-0.5')	S-3 (0-0.5')	S-4 (0-0.5')
Total Petroleum Hydrocarbons							
C9 - C36	mg/kg dry	1000	3000	ND (12)	23.9	49.4	48.3
Total Metals							
Arsenic	mg/kg dry	20	20	2.66	7.50	8.63	4.20
Barium	mg/kg dry	1000	3000	7.63	14.6	30.8	30.9
Cadmium	mg/kg dry	70	100	ND (0.44)	ND (0.43)	ND (0.49)	ND (0.47)
Chromium	mg/kg dry	100	200	9.16	13.8	32.3	17.0
Lead	mg/kg dry	200	600	17.4	35.7	107	48.8
Mercury	mg/kg dry	20	30	0.038	0.059	0.134	0.101
Selenium	mg/kg dry	400	700	ND (4.42)	ND (4.43)	ND (4.88)	ND (4.65)
Silver	mg/kg dry	100	200	ND (0.44)	ND (0.43)	ND (0.49)	ND (0.47)

mg/kg = Milligrams per kilogram

ND (0.0049) = Not detected above laboratory reporting limits shown

BOLD type face indicates values above reporting limits

Analytical Laboratory Report

CERTIFICATE OF ANALYSIS

Mike Clark
BSC Companies
803 Summer Street Suite 3
Boston, MA 02127

RE: Haggetts Pond Rail Trail (89985.01)
ESS Laboratory Work Order Number: 24A0847

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.



Laurel Stoddard
Laboratory Director

REVIEWED

By ESS Laboratory at 5:52 pm, Feb 01, 2024

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

CERTIFICATE OF ANALYSIS

Client Name: BSC Companies
Client Project ID: Haggetts Pond Rail Trail

ESS Laboratory Work Order: 24A0847

SAMPLE RECEIPT

The following samples were received on January 29, 2024 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been performed and achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Limit Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

Question I: All samples for EPH and metals were analyzed for a subset of the required MCP list per the client's request.

<u>Lab Number</u>	<u>Sample Name</u>	<u>Matrix</u>	<u>Analysis</u>
24A0847-01	S-1	Soil	6010D, 7471B, 8100M
24A0847-02	S-2	Soil	6010D, 7471B, 8100M
24A0847-03	S-3	Soil	6010D, 7471B, 8100M
24A0847-04	S-4	Soil	6010D, 7471B, 8100M

CERTIFICATE OF ANALYSIS

Client Name: BSC Companies
Client Project ID: Haggetts Pond Rail Trail

ESS Laboratory Work Order: 24A0847

PROJECT NARRATIVE

Total Metals

DA43008-BSD1

Blank Spike recovery is below lower control limit (B-).

Arsenic (65% @ 67-133%), Barium (67% @ 76-125%), Cadmium (65% @ 80-120%), Chromium (60% @ 71-129%), Lead (68% @ 74-125%), Selenium (69% @ 70-130%)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

[Definitions of Quality Control Parameters](#)

[Semivolatile Organics Internal Standard Information](#)

[Semivolatile Organics Surrogate Information](#)

[Volatile Organics Internal Standard Information](#)

[Volatile Organics Surrogate Information](#)

[EPH and VPH Alkane Lists](#)

CERTIFICATE OF ANALYSIS

Client Name: BSC Companies

Client Project ID: Haggetts Pond Rail Trail

ESS Laboratory Work Order: 24A0847

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH
MADEP 18-2.1 - VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.

CERTIFICATE OF ANALYSIS

Client Name: BSC Companies
 Client Project ID: Haggetts Pond Rail Trail

ESS Laboratory Work Order: 24A0847

MassDEP Analytical Protocol Certification Form

MADEP RTN: _____

This form provides certification for the following data set: **24A0847-01 through 24A0847-04**

Matrices: () Ground Water/Surface Water (x) Soil/Sediment () Drinking Water () Air () Other: _____

CAM Protocol (check all that apply below):

- | | | | | | |
|------------------------------|-------------------------------|---|--------------------------------|---|------------------------------------|
| () 8260 VOC
CAM II A | (x) 7470/7471 Hg
CAM III B | () MassDEP VPH
(GC/PID/FID)
CAM IV A | () 8082 PCB
CAM V A | () 9014 Total
Cyanide/PAC
CAM VI A | () 6860 Perchlorate
CAM VIII B |
| () 8270 SVOC
CAM II B | () 7010 Metals
CAM III C | () MassDEP VPH
(GC/MS)
CAM IV C | () 8081 Pesticides
CAM V B | () 7196 Hex Cr
CAM VI B | () MassDEP APH
CAM IX A |
| (x) 6010 Metals
CAM III A | () 6020 Metals
CAM III D | (x) MassDEP EPH
CAM IV B | () 8151 Herbicides
CAM V C | () Explosives
CAM VIII A | () TO-15 VOC
CAM IX B |

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

- A Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times? Yes (x) No ()
- B Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed? Yes (x) No ()
- C Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances? Yes (x) No ()
- D Does the laboratory report comply with all the reporting requirements specified in the CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"? Yes (x) No ()
- E VPH, EPH, APH and TO-15 only: a. Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). Yes (x) No ()
 b. APH and TO-15 Methods only: Was the complete analyte list reported for each method? Yes () No ()
- F Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)? Yes (x) No ()

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

- G Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols(s)? Yes (x) No ()*
Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.
- H Were all QC performance standards specified in the CAM protocol(s) achieved? Yes () No (x)*
- I Were results reported for the complete analyte list specified in the selected CAM protocol(s)? Yes () No (x)*

***All negative responses must be addressed in an attached laboratory narrative.**

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

Signature: 
 Printed Name: Laurel Stoddard

Date: February 01, 2024
 Position: Laboratory Director

CERTIFICATE OF ANALYSIS

Client Name: BSC Companies
 Client Project ID: Haggetts Pond Rail Trail
 Client Sample ID: S-1
 Date Sampled: 01/26/24 13:21
 Percent Solids: 85

ESS Laboratory Work Order: 24A0847
 ESS Laboratory Sample ID: 24A0847-01
 Sample Matrix: Soil
 Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	2.66 (2.21)		6010D		1	KJB	01/31/24 3:04	2.65	100	DA43008
Barium	7.63 (2.21)		6010D		1	KJB	01/31/24 3:04	2.65	100	DA43008
Cadmium	ND (0.44)		6010D		1	KJB	01/31/24 3:04	2.65	100	DA43008
Chromium	9.16 (0.88)		6010D		1	KJB	01/31/24 3:04	2.65	100	DA43008
Lead	17.4 (4.42)		6010D		1	KJB	01/31/24 3:04	2.65	100	DA43008
Mercury	0.038 (0.036)		7471B		1	AFV	01/30/24 16:27	0.64	40	DA43007
Selenium	ND (4.42)		6010D		1	KJB	01/31/24 3:04	2.65	100	DA43008
Silver	ND (0.44)		6010D		1	KJB	01/31/24 3:04	2.65	100	DA43008

CERTIFICATE OF ANALYSIS

Client Name: BSC Companies
 Client Project ID: Haggetts Pond Rail Trail
 Client Sample ID: S-1
 Date Sampled: 01/26/24 13:21
 Percent Solids: 85
 Initial Volume: 19.5g
 Final Volume: 1ml
 Extraction Method: 3546

ESS Laboratory Work Order: 24A0847
 ESS Laboratory Sample ID: 24A0847-01
 Sample Matrix: Soil
 Units: mg/kg dry
 Analyst: JDN
 Prepared: 1/29/24 19:37

8100M Total Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Total Petroleum Hydrocarbons (C9-C36)	ND (12.0)		8100M		1	01/30/24 15:35		DA42905
		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
<i>Surrogate: O-Terphenyl</i>		<i>96 %</i>		<i>40-140</i>				

CERTIFICATE OF ANALYSIS

Client Name: BSC Companies
 Client Project ID: Haggetts Pond Rail Trail
 Client Sample ID: S-2
 Date Sampled: 01/26/24 13:34
 Percent Solids: 87

ESS Laboratory Work Order: 24A0847
 ESS Laboratory Sample ID: 24A0847-02
 Sample Matrix: Soil
 Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	7.50 (2.17)		6010D		1	KJB	01/31/24 3:09	2.65	100	DA43008
Barium	14.6 (2.17)		6010D		1	KJB	01/31/24 3:09	2.65	100	DA43008
Cadmium	ND (0.43)		6010D		1	KJB	01/31/24 3:09	2.65	100	DA43008
Chromium	13.8 (0.87)		6010D		1	KJB	01/31/24 3:09	2.65	100	DA43008
Lead	35.7 (4.33)		6010D		1	KJB	01/31/24 3:09	2.65	100	DA43008
Mercury	0.059 (0.037)		7471B		1	AFV	01/30/24 16:30	0.61	40	DA43007
Selenium	ND (4.33)		6010D		1	KJB	01/31/24 3:09	2.65	100	DA43008
Silver	ND (0.43)		6010D		1	KJB	01/31/24 3:09	2.65	100	DA43008

CERTIFICATE OF ANALYSIS

Client Name: BSC Companies
 Client Project ID: Haggetts Pond Rail Trail
 Client Sample ID: S-2
 Date Sampled: 01/26/24 13:34
 Percent Solids: 87
 Initial Volume: 19.1g
 Final Volume: 1ml
 Extraction Method: 3546

ESS Laboratory Work Order: 24A0847
 ESS Laboratory Sample ID: 24A0847-02
 Sample Matrix: Soil
 Units: mg/kg dry
 Analyst: JDN
 Prepared: 1/29/24 19:37

8100M Total Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Total Petroleum Hydrocarbons (C9-C36)	23.9 (12.0)		8100M		1	01/30/24 16:14		DA42905
		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
<i>Surrogate: O-Terphenyl</i>		85 %		40-140				

CERTIFICATE OF ANALYSIS

Client Name: BSC Companies
 Client Project ID: Haggetts Pond Rail Trail
 Client Sample ID: S-3
 Date Sampled: 01/26/24 13:47
 Percent Solids: 74

ESS Laboratory Work Order: 24A0847
 ESS Laboratory Sample ID: 24A0847-03
 Sample Matrix: Soil
 Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	8.63 (2.44)		6010D		1	KJB	01/31/24 3:14	2.76	100	DA43008
Barium	30.8 (2.44)		6010D		1	KJB	01/31/24 3:14	2.76	100	DA43008
Cadmium	ND (0.49)		6010D		1	KJB	01/31/24 3:14	2.76	100	DA43008
Chromium	32.3 (0.98)		6010D		1	KJB	01/31/24 3:14	2.76	100	DA43008
Lead	107 (4.88)		6010D		1	KJB	01/31/24 3:14	2.76	100	DA43008
Mercury	0.134 (0.041)		7471B		1	AFV	01/30/24 16:36	0.65	40	DA43007
Selenium	ND (4.88)		6010D		1	KJB	01/31/24 3:14	2.76	100	DA43008
Silver	ND (0.49)		6010D		1	KJB	01/31/24 3:14	2.76	100	DA43008

CERTIFICATE OF ANALYSIS

Client Name: BSC Companies
 Client Project ID: Haggetts Pond Rail Trail
 Client Sample ID: S-3
 Date Sampled: 01/26/24 13:47
 Percent Solids: 74
 Initial Volume: 19.4g
 Final Volume: 1ml
 Extraction Method: 3546

ESS Laboratory Work Order: 24A0847
 ESS Laboratory Sample ID: 24A0847-03
 Sample Matrix: Soil
 Units: mg/kg dry
 Analyst: JDN
 Prepared: 1/29/24 19:37

8100M Total Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Total Petroleum Hydrocarbons (C9-C36)	49.4 (13.9)		8100M		1	01/30/24 16:55		DA42905
		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
<i>Surrogate: O-Terphenyl</i>		88 %		40-140				

CERTIFICATE OF ANALYSIS

Client Name: BSC Companies
 Client Project ID: Haggetts Pond Rail Trail
 Client Sample ID: S-4
 Date Sampled: 01/26/24 13:55
 Percent Solids: 81

ESS Laboratory Work Order: 24A0847
 ESS Laboratory Sample ID: 24A0847-04
 Sample Matrix: Soil
 Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	4.20 (2.33)		6010D		1	KJB	01/31/24 3:19	2.65	100	DA43008
Barium	30.9 (2.33)		6010D		1	KJB	01/31/24 3:19	2.65	100	DA43008
Cadmium	ND (0.47)		6010D		1	KJB	01/31/24 3:19	2.65	100	DA43008
Chromium	17.0 (0.93)		6010D		1	KJB	01/31/24 3:19	2.65	100	DA43008
Lead	48.8 (4.65)		6010D		1	KJB	01/31/24 3:19	2.65	100	DA43008
Mercury	0.101 (0.035)		7471B		1	AFV	01/30/24 16:38	0.69	40	DA43007
Selenium	ND (4.65)		6010D		1	KJB	01/31/24 3:19	2.65	100	DA43008
Silver	ND (0.47)		6010D		1	KJB	01/31/24 3:19	2.65	100	DA43008

CERTIFICATE OF ANALYSIS

Client Name: BSC Companies
 Client Project ID: Haggetts Pond Rail Trail
 Client Sample ID: S-4
 Date Sampled: 01/26/24 13:55
 Percent Solids: 81
 Initial Volume: 19.7g
 Final Volume: 1ml
 Extraction Method: 3546

ESS Laboratory Work Order: 24A0847
 ESS Laboratory Sample ID: 24A0847-04
 Sample Matrix: Soil
 Units: mg/kg dry
 Analyst: JDN
 Prepared: 1/29/24 19:37

8100M Total Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Total Petroleum Hydrocarbons (C9-C36)	48.3 (12.5)		8100M		1	01/30/24 17:33		DA42905

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: O-Terphenyl</i>	<i>84 %</i>		<i>40-140</i>

CERTIFICATE OF ANALYSIS

Client Name: BSC Companies
 Client Project ID: Haggetts Pond Rail Trail

ESS Laboratory Work Order: 24A0847

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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Total Metals

Batch DA43007 - 7471B

Blank										
Mercury	ND	0.030	mg/kg wet							
LCS										
Mercury	21.3	2.87	mg/kg wet	21.60		99	80-120			
LCS Dup										
Mercury	18.3	2.96	mg/kg wet	21.60		85	80-120	15	30	

Batch DA43008 - 3050B

Blank										
Arsenic	ND	2.50	mg/kg wet							
Barium	ND	2.50	mg/kg wet							
Cadmium	ND	0.50	mg/kg wet							
Chromium	ND	1.00	mg/kg wet							
Lead	ND	5.00	mg/kg wet							
Selenium	ND	5.00	mg/kg wet							
Silver	ND	0.50	mg/kg wet							
LCS										
Arsenic	212	7.69	mg/kg wet	258.0		82	67-133			
Barium	717	7.69	mg/kg wet	809.0		89	76-125			
Cadmium	259	1.54	mg/kg wet	321.0		81	80-120			
Chromium	99.2	3.08	mg/kg wet	133.0		75	71-129			
Lead	85.6	15.4	mg/kg wet	102.0		84	74-125			
Selenium	43.6	15.4	mg/kg wet	49.40		88	70-130			
Silver	19.4	1.54	mg/kg wet	22.70		86	69-131			
LCS Dup										
Arsenic	168	7.46	mg/kg wet	258.0		65	67-133	23	30	B-
Barium	544	7.46	mg/kg wet	809.0		67	76-125	27	30	B-
Cadmium	208	1.49	mg/kg wet	321.0		65	80-120	22	30	B-
Chromium	80.2	2.99	mg/kg wet	133.0		60	71-129	21	30	B-
Lead	68.9	14.9	mg/kg wet	102.0		68	74-125	22	30	B-
Selenium	34.1	14.9	mg/kg wet	49.40		69	70-130	25	30	B-
Silver	15.7	1.49	mg/kg wet	22.70		69	69-131	21	30	

8100M Total Petroleum Hydrocarbons

Batch DA42905 - 3546

Blank										
Decane (C10)	ND	0.2	mg/kg wet							
Docosane (C22)	ND	0.2	mg/kg wet							
Dodecane (C12)	ND	0.2	mg/kg wet							
Eicosane (C20)	ND	0.2	mg/kg wet							
Hexacosane (C26)	ND	0.2	mg/kg wet							
Hexadecane (C16)	ND	0.2	mg/kg wet							
Hexatriacontane (C36)	ND	0.2	mg/kg wet							
Nonadecane (C19)	ND	0.2	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: BSC Companies
 Client Project ID: Haggetts Pond Rail Trail

ESS Laboratory Work Order: 24A0847

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8100M Total Petroleum Hydrocarbons

Batch DA42905 - 3546

Nonane (C9)	ND	0.2	mg/kg wet							
Octacosane (C28)	ND	0.2	mg/kg wet							
Octadecane (C18)	ND	0.2	mg/kg wet							
Tetracosane (C24)	ND	0.2	mg/kg wet							
Tetradecane (C14)	ND	0.2	mg/kg wet							
Total Petroleum Hydrocarbons (C9-C36)	ND	10.0	mg/kg wet							
Triacontane (C30)	ND	0.2	mg/kg wet							

LCS

Decane (C10)	1.6	0.2	mg/kg wet	2.500		65	40-140			
Docosane (C22)	1.7	0.2	mg/kg wet	2.500		66	40-140			
Dodecane (C12)	1.7	0.2	mg/kg wet	2.500		68	40-140			
Eicosane (C20)	1.7	0.2	mg/kg wet	2.500		67	40-140			
Hexacosane (C26)	1.7	0.2	mg/kg wet	2.500		67	40-140			
Hexadecane (C16)	1.7	0.2	mg/kg wet	2.500		68	40-140			
Hexatriacontane (C36)	2.1	0.2	mg/kg wet	2.500		83	40-140			
Nonadecane (C19)	1.7	0.2	mg/kg wet	2.500		67	40-140			
Nonane (C9)	1.5	0.2	mg/kg wet	2.500		60	30-140			
Octacosane (C28)	1.7	0.2	mg/kg wet	2.500		68	40-140			
Octadecane (C18)	1.7	0.2	mg/kg wet	2.500		66	40-140			
Tetracosane (C24)	1.6	0.2	mg/kg wet	2.500		62	40-140			
Tetradecane (C14)	1.7	0.2	mg/kg wet	2.500		67	40-140			
Total Petroleum Hydrocarbons (C9-C36)	24.2	10.0	mg/kg wet	35.00		69	40-140			
Triacontane (C30)	1.8	0.2	mg/kg wet	2.500		72	40-140			

LCS Dup

Decane (C10)	1.6	0.2	mg/kg wet	2.500		65	40-140	0.09	25	
Docosane (C22)	1.7	0.2	mg/kg wet	2.500		66	40-140	0.5	25	
Dodecane (C12)	1.7	0.2	mg/kg wet	2.500		67	40-140	0.5	25	
Eicosane (C20)	1.7	0.2	mg/kg wet	2.500		67	40-140	0.3	25	
Hexacosane (C26)	1.6	0.2	mg/kg wet	2.500		66	40-140	2	25	
Hexadecane (C16)	1.7	0.2	mg/kg wet	2.500		67	40-140	2	25	
Hexatriacontane (C36)	2.0	0.2	mg/kg wet	2.500		78	40-140	6	25	
Nonadecane (C19)	1.7	0.2	mg/kg wet	2.500		67	40-140	0.4	25	
Nonane (C9)	1.5	0.2	mg/kg wet	2.500		60	30-140	0.2	25	
Octacosane (C28)	1.6	0.2	mg/kg wet	2.500		66	40-140	3	25	
Octadecane (C18)	1.6	0.2	mg/kg wet	2.500		66	40-140	0.5	25	
Tetracosane (C24)	1.5	0.2	mg/kg wet	2.500		61	40-140	1	25	
Tetradecane (C14)	1.7	0.2	mg/kg wet	2.500		67	40-140	1	25	
Total Petroleum Hydrocarbons (C9-C36)	23.7	10.0	mg/kg wet	35.00		68	40-140	2	25	
Triacontane (C30)	1.7	0.2	mg/kg wet	2.500		69	40-140	4	25	

CERTIFICATE OF ANALYSIS

Client Name: BSC Companies

Client Project ID: Haggetts Pond Rail Trail

ESS Laboratory Work Order: 24A0847

Notes and Definitions

U	Analyte included in the analysis, but not detected
D	Diluted.
B-	Blank Spike recovery is below lower control limit (B-).
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report
RL	Reporting Limit
EDL	Estimated Detection Limit
MF	Membrane Filtration
MPN	Most Probable Number
TNTC	Too numerous to Count
CFU	Colony Forming Units

CERTIFICATE OF ANALYSIS

Client Name: BSC Companies
Client Project ID: Haggetts Pond Rail Trail

ESS Laboratory Work Order: 24A0847

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179
<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002
<http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml>

Massachusetts Potable and Non Potable Water: M-RI002
<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424
<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

Pennsylvania: 68-01752
<http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx>

ESS Laboratory Sample and Cooler Receipt Checklist

Client: BSC Group - TB

ESS Project ID: 24A0847

Date Received: 1/29/2024

Shipped/Delivered Via: ESS Courier

Project Due Date: 2/1/2024

Days for Project: 3 Day

1. Air bill manifest present? No
Air No.: NA

6. Does COC match bottles? Yes

2. Were custody seals present? No

7. Is COC complete and correct? Yes

3. Is radiation count <100 CPM? Yes

8. Were samples received intact? Yes

4. Is a Cooler Present? Yes
Temp: 0.3 Iced with: Ice

9. Were labs informed about short holds & rushes? Yes / No / NA

10. Were any analyses received outside of hold time? Yes / No

5. Was COC signed and dated by client? Yes

11. Any Subcontracting needed? Yes / No
ESS Sample IDs: _____
Analysis: _____
TAT: _____

12. Were VOAs received? Yes / No
a. Air bubbles in aqueous VOAs? Yes / No
b. Does methanol cover soil completely? Yes / No / NA

13. Are the samples properly preserved? Yes / No
a. If metals preserved upon receipt: Date: _____ Time: _____ By/Acid Lot#: _____
b. Low Level VOA vials frozen: Date: _____ Time: _____ By: _____

Sample Receiving Notes:

14. Was there a need to contact Project Manager? Yes / No
a. Was there a need to contact the client? Yes / No
Who was contacted? _____ Date: _____ Time: _____ By: _____

Resolution:

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
1	515664	Yes	N/A	Yes	8 oz jar	NP	
2	515665	Yes	N/A	Yes	8 oz jar	NP	
3	515666	Yes	N/A	Yes	8 oz jar	NP	
4	515667	Yes	N/A	Yes	8 oz jar	NP	

2nd Review

Were all containers scanned into storage/lab? Initials BB
 Are barcode labels on correct containers? Yes / No
 Are all Flashpoint stickers attached/container ID # circled? Yes / No / NA
 Are all Hex Chrome stickers attached? Yes / No / NA
 Are all QC stickers attached? Yes / No / NA
 Are VOA stickers attached if bubbles noted? Yes / No / NA

Completed By: [Signature] Date & Time: 1/29/24 15:03
 Reviewed By: [Signature] Date & Time: 1/29/24 16:15

