



Nicholson GeoSolutions LLC

3433 East Lake Drive
Centennial, CO 80121

July 3, 2017

Mr. Derek Johnson
Berry Petroleum Company
235 Callahan Avenue
Parachute, Colorado 81635

Subject: I-11 Landfarm Sampling Results

Dear Derek:

Nicholson GeoSolutions LLC was retained by Berry Petroleum Company (Berry) to conduct soil sampling of the landfarm on the I-11 well pad in the Garden Gulch area, Garfield County, Colorado. GPS mapping showed that the landfarm covers about 2.44 acres in two lobes and contains an estimated 9,000 yards of material.

Sampling was conducted on June 13th, 2017. A total of 12 composite soil samples were collected. Each composite sample was combined from six subsamples. All subsamples were collected from a depth of about 2.0 feet. The locations of the samples are shown on Figure 1.

All samples were analyzed for Total Volatile Petroleum Hydrocarbons (TVPH – gasoline range), Total Extractable Petroleum Hydrocarbons (TEPH – diesel and motor oil range), BTEX (benzene, toluene, ethylbenzene, and xylenes), sodium adsorption ratio (SAR), pH, conductivity, metals, and PAHs to evaluate compliance with the COGCC Table 910-1 standards and further treatment needs.

Table 1 provides a summary of the analytical results for the 12 composite samples. The laboratory report is contained in Appendix A. All results were below the COGCC standards except for benzo(a)pyrene for seven samples and arsenic for all samples. Benzo(a)pyrene was above the standard of 0.022 mg/kg for samples I-II LF-3 through I-II LF-6, I-11 LF 9 and I-11 LF 10, and I-11 LF-12 and ranged from 0.0258 mg/kg to 0.0755 mg/kg for the seven samples that exceeded the standard. Arsenic ranged from 5.01 mg/kg to 25.3 mg/kg for the 12 samples.

Based on the sample results, further treatment of the areas of the landfarm shown as hatched on Figure 1 landfarm is necessary. Remediation of the areas covered by samples I-11 LF-1 and I-11 LF-2, I-11 LF -7, I-11 LF-8, and I-11 LF-11 is now complete. Since all SAR pH, and conductivity values are below the standards for all samples, this material does not need to be buried and can be used for general site purposes pending COGCC approval.

Nicholson GeoSolutions LLC



David K. Nicholson, P.G.
Principal Geologist

Table 1 I-11 Landfarm Sample Results – June 13, 2017

	Table 910-1 Standards	I-11 LF-1	I-11 LF-2	I-11 LF-3	I-11 LF-4	I-11 LF-5	I-11 LF-6
sp. conductance (mmhos/cm)	<4	0.515	0.447	0.421	0.447	0.351	0.208
pH (standard units)	6-9	7.81	7.91	8.11	7.59	7.93	7.88
SAR (ratio)	<12	2.11	3.01	3.39	1.76	2.26	1.93
TVPH – gasoline range	500 ¹	0.105	0.106	<0.1	<0.1	0.119	<0.1
TEPH – diesel/motor oil range		<80	137.5	219.6	<80	188.8	204.8
benzene	0.17	0.00159	0.0016	0.00127	0.00146	0.00164	0.00133
toluene	85	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
ethylbenzene	100	0.00119	0.000922	0.000939	0.00106	0.00127	0.000841
xylenes	175	0.00158	<0.0015	<0.0015	<0.0015	0.00166	<0.0015
benzo(a)pyrene	0.022	0.0127	0.0112	0.0385	0.0258	0.0755	0.0898
arsenic	0.39	7.20	5.01	4.54	25.3	5.77	5.15

	Table 910-1 Standards	I-11 LF-7	I-11 LF-8	I-11 LF-9	I-11 LF-10	I-11 LF-11	I-11 LF-12
sp. conductance (mmhos/cm)	<4	0.251	0.24	0.257	0.276	0.336	0.365
pH (standard units)	6-9	8.30	8.29	8.42	8.02	8.09	8.15
SAR (ratio)	<12	2.15	2.48	2.32	2.45	2.68	2.73
TVPH – gasoline range	500 ¹	0.106	<0.1	<0.1	<0.1	0.104	0.10
TEPH – diesel/motor oil range		<80	<80	162.5	168.1	66.8	94.7
benzene	0.17	0.00147	0.00113	0.0013	0.00133	0.0013	0.00139
toluene	85	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
ethylbenzene	100	0.00098	0.000713	0.000844	0.000902	0.000809	0.000962
xylenes	175	<0.0015	<0.0015	<0.0015	<0.0015	0.00204	<0.0015
benzo(a)pyrene	0.022	0.0104	0.0074	0.0382	0.046	0.017	0.0396
arsenic	0.39	6.52	5.64	6.34	5.72	5.22	6.20

¹The standard is 500 for the combined total of TVPH and TEPH

Values in bold type exceed standards

All units in mg/kg except where indicated

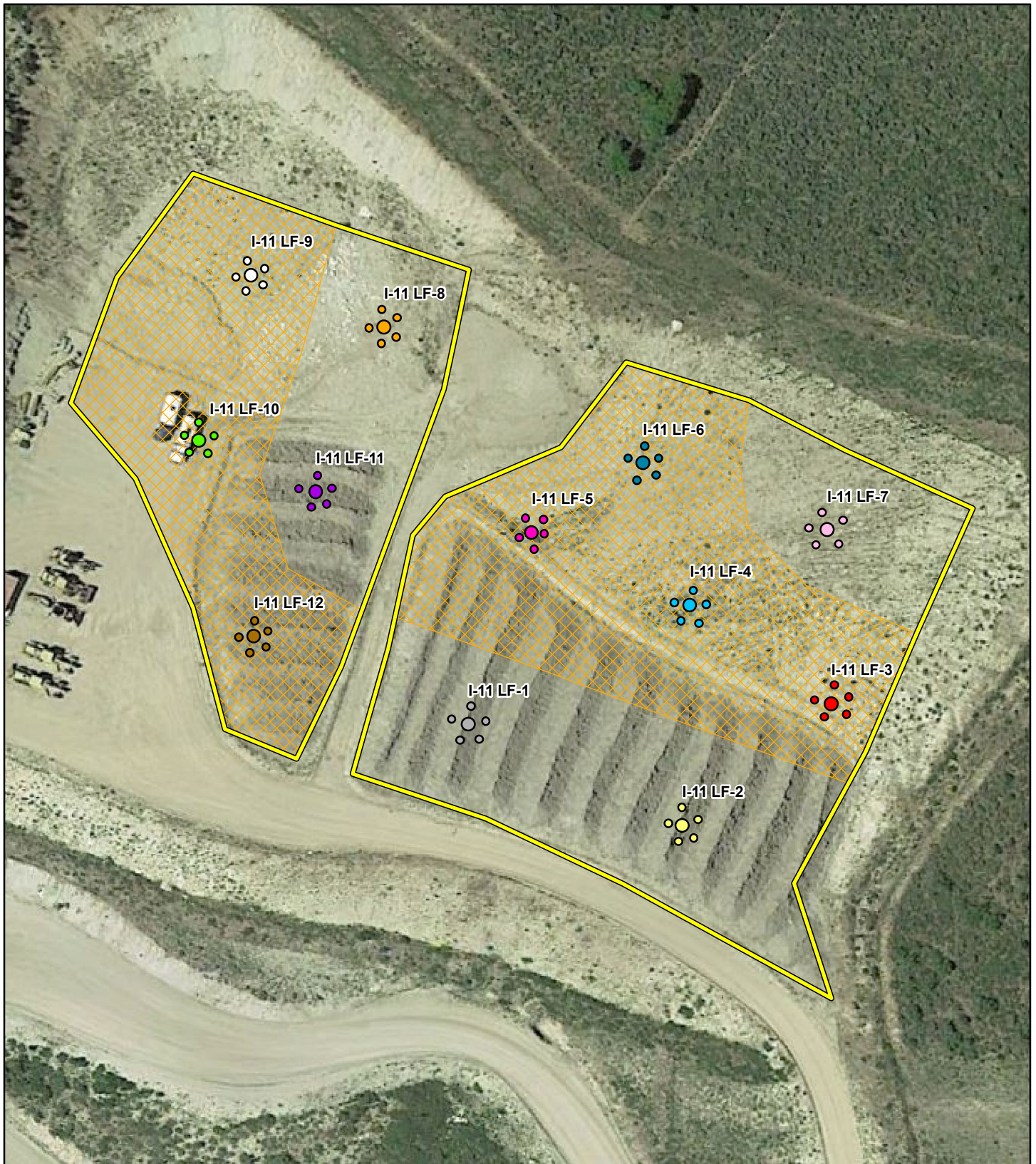


Figure 1

July
2017

GeoSolutions
NICHOLSON

Legend

- Sub Sample
- Land Farm Perimeter
- Area Needing Further Treatment

0 37.5 75 150 Feet 1" = 75'

Berry Petroleum Company

I-11
East Lobe = 1.52 Acres
West Lobe = 0.92 Acres

APPENDIX A
Laboratory Report

Berry Petroleum - Denver, CO

Sample Delivery Group: L916918
Samples Received: 06/17/2017
Project Number:
Description: Pit Reclamation

Report To: Dave Nicholson
1999 Broadway, Suite 3700
Denver, CO 80202

Entire Report Reviewed By:



Mark W. Beasley
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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¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



I-11 LF-1 L916918-01 Solid

Collected by
DK Nicholson

Collected date/time
06/13/17 12:40

Received date/time
06/17/17 08:45

¹ Cp

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG992188	1	06/23/17 10:13	06/26/17 18:31	CCE
Wet Chemistry by Method 3060A/7196A	WG990799	1	06/21/17 08:23	06/22/17 10:40	MA
Wet Chemistry by Method 9045D	WG990795	1	06/21/17 09:48	06/21/17 10:28	MA
Wet Chemistry by Method 9050AMod	WG990867	1	06/20/17 01:37	06/20/17 01:37	MZ
Mercury by Method 7471A	WG991015	1	06/20/17 14:46	06/22/17 06:50	EL
Metals (ICP) by Method 6010B	WG991974	1	06/22/17 14:27	06/22/17 20:00	ST
Volatile Organic Compounds (GC) by Method 8015/8021	WG992882	1	06/25/17 17:56	06/26/17 14:46	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG992147	10	06/24/17 20:58	06/26/17 14:13	KLM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG992161	1	06/23/17 14:46	06/24/17 06:13	CLG

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

I-11 LF-2 L916918-02 Solid

Collected by
DK Nicholson

Collected date/time
06/13/17 12:55

Received date/time
06/17/17 08:45

⁷ Gl

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG992188	1	06/23/17 10:13	06/26/17 18:34	CCE
Wet Chemistry by Method 3060A/7196A	WG990799	1	06/21/17 08:23	06/22/17 10:41	MA
Wet Chemistry by Method 9045D	WG990795	1	06/21/17 09:48	06/21/17 10:28	MA
Wet Chemistry by Method 9050AMod	WG990867	1	06/20/17 01:37	06/20/17 01:37	MZ
Mercury by Method 7471A	WG991015	1	06/20/17 14:46	06/22/17 06:53	EL
Metals (ICP) by Method 6010B	WG991974	1	06/22/17 14:27	06/22/17 20:17	ST
Volatile Organic Compounds (GC) by Method 8015/8021	WG992882	1	06/25/17 17:56	06/26/17 15:08	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG992147	10	06/24/17 20:58	06/26/17 14:29	KLM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG992161	1	06/23/17 14:46	06/24/17 07:19	CLG

⁸ Al

⁹ Sc

I-11 LF-3 L916918-03 Solid

Collected by
DK Nicholson

Collected date/time
06/13/17 13:15

Received date/time
06/17/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG992188	1	06/23/17 10:13	06/26/17 18:36	CCE
Wet Chemistry by Method 3060A/7196A	WG990799	1	06/21/17 08:23	06/22/17 10:41	MA
Wet Chemistry by Method 9045D	WG990795	1	06/21/17 09:48	06/21/17 10:28	MA
Wet Chemistry by Method 9050AMod	WG990867	1	06/20/17 01:37	06/20/17 01:37	MZ
Mercury by Method 7471A	WG991015	1	06/20/17 14:46	06/22/17 06:55	EL
Metals (ICP) by Method 6010B	WG991974	1	06/22/17 14:27	06/22/17 20:26	ST
Volatile Organic Compounds (GC) by Method 8015/8021	WG992882	1	06/25/17 17:56	06/26/17 15:30	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG992147	10	06/24/17 20:58	06/26/17 14:43	KLM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG992161	1	06/23/17 14:46	06/26/17 23:22	CLG

I-11 LF-4 L916918-04 Solid

Collected by
DK Nicholson

Collected date/time
06/13/17 13:30

Received date/time
06/17/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG992188	1	06/23/17 10:13	06/26/17 18:39	CCE
Wet Chemistry by Method 3060A/7196A	WG990799	1	06/21/17 08:23	06/22/17 10:41	MA
Wet Chemistry by Method 9045D	WG990795	1	06/21/17 09:48	06/21/17 10:28	MA
Wet Chemistry by Method 9050AMod	WG990867	1	06/20/17 01:37	06/20/17 01:37	MZ
Mercury by Method 7471A	WG991015	1	06/20/17 14:46	06/22/17 06:57	EL
Metals (ICP) by Method 6010B	WG991974	1	06/22/17 14:27	06/22/17 20:28	ST
Volatile Organic Compounds (GC) by Method 8015/8021	WG992882	1	06/25/17 17:56	06/26/17 15:52	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG992147	10	06/24/17 20:58	06/26/17 14:56	KLM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG992161	1	06/23/17 14:46	06/24/17 07:41	CLG

ACCOUNT:

Berry Petroleum - Denver, CO

PROJECT:

SDG:

L916918

DATE/TIME:

06/28/17 15:04

PAGE:

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SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



I-11 LF-5 L916918-05 Solid

Collected by
DK Nicholson

Collected date/time
06/13/17 13:50

Received date/time
06/17/17 08:45

¹ Cp

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG992188	1	06/23/17 10:13	06/26/17 18:42	CCE
Wet Chemistry by Method 3060A/7196A	WG990799	1	06/21/17 08:23	06/22/17 10:42	MA
Wet Chemistry by Method 9045D	WG990795	1	06/21/17 09:48	06/21/17 10:28	MA
Wet Chemistry by Method 9050AMod	WG990867	1	06/20/17 01:37	06/20/17 01:37	MZ
Mercury by Method 7471A	WG991015	1	06/20/17 14:46	06/22/17 07:07	EL
Metals (ICP) by Method 6010B	WG991974	1	06/22/17 14:27	06/22/17 20:31	ST
Volatile Organic Compounds (GC) by Method 8015/8021	WG992882	1	06/25/17 17:56	06/26/17 16:14	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG992147	10	06/24/17 20:58	06/26/17 15:11	KLM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG992161	1	06/23/17 14:46	06/26/17 23:44	CLG

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

I-11 LF-6 L916918-06 Solid

Collected by
DK Nicholson

Collected date/time
06/13/17 14:05

Received date/time
06/17/17 08:45

⁷ Gl

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG992188	1	06/23/17 10:13	06/26/17 18:45	CCE
Wet Chemistry by Method 3060A/7196A	WG990799	1	06/21/17 08:23	06/22/17 10:42	MA
Wet Chemistry by Method 9045D	WG990795	1	06/21/17 09:48	06/21/17 10:28	MA
Wet Chemistry by Method 9050AMod	WG990867	1	06/20/17 01:37	06/20/17 01:37	MZ
Mercury by Method 7471A	WG991015	1	06/20/17 14:46	06/22/17 07:09	EL
Metals (ICP) by Method 6010B	WG991974	1	06/22/17 14:27	06/22/17 20:34	ST
Volatile Organic Compounds (GC) by Method 8015/8021	WG992882	1	06/25/17 17:56	06/26/17 16:37	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG992147	10	06/24/17 20:58	06/26/17 15:24	KLM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG992161	1	06/23/17 14:46	06/27/17 00:06	CLG

⁸ Al

⁹ Sc

I-11 LF-7 L916918-07 Solid

Collected by
DK Nicholson

Collected date/time
06/13/17 14:20

Received date/time
06/17/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG992188	1	06/23/17 10:13	06/26/17 18:47	CCE
Wet Chemistry by Method 3060A/7196A	WG990799	1	06/21/17 08:23	06/22/17 10:43	MA
Wet Chemistry by Method 9045D	WG990795	1	06/21/17 09:48	06/21/17 10:28	MA
Wet Chemistry by Method 9050AMod	WG990867	1	06/20/17 01:37	06/20/17 01:37	MZ
Mercury by Method 7471A	WG991015	1	06/20/17 14:46	06/22/17 07:12	EL
Metals (ICP) by Method 6010B	WG991974	1	06/22/17 14:27	06/22/17 20:37	ST
Volatile Organic Compounds (GC) by Method 8015/8021	WG992882	1	06/25/17 17:56	06/26/17 16:59	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG992147	10	06/24/17 20:58	06/26/17 15:39	KLM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG992161	1	06/23/17 14:46	06/24/17 08:03	CLG

I-11 LF-8 L916918-08 Solid

Collected by
DK Nicholson

Collected date/time
06/13/17 14:35

Received date/time
06/17/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG992188	1	06/23/17 10:13	06/26/17 19:06	CCE
Wet Chemistry by Method 3060A/7196A	WG990799	1	06/21/17 08:23	06/22/17 10:44	MA
Wet Chemistry by Method 9045D	WG990795	1	06/21/17 09:48	06/21/17 10:28	MA
Wet Chemistry by Method 9050AMod	WG990867	1	06/20/17 01:37	06/20/17 01:37	MZ
Mercury by Method 7471A	WG991015	1	06/20/17 14:46	06/22/17 07:14	EL
Metals (ICP) by Method 6010B	WG991974	1	06/22/17 14:27	06/22/17 20:40	ST
Volatile Organic Compounds (GC) by Method 8015/8021	WG992882	1	06/25/17 17:56	06/26/17 17:21	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG992147	10	06/24/17 20:58	06/26/17 15:55	KLM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG992161	1	06/23/17 14:46	06/24/17 08:24	CLG

SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



I-11 LF-9 L916918-09 Solid

Collected by
DK Nicholson

Collected date/time
06/13/17 14:50

Received date/time
06/17/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG992188	1	06/23/17 10:13	06/26/17 19:09	CCE
Wet Chemistry by Method 3060A/7196A	WG990799	1	06/21/17 08:23	06/22/17 10:44	MA
Wet Chemistry by Method 9045D	WG990795	1	06/21/17 09:48	06/21/17 10:28	MA
Wet Chemistry by Method 9050AMod	WG990867	1	06/20/17 01:37	06/20/17 01:37	MZ
Mercury by Method 7471A	WG991015	1	06/20/17 14:46	06/22/17 07:16	EL
Metals (ICP) by Method 6010B	WG991974	1	06/22/17 14:27	06/22/17 20:43	ST
Volatile Organic Compounds (GC) by Method 8015/8021	WG992882	1	06/25/17 17:56	06/26/17 17:43	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG992147	10	06/24/17 20:58	06/26/17 16:08	ACM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG992161	1	06/23/17 14:46	06/27/17 00:27	CLG

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

I-11 LF-10 L916918-10 Solid

Collected by
DK Nicholson

Collected date/time
06/13/17 15:10

Received date/time
06/17/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG992188	1	06/23/17 10:13	06/26/17 19:12	CCE
Wet Chemistry by Method 3060A/7196A	WG990799	1	06/21/17 08:23	06/22/17 10:46	MA
Wet Chemistry by Method 9045D	WG990795	1	06/21/17 09:48	06/21/17 10:28	MA
Wet Chemistry by Method 9050AMod	WG990867	1	06/20/17 01:37	06/20/17 01:37	MZ
Mercury by Method 7471A	WG991015	1	06/20/17 14:46	06/22/17 07:19	EL
Metals (ICP) by Method 6010B	WG991974	1	06/22/17 14:27	06/22/17 20:46	ST
Volatile Organic Compounds (GC) by Method 8015/8021	WG992882	1	06/25/17 17:56	06/26/17 18:05	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG992147	10	06/24/17 20:58	06/26/17 16:49	ACM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG992161	1	06/23/17 14:46	06/27/17 00:49	CLG

I-11 LF-11 L916918-11 Solid

Collected by
DK Nicholson

Collected date/time
06/13/17 15:20

Received date/time
06/17/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG992188	1	06/23/17 10:13	06/26/17 19:14	CCE
Wet Chemistry by Method 3060A/7196A	WG990799	1	06/21/17 08:23	06/22/17 10:47	MA
Wet Chemistry by Method 9045D	WG990795	1	06/21/17 09:48	06/21/17 10:28	MA
Wet Chemistry by Method 9050AMod	WG990867	1	06/20/17 01:37	06/20/17 01:37	MZ
Mercury by Method 7471A	WG991015	1	06/20/17 14:46	06/22/17 07:21	EL
Metals (ICP) by Method 6010B	WG991974	1	06/22/17 14:27	06/22/17 20:49	ST
Volatile Organic Compounds (GC) by Method 8015/8021	WG992882	1	06/25/17 17:56	06/26/17 19:56	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG992147	10	06/24/17 20:58	06/26/17 19:29	KLM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG992161	1	06/23/17 14:46	06/24/17 09:30	CLG

I-11 LF-12 L916918-12 Solid

Collected by
DK Nicholson

Collected date/time
06/13/17 15:35

Received date/time
06/17/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG992188	1	06/23/17 10:13	06/26/17 19:17	CCE
Wet Chemistry by Method 3060A/7196A	WG990799	1	06/21/17 08:23	06/22/17 10:47	MA
Wet Chemistry by Method 9045D	WG990795	1	06/21/17 09:48	06/21/17 10:28	MA
Wet Chemistry by Method 9050AMod	WG990867	1	06/20/17 01:37	06/20/17 01:37	MZ
Mercury by Method 7471A	WG991015	1	06/20/17 14:46	06/22/17 07:23	EL
Metals (ICP) by Method 6010B	WG991974	1	06/22/17 14:27	06/22/17 20:52	ST
Volatile Organic Compounds (GC) by Method 8015/8021	WG992882	1	06/25/17 17:56	06/26/17 20:19	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG992147	10	06/24/17 20:58	06/26/17 19:43	KLM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG992161	1	06/23/17 14:46	06/27/17 01:11	CLG

ACCOUNT:

Berry Petroleum - Denver, CO

PROJECT:

SDG:

L916918

DATE/TIME:

06/28/17 15:04

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All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. 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.

Mark W. Beasley
Technical Service Representative

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.11		1	06/26/2017 18:31	WG992188

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	06/22/2017 10:40	WG990799

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.81	T8	1	06/21/2017 10:28	WG990795

Sample Narrative:

9045D L916918-01 WG990795: 7.81 at 21.5c

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	515		1	06/20/2017 01:37	WG990867

Sample Narrative:

9050AMod L916918-01 WG990867: 515 at 21.1c

Mercury by Method 7471A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	0.0253		0.0200	1	06/22/2017 06:50	WG991015

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	7.20		2.00	1	06/22/2017 20:00	WG991974
Barium	418	J3 V	0.500	1	06/22/2017 20:00	WG991974
Boron	ND		10.0	1	06/22/2017 20:00	WG991974
Cadmium	ND		0.500	1	06/22/2017 20:00	WG991974
Chromium	25.6		1.00	1	06/22/2017 20:00	WG991974
Copper	25.1		2.00	1	06/22/2017 20:00	WG991974
Lead	13.7		0.500	1	06/22/2017 20:00	WG991974
Nickel	23.2		2.00	1	06/22/2017 20:00	WG991974
Selenium	ND		2.00	1	06/22/2017 20:00	WG991974
Silver	ND		1.00	1	06/22/2017 20:00	WG991974
Zinc	55.6		5.00	1	06/22/2017 20:00	WG991974

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	0.00159		0.000500	1	06/26/2017 14:46	WG992882
Toluene	ND		0.00500	1	06/26/2017 14:46	WG992882
Ethylbenzene	0.00119	B J3 J6	0.000500	1	06/26/2017 14:46	WG992882
Total Xylene	0.00158	B J3 J6	0.00150	1	06/26/2017 14:46	WG992882
TPH (GC/FID) Low Fraction	0.105		0.100	1	06/26/2017 14:46	WG992882
(S) a,a,a-Trifluorotoluene(FID)	86.5		77.0-120		06/26/2017 14:46	WG992882
(S) a,a,a-Trifluorotoluene(PID)	96.2		75.0-128		06/26/2017 14:46	WG992882



Collected date/time: 06/13/17 12:40

L916918

Semi-Volatile Organic Compounds (GC) by Method 8015

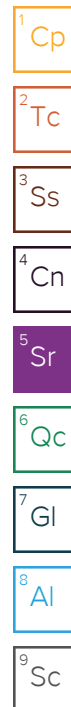
Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		40.0	10	06/26/2017 14:13	WG992147
C28-C40 Oil Range	ND		40.0	10	06/26/2017 14:13	WG992147
(S) o-Terphenyl	76.2		18.0-148		06/26/2017 14:13	WG992147

Sample Narrative:

8015 L916918-01 WG992147: Dilution due to matrix impact during extraction procedure

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	06/24/2017 06:13	WG992161
Acenaphthene	ND		0.00600	1	06/24/2017 06:13	WG992161
Acenaphthylene	ND		0.00600	1	06/24/2017 06:13	WG992161
Benzo(a)anthracene	0.0108		0.00600	1	06/24/2017 06:13	WG992161
Benzo(a)pyrene	0.0127		0.00600	1	06/24/2017 06:13	WG992161
Benzo(b)fluoranthene	0.0269		0.00600	1	06/24/2017 06:13	WG992161
Benzo(g,h,i)perylene	0.0181		0.00600	1	06/24/2017 06:13	WG992161
Benzo(k)fluoranthene	0.00705		0.00600	1	06/24/2017 06:13	WG992161
Chrysene	0.0161		0.00600	1	06/24/2017 06:13	WG992161
Dibenz(a,h)anthracene	ND		0.00600	1	06/24/2017 06:13	WG992161
Fluoranthene	0.0148		0.00600	1	06/24/2017 06:13	WG992161
Fluorene	ND		0.00600	1	06/24/2017 06:13	WG992161
Indeno(1,2,3-cd)pyrene	0.0129		0.00600	1	06/24/2017 06:13	WG992161
Naphthalene	0.0297		0.0200	1	06/24/2017 06:13	WG992161
Phenanthrene	0.0146		0.00600	1	06/24/2017 06:13	WG992161
Pyrene	0.0139		0.00600	1	06/24/2017 06:13	WG992161
1-Methylnaphthalene	0.0217		0.0200	1	06/24/2017 06:13	WG992161
2-Methylnaphthalene	0.0395		0.0200	1	06/24/2017 06:13	WG992161
2-Chloronaphthalene	ND		0.0200	1	06/24/2017 06:13	WG992161
(S) p-Terphenyl-d14	59.0		23.0-120		06/24/2017 06:13	WG992161
(S) Nitrobenzene-d5	69.7		14.0-149		06/24/2017 06:13	WG992161
(S) 2-Fluorobiphenyl	73.1		34.0-125		06/24/2017 06:13	WG992161





Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	3.01		1	06/26/2017 18:34	WG992188

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	06/22/2017 10:41	WG990799

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.91	T8	1	06/21/2017 10:28	WG990795

Sample Narrative:

9045D L916918-02 WG990795: 7.91 at 21.6c

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	447		1	06/20/2017 01:37	WG990867

Sample Narrative:

9050AMod L916918-02 WG990867: 447 at 20.8c

Mercury by Method 7471A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	0.0415		0.0200	1	06/22/2017 06:53	WG991015

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	5.01		2.00	1	06/22/2017 20:17	WG991974
Barium	427		0.500	1	06/22/2017 20:17	WG991974
Boron	ND		10.0	1	06/22/2017 20:17	WG991974
Cadmium	ND		0.500	1	06/22/2017 20:17	WG991974
Chromium	25.6		1.00	1	06/22/2017 20:17	WG991974
Copper	23.3		2.00	1	06/22/2017 20:17	WG991974
Lead	12.2		0.500	1	06/22/2017 20:17	WG991974
Nickel	21.3		2.00	1	06/22/2017 20:17	WG991974
Selenium	ND		2.00	1	06/22/2017 20:17	WG991974
Silver	ND		1.00	1	06/22/2017 20:17	WG991974
Zinc	53.3		5.00	1	06/22/2017 20:17	WG991974

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	0.00160		0.000500	1	06/26/2017 15:08	WG992882
Toluene	ND		0.00500	1	06/26/2017 15:08	WG992882
Ethylbenzene	0.000922	B	0.000500	1	06/26/2017 15:08	WG992882
Total Xylene	ND		0.00150	1	06/26/2017 15:08	WG992882
TPH (GC/FID) Low Fraction	0.106		0.100	1	06/26/2017 15:08	WG992882
(S) a,a,a-Trifluorotoluene(FID)	88.7		77.0-120		06/26/2017 15:08	WG992882
(S) a,a,a-Trifluorotoluene(PID)	95.5		75.0-128		06/26/2017 15:08	WG992882



Collected date/time: 06/13/17 12:55

L916918

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	91.3		40.0	10	06/26/2017 14:29	WG992147
C28-C40 Oil Range	46.2		40.0	10	06/26/2017 14:29	WG992147
(S) o-Terphenyl	83.9		18.0-148		06/26/2017 14:29	WG992147

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	06/24/2017 07:19	WG992161
Acenaphthene	ND		0.00600	1	06/24/2017 07:19	WG992161
Acenaphthylene	ND		0.00600	1	06/24/2017 07:19	WG992161
Benzo(a)anthracene	0.00982		0.00600	1	06/24/2017 07:19	WG992161
Benzo(a)pyrene	0.0112		0.00600	1	06/24/2017 07:19	WG992161
Benzo(b)fluoranthene	0.0285		0.00600	1	06/24/2017 07:19	WG992161
Benzo(g,h,i)perylene	0.0162		0.00600	1	06/24/2017 07:19	WG992161
Benzo(k)fluoranthene	0.00646	<u>J3</u>	0.00600	1	06/24/2017 07:19	WG992161
Chrysene	0.0178		0.00600	1	06/24/2017 07:19	WG992161
Dibenz(a,h)anthracene	ND		0.00600	1	06/24/2017 07:19	WG992161
Fluoranthene	0.0168		0.00600	1	06/24/2017 07:19	WG992161
Fluorene	ND		0.00600	1	06/24/2017 07:19	WG992161
Indeno(1,2,3-cd)pyrene	0.0116		0.00600	1	06/24/2017 07:19	WG992161
Naphthalene	0.0462		0.0200	1	06/24/2017 07:19	WG992161
Phenanthrene	0.0215		0.00600	1	06/24/2017 07:19	WG992161
Pyrene	0.0184		0.00600	1	06/24/2017 07:19	WG992161
1-Methylnaphthalene	0.0406		0.0200	1	06/24/2017 07:19	WG992161
2-Methylnaphthalene	0.0686		0.0200	1	06/24/2017 07:19	WG992161
2-Chloronaphthalene	ND		0.0200	1	06/24/2017 07:19	WG992161
(S) p-Terphenyl-d14	52.6		23.0-120		06/24/2017 07:19	WG992161
(S) Nitrobenzene-d5	58.5		14.0-149		06/24/2017 07:19	WG992161
(S) 2-Fluorobiphenyl	64.4		34.0-125		06/24/2017 07:19	WG992161

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	3.39		1	06/26/2017 18:36	WG992188

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	06/22/2017 10:41	WG990799

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.11	T8	1	06/21/2017 10:28	WG990795

Sample Narrative:

9045D L916918-03 WG990795: 8.11 at 21.3c

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	421		1	06/20/2017 01:37	WG990867

Sample Narrative:

9050AMod L916918-03 WG990867: 421 at 20.7c

Mercury by Method 7471A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	0.0354		0.0200	1	06/22/2017 06:55	WG991015

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.54		2.00	1	06/22/2017 20:26	WG991974
Barium	414		0.500	1	06/22/2017 20:26	WG991974
Boron	ND		10.0	1	06/22/2017 20:26	WG991974
Cadmium	ND		0.500	1	06/22/2017 20:26	WG991974
Chromium	24.7		1.00	1	06/22/2017 20:26	WG991974
Copper	23.4		2.00	1	06/22/2017 20:26	WG991974
Lead	13.2		0.500	1	06/22/2017 20:26	WG991974
Nickel	19.2		2.00	1	06/22/2017 20:26	WG991974
Selenium	ND		2.00	1	06/22/2017 20:26	WG991974
Silver	ND		1.00	1	06/22/2017 20:26	WG991974
Zinc	51.4		5.00	1	06/22/2017 20:26	WG991974

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	0.00127		0.000500	1	06/26/2017 15:30	WG992882
Toluene	ND		0.00500	1	06/26/2017 15:30	WG992882
Ethylbenzene	0.000939	B	0.000500	1	06/26/2017 15:30	WG992882
Total Xylene	ND		0.00150	1	06/26/2017 15:30	WG992882
TPH (GC/FID) Low Fraction	ND		0.100	1	06/26/2017 15:30	WG992882
(S) a,a,a-Trifluorotoluene(FID)	86.3		77.0-120		06/26/2017 15:30	WG992882
(S) a,a,a-Trifluorotoluene(PID)	95.7		75.0-128		06/26/2017 15:30	WG992882



Collected date/time: 06/13/17 13:15

L916918

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	150		40.0	10	06/26/2017 14:43	WG992147
C28-C40 Oil Range	69.6		40.0	10	06/26/2017 14:43	WG992147
(S) o-Terphenyl	75.8		18.0-148		06/26/2017 14:43	WG992147

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	0.0160		0.00600	1	06/26/2017 23:22	WG992161
Acenaphthene	ND		0.00600	1	06/26/2017 23:22	WG992161
Acenaphthylene	ND		0.00600	1	06/26/2017 23:22	WG992161
Benzo(a)anthracene	0.0280		0.00600	1	06/26/2017 23:22	WG992161
Benzo(a)pyrene	0.0385		0.00600	1	06/26/2017 23:22	WG992161
Benzo(b)fluoranthene	0.0850		0.00600	1	06/26/2017 23:22	WG992161
Benzo(g,h,i)perylene	0.0497		0.00600	1	06/26/2017 23:22	WG992161
Benzo(k)fluoranthene	0.0201	J3	0.00600	1	06/26/2017 23:22	WG992161
Chrysene	0.0285		0.00600	1	06/26/2017 23:22	WG992161
Dibenz(a,h)anthracene	0.0144		0.00600	1	06/26/2017 23:22	WG992161
Fluoranthene	0.0500		0.00600	1	06/26/2017 23:22	WG992161
Fluorene	0.0164		0.00600	1	06/26/2017 23:22	WG992161
Indeno(1,2,3-cd)pyrene	0.0391		0.00600	1	06/26/2017 23:22	WG992161
Naphthalene	0.0901		0.0200	1	06/26/2017 23:22	WG992161
Phenanthrene	0.0613		0.00600	1	06/26/2017 23:22	WG992161
Pyrene	0.0553		0.00600	1	06/26/2017 23:22	WG992161
1-Methylnaphthalene	0.0929		0.0200	1	06/26/2017 23:22	WG992161
2-Methylnaphthalene	0.160		0.0200	1	06/26/2017 23:22	WG992161
2-Chloronaphthalene	ND		0.0200	1	06/26/2017 23:22	WG992161
(S) p-Terphenyl-d14	76.2		23.0-120		06/26/2017 23:22	WG992161
(S) Nitrobenzene-d5	74.4		14.0-149		06/26/2017 23:22	WG992161
(S) 2-Fluorobiphenyl	75.5		34.0-125		06/26/2017 23:22	WG992161

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.76		1	06/26/2017 18:39	WG992188

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	06/22/2017 10:41	WG990799

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.59	T8	1	06/21/2017 10:28	WG990795

Sample Narrative:

9045D L916918-04 WG990795: 7.59 at 21.1c

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	447		1	06/20/2017 01:37	WG990867

Sample Narrative:

9050AMod L916918-04 WG990867: 447 at 20.7c

Mercury by Method 7471A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	0.0259		0.0200	1	06/22/2017 06:57	WG991015

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	25.3		2.00	1	06/22/2017 20:28	WG991974
Barium	192		0.500	1	06/22/2017 20:28	WG991974
Boron	ND		10.0	1	06/22/2017 20:28	WG991974
Cadmium	ND		0.500	1	06/22/2017 20:28	WG991974
Chromium	17.7		1.00	1	06/22/2017 20:28	WG991974
Copper	16.5		2.00	1	06/22/2017 20:28	WG991974
Lead	51.8		0.500	1	06/22/2017 20:28	WG991974
Nickel	76.7		2.00	1	06/22/2017 20:28	WG991974
Selenium	ND		2.00	1	06/22/2017 20:28	WG991974
Silver	ND		1.00	1	06/22/2017 20:28	WG991974
Zinc	34.4		5.00	1	06/22/2017 20:28	WG991974

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	0.00146		0.000500	1	06/26/2017 15:52	WG992882
Toluene	ND		0.00500	1	06/26/2017 15:52	WG992882
Ethylbenzene	0.00106	B	0.000500	1	06/26/2017 15:52	WG992882
Total Xylene	ND		0.00150	1	06/26/2017 15:52	WG992882
TPH (GC/FID) Low Fraction	ND		0.100	1	06/26/2017 15:52	WG992882
(S) a,a,a-Trifluorotoluene(FID)	86.6		77.0-120		06/26/2017 15:52	WG992882
(S) a,a,a-Trifluorotoluene(PID)	96.2		75.0-128		06/26/2017 15:52	WG992882



Collected date/time: 06/13/17 13:30

L916918

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		40.0	10	06/26/2017 14:56	WG992147
C28-C40 Oil Range	ND		40.0	10	06/26/2017 14:56	WG992147
(S) o-Terphenyl	78.9		18.0-148		06/26/2017 14:56	WG992147

Sample Narrative:

8015 L916918-04 WG992147: Dilution due to matrix impact during extraction procedure

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	06/24/2017 07:41	WG992161
Acenaphthene	ND		0.00600	1	06/24/2017 07:41	WG992161
Acenaphthylene	ND		0.00600	1	06/24/2017 07:41	WG992161
Benzo(a)anthracene	0.0222		0.00600	1	06/24/2017 07:41	WG992161
Benzo(a)pyrene	0.0258		0.00600	1	06/24/2017 07:41	WG992161
Benzo(b)fluoranthene	0.0654		0.00600	1	06/24/2017 07:41	WG992161
Benzo(g,h,i)perylene	0.0342		0.00600	1	06/24/2017 07:41	WG992161
Benzo(k)fluoranthene	0.0129	<u>J3</u>	0.00600	1	06/24/2017 07:41	WG992161
Chrysene	0.0348		0.00600	1	06/24/2017 07:41	WG992161
Dibenz(a,h)anthracene	0.00893		0.00600	1	06/24/2017 07:41	WG992161
Fluoranthene	0.0302		0.00600	1	06/24/2017 07:41	WG992161
Fluorene	0.00730		0.00600	1	06/24/2017 07:41	WG992161
Indeno(1,2,3-cd)pyrene	0.0262		0.00600	1	06/24/2017 07:41	WG992161
Naphthalene	0.0665		0.0200	1	06/24/2017 07:41	WG992161
Phenanthrene	0.0359		0.00600	1	06/24/2017 07:41	WG992161
Pyrene	0.0262		0.00600	1	06/24/2017 07:41	WG992161
1-Methylnaphthalene	0.0659		0.0200	1	06/24/2017 07:41	WG992161
2-Methylnaphthalene	0.102		0.0200	1	06/24/2017 07:41	WG992161
2-Chloronaphthalene	ND		0.0200	1	06/24/2017 07:41	WG992161
(S) p-Terphenyl-d14	57.8		23.0-120		06/24/2017 07:41	WG992161
(S) Nitrobenzene-d5	66.0		14.0-149		06/24/2017 07:41	WG992161
(S) 2-Fluorobiphenyl	67.2		34.0-125		06/24/2017 07:41	WG992161

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.26		1	06/26/2017 18:42	WG992188

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	06/22/2017 10:42	WG990799

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.93	T8	1	06/21/2017 10:28	WG990795

Sample Narrative:

9045D L916918-05 WG990795: 7.93 at 21.0c

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	351		1	06/20/2017 01:37	WG990867

Sample Narrative:

9050AMod L916918-05 WG990867: 351 at 20.6c

Mercury by Method 7471A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	0.0260		0.0200	1	06/22/2017 07:07	WG991015

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	5.77		2.00	1	06/22/2017 20:31	WG991974
Barium	376		0.500	1	06/22/2017 20:31	WG991974
Boron	ND		10.0	1	06/22/2017 20:31	WG991974
Cadmium	ND		0.500	1	06/22/2017 20:31	WG991974
Chromium	25.1		1.00	1	06/22/2017 20:31	WG991974
Copper	22.3		2.00	1	06/22/2017 20:31	WG991974
Lead	10.7		0.500	1	06/22/2017 20:31	WG991974
Nickel	19.6		2.00	1	06/22/2017 20:31	WG991974
Selenium	ND		2.00	1	06/22/2017 20:31	WG991974
Silver	ND		1.00	1	06/22/2017 20:31	WG991974
Zinc	54.2		5.00	1	06/22/2017 20:31	WG991974

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	0.00164		0.000500	1	06/26/2017 16:14	WG992882
Toluene	ND		0.00500	1	06/26/2017 16:14	WG992882
Ethylbenzene	0.00127	B	0.000500	1	06/26/2017 16:14	WG992882
Total Xylene	0.00166	B	0.00150	1	06/26/2017 16:14	WG992882
TPH (GC/FID) Low Fraction	0.119		0.100	1	06/26/2017 16:14	WG992882
(S) a,a,a-Trifluorotoluene(FID)	86.4		77.0-120		06/26/2017 16:14	WG992882
(S) a,a,a-Trifluorotoluene(PID)	95.4		75.0-128		06/26/2017 16:14	WG992882



Collected date/time: 06/13/17 13:50

L916918

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	107		40.0	10	06/26/2017 15:11	WG992147
C28-C40 Oil Range	81.8		40.0	10	06/26/2017 15:11	WG992147
(S) o-Terphenyl	88.3		18.0-148		06/26/2017 15:11	WG992147

1
Cp2
Tc3
Ss4
Cn5
Sr6
Qc7
Gl8
Al9
Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	0.0162		0.00600	1	06/26/2017 23:44	WG992161
Acenaphthene	0.0108		0.00600	1	06/26/2017 23:44	WG992161
Acenaphthylene	ND		0.00600	1	06/26/2017 23:44	WG992161
Benzo(a)anthracene	0.0647		0.00600	1	06/26/2017 23:44	WG992161
Benzo(a)pyrene	0.0755		0.00600	1	06/26/2017 23:44	WG992161
Benzo(b)fluoranthene	0.172		0.00600	1	06/26/2017 23:44	WG992161
Benzo(g,h,i)perylene	0.0839		0.00600	1	06/26/2017 23:44	WG992161
Benzo(k)fluoranthene	0.0422	J3	0.00600	1	06/26/2017 23:44	WG992161
Chrysene	0.103		0.00600	1	06/26/2017 23:44	WG992161
Dibenz(a,h)anthracene	0.0262		0.00600	1	06/26/2017 23:44	WG992161
Fluoranthene	0.0798		0.00600	1	06/26/2017 23:44	WG992161
Fluorene	0.0185		0.00600	1	06/26/2017 23:44	WG992161
Indeno(1,2,3-cd)pyrene	0.0704		0.00600	1	06/26/2017 23:44	WG992161
Naphthalene	0.140		0.0200	1	06/26/2017 23:44	WG992161
Phenanthrene	0.100		0.00600	1	06/26/2017 23:44	WG992161
Pyrene	0.0686		0.00600	1	06/26/2017 23:44	WG992161
1-Methylnaphthalene	0.116		0.0200	1	06/26/2017 23:44	WG992161
2-Methylnaphthalene	0.226		0.0200	1	06/26/2017 23:44	WG992161
2-Chloronaphthalene	ND		0.0200	1	06/26/2017 23:44	WG992161
(S) p-Terphenyl-d14	81.0		23.0-120		06/26/2017 23:44	WG992161
(S) Nitrobenzene-d5	94.7		14.0-149		06/26/2017 23:44	WG992161
(S) 2-Fluorobiphenyl	85.9		34.0-125		06/26/2017 23:44	WG992161



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.93		1	06/26/2017 18:45	WG992188

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	06/22/2017 10:42	WG990799

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.88	T8	1	06/21/2017 10:28	WG990795

Sample Narrative:

9045D L916918-06 WG990795: 7.88 at 20.8c

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	208		1	06/20/2017 01:37	WG990867

Sample Narrative:

9050AMod L916918-06 WG990867: 207.5 at 20.5c

Mercury by Method 7471A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	0.0279		0.0200	1	06/22/2017 07:09	WG991015

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	5.15		2.00	1	06/22/2017 20:34	WG991974
Barium	368		0.500	1	06/22/2017 20:34	WG991974
Boron	ND		10.0	1	06/22/2017 20:34	WG991974
Cadmium	ND		0.500	1	06/22/2017 20:34	WG991974
Chromium	21.4		1.00	1	06/22/2017 20:34	WG991974
Copper	21.0		2.00	1	06/22/2017 20:34	WG991974
Lead	10.6		0.500	1	06/22/2017 20:34	WG991974
Nickel	17.5		2.00	1	06/22/2017 20:34	WG991974
Selenium	ND		2.00	1	06/22/2017 20:34	WG991974
Silver	ND		1.00	1	06/22/2017 20:34	WG991974
Zinc	45.4		5.00	1	06/22/2017 20:34	WG991974

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	0.00133		0.000500	1	06/26/2017 16:37	WG992882
Toluene	ND		0.00500	1	06/26/2017 16:37	WG992882
Ethylbenzene	0.000841	B	0.000500	1	06/26/2017 16:37	WG992882
Total Xylene	ND		0.00150	1	06/26/2017 16:37	WG992882
TPH (GC/FID) Low Fraction	ND		0.100	1	06/26/2017 16:37	WG992882
(S) a,a,a-Trifluorotoluene(FID)	89.8		77.0-120		06/26/2017 16:37	WG992882
(S) a,a,a-Trifluorotoluene(PID)	96.1		75.0-128		06/26/2017 16:37	WG992882



Collected date/time: 06/13/17 14:05

L916918

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	117		40.0	10	06/26/2017 15:24	WG992147
C28-C40 Oil Range	87.8		40.0	10	06/26/2017 15:24	WG992147
(S) o-terphenyl	88.9		18.0-148		06/26/2017 15:24	WG992147

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	0.0182		0.00600	1	06/27/2017 00:06	WG992161
Acenaphthene	0.0108		0.00600	1	06/27/2017 00:06	WG992161
Acenaphthylene	ND		0.00600	1	06/27/2017 00:06	WG992161
Benzo(a)anthracene	0.0773		0.00600	1	06/27/2017 00:06	WG992161
Benzo(a)pyrene	0.0898		0.00600	1	06/27/2017 00:06	WG992161
Benzo(b)fluoranthene	0.192		0.00600	1	06/27/2017 00:06	WG992161
Benzo(g,h,i)perylene	0.100		0.00600	1	06/27/2017 00:06	WG992161
Benzo(k)fluoranthene	0.0548	J3	0.00600	1	06/27/2017 00:06	WG992161
Chrysene	0.113		0.00600	1	06/27/2017 00:06	WG992161
Dibenz(a,h)anthracene	0.0310		0.00600	1	06/27/2017 00:06	WG992161
Fluoranthene	0.0916		0.00600	1	06/27/2017 00:06	WG992161
Fluorene	0.0193		0.00600	1	06/27/2017 00:06	WG992161
Indeno(1,2,3-cd)pyrene	0.0837		0.00600	1	06/27/2017 00:06	WG992161
Naphthalene	0.130		0.0200	1	06/27/2017 00:06	WG992161
Phenanthrene	0.100		0.00600	1	06/27/2017 00:06	WG992161
Pyrene	0.0826		0.00600	1	06/27/2017 00:06	WG992161
1-Methylnaphthalene	0.111		0.0200	1	06/27/2017 00:06	WG992161
2-Methylnaphthalene	0.214		0.0200	1	06/27/2017 00:06	WG992161
2-Chloronaphthalene	ND		0.0200	1	06/27/2017 00:06	WG992161
(S) p-Terphenyl-d14	82.2		23.0-120		06/27/2017 00:06	WG992161
(S) Nitrobenzene-d5	93.9		14.0-149		06/27/2017 00:06	WG992161
(S) 2-Fluorobiphenyl	87.6		34.0-125		06/27/2017 00:06	WG992161

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.15		1	06/26/2017 18:47	WG992188

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	06/22/2017 10:43	WG990799

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.30	T8	1	06/21/2017 10:28	WG990795

Sample Narrative:

9045D L916918-07 WG990795: 8.30 at 20.9c

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	251		1	06/20/2017 01:37	WG990867

Sample Narrative:

9050AMod L916918-07 WG990867: 251.1 at 20.5c

Mercury by Method 7471A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	0.0266		0.0200	1	06/22/2017 07:12	WG991015

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	6.52		2.00	1	06/22/2017 20:37	WG991974
Barium	377		0.500	1	06/22/2017 20:37	WG991974
Boron	ND		10.0	1	06/22/2017 20:37	WG991974
Cadmium	ND		0.500	1	06/22/2017 20:37	WG991974
Chromium	23.0		1.00	1	06/22/2017 20:37	WG991974
Copper	21.8		2.00	1	06/22/2017 20:37	WG991974
Lead	12.7		0.500	1	06/22/2017 20:37	WG991974
Nickel	20.2		2.00	1	06/22/2017 20:37	WG991974
Selenium	ND		2.00	1	06/22/2017 20:37	WG991974
Silver	ND		1.00	1	06/22/2017 20:37	WG991974
Zinc	51.7		5.00	1	06/22/2017 20:37	WG991974

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	0.00147		0.000500	1	06/26/2017 16:59	WG992882
Toluene	ND		0.00500	1	06/26/2017 16:59	WG992882
Ethylbenzene	0.000980	B	0.000500	1	06/26/2017 16:59	WG992882
Total Xylene	ND		0.00150	1	06/26/2017 16:59	WG992882
TPH (GC/FID) Low Fraction	0.106		0.100	1	06/26/2017 16:59	WG992882
(S) a,a,a-Trifluorotoluene(FID)	86.5		77.0-120		06/26/2017 16:59	WG992882
(S) a,a,a-Trifluorotoluene(PID)	95.5		75.0-128		06/26/2017 16:59	WG992882



Collected date/time: 06/13/17 14:20

L916918

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		40.0	10	06/26/2017 15:39	WG992147
C28-C40 Oil Range	ND		40.0	10	06/26/2017 15:39	WG992147
(S) o-Terphenyl	80.8		18.0-148		06/26/2017 15:39	WG992147

Sample Narrative:

8015 L916918-07 WG992147: Dilution due to matrix impact during extraction procedure

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	06/24/2017 08:03	WG992161
Acenaphthene	ND		0.00600	1	06/24/2017 08:03	WG992161
Acenaphthylene	ND		0.00600	1	06/24/2017 08:03	WG992161
Benzo(a)anthracene	0.00968		0.00600	1	06/24/2017 08:03	WG992161
Benzo(a)pyrene	0.0104		0.00600	1	06/24/2017 08:03	WG992161
Benzo(b)fluoranthene	0.0260		0.00600	1	06/24/2017 08:03	WG992161
Benzo(g,h,i)perylene	0.0145		0.00600	1	06/24/2017 08:03	WG992161
Benzo(k)fluoranthene	ND	J3	0.00600	1	06/24/2017 08:03	WG992161
Chrysene	0.0151		0.00600	1	06/24/2017 08:03	WG992161
Dibenz(a,h)anthracene	ND		0.00600	1	06/24/2017 08:03	WG992161
Fluoranthene	0.0147		0.00600	1	06/24/2017 08:03	WG992161
Fluorene	ND		0.00600	1	06/24/2017 08:03	WG992161
Indeno(1,2,3-cd)pyrene	0.0104		0.00600	1	06/24/2017 08:03	WG992161
Naphthalene	0.0335		0.0200	1	06/24/2017 08:03	WG992161
Phenanthrene	0.0144		0.00600	1	06/24/2017 08:03	WG992161
Pyrene	0.0108		0.00600	1	06/24/2017 08:03	WG992161
1-Methylnaphthalene	0.0232		0.0200	1	06/24/2017 08:03	WG992161
2-Methylnaphthalene	0.0433		0.0200	1	06/24/2017 08:03	WG992161
2-Chloronaphthalene	ND		0.0200	1	06/24/2017 08:03	WG992161
(S) p-Terphenyl-d14	54.3		23.0-120		06/24/2017 08:03	WG992161
(S) Nitrobenzene-d5	66.2		14.0-149		06/24/2017 08:03	WG992161
(S) 2-Fluorobiphenyl	72.0		34.0-125		06/24/2017 08:03	WG992161

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.48		1	06/26/2017 19:06	WG992188

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	06/22/2017 10:44	WG990799

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.29	T8	1	06/21/2017 10:28	WG990795

Sample Narrative:

9045D L916918-08 WG990795: 8.29 at 20.7c

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	240		1	06/20/2017 01:37	WG990867

Sample Narrative:

9050AMod L916918-08 WG990867: 240.2 at 20.6c

Mercury by Method 7471A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	0.0445		0.0200	1	06/22/2017 07:14	WG991015

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	5.64		2.00	1	06/22/2017 20:40	WG991974
Barium	432		0.500	1	06/22/2017 20:40	WG991974
Boron	ND		10.0	1	06/22/2017 20:40	WG991974
Cadmium	ND		0.500	1	06/22/2017 20:40	WG991974
Chromium	26.4		1.00	1	06/22/2017 20:40	WG991974
Copper	25.1		2.00	1	06/22/2017 20:40	WG991974
Lead	13.1		0.500	1	06/22/2017 20:40	WG991974
Nickel	20.8		2.00	1	06/22/2017 20:40	WG991974
Selenium	ND		2.00	1	06/22/2017 20:40	WG991974
Silver	ND		1.00	1	06/22/2017 20:40	WG991974
Zinc	53.3		5.00	1	06/22/2017 20:40	WG991974

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	0.00113		0.000500	1	06/26/2017 17:21	WG992882
Toluene	ND		0.00500	1	06/26/2017 17:21	WG992882
Ethylbenzene	0.000713	B	0.000500	1	06/26/2017 17:21	WG992882
Total Xylene	ND		0.00150	1	06/26/2017 17:21	WG992882
TPH (GC/FID) Low Fraction	ND		0.100	1	06/26/2017 17:21	WG992882
(S) a,a,a-Trifluorotoluene(FID)	89.4		77.0-120		06/26/2017 17:21	WG992882
(S) a,a,a-Trifluorotoluene(PID)	96.1		75.0-128		06/26/2017 17:21	WG992882



Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		40.0	10	06/26/2017 15:55	WG992147
C28-C40 Oil Range	ND		40.0	10	06/26/2017 15:55	WG992147
(S) o-Terphenyl	66.8		18.0-148		06/26/2017 15:55	WG992147

Sample Narrative:

8015 L916918-08 WG992147: Dilution due to matrix impact during extraction procedure

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	06/24/2017 08:24	WG992161
Acenaphthene	ND		0.00600	1	06/24/2017 08:24	WG992161
Acenaphthylene	ND		0.00600	1	06/24/2017 08:24	WG992161
Benzo(a)anthracene	ND		0.00600	1	06/24/2017 08:24	WG992161
Benzo(a)pyrene	0.00740		0.00600	1	06/24/2017 08:24	WG992161
Benzo(b)fluoranthene	0.0155		0.00600	1	06/24/2017 08:24	WG992161
Benzo(g,h,i)perylene	0.00957		0.00600	1	06/24/2017 08:24	WG992161
Benzo(k)fluoranthene	ND	<u>J3</u>	0.00600	1	06/24/2017 08:24	WG992161
Chrysene	0.0104		0.00600	1	06/24/2017 08:24	WG992161
Dibenz(a,h)anthracene	ND		0.00600	1	06/24/2017 08:24	WG992161
Fluoranthene	0.00803		0.00600	1	06/24/2017 08:24	WG992161
Fluorene	ND		0.00600	1	06/24/2017 08:24	WG992161
Indeno(1,2,3-cd)pyrene	0.00714		0.00600	1	06/24/2017 08:24	WG992161
Naphthalene	0.0611		0.0200	1	06/24/2017 08:24	WG992161
Phenanthrene	0.0185		0.00600	1	06/24/2017 08:24	WG992161
Pyrene	0.00955		0.00600	1	06/24/2017 08:24	WG992161
1-Methylnaphthalene	0.0533		0.0200	1	06/24/2017 08:24	WG992161
2-Methylnaphthalene	0.0888		0.0200	1	06/24/2017 08:24	WG992161
2-Chloronaphthalene	ND		0.0200	1	06/24/2017 08:24	WG992161
(S) p-Terphenyl-d14	33.2		23.0-120		06/24/2017 08:24	WG992161
(S) Nitrobenzene-d5	48.5		14.0-149		06/24/2017 08:24	WG992161
(S) 2-Fluorobiphenyl	50.5		34.0-125		06/24/2017 08:24	WG992161

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.32		1	06/26/2017 19:09	WG992188

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	06/22/2017 10:44	WG990799

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.42	T8	1	06/21/2017 10:28	WG990795

Sample Narrative:

9045D L916918-09 WG990795: 8.42 at 20.7c

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	257		1	06/20/2017 01:37	WG990867

Sample Narrative:

9050AMod L916918-09 WG990867: 257.4 at 20.7c

Mercury by Method 7471A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	0.0337		0.0200	1	06/22/2017 07:16	WG991015

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	6.34		2.00	1	06/22/2017 20:43	WG991974
Barium	434		0.500	1	06/22/2017 20:43	WG991974
Boron	ND		10.0	1	06/22/2017 20:43	WG991974
Cadmium	ND		0.500	1	06/22/2017 20:43	WG991974
Chromium	27.2		1.00	1	06/22/2017 20:43	WG991974
Copper	25.2		2.00	1	06/22/2017 20:43	WG991974
Lead	13.9		0.500	1	06/22/2017 20:43	WG991974
Nickel	20.7		2.00	1	06/22/2017 20:43	WG991974
Selenium	ND		2.00	1	06/22/2017 20:43	WG991974
Silver	ND		1.00	1	06/22/2017 20:43	WG991974
Zinc	56.9		5.00	1	06/22/2017 20:43	WG991974

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	0.00130		0.000500	1	06/26/2017 17:43	WG992882
Toluene	ND		0.00500	1	06/26/2017 17:43	WG992882
Ethylbenzene	0.000844	B	0.000500	1	06/26/2017 17:43	WG992882
Total Xylene	ND		0.00150	1	06/26/2017 17:43	WG992882
TPH (GC/FID) Low Fraction	ND		0.100	1	06/26/2017 17:43	WG992882
(S) a,a,a-Trifluorotoluene(FID)	86.7		77.0-120		06/26/2017 17:43	WG992882
(S) a,a,a-Trifluorotoluene(PID)	96.1		75.0-128		06/26/2017 17:43	WG992882



Collected date/time: 06/13/17 14:50

L916918

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	103		40.0	10	06/26/2017 16:08	WG992147
C28-C40 Oil Range	59.5		40.0	10	06/26/2017 16:08	WG992147
(S) o-Terphenyl	97.6		18.0-148		06/26/2017 16:08	WG992147

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	0.0117		0.00600	1	06/27/2017 00:27	WG992161
Acenaphthene	ND		0.00600	1	06/27/2017 00:27	WG992161
Acenaphthylene	ND		0.00600	1	06/27/2017 00:27	WG992161
Benzo(a)anthracene	0.0247		0.00600	1	06/27/2017 00:27	WG992161
Benzo(a)pyrene	0.0382		0.00600	1	06/27/2017 00:27	WG992161
Benzo(b)fluoranthene	0.0844		0.00600	1	06/27/2017 00:27	WG992161
Benzo(g,h,i)perylene	0.0471		0.00600	1	06/27/2017 00:27	WG992161
Benzo(k)fluoranthene	0.0198	J3	0.00600	1	06/27/2017 00:27	WG992161
Chrysene	0.0480		0.00600	1	06/27/2017 00:27	WG992161
Dibenz(a,h)anthracene	0.0138		0.00600	1	06/27/2017 00:27	WG992161
Fluoranthene	0.0332		0.00600	1	06/27/2017 00:27	WG992161
Fluorene	0.0127		0.00600	1	06/27/2017 00:27	WG992161
Indeno(1,2,3-cd)pyrene	0.0389		0.00600	1	06/27/2017 00:27	WG992161
Naphthalene	0.0916		0.0200	1	06/27/2017 00:27	WG992161
Phenanthrene	0.0511		0.00600	1	06/27/2017 00:27	WG992161
Pyrene	0.0395		0.00600	1	06/27/2017 00:27	WG992161
1-Methylnaphthalene	0.0886		0.0200	1	06/27/2017 00:27	WG992161
2-Methylnaphthalene	0.155		0.0200	1	06/27/2017 00:27	WG992161
2-Chloronaphthalene	ND		0.0200	1	06/27/2017 00:27	WG992161
(S) p-Terphenyl-d14	79.8		23.0-120		06/27/2017 00:27	WG992161
(S) Nitrobenzene-d5	85.5		14.0-149		06/27/2017 00:27	WG992161
(S) 2-Fluorobiphenyl	88.2		34.0-125		06/27/2017 00:27	WG992161

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.45		1	06/26/2017 19:12	WG992188

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	06/22/2017 10:46	WG990799

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.02	<u>T8</u>	1	06/21/2017 10:28	WG990795

Sample Narrative:

9045D L916918-10 WG990795: 8.02 at 20.7c

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	276		1	06/20/2017 01:37	WG990867

Sample Narrative:

9050AMod L916918-10 WG990867: 275.9 at 21.0c

Mercury by Method 7471A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	0.0434		0.0200	1	06/22/2017 07:19	WG991015

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	5.72		2.00	1	06/22/2017 20:46	WG991974
Barium	400		0.500	1	06/22/2017 20:46	WG991974
Boron	ND		10.0	1	06/22/2017 20:46	WG991974
Cadmium	ND		0.500	1	06/22/2017 20:46	WG991974
Chromium	23.7		1.00	1	06/22/2017 20:46	WG991974
Copper	24.7		2.00	1	06/22/2017 20:46	WG991974
Lead	13.1		0.500	1	06/22/2017 20:46	WG991974
Nickel	18.9		2.00	1	06/22/2017 20:46	WG991974
Selenium	ND		2.00	1	06/22/2017 20:46	WG991974
Silver	ND		1.00	1	06/22/2017 20:46	WG991974
Zinc	52.9		5.00	1	06/22/2017 20:46	WG991974

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	0.00133		0.000500	1	06/26/2017 18:05	WG992882
Toluene	ND		0.00500	1	06/26/2017 18:05	WG992882
Ethylbenzene	0.000902	<u>B</u>	0.000500	1	06/26/2017 18:05	WG992882
Total Xylene	ND		0.00150	1	06/26/2017 18:05	WG992882
TPH (GC/FID) Low Fraction	ND		0.100	1	06/26/2017 18:05	WG992882
(S) a,a,a-Trifluorotoluene(FID)	85.9		77.0-120		06/26/2017 18:05	WG992882
(S) a,a,a-Trifluorotoluene(PID)	95.8		75.0-128		06/26/2017 18:05	WG992882



Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	117		40.0	10	06/26/2017 16:49	WG992147
C28-C40 Oil Range	51.1		40.0	10	06/26/2017 16:49	WG992147
(S) o-terphenyl	86.3		18.0-148		06/26/2017 16:49	WG992147

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	0.0151		0.00600	1	06/27/2017 00:49	WG992161
Acenaphthene	0.00885		0.00600	1	06/27/2017 00:49	WG992161
Acenaphthylene	ND		0.00600	1	06/27/2017 00:49	WG992161
Benzo(a)anthracene	0.0339		0.00600	1	06/27/2017 00:49	WG992161
Benzo(a)pyrene	0.0460		0.00600	1	06/27/2017 00:49	WG992161
Benzo(b)fluoranthene	0.102		0.00600	1	06/27/2017 00:49	WG992161
Benzo(g,h,i)perylene	0.0541		0.00600	1	06/27/2017 00:49	WG992161
Benzo(k)fluoranthene	0.0249	J3	0.00600	1	06/27/2017 00:49	WG992161
Chrysene	0.0611		0.00600	1	06/27/2017 00:49	WG992161
Dibenz(a,h)anthracene	0.0166		0.00600	1	06/27/2017 00:49	WG992161
Fluoranthene	0.0503		0.00600	1	06/27/2017 00:49	WG992161
Fluorene	0.0160		0.00600	1	06/27/2017 00:49	WG992161
Indeno(1,2,3-cd)pyrene	0.0444		0.00600	1	06/27/2017 00:49	WG992161
Naphthalene	0.107		0.0200	1	06/27/2017 00:49	WG992161
Phenanthrene	0.0713		0.00600	1	06/27/2017 00:49	WG992161
Pyrene	0.0602		0.00600	1	06/27/2017 00:49	WG992161
1-Methylnaphthalene	0.103		0.0200	1	06/27/2017 00:49	WG992161
2-Methylnaphthalene	0.180		0.0200	1	06/27/2017 00:49	WG992161
2-Chloronaphthalene	ND		0.0200	1	06/27/2017 00:49	WG992161
(S) p-Terphenyl-d14	89.7		23.0-120		06/27/2017 00:49	WG992161
(S) Nitrobenzene-d5	87.0		14.0-149		06/27/2017 00:49	WG992161
(S) 2-Fluorobiphenyl	90.9		34.0-125		06/27/2017 00:49	WG992161

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.68		1	06/26/2017 19:14	WG992188

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	06/22/2017 10:47	WG990799

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.09	T8	1	06/21/2017 10:28	WG990795

Sample Narrative:

9045D L916918-11 WG990795: 8.09 at 21.4c

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	336		1	06/20/2017 01:37	WG990867

Sample Narrative:

9050AMod L916918-11 WG990867: 336 at 20.6c

Mercury by Method 7471A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	0.0296		0.0200	1	06/22/2017 07:21	WG991015

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	5.22		2.00	1	06/22/2017 20:49	WG991974
Barium	396		0.500	1	06/22/2017 20:49	WG991974
Boron	ND		10.0	1	06/22/2017 20:49	WG991974
Cadmium	ND		0.500	1	06/22/2017 20:49	WG991974
Chromium	27.1		1.00	1	06/22/2017 20:49	WG991974
Copper	25.0		2.00	1	06/22/2017 20:49	WG991974
Lead	12.2		0.500	1	06/22/2017 20:49	WG991974
Nickel	24.0		2.00	1	06/22/2017 20:49	WG991974
Selenium	ND		2.00	1	06/22/2017 20:49	WG991974
Silver	ND		1.00	1	06/22/2017 20:49	WG991974
Zinc	57.4		5.00	1	06/22/2017 20:49	WG991974

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	0.00130		0.000500	1	06/26/2017 19:56	WG992882
Toluene	ND		0.00500	1	06/26/2017 19:56	WG992882
Ethylbenzene	0.000809	B	0.000500	1	06/26/2017 19:56	WG992882
Total Xylene	0.00204	B	0.00150	1	06/26/2017 19:56	WG992882
TPH (GC/FID) Low Fraction	0.104		0.100	1	06/26/2017 19:56	WG992882
(S) a,a,a-Trifluorotoluene(FID)	87.0		77.0-120		06/26/2017 19:56	WG992882
(S) a,a,a-Trifluorotoluene(PID)	96.4		75.0-128		06/26/2017 19:56	WG992882



Collected date/time: 06/13/17 15:20

L916918

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	66.8		40.0	10	06/26/2017 19:29	WG992147
C28-C40 Oil Range	ND		40.0	10	06/26/2017 19:29	WG992147
(S) o-Terphenyl	57.2		18.0-148		06/26/2017 19:29	WG992147

Sample Narrative:

8015 L916918-11 WG992147: Dilution due to matrix impact during extraction procedure

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	0.00612		0.00600	1	06/24/2017 09:30	WG992161
Acenaphthene	ND		0.00600	1	06/24/2017 09:30	WG992161
Acenaphthylene	ND		0.00600	1	06/24/2017 09:30	WG992161
Benzo(a)anthracene	0.0122		0.00600	1	06/24/2017 09:30	WG992161
Benzo(a)pyrene	0.0170		0.00600	1	06/24/2017 09:30	WG992161
Benzo(b)fluoranthene	0.0364		0.00600	1	06/24/2017 09:30	WG992161
Benzo(g,h,i)perylene	0.0254		0.00600	1	06/24/2017 09:30	WG992161
Benzo(k)fluoranthene	0.0103	J3	0.00600	1	06/24/2017 09:30	WG992161
Chrysene	0.0227		0.00600	1	06/24/2017 09:30	WG992161
Dibenz(a,h)anthracene	ND		0.00600	1	06/24/2017 09:30	WG992161
Fluoranthene	0.0185		0.00600	1	06/24/2017 09:30	WG992161
Fluorene	0.00681		0.00600	1	06/24/2017 09:30	WG992161
Indeno(1,2,3-cd)pyrene	0.0171		0.00600	1	06/24/2017 09:30	WG992161
Naphthalene	0.0581		0.0200	1	06/24/2017 09:30	WG992161
Phenanthrene	0.0270		0.00600	1	06/24/2017 09:30	WG992161
Pyrene	0.0209		0.00600	1	06/24/2017 09:30	WG992161
1-Methylnaphthalene	0.0605		0.0200	1	06/24/2017 09:30	WG992161
2-Methylnaphthalene	0.103		0.0200	1	06/24/2017 09:30	WG992161
2-Chloronaphthalene	ND		0.0200	1	06/24/2017 09:30	WG992161
(S) p-Terphenyl-d14	49.7		23.0-120		06/24/2017 09:30	WG992161
(S) Nitrobenzene-d5	59.3		14.0-149		06/24/2017 09:30	WG992161
(S) 2-Fluorobiphenyl	70.8		34.0-125		06/24/2017 09:30	WG992161

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.73		1	06/26/2017 19:17	WG992188

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	06/22/2017 10:47	WG990799

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.15	T8	1	06/21/2017 10:28	WG990795

Sample Narrative:

9045D L916918-12 WG990795: 8.15 at 21.5c

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	365		1	06/20/2017 01:37	WG990867

Sample Narrative:

9050AMod L916918-12 WG990867: 365 at 20.9c

Mercury by Method 7471A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	0.0310		0.0200	1	06/22/2017 07:23	WG991015

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	6.20		2.00	1	06/22/2017 20:52	WG991974
Barium	429		0.500	1	06/22/2017 20:52	WG991974
Boron	ND		10.0	1	06/22/2017 20:52	WG991974
Cadmium	ND		0.500	1	06/22/2017 20:52	WG991974
Chromium	25.0		1.00	1	06/22/2017 20:52	WG991974
Copper	25.7		2.00	1	06/22/2017 20:52	WG991974
Lead	13.5		0.500	1	06/22/2017 20:52	WG991974
Nickel	20.4		2.00	1	06/22/2017 20:52	WG991974
Selenium	ND		2.00	1	06/22/2017 20:52	WG991974
Silver	ND		1.00	1	06/22/2017 20:52	WG991974
Zinc	52.6		5.00	1	06/22/2017 20:52	WG991974

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	0.00139		0.000500	1	06/26/2017 20:19	WG992882
Toluene	ND		0.00500	1	06/26/2017 20:19	WG992882
Ethylbenzene	0.000962	B	0.000500	1	06/26/2017 20:19	WG992882
Total Xylene	ND		0.00150	1	06/26/2017 20:19	WG992882
TPH (GC/FID) Low Fraction	0.100		0.100	1	06/26/2017 20:19	WG992882
(S) a,a,a-Trifluorotoluene(FID)	85.9		77.0-120		06/26/2017 20:19	WG992882
(S) a,a,a-Trifluorotoluene(PID)	95.9		75.0-128		06/26/2017 20:19	WG992882



Collected date/time: 06/13/17 15:35

L916918

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	94.7		40.0	10	06/26/2017 19:43	WG992147
C28-C40 Oil Range	ND		40.0	10	06/26/2017 19:43	WG992147
(S) o-Terphenyl	96.5		18.0-148		06/26/2017 19:43	WG992147

Sample Narrative:

8015 L916918-12 WG992147: Dilution due to matrix impact during extraction procedure

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	0.0148		0.00600	1	06/27/2017 01:11	WG992161
Acenaphthene	0.00894		0.00600	1	06/27/2017 01:11	WG992161
Acenaphthylene	ND		0.00600	1	06/27/2017 01:11	WG992161
Benzo(a)anthracene	0.0273		0.00600	1	06/27/2017 01:11	WG992161
Benzo(a)pyrene	0.0396		0.00600	1	06/27/2017 01:11	WG992161
Benzo(b)fluoranthene	0.0900		0.00600	1	06/27/2017 01:11	WG992161
Benzo(g,h,i)perylene	0.0457		0.00600	1	06/27/2017 01:11	WG992161
Benzo(k)fluoranthene	0.0204	<u>J3</u>	0.00600	1	06/27/2017 01:11	WG992161
Chrysene	0.0318		0.00600	1	06/27/2017 01:11	WG992161
Dibenz(a,h)anthracene	0.0143		0.00600	1	06/27/2017 01:11	WG992161
Fluoranthene	0.0390		0.00600	1	06/27/2017 01:11	WG992161
Fluorene	0.0167		0.00600	1	06/27/2017 01:11	WG992161
Indeno(1,2,3-cd)pyrene	0.0379		0.00600	1	06/27/2017 01:11	WG992161
Naphthalene	0.113		0.0200	1	06/27/2017 01:11	WG992161
Phenanthrene	0.0641		0.00600	1	06/27/2017 01:11	WG992161
Pyrene	0.0475		0.00600	1	06/27/2017 01:11	WG992161
1-Methylnaphthalene	0.111		0.0200	1	06/27/2017 01:11	WG992161
2-Methylnaphthalene	0.187		0.0200	1	06/27/2017 01:11	WG992161
2-Chloronaphthalene	ND		0.0200	1	06/27/2017 01:11	WG992161
(S) p-Terphenyl-d14	80.7		23.0-120		06/27/2017 01:11	WG992161
(S) Nitrobenzene-d5	92.5		14.0-149		06/27/2017 01:11	WG992161
(S) 2-Fluorobiphenyl	91.6		34.0-125		06/27/2017 01:11	WG992161

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3227822-1 06/22/17 10:30

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Chromium,Hexavalent	U		0.64	2.00

L916302-29 Original Sample (OS) • Duplicate (DUP)

(OS) L916302-29 06/22/17 10:35 • (DUP) R3227822-4 06/22/17 10:36

	Original Result (dry)	DUP Result (dry)	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Chromium,Hexavalent	1.62	1.62	1	0	J	20

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

(LCS) R3227822-2 06/22/17 10:33 • (LCSD) R3227822-3 06/22/17 10:33

	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	%	%	%			%	%
Chromium,Hexavalent	56.9	58.2	58.6	102	103	80-120			1	20

L916302-29 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L916302-29 06/22/17 10:35 • (MS) R3227822-5 06/22/17 10:36 • (MSD) R3227822-6 06/22/17 10:36

	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Chromium,Hexavalent	22.4	1.62	17.6	17.6	71	71	1	75-125	J6	J6	0	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



L916918-01 Original Sample (OS) • Duplicate (DUP)

(OS) L916918-01 06/21/17 10:28 • (DUP) WG990795-3 06/21/17 10:28

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.81	7.82	1	0.128	T8	1

L917255-01 Original Sample (OS) • Duplicate (DUP)

(OS) L917255-01 06/21/17 10:28 • (DUP) WG990795-4 06/21/17 10:28

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.38	7.39	1	0.135	T8	1

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

(LCS) WG990795-1 06/21/17 10:28 • (LCSD) WG990795-2 06/21/17 10:28

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	su	su	su	%	%	%			%	%
pH	6.38	6.32	6.32	99.1	99.1	98.7-101			0.000	1

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) WG990867-1 06/20/17 01:37

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	umhos/cm		umhos/cm	umhos/cm
Specific Conductance	1.47			

L916918-01 Original Sample (OS) • Duplicate (DUP)

(OS) L916918-01 06/20/17 01:37 • (DUP) WG990867-4 06/20/17 01:37

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	umhos/cm	umhos/cm		%		%
Specific Conductance	515	515	1	0.000		20

L916920-01 Original Sample (OS) • Duplicate (DUP)

(OS) L916920-01 06/20/17 01:37 • (DUP) WG990867-5 06/20/17 01:37

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	umhos/cm	umhos/cm		%		%
Specific Conductance	3760	3760	1	0.000		20

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

(LCS) WG990867-2 06/20/17 01:37 • (LCSD) WG990867-3 06/20/17 01:37

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	umhos/cm	umhos/cm	umhos/cm	%	%	%			%	%
Specific Conductance	1070	1050	1050	98.1	98.1	90.0-110			0.000	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) R3227691-1 06/22/17 06:15

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Mercury	U		0.0028	0.0200

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

(LCS) R3227691-2 06/22/17 06:17 • (LCSD) R3227691-3 06/22/17 06:20

	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	%	%	%			%	%
Mercury	0.300	0.310	0.304	103	101	80-120			2	20

L916697-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L916697-09 06/22/17 06:22 • (MS) R3227691-4 06/22/17 06:24 • (MSD) R3227691-5 06/22/17 06:27

	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	%	%		%			%	%
Mercury	0.300	ND	0.310	0.324	100	105	1	75-125			4	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) R3228051-1 06/22/17 19:52

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.65	2.00
Barium	U		0.17	0.500
Boron	U		1.26	10.0
Cadmium	U		0.07	0.500
Chromium	U		0.14	1.00
Copper	U		0.53	2.00
Lead	U		0.19	0.500
Nickel	U		0.49	2.00
Selenium	U		0.74	2.00
Silver	U		0.28	1.00
Zinc	U		0.59	5.00

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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

(LCS) R3228051-2 06/22/17 19:55 • (LCSD) R3228051-3 06/22/17 19:57

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 %
Arsenic	100	99.4	94.3	99	94	80-120			5	20
Barium	100	104	99.2	104	99	80-120			5	20
Boron	100	104	96.2	104	96	80-120			8	20
Cadmium	100	99.3	94.5	99	95	80-120			5	20
Chromium	100	103	97.6	103	98	80-120			6	20
Copper	100	102	96.7	102	97	80-120			6	20
Lead	100	99.6	94.8	100	95	80-120			5	20
Nickel	100	101	96.0	101	96	80-120			5	20
Selenium	100	98.7	93.7	99	94	80-120			5	20
Silver	20.0	19.6	18.4	98	92	80-120			6	20
Zinc	100	100	95.3	100	95	80-120			5	20

L916918-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L916918-01 06/22/17 20:00 • (MS) R3228051-6 06/22/17 20:09 • (MSD) R3228051-7 06/22/17 20:11

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	7.20	106	96.4	99	89	1	75-125			9	20
Barium	100	418	507	395	89	0	1	75-125		J3 V	25	20
Boron	100	ND	99.4	88.6	97	87	1	75-125			11	20
Cadmium	100	ND	101	92.4	100	92	1	75-125			8	20
Chromium	100	25.6	122	115	97	90	1	75-125			6	20



L916918-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L916918-01 06/22/17 20:00 • (MS) R3228051-6 06/22/17 20:09 • (MSD) R3228051-7 06/22/17 20:11

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Copper	100	25.1	129	120	104	95	1	75-125			7	20
Lead	100	13.7	116	106	103	92	1	75-125			9	20
Nickel	100	23.2	126	116	103	93	1	75-125			8	20
Selenium	100	ND	99.9	91.7	100	92	1	75-125			9	20
Silver	20.0	ND	19.8	18.3	99	91	1	75-125			8	20
Zinc	100	55.6	146	138	91	83	1	75-125			6	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3228717-5 06/26/17 11:32

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000120	0.000500
Toluene	0.000425	U	0.000150	0.00500
Ethylbenzene	0.000218	U	0.000110	0.000500
Total Xylene	U		0.000460	0.00150
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID) 92.4			77.0-120	
(S) a,a,a-Trifluorotoluene(PID) 102			75.0-128	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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

(LCS) R3228717-1 06/26/17 09:40 • (LCSD) R3228717-2 06/26/17 10:03

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 %
Benzene	0.0500	0.0459	0.0476	91.7	95.2	71.0-121			3.73	20
Toluene	0.0500	0.0463	0.0471	92.6	94.1	72.0-120			1.63	20
Ethylbenzene	0.0500	0.0463	0.0476	92.5	95.1	76.0-121			2.80	20
Total Xylene	0.150	0.136	0.138	90.8	91.9	75.0-124			1.24	20
(S) a,a,a-Trifluorotoluene(FID)				92.1	93.4	77.0-120				
(S) a,a,a-Trifluorotoluene(PID)				99.5	101	75.0-128				

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

(LCS) R3228717-3 06/26/17 10:25 • (LCSD) R3228717-4 06/26/17 10:47

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 %
TPH (GC/FID) Low Fraction	5.50	5.98	5.88	109	107	70.0-136			1.60	20
(S) a,a,a-Trifluorotoluene(FID)				108	106	77.0-120				
(S) a,a,a-Trifluorotoluene(PID)				114	115	75.0-128				

L916918-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L916918-01 06/26/17 14:46 • (MS) R3228717-6 06/26/17 22:54 • (MSD) R3228717-7 06/26/17 23:16

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	0.00159	0.0140	0.0126	24.8	21.9	1	10.0-146			10.7	29
Toluene	0.0500	ND	0.0110	0.00844	16.0	11.0	1	10.0-143			26.0	30
Ethylbenzene	0.0500	0.00119	0.00644	0.00430	10.5	6.22	1	10.0-147		J3 J6	39.8	31
Total Xylene	0.150	0.00158	0.0164	0.00970	9.88	5.42	1	10.0-149	J6	J3 J6	51.3	30
(S) a,a,a-Trifluorotoluene(FID)					80.3	84.4		77.0-120				



L916918-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L916918-01 06/26/17 14:46 • (MS) R3228717-6 06/26/17 22:54 • (MSD) R3228717-7 06/26/17 23:16

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
(S) a,a,a-Trifluorotoluene(PID)					85.5	90.1		75.0-128				

L916918-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L916918-01 06/26/17 14:46 • (MS) R3228717-8 06/26/17 23:38 • (MSD) R3228717-9 06/27/17 00:01

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	0.105	1.57	1.76	26.7	30.0	1	10.0-147			10.9	30
(S) a,a,a-Trifluorotoluene(FID)					78.9	84.9		77.0-120				
(S) a,a,a-Trifluorotoluene(PID)					88.7	93.5		75.0-128				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) R3228646-1 06/26/17 09:44

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	85.5			18.0-148

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

(LCS) R3228646-2 06/26/17 09:58 • (LCSD) R3228646-3 06/26/17 10:11

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 %
C10-C28 Diesel Range	60.0	45.0	48.7	75.0	81.2	50.0-150			7.95	20
(S) o-Terphenyl				80.8	90.2	18.0-148				

L916918-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L916918-09 06/26/17 16:08 • (MS) R3228646-4 06/26/17 16:21 • (MSD) R3228646-5 06/26/17 16:35

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	6.00	103	174	175	118	119	10	50.0-150			0.200	20
(S) o-Terphenyl					100	96.8		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

[L916918-01,02,03,04,05,06,07,08,09,10,11,12](#)

Method Blank (MB)

(MB) R3228817-3 06/24/17 05:07

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.000600	0.00600
Acenaphthene	U		0.000600	0.00600
Acenaphthylene	U		0.000600	0.00600
Benzo(a)anthracene	U		0.000600	0.00600
Benzo(a)pyrene	U		0.000600	0.00600
Benzo(b)fluoranthene	U		0.000600	0.00600
Benzo(g,h,i)perylene	U		0.000600	0.00600
Benzo(k)fluoranthene	U		0.000600	0.00600
Chrysene	U		0.000600	0.00600
Dibenz(a,h)anthracene	U		0.000600	0.00600
Fluoranthene	U		0.000600	0.00600
Fluorene	U		0.000600	0.00600
Indeno(1,2,3-cd)pyrene	U		0.000600	0.00600
Naphthalene	U		0.00200	0.0200
Phenanthrene	U		0.000600	0.00600
Pyrene	U		0.000600	0.00600
1-Methylnaphthalene	U		0.00200	0.0200
2-Methylnaphthalene	U		0.00200	0.0200
2-Chloronaphthalene	U		0.00200	0.0200
(S) Nitrobenzene-d5	56.4			14.0-149
(S) 2-Fluorobiphenyl	59.0			34.0-125
(S) p-Terphenyl-d14	47.7			23.0-120

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

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

(LCS) R3228817-1 06/24/17 04:24 • (LCSD) R3228817-2 06/24/17 04:45

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 %
Anthracene	0.0800	0.0517	0.0486	64.6	60.7	50.0-125			6.12	20
Acenaphthene	0.0800	0.0527	0.0539	65.9	67.4	52.0-120			2.35	20
Acenaphthylene	0.0800	0.0553	0.0500	69.1	62.5	51.0-120			10.0	20
Benzo(a)anthracene	0.0800	0.0426	0.0444	53.3	55.5	46.0-121			4.08	20
Benzo(a)pyrene	0.0800	0.0386	0.0424	48.3	53.0	42.0-121			9.30	20
Benzo(b)fluoranthene	0.0800	0.0404	0.0483	50.5	60.4	42.0-123			17.9	20
Benzo(g,h,i)perylene	0.0800	0.0387	0.0392	48.3	49.0	43.0-128			1.35	20
Benzo(k)fluoranthene	0.0800	0.0467	0.0574	58.4	71.8	45.0-128		J3	20.5	20
Chrysene	0.0800	0.0482	0.0525	60.3	65.6	48.0-127			8.37	20
Dibenz(a,h)anthracene	0.0800	0.0375	0.0369	46.9	46.1	43.0-132			1.64	20
Fluoranthene	0.0800	0.0516	0.0564	64.5	70.6	49.0-129			8.93	20

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

(LCS) R3228817-1 06/24/17 04:24 • (LCSD) R3228817-2 06/24/17 04:45

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Fluorene	0.0800	0.0487	0.0447	60.9	55.9	50.0-120			8.54	20
Indeno(1,2,3-cd)pyrene	0.0800	0.0383	0.0380	47.9	47.4	44.0-131			0.930	20
Naphthalene	0.0800	0.0521	0.0487	65.1	60.8	50.0-120			6.73	20
Phenanthrene	0.0800	0.0448	0.0432	56.1	54.0	48.0-120			3.66	20
Pyrene	0.0800	0.0519	0.0479	64.9	59.9	48.0-135			7.96	20
1-Methylnaphthalene	0.0800	0.0522	0.0531	65.3	66.4	52.0-122			1.72	20
2-Methylnaphthalene	0.0800	0.0503	0.0480	62.9	60.0	52.0-120			4.66	20
2-Chloronaphthalene	0.0800	0.0522	0.0477	65.3	59.6	50.0-120			9.07	20
(S) Nitrobenzene-d5				72.0	62.6	14.0-149				
(S) 2-Fluorobiphenyl				73.7	71.6	34.0-125				
(S) p-Terphenyl-d14				65.1	52.8	23.0-120				

L916918-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L916918-01 06/24/17 06:13 • (MS) R3228817-4 06/24/17 06:35 • (MSD) R3228817-5 06/24/17 06:57

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Anthracene	0.0800	ND	0.0374	0.0401	44.3	47.6	1	20.0-136			6.86	24
Acenaphthene	0.0800	ND	0.0389	0.0441	46.0	52.5	1	29.0-124			12.5	20
Acenaphthylene	0.0800	ND	0.0383	0.0394	47.9	49.2	1	35.0-120			2.72	20
Benzo(a)anthracene	0.0800	0.0108	0.0420	0.0403	39.1	37.0	1	13.0-132			4.07	27
Benzo(a)pyrene	0.0800	0.0127	0.0416	0.0389	36.1	32.7	1	14.0-138			6.75	27
Benzo(b)fluoranthene	0.0800	0.0269	0.0476	0.0451	25.9	22.8	1	10.0-129			5.28	31
Benzo(g,h,i)perylene	0.0800	0.0181	0.0422	0.0407	30.2	28.3	1	10.0-133			3.71	30
Benzo(k)fluoranthene	0.0800	0.00705	0.0387	0.0395	39.6	40.6	1	15.0-131			1.94	27
Chrysene	0.0800	0.0161	0.0494	0.0468	41.6	38.4	1	15.0-137			5.38	25
Dibenz(a,h)anthracene	0.0800	ND	0.0363	0.0336	40.1	36.7	1	15.0-132			7.63	27
Fluoranthene	0.0800	0.0148	0.0502	0.0420	44.2	34.0	1	13.0-139			17.7	28
Fluorene	0.0800	ND	0.0362	0.0392	40.9	44.7	1	27.0-122			8.13	22
Indeno(1,2,3-cd)pyrene	0.0800	0.0129	0.0409	0.0384	35.0	31.8	1	11.0-133			6.46	29
Naphthalene	0.0800	0.0297	0.0589	0.0670	36.6	46.6	1	18.0-136			12.7	21
Phenanthrene	0.0800	0.0146	0.0409	0.0431	33.0	35.6	1	15.0-133			5.06	25
Pyrene	0.0800	0.0139	0.0438	0.0422	37.4	35.4	1	11.0-146			3.70	29
1-Methylnaphthalene	0.0800	0.0217	0.0517	0.0628	37.5	51.4	1	24.0-137			19.4	22
2-Methylnaphthalene	0.0800	0.0395	0.0634	0.0768	29.9	46.6	1	23.0-136			19.1	22
2-Chloronaphthalene	0.0800	ND	0.0386	0.0436	48.3	54.4	1	36.0-120			12.0	20
(S) Nitrobenzene-d5					65.2	58.8		14.0-149				
(S) 2-Fluorobiphenyl					66.0	67.4		34.0-125				
(S) p-Terphenyl-d14					55.0	46.2		23.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



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

B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ 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 ¹	DW21704
Florida	E87487	North Carolina ²	41
Georgia	NELAP	North Dakota	R-140
Georgia ¹	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 ¹	90010	South Dakota	n/a
Kentucky ²	16	Tennessee ¹⁴	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas ⁵	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		

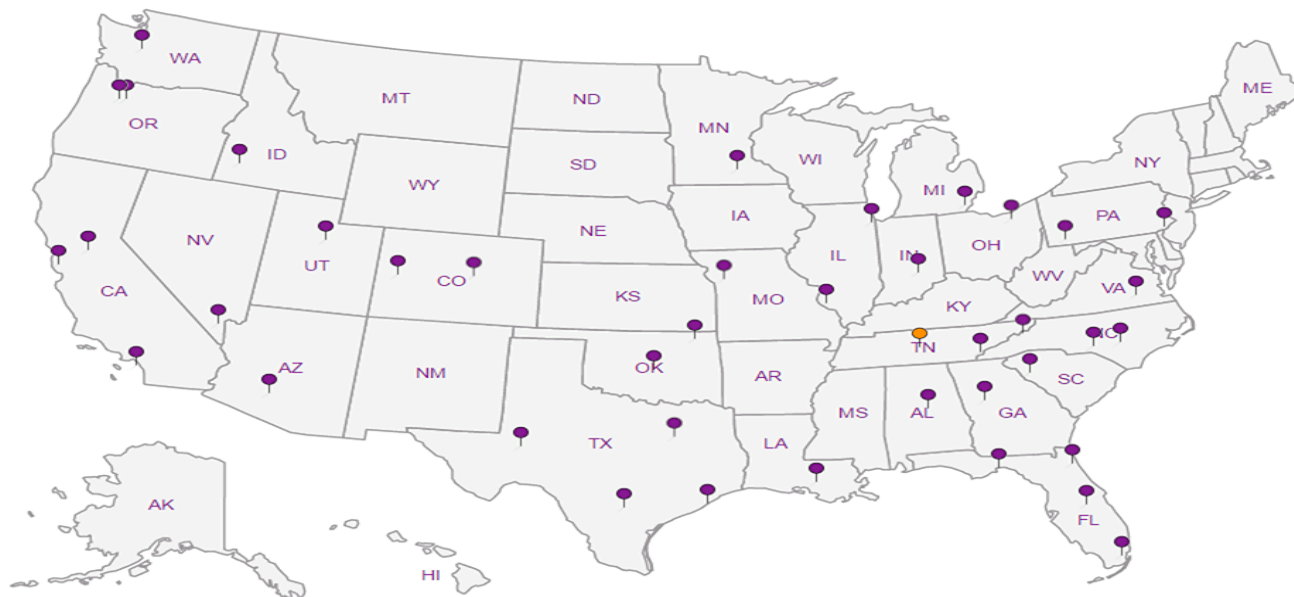
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ^{n/a} 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.**



Company Name/Address:

Nicholson GeoSolutions, LLC3433 E. Lake Dr.
Centennial, CO 80121

Billing Information:

Tom Hogelin
Linn Energy LLC - *Berry Petroleum*
235 Callahan Ave
Parachute, CO 81635

Analysis / Container / Preservative

Chain of Custody Page 1 of 2



YOUR LAB OF CHOICE

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859L# 916913
H212

Acctnum: BERPETDCO

Template:

Prelogin:

TSR:

Cooler:

Shipped Via:

Rem./Contaminant Sample # (lab only)

Report to:

Dave Nicholson

Email To:

dknicholson@q.com

Project

Description: Pit Reclamation

City/State

Collected:

Phone: 303-601-2023

Client Project #

Lab Project #

Fax:

BERPETDCO030615S

Collected by (print):

Site/Facility ID #

P.O. #

Collected by (signature):

*D Nicholson*Immediately
Packed on Ice N ☒

Rush? (Lab MUST Be Notified)

Same Day 200%

Next Day 100%

Two Day 50%

Three Day 25%

Date Results Needed

Email? ☐ No ☒ YesFAX? ☒ No ☐ YesNo.
of
Cntrs

Sample ID

Comp/Grab

Matrix *

Depth

Date

Time

Cntrs

I-11 LF-1

SS

6/13

1240

5

I-11 LF-2

SS

1255

5

I-11 LF-3

SS

1315

5

I-11 LF-4

SS

1330

5

I-11 LF-5

SS

1350

5

I-11 LF-6

SS

1405

5

I-11 LF-7

SS

1420

5

I-11 LF-8

SS

1435

5

I-11 LF-9

SS

1450

5

I-11 LF-10

SS

↓

1510

5

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

Remarks: As, Ba, B, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Zn, Cr6

pH _____ Temp _____

Flow _____ Other _____

Hold #

Relinquished by: (Signature)

D Nicholson

Date:

6/16/17

Time:

1300

7215 4519 3603

Received by: (Signature)

Fedex

Samples returned via: ☐ UPS☐ FedEx ☐ Courier ☐

Condition:

(lab use only)

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Temp: °C Bottles Received:

2.1M 60=402

COC Seal Intact: ☐ Y ☐ N ☐ NA

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Date: Time:

06-17-2017 0845

pH Checked:

NCF:

Company Name/Address:

Nicholson GeoSolutions. LLC.3433 E. Lake Dr.
Centennial, CO 80121

Billing Information:

Tom Hogelin
Linn Energy LLC
235 Callahan Ave
Parachute, COBerry
Petroleum

Analysis / Container / Preservative

Chain of Custody Page 2 of 2



YOUR LAB OF CHOICE

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

Report to:

Dave Nicholson

Email To:

dknicholson@q.com

Project Description: **Linn Energy Reclamation**City/State
Collected:

Phone: 303-501-2023

Client Project #

Lab Project #

Fax:

Collected by (print):

Site/Facility ID #

P.O. #

Collected by (signature):

Rush? (Lab MUST Be Notified)

Date Results Needed

Immediately

Packed on ice N ☒

Same Day 200%
 Next Day 100%
 Two Day 50%
 Three Day 25%

Email? ☐ No ☒ YesFAX? ☒ No ☐ YesNo. of
Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Cntrs	BTEX/TVPH (3) 40ml Amb w/HCL	TEPH (3) 40ml Amb w/HCL	VOC's-8260 (3) 40ml Amb w/HCL	Methanol Ethanol 8015 (3) 40ml Amb w/HCL	BTEX SAR, Metals, Cr VI	BTEX / TVPH	TEPH (diesel + motor oil)	SPCON, pH	PATH 8070 SIM	Rem./Contaminant	Sample # (lab only)
I-11 LF-11		GWSS		6/13	1520	12	X	X	X	X	X	X	X	X	X		11
I-11 LF-12		GWSS		11	1535	12	X	X	X	X	X	X	X	X	X		12
		GW				12	X	X	X	X							
		GW				12	X	X	X	X							
		GW				12	X	X	X	X							
		GW				12	X	X	X	X							
		GW				12	X	X	X	X							
		GW				12	X	X	X	X							
		GW				12	X	X	X	X							
		GW				12	X	X	X	X							
		GW				12	X	X	X	X							

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

pH _____ Temp _____

Remarks:

7215 4519 3603

Flow _____ Other _____

Hold #

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Samples returned via: ☐ UPS

Condition:

(lab use only)

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Temp: °C Bottles Received:

COC Seal Intact: ☐ Y ☐ N ☒ NA

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Date: Time:

pH Checked:

NCF:

Amir Soltan 06-17-2011 0845

ESC LAB SCIENCES Cooler Receipt Form

Client: BERPETCO		SDG#	91678
Cooler Received/Opened On: 06/17/2017		Temperature:	2.1
Received By: Matthew Lockhart			
Signature: <i>Matthew Lockhart</i>			
Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?			
Bottles arrive intact?			
Correct bottles used?			
Sufficient volume sent?			
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?			