



Second Semiannual 2015 Groundwater Monitoring Report

Margaret Spaulding Water Treatment Facility
ID# 115241 – REM #7058
SW ¼ SE ¼ Section 28, T9N, R81W
Jackson County, CO

CM Production LLC

GHD | 14998 W. 6th Ave., Suite 800, Golden, CO 80401
11103525 | Report No 3 | January 12, 2016

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1. Introduction

GHD Services, Inc. (GHD), formerly Conestoga-Rovers and Associates, Inc., prepared this *Second Semiannual 2015 Groundwater Monitoring Report* on behalf of CM Production LLC for the Margaret Spaulding Treatment Site.

GHD conducted semiannual groundwater monitoring and sampling activities on November 18, 2015 at the Margaret Spaulding Water Treatment Facility (Site), SW ¼ SE ¼ Section 28, T9N, R81W, Jackson County, Colorado, which is located on the Lone Pine Ranch off of County Road 12W (Figure 1). This report summarizes:

- Background and site characteristics
- Semiannual groundwater monitoring activities
- Analytical results
- Planned site activities

1.1 Site Background and Characteristics

The Margaret Spaulding Water Treatment Facility, operated by CM Production LLC, includes aboveground storage tanks, various aboveground and underground piping, a truck loading rack, and six pits (Figure 2). Site investigation activities were initiated in April 2012, by the previous owner (Lone Pine Gas, Inc.). In July 2015, GHD was retained as the environmental consultant for the Site by CM Production LLC.

A total of six groundwater monitoring wells were installed at the Site during site characterization activities in 2013. Semiannual groundwater monitoring and sampling are currently being conducted at the Site.

The Colorado Department of Public Health and Environment – Water Quality Control Division (CDPHE-WQCD) required CM Production LLC to cease the produced water discharge to Spring Gulch (Permit # CO0048712) on October 31, 2013 pursuant to the June 25, 2013 Compliance Order on Consent, Number IC-130624.

Remediation activities that have been conducted at the Site have included soil treatment of the stockpiled soil removed from the former Overflow Treater Pit (Facility ID# 115241), the decommissioning of pits and groundwater monitoring.

1.2 Regulatory Framework

The standards for the cleanup of the petroleum hydrocarbon impacts associated with the Site and enforced water quality standards and pit closure standards are based on Colorado Oil and Gas Conservation Commission (COGCC) Table 910-1. Sampling activities were conducted in accordance with COGCC guidance.

2. Groundwater Sampling

GHD conducted groundwater monitoring at the Site on November 18, 2015. GHD measured fluid levels in the six (6) on-site monitoring wells prior to the collection of water quality samples. Groundwater elevations ranged from 8203.50 feet-above mean sea level (ft-amsl) at MW-1 to 8206.48 ft-amsl at MW-6. The depth below ground averaged 28.69 ft-below ground surface (bgs). Groundwater flows to the north/northwest with a gradient of approximately 0.0057 feet per foot (ft/ft). For the November 2015 groundwater monitoring, the Groundwater Surface Map is presented as Figure 3, Groundwater levels are presented in Table 1, and Historical Groundwater Elevation Data is summarized in Appendix A.

Groundwater samples were collected from all of the Site's monitoring wells and included wells MW-1, MW-2, MW-3, MW-4, MW-5, and MW-6. Prior to gauging, each monitoring well was opened and the cap was removed to allow groundwater levels to stabilize and equilibrate. Samples were collected following the removal of stagnant water with a disposable bailer. The groundwater samples were collected using clean, disposable bailers, decanted into clean laboratory-provided containers, and placed on ice in an insulated cooler. The coolers were delivered to ESC Laboratories in Lakewood, Colorado under chain-of-custody protocols.

Accutest analyzed the groundwater samples for:

- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8260B
- Total Petroleum Hydrocarbons – Gasoline Range Organics (TPH-GRO) by EPA Method 8260B
- Total Petroleum Hydrocarbons – Diesel Range Organics (TPH-DRO) by EPA Method 8015B
- TDS by SM 2540C
- Chloride and Sulfate by EPA Method 300

3. Analytical Results

Sample results for the Site are summarized as follows:

- BTEX constituents were not detected above the groundwater COGCC Table 910-1 levels during the November 2015 monitoring and sampling event
- TPH-GRO was not detected above the laboratory detection limit in any monitoring wells
- TPH-DRO was detected above the lower laboratory detection limit in monitoring wells MW-1 (1.55 mg/L), MW-2 (0.267 mg/L), MW-4 (0.329), MW-5 (0.502 mg/L), and MW-6 (0.146 mg/L)
- Chloride and sulfate were detected above the lower laboratory detection limits in all monitoring wells, but were below the CDPHE-WQCC Regulation #41 standard of 250 mg/L
- TDS ranged from 55 mg/L in MW-2 to 351 mg/L in MW-1, which are below the CDPHE-WQCC Regulation #41 standard range of 0 to 400 mg/L.

Groundwater analytical data are summarized in Table 2 and historical groundwater analytical data is summarized in Appendix B. The laboratory report is presented in Appendix C. Groundwater analytical results are shown on Figure 4.

4. Conclusions

The groundwater analytical results for this sampling period showed all hydrocarbon constituents are below applicable COGCC Table 910-1 standards as previously observed for this Site.

The next semiannual groundwater sampling event will be conducted in May 2016.

5. Future Site Activities

The Pits, not including the currently excavated pit, will be sampled for baseline soil analytical results including BTEX, TPH-GRO, TPH-DRO TPH-ORO, inorganics and metals in order to choose the best remedial process for pit closures.

Expansion of the landfarm area, to include scheduled aeration and spreading of the current stockpiles will begin in the spring.

The first semiannual groundwater sampling event will be conducted in May 2016.

Regular e-Sundry forms will be submitted to the COGCC to be sure communication of remediation progress is available.

All of Which is Respectfully Submitted,

GHD Services Inc.

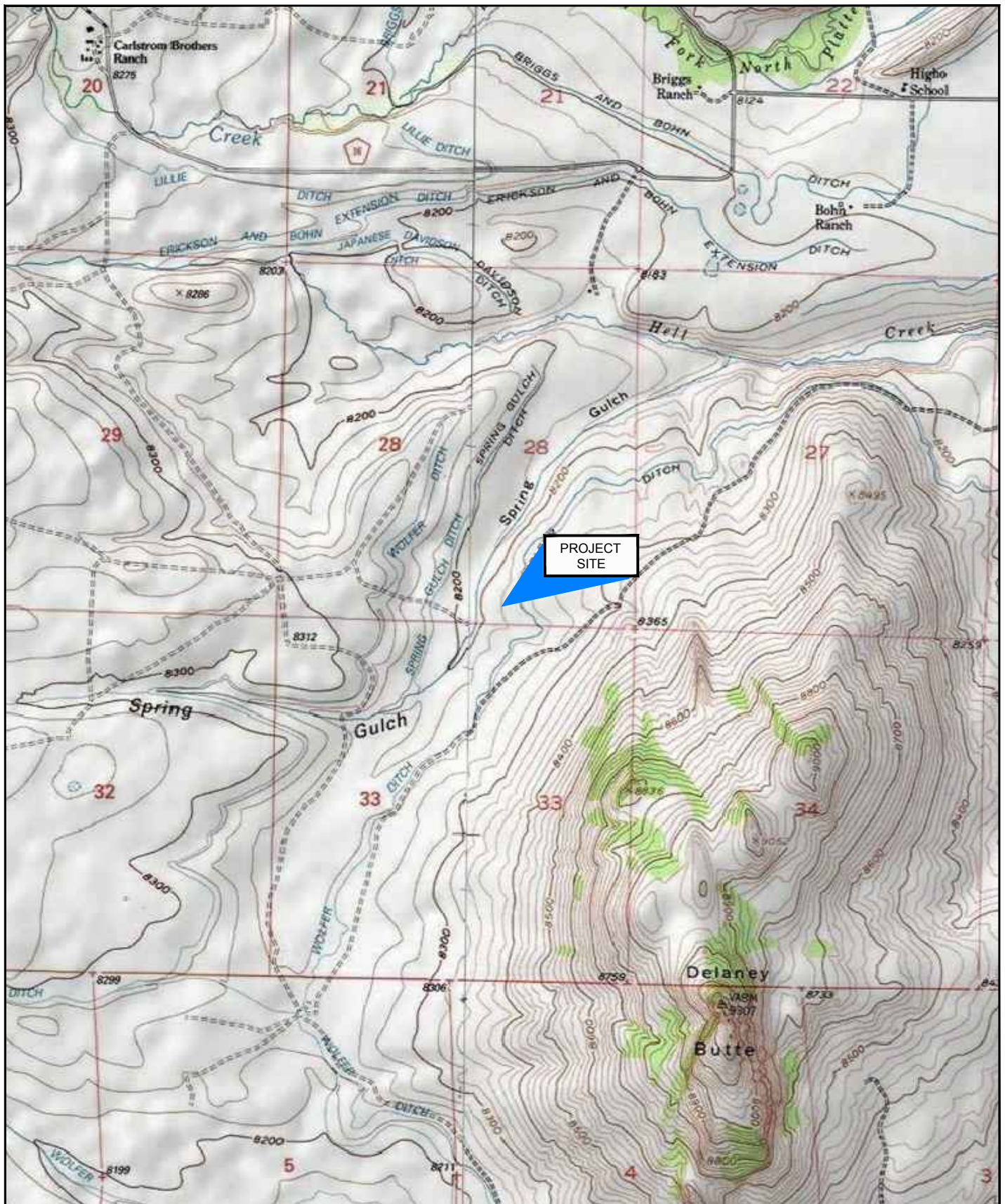


Justin Covey
Project Geologist



Brad Stephenson
Project Manager

Figures



Source: USGS 7.5 Minute Quad "Delaney Butte and Pitchpine Mountain, Colorado"

LAT/LONG: 40.717665° NORTH, 106.498721° WEST

0 1000 2000ft

Coordinate System:
NAD 83 (2011) State Plane-
Colorado North (US Feet)



CM PRODUCTION, LLC
JACKSON COUNTY, COLORADO
MARGARET SPAULDING TREATMENT SITE

SITE LOCATION MAP

11103525-01

Jan 6, 2016

FIGURE 1



Source: USDA FSA Imagery, July 22, 2013

0 40 120ft

Coordinate System:
NAD 83 (2011) State Plane-
Colorado North (US Feet)



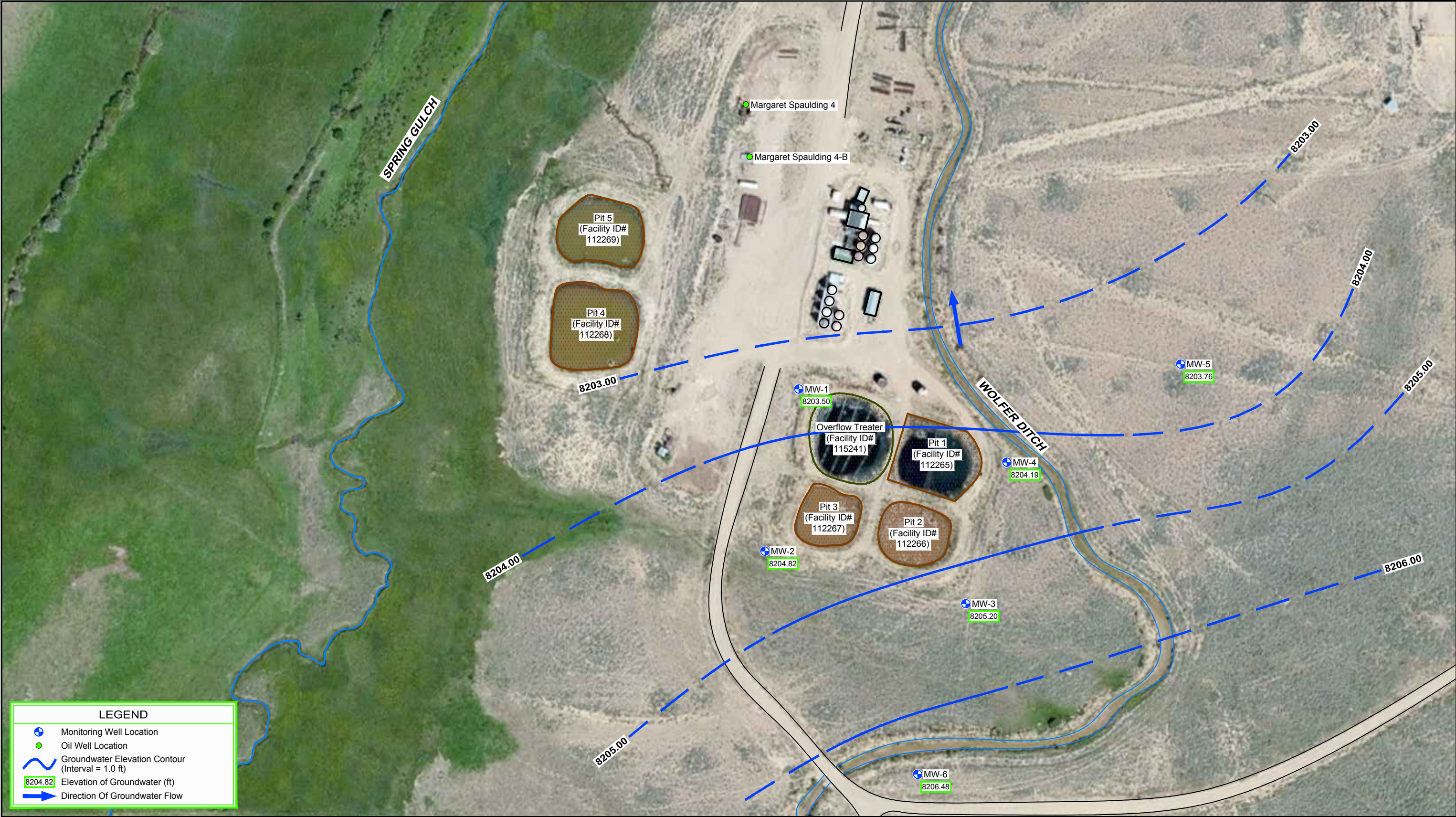
CM PRODUCTION, LLC
JACKSON COUNTY, COLORADO
MARGARET SPAULDING TREATMENT SITE

SITE PLAN

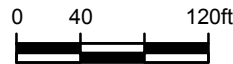
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FIGURE 2



Source: USDA FSA Imagery, July 22, 2013



Coordinate System:
NAD 83 (2011) State Plane-
Colorado North (US Feet)



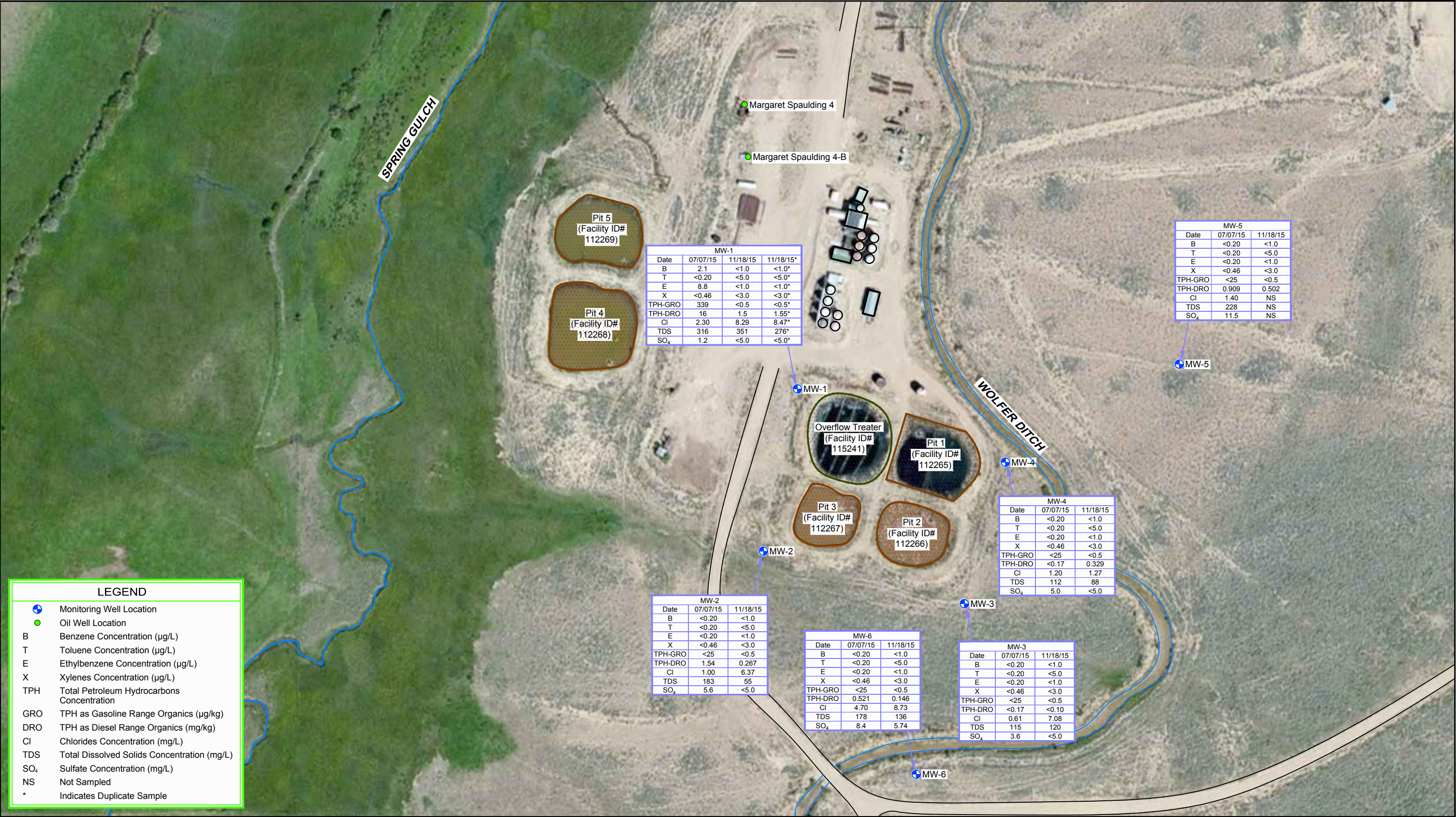
CM PRODUCTION, LLC
JACKSON COUNTY, COLORADO
MARGARET SPAULDING TREATMENT SITE

POTENTIOMETRIC MAP - NOVEMBER 2015

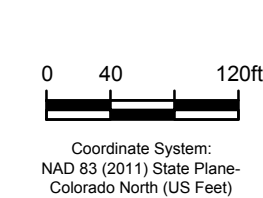
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FIGURE 3



Source: USDA FSA Imagery, July 22, 2013



CM PRODUCTION, LLC
JACKSON COUNTY, COLORADO
MARGARET SPAULDING TREATMENT SITE

GROUNDWATER ANALYTICAL - JULY AND NOVEMBER 2015

11103525-01
Jan 6, 2016

FIGURE 4

Tables

Table 1 Summary of Fluid Levels
CM Production, LLC., Margaret Spaulding Water Treatment Site - Jackson County, Colorado

Well ID/MP Elevation	Date	DTP (ft-bmp)	DTW (ft-bmp)	Prod. Thick (ft)	TD (ft-bmp)	Groundwater Elevation (ft-msl)
MW-1	07/07/15		20.13	0.00	30.99	8207.21
8227.34	11/18/15		23.84	0.00		8203.50
MW-2	07/07/15		11.16	0.00	24.87	8208.71
8219.87	11/18/15		15.05	0.00		8204.82
MW-3	07/07/15		18.60	0.00	34.35	8210.40
8229.00	11/18/15		23.80	0.00		8205.20
MW-4	07/07/15		26.65	0.00	42.50	8209.06
8235.71	11/18/15		31.52	0.00		8204.19
MW-5	07/07/15		36.35	0.00	42.70	8208.61
8244.96	11/18/15		41.20	0.00		8203.76
MW-6	07/07/15		30.76	0.00	47.55	8211.47
8242.23	11/18/15		35.75	0.00		8206.48

Notes:

DTP - depth to product

DTW - depth to water

TD - total depth

ft - feet

ft-bmp - feet-below measuring point

ft-msl - feet-mean sea level

Table 2 Summary of Groundwater Analytical Results and Field Parameters
CM Production - Margaret Spaulding Water Treatment Site - Jackson County, Colorado

Monitor Well ID/ MP Elevation	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Xylenes (µg/L)	TPH-GRO (µg/L)	TPH-DRO (mg/L)	Product Thickness (feet)	Depth to Water (ft-bmp)	Groundwater Elevation (ft- msl)	Temperature (deg-C)	Conductivity (mS/cm)	DO (mg/L)	pH	ORP (mV)	Chloride (mg/L)	Total Dissolved Solids (mg/L)	Sulfate (mg/L)
Table 910-1 concentration levels		5	560-1,000	700	1,400-10,000											<1.25 x background	<1.25 x background	<1.25 x background
MW-1	07/07/15	2.1	<0.20	8.8	<0.46	339	16		20.13	8,207.21	10.05	0.322	2.79	7.18	-7.0	2.30	316	1.2
8227.34	11/18/15	< 1.0	< 5.0	< 1.0	< 3.0	< 0.5	1.5		23.84	8,203.50	8.30	0.176	1.02	6.79	-50.9	8.29	351	< 5.0
DUP	11/18/15	< 1.0	< 5.0	< 1.0	< 3.0	< 0.5	1.55									8.47	276	< 5.0
MW-2	07/07/15	<0.20	<0.20	<0.20	<0.46	<25	1.54		11.16	8,208.71	10.79	0.123	7.81	4.14	273.3	1.00	183	5.6
8219.87	11/18/15	< 1.0	< 5.0	< 1.0	< 3.0	< 0.5	0.267		15.05	8,204.82	8.31	0.111	7.62	6.83	196.6	6.37	55	< 5.0
MW-3	07/07/15	<0.20	<0.20	<0.20	<0.46	<25	<0.17		18.60	8,210.40	9.16	0.115	9.08	7.21	122.7	0.61	115	3.6
8229.00	11/18/15	< 1.0	< 5.0	< 1.0	< 3.0	< 0.5	< 0.10		23.80	8,205.20	7.39	0.175	6.97	6.82	204.6	7.08	120	< 5.0
MW-4	07/07/15	<0.20	<0.20	<0.20	<0.46	<25	<0.17		26.65	8,209.06	9.18	0.113	8.45	6.99	212.1	1.20	112	5.0
8235.71	11/18/15	< 1.0	< 5.0	< 1.0	< 3.0	< 0.5	0.329		31.52	8,204.19	6.65	0.158	6.98	6.66	219.2	1.27	88	< 5.0
MW-5	07/07/15	<0.20	<0.20	<0.20	<0.46	<25	0.909		36.35	8,208.61	10.63	0.181	8.37	7.05	143.0	1.40	228	11.5
8244.96	11/18/15	< 1.0	< 5.0	< 1.0	< 3.0	< 0.5	0.502		41.2	8,203.76	NA	NA	7.95	NA	NA	NS	NS	NS
MW-6	7/7/15	<0.20	<0.20	<0.20	<0.46	<25	0.521		30.76	8,211.47	9.32	0.182	7.77	6.68	145.8	4.70	178	8.4
8242.23	11/18/15	< 1.0	< 5.0	< 1.0	< 3.0	< 0.5	0.146		35.75	8,206.48	6.42	0.219	7.25	6.70	210.80	8.73	136	5.74

Notes:
BOLD = Exceeds New Mexico Water Quality Commission (NMWQC) Standard
µg/L = microgram per liter
mg/L= micrograms per liter
< = Not detected above indicated level
NA = Not Analyzed
NS = Not Sampled
BTEX = Benzene, Toluene, Ethylbenzene and Xylenes
BTEX analyzed by Method EPA 8260
ft-bmp - feet-below measuring point
ft-msl - feet-mean sea level
deg-C - degrees-Celcius
mS/cm - milliSiemens per centimeter
mV - millivolts

Appendix A

Historical Groundwater Elevation Data

Appendix A - Historical Fluid Levels
Summary of Fluid Level Measurements
CM Production Inc. - Lone Pine Field Pits
Groundwater Monitoring

Station ID#	Date Measured	Northing	Easting	Depth to Product (feet)	Depth to Water (feet)	Total Depth (feet)	Water Column (feet)	Measuring Point Elevation (ft-amsl)	Calculated Groundwater Elevation (ft - amsl)
MW-1	7/12/2012	4403030.111	506765.951		19.00			8227.34	8208.34
	9/19/2013			ND	22.18	30.99	8.81		8205.16
	11/20/2013			ND	23.16		7.83		8204.18
	3/25/2014			ND	24.57		6.42		8202.77
	6/26/2014			ND	20.26		10.73		8207.08
	9/22/2014			ND	22.46		8.53		8204.88
	11/19/2014			ND	23.82		7.17		8220.17
MW-2	7/12/2012	4403049.744	506765.848		10.01			8219.87	8209.86
	9/19/2013			ND	13.33	24.87	11.54		8206.54
	11/20/2013			ND	14.26		10.61		8205.61
	3/25/2014			NM	NM	NM	NM		NM
	6/26/2014			ND	11.22		13.65		8208.65
	9/22/2014			ND	13.70		11.17		8206.17
	11/19/2014			ND	15.00		9.87		8210.00
MW-3	7/12/2012	4403107.371	506677.024		17.38			8229.00	8211.62
	9/19/2013			ND	22.13	34.35	12.22		8206.87
	11/20/2013			ND	23.24		11.11		8205.76
	3/25/2014			ND	24.87		9.48		8204.13
	6/26/2014			ND	18.82		15.53		8210.18
	9/22/2014			ND	22.19		12.16		8206.81
	11/19/2014			ND	23.80		10.55		8218.45
MW-4	7/12/2012	4403109.303	506751.803		24.77			8235.71	8210.94
	9/19/2013			ND	29.71	42.50	12.79		8206.00
	11/20/2013			ND	30.90		11.60		8204.81
	3/24/2014			ND	32.56		9.94		8203.15
	6/26/2014			ND	26.67		15.83		8209.04
	9/22/2014			ND	29.84		12.66		8205.87
	11/19/2014			ND	31.55		10.95		8224.76
MW-5	7/12/2012	4403107.537	506790.649		34.37			8244.96	8210.59
	9/19/2013			ND	34.27	42.70	8.43		8210.69
	11/20/2013			ND	40.56		2.14		8204.40
	3/25/2014			NM	NM	NM	NM		NM
	6/26/2014			ND	35.56		7.14		8209.40
	9/22/2014			ND	39.45		3.25		8205.51
	11/19/2014			ND	41.20		1.50		8243.46
MW-6	7/12/2012	4402964.351	506739.099		34.37			8242.23	8207.86
	9/19/2013			ND	39.42	47.55	8.13		8202.81
	11/20/2013			ND	35.28		12.27		8206.95
	3/25/2014			ND	36.81		10.74		8205.42
	6/26/2014			ND	30.45		17.10		8211.78
	9/22/2014			ND	34.20		13.35		8208.03
	11/19/2014			NM	NM		NM		NM

ft - amsl fee above mean sea level

ND Not Detected

Monitoring wells were installed and surveyed by North Park Engineering - R. Miller on 06/18/2012.

Coordinate System - UTM Zone 13/NAD 1983

North Park Engineering measured groundwater in the monitoring wells on 07/12/2012.

Olsson Associates measured fluid levels in the monitoring wells on 09/19/2013, 11/20/2013, 3/25/2014, 6/26/2014, and 9/22/2014.

Appendix B

Historical Groundwater Analytical Data

Appendix B - Historical Analytical Results
Groundwater Analytical Results
Summary of Volatile Organic Compounds and Total Petroleum Hydrocarbons
CM Production Inc. - Lone Pine Field Pits

Station ID#	Date Sampled	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)
COGCC 910-1		0.005	0.56	0.7	1.4	N/A	N/A
MW-1	4/17/2012	< 0.002	< 0.002	< 0.002	< 0.004	< 0.05	4.3
	1/8/2013	< 0.001	0.0032	< 0.001	< 0.001	0.057	2.1
	9/19/2013	< 0.001	< 0.002	0.00073 J	< 0.001	NA	26.8
	11/20/2013	< 0.001	< 0.001	< 0.001	< 0.001	NA	6.5
	3/25/2014	< 0.001	< 0.001	< 0.002	< 0.001	NA	2.26
	6/26/2014	0.0029	< 0.001	0.0081	< 0.001	< 0.2	6.6
	9/22/2014	< 0.001	< 0.001	0.0089 J	< 0.001	< 0.2	8.57
	11/19/2014	< 0.001	< 0.001	< 0.001	< 0.002	< 0.050	4.1
MW-2	4/17/2012	< 0.002	< 0.002	< 0.002	< 0.004	< 0.05	1.1
	1/8/2013	< 0.001	0.0029	< 0.001	< 0.001	< 0.040	< 1.0
	9/19/2013	< 0.001	< 0.002	< 0.002	< 0.003	NA	< 0.40
	11/20/2013	< 0.001	< 0.001	< 0.001	< 0.001	NA	2.5
	3/25/2014	NS	NS	NS	NS	NS	NS
	6/26/2014	< 0.001	< 0.002	< 0.002	< 0.003	< 0.2	1.48
	9/22/2014	< 0.001	< 0.001	< 0.001	< 0.001	< 0.2	1.31
	11/19/2014	< 0.001	< 0.001	< 0.001	< 0.002	< 0.050	1.44
MW-3	4/17/2012	< 0.002	< 0.002	< 0.002	< 0.004	< 0.05	3.9
	1/8/2013	< 0.001	< 0.001	< 0.001	< 0.001	< 0.040	< 1.0
	9/19/2013	< 0.001	< 0.002	< 0.002	< 0.003	NA	NA
	11/20/2013	< 0.001	< 0.001	< 0.001	< 0.001	NA	< 1.0
	3/25/2014	< 0.001	< 0.002	< 0.002	< 0.003	NA	0.441
	6/26/2014	< 0.001	< 0.002	< 0.002	< 0.003	< 0.2	0.418
	9/22/2014	< 0.001	< 0.001	< 0.001	< 0.001	< 0.2	0.399
	11/19/2014	< 0.001	< 0.001	< 0.001	< 0.002	< 0.050	0.214
MW-4	4/17/2012	< 0.002	< 0.002	< 0.002	< 0.004	< 0.05	1.2
	1/8/2013	< 0.001	< 0.001	< 0.001	< 0.001	< 0.040	< 1.0
	9/19/2013	< 0.001	< 0.002	< 0.002	< 0.003	NA	NA
	11/20/2013	< 0.001	< 0.001	< 0.001	< 0.001	NA	1.7
	3/25/2014	< 0.001	< 0.002	< 0.002	< 0.003	< 0.2	3.12
	6/26/2014	< 0.001	< 0.002	< 0.002	< 0.003	< 0.2	1.65
	9/22/2014	< 0.001	< 0.001	< 0.001	< 0.001	< 0.2	1.21
	11/19/2014	< 0.001	< 0.001	< 0.001	< 0.002	< 0.05	1.09
MW-5	4/17/2012	NS	NS	NS	NS	NS	NS
	1/8/2013	NS	NS	NS	NS	NS	NS
	2/5/2013	< 0.001	< 0.001	< 0.001	< 0.001	< 0.040	< 1.0
	9/19/2013	< 0.001	< 0.002	< 0.002	< 0.003	NA	NA
	11/20/2013	NS	NS	NS	NS	NS	NS
	3/25/2014	NS	NS	NS	NS	NS	NS
	6/26/2014	NS	NS	NS	NS	NS	NS
	9/22/2014	< 0.001	< 0.001	< 0.001	< 0.001	< 0.2	2.63
	11/19/2014	NS	NS	NS	NS	NS	NS
MW-6	4/17/2012	NS	NS	NS	NS	NS	NS
	1/8/2013	NS	NS	NS	NS	NS	NS
	2/5/2013	< 0.001	< 0.001	< 0.001	< 0.001	< 0.040	< 1.0
	9/19/2013	< 0.001	< 0.002	< 0.002	< 0.003	NA	NA
	11/20/2013	NS	NS	NS	NS	NS	NS
	3/25/2014	NS	NS	NS	NS	NS	NS
	6/26/2014	NS	NS	NS	NS	NS	NS
	9/22/2014	< 0.001	< 0.001	< 0.001	< 0.001	< 0.2	1.57
	11/19/2014	NS	NS	NS	NS	NS	NS

COGCC 910-1 Colorado Oil and Gas Conservation Commission Table 910-1 Concentration Levels

mg/L milligrams per liter

N/A Not Applicable (COGCC has not established a Table 910-1 Concentration Level for GRO or DRO in Groundwater)

< or ND Not Detected NA Not Analyzed NS Not Sampled

Appendix B - Historical Analytical Results
Groundwater Analytical Results
Semi-Volatile Organic Compounds - Polycyclic Aromatic Hydrocarbons
CM Production Inc. - Lone Pine Field Pits

Station ID#	Date Sampled	Acenaphthene (mg/l)	Anthracene (mg/l)	Benzo(a) anthracene (mg/l)	Benzo(b) fluoranthene (mg/l)	Benzo(a) pyrene (mg/l)	Chrysene (mg/l)	Dibenzo(a,h) anthracene (mg/l)	Fluoranthene (mg/l)	Fluorene (mg/l)	Indeno (1,2,3-cd) pyrene (mg/l)	Naphthalene (mg/l)	Pyrene (mg/l)	DRO (mg/l)
COGCC 910-1		NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
CDPHE-WQCC Reg 41		0.42	2.1	0.00048	0.00048	0.00048	0.00048	0.00048	0.28	0.28	0.00048	0.14	0.21	NE
MW-1	9/19/2013	0.0003	< 0.00019	< 0.000095	< 0.000095	< 0.00019	0.00014	< 0.000095	< 0.00019	0.002	< 0.00019	0.00036	< 0.00019	26.8
	11/20/2013	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	6.5
	3/25/2014	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.000095	< 0.00019	< 0.00019	2.26
	6/26/2014	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	6.6
	9/22/2014	0.00038	< 0.00019	< 0.000095	< 0.000095	< 0.000095	0.00017	< 0.000095	< 0.00019	< 0.00019	0.000071	< 0.00019	< 0.00019	8.57
	11/19/2014	< 0.0047	< 0.0047	< 0.0047	< 0.00094	< 0.00094	< 0.00094	< 0.00094	< 0.0047	< 0.0047	< 0.00094	< 0.0047	< 0.0047	4.1
MW-2	9/19/2013	< 0.00038	< 0.00038	< 0.00019	< 0.00019	< 0.00038	< 0.00019	< 0.00019	< 0.00038	< 0.00038	< 0.00039	< 0.00039	< 0.00038	< 0.40
	11/20/2013	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	2.5
	3/25/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/26/2014	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	1.48
	9/22/2014	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.000095	< 0.00019	< 0.00019	1.31
	11/19/2014	< 0.0047	< 0.0047	< 0.000094	< 0.000094	< 0.00094	< 0.00094	< 0.000094	< 0.0047	< 0.0047	< 0.000094	< 0.0047	< 0.0047	1.44
MW-3	9/19/2013	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.00019	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	NA
	11/20/2013	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.10	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 1.0
	3/25/2014	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.000095	< 0.00019	< 0.00019	0.441
	6/26/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.418
	9/22/2014	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.000095	< 0.00019	< 0.00019	0.399
	11/19/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.214
MW-4	9/19/2013	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.00019	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	NA
	11/20/2013	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	1.7
	3/25/2014	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.000095	< 0.00019	< 0.00019	3.12
	6/26/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	1.65
	9/22/2014	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.000095	< 0.00019	< 0.00019	1.21
	11/19/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
MW-5	9/19/2013	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.00019	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	NA
	11/20/2013	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/25/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/26/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/22/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	2.63
	11/19/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-6	9/19/2013	< 0.00019	< 0.00019	< 0.000095	< 0.000095	< 0.00019	< 0.000095	< 0.000095	< 0.00019	< 0.00019	< 0.00019	< 0.00019	< 0.00019	NA
	11/20/2013	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/25/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/26/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/22/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	1.57
	11/19/2014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

OGCC 910- Colorado Oil and Gas Conservation Commission Table 910-1 Concentration Levels

mg/L milligrams per liter

N/A Not Applicable - Total PAH (polycyclic aromatic hydrocarbons)

NE None Established - the COGCC has Table 910-1 Concentration Levels for PAHs in soil, but has not established PAH concentrations in Groundwater

< Not Detected above the laboratory reporting limit

NS Not Sampled

Note: Upgradient wells MW-5 and MW-6 were not sampled.

Appendix B - Historical Analytical Results
Summary of Inorganic Compounds in Groundwater
CM Production Inc. - Lone Pine Field Pits
Groundwater Monitoring

Station ID#	Date Measured	Chloride (mg/L)	Iron (mg/L)	TDS (mg/L)	Sulfate (mg/L)
COGCC T 910-1		< 1.25 x background	NE	< 1.25 x background	< 1.25 x background
MW-1	4/17/2012	9.41		360	3.43
	9/19/2013	NS		NS	NS
	11/20/2013	NS		NS	NS
	3/25/2014	NS		NS	NS
	6/26/2014	4.6		452	2.5
	9/23/2014	2.7	30.1	470	2.6
	11/19/2014	3.9	42.1	384	4.5
MW-2	4/17/2012	1.71		120	4.48
	9/19/2013	NS		NS	NS
	11/20/2013	NS		NS	NS
	3/25/2014	NS		NS	NS
	6/26/2014	1.3		156	6.0
	9/22/2014	1.0	29.2	230	4.0
	11/19/2014	0.8	66.8	156	3.2
MW-3	4/17/2012	6.8		160	10.04
	9/19/2013	NS		NS	NS
	11/20/2013	NS		NS	NS
	3/25/2014	NS		NS	NS
	6/26/2014	0.93		133	4.9
	9/23/2014	0.51	49.1	130	2.3
	11/19/2014	1.3	71.5	100	2.6
MW-4	4/17/2012	6.34		160	4.47
	9/19/2013	NS		NS	NS
	11/20/2013	NS		NS	NS
	3/25/2014	NS		NS	NS
	6/26/2014	2.3		134	4.7
	9/22/2014	0.84	64.7	144	4.2
	11/19/2014	0.71	44.4	90.0	3.2
MW-5	4/17/2012	NS		NS	NS
	9/19/2013	NS		NS	NS
	11/20/2013	NS		NS	NS
	3/25/2014	NS		NS	NS
	6/26/2014	NS		NS	NS
	9/22/2014	1.0	27.7	150	8.8
	11/19/2014	NS	NS	NS	NS
MW-6	4/17/2012	NS		NS	NS
	9/19/2013	NS		NS	NS
	11/20/2013	NS		NS	NS
	3/25/2014	NS		NS	NS
	6/26/2014	NS		NS	NS
	9/22/2014	2.1	74.8	168	6.8
	11/19/2014	NS	NS	NS	NS

mg/L milligrams per liter

ND Not Detected

NS Not Sampled

Appendix C

Laboratory Analytical Reports

GHD Services, Inc. - Co

Sample Delivery Group: L802479
Samples Received: 11/20/2015
Project Number: 11103525-01-
Description: CM Production-N. CO GW Sampling

Report To: Brad Stephenson
14998 West. 6th Ave. Ste 800
Golden, CO 80401

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.



¹Cp: Cover Page	1
²Tc: Table of Contents	2
³Ss: Sample Summary	3
⁴Cn: Case Narrative	5
⁵Sr: Sample Results	6
MW-1 L802479-01	6
MW-2 L802479-02	7
MW-3 L802479-03	8
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MW-5 L802479-05	10
MW-6 L802479-06	11
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TRIP BLANK L802479-08	13
⁶Qc: Quality Control Summary	14
Gravimetric Analysis by Method 2540 C-2011	14
Wet Chemistry by Method 9056	16
Volatile Organic Compounds (GC/MS) by Method 8260B/8260B/OA1	18
Semi-Volatile Organic Compounds (GC) by Method 3511/8015	24
⁷Gl: Glossary of Terms	25
⁸Al: Accreditations & Locations	26
⁹Sc: Chain of Custody	27



SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



MW-1 L802479-01 GW

			Collected by Justin Covey	Collected date/time 11/18/15 13:10	Received date/time 11/20/15 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG831109	1	11/24/15 00:56	11/24/15 03:20	JM
Semi-Volatile Organic Compounds (GC) by Method 3511/8015	WG830792	1	11/21/15 21:31	11/22/15 22:30	CLG
Volatile Organic Compounds (GC/MS) by Method 8260B/8260B/OA1	WG830947	1	11/27/15 21:11	11/27/15 21:11	BMB
Wet Chemistry by Method 9056	WG830782	1	11/24/15 13:34	11/24/15 13:34	NJM

¹ Cp

² Tc

³ Ss

⁴ Cn

MW-2 L802479-02 GW

			Collected by Justin Covey	Collected date/time 11/18/15 12:20	Received date/time 11/20/15 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG831109	1	11/24/15 00:56	11/24/15 03:20	JM
Semi-Volatile Organic Compounds (GC) by Method 3511/8015	WG830792	1	11/21/15 21:31	11/22/15 22:50	CLG
Volatile Organic Compounds (GC/MS) by Method 8260B/8260B/OA1	WG832490	1	12/01/15 12:41	12/01/15 12:41	BMB
Wet Chemistry by Method 9056	WG830782	1	11/24/15 13:47	11/24/15 13:47	NJM

⁵ Sr

⁶ Qc

⁷ Gl

MW-3 L802479-03 GW

			Collected by Justin Covey	Collected date/time 11/18/15 11:57	Received date/time 11/20/15 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG831110	1	11/24/15 02:09	11/24/15 03:37	JM
Semi-Volatile Organic Compounds (GC) by Method 3511/8015	WG830792	1	11/21/15 21:31	11/22/15 23:10	CLG
Volatile Organic Compounds (GC/MS) by Method 8260B/8260B/OA1	WG832490	1	12/01/15 12:23	12/01/15 12:23	BMB
Wet Chemistry by Method 9056	WG830782	1	11/24/15 14:00	11/24/15 14:00	NJM

⁸ Al

⁹ Sc

MW-4 L802479-04 GW

			Collected by Justin Covey	Collected date/time 11/18/15 11:25	Received date/time 11/20/15 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG831110	1	11/24/15 02:09	11/24/15 03:37	JM
Semi-Volatile Organic Compounds (GC) by Method 3511/8015	WG830792	1	11/21/15 21:31	11/22/15 23:30	CLG
Volatile Organic Compounds (GC/MS) by Method 8260B/8260B/OA1	WG830947	1	11/28/15 03:57	11/28/15 03:57	BMB
Wet Chemistry by Method 9056	WG830782	1	11/24/15 14:13	11/24/15 14:13	NJM

MW-5 L802479-05 GW

			Collected by Justin Covey	Collected date/time 11/18/15 10:45	Received date/time 11/20/15 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi-Volatile Organic Compounds (GC) by Method 3511/8015	WG830792	1	11/21/15 21:31	11/23/15 09:11	BJF
Volatile Organic Compounds (GC/MS) by Method 8260B/8260B/OA1	WG830947	1	11/28/15 04:20	11/28/15 04:20	BMB

MW-6 L802479-06 GW

			Collected by Justin Covey	Collected date/time 11/18/15 11:00	Received date/time 11/20/15 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG831110	1	11/24/15 02:09	11/24/15 03:37	JM
Semi-Volatile Organic Compounds (GC) by Method 3511/8015	WG830792	1	11/21/15 21:31	11/22/15 23:49	CLG
Volatile Organic Compounds (GC/MS) by Method 8260B/8260B/OA1	WG830947	1	11/28/15 04:42	11/28/15 04:42	BMB
Wet Chemistry by Method 9056	WG830782	1	11/24/15 14:26	11/24/15 14:26	NJM



DUP-MW-1 L802479-07 GW

Collected by
Justin CoveyCollected date/time
11/18/15 13:10Received date/time
11/20/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Gravimetric Analysis by Method 2540 C-2011	WG831110	1	11/24/15 02:09	11/24/15 03:37	JM
Semi-Volatile Organic Compounds (GC) by Method 3511/8015	WG830792	1	11/21/15 21:31	11/23/15 00:09	CLG
Volatile Organic Compounds (GC/MS) by Method 8260B/8260B/OA1	WG830947	1	11/28/15 05:05	11/28/15 05:05	BMB
Wet Chemistry by Method 9056	WG830782	1	11/24/15 14:39	11/24/15 14:39	NJM

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

TRIP BLANK L802479-08 GW

Collected by
Justin CoveyCollected date/time
11/18/15 08:00Received date/time
11/20/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B/8260B/OA1	WG830948	1	11/27/15 14:33	11/27/15 14:33	ACG



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



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	351		10.0	1	11/24/2015 03:20	WG831109

Wet Chemistry by Method 9056

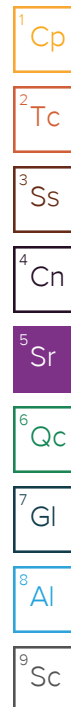
Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloride	8.29		1.00	1	11/24/2015 13:34	WG830782
Sulfate	ND		5.00	1	11/24/2015 13:34	WG830782

Volatile Organic Compounds (GC/MS) by Method 8260B/8260B/OA1

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	ND		0.00100	1	11/27/2015 21:11	WG830947
Ethylbenzene	ND		0.00100	1	11/27/2015 21:11	WG830947
Toluene	ND		0.00500	1	11/27/2015 21:11	WG830947
Xylenes, Total	ND		0.00300	1	11/27/2015 21:11	WG830947
Methyl tert-butyl ether	ND		0.00100	1	11/27/2015 21:11	WG830947
Naphthalene	ND		0.00500	1	11/27/2015 21:11	WG830947
TPH (GC/MS) Low Fraction	ND		0.500	1	11/27/2015 21:11	WG830947
(S) Toluene-d8	106		90.0-115		11/27/2015 21:11	WG830947
(S) Dibromofluoromethane	112		79.0-121		11/27/2015 21:11	WG830947
(S) 4-Bromofluorobenzene	94.1		80.1-120		11/27/2015 21:11	WG830947

Semi-Volatile Organic Compounds (GC) by Method 3511/8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
TPH (GC/FID) High Fraction	1.50		0.100	1	11/22/2015 22:30	WG830792
(S) o-Terphenyl	103		50.0-150		11/22/2015 22:30	WG830792





Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	55.0		10.0	1	11/24/2015 03:20	WG831109

Wet Chemistry by Method 9056

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloride	6.37		1.00	1	11/24/2015 13:47	WG830782
Sulfate	ND		5.00	1	11/24/2015 13:47	WG830782

Volatile Organic Compounds (GC/MS) by Method 8260B/8260B/OA1

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	ND		0.00100	1	12/01/2015 12:41	WG832490
Ethylbenzene	ND		0.00100	1	12/01/2015 12:41	WG832490
Toluene	ND		0.00500	1	12/01/2015 12:41	WG832490
Xylenes, Total	ND		0.00300	1	12/01/2015 12:41	WG832490
Methyl tert-butyl ether	ND		0.00100	1	12/01/2015 12:41	WG832490
Naphthalene	ND		0.00500	1	12/01/2015 12:41	WG832490
TPH (GC/MS) Low Fraction	ND		0.500	1	12/01/2015 12:41	WG832490
(S) Toluene-d8	107		90.0-115		12/01/2015 12:41	WG832490
(S) Dibromofluoromethane	105		79.0-121		12/01/2015 12:41	WG832490
(S) 4-Bromofluorobenzene	91.2		80.1-120		12/01/2015 12:41	WG832490

Semi-Volatile Organic Compounds (GC) by Method 3511/8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
TPH (GC/FID) High Fraction	0.267		0.100	1	11/22/2015 22:50	WG830792
(S) o-Terphenyl	96.9		50.0-150		11/22/2015 22:50	WG830792

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	120		10.0	1	11/24/2015 03:37	WG831110

Wet Chemistry by Method 9056

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloride	7.08		1.00	1	11/24/2015 14:00	WG830782
Sulfate	ND		5.00	1	11/24/2015 14:00	WG830782

Volatile Organic Compounds (GC/MS) by Method 8260B/8260B/OA1

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	ND		0.00100	1	12/01/2015 12:23	WG832490
Ethylbenzene	ND		0.00100	1	12/01/2015 12:23	WG832490
Toluene	ND	J3	0.00500	1	12/01/2015 12:23	WG832490
Xylenes, Total	ND		0.00300	1	12/01/2015 12:23	WG832490
Methyl tert-butyl ether	ND		0.00100	1	12/01/2015 12:23	WG832490
Naphthalene	ND		0.00500	1	12/01/2015 12:23	WG832490
TPH (GC/MS) Low Fraction	ND		0.500	1	12/01/2015 12:23	WG832490
(S) Toluene-d8	107		90.0-115		12/01/2015 12:23	WG832490
(S) Dibromofluoromethane	109		79.0-121		12/01/2015 12:23	WG832490
(S) 4-Bromofluorobenzene	94.2		80.1-120		12/01/2015 12:23	WG832490

Semi-Volatile Organic Compounds (GC) by Method 3511/8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
TPH (GC/FID) High Fraction	ND		0.100	1	11/22/2015 23:10	WG830792
(S) o-Terphenyl	94.5		50.0-150		11/22/2015 23:10	WG830792

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	88.0		10.0	1	11/24/2015 03:37	WG831110

Wet Chemistry by Method 9056

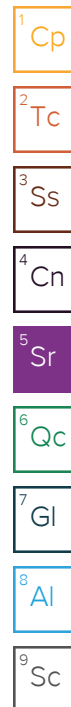
Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloride	1.27		1.00	1	11/24/2015 14:13	WG830782
Sulfate	ND		5.00	1	11/24/2015 14:13	WG830782

Volatile Organic Compounds (GC/MS) by Method 8260B/8260B/OA1

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	ND		0.00100	1	11/28/2015 03:57	WG830947
Ethylbenzene	ND		0.00100	1	11/28/2015 03:57	WG830947
Toluene	ND		0.00500	1	11/28/2015 03:57	WG830947
Xylenes, Total	ND		0.00300	1	11/28/2015 03:57	WG830947
Methyl tert-butyl ether	ND		0.00100	1	11/28/2015 03:57	WG830947
Naphthalene	ND		0.00500	1	11/28/2015 03:57	WG830947
TPH (GC/MS) Low Fraction	ND		0.500	1	11/28/2015 03:57	WG830947
(S) Toluene-d8	107		90.0-115		11/28/2015 03:57	WG830947
(S) Dibromofluoromethane	112		79.0-121		11/28/2015 03:57	WG830947
(S) 4-Bromofluorobenzene	92.9		80.1-120		11/28/2015 03:57	WG830947

Semi-Volatile Organic Compounds (GC) by Method 3511/8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
TPH (GC/FID) High Fraction	0.329		0.100	1	11/22/2015 23:30	WG830792
(S) o-Terphenyl	98.6		50.0-150		11/22/2015 23:30	WG830792





Volatile Organic Compounds (GC/MS) by Method 8260B/8260B/OA1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	11/28/2015 04:20	WG830947
Ethylbenzene	ND		0.00100	1	11/28/2015 04:20	WG830947
Toluene	ND		0.00500	1	11/28/2015 04:20	WG830947
Xylenes, Total	ND		0.00300	1	11/28/2015 04:20	WG830947
Methyl tert-butyl ether	ND		0.00100	1	11/28/2015 04:20	WG830947
Naphthalene	ND		0.00500	1	11/28/2015 04:20	WG830947
TPH (GC/MS) Low Fraction	ND		0.500	1	11/28/2015 04:20	WG830947
(S) Toluene-d8	106		90.0-115		11/28/2015 04:20	WG830947
(S) Dibromofluoromethane	111		79.0-121		11/28/2015 04:20	WG830947
(S) 4-Bromofluorobenzene	92.4		80.1-120		11/28/2015 04:20	WG830947

Semi-Volatile Organic Compounds (GC) by Method 3511/8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	0.502		0.100	1	11/23/2015 09:11	WG830792
(S) o-Terphenyl	99.4		50.0-150		11/23/2015 09:11	WG830792

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	136		10.0	1	11/24/2015 03:37	WG831110

Wet Chemistry by Method 9056

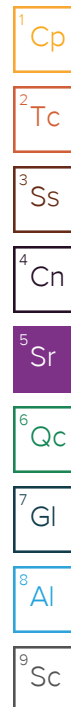
Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloride	8.73		1.00	1	11/24/2015 14:26	WG830782
Sulfate	5.74		5.00	1	11/24/2015 14:26	WG830782

Volatile Organic Compounds (GC/MS) by Method 8260B/8260B/OA1

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	ND		0.00100	1	11/28/2015 04:42	WG830947
Ethylbenzene	ND		0.00100	1	11/28/2015 04:42	WG830947
Toluene	ND		0.00500	1	11/28/2015 04:42	WG830947
Xylenes, Total	ND		0.00300	1	11/28/2015 04:42	WG830947
Methyl tert-butyl ether	ND		0.00100	1	11/28/2015 04:42	WG830947
Naphthalene	ND		0.00500	1	11/28/2015 04:42	WG830947
TPH (GC/MS) Low Fraction	ND		0.500	1	11/28/2015 04:42	WG830947
(S) Toluene-d8	107		90.0-115		11/28/2015 04:42	WG830947
(S) Dibromofluoromethane	112		79.0-121		11/28/2015 04:42	WG830947
(S) 4-Bromofluorobenzene	91.3		80.1-120		11/28/2015 04:42	WG830947

Semi-Volatile Organic Compounds (GC) by Method 3511/8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
TPH (GC/FID) High Fraction	0.146		0.100	1	11/22/2015 23:49	WG830792
(S) o-Terphenyl	97.8		50.0-150		11/22/2015 23:49	WG830792





Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	276		10.0	1	11/24/2015 03:37	WG831110

Wet Chemistry by Method 9056

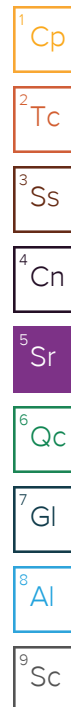
Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloride	8.47		1.00	1	11/24/2015 14:39	WG830782
Sulfate	ND		5.00	1	11/24/2015 14:39	WG830782

Volatile Organic Compounds (GC/MS) by Method 8260B/8260B/OA1

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	ND		0.00100	1	11/28/2015 05:05	WG830947
Ethylbenzene	ND		0.00100	1	11/28/2015 05:05	WG830947
Toluene	ND		0.00500	1	11/28/2015 05:05	WG830947
Xylenes, Total	ND		0.00300	1	11/28/2015 05:05	WG830947
Methyl tert-butyl ether	ND		0.00100	1	11/28/2015 05:05	WG830947
Naphthalene	ND		0.00500	1	11/28/2015 05:05	WG830947
TPH (GC/MS) Low Fraction	ND		0.500	1	11/28/2015 05:05	WG830947
(S) Toluene-d8	106		90.0-115		11/28/2015 05:05	WG830947
(S) Dibromofluoromethane	112		79.0-121		11/28/2015 05:05	WG830947
(S) 4-Bromofluorobenzene	95.1		80.1-120		11/28/2015 05:05	WG830947

Semi-Volatile Organic Compounds (GC) by Method 3511/8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
TPH (GC/FID) High Fraction	1.55		0.100	1	11/23/2015 00:09	WG830792
(S) o-Terphenyl	104		50.0-150		11/23/2015 00:09	WG830792





Volatile Organic Compounds (GC/MS) by Method 8260B/8260B/OA1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	11/27/2015 14:33	WG830948
Ethylbenzene	ND		0.00100	1	11/27/2015 14:33	WG830948
Toluene	ND		0.00500	1	11/27/2015 14:33	WG830948
Xylenes, Total	ND		0.00300	1	11/27/2015 14:33	WG830948
Methyl tert-butyl ether	ND		0.00100	1	11/27/2015 14:33	WG830948
Naphthalene	ND		0.00500	1	11/27/2015 14:33	WG830948
TPH (GC/MS) Low Fraction	ND		0.500	1	11/27/2015 14:33	WG830948
(S) Toluene-d8	106		90.0-115		11/27/2015 14:33	WG830948
(S) Dibromofluoromethane	96.9		79.0-121		11/27/2015 14:33	WG830948
(S) 4-Bromofluorobenzene	103		80.1-120		11/27/2015 14:33	WG830948

1
Cp2
Tc3
Ss4
Cn5
Sr6
Qc7
Gl8
Al9
Sc

Method Blank (MB)

(MB) 11/24/15 03:20

	MB Result	MB Qualifier	MB RDL
Analyte	mg/l		mg/l
Dissolved Solids	ND		10.0

L802479-02 Original Sample (OS) • Duplicate (DUP)

(OS) 11/24/15 03:20 • (DUP) 11/24/15 03:20

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	55.0	55.0	1	0.000		5

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

(LCS) 11/24/15 03:20 • (LCSD) 11/24/15 03:20

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	%	%	%			%	%
Dissolved Solids	8800	8530	8370	96.9	95.1	85.0-115			1.89	5

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) 11/24/15 03:37

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
Dissolved Solids	ND		10.0

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L802479-03 Original Sample (OS) • Duplicate (DUP)

(OS) 11/24/15 03:37 • (DUP) 11/24/15 03:37

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	120	126	1	4.88		5

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

(LCS) 11/24/15 03:37 • (LCSD) 11/24/15 03:37

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Dissolved Solids	8800	8420	8740	95.7	99.3	85.0-115			3.73	5



Method Blank (MB)

(MB) 11/24/15 07:06

	MB Result	MB Qualifier	MB RDL
Analyte	mg/l		mg/l
Chloride	ND		1.00
Sulfate	ND		5.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L802490-07 Original Sample (OS) • Duplicate (DUP)

(OS) 11/24/15 11:12 • (DUP) 11/24/15 11:25

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Chloride	0.281	0.257	1	0		20
Sulfate	0.163	-0.0370	1	0		20

L802486-01 Original Sample (OS) • Duplicate (DUP)

(OS) 11/24/15 15:04 • (DUP) 11/24/15 15:17

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Chloride	3.84	3.85	1	0		20
Sulfate	23.7	23.8	1	0		20

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

(LCS) 11/24/15 07:20 • (LCSD) 11/24/15 07:33

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	%	%	%			%	%
Chloride	40.0	39.6	39.6	99	99	90-110			0	20
Sulfate	40.0	40.3	40.2	101	101	90-110			0	20

L802480-04 Original Sample (OS) • Matrix Spike (MS)

(OS) 11/24/15 12:04 • (MS) 11/24/15 12:17

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Chloride	50.0	5.44	50.7	91	1	80-120	
Sulfate	50.0	12.6	58.9	93	1	80-120	



L802480-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 11/24/15 12:55 • (MS) 11/24/15 13:08 • (MSD) 11/24/15 13:21

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50.0	11.5	57.9	58.3	93	94	1	80-120			1	20
Sulfate	50.0	20.6	67.2	67.5	93	94	1	80-120			0	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) 11/27/15 13:04

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
TPH (GC/MS) Low Fraction	ND		0.500
Benzene	ND		0.00100
Ethylbenzene	ND		0.00100
Methyl tert-butyl ether	ND		0.00100
Naphthalene	ND		0.00500
Toluene	ND		0.00500
Xylenes, Total	ND		0.00300
(S) Toluene-d8	106		90.0-115
(S) Dibromofluoromethane	112		79.0-121
(S) 4-Bromofluorobenzene	92.1		80.1-120

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

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

(LCS) 11/27/15 10:48 • (LCSD) 11/27/15 11:11

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0250	0.0296	0.0292	118	117	73.0-122			1.20	20
Ethylbenzene	0.0250	0.0241	0.0241	96.6	96.4	80.9-121			0.210	20
Methyl tert-butyl ether	0.0250	0.0294	0.0288	117	115	70.1-125			1.89	20
Naphthalene	0.0250	0.0271	0.0269	109	108	69.7-134			0.750	20
Toluene	0.0250	0.0261	0.0260	105	104	77.9-116			0.430	20
Xylenes, Total	0.0750	0.0715	0.0702	95.3	93.6	79.2-122			1.85	20
(S) Toluene-d8				108	109	90.0-115				
(S) Dibromofluoromethane				108	111	79.0-121				
(S) 4-Bromofluorobenzene				96.2	95.3	80.1-120				

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

(LCS) 11/27/15 14:04 • (LCSD) 11/27/15 14:27

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/MS) Low Fraction	5.00	3.75	3.96	75.1	79.1	62.3-131			5.28	20
(S) Toluene-d8				109	109	90.0-115				
(S) Dibromofluoromethane				111	111	79.0-121				
(S) 4-Bromofluorobenzene				94.3	94.4	80.1-120				

L802371-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 11/27/15 17:48 • (MS) 11/27/15 15:54 • (MSD) 11/27/15 16:17

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.0250	ND	0.0247	0.0247	99.0	98.7	1	58.6-133			0.270	20
Ethylbenzene	0.0250	ND	0.0204	0.0202	81.7	80.8	1	62.7-136			1.06	20
Methyl tert-butyl ether	0.0250	ND	0.0275	0.0279	110	112	1	61.4-136			1.57	20
Naphthalene	0.0250	ND	0.0266	0.0270	106	108	1	61.8-143			1.37	20
Toluene	0.0250	ND	0.0231	0.0225	92.3	90.0	1	67.8-124			2.59	20
Xylenes, Total	0.0750	ND	0.0606	0.0592	80.8	79.0	1	65.6-133			2.35	20
(S) Toluene-d8					108	109		90.0-115				
(S) Dibromofluoromethane					87.8	89.2		79.0-121				
(S) 4-Bromofluorobenzene					93.2	91.5		80.1-120				

L802371-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 11/27/15 17:48 • (MS) 11/27/15 16:40 • (MSD) 11/27/15 17:02

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/MS) Low Fraction	5.00	ND	7.09	7.02	142	140	1	44.3-147			1.02	20
(S) Toluene-d8					108	109		90.0-115				
(S) Dibromofluoromethane					89.2	90.7		79.0-121				
(S) 4-Bromofluorobenzene					97.8	97.5		80.1-120				

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) 11/27/15 13:37

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
TPH (GC/MS) Low Fraction	ND		0.500
Benzene	ND		0.00100
Ethylbenzene	ND		0.00100
Methyl tert-butyl ether	ND		0.00100
Naphthalene	ND		0.00500
Toluene	ND		0.00500
Xylenes, Total	ND		0.00300
(S) Toluene-d8	104		90.0-115
(S) Dibromofluoromethane	94.7		79.0-121
(S) 4-Bromofluorobenzene	101		80.1-120

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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

(LCS) 11/27/15 11:07 • (LCSD) 11/27/15 11:29

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0250	0.0261	0.0268	105	107	73.0-122			2.62	20
Ethylbenzene	0.0250	0.0245	0.0244	97.9	97.7	80.9-121			0.240	20
Methyl tert-butyl ether	0.0250	0.0277	0.0276	111	111	70.1-125			0.340	20
Naphthalene	0.0250	0.0265	0.0259	106	104	69.7-134			2.16	20
Toluene	0.0250	0.0263	0.0267	105	107	77.9-116			1.49	20
Xylenes, Total	0.0750	0.0748	0.0744	99.8	99.2	79.2-122			0.630	20
(S) Toluene-d8				108	110	90.0-115				
(S) Dibromofluoromethane				97.3	98.7	79.0-121				
(S) 4-Bromofluorobenzene				101	98.1	80.1-120				

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

(LCS) 11/27/15 11:50 • (LCSD) 11/27/15 12:12

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/MS) Low Fraction	5.00	6.42	6.24	128	125	62.3-131			2.88	20
(S) Toluene-d8				104	103	90.0-115				
(S) Dibromofluoromethane				94.9	94.6	79.0-121				
(S) 4-Bromofluorobenzene				107	104	80.1-120				



L802757-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 11/27/15 15:36 • (MS) 11/27/15 17:15 • (MSD) 11/27/15 17:36

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.0250	ND	0.0259	0.0240	103	96.0	1	58.6-133			7.54	20
Ethylbenzene	0.0250	ND	0.0274	0.0247	110	98.8	1	62.7-136			10.4	20
Methyl tert-butyl ether	0.0250	ND	0.0225	0.0239	90.1	95.4	1	61.4-136			5.79	20
Naphthalene	0.0250	ND	0.0346	0.0267	138	107	1	61.8-143		J3	25.5	20
Toluene	0.0250	ND	0.0235	0.0231	93.8	92.6	1	67.8-124			1.31	20
Xylenes, Total	0.0750	ND	0.0877	0.0777	117	104	1	65.6-133			12.2	20
(S) Toluene-d8					108	107		90.0-115				
(S) Dibromofluoromethane					94.1	92.5		79.0-121				
(S) 4-Bromofluorobenzene					100	101		80.1-120				

L802466-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 11/27/15 16:54 • (MS) 11/27/15 17:58 • (MSD) 11/27/15 19:31

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/MS) Low Fraction	5.00	70.4	71.0	79.6	11.8	184	1	44.3-147	V	V	11.4	20
(S) Toluene-d8					103	104		90.0-115				
(S) Dibromofluoromethane					241	262		79.0-121	J1	J1		
(S) 4-Bromofluorobenzene					104	103		80.1-120				

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc



Method Blank (MB)

(MB) 12/01/15 06:04

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
TPH (GC/MS) Low Fraction	ND		0.500
Benzene	ND		0.00100
Ethylbenzene	ND		0.00100
Methyl tert-butyl ether	ND		0.00100
Naphthalene	ND		0.00500
Toluene	ND		0.00500
Xylenes, Total	ND		0.00300
(S) Toluene-d8	107		90.0-115
(S) Dibromofluoromethane	109		79.0-121
(S) 4-Bromofluorobenzene	92.7		80.1-120

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

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

(LCS) 12/01/15 04:55 • (LCSD) 12/01/15 08:38

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0250	0.0291	0.0300	116	120	73.0-122			3.18	20
Ethylbenzene	0.0250	0.0229	0.0229	91.6	91.6	80.9-121			0.0600	20
Methyl tert-butyl ether	0.0250	0.0268	0.0280	107	112	70.1-125			4.58	20
Naphthalene	0.0250	0.0188	0.0188	75.2	75.1	69.7-134			0.0900	20
Toluene	0.0250	0.0252	0.0255	101	102	77.9-116			1.01	20
Xylenes, Total	0.0750	0.0684	0.0690	91.2	92.0	79.2-122			0.960	20
(S) Toluene-d8				107	107	90.0-115				
(S) Dibromofluoromethane				105	109	79.0-121				
(S) 4-Bromofluorobenzene				88.7	92.5	80.1-120				

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

(LCS) 12/01/15 10:04 • (LCSD) 12/01/15 10:21

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/MS) Low Fraction	5.00	5.20	5.77	104	115	62.3-131			10.4	20
(S) Toluene-d8				104	105	90.0-115				
(S) Dibromofluoromethane				106	105	79.0-121				
(S) 4-Bromofluorobenzene				96.9	99.3	80.1-120				

L802479-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 12/01/15 12:23 • (MS) 12/01/15 10:55 • (MSD) 12/01/15 11:15

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.0250	ND	0.0299	0.0276	119	110	1	58.6-133			7.87	20
Ethylbenzene	0.0250	ND	0.0238	0.0216	95.1	86.3	1	62.7-136			9.74	20
Methyl tert-butyl ether	0.0250	ND	0.0270	0.0250	108	99.9	1	61.4-136			7.72	20
Naphthalene	0.0250	ND	0.0190	0.0179	76.1	71.8	1	61.8-143			5.88	20
Toluene	0.0250	0.000401	0.0297	0.0241	117	94.6	1	67.8-124		J3	21.1	20
Xylenes, Total	0.0750	ND	0.0707	0.0650	94.3	86.7	1	65.6-133			8.38	20
(S) Toluene-d8					106	107		90.0-115				
(S) Dibromofluoromethane					108	108		79.0-121				
(S) 4-Bromofluorobenzene					92.0	91.5		80.1-120				

L802479-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 12/01/15 12:23 • (MS) 12/01/15 11:32 • (MSD) 12/01/15 11:49

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/MS) Low Fraction	5.00	ND	5.80	5.82	116	116	1	44.3-147			0.370	20
(S) Toluene-d8					104	104		90.0-115				
(S) Dibromofluoromethane					104	106		79.0-121				
(S) 4-Bromofluorobenzene					93.7	98.0		80.1-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) 11/22/15 19:13

Analyte	MB Result	MB Qualifier	MB RDL
	mg/l		mg/l
TPH (GC/FID) High Fraction	ND		0.100
(S) o-Terphenyl	101		50.0-150

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

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

(LCS) 11/22/15 19:33 • (LCSD) 11/22/15 19:53

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
TPH (GC/FID) High Fraction	1.50	1.58	1.59	106	106	50.0-150			0.110	20
(S) o-Terphenyl				100	104	50.0-150				



Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND,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.
SDL	Sample Detection Limit.
MQL	Method Quantitation Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.

Qualifier	Description
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.
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**.

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		

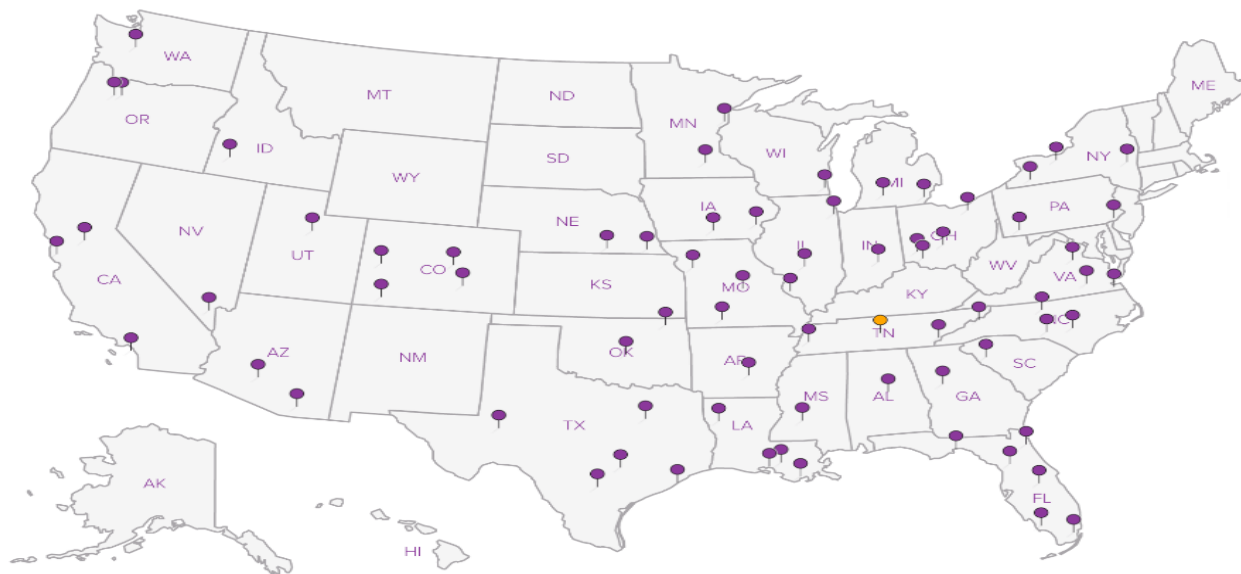
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA	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.**



GHD Services, Inc. - Co

14998 West. 6th Ave. Ste 800
Golden, CO 80401

Billing Information:

Accounts Payable
2055 Niagara Falls Blvd
Niagara Falls, NY 14304

Report to: **BRAD STEPHENSON**
~~Christina Ruby~~

Email To: @ghd.com
brad.stephenson@ghd.com

Project Description: **CM Production-N. CO GW Sampling**

City/State Collected: **Walden, CO**

Phone: **720-974-0967**

Client Project #
11103525-01-

Lab Project #
CRADCO-11103525(W)

Fax:

Collected by (print):
JUSTIN COVEY

Site/Facility ID #

P.O. #

Collected by (signature):

Rush? (Lab MUST Be Notified)

Date Results Needed

Same Day200%
Next Day100%
Two Day50%
Three Day25%

Email? ☐ No ☒ Yes

FAX? ☐ No ☐ Yes

No. of
Cntrs

Immediately
Packed on Ice N ☐ Y ☒

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	CHLORIDE, SULFATE 125mlHDPE-NoPres	DROLVI 40mlAmb-HCl-BT	TDS 250mlHDPE-NoPres	V8260TPHKS 40mlAmb-HCl								
MW-1	GRAB	GW		11.18.15	1310	6	X	X	X	X								-01
MW-2		GW			1220	6	X	X	X	X								-02
MW-3		GW			1157	6	X	X	X	X								-03
MW-4		GW			1125	6	X	X	X	X								-04
MW-5		GW			1045	6	X	X	X	X								-05
MW-6		GW			1100	6	X	X	X	X								-06
DUP-MW-1		GW			1310	6	X	X	X	X								-07
		GW				6	X	X	X	X								
TRIP BLANK		GW		11.18.15	0800	2				X								-08

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

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Samples returned via: ☐ UPS

☐ FedEx ☐ Courier ☐

Condition: (lab use only)

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Temp: _____ °C Bottles Received:

32 41

COC Seal Intact: ☐ Y ☐ N ☒ NA

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Date: 11/20/15 Time: 900

pH Checked:

NCF:

Analysis / Container / Preservative

Chain of Custody Page 1 of 1



YOUR LAB OF CHOICE

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



L # **L802479**
G163

Acctnum: **CRADCO**

Template: **T107409**

Pregoin: **P531186**

TSR: 134 - Mark W. Beasley

PB:

Shipped Via:

Rem./Contaminant Sample # (lab only)

6436713156410

Hold #