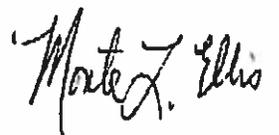


April Stegall  
Wexpro  
PO Box 458  
Rock Springs, WY 82901

Date: August 29, 2017  
Request Number: 36588R  
Date Received: 8/11/17  
Matrix: Soil

BTEX, GRO & DRO analyzed by ALS Environmental in Fort Collins CO . The following pages apply to the sample listed below.

	ALS Lab Number	Wexpro Sample ID
R1763	1708340-1	Musser 11 Sample #1 100382 8/10/17 10:36am



Laboratory Manager



## WYOMING ANALYTICAL LABORATORIES, INC

1660 Harrison Street  
Laramie, WY 82070

[www.wal-lab.com](http://www.wal-lab.com)  
[laramie@wal-lab.com](mailto:laramie@wal-lab.com)

ph: 307-742-7995  
fax: 307-721-8956



Friday, August 25, 2017

Monte Ellis  
Wyoming Analytical Laboratories, Inc.  
1660 Harrison St.  
Laramie, WY 82070

Re: ALS Workorder: 1708340  
Project Name:  
Project Number: 36588R

Dear Mr. Ellis:

One soil sample was received from Wyoming Analytical Laboratories, Inc., on 8/16/2017. The sample was scheduled for the following analyses:

GC/MS Volatiles

Total Extractable Petroleum Hydrocarbons (Diesel)

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental  
Shiloh J. Summy  
Project Manager

ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environmental – Fort Collins	
Accreditation Body	License or Certification Number
AIHA	214884
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Connecticut (CT)	PH-0232
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
L-A-B (DoD ELAP/ISO 170250)	L2257
Louisiana (LA)	05057
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO000782008A
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280



## 1708340

### GC/MS Volatiles:

The sample was analyzed using GC/MS following the current revision of SOP 525 based on SW-846 Method 8260C. The sample was also analyzed for Gasoline Range Organics (GRO).

All acceptance criteria were met.

### DRO:

The sample was analyzed following the current revision of SOP 406 generally based on SW-846 Methods 8000C and 8015D. TEPH is a multicomponent mixture and is quantitated by summing the entire carbon range, rather than individual peaks. The carbon range integrated in this test extends from C10 to C28.

All surrogate recoveries were within acceptance criteria with the following exception:

Surrogate	Sample	Direction
O-terphenyl	1	High

The surrogate recovery for sample -1 was outside control limits (high). Inspection of the chromatogram indicated co-elution of the surrogate peak with a target component peak, biasing the surrogate result high. No further action was taken.

All acceptance criteria were met.

**ALS -- Fort Collins**

**SAMPLE SUMMARY REPORT**

**Client:** Wyoming Analytical Laboratories, Inc.  
**Project:** 36588R  
**Sample ID:** R1763  
**Legal Location:**  
**Collection Date:** 8/10/2017 10:36

**Date:** 25-Aug-17  
**Work Order:** 1708340  
**Lab ID:** 1708340-1  
**Matrix:** SOIL  
**Percent Moisture:** 17.7

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>Diesel Range Organics</b>			<b>SW8015M</b>		Prep Date: 8/22/2017	PrepBy: JFN
Diesel Range Organics	8800	LDMH	120	MG/KG	20	8/22/2017 16:25
Surr: O-TERPHENYL	160	*	49-114	%REC	20	8/22/2017 16:25
<b>GC/MS Volatiles</b>			<b>SW8260</b>		Prep Date: 8/22/2017	PrepBy: JJK
BENZENE	45000		6.1	UG/KG	5000	8/22/2017 17:34
TOLUENE	ND		6.1	UG/KG	5000	8/22/2017 17:34
ETHYLBENZENE	81000		6.1	UG/KG	5000	8/22/2017 17:34
M+P-XYLENE	440000		6.1	UG/KG	5000	8/22/2017 17:34
O-XYLENE	160000		6.1	UG/KG	5000	8/22/2017 17:34
TOTAL XYLENES	800000		5	UG/KG	1	8/22/2017 17:34
Surr: DIBROMOFLUOROMETHANE	99		61-134	%REC	5000	8/22/2017 17:34
Surr: TOLUENE-D8	93		57-135	%REC	5000	8/22/2017 17:34
Surr: 4-BROMOFLUOROBENZENE	112		52-151	%REC	5000	8/22/2017 17:34
GASOLINE RANGE ORGANICS	1.2E+07		610	UG/KG	5000	8/22/2017 17:34

Client: Wyoming Analytical Laboratories, Inc.  
 Project: 36588R  
 Sample ID: R1763  
 Legal Location:  
 Collection Date: 8/10/2017 10:36

Date: 25-Aug-17  
 Work Order: 1708340  
 Lab ID: 1708340-1  
 Matrix: SOIL  
 Percent Moisture: 17.7

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
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### Explanation of Qualifiers

#### Radiochemistry:

U or ND - Result is less than the sample specific MDC.  
 Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.  
 Y2 - Chemical Yield outside default limits.  
 W - DER is greater than Warning Limit of 1.42  
 \* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.  
 # - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.  
 G - Sample density differs by more than 15% of LCS density.  
 D - DER is greater than Control Limit  
 M - Requested MDC not met.  
 LT - Result is less than requested MDC but greater than achieved MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.  
 L - LCS Recovery below lower control limit.  
 H - LCS Recovery above upper control limit.  
 P - LCS, Matrix Spike Recovery within control limits.  
 N - Matrix Spike Recovery outside control limits  
 NC - Not Calculated for duplicate results less than 5 times MDC  
 B - Analyte concentration greater than MDC.  
 B3 - Analyte concentration greater than MDC but less than Requested MDC.

#### Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).  
 U or ND - Indicates that the compound was analyzed for but not detected.  
 E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.  
 M - Duplicate injection precision was not met.  
 N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.  
 Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.  
 \* - Duplicate analysis (relative percent difference) not within control limits.  
 S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

#### Organics:

U or ND - Indicates that the compound was analyzed for but not detected.  
 B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.  
 E - Analyte concentration exceeds the upper level of the calibration range.  
 J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).  
 A - A tentatively identified compound is a suspected aldol-condensation product.  
 X - The analyte was diluted below an accurate quantitation level.  
 \* - The spike recovery is equal to or outside the control criteria used.  
 +- - The relative percent difference (RPD) equals or exceeds the control criteria.  
 G - A pattern resembling gasoline was detected in this sample.  
 D - A pattern resembling diesel was detected in this sample.  
 M - A pattern resembling motor oil was detected in this sample.  
 C - A pattern resembling crude oil was detected in this sample.  
 4 - A pattern resembling JP-4 was detected in this sample.  
 5 - A pattern resembling JP-5 was detected in this sample.  
 H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.  
 L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.  
 Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:  
 - gasoline  
 - JP-8  
 - diesel  
 - mineral spirits  
 - motor oil  
 - Stoddard solvent  
 - bunker C

ALS -- Fort Collins

Client: Wyoming Analytical Laboratories, Inc.  
 Work Order: 1708340  
 Project: 36588R

Date: 8/25/2017 1:39:

QC BATCH REPORT

Batch ID: HC170822-100-1 Instrument ID FUELS-1 Method: SW8015M

LCS		Sample ID: HC170822-100			Units: MG/KG		Analysis Date: 8/22/2017 21:06				
Client ID:		Run ID: HC170822-8A			Prep Date: 8/22/2017		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Diesel Range Organics	130	5	125		104	81-129				20	
Surr: O-TERPHENYL	5.22		6.25		84	49-114					

LCSD		Sample ID: HC170822-100			Units: MG/KG		Analysis Date: 8/22/2017 21:26				
Client ID:		Run ID: HC170822-8A			Prep Date: 8/22/2017		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Diesel Range Organics	126	5	125		101	81-129		130	3	20	
Surr: O-TERPHENYL	4.92		6.25		79	49-114			6		

MB		Sample ID: HC170822-100			Units: MG/KG		Analysis Date: 8/22/2017 14:25				
Client ID:		Run ID: HC170822-8A			Prep Date: 8/22/2017		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Diesel Range Organics	ND	5									
Surr: O-TERPHENYL	4.84		6.25		74	49-114					

The following samples were analyzed in this batch:

1708340-1

Client: Wyoming Analytical Laboratories, Inc.  
 Work Order: 1708340  
 Project: 36588R

# QC BATCH REPORT

Batch ID: VL170822-2-1 Instrument ID HPV1 Method: SW8260

LCS Sample ID: VL170822-2 Units: UG/KG Analysis Date: 8/22/2017 10:23  
 Client ID: Run ID: VL170822-2A Prep Date: 8/22/2017 DF: 1

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
BENZENE	43.5	5	40		109	73-126				30	
TOLUENE	37.2	5	40		93	71-127				30	
ETHYLBENZENE	38.6	5	40		97	74-127				30	
M+P-XYLENE	80.1	5	80		100	79-126				30	
O-XYLENE	38.9	5	40		97	77-125				30	
Surr: DIBROMOFLUOROMETHANE	54.2		50		108	61-134					
Surr: TOLUENE-D8	46.3		50		93	57-135					
Surr: 4-BROMOFLUOROBENZENE	57.4		50		115	52-151					

LCSD Sample ID: VL170822-2 Units: UG/KG Analysis Date: 8/22/2017 10:45  
 Client ID: Run ID: VL170822-2A Prep Date: 8/22/2017 DF: 1

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
BENZENE	43.3	5	40		108	73-126		43.5	1	30	
TOLUENE	36.3	5	40		91	71-127		37.2	2	30	
ETHYLBENZENE	37.7	5	40		94	74-127		38.6	3	30	
M+P-XYLENE	77.3	5	80		97	79-126		80.1	3	30	
O-XYLENE	38.2	5	40		96	77-125		38.9	2	30	
Surr: DIBROMOFLUOROMETHANE	53.4		50		107	61-134				1	
Surr: TOLUENE-D8	45.4		50		91	57-135				2	
Surr: 4-BROMOFLUOROBENZENE	56.9		50		114	52-151				1	

MB Sample ID: VL170822-2 Units: UG/KG Analysis Date: 8/22/2017 12:37  
 Client ID: Run ID: VL170822-2A Prep Date: 8/22/2017 DF: 1

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
BENZENE	ND	5									
TOLUENE	ND	5									
ETHYLBENZENE	ND	5									
M+P-XYLENE	ND	5									
O-XYLENE	ND	5									
TOTAL XYLENES	ND	5									
Surr: DIBROMOFLUOROMETHANE	52.1		50		104	61-134					
Surr: TOLUENE-D8	47.8		50		96	57-135					
Surr: 4-BROMOFLUOROBENZENE	56.5		50		113	52-151					

Client: Wyoming Analytical Laboratories, Inc.  
 Work Order: 1708340  
 Project: 36588R

**QC BATCH REPORT**

Batch ID: VL170822-2-1 Instrument ID HPV1 Method: SW8260

MB Sample ID: VL170822-2M Units: UG/KG Analysis Date: 8/22/2017 12:59  
 Client ID: Run ID: VL170822-2A Prep Date: 8/22/2017 DF: 50

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
BENZENE	ND	5									
TOLUENE	ND	5									
ETHYLBENZENE	ND	5									
M+P-XYLENE	ND	5									
O-XYLENE	ND	5									
TOTAL XYLENES	ND	5									
Surr: DIBROMOFLUOROMETHANE	2820		50		105	61-134					
Surr: TOLUENE-D8	2360		50		94	57-135					
Surr: 4-BROMOFLUOROBENZENE	2830		50		113	52-151					

The following samples were analyzed in this batch:

1708340-1

Client: Wyoming Analytical Laboratories, Inc.  
 Work Order: 1708340  
 Project: 36588R

**QC BATCH REPORT**

Batch ID: VL170822-2-3 Instrument ID HPV1 Method: SW8260

LCS		Sample ID: VL170822-5			Units: UG/KG			Analysis Date: 8/22/2017 11:30			
Client ID:		Run ID: VL170822-2A			Prep Date: 8/22/2017			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	1880	500	2000		93	80-120				20	

LCSD		Sample ID: VL170822-5			Units: UG/KG			Analysis Date: 8/22/2017 11:52			
Client ID:		Run ID: VL170822-2A			Prep Date: 8/22/2017			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	1880	500	2000		94	80-120		1860	1	20	

MB		Sample ID: VL170822-2			Units: UG/KG			Analysis Date: 8/22/2017 12:37			
Client ID:		Run ID: VL170822-2A			Prep Date: 8/22/2017			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	ND	500									

MB		Sample ID: VL170822-2M			Units: UG/KG			Analysis Date: 8/22/2017 12:59			
Client ID:		Run ID: VL170822-2A			Prep Date: 8/22/2017			DF: 50			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	ND	500									

The following samples were analyzed in this batch:

1708340-1