ANALYTICAL REPORT

June 01, 2018

Fed 7-1 & 8-1 Lab Analytical
Doc #2573075
Fed 7-1 ID 104320
Fed 8-1 ID 104322
5/24/2018

Utah Gas Corporation

Sample Delivery Group:	L996713
Samples Received:	05/24/2018
Project Number:	
Description:	Wexpro Pit Project

Report To: Mr. Steve Hale
1125 Escalante Drive
Rangely, CO 81648

Entire Report Reviewed By:

Jason Romer
Technical Service Representative

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MFS FED 7-1 L996713-01 Solid

Collected by: Steve Hale
Collected date/time: 05/23/18 10:16
Received date/time: 05/24/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1115786	1	05/30/18 08:55	05/31/18 13:22	TRB
Calculated Results	WG1116279	1	05/25/18 16:08	05/29/18 15:58	ITB
Wet Chemistry by Method 3060A/7196A	WG1117105	1	05/29/18 08:28	05/29/18 15:58	ITB
Wet Chemistry by Method 9045D	WG1115804	1	05/25/18 09:15	05/25/18 10:07	MLW
Wet Chemistry by Method 9050AMod	WG1118011	1	05/31/18 13:33	05/31/18 17:18	TH
Mercury by Method 7471A	WG1116274	1	05/25/18 13:15	05/28/18 10:51	EL
Metals (ICP) by Method 6010B	WG1116279	1	05/25/18 16:08	05/28/18 20:04	CCE
Volatile Organic Compounds (GC) by Method 8015/8021	WG1116951	250	05/26/18 07:47	05/28/18 06:33	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1116969	500	05/27/18 07:41	05/28/18 08:45	AAT
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1116922	5	05/29/18 08:19	05/29/18 21:59	DMG
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1116922	50	05/29/18 08:19	05/30/18 11:19	DMG
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1116922	500	05/29/18 08:19	05/30/18 13:36	DMG

MFS FED 8-1 L996713-02 Solid

Collected by: Steve Hale
Collected date/time: 05/23/18 10:00
Received date/time: 05/24/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1115786	1	05/30/18 08:55	05/31/18 12:03	TRB
Calculated Results	WG1116279	1	05/25/18 16:08	05/29/18 15:58	ITB
Wet Chemistry by Method 3060A/7196A	WG1117105	1	05/29/18 08:28	05/29/18 15:58	ITB
Wet Chemistry by Method 9045D	WG1115804	1	05/25/18 09:15	05/25/18 10:07	MLW
Wet Chemistry by Method 9050AMod	WG1118011	1	05/31/18 13:33	05/31/18 17:18	TH
Mercury by Method 7471A	WG1116274	1	05/25/18 13:15	05/28/18 10:53	EL
Metals (ICP) by Method 6010B	WG1116279	1	05/25/18 16:08	05/28/18 20:07	CCE
Volatile Organic Compounds (GC) by Method 8015/8021	WG1116951	100	05/26/18 07:47	05/28/18 06:55	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1116969	20	05/27/18 07:41	05/28/18 08:02	AAT
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1116922	1	05/29/18 08:19	05/29/18 21:38	DMG
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1116922	50	05/29/18 08:19	05/30/18 10:57	DMG

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. 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.

Jason Romer
Technical Service Representative

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	10.0		1	05/31/2018 13:22	WG1115786

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Trivalent	10.1		1.00	1	05/29/2018 15:58	WG1116279

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	05/29/2018 15:58	WG1117105

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.23	T8	1	05/25/2018 10:07	WG1115804

Sample Narrative:

L996713-01 WG1115804: 8.23 at 21.5C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	943		10.0	1	05/31/2018 17:18	WG1118011

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.0830		0.0200	1	05/28/2018 10:51	WG1116274

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	ND		2.00	1	05/28/2018 20:04	WG1116279
Barium	468		0.500	1	05/28/2018 20:04	WG1116279
Cadmium	ND		0.500	1	05/28/2018 20:04	WG1116279
Chromium	10.1		1.00	1	05/28/2018 20:04	WG1116279
Copper	18.0		2.00	1	05/28/2018 20:04	WG1116279
Lead	73.0		0.500	1	05/28/2018 20:04	WG1116279
Nickel	11.6		2.00	1	05/28/2018 20:04	WG1116279
Selenium	ND		2.00	1	05/28/2018 20:04	WG1116279
Silver	ND		1.00	1	05/28/2018 20:04	WG1116279
Zinc	126		5.00	1	05/28/2018 20:04	WG1116279

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	11.2		0.125	250	05/28/2018 06:33	WG1116951
Toluene	36.3		1.25	250	05/28/2018 06:33	WG1116951
Ethylbenzene	9.68		0.125	250	05/28/2018 06:33	WG1116951
Total Xylene	130		0.375	250	05/28/2018 06:33	WG1116951
TPH (GC/FID) Low Fraction	1780		25.0	250	05/28/2018 06:33	WG1116951

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) a,a,a-Trifluorotoluene(FID)	*85.1*		*77.0-120*		*05/28/2018 06:33*	WG1116951
(S) a,a,a-Trifluorotoluene(PID)	*94.4*		*75.0-128*		*05/28/2018 06:33*	WG1116951

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	90000		2000	500	05/28/2018 08:45	WG1116969
(S) o-Terphenyl	*0.910*	J7	*18.0-148*		*05/28/2018 08:45*	WG1116969

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		0.300	50	05/30/2018 11:19	WG1116922
Acenaphthene	0.903		0.0300	5	05/29/2018 21:59	WG1116922
Acenaphthylene	ND		0.0300	5	05/29/2018 21:59	WG1116922
Benzo(a)anthracene	ND		0.300	50	05/30/2018 11:19	WG1116922
Benzo(a)pyrene	ND		3.00	500	05/30/2018 13:36	WG1116922
Benzo(b)fluoranthene	ND		3.00	500	05/30/2018 13:36	WG1116922
Benzo(g,h,i)perylene	ND		3.00	500	05/30/2018 13:36	WG1116922
Benzo(k)fluoranthene	ND		3.00	500	05/30/2018 13:36	WG1116922
Chrysene	0.541		0.300	50	05/30/2018 11:19	WG1116922
Dibenz(a,h)anthracene	ND		3.00	500	05/30/2018 13:36	WG1116922
Fluoranthene	2.25		0.300	50	05/30/2018 11:19	WG1116922
Fluorene	ND		0.0300	5	05/29/2018 21:59	WG1116922
Indeno(1,2,3-cd)pyrene	ND		3.00	500	05/30/2018 13:36	WG1116922
Naphthalene	28.1		1.00	50	05/30/2018 11:19	WG1116922
Phenanthrene	19.2		0.300	50	05/30/2018 11:19	WG1116922
Pyrene	3.16		0.300	50	05/30/2018 11:19	WG1116922
1-Methylnaphthalene	89.6		1.00	50	05/30/2018 11:19	WG1116922
2-Methylnaphthalene	109		1.00	50	05/30/2018 11:19	WG1116922
2-Chloronaphthalene	ND		0.100	5	05/29/2018 21:59	WG1116922
(S) p-Terphenyl-d14	*42.2*		*23.0-120*		*05/29/2018 21:59*	WG1116922
(S) p-Terphenyl-d14	*131*	J7	*23.0-120*		*05/30/2018 11:19*	WG1116922
(S) p-Terphenyl-d14	*106*	J7	*23.0-120*		*05/30/2018 13:36*	WG1116922
(S) Nitrobenzene-d5	*0.000*	J7	*14.0-149*		*05/30/2018 11:19*	WG1116922
(S) Nitrobenzene-d5	*0.000*	J7	*14.0-149*		*05/30/2018 13:36*	WG1116922
(S) Nitrobenzene-d5	*6810*	J1	*14.0-149*		*05/29/2018 21:59*	WG1116922
(S) 2-Fluorobiphenyl	*640*	J7	*34.0-125*		*05/30/2018 11:19*	WG1116922
(S) 2-Fluorobiphenyl	*710*	J7	*34.0-125*		*05/30/2018 13:36*	WG1116922
(S) 2-Fluorobiphenyl	*65.1*		*34.0-125*		*05/29/2018 21:59*	WG1116922

Sample Narrative:

L996713-01 WG1116922: IS/SURR failed on lower dilution.

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	40.5		1	05/31/2018 12:03	WG1115786

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Trivalent	9.19		1.00	1	05/29/2018 15:58	WG1116279

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND	J	2.00	1	05/29/2018 15:58	WG1117105

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.44	T8	1	05/25/2018 10:07	WG1115804

Sample Narrative:

L996713-02 WG1115804: 8.44 at 21.3C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	583		10.0	1	05/31/2018 17:18	WG1118011

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0200	1	05/28/2018 10:53	WG1116274

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.50		2.00	1	05/28/2018 20:07	WG1116279
Barium	589		0.500	1	05/28/2018 20:07	WG1116279
Cadmium	ND		0.500	1	05/28/2018 20:07	WG1116279
Chromium	9.83		1.00	1	05/28/2018 20:07	WG1116279
Copper	14.7		2.00	1	05/28/2018 20:07	WG1116279
Lead	8.85		0.500	1	05/28/2018 20:07	WG1116279
Nickel	11.9		2.00	1	05/28/2018 20:07	WG1116279
Selenium	ND		2.00	1	05/28/2018 20:07	WG1116279
Silver	ND		1.00	1	05/28/2018 20:07	WG1116279
Zinc	44.4		5.00	1	05/28/2018 20:07	WG1116279

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.0570		0.0500	100	05/28/2018 06:55	WG1116951
Toluene	ND		0.500	100	05/28/2018 06:55	WG1116951
Ethylbenzene	ND		0.0500	100	05/28/2018 06:55	WG1116951
Total Xylene	1.40		0.150	100	05/28/2018 06:55	WG1116951
TPH (GC/FID) Low Fraction	131		10.0	100	05/28/2018 06:55	WG1116951

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) a,a,a-Trifluorotoluene(FID)	*97.7*		*77.0-120*		*05/28/2018 06:55*	WG1116951
(S) a,a,a-Trifluorotoluene(PID)	*99.1*		*75.0-128*		*05/28/2018 06:55*	WG1116951

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	4150		80.0	20	05/28/2018 08:02	WG1116969
(S) o-Terphenyl	*52.8*	J7	*18.0-148*		*05/28/2018 08:02*	WG1116969

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	05/29/2018 21:38	WG1116922
Acenaphthene	ND		0.00600	1	05/29/2018 21:38	WG1116922
Acenaphthylene	ND		0.00600	1	05/29/2018 21:38	WG1116922
Benzo(a)anthracene	0.619		0.300	50	05/30/2018 10:57	WG1116922
Benzo(a)pyrene	0.339	V3	0.00600	1	05/29/2018 21:38	WG1116922
Benzo(b)fluoranthene	0.219	V3	0.00600	1	05/29/2018 21:38	WG1116922
Benzo(g,h,i)perylene	0.0645	V3	0.00600	1	05/29/2018 21:38	WG1116922
Benzo(k)fluoranthene	0.0995	V3	0.00600	1	05/29/2018 21:38	WG1116922
Chrysene	ND		0.300	50	05/30/2018 10:57	WG1116922
Dibenz(a,h)anthracene	0.0194	V3	0.00600	1	05/29/2018 21:38	WG1116922
Fluoranthene	ND		0.00600	1	05/29/2018 21:38	WG1116922
Fluorene	ND		0.00600	1	05/29/2018 21:38	WG1116922
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	05/29/2018 21:38	WG1116922
Naphthalene	ND		0.0200	1	05/29/2018 21:38	WG1116922
Phenanthrene	ND		0.00600	1	05/29/2018 21:38	WG1116922
Pyrene	ND		0.300	50	05/30/2018 10:57	WG1116922
1-Methylnaphthalene	ND		0.0200	1	05/29/2018 21:38	WG1116922
2-Methylnaphthalene	ND		0.0200	1	05/29/2018 21:38	WG1116922
2-Chloronaphthalene	ND		0.0200	1	05/29/2018 21:38	WG1116922
(S) p-Terphenyl-d14	*247*	J1	*23.0-120*		*05/29/2018 21:38*	WG1116922
(S) p-Terphenyl-d14	*92.5*	J7	*23.0-120*		*05/30/2018 10:57*	WG1116922
(S) Nitrobenzene-d5	*0.000*	J7	*14.0-149*		*05/30/2018 10:57*	WG1116922
(S) Nitrobenzene-d5	*171*	J1	*14.0-149*		*05/29/2018 21:38*	WG1116922
(S) 2-Fluorobiphenyl	*70.5*	J7	*34.0-125*		*05/30/2018 10:57*	WG1116922
(S) 2-Fluorobiphenyl	*106*		*34.0-125*		*05/29/2018 21:38*	WG1116922

Sample Narrative:

L996713-02 WG1116922: IS/SURR failed on lower dilution.

Method Blank (MB)

(MB) R3313641-1 05/29/18 15:38

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Chromium,Hexavalent	U		0.640	2.00

L996387-02 Original Sample (OS) • Duplicate (DUP)

(OS) L996387-02 05/29/18 15:53 • (DUP) R3313641-8 05/29/18 15:54

Analyte	Original Result (dry) mg/kg	DUP Result (dry) mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chromium,Hexavalent	ND	0.000	1	0.000		20

L997261-09 Original Sample (OS) • Duplicate (DUP)

(OS) L997261-09 05/29/18 16:03 • (DUP) R3313641-9 05/29/18 16:03

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chromium,Hexavalent	U	0.000	1	0.000		20

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

(LCS) R3313641-2 05/29/18 15:38 • (LCSD) R3313641-3 05/29/18 15:38

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	24.0	24.1	23.8	101	99.0	80.0-120			1.50	20

L995461-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L995461-08 05/29/18 15:39 • (MS) R3313641-4 05/29/18 15:47 • (MSD) R3313641-5 05/29/18 15:50

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	23.3	U	12.0	8.54	51.2	36.6	1	75.0-125	J6	J3 J6	33.3	20

L995461-08 Original Sample (OS) • Matrix Spike (MS)

(OS) L995461-08 05/29/18 15:39 • (MS) R3313641-6 05/29/18 15:52

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chromium,Hexavalent	773	U	602	77.9	50	75.0-125	

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

(LCS) R3313049-1 05/25/18 10:07 • (LCSD) R3313049-2 05/25/18 10:07

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	su	su	su	%	%	%			%	%
pH	10.0	9.99	10.0	99.9	100	99.0-101			0.200	1

Sample Narrative:

LCS: 9.99 at 19.9C

LCSD: 10.01 at 19.9C

Method Blank (MB)

(MB) R3314362-1 05/31/18 17:18

Analyte	MB Result umhos/cm	MB Qualifier	MB MDL umhos/cm	MB RDL umhos/cm
Specific Conductance	U		10.0	10.0

L997768-08 Original Sample (OS) • Duplicate (DUP)

(OS) L997768-08 05/31/18 17:18 • (DUP) R3314362-4 05/31/18 17:18

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	261	262	1	0.382		20

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

(LCS) R3314362-2 05/31/18 17:18 • (LCSD) R3314362-3 05/31/18 17:18

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCSD Result umhos/cm	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Specific Conductance	877	866	866	98.7	98.7	85.0-115			0.000	20

Method Blank (MB)

(MB) R3313448-1 05/28/18 10:00

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Mercury	U		0.00280	0.0200

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

(LCS) R3313448-2 05/28/18 10:02 • (LCSD) R3313448-3 05/28/18 10:05

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	0.272	0.270	90.8	90.1	80.0-120			0.676	20

L996660-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L996660-01 05/28/18 10:07 • (MS) R3313448-4 05/28/18 10:09 • (MSD) R3313448-5 05/28/18 10:11

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 %
Mercury	0.325	U	0.261	0.246	80.2	75.8	1	75.0-125			5.70	20

Method Blank (MB)

(MB) R3313456-1 05/28/18 19:02

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.650	2.00
Barium	U		0.170	0.500
Cadmium	U		0.0700	0.500
Chromium	U		0.140	1.00
Copper	U		0.530	2.00
Lead	U		0.190	0.500
Nickel	U		0.490	2.00
Selenium	U		0.740	2.00
Silver	U		0.280	1.00
Zinc	U		0.590	5.00

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

(LCS) R3313456-2 05/28/18 19:05 • (LCSD) R3313456-3 05/28/18 19:07

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	97.4	94.0	97.4	94.0	80.0-120			3.59	20
Barium	100	102	98.1	102	98.1	80.0-120			3.70	20
Cadmium	100	95.7	92.5	95.7	92.5	80.0-120			3.44	20
Chromium	100	95.9	93.0	95.9	93.0	80.0-120			3.09	20
Copper	100	96.7	92.9	96.7	92.9	80.0-120			3.93	20
Lead	100	101	97.2	101	97.2	80.0-120			3.89	20
Nickel	100	96.0	92.7	96.0	92.7	80.0-120			3.48	20
Selenium	100	101	97.6	101	97.6	80.0-120			3.11	20
Silver	20.0	19.4	18.9	97.2	94.4	80.0-120			2.94	20
Zinc	100	96.5	93.0	96.5	93.0	80.0-120			3.68	20

L996704-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L996704-01 05/28/18 19:10 • (MS) R3313456-6 05/28/18 19:17 • (MSD) R3313456-7 05/28/18 19:20

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 %
Arsenic	125	3.12	104	104	80.3	80.6	1	75.0-125			0.292	20
Barium	125	81.8	191	193	87.4	89.0	1	75.0-125			1.05	20
Cadmium	125	ND	111	111	88.5	88.6	1	75.0-125			0.207	20
Chromium	125	90.6	195	193	83.8	82.1	1	75.0-125			1.06	20
Copper	125	135	234	251	79.3	92.8	1	75.0-125			6.95	20
Lead	125	9.75	140	137	104	102	1	75.0-125			2.36	20

L996704-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L996704-01 05/28/18 19:10 • (MS) R3313456-6 05/28/18 19:17 • (MSD) R3313456-7 05/28/18 19:20

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 %
Nickel	125	34.5	158	160	99.0	100	1	75.0-125			1.20	20
Selenium	125	ND	105	109	83.9	87.3	1	75.0-125			3.96	20
Silver	25.0	ND	22.4	22.3	89.5	89.1	1	75.0-125			0.430	20
Zinc	125	43.8	150	157	84.8	90.3	1	75.0-125			4.42	20

Method Blank (MB)

(MB) R3314195-3 05/28/18 01:19

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000120	0.000500
Toluene	0.000202	J	0.000150	0.00500
Ethylbenzene	0.000260	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)	*98.4*			*77.0-120*
(S) a,a,a-Trifluorotoluene(PID)	*98.7*			*75.0-128*

Laboratory Control Sample (LCS)

(LCS) R3314195-1 05/28/18 00:13

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.0500	0.0529	106	71.0-121	
Toluene	0.0500	0.0545	109	72.0-120	
Ethylbenzene	0.0500	0.0539	108	76.0-121	
Total Xylene	0.150	0.163	109	75.0-124	
(S) a,a,a-Trifluorotoluene(FID)			*98.7*	*77.0-120*	
(S) a,a,a-Trifluorotoluene(PID)			*98.5*	*75.0-128*	

Laboratory Control Sample (LCS)

(LCS) R3314195-2 05/28/18 00:35

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	6.01	109	70.0-136	
(S) a,a,a-Trifluorotoluene(FID)			*105*	*77.0-120*	
(S) a,a,a-Trifluorotoluene(PID)			*108*	*75.0-128*	

Method Blank (MB)

(MB) R3313386-1 05/28/18 07:07

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) High Fraction	U		0.769	4.00
(S) o-Terphenyl	*64.4*			*18.0-148*

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

(LCS) R3313386-2 05/28/18 07:18 • (LCSD) R3313386-3 05/28/18 07:29

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) High Fraction	50.0	37.8	34.6	75.7	69.2	50.0-150			8.90	20
(S) o-Terphenyl				*86.2*	*83.9*	*18.0-148*				

Method Blank (MB)

(MB) R3313730-3 05/29/18 14:14

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	*44.5*			*14.0-149*
(S) 2-Fluorobiphenyl	*72.3*			*34.0-125*
(S) p-Terphenyl-d14	*88.8*			*23.0-120*

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

(LCS) R3313730-1 05/29/18 13:32 • (LCSD) R3313730-2 05/29/18 13:53

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	0.0860	0.0788	107	98.5	50.0-125			8.78	20
Acenaphthene	0.0800	0.0735	0.0661	91.8	82.6	52.0-120			10.6	20
Acenaphthylene	0.0800	0.0776	0.0690	97.0	86.2	51.0-120			11.7	20
Benzo(a)anthracene	0.0800	0.0791	0.0709	98.9	88.6	46.0-121			11.0	20
Benzo(a)pyrene	0.0800	0.0770	0.0697	96.2	87.1	42.0-121			9.91	20
Benzo(b)fluoranthene	0.0800	0.0790	0.0702	98.7	87.8	42.0-123			11.7	20
Benzo(g,h,i)perylene	0.0800	0.0827	0.0747	103	93.4	43.0-128			10.1	20
Benzo(k)fluoranthene	0.0800	0.0770	0.0725	96.3	90.7	45.0-128			5.97	20
Chrysene	0.0800	0.0796	0.0722	99.6	90.3	48.0-127			9.77	20
Dibenz(a,h)anthracene	0.0800	0.0823	0.0744	103	92.9	43.0-132			10.1	20
Fluoranthene	0.0800	0.0847	0.0768	106	96.0	49.0-129			9.73	20

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

(LCS) R3313730-1 05/29/18 13:32 • (LCSD) R3313730-2 05/29/18 13:53

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	0.0772	0.0691	96.5	86.4	50.0-120			11.0	20
Indeno(1,2,3-cd)pyrene	0.0800	0.0820	0.0746	103	93.3	44.0-131			9.47	20
Naphthalene	0.0800	0.0683	0.0610	85.3	76.2	50.0-120			11.3	20
Phenanthrene	0.0800	0.0811	0.0731	101	91.4	48.0-120			10.3	20
Pyrene	0.0800	0.0785	0.0713	98.1	89.1	48.0-135			9.65	20
1-Methylnaphthalene	0.0800	0.0744	0.0675	93.0	84.4	52.0-122			9.69	20
2-Methylnaphthalene	0.0800	0.0720	0.0646	90.0	80.8	52.0-120			10.8	20
2-Chloronaphthalene	0.0800	0.0751	0.0673	93.9	84.1	50.0-120			11.0	20
(S) Nitrobenzene-d5				*66.3*	*72.2*	*14.0-149*				
(S) 2-Fluorobiphenyl				*86.0*	*89.5*	*34.0-125*				
(S) p-Terphenyl-d14				*94.4*	*88.3*	*23.0-120*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(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.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
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.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper 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.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
T8	Sample(s) received past/too close to holding time expiration.
V3	The internal standard exhibited poor recovery due to sample matrix interference. The analytical results will be biased high. BDL results will be unaffected.

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.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

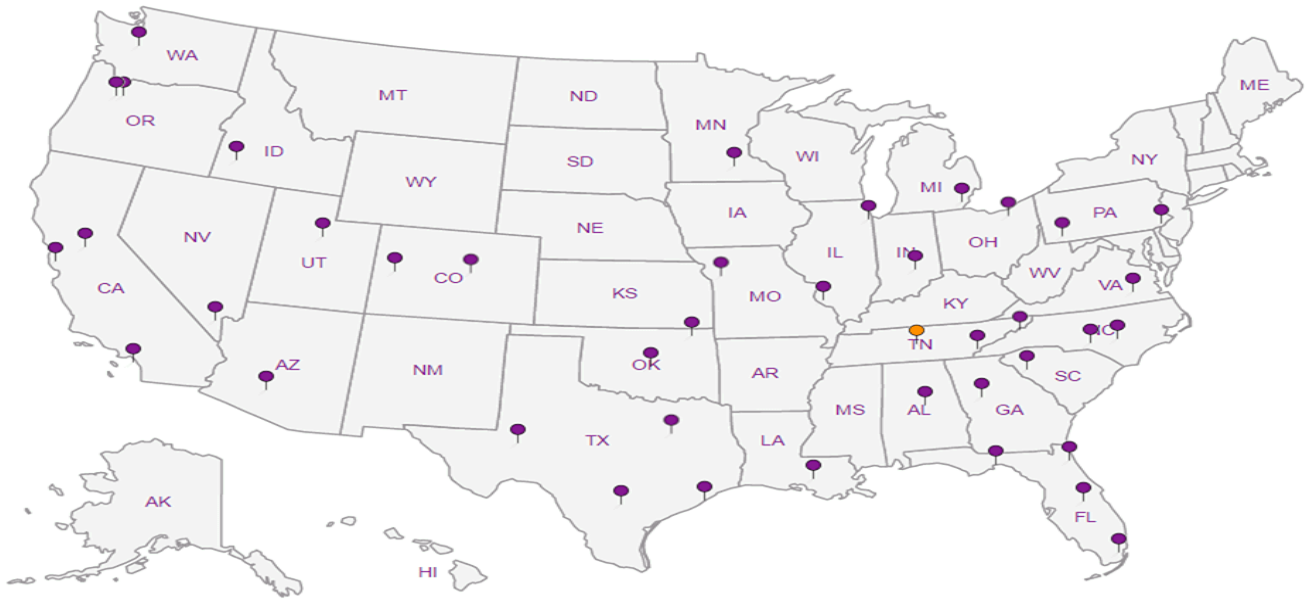
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater 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.



Utah Gas Corporation

1125 Escalante Drive
Rangely, CO 81648

Billing Information:
Attn: Accounts Payable
1125 Escalante Dr.
Rangely, CO 81648

Pres Chk

Report to: Steve Hale

Email To: shale@utahgascorp.com

Project Description: Wexpro Pit Project

City/State Collected: Rangely CO

Phone: 970-675-4400
Fax:

Client Project #

Lab Project #

Collected by (print): Steve Hale

Site/Facility ID #

P.O. #

Collected by (signature): C Jensen for Steve Hale

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed: Reg. TAT.

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	COGC Table 910-1 Parameters	Remarks	Sample # (lab only)
MFS Fed 7-1	Grab	Soil	6"	5/23/18	10:16	3	X		-01
MFS Fed 8-1	Grab	Soil	6"	5/23/18	10:00	3	X		-02

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

ESC LABORATORY SCIENCES
a subsidiary of Accelerate

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

L# L996713

D064

Acctnum: UTAHGASRCO

Template:

Prelogin:

TSR: 728 - Shane Gambill

PB:

Shipped Via:

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks: MFS Fed 7-1 May have grease contamination

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking # 7474 0928 5445

Sample Receipt Checklist:
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N

	Date:	Time:		
Relinquished by: (Signature)	5/23/18	1:47 PM	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
Relinquished by: (Signature)	5/23/18	1700	Received by: (Signature)	Temp: 0.3 °C Bottles Received: 6
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 5/24/18 Time: 0845

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK