

## HRL Compliance Solutions- CO

Sample Delivery Group: L837946  
Samples Received: 05/26/2016  
Project Number: LIFT 1 MONITORING SA  
Description: Black Hills - Whittaker Flats D-17 - Cuttings Remediation  
Site: WHITTAKER FLATS D-17  
Report To: Jordan Cario  
2385 F ½ Road  
Grand Junction, CO 81505

Entire Report Reviewed By:



Shane Gambill

Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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## LIFT 1 MONITORING SAMPLE L837946-01 Solid

Collected by  
Jordan CarioCollected date/time  
05/24/16 10:00Received date/time  
05/26/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	<sup>1</sup> Cp
Calculated Results	WG875819	1	05/31/16 07:25	05/31/16 23:39	ST	<sup>2</sup> Tc
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG875839	10	05/29/16 21:38	05/31/16 08:50	KMP	<sup>3</sup> Ss
Semi-Volatile Organic Compounds (GC) by Method 3546/DRO	WG877394	20	06/02/16 19:44	06/03/16 10:38	KLM	<sup>4</sup> Cn
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG876832	5	06/01/16 22:39	06/02/16 14:54	JAH	<sup>5</sup> Sr
Wet Chemistry by Method 9045D	WG875786	1	05/28/16 12:50	05/28/16 12:50	MAJ	<sup>6</sup> Qc
Wet Chemistry by Method 9050AMod	WG875739	1	05/31/16 14:36	05/31/16 14:36	AMC	<sup>7</sup> Gl
						<sup>8</sup> Al
						<sup>9</sup> Sc



All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Shane Gambill  
Technical Service Representative

### Sample Handling and Receiving

The following samples were prepared and/or analyzed past recommended holding time. Concentrations should be considered minimum values.

<u>ESC Sample ID</u>	<u>Project Sample ID</u>	<u>Method</u>
<a href="#"><u>L837946-01</u></a>	<a href="#"><u>LIFT 1 MONITORING SAMPLE</u></a>	9045D

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

## LIFT 1 MONITORING SAMPLE

Collected date/time: 05/24/16 10:00

## SAMPLE RESULTS - 01

L837946

ONE LAB. NATIONWIDE.



## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	24.6		1	05/31/2016 23:39	WG875819

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.73		1	05/28/2016 12:50	<a href="#">WG875786</a>

## Sample Narrative:

9045D L837946-01 WG875786: 8.73 at 20.9c

## Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	umhos/cm				
Specific Conductance	4180		1	05/31/2016 14:36	<a href="#">WG875739</a>

## Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	2.33		0.500	5	06/02/2016 14:54	<a href="#">WG876832</a>
(S) a,a,a-Trifluorotoluene(FID)	90.7		59.0-128		06/02/2016 14:54	<a href="#">WG876832</a>

## Semi-Volatile Organic Compounds (GC) by Method 3546/DRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
DRO W/ SGT	216		80.0	20	06/03/2016 10:38	<a href="#">WG877394</a>
(S) o-Terphenyl	103	<a href="#">J7</a>	50.0-150		06/03/2016 10:38	<a href="#">WG877394</a>

## Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzo(a)anthracene	0.311		0.0600	10	05/31/2016 08:50	<a href="#">WG875839</a>
Benzo(a)pyrene	0.0895		0.0600	10	05/31/2016 08:50	<a href="#">WG875839</a>
Benzo(b)fluoranthene	0.365		0.0600	10	05/31/2016 08:50	<a href="#">WG875839</a>
Dibenz(a,h)anthracene	ND		0.0600	10	05/31/2016 08:50	<a href="#">WG875839</a>
(S) p-Terphenyl-d14	46.1		32.2-131		05/31/2016 08:50	<a href="#">WG875839</a>
(S) Nitrobenzene-d5	201	<a href="#">J1</a>	22.1-146		05/31/2016 08:50	<a href="#">WG875839</a>
(S) 2-Fluorobiphenyl	61.1		40.6-122		05/31/2016 08:50	<a href="#">WG875839</a>



L837632-01 Original Sample (OS) • Duplicate (DUP)

(OS) L837632-01 05/28/16 12:50 • (DUP) WG875786-1 05/28/16 12:50

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.04	8.04	1	0.000		1

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

L837975-02 Original Sample (OS) • Duplicate (DUP)

(OS) L837975-02 05/28/16 12:50 • (DUP) WG875786-4 05/28/16 12:50

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.33	7.27	1	0.822		1

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) WG875786-2 05/28/16 12:50 • (LCSD) WG875786-3 05/28/16 12:50

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	su	su	su	%	%	%			%	%
pH	6.43	6.36	6.35	98.9	98.8	98.4-102			0.157	1

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc



Method Blank (MB)

(MB) WG875739-4 05/31/16 14:36

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	umhos/cm		umhos/cm	umhos/cm
Specific Conductance	2.10			

L837627-15 Original Sample (OS) • Duplicate (DUP)

(OS) L837627-15 05/31/16 14:36 • (DUP) WG875739-1 05/31/16 14:36

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	umhos/cm	umhos/cm		%		%
Specific Conductance	14300	14300	1	0.140		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) WG875739-2 05/31/16 14:36 • (LCSD) WG875739-3 05/31/16 14:36

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	umhos/cm	umhos/cm	umhos/cm	%	%	%			%	%
Specific Conductance	653	671	673	103	103	90.0-110			0.298	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3141450-3 06/02/16 11:27

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	93.2			59.0-128

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3141450-1 06/02/16 10:21 • (LCSD) R3141450-2 06/02/16 10:43

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	%	%	%			%	%
TPH (GC/FID) Low Fraction	5.50	5.79	5.83	105	106	63.5-137			0.550	20
(S) a,a,a-Trifluorotoluene(FID)				104	104	59.0-128				

L837954-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L837954-01 06/02/16 15:16 • (MS) R3141450-4 06/02/16 13:03 • (MSD) R3141450-5 06/02/16 13:25

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
TPH (GC/FID) Low Fraction	5.50	ND	12.5	12.3	44.9	44.2	5	28.5-138			1.54	23.6
(S) a,a,a-Trifluorotoluene(FID)					94.7	94.8		59.0-128				





Method Blank (MB)

(MB) R3141463-1 06/03/16 09:13

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
DRO W/ SGT	U		0.769	4.00
(S) o-Terphenyl	75.7			50.0-150

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3141463-2 06/03/16 09:24 • (LCSD) R3141463-3 06/03/16 09:35

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
DRO W/ SGT	60.0	49.3	47.4	82.1	78.9	50.0-150			3.91	20
(S) o-Terphenyl				86.0	81.9	50.0-150				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3140506-3 05/31/16 01:06

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzo(a)anthracene	U		0.000600	0.00600
Benzo(a)pyrene	U		0.000600	0.00600
Benzo(b)fluoranthene	U		0.000600	0.00600
Dibenz(a,h)anthracene	U		0.000600	0.00600
(S) p-Terphenyl-d14	59.1			32.2-131
(S) Nitrobenzene-d5	80.0			22.1-146
(S) 2-Fluorobiphenyl	69.9			40.6-122

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3140506-1 05/31/16 00:24 • (LCSD) R3140506-2 05/31/16 00:45

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzo(a)anthracene	0.0800	0.0625	0.0626	78.1	78.2	46.7-125			0.140	20
Benzo(a)pyrene	0.0800	0.0601	0.0616	75.1	77.1	42.3-119			2.61	20
Benzo(b)fluoranthene	0.0800	0.0513	0.0557	64.2	69.6	43.6-124			8.16	20
Dibenz(a,h)anthracene	0.0800	0.0595	0.0517	74.4	64.6	44.8-133			14.1	20
(S) p-Terphenyl-d14				64.7	68.7	32.2-131				
(S) Nitrobenzene-d5				87.4	91.7	22.1-146				
(S) 2-Fluorobiphenyl				76.2	81.5	40.6-122				

L837990-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L837990-01 05/31/16 02:09 • (MS) R3140506-4 05/31/16 02:30 • (MSD) R3140506-5 05/31/16 02:52

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzo(a)anthracene	0.0962	U	0.0568	0.0523	59.0	54.4	1	18.3-136			8.25	24.6
Benzo(a)pyrene	0.0962	U	0.0542	0.0495	56.3	51.4	1	16.9-135			9.09	25.2
Benzo(b)fluoranthene	0.0962	U	0.0448	0.0436	46.6	45.3	1	10.0-134			2.80	30.9
Dibenz(a,h)anthracene	0.0962	U	0.0457	0.0500	47.5	52.0	1	18.5-138			8.92	24.3
(S) p-Terphenyl-d14					51.5	48.8		32.2-131				
(S) Nitrobenzene-d5					82.7	79.6		22.1-146				
(S) 2-Fluorobiphenyl					66.7	63.0		40.6-122				



## Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.

Qualifier	Description
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J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.

<sup>1</sup> Cp<sup>2</sup> Tc<sup>3</sup> Ss<sup>4</sup> Cn<sup>5</sup> Sr<sup>6</sup> Qc<sup>7</sup> Gl<sup>8</sup> Al<sup>9</sup> Sc



ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE**.

\* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

## State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina <sup>1</sup>	DW21704
Florida	E87487	North Carolina <sup>2</sup>	41
Georgia	NELAP	North Dakota	R-140
Georgia <sup>1</sup>	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky <sup>1</sup>	90010	South Dakota	n/a
Kentucky <sup>2</sup>	16	Tennessee <sup>14</sup>	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

## Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA	100789
A2LA – ISO 17025 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>n/a</sup> Accreditation not applicable

## Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



