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Monitoring Well Installation Report Terrace Pit

September 7, 2017

Prepared By:

Talon/LPE
1811 East Mulberry Street
Fort Collins, CO 80524

Prepared For:

Whiting Petroleum Corporation

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1 Introduction

Talon/LPE (Talon) was contracted by Whiting Petroleum Corporation (Whiting) to conduct site investigation assessment activities associated with a former pit identified west of the Terrace Gas Plant (Site) in Weld County, Colorado. The site is located at the northwest quarter of the northeast quarter of Section 18, Township 10 North, Range 58 West, 6th Principal Meridian. The Terrace Compressor tin horn pit (COGCC facility #100035 - Remediation #7392) is located approximately one-eighth (1/8) of a mile to the west of the Terrace Gas Plant. The site is located at 40°50'44.22"N and 103°54'48.34"W. The Site Plan is shown on Figure 1 and the general site location is shown on Figure 3.

The following document is an assessment of site investigation activities including the installation of monitoring wells, and groundwater monitoring.

2 Objective

The primary objective of the Terrace investigation is to determine the nature and extent of soil and/or groundwater impacts resulting from the former Compressor pit.

3 Regulatory Framework

The COGCC has regulatory jurisdiction over oil and natural gas industry operations in the State of Colorado. Section 900 of the COGCC Rules is for Exploration and Production Waste Management. More specifically, Section 910 details the Concentrations and Sampling for Soil and Groundwater rules. The regulatory limits for specific analytes in soil and groundwater are detailed in Table 910-1 and are summarized below.

Compound	COGCC Table 910-1 Soil Concentrations	COGCC Table 910-1 Groundwater Concentrations
Benzene	0.17 mg/kg	0.005 mg/L
Toluene	85 mg/kg	1.0 mg/L
Ethylbenzene	100 mg/kg	0.7 mg/L
Xylenes (total)	175 mg/kg	10 mg/L
Naphthalene	23 mg/kg	Not Applicable
TPH (total volatile and extractable petroleum hydrocarbons)	500 mg/kg	Not Applicable

4 Site Characteristics

4.1 Geography

The site is located in the Pawnee Grasslands in Weld County, which is the northeastern part of Colorado. The Grasslands are part of the Colorado Eastern Plains and are relatively flat with the exception of the Pawnee Creek which drains into the South Platte River.

4.2 Geologic Summary

Surficial geology surrounding the area consists of Tertiary age fluvial deposits of the lower Ogallala Formation. More specifically, these deposits are Miocene in age and are composed of gray to brown and semi-consolidated, ashy sands and silt beds with volcanic ash beds. Deposited material hardened into sandstone and siltstone which are grouped into three formations: White River, Arikaree, and Ogallala.

4.3 Groundwater

According to the Colorado Division of Water Resources Website, there are no water wells within 1,000-foot radius of the Site.

Depth to groundwater levels as measured on June 29, 2017, in the three (3) groundwater monitoring wells range

from 46.31 to 55.77 feet below top of casing (Table 4), which are above-ground by approximately three (3) feet (ft). No wells had measurable amounts of phase-separated hydrocarbons (PSH) during the gauging and sampling activities.

5 Field Investigation Activities

5.1 Monitoring Well Installation

On June 26 and 28, 2017, Talon personnel oversaw Drilling Engineers advance three (3) monitoring wells (MW-1 through MW-3). MW-1 was drilled to approximately 74 feet below ground surface (bgs). MW-2 and MW-3 were drilled to 65 and 60 ft bgs, respectively. The depths of the monitoring wells were determined in the field based on observed lithology, hydrocarbon odors, and PID values; the goal was to drill until no further odors or elevated PIDs were observed and a confining lithologic layer was observed. Boring logs detailing observed lithology, and PID values are included in Attachment 3.

Multiple soil samples were collected from each of the borings during drilling efforts from depths ranging from 9-74 ft bgs. Sample locations were determined based on elevated PID values. Additionally, soil samples were collected from the bottom of each boring and above the assumed groundwater interface to provide additional vertical delineation of any impacts. The sample locations and depths are listed in Table 2. The collected soil samples were submitted to Summit Scientific (Summit) in Golden, Colorado for analysis of benzene, toluene, ethylbenzene, and xylene (BTEX), gasoline range organics (GRO), and naphthalene via method SW8260B and diesel range organics (DRO) via method SW8015. The remaining soils were stockpiled on-site on a plastic liner pending laboratory analytical results.

All three (3) monitoring wells were constructed using 4-inch diameter Schedule 40 PVC casing and 10-slot screen. Each well was completed with 10/20 silica sand pack to two (2) ft above the top of the screen interval, sealed with bentonite chips to near-surface, and included an above-ground well mount in a concrete pad. Well completion details are included in Attachment 3.

All monitoring wells were gauged on June 29, 2017. The wells were purged until three (3) casing volumes were removed or the well became dry. Following the well purging, the groundwater was allowed to recover within the wells and groundwater samples were collected from each well. The collected samples were submitted to Summit for analysis of BTEX.

Depth to water values are summarized in Table 4. Purge water generated during development and sampling was placed in 55-gallon drums pending off-site disposal.

5.1.1 Discussion of Results

Table 1 in Attachment 2 summarizes the well completion and survey information, and Table 2 summarizes the soil sample laboratory analytical results. Table 3 summarizes the groundwater laboratory analytical results, and Table 4 includes well gauging data. A copy of the laboratory reports and chain of custody documentation is included in Attachment 4.

Analytical results for TPH from soil samples collected from MW-1 at 14-19 ft bgs (2765 mg/kg) and 19-24 ft bgs (2254 mg/kg) were above COGCC Table 910-1 concentration levels. All remaining soil analytical results were below COGCC Table 910-1 concentration levels or laboratory detection limits (Figure 2).

Analytical results for benzene in groundwater (0.03 to 0.99 mg/L) were above COGCC Table 910-1 concentration levels in all three monitoring wells (Table 3 and Figure 3). The analytical result for toluene in monitoring well MW-1 (5.1 mg/L) was above COGCC Table 910-1 concentration level. All remaining groundwater analytical results were below COGCC Table 910-1 concentration levels. Talon will continue to monitor the wells during quarterly monitoring events.

6 Conclusions & Recommendations

The objective of this report was to document the nature and extent of the impacts at the former Terrace Compressor station tin horn pit location. Talon has installed three (3) monitoring wells to assess soil or groundwater impacts at the site. Analytical results for benzene in soil samples MW-1@14-19 ft bgs and MW-1@19-24 ft bgs were above COGCC Table 910-1 concentration levels. Analytical results for benzene in groundwater were above COGCC Table 910-1 concentration levels in all three (3) monitoring wells. Analytical results for toluene in groundwater in MW-1 was above COGCC Table 910-1 concentration level. All remaining sample results were below COGCC Table 910-1 concentration levels or laboratory detection limits.

The vertical extent of impacts in soil are defined at the site. However, the extent of groundwater impacts and the horizontal extent of soil impacts remains unknown. Talon recommends installing more soil borings and groundwater monitoring wells to further define the extent of impacts at the site.

Talon will continue to monitor all the wells on site during quarterly monitoring events.

Attachment 1
Figures

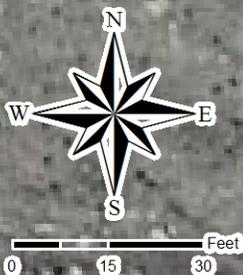


COUNTY RD 118

MW-2

MW-1

MW-3

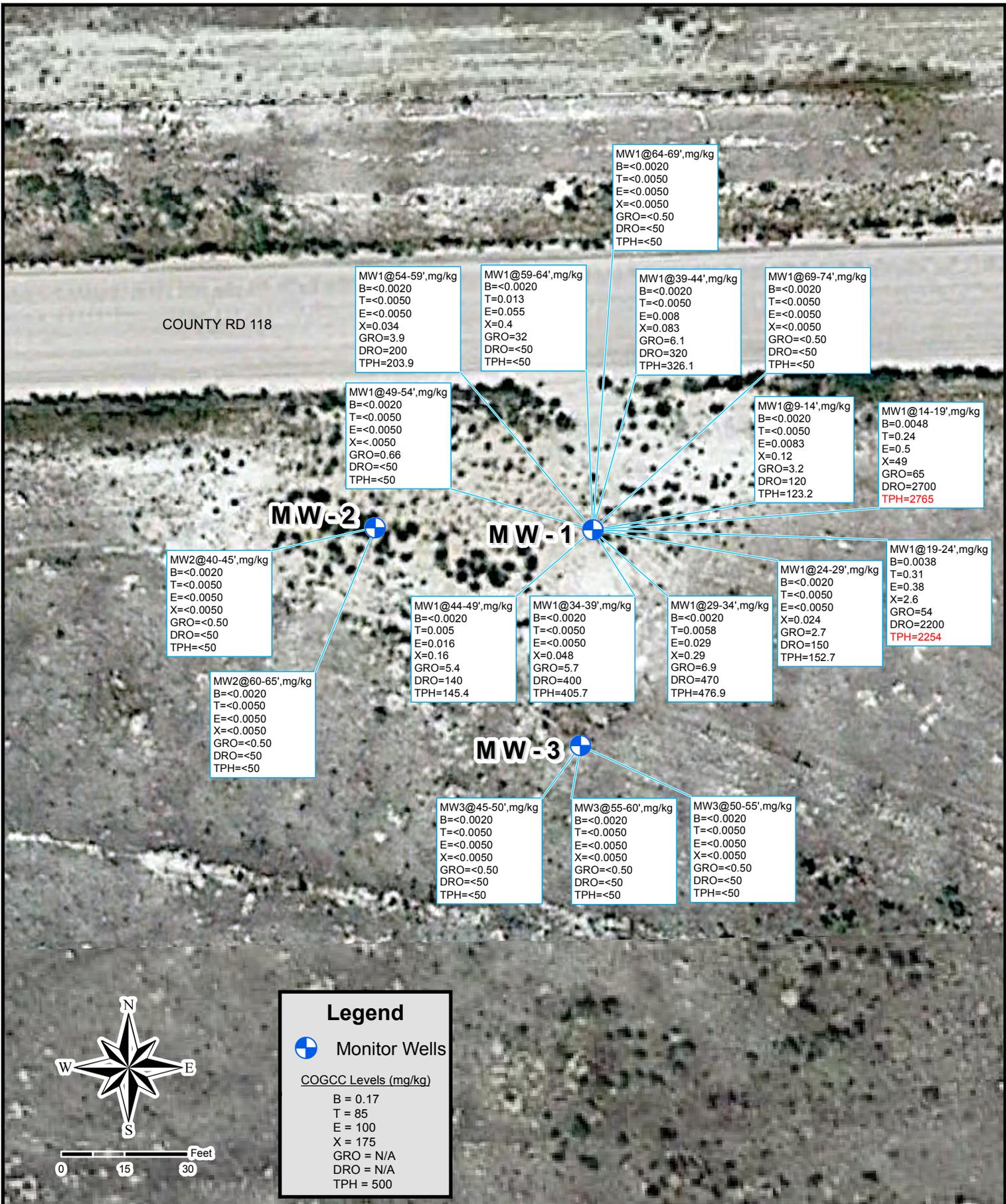


Legend
Monitor Wells



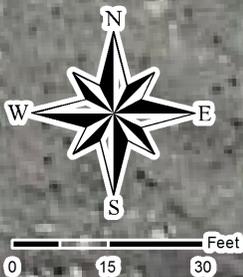
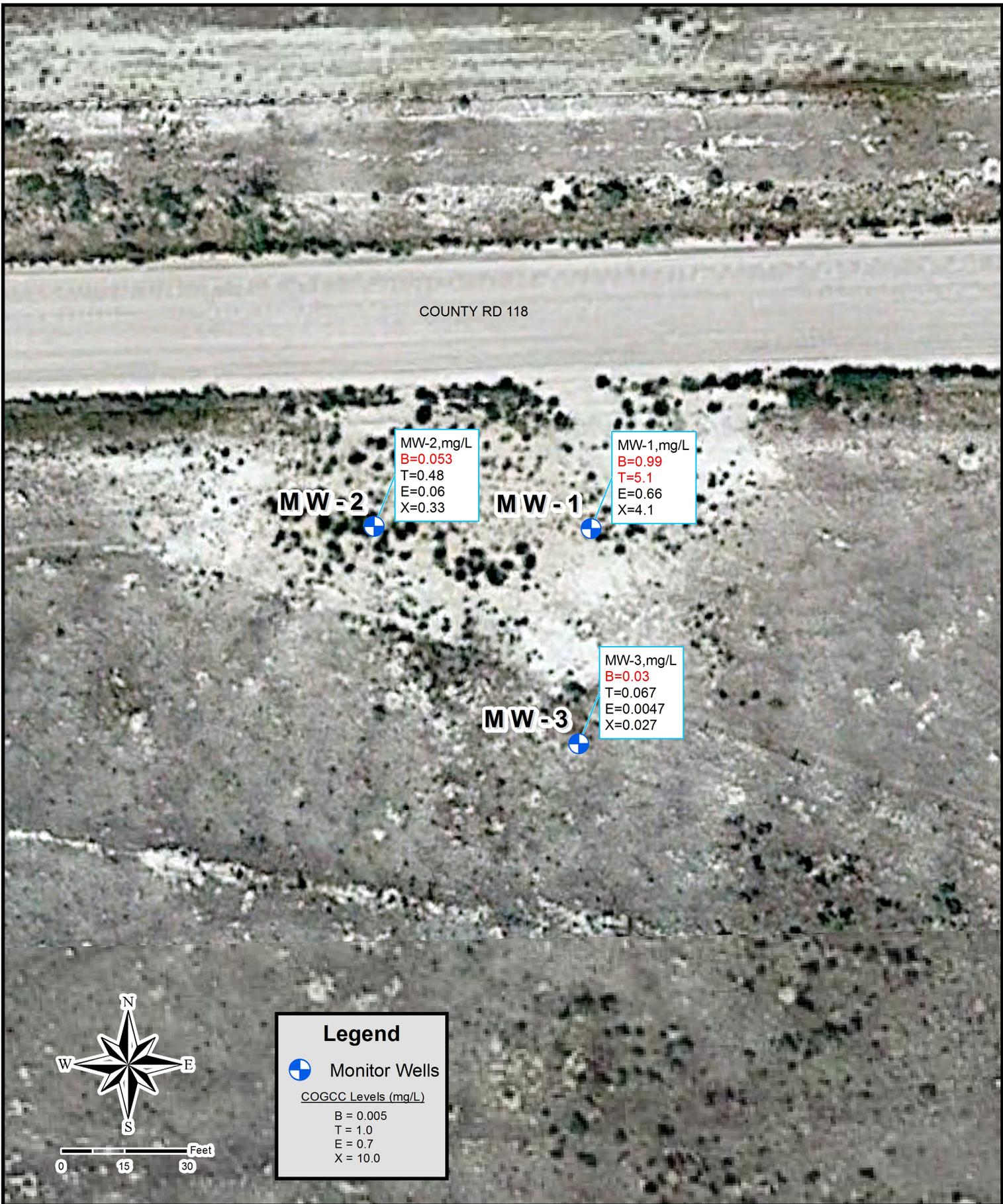
Drafted: 8/2/2017
1 in = 30 ft
Drafted By: IJM

Whiting Oil and Gas Corporation
Terrace Pit
Weld County, CO
Figure 1 - Site Map



Drafted: 8/2/2017
1 in = 30 ft
Drafted By: IJM

Whiting Oil and Gas Corporation
Terrace Pit
Weld County, CO
Figure 2 - Soil Concentration Map (06/26/2017)



Legend

Monitor Wells

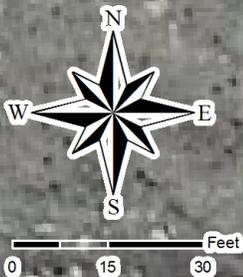
COGCC Levels (mg/L)

B = 0.005
 T = 1.0
 E = 0.7
 X = 10.0



Drafted: 8/2/2017
 1 in = 30 ft
 Drafted By: IJM

Whiting Oil and Gas Corporation
 Terrace Pit
 Weld County, CO
 Figure 3 - Groundwater Concentration Map (06/29/2017)



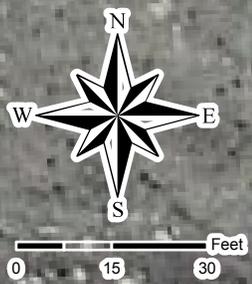
Legend	
	Monitor Well
	Known Benzene Contour Line
	Likely Benzene Contour Line



Drafted: 9/6/2017
 1 in = 30 ft
 Drafted By: IJM

Whiting Oil and Gas Corporation
 Terrace Pit
 Weld County, CO
 Figure 4 - Benzene Isoconcentration Map (06/29/2017)

COUNTY RD 118



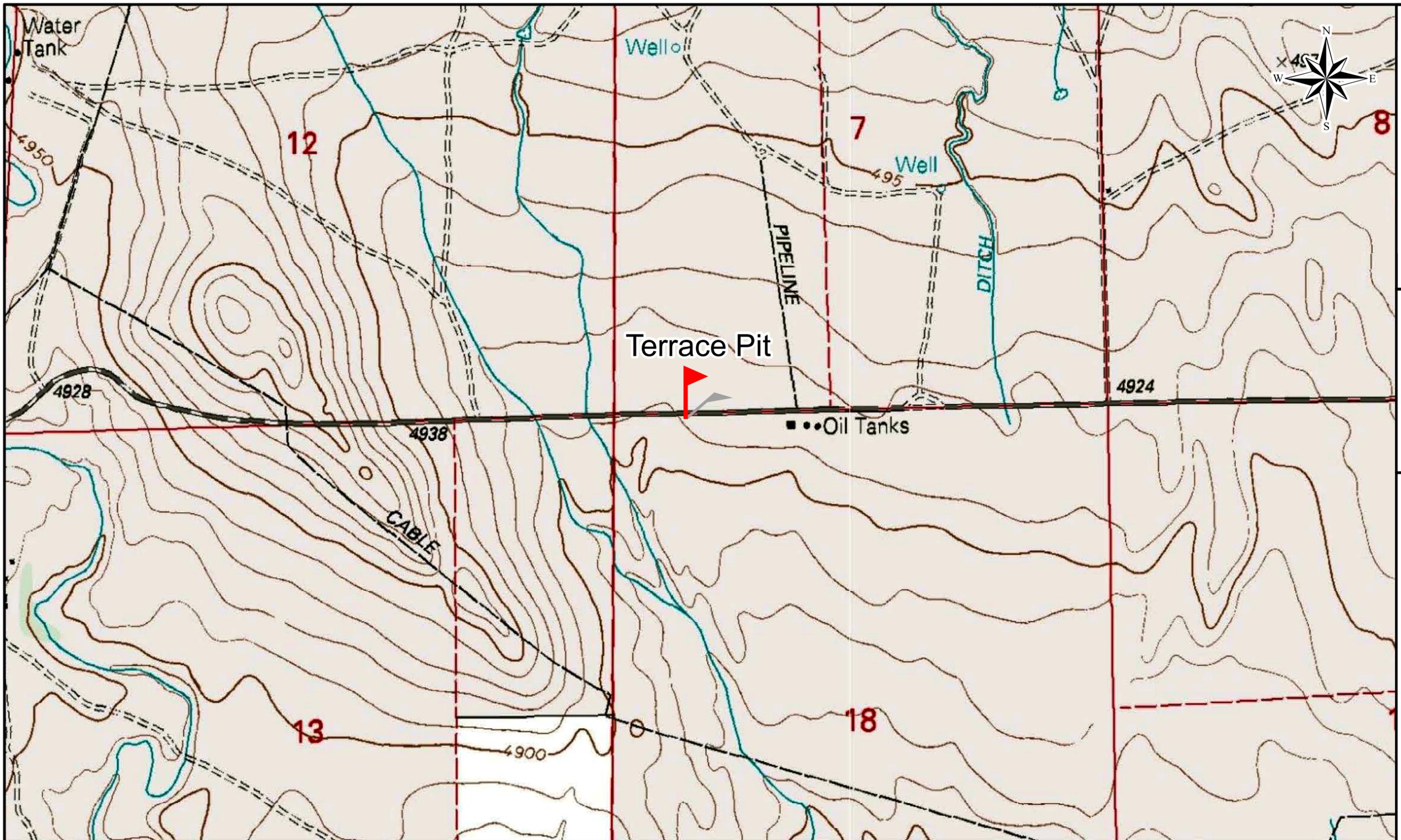
Legend

- Monitor Wells
- 4858-Groundwater Elevation in Feet Above Mean Sea Level



Drafted: 8/2/2017
1 in = 30 ft
Drafted By: IJM

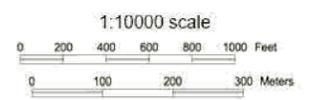
Whiting Oil and Gas Corporation
Terrace Pit
Weld County, CO
Figure 5 - Groundwater Gradient Map (06/29/2017)



Drafted: 8/1/2017
 Map Scale 1:10,000
 Drafted By: IJM

Whiting Oil and Gas Corporation
 Terrace Pit
 Weld County, CO
 Figure 6 - Topographic Map

Universal Transverse Mercator (UTM) Projection Zone 13
 North American Datum of 1983



**Attachment 2
Tables**



Table 1 - Well Information

**Whiting Oil and Gas Corporation
Terrace Pit
Weld County, Colorado**

Well ID	Latitude	Longitude	Ground Surface Elevation (ft amsl)	TOC Elevation (ft amsl)	Screen Interval (ft bgs)	Total Depth (ft)
MW-1	40.845630	-103.913390	4909.7	4912.9	44-74	77.25
MW-2	40.845634	-103.913576	4909.9	4912.9	45-65	67.07
MW-3	40.845490	-103.913404	4909.6	4912.5	40-60	59.97

TOC - Top of Casing
ft bgs - Feet Below Ground Surface
ft amsl - Feet Above Mean Sea Level



Table 2 - Soil Analytical Data

**Whiting Oil and Gas Corporation
Terrace Pit
Weld County, Colorado**

Sample ID	Lab ID	Date Sampled	Concentration (mg/kg)							
			Benzene	Toluene	Ethyl-Benzene	Xylenes	Benzo(a)pyrene	GRO	DRO	TPH
COGCC Table 910-1 Concentration Levels			0.17	85	100	175	0.022	NA	NA	500
Soil Samples Collected by Olsson Associates										
SS1 - 13'	R212037-01	12/6/2012	<0.005	<0.005	<<0.005	0.016	NS	13	1500	1513
SS2 - 13'	R212037-02	12/6/2012	0.012	0.046	1.5	11	NS	700	730	1430
SS3 - 12'	R212037-03	12/6/2012	<0.0044	<0.0044	<0.0044	<0.0044	NS	1.2	<50	<50
SS4 - 11'	R212037-04	12/6/2012	<0.0043	<0.0043	<0.0043	<0.0043	NS	<0.43	<50	<50
SS5 - 17'	R212037-05	12/6/2012	0.73	17	10	69	0.0116	1900	2100	4000
SS6 - 24'	R212037-06	12/7/2012	<0.45	12	7.1	48	0.111	1500	1800	3300
Soil Samples Collected by Talon/LPE										
SB-1 - 20-25'	1504198-1	04/07/15	<1.2	7	5.9	43	0.0027	640	490	1130
SB-1 - 25-30'	1504198-2	04/07/15	<0.65	2.7	3.6	33	<0.0044	500	1000	1500
SB-1 - 30-35'	1504198-3	04/07/15	<3.3	36	21	140	0.0033	2500	2200	4700
SB-1 - 35-40'	1504198-4	04/07/15	<0.006	<0.006	<0.006	<0.005	<0.0045	<0.6	<6.7	<6.7
SB-2 - 20-25'	1504198-5	04/08/15	<0.0062	<0.0062	<0.0062	<0.005	<0.0044	<0.57	<6.5	<6.5
SB-2 - 30-35'	1504198-6	04/08/15	<0.0063	<0.0063	<0.0063	<0.005	<0.0044	<0.58	<6.6	<6.6
SB-3 - 20-25'	1504198-7	04/08/15	<0.0054	<0.0054	0.0016	0.023	<0.0039	40	89	129
SB-3 - 35-40'	1504198-8	04/09/15	<0.66	1	1.3	9.6	<0.0046	200	400	600
SB-3 - 45-50'	1504198-9	04/09/15	<0.35	1	0.51	3.4	<0.0046	110	170	280
SB-3 - 55-60'	1504198-10	04/09/15	0.011	0.062	0.017	0.14	<0.0046	0.88	36	36.88
SB-3 - 60-65'	1504198-11	04/09/15	<0.0065	<0.0065	<0.0065	<0.005	<0.0045	<0.47	<6.7	<6.7
SB-3 - 65-70'	1504198-12	04/09/15	<0.0065	<0.0065	<0.0065	<0.005	<0.0047	<0.58	<6.8	<6.8
SB-4 - 20-25'	1504426-1	04/16/15	<0.0059	<0.0059	<0.0059	<0.005	<0.0042	<0.59	<6.3	<6.3
SB-4 - 35-40'	1504426-2	04/16/15	<0.0065	<0.0065	<0.0065	<0.005	<0.0045	<0.65	<6.7	<6.7
SB-4 - 45-50'	1504426-3	04/16/15	0.029	0.036	<0.0075	0.025	<0.0053	<0.77	<7.7	<7.7
SB-4 - 50-55'	1504426-4	04/16/15	<0.0069	<0.0069	<0.0069	<0.005	<0.005	<0.72	<7.1	<7.1
SB-4 - 55-60'	1504426-5	04/16/15	<0.0064	<0.0064	<0.0064	<0.005	<0.0047	<0.56	66	66
SB-4 - 65-70'	1504426-6	04/16/15	<0.0072	<0.0072	<0.0072	<0.005	<0.0051	<0.69	<7.5	<7.5
SB-5 - 30-35'	1506112-1	06/03/15	<0.0064	<0.0064	<0.0064	<0.005	<0.0043	<0.48	<6.4	<6.4
SB-5 - 35-40'	1506112-2	06/03/15	<0.0064	<0.0064	<0.0064	<0.005	<0.0045	<0.47	<6.7	<6.7
SB-6 - 30-35'	1506112-3	06/03/15	<0.0064	<0.0064	<0.0064	<0.005	<0.0043	<0.6	<6.2	<6.2
SB-6 - 35-40'	1506112-4	06/03/15	<0.0061	<0.0061	<0.0061	<0.005	<0.0045	<0.65	<6.6	<6.6
MW-1@9-14'	1706319-01	06/26/17	<0.0020	<0.0050	0.0083	0.12	NA	3.2	120	123.2
MW-1@14-19'	1706319-02	06/26/17	0.0048	0.24	0.5	49	NA	65	2700	2765
MW-1@19-24'	1706319-03	06/26/17	0.0038	0.31	0.38	2.6	NA	54	2200	2254



Table 2 - Soil Analytical Data

**Whiting Oil and Gas Corporation
Terrace Pit
Weld County, Colorado**

Sample ID	Lab ID	Date Sampled	Concentration (mg/kg)							
			Benzene	Toluene	Ethyl-Benzene	Xylenes	Benzo(a)pyrene	GRO	DRO	TPH
COGCC Table 910-1 Concentration Levels			0.17	85	100	175	0.022	NA	NA	500
MW-1@24-29'	1706319-04	06/26/17	<0.0020	<0.0050	<0.0050	0.024	NA	2.7	150	152.7
MW-1@29-34'	1706319-05	06/26/17	<0.0020	0.0058	0.029	0.29	NA	6.9	470	476.9
MW-1@34-39'	1706319-06	06/26/17	<0.0020	<0.0050	<0.0050	0.048	NA	5.7	400	405.7
MW-1@39-44'	1706319-07	06/26/17	<0.0020	<0.0050	0.008	0.083	NA	6.1	320	326.1
MW-1@44-49'	1706319-08	06/26/17	<0.0020	0.005	0.016	0.16	NA	5.4	140	145.4
MW-1@49-54'	1706319-09	06/26/17	<0.0020	<0.0050	<0.0050	<.0050	NA	0.66	<50	<50
MW-1@54-59'	1706319-10	06/26/17	<0.0020	<0.0050	<0.0050	0.034	NA	3.9	200	203.9
MW-1@59-64'	1706319-11	06/26/17	<0.0020	0.013	0.055	0.4	NA	32	<50	<50
MW-1@64-69'	1706319-12	06/26/17	<0.0020	<0.0050	<0.0050	<0.0050	NA	<0.50	<50	<50
MW-1@69-74'	1706319-13	06/26/17	<0.0020	<0.0050	<0.0050	<0.0050	NA	<0.50	<50	<50
MW-2@40-45'	1706319-14	06/28/17	<0.0020	<0.0050	<0.0050	<0.0050	NA	<0.50	<50	<50
MW-2@60-65'	1706319-15	06/28/17	<0.0020	<0.0050	<0.0050	<0.0050	NA	<0.50	<50	<50
MW-3@45-50'	1706319-16	06/28/17	<0.0020	<0.0050	<0.0050	<0.0050	NA	<0.50	<50	<50
MW-3@50-55'	1706319-17	06/28/17	<0.0020	<0.0050	<0.0050	<0.0050	NA	<0.50	<50	<50
MW-3@55-60'	1706319-18	06/28/17	<0.0020	<0.0050	<0.0050	<0.0050	NA	<0.50	<50	<50

mg/kg - milligrams per kilogram

< - Analytical result is less than the reporting limit

COGCC - Colorado Oil and Gas Conservation Commission

GRO - Gasoline Range Organics

DRO - Diesel Range Organics

TPH - Total Petroleum Hydrocarbons (Combined GRO/DRO)



Table 3 - Groundwater Analytical Data

**Whiting Oil and Gas Corporation
Terrace Pit
Weld County, Colorado**

Sample ID	Lab ID	Date	Concentration (mg/L)			
			Benzene	Toluene	Ethyl-Benzene	Xylenes
COGCC Table 910-1 Concentration Levels			0.005	1	0.7	10
MW-1	1706314-01	06/29/17	0.99	5.1	0.66	4.1
MW-2	1706314-02	06/29/17	0.053	0.48	0.06	0.33
MW-3	1706314-03	06/29/17	0.03	0.067	0.0047	0.027

mg/L -milligrams per liter

< - Analytical result is less than the reporting limit

COGCC - Colorado Oil and Gas Conservation Commission

NS - Not Sampled

PSH - Phase-Separated Hydrocarbons



Table 4 - Gauging Data

**Whiting Oil and Gas Corporation
Terrace Pit
Weld County, Colorado**

Well ID	Top of Casing Elevation (ft amsl)	Total Depth of Well (ft)	Date Gauged	Depth to Product (ft btoc)	DTW (ft btoc)	Product Thickness (ft)	Potentiometric Surface Elevation (ft)
MW-1	4912.9	77.03	6/29/2017	NA	54.21	0.00	4858.69
MW-2	4912.9	67.06	6/29/2017	NA	46.31	0.00	4866.59
MW-3	4912.5	60.02	6/29/2017	NA	55.77	0.00	4856.73

NA - Not Applicable

DTW - Depth to Water

ft btoc - Feet Below Top of Casing

ft amsl - Feet Above Mean Sea Level

Attachment 3
Boring Logs

SOIL BORING / MONITORING WELL LOG

PROJECT: Terrace Pit	DRILLING COMPANY: DE
PROJECT NUMBER: 701530.022.04	DRILLER: Ken Rogowski/Jason Leverton
CLIENT: Whiting Oil & Gas	DRILLING METHOD: HSA
BORING / WELL NUMBER: MW-1	BORE HOLE DIAMETER: 8' 7/3"
TOTAL DEPTH: 74	SCREEN: Diam. 4" Length 30' Slot Size 0.010
SURFACE ELEVATION: 4909.7	CASING: Diam. 4" Length 47' Type SCH 40
GEOLOGIST: Ken Rogowski	DATE DRILLED: 06/26/2017
LATITUDE: 40.845630	LONGITUDE: -103.913390

DEPTH (FT.)	Soil Symbol	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT.)
0								0
5			0.0				10 YR 5/6 Yellowish Brown, Fine to Med Grain Sand, Non-Plastic, Some Gravel, Dry, Loose, No Odor	5
10			1.5		9'-14'	9'	10 YR 4/4 Dark Brown, Yellow @ 9', Fine Grained Sand, Some Clay Nodules, Dry, Loose	10
15			352.3		14'-19'	15'	10 YR 5/4 Yellowish Brown, Fine Grained Sand, Silt, Non-Plastic, Black @ 15', Dry, Loose, Moderate Odor	15
20			2658		19'		10 YR 5/4 Yellowish Brown, Fine Grained Sand, Silt, Non-Plastic, Black @ 15', Dry, Loose, Moderate Odor	20
25			2440		19'-24'	21'	10 YR 6/4 Light Yellowish Brown, Silt, Some Clay, Siltstone, Dense, Dry, Very Strong Odor @ 20'	25
30			6772		24'-29'		10 YR 5/4 Yellowish Brown, Silt, Predominantly Siltstone @ 21', Dry, Dense, Moderate Odor	30
			3711				10 YR 5/4 Yellowish Brown, Silt, Mainly Siltstone, Some Black Mineral Flakes, Dry, Non-Plastic, Strong Odor	
			3133				10 YR 5/4 Yellowish Brown, Silt, Mainly Siltstone, Some Black Mineral Flakes, Dry, Non-Plastic, Strong Odor	

REMARKS:

THIS BORING LOG AND WELL DIAGRAM SHOULD NOT BE USED SEPARATE FROM THE ORIGINAL REPORT.



SOIL BORING / MONITORING WELL LOG

PROJECT: Terrace Pit	DRILLING COMPANY: DE
PROJECT NUMBER: 701530.022.04	DRILLER: Ken Rogowski/Jason Leverton
CLIENT: Whiting Oil & Gas	DRILLING METHOD: HSA
BORING / WELL NUMBER: MW-1	BORE HOLE DIAMETER: 8' 7/3"
TOTAL DEPTH: 74	SCREEN: Diam. 4" Length 30' Slot Size 0.010
SURFACE ELEVATION: 4909.7	CASING: Diam. 4" Length 47' Type SCH 40
GEOLOGIST: Ken Rogowski	DATE DRILLED: 06/26/2017
LATITUDE: 40.845630	LONGITUDE: -103.913390

DEPTH (FT.)	Soil Symbol	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT.)
35			9357	29'-34'			35	35
40			9658	34'-39'			40	40
45			2455	39'-44'			45	45
50			2375	44'-49'			50	50
55			2375	49'-54'			55	55
60			1899	54'-59'			60	60
			602.4			59'		

REMARKS:

THIS BORING LOG AND WELL DIAGRAM SHOULD NOT BE USED SEPARATE FROM THE ORIGINAL REPORT.



SOIL BORING / MONITORING WELL LOG

PROJECT: Terrace Pit	DRILLING COMPANY: DE
PROJECT NUMBER: 701530.022.04	DRILLER: Ken Rogowski/Jason Leverton
CLIENT: Whiting Oil & Gas	DRILLING METHOD: HSA
BORING / WELL NUMBER: MW-1	BORE HOLE DIAMETER: 8' 7/3"
TOTAL DEPTH: 74	SCREEN: Diam. 4" Length 30' Slot Size 0.010
SURFACE ELEVATION: 4909.7	CASING: Diam. 4" Length 47' Type SCH 40
GEOLOGIST: Ken Rogowski	DATE DRILLED: 06/26/2017
LATITUDE: 40.845630	LONGITUDE: -103.913390

DEPTH (FT.)	Soil Symbol	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT.)
65			846.0	59'-64'	64'-69'	69'	10 YR 5/2 Grayish Brown, Siltstone and Silty Clay, Slightly Plastic @ 59'-60', Wet, Dense, Slight Odor	65
70			24.9	69'-74'	74'	74'	10 YR 6/1 Gray, Saturated, Silt & Siltstone, Iron Deposits, Some Black Deposits, Slight Odor	70
75			9.2				Bottom of Hole	75
80								80
85								85
90								90

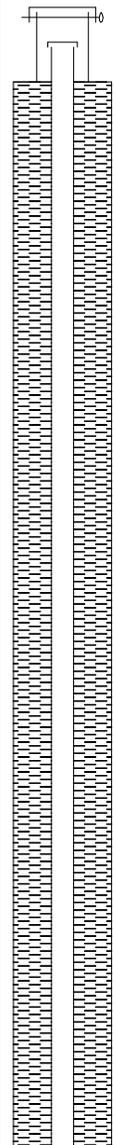
REMARKS:

THIS BORING LOG AND WELL DIAGRAM SHOULD NOT BE USED SEPARATE FROM THE ORIGINAL REPORT.



SOIL BORING / MONITORING WELL LOG

PROJECT: Terrace Pit	DRILLING COMPANY: Shawn/DE
PROJECT NUMBER: 701530.022.04	DRILLER: Ken Rogowski/Jason Leverton
CLIENT: Whiting Oil & Gas	DRILLING METHOD: HSA
BORING / WELL NUMBER: MW-2	BORE HOLE DIAMETER: 7' 7/8"
TOTAL DEPTH: 65	SCREEN: Diam. 4" Length 20' Slot Size 0.010"
SURFACE ELEVATION: 4909.9	CASING: Diam. 4" Length 48' Type SCH 40
GEOLOGIST: Ken Rogowski	DATE DRILLED: 06/28/2017
LATITUDE: 40.845634	LONGITUDE: -103.913576

DEPTH (FT.)	Soil Symbol	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT.)
0								0
5			0.0			2'	10 YR 5/4 Yellowish Brown, Loose/Gravel, Sandy Silt, No Odor	5
			0.0				10 YR 7/4 Very Pale Brown, Loose, Some Gravel, Fine Grained Sand, Dry, No Odor	
10						10'		10
			0.2				10 YR 7/4 Very Pale Brown, Silt/Siltstone, Dense Sub-Angular Blocky, Dry, Few Black Deposits @ 14', No Odor	
15						10 YR 7/4 Very Pale Brown, Silt/Siltstone, Sub-Angular Blocky and Platy, Dry, No Odor	15	
20						10 YR 6/4 Light Yellowish Brown, Silt/Siltstone-Platy, Dry, Purple Deposits/Staining, No Odor	20	
25						10 YR 6/4 Light Yellowish Brown, Siltstone, Sub-Angular Blocky, Dry, Dense, No Odor	25	
30						10 YR 6/5 Pale Brown, Siltstone, Sub-Angular Blocky, Dry, Dense,	30	

REMARKS:

THIS BORING LOG AND WELL DIAGRAM SHOULD NOT BE USED SEPARATE FROM THE ORIGINAL REPORT.



SOIL BORING / MONITORING WELL LOG

PROJECT: Terrace Pit
 PROJECT NUMBER: 701530.022.04
 CLIENT: Whiting Oil & Gas
 BORING / WELL NUMBER: MW-2
 TOTAL DEPTH: 65
 SURFACE ELEVATION: 4909.9
 GEOLOGIST: Ken Rogowski
 LATITUDE: 40.845634

DRILLING COMPANY: Shawn/DE
 DRILLER: Ken Rogowski/Jason Leverton
 DRILLING METHOD: HSA
 BORE HOLE DIAMETER: 7' 7/8"
 SCREEN: Diam. 4" Length 20' Slot Size 0.010"
 CASING: Diam. 4" Length 48' Type SCH 40
 DATE DRILLED: 06/28/2017
 LONGITUDE: -103.913576

DEPTH (FT.)	Soil Symbol	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT.)
35			4.0				Black Deposits, No Odor	35
40			1.4				10 YR 5/6 Yellowish Brown, Siltstone, Sub-Angular Blocky, Dry, Dense (Very), Black deposits, No Odor	40
45			1.6		40'-45'		10 YR 5/4 Yellowish Brown, Siltstone, Sub-Angular Blocky, Dry, Dense, Black deposits, No Odor	45
50			7.6				10 YR 5/6 Yellowish Brown, Siltstone, Sub-Angular Blocky, Dry, Dense, Black and Iron deposits, No Odor	50
55			1.2				10 YR 7/2 Light Gray, Siltstone, Sub-Angular Blocky, Dense, Moist, Brown Staining, No Odor	55
60			0.5				10 YR 6/2 Light Brown Gray, Siltstone, Dense, Saturated, Brown Staining, No Odor	60

REMARKS:

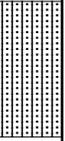
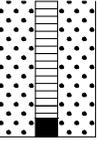
THIS BORING LOG AND WELL DIAGRAM SHOULD NOT BE USED SEPARATE FROM THE ORIGINAL REPORT.



SOIL BORING / MONITORING WELL LOG

PROJECT: Terrace Pit
 PROJECT NUMBER: 701530.022.04
 CLIENT: Whiting Oil & Gas
 BORING / WELL NUMBER: MW-2
 TOTAL DEPTH: 65
 SURFACE ELEVATION: 4909.9
 GEOLOGIST: Ken Rogowski
 LATITUDE: 40.845634

DRILLING COMPANY: Shawn/DE
 DRILLER: Ken Rogowski/Jason Leverton
 DRILLING METHOD: HSA
 BORE HOLE DIAMETER: 7' 7/8"
 SCREEN: Diam. 4" Length 20' Slot Size 0.010"
 CASING: Diam. 4" Length 48' Type SCH 40
 DATE DRILLED: 06/28/2017
 LONGITUDE: -103.913576

DEPTH (FT.)	Soil Symbol	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT.)
65			0.6 1.1		60'- 65'	65'	Bottom of Hole	65
70								70
75								75
80								80
85								85
90								90

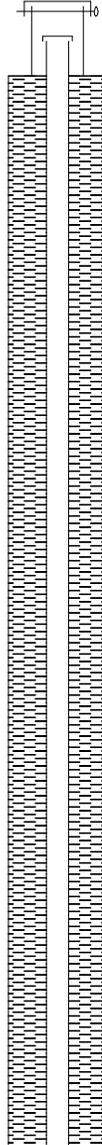
REMARKS:

THIS BORING LOG AND WELL DIAGRAM SHOULD NOT BE USED SEPARATE FROM THE ORIGINAL REPORT.



SOIL BORING / MONITORING WELL LOG

PROJECT: Terrace Pit	DRILLING COMPANY: Shawn/DE
PROJECT NUMBER: 701530.022.04	DRILLER: Ken Rogowski/Jason Leverton
CLIENT: Whiting Oil & Gas	DRILLING METHOD: HSA
BORING / WELL NUMBER: MW-3	BORE HOLE DIAMETER: 7' 7/8"
TOTAL DEPTH: 60	SCREEN: Diam. 4" Length 20' Slot Size 0.010"
SURFACE ELEVATION: 4909.6	CASING: Diam. 4" Length 43' Type SCH 40
GEOLOGIST: Ken Rogowski	DATE DRILLED: 06/28/2017
LATITUDE: 40.845490	LONGITUDE: -103.913404

DEPTH (FT.)	Soil Symbol	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT.)
0								0
5			0.0		2'-7'	2'	10 YR 6/4 Light Yellowish Brown, Silt, Loose, Dry, Gravel Fragments, No Odor	5
10			0.0		5'-10'	10'	10 YR 6/4 Light Yellowish Brown, Silt, Loose, Dry, Gravel Fragments, No Odor	10
15			0.0		10'-15'	15'	10 YR 7/3 Very Pale Brown, Very Fine Silt, Dry, Loose, 14-15' Dense, No Odor	15
20			0.0		15'-20'		10 YR 7/4 Very Pale Brown, Dense, Dry Silt/Silt Stone, Sub-Angular Blocky, Brown/Black Deposits, No Odor	20
25			0.5		20'-25'		10 YR 7/4 Very Pale Brown, Dense, Dry Silt/Silt Stone, Sub-Angular Blocky, Purple Deposits, No Odor	25
30			0.6		25'-30'		10 YR 6/4 Light Yellowish Brown, Silt Stone, Some Silt, Sub-Angular Blocky, More Purple Deposits and Some Black Deposits, Dense, No Odor	30
							10 YR 6/4 Light Yellowish Brown, Silt Stone, Some Silt, Sub-Angular,	30

REMARKS:

THIS BORING LOG AND WELL DIAGRAM SHOULD NOT BE USED SEPARATE FROM THE ORIGINAL REPORT.



SOIL BORING / MONITORING WELL LOG

PROJECT: Terrace Pit
 PROJECT NUMBER: 701530.022.04
 CLIENT: Whiting Oil & Gas
 BORING / WELL NUMBER: MW-3
 TOTAL DEPTH: 60
 SURFACE ELEVATION: 4909.6
 GEOLOGIST: Ken Rogowski
 LATITUDE: 40.845490

DRILLING COMPANY: Shawn/DE
 DRILLER: Ken Rogowski/Jason Leverton
 DRILLING METHOD: HSA
 BORE HOLE DIAMETER: 7' 7/8"
 SCREEN: Diam. 4" Length 20' Slot Size 0.010"
 CASING: Diam. 4" Length 43' Type SCH 40
 DATE DRILLED: 06/28/2017
 LONGITUDE: -103.913404

DEPTH (FT.)	Soil Symbol	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT.)
35			0.6	█	30'-35'		Black Deposits, hite Deposits (Non- Calcareous), Dense, No Odor	35
40			1.9					40
45			2.5					45
50			19.0	█	45'-50'		10 YR 5/4 Yellowish Brown, Silt Stone, Some Silt, Sub-Angular, Black Deposits, White Deposits (Non- Calcareous), Dense No Odor,	50
55			3.7		50'-55'			55
60			1.1		55'-60'		10 YR 5/6 Yellowish Brown, Silt Stone, Some Silt, Sub-Angular, Blocky, Black Deposits, White Deposits (Non- Calcareous), Dense, With Less Purple Deposits, No Odor	60
			60'				Same as above, except, 10 YR 6/2 Light Brown Gray.	
			3.7				Bottom of Hole	

REMARKS:

THIS BORING LOG AND WELL DIAGRAM SHOULD NOT BE USED SEPARATE FROM THE ORIGINAL REPORT.



KEY TO SYMBOLS

Symbol Description

Symbol Description

Strata symbols

 Poorly graded sand

 Clayey sand/
Low plasticity clay

 Silty sand

 Low plasticity
clay

 Silt

 Clayey gravel

Soil Samplers

 Auger

Monitor Well Details

 capped riser with locking
cover

 bentonite pellets

 silica sand, blank PVC

Notes:

1. Exploratory borings were drilled on 06/28/2017 using a 4-inch diameter continuous flight power auger.
2. No free water was encountered at the time of drilling or when re-checked the following day.
3. Boring locations were taped from existing features and elevations extrapolated from the final design schematic plan.
4. These logs are subject to the limitations, conclusions, and recommendations in this report.
5. Results of tests conducted on samples recovered are reported on the logs.

 slotted pipe w/ sand

 endcap on pipe
packed in sand

Attachment 4
Analytical Reports

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

July 10, 2017

Jennifer Galles
Talon/LPE
1811 E Mulberry
Ft Collins, CO 80524
RE: Terrace Pit

Enclosed are the results of analyses for samples received by Summit Scientific on 06/30/17 15:50. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ben Shrewsbury', with a long, sweeping horizontal line extending to the right.

Ben Shrewsbury
Laboratory Manager



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/10/17 15:11

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1@9-14'	1706319-01	Soil	06/26/17 09:00	06/30/17 15:50
MW-1@14-19'	1706319-02	Soil	06/26/17 09:05	06/30/17 15:50
MW-1@19-24'	1706319-03	Soil	06/26/17 09:15	06/30/17 15:50
MW-1@24-29'	1706319-04	Soil	06/26/17 09:30	06/30/17 15:50
MW-1@29-34'	1706319-05	Soil	06/26/17 09:38	06/30/17 15:50
MW-1@34-39'	1706319-06	Soil	06/26/17 09:47	06/30/17 15:50
MW-1@39-44'	1706319-07	Soil	06/26/17 09:54	06/30/17 15:50
MW-1@44-49'	1706319-08	Soil	06/26/17 10:18	06/30/17 15:50
MW-1@49-54'	1706319-09	Soil	06/26/17 10:30	06/30/17 15:50
MW-1@54-59'	1706319-10	Soil	06/26/17 10:46	06/30/17 15:50
MW-1@59-64'	1706319-11	Soil	06/26/17 11:10	06/30/17 15:50
MW-1@64-69'	1706319-12	Soil	06/26/17 11:22	06/30/17 15:50
MW-1@69-74'	1706319-13	Soil	06/26/17 11:57	06/30/17 15:50
MW-2@40-45'	1706319-14	Soil	06/28/17 09:13	06/30/17 15:50
MW-2@60-65'	1706319-15	Soil	06/28/17 09:57	06/30/17 15:50
MW-3@45-50'	1706319-16	Soil	06/28/17 13:04	06/30/17 15:50
MW-3@50-55'	1706319-17	Soil	06/28/17 13:12	06/30/17 15:50
MW-3@55-60'	1706319-18	Soil	06/28/17 13:22	06/30/17 15:50

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit

Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/10/17 15:11

Summit Scientific 1706319.1

741 Corporate Circle Suite I ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933 Fax

Page 1 of 2

Client: Talon/LPE - Bill Whiting Petroleum
Address: 1811 East Mulberry
City/State/Zip: Fort Collins, CO 80524
Phone: 970-818-5330 Fax:
Sampler Name: Ken Rogowski/Jason Leverton

Project Manager: Jennifer Galles
E-Mail: jgalles@talonlpe.com
Project Name: Terrace Pit
Project Number: 701530.022.04

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:			Special Instructions	
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	BTEX	GRO		DRO
MW-1@9-14'	6/26/2017	9:00	1		x			x				x	x	x	
MW-1@14-19'	6/26/2017	9:05	1		x			x				x	x	x	
MW-1@19-24'	6/26/2017	9:15	1		x			x				x	x	x	
MW-1@24-29'	6/26/2017	9:30	1		x			x				x	x	x	
MW-1@29-34'	6/26/2017	9:38	1		x			x				x	x	x	
MW-1@34-39'	6/26/2017	9:47	1		x			x				x	x	x	
MW-1@39-44'	6/26/2017	9:54	1		x			x				x	x	x	
MW-1@44-49'	6/26/2017	10:18	1		x			x				x	x	x	
MW-1@49-54'	6/26/2017	10:30	1		x			x				x	x	x	
MW-1@54-59'	6/26/2017	10:46	1		x			x				x	x	x	

Relinquished by: <i>[Signature]</i>	Date/Time: 6-30-17 15:50	Received by: <i>[Signature]</i>	Date/Time: 6-30-17 15:50	Turn Around Time (Check)
Relinquished by: <i>[Signature]</i>	Date/Time: 6-30-17 18:15	Received by:	Date/Time:	Same Day <input type="checkbox"/>
				24 Hours <input type="checkbox"/>
				48 Hours <input type="checkbox"/>
				72 Hours <input type="checkbox"/>
				Standard <input checked="" type="checkbox"/>
				Sample Integrity:
				Temperature Upon Receipt: 13.8
				Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

www.s2scientific.com

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit

Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/10/17 15:11

Summit Scientific 1706319.2

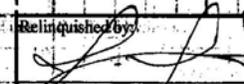
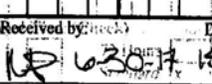
741 Corporate Circle Suite 1 ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933 Fax

Page 2 of 2

Client: Talon/LPE - Bill Whiting Petroleum
Address: 1811 East Mulberry
City/State/Zip: Fort Collins, CO 80524
Phone: 970-818-5330 Fax:
Sampler Name: Ken Rogowski/Jason Leverton

Project Manager: Jennifer Galles
E-Mail: jgalles@talonlpe.com
Project Name: Terrace Pit
Project Number: 701530.022.04

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:			Special Instructions	
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	BTEX	GRO		DRO
MW-1@59-64'	6/26/2017	11:10	1		x			x				x	x	x	
MW-1@64-69'	6/26/2017	11:22	1		x			x				x	x	x	
MW-1@69-74'	6/26/2017	11:57	1		x			x				x	x	x	
MW-2@40-45'	6/28/2017	9:13	1		x			x				x	x	x	
MW-2@60-65'	6/28/2017	9:57	1		x			x				x	x	x	
MW-3@45-50'	6/28/2017	13:04	1		x			x				x	x	x	
MW-3@50-55'	6/28/2017	13:12	1		x			x				x	x	x	
MW-3@55-60'	6/28/2017	13:22	1		x			x				x	x	x	

Relinquished by: 	Date/Time: 6-30-17 15:50	Received by: 	Date/Time: 6-30-17 15:50	Turn Around Time (Check) Same Day <input type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 Hours <input type="checkbox"/>
Relinquished by: 	Date/Time: 6-30-17 18:15	Received by:	Date/Time:	
Relinquished by:	Date/Time:	Received in Lab by:	Date/Time:	
				Sample Integrity: Temperature Upon Receipt: 13.8 Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

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Summit Scientific



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/10/17 15:11

Sample Receipt Checklist

S2 Work Order: 1706319
Client: Talon Client Project ID: Terrace Pit
Shipped Via: P.U. Airbill #: _____
(UPS, FedEx, Hand Delivered, Pick-up, etc.)
Matrix (check all that apply): Air Soil/Solid Water Other: _____
(Describe)

Cooler ID					
Temp (°C)	<u>13.8</u>				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?				
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>			<u>OK</u>
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

Murid
Custodian Printed Name

MP 630-FT
Signature or Initials of Custodian

18:15
Date/Time



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/10/17 15:11

MW-1@9-14'
1706319-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/26/17 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	120	50	mg/kg	1	1707009	07/03/17	07/03/17	8015M	

Date Sampled: **06/26/17 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		87.3 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/26/17 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1707011	07/03/17	07/04/17	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.0083	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.12	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	3.2	0.50	"	"	"	"	"	"	

Date Sampled: **06/26/17 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		111 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		101 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		121 %	21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/10/17 15:11

MW-1@14-19'
1706319-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/26/17 09:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	2700	50	mg/kg	1	1707009	07/03/17	07/03/17	8015M	

Date Sampled: **06/26/17 09:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		265 %	30-150		"	"	"	"	S-02

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/26/17 09:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.0048	0.0020	mg/kg	1	1707011	07/03/17	07/04/17	EPA 8260B	
Toluene	0.24	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.50	0.0050	"	"	"	"	"	"	
Xylenes (total)	49	0.50	"	100	"	"	07/04/17	"	
Gasoline Range Hydrocarbons	65	0.50	"	1	"	"	07/04/17	"	

Date Sampled: **06/26/17 09:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		129 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		101 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		296 %	21-167		"	"	"	"	S-02

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/10/17 15:11

MW-1@19-24'
1706319-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 06/26/17 09:15

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	2200	50	mg/kg	1	1707009	07/03/17	07/03/17	8015M	

Date Sampled: 06/26/17 09:15

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		204 %	30-150		"	"	"	"	S-02

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 06/26/17 09:15

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.0038	0.0020	mg/kg	1	1707011	07/03/17	07/04/17	EPA 8260B	
Toluene	0.31	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.38	0.0050	"	"	"	"	"	"	
Xylenes (total)	2.6	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	54	0.50	"	"	"	"	"	"	

Date Sampled: 06/26/17 09:15

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		126 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		247 %	21-167		"	"	"	"	S-02

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/10/17 15:11

MW-1@24-29'
1706319-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/26/17 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	150	50	mg/kg	1	1707009	07/03/17	07/03/17	8015M	

Date Sampled: **06/26/17 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		111 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/26/17 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1707011	07/03/17	07/04/17	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.024	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	2.7	0.50	"	"	"	"	"	"	

Date Sampled: **06/26/17 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		112 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		101 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		115 %	21-167		"	"	"	"	

Summit Scientific

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Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/10/17 15:11

MW-1@29-34'
1706319-05 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 06/26/17 09:38

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	470	50	mg/kg	1	1707009	07/03/17	07/03/17	8015M	

Date Sampled: 06/26/17 09:38

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		118 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 06/26/17 09:38

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1707011	07/03/17	07/04/17	EPA 8260B	
Toluene	0.0058	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.029	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.29	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	6.9	0.50	"	"	"	"	"	"	

Date Sampled: 06/26/17 09:38

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		134 %	21-167		"	"	"	"	

Summit Scientific

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Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/10/17 15:11

MW-1@34-39'
1706319-06 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/26/17 09:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	400	50	mg/kg	1	1707009	07/03/17	07/03/17	8015M	

Date Sampled: **06/26/17 09:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		115 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/26/17 09:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1707011	07/03/17	07/04/17	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.048	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	5.7	0.50	"	"	"	"	"	"	

Date Sampled: **06/26/17 09:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		111 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		99.4 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		126 %	21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/10/17 15:11

MW-1@39-44'
1706319-07 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 06/26/17 09:54

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	320	50	mg/kg	1	1707009	07/03/17	07/03/17	8015M	

Date Sampled: 06/26/17 09:54

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		115 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 06/26/17 09:54

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1707011	07/03/17	07/04/17	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.0080	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.083	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	6.1	0.50	"	"	"	"	"	"	

Date Sampled: 06/26/17 09:54

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		132 %	21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/10/17 15:11

MW-1@44-49'
1706319-08 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 06/26/17 10:18

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	140	50	mg/kg	1	1707009	07/03/17	07/03/17	8015M	

Date Sampled: 06/26/17 10:18

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		111 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 06/26/17 10:18

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1707011	07/03/17	07/04/17	EPA 8260B	
Toluene	0.0050	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.016	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.16	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	5.4	0.50	"	"	"	"	"	"	

Date Sampled: 06/26/17 10:18

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		122 %	21-167		"	"	"	"	

Summit Scientific

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Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/10/17 15:11

MW-1@49-54'
1706319-09 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/26/17 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1707009	07/03/17	07/03/17	8015M	

Date Sampled: **06/26/17 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		110 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/26/17 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1707011	07/03/17	07/04/17	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	0.66	0.50	"	"	"	"	"	"	

Date Sampled: **06/26/17 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		112 %	21-167		"	"	"	"	

Summit Scientific

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Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/10/17 15:11

MW-1@54-59'
1706319-10 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/26/17 10:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	200	50	mg/kg	1	1707009	07/03/17	07/04/17	8015M	

Date Sampled: **06/26/17 10:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		111 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/26/17 10:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1707011	07/03/17	07/04/17	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.034	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	3.9	0.50	"	"	"	"	"	"	

Date Sampled: **06/26/17 10:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		109 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		102 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		121 %	21-167		"	"	"	"	

Summit Scientific

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Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/10/17 15:11

MW-1@59-64'
1706319-11 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/26/17 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1707009	07/03/17	07/04/17	8015M	

Date Sampled: **06/26/17 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		108 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/26/17 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1707011	07/03/17	07/04/17	EPA 8260B	
Toluene	0.013	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.055	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.40	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	32	0.50	"	"	"	"	"	"	

Date Sampled: **06/26/17 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		150 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		201 %	21-167		"	"	"	"	S-02

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/10/17 15:11

MW-1@64-69'
1706319-12 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/26/17 11:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1707009	07/03/17	07/04/17	8015M	

Date Sampled: **06/26/17 11:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		109 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/26/17 11:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1707011	07/03/17	07/04/17	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **06/26/17 11:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		110 %	21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/10/17 15:11

MW-1@69-74'
1706319-13 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/26/17 11:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1707009	07/03/17	07/04/17	8015M	

Date Sampled: **06/26/17 11:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		115 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/26/17 11:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1707011	07/03/17	07/04/17	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **06/26/17 11:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %	21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/10/17 15:11

MW-2@40-45'
1706319-14 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/28/17 09:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1707009	07/03/17	07/04/17	8015M	

Date Sampled: **06/28/17 09:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		109 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/28/17 09:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1707011	07/03/17	07/04/17	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **06/28/17 09:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		104 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/10/17 15:11

MW-2@60-65'
1706319-15 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/28/17 09:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1707009	07/03/17	07/04/17	8015M	

Date Sampled: **06/28/17 09:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		107 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/28/17 09:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1707011	07/03/17	07/04/17	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **06/28/17 09:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		103 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %	21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/10/17 15:11

MW-3@45-50'
1706319-16 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/28/17 13:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1707009	07/03/17	07/04/17	8015M	

Date Sampled: **06/28/17 13:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		108 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/28/17 13:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1707011	07/03/17	07/04/17	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **06/28/17 13:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		103 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %	21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/10/17 15:11

MW-3@50-55'
1706319-17 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/28/17 13:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1707009	07/03/17	07/04/17	8015M	

Date Sampled: **06/28/17 13:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		108 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/28/17 13:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1707011	07/03/17	07/04/17	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **06/28/17 13:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

Summit Scientific

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Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/10/17 15:11

MW-3@55-60'
1706319-18 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/28/17 13:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1707009	07/03/17	07/04/17	8015M	

Date Sampled: **06/28/17 13:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		106 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/28/17 13:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1707011	07/03/17	07/04/17	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **06/28/17 13:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		100 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

Summit Scientific

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Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/10/17 15:11

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch 1707009 - EPA 3550A

Blank (1707009-BLK1)

Prepared & Analyzed: 07/03/17

C10-C28 (DRO)	ND	50	mg/kg								
<i>Surrogate: o-Terphenyl</i>	13.2		"	12.5		106	30-150				

LCS (1707009-BS1)

Prepared & Analyzed: 07/03/17

C10-C28 (DRO)	503	50	mg/kg	499		101	73-134				
<i>Surrogate: o-Terphenyl</i>	13.8		"	12.5		110	30-150				

Matrix Spike (1707009-MS1)

Source: 1706319-01

Prepared & Analyzed: 07/03/17

C10-C28 (DRO)	546	50	mg/kg	499	122	84.9	50-148				
<i>Surrogate: o-Terphenyl</i>	14.5		"	12.5		116	30-150				

Matrix Spike Dup (1707009-MSD1)

Source: 1706319-01

Prepared & Analyzed: 07/03/17

C10-C28 (DRO)	663	50	mg/kg	499	122	109	50-148	19.5	20		
<i>Surrogate: o-Terphenyl</i>	14.5		"	12.5		116	30-150				

Summit Scientific

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Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/10/17 15:11

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD	Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	

Batch 1707011 - EPA 5030 Soil MS

Blank (1707011-BLK1)

Prepared: 07/03/17 Analyzed: 07/04/17

Benzene	ND	0.0020	mg/kg						
Toluene	ND	0.0050	"						
Ethylbenzene	ND	0.0050	"						
Xylenes (total)	ND	0.0050	"						
Gasoline Range Hydrocarbons	ND	0.50	"						
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0451</i>		<i>"</i>	<i>0.0400</i>		<i>113</i>	<i>23-173</i>		
<i>Surrogate: Toluene-d8</i>	<i>0.0414</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>20-170</i>		
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0428</i>		<i>"</i>	<i>0.0400</i>		<i>107</i>	<i>21-167</i>		

LCS (1707011-BS1)

Prepared: 07/03/17 Analyzed: 07/04/17

Benzene	0.0879	0.0020	mg/kg	0.100		87.9	58-130		
Toluene	0.0947	0.0050	"	0.100		94.7	61-134		
Ethylbenzene	0.0927	0.0050	"	0.0992		93.4	74-139		
m,p-Xylene	0.181	0.010	"	0.200		90.8	73-137		
o-Xylene	0.0952	0.0050	"	0.0980		97.2	73-141		
Xylenes (total)	0.276	0.0050	"				30-150		
Gasoline Range Hydrocarbons	0.358	0.50	"				30-150		
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0449</i>		<i>"</i>	<i>0.0400</i>		<i>112</i>	<i>23-173</i>		
<i>Surrogate: Toluene-d8</i>	<i>0.0409</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>20-170</i>		
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0427</i>		<i>"</i>	<i>0.0400</i>		<i>107</i>	<i>21-167</i>		

Matrix Spike (1707011-MS1)

Source: 1706319-01

Prepared: 07/03/17 Analyzed: 07/04/17

Benzene	0.0735	0.0020	mg/kg	0.100	ND	73.5	30-131		
Toluene	0.0718	0.0050	"	0.100	ND	71.8	30-134		
Ethylbenzene	0.0770	0.0050	"	0.0992	0.00831	69.2	22-153		
m,p-Xylene	0.194	0.010	"	0.200	0.0430	75.7	10-159		
o-Xylene	0.163	0.0050	"	0.0980	0.0807	84.5	31-151		
Xylenes (total)	0.358	0.0050	"		0.124		30-150		
Gasoline Range Hydrocarbons	4.57	0.50	"		3.15		30-150		
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0446</i>		<i>"</i>	<i>0.0400</i>		<i>111</i>	<i>23-173</i>		
<i>Surrogate: Toluene-d8</i>	<i>0.0412</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>20-170</i>		
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0488</i>		<i>"</i>	<i>0.0400</i>		<i>122</i>	<i>21-167</i>		

Summit Scientific

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Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/10/17 15:11

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source	%REC			RPD	Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch 1707011 - EPA 5030 Soil MS

Matrix Spike Dup (1707011-MSD1)	Source: 1706319-01			Prepared: 07/03/17		Analyzed: 07/04/17				
Benzene	0.0673	0.0020	mg/kg	0.100	ND	67.3	30-131	8.86	34	
Toluene	0.0618	0.0050	"	0.100	ND	61.8	30-134	15.0	30	
Ethylbenzene	0.0636	0.0050	"	0.0992	0.00831	55.8	22-153	19.0	24	
m,p-Xylene	0.145	0.010	"	0.200	0.0430	50.9	10-159	29.3	68	
o-Xylene	0.145	0.0050	"	0.0980	0.0807	66.1	31-151	11.7	38	
Xylenes (total)	0.290	0.0050	"		0.124		30-150	20.9	20	QM-07
Gasoline Range Hydrocarbons	3.76	0.50	"		3.15		30-150	19.3	20	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0470</i>		<i>"</i>	<i>0.0400</i>		<i>117</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0404</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0471</i>		<i>"</i>	<i>0.0400</i>		<i>118</i>	<i>21-167</i>			

Summit Scientific

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Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/10/17 15:11

Notes and Definitions

- S-02 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

July 07, 2017

Jennifer Galles
Talon/LPE
1811 E Mulberry
Ft Collins, CO 80524
RE: Terrace Pit

Enclosed are the results of analyses for samples received by Summit Scientific on 06/29/17 15:47. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ben Shrewsbury', with a long, sweeping horizontal line extending to the right.

Ben Shrewsbury
Laboratory Manager



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/07/17 16:20

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	1706314-01	Water	06/29/17 12:52	06/29/17 15:47
MW-2	1706314-02	Water	06/29/17 13:10	06/29/17 15:47
MW-3	1706314-03	Water	06/29/17 12:45	06/29/17 15:47

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit

Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/07/17 16:20

Sample Receipt Checklist

S2 Work Order: 1706314
Client: Talon Client Project ID: Terrace Pit
Shipped Via: P.U. Airbill #: _____
(UPS, FedEx, Hand Delivered, Pick-up, etc.)
Matrix (check all that apply): Air Soil/Solid Water Other: _____
(Describe)

Cooler ID				
Temp (°C)	11.7			

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?				
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	✓			on ice
Were all samples received intact ⁽¹⁾ ?	✓			
Was adequate sample volume provided ⁽¹⁾ ?	✓			
If custody seals are present, are they intact ⁽¹⁾ ?			✓	
Are short holding time analytes or samples with HTs due within 48 hours present?			✓	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	✓			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	✓			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	✓			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	✓			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		✓	✓	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?	✓		✓	HCL
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?			✓	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			✓	
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

Murp.
Custodian Printed Name

JA 6-29-17
Signature or Initials of Custodian

18:20
Date/Time



Talon/LPE
 1811 E Mulberry
 Ft Collins CO, 80524

Project: Terrace Pit
 Project Number: 701530.02204
 Project Manager: Jennifer Galles

Reported:
 07/07/17 16:20

MW-1
1706314-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/29/17 12:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	990	100	ug/l	100	1707016	07/05/17	07/05/17	EPA 8260B	
Toluene	5100	100	"	"	"	"	"	"	
Ethylbenzene	660	100	"	"	"	"	"	"	
Xylenes (total)	4100	200	"	"	"	"	"	"	

Date Sampled: **06/29/17 12:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		90.4 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		102 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		98.7 %	45-146		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
 1811 E Mulberry
 Ft Collins CO, 80524

Project: Terrace Pit
 Project Number: 701530.02204
 Project Manager: Jennifer Galles

Reported:
 07/07/17 16:20

MW-2
1706314-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/29/17 13:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	53	10	ug/l	10	1707016	07/05/17	07/05/17	EPA 8260B	
Toluene	480	10	"	"	"	"	"	"	
Ethylbenzene	60	10	"	"	"	"	"	"	
Xylenes (total)	330	20	"	"	"	"	"	"	

Date Sampled: **06/29/17 13:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		95.9 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		100 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		102 %	45-146		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/07/17 16:20

MW-3
1706314-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/29/17 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	30	1.0	ug/l	1	1707016	07/05/17	07/05/17	EPA 8260B	
Toluene	67	1.0	"	"	"	"	"	"	
Ethylbenzene	4.7	1.0	"	"	"	"	"	"	
Xylenes (total)	27	2.0	"	"	"	"	"	"	

Date Sampled: **06/29/17 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		98.8 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		101 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		95.9 %	45-146		"	"	"	"	

Summit Scientific

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Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/07/17 16:20

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch 1707016 - EPA 5030 Water MS

Blank (1707016-BLK1)

Prepared & Analyzed: 07/04/17

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	14.2		"	13.3		107	37-154			
Surrogate: Toluene-d8	13.5		"	13.3		101	45-149			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.7	45-146			

LCS (1707016-BS1)

Prepared & Analyzed: 07/04/17

Benzene	42.0	1.0	ug/l	50.0		84.0	51-132			
Toluene	40.4	1.0	"	50.0		80.7	51-138			
Ethylbenzene	44.3	1.0	"	50.0		88.7	58-146			
m,p-Xylene	88.0	2.0	"	100		88.0	57-144			
o-Xylene	45.6	1.0	"	50.0		91.2	53-146			
Surrogate: 1,2-Dichloroethane-d4	14.1		"	13.3		106	37-154			
Surrogate: Toluene-d8	13.3		"	13.3		99.6	45-149			
Surrogate: 4-Bromofluorobenzene	13.6		"	13.3		102	45-146			

Matrix Spike (1707016-MS1)

Source: 1706320-05

Prepared & Analyzed: 07/04/17

Benzene	46.7	1.0	ug/l	50.0	ND	93.5	34-141			
Toluene	45.1	1.0	"	50.0	ND	90.2	27-151			
Ethylbenzene	51.1	1.0	"	50.0	ND	102	29-160			
m,p-Xylene	100	2.0	"	100	ND	100	20-166			
o-Xylene	50.7	1.0	"	50.0	ND	101	33-159			
Surrogate: 1,2-Dichloroethane-d4	12.2		"	13.3		91.6	37-154			
Surrogate: Toluene-d8	13.4		"	13.3		101	45-149			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		101	45-146			

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Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Terrace Pit
Project Number: 701530.02204
Project Manager: Jennifer Galles

Reported:
07/07/17 16:20

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting		Spike Level	Source Result	%REC		RPD		Notes
	Result	Limit			Units	%REC	Limits	RPD	

Batch 1707016 - EPA 5030 Water MS

Matrix Spike Dup (1707016-MSD1)	Source: 1706320-05			Prepared & Analyzed: 07/04/17						
Benzene	46.1	1.0	ug/l	50.0	ND	92.3	34-141	1.29	32	
Toluene	44.7	1.0	"	50.0	ND	89.4	27-151	0.802	25	
Ethylbenzene	50.9	1.0	"	50.0	ND	102	29-160	0.314	50	
m,p-Xylene	99.4	2.0	"	100	ND	99.4	20-166	1.01	36	
o-Xylene	51.7	1.0	"	50.0	ND	103	33-159	1.80	26	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>12.5</i>		<i>"</i>	<i>13.3</i>		<i>94.1</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>13.2</i>		<i>"</i>	<i>13.3</i>		<i>98.9</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>13.3</i>		<i>"</i>	<i>13.3</i>		<i>100</i>	<i>45-146</i>			

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Reported:
07/07/17 16:20

Notes and Definitions

DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference