Nicholson GeoSolutions LLC
3433 East Lake Drive
Centennial, CO 80121

July 5, 2017

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

Subject: O-36B Landfarm Screening Soil Sample Results

Dear Derek:

Nicholson GeoSolutions LLC collected a screening level soil sample from the landfarm on the O-36B well pad in the Garden Gulch area, Garfield County, Colorado on June 13th, 2017. The sample was composited from 16 subsamples collected at depths of about 18 inches across the surface of the landfarm. The sample was 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, PAHs, and metals to evaluate compliance with the COGCC Table 910-1 standards and whether additional treatment is necessary. The laboratory report is attached.

TPH was reported at 561 mg/kg, above the COGCC standard of 500 mg/kg but down by 24% from the value of 735 mg/kg recorded on March 9th, 2017. All other results were below the standards except for arsenic at 7.9 mg/kg.

Given these results, continued treatment of the landfarm is recommended.

Nicholson GeoSolutions LLC

DK Nicholson

David K. Nicholson, P.G.
Principal Geologist

APPENDIX A
Laboratory Report

ANALYTICAL REPORT

July 03, 2017

Berry Petroleum - Denver, CO

Sample Delivery Group:	L916920
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

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O-36B L916920-01 Solid

Collected by: DK Nicholson
Collected date/time: 06/13/17 16:40
Received date/time: 06/17/17 16:40

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG992188	1	06/23/17 10:13	06/26/17 19:20	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	WG991093	1	06/20/17 18:21	06/23/17 14:11	EL
Metals (ICP) by Method 6010B	WG991813	1	06/22/17 10:41	06/22/17 15:24	ST
Metals (ICP) by Method 6010B	WG991813	5	06/22/17 10:41	06/22/17 22:02	ST
Volatile Organic Compounds (GC) by Method 8015/8021	WG992882	1	06/25/17 20:58	06/26/17 20:41	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG991762	10	06/21/17 22:48	06/23/17 15:07	ACM
Semi-Volatile Organic Compounds (GC) by Method 8015	WG991762	2	06/21/17 22:48	06/22/17 16:47	DMG
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG992161	1	06/23/17 14:46	06/24/17 09:52	CLG
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG992161	10	06/23/17 14:46	07/03/17 12:35	CLG

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

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	9.55		1	06/26/2017 19:20	WG992188

Wet Chemistry by Method 3060A/7196A

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

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.84	T8	1	06/21/2017 10:28	WG990795

Sample Narrative:

9045D L916920-01 WG990795: 8.84 at 21.3c

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	3760		1	06/20/2017 01:37	WG990867

Sample Narrative:

9050AMod L916920-01 WG990867: 3760 at 20.8c

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.0302		0.0200	1	06/23/2017 14:11	WG991093

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.90		2.00	1	06/22/2017 15:24	WG991813
Barium	6990	V	2.50	5	06/22/2017 22:02	WG991813
Boron	12.9		10.0	1	06/22/2017 15:24	WG991813
Cadmium	ND		0.500	1	06/22/2017 15:24	WG991813
Chromium	16.3		1.00	1	06/22/2017 15:24	WG991813
Copper	19.3		2.00	1	06/22/2017 15:24	WG991813
Lead	19.0		0.500	1	06/22/2017 15:24	WG991813
Nickel	15.1		2.00	1	06/22/2017 15:24	WG991813
Selenium	ND		2.00	1	06/22/2017 15:24	WG991813
Silver	ND		1.00	1	06/22/2017 15:24	WG991813
Zinc	69.9		5.00	1	06/22/2017 15:24	WG991813

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.000500	1	06/26/2017 20:41	WG992882
Toluene	ND		0.00500	1	06/26/2017 20:41	WG992882
Ethylbenzene	ND		0.000500	1	06/26/2017 20:41	WG992882
Total Xylene	ND		0.00150	1	06/26/2017 20:41	WG992882
TPH (GC/FID) Low Fraction	ND		0.100	1	06/26/2017 20:41	WG992882
(S) a,a,a-Trifluorotoluene(FID)	*90.8*		*77.0-120*		*06/26/2017 20:41*	WG992882
(S) a,a,a-Trifluorotoluene(PID)	*99.7*		*75.0-128*		*06/26/2017 20:41*	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	422		40.0	10	06/23/2017 15:07	WG991762
C28-C40 Oil Range	139		8.00	2	06/22/2017 16:47	WG991762
(S) o-Terphenyl	*106*		*18.0-148*		*06/22/2017 16:47*	WG991762
(S) o-Terphenyl	*2.47*	J2	*18.0-148*		*06/23/2017 15:07*	WG991762

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	0.0644		0.00600	1	06/24/2017 09:52	WG992161
Acenaphthene	ND		0.00600	1	06/24/2017 09:52	WG992161
Acenaphthylene	0.0109		0.00600	1	06/24/2017 09:52	WG992161
Benzo(a)anthracene	ND		0.0600	10	07/03/2017 12:35	WG992161
Benzo(a)pyrene	ND		0.00600	1	06/24/2017 09:52	WG992161
Benzo(b)fluoranthene	ND		0.00600	1	06/24/2017 09:52	WG992161
Benzo(g,h,i)perylene	ND		0.00600	1	06/24/2017 09:52	WG992161
Benzo(k)fluoranthene	ND	J3	0.00600	1	06/24/2017 09:52	WG992161
Chrysene	ND		0.0600	10	07/03/2017 12:35	WG992161
Dibenz(a,h)anthracene	ND		0.00600	1	06/24/2017 09:52	WG992161
Fluoranthene	0.0120		0.00600	1	06/24/2017 09:52	WG992161
Fluorene	ND		0.00600	1	06/24/2017 09:52	WG992161
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	06/24/2017 09:52	WG992161
Naphthalene	0.154		0.0200	1	06/24/2017 09:52	WG992161
Phenanthrene	0.204		0.00600	1	06/24/2017 09:52	WG992161
Pyrene	0.141		0.0600	10	07/03/2017 12:35	WG992161
1-Methylnaphthalene	0.199		0.0200	1	06/24/2017 09:52	WG992161
2-Methylnaphthalene	0.395		0.0200	1	06/24/2017 09:52	WG992161
2-Chloronaphthalene	ND		0.0200	1	06/24/2017 09:52	WG992161
(S) p-Terphenyl-d14	*62.9*		*23.0-120*		*07/03/2017 12:35*	WG992161
(S) p-Terphenyl-d14	*55.8*		*23.0-120*		*06/24/2017 09:52*	WG992161
(S) Nitrobenzene-d5	*70.0*		*14.0-149*		*06/24/2017 09:52*	WG992161
(S) Nitrobenzene-d5	*3.29*	J2	*14.0-149*		*07/03/2017 12:35*	WG992161
(S) 2-Fluorobiphenyl	*2.98*	J2	*34.0-125*		*07/03/2017 12:35*	WG992161
(S) 2-Fluorobiphenyl	*68.6*		*34.0-125*		*06/24/2017 09:52*	WG992161

Sample Narrative:

8270C-SIM L916920-01 WG992161: IS/SURR failed on lower dilution.

Method Blank (MB)

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

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL 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

Analyte	Original Result (dry) mg/kg	DUP Result (dry) mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
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

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 %
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

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

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

Method Blank (MB)

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

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	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

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	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

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	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

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

Method Blank (MB)

(MB) R3228286-1 06/23/17 13:49

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

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

(LCS) R3228286-2 06/23/17 13:52 • (LCSD) R3228286-3 06/23/17 13:54

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 %
Mercury	0.300	0.313	0.305	104	102	80-120			2	20

L916692-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L916692-01 06/23/17 13:56 • (MS) R3228286-4 06/23/17 13:59 • (MSD) R3228286-5 06/23/17 14:06

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 %
Mercury	0.300	ND	0.303	0.311	98	101	1	75-125			3	20

Method Blank (MB)

(MB) R3228030-1 06/22/17 15:16

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

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

(LCS) R3228030-2 06/22/17 15:19 • (LCSD) R3228030-3 06/22/17 15:22

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	96.8	94.4	97	94	80-120			3	20
Barium	100	105	103	105	103	80-120			2	20
Boron	100	103	98.9	103	99	80-120			4	20
Cadmium	100	99.8	97.9	100	98	80-120			2	20
Chromium	100	101	99.6	101	100	80-120			1	20
Copper	100	100	98.7	100	99	80-120			2	20
Lead	100	99.9	98.2	100	98	80-120			2	20
Nickel	100	101	99.7	101	100	80-120			2	20
Selenium	100	98.7	96.2	99	96	80-120			3	20
Silver	20.0	18.2	17.9	91	90	80-120			2	20
Zinc	100	100	98.9	100	99	80-120			2	20

L916920-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L916920-01 06/22/17 15:24 • (MS) R3228030-6 06/22/17 15:32 • (MSD) R3228030-7 06/22/17 15:35

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 %
Arsenic	100	7.90	106	102	98	94	1	75-125			3	20
Barium	100	5790	6640	6340	853	548	1	75-125	E V	E V	5	20
Boron	100	12.9	110	113	97	100	1	75-125			2	20
Cadmium	100	ND	99.7	99.7	100	100	1	75-125			0	20
Chromium	100	16.3	107	106	91	89	1	75-125			2	20

L916920-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L916920-01 06/22/17 15:24 • (MS) R3228030-6 06/22/17 15:32 • (MSD) R3228030-7 06/22/17 15:35

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 %
Copper	100	19.3	120	116	100	97	1	75-125			3	20
Lead	100	19.0	120	120	101	101	1	75-125			0	20
Nickel	100	15.1	118	115	103	100	1	75-125			2	20
Selenium	100	ND	97.0	95.8	96	95	1	75-125			1	20
Silver	20.0	ND	18.5	18.6	92	93	1	75-125			1	20
Zinc	100	69.9	162	160	92	90	1	75-125			1	20

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	J	0.000150	0.00500
Ethylbenzene	0.000218	J	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*

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*				

Method Blank (MB)

(MB) R3228189-1 06/22/17 14:30

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	*101*			*18.0-148*

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

(LCS) R3228189-2 06/22/17 14:47 • (LCSD) R3228189-3 06/22/17 15:04

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	%	%	%			%	%
C10-C28 Diesel Range	60.0	54.9	50.3	91.5	83.9	50.0-150			8.64	20
(S) o-Terphenyl				*107*	*94.2*	*18.0-148*				

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*

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 %	LCS Qualifier	LCSD Qualifier	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 %	MS Qualifier	MSD Qualifier	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*				

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
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
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.

ACCREDITATIONS & LOCATIONS

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
Conneticut	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 [1 4]	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		

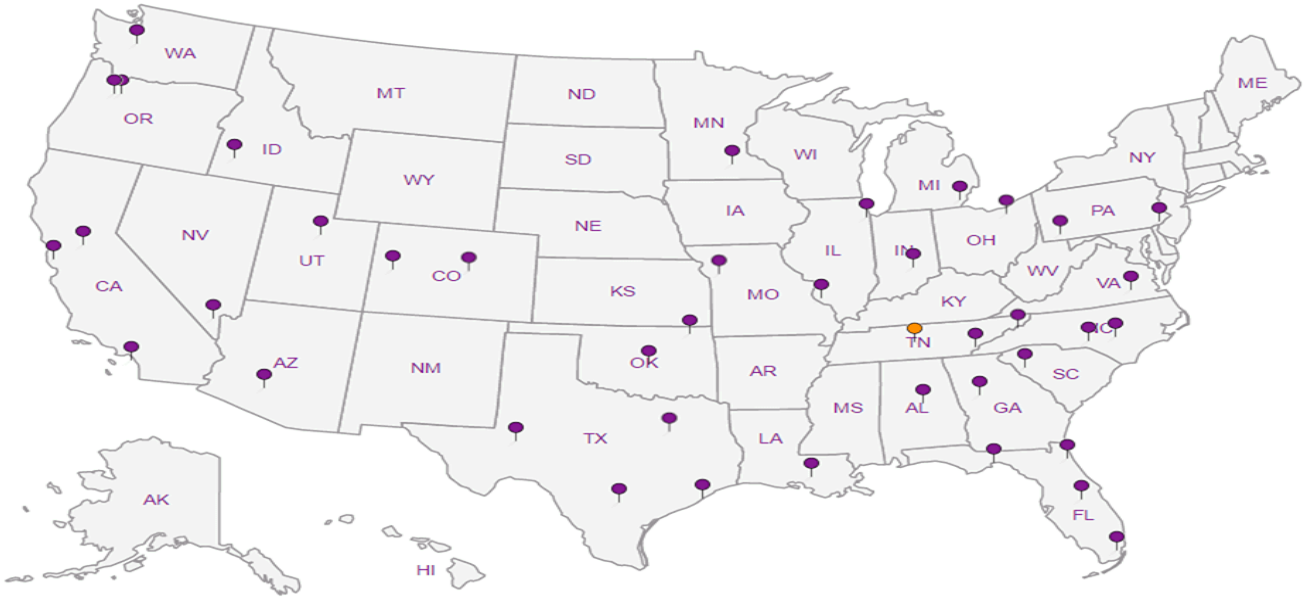
Third Party & Federal Accreditations

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.**



Chain of Custody Page 1 of 1

ESC LABORATORY SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 91692
H211

Company Name/Address:
Nicholson GeoSolutions, LLC
3433 E.Lake Dr.
Centennial, CO 80121

Billing Information:
Tom Hogelin
Berry Petroleum
~~1099 Broadway, Suite 3700~~
~~Denver, CO 80202~~
235 Callahan Ave
Parachute, CO

Report to: Dave Nicholson

Email To: dnicholson@q.com

Project Description: Berry ~~Garden Gulch Water~~ Pit Reclamation

City/State Collected:

Phone: 303-601-2023
Fax:

Client Project #

Lab Project #

Collected by (print):

Site/Facility ID #

P.O. #

Collected by (signature):
Immediately Packed on Ice N ___ Y ___

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No ___Yes
FAX? ___No ___Yes

Acctnum: BERPETDCO
Template:
Prelogin:
TSR:
Cooler:
Shipped Via:

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	BTEX (8021) (3) 40ml Amb w/HCl, TVPH	TDS, ALK (1) 500ml HDPE No Pres. TEPH diesel + motor oil	Fluoride, Chloride, Nitrate, NitriteSulfate 500ml HDPE	RSK-175 (3) 40ml Amb w/HCl. SPLON, pH	Total Hardness (1) 125ml HDPE w/HNO3	Ammonia (1) 250ml HDPE w/H2SO4	TSS (1) 1L HDPE No Pres. PAH 8270 SIM	Diss Metals (6010/6020) (1) 500ml HDPE No Pres. SAR, Cr VI, metals	Rem./Contaminant	Sample # (lab only)
O-36B		GW		6/13	1640	~~5~~ 12	X	X		X			X	X		11
		GW				12										
		GW				12										
		GW				12										
		GW				12										
		GW				12										
		GW				12										
		GW				12										
		GW				12										
		GW				12										

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

Remarks: ~~Lab Filter Diss. Metals: Ca, Mg, K, Na, Al, As, Ba, B, Cr, Cu, Fe, Pb, Mn, Ni, Se, Zn~~ As, Ba, B, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Zn, Cr^{VI}

pH ___ Temp ___
Flow ___ Other ___

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ ___

Temp: 3.1 °C Bottles Received: 5-402

Date: 06/22/2017 Time: 0845

Received for lab by: (Signature) Matthew Goddard

Hold #

Condition: (lab use only)

COC Seal Intact: ___Y ___N ___NA

pH Checked: NCF:

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
DK Nicholson	6/16/17	1300	FedEx
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature) 7245 4514 3614
Relinquished by : (Signature)	Date:	Time:	

ESC LAB SCIENCES
Cooler Receipt Form

Client: BERPETDCO	SDG#	91690
Cooler Received/Opened On: 06/17/2017	Temperature:	3.1
Received By: Matthew Lockhart		
Signature: Matthew Lockhart		

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?			