APPROVED
By CHernandez at 2:35 pm, Jul 23, 2018

Please note that both proposed monitoring wells are required, one up gradient and one down gradient from spill release location as noted.
Please be advised that all laboratory analyses (Benzene, BTEX, and TPH extended) are required for proposed 12' and 4' extended excavation confirmation bottom and sidewall sample locations; all laboratory analyses will also be required for groundwater testing.
Please address historical releases; please be advised to excavate to 4' at these (DP-2, DP-6, DP-7, DP-9, DP-10, DP-11, DP-12, DP-13) locations and collect sidewall samples as well.
After proper placement of 20 mil liner and back filling, sample every 50 cubic yards.

1RP-4832
DELINEATION REPORT
EMSU B Satellite 13 Trunk Line Leak
Lea County, New Mexico

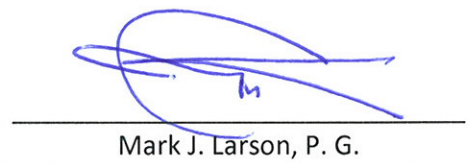
Latitude: 32° 34' 32.79"
Longitude: 103° 19' 19.06"

LAI Project No. 17-0193-01

July 6, 2018

Prepared for:
XTO Energy, Inc.
6401 Holiday Hill Road, Building 5
Midland, Texas 79707

Prepared by:
Larson & Associates, Inc.
507 North Marienfeld Street, Suite 205
Midland, Texas 79701



Mark J. Larson, P. G.
Certified Professional Geologist #10490

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1.0 INTRODUCTION

Larson & Associates, Inc., (LAI) has prepared this delineation report on behalf of XTO Energy, Inc. (XTO) for submittal to the New Mexico Oil Conservation Division (OCD) District 1 for a produced water leak from a trunk line near the Eunice Monument South Unit (EMSU) B Satellite #13 (Site) located in Unit G (SW/4, NE/4), Section 14, Township 20 South, Range 37 East in Lea County, New Mexico. The geodetic position is North 32° 34' 32.79" and West 103° 19' 19.06". Figure 1 presents a topographic map. Figure 2 presents an aerial map.

1.1 Background

The spill occurred on September 20, 2017, due to a rupture in the poly trunk line releasing approximately 34.06 barrels (bbl) of produced water with 0 bbl recovered. The release covered an area estimated at approximately 10 x 45 feet or about 450 square feet to a depth of approximately 4 inches. XTO used a hydrovac to excavate soil from around the trunk line for repairing the leak. Soil was excavated to approximately 4 feet below ground surface (bgs) over an area measuring approximately 336 square feet. Soil from the hydrovac was placed near the excavation pending disposal arrangements. The surface owner is Jimmie T. Cooper. The mineral owner is the United States of America (US) administered by the Department of the Interior Bureau of Land Management (BLM). On September 28, 2017, XTO submitted the initial C-141 to OCD District 1 which assigned the release remediation permit number 1RP-4832, with conditions. Appendix A presents the initial C-141.

On November 27, 2017, LAI, on behalf of XTO, submitted a delineation plan to OCD District 1. The plan was approved on November 28, 2017, with the following stipulations:
The proposed delineation report for 1RP-4832 is approved with these stipulations:

- Please note that based on the release outlined in Figure 3, there are 2 NMOSE wells (L04507 & L10135) within 1,000 ft. of the GPS coordinates for the site.
- Delineate to 600 mg/kg chloride levels and maintained for 10 ft. further in depth.
- At least two depths for each sample location must have laboratory analyses: depth obtained and depth maintained permissible levels of chlorides, TPH extended, and BTEX. Include all pertinent field data.
- Please be advised that with average depth to groundwater < 50 ft. bgs, a temporary monitoring well may be required.
- In the subsequent delineation report, please include on one or more appropriately scaled maps: 1) the release area and pipeline trench outlined; 2) delineation and proposed confirmation sample locations demarcated with GPS coordinates; 3) and dimensions and depths of proposed excavations annotated.

Please confirm or inform if clarification is required. Appendix B presents OCD and BLM communications.

Groundwater was encountered in several borings during spill delineation at about 35 feet below ground surface (bgs).

1.2 Physical Setting

The physical setting is as follows:

- The surface elevation is approximately 3,558 feet above mean sea level (MSL);
- The topography slopes towards the east and southeast;
- There are no surface water features within 1,000 feet of the Site;
- The soils are designated as "Wink fine sand", consisting of approximately 12 inches of fine sand underlain by about 12 inches of sandy loam to approximately 60 inches derived from sedimentary rock;
- The upper geological unit is the Tertiary-age Blackwater Draw and Ogallala formations, in descending order, comprised of very fine to medium-grained quartz sand and gravel, with minor amount of silt and clay with indistinct to massive cross beds;
- The Ogallala formation is underlain by clay, silty clay, shale and sandstone of the Chinle formation (Triassic) and is about 300 feet thick;
- According to records from the U.S. Geological Survey (U.S.G.S.) and State of New Mexico Office of the State Engineer (OSE) the nearest fresh water well is located in Unit G (SW/4, NE/4), Section 14, Township 20 South, Range 36 East or about 410 feet southwest from the Site;
- Groundwater occurs at approximately 35 feet bgs.

1.3 Remediation Action Levels

Remediation action levels (RRAL) were calculated for benzene, BTEX and TPH based on the following criteria established by the OCD in *"Guidelines for Remediation of Leaks, Spills and Releases, pp. 6 – 7, August 13, 1993":*

Criteria	***Result***	***Score***
Depth-to-Groundwater	<50 Feet	20
Wellhead Protection Area	No	0
Distance to Surface Water Body	>1000 Horizontal Feet	0

The following RRAL apply to the release for ranking score: 20

- Benzene 10 mg/Kg
- BTEX 50 mg/Kg
- TPH 100 mg/Kg

Depth to groundwater less than 50 feet bgs requires vertical delineation of chloride to 250 milligrams per kilogram (mg/Kg) and maintained for a minimum of 10 feet farther in depth.

2.0 DELINEATION

On December 8 and 11, 2017, LAI personnel collected soil samples the bottom and sidewalls of the excavations and at boring eight (8) locations (DP-1 through DP-8). The bottom samples (HA-1) were collected with a stainless steel hand auger to approximately 9 feet bgs. The sidewall samples (SW-N, SW-S, SW-E and SW-W) were collected at approximately 2 feet bgs with a sample trowel. The boring samples were collected between about 3 (DP-1) and 12 feet bgs with direct push technology (DPT). DPT samples were collected in 1 foot increments (0 to 1, 1 to 2, 2 to 3 feet, etc.) to approximately 4 feet bgs and 2 foot increments (4 to 6, 6 to 8 feet, etc.) to approximately 12 feet bgs depending on subsurface conditions. The samples were delivered under preservation and chain of custody to Permian Basin Environmental Lab (PBEL) in Midland, Texas, which analyzed samples for benzene, toluene,

ethylbenzene and xylenes (BTEX) and total petroleum hydrocarbons (TPH), including gasoline range organics (C6-C12), diesel range organics (>C12-C28) and oil range organics (>C28-C35) by EPA SW-846 Methods 8021B and 8015M, respectively, and by EPA Method 300. Benzene and BTEX were reported below the RRAL of 10 mg/Kg and 50 mg/Kg, respectively, in all samples. TPH exceeded the RRAL (100 mg/Kg) in the following samples from the excavation:

- HA-1, 6 – 7 feet (769 mg/Kg)
- HA-1, 8 – 9 feet (275 mg/Kg)
- SW-S, 2 feet (174 mg/Kg)
- HA-1, 7 – 8 feet (1,410 mg/Kg)
- SW-N, 2 feet (839 mg/Kg)
- SW-W, 2 feet (196 mg/kg)

Chloride exceeded the delineation limit (250 mg/Kg) in the following samples:

- HA-1, 4 – 5 feet (397 mg/Kg)
- HA-1, 6 – 7 feet (633 mg/Kg)
- HA-1, 8 – 9 feet (777 mg/Kg)
- SW-S, 2 feet (1,480 mg/Kg)
- SW-W, 2 feet (1,010 mg/Kg)
- DP-2, 8 – 10 feet (573 mg/Kg)
- DP-5, 1 – 2 feet (444 mg/Kg)
- DP-5, 3 – 4 feet (1,510 mg/kg)
- DP-7, 2 – 3 feet (440 mg/Kg)
- DP-7, 8 – 10 feet (799 mg/Kg)
- HA-1, 5 – 6 feet (366 mg/Kg)
- HA-1, 7 – 8 feet (786 mg/Kg)
- SW-N, 2 feet (1,480 mg/Kg)
- SW-E, 2 feet (1,590 mg/Kg)
- DP-2, 6 – 8 feet (375 mg/Kg)
- DP-2, 10 – 12 feet (789 mg/Kg)
- DP-5, 2 – 3 feet (1,450 mg/Kg)
- DP-6, 3 – 4 feet (562 mg/Kg)
- DP-7, 6 – 8 feet (485 mg/Kg)
- DP-7, 10 – 12 feet (1,140 mg/Kg)

On April 24, 2018, Scarborough Drilling Inc. (SDI), under supervision from LAI, used an air rotary rig and jam tube sampler to collect soil samples for vertical delineation at HA-1, DP-2, DP-5, DP-6, DP-7, DP-9, DP-10, DP-11, DP-12 and DP-13. Soil samples were collected about every 5 feet to 25 feet (DP-2, DP-4, DP-5 and DP-6) and 35 feet (HA-1, DP-7, DP-9, DP-10, DP-11, DP-12 and DP-13) bgs. Groundwater was encountered at about 35 feet bgs where sampling terminated at locations HA-1, DP-7, DP-9, DP-10, DP-11, DP-12 and DP-13. PBEL analyzed the samples for chloride by EPA Method 300.

Chloride decreased below 250 mg/Kg in samples from 35 feet bgs at DP-9 (171 mg/Kg) and DP-10 (149 mg/Kg). Chloride was above 250 mg/Kg in the deepest samples from borings HA-1, 35 feet (1,010 mg/Kg), DP-2, 25 feet (735 mg/Kg), DP-5, 25 feet (985 mg/Kg), DP-6, 25 feet (685 mg/kg), DP-7, 35 feet (1,150 mg/kg) and DP-13, 35 feet (290 mg/Kg). Table 1 presents the laboratory analytical data summary. Appendix C presents the laboratory reports. Appendix D presents boring logs. Appendix E presents photographs.

3.0 REDMEDIATION PLAN

XTO proposes the following remedial actions:

- Install one (1) monitoring well down gradient (south) of the spill constructed with 2 inch schedule 40 threaded PVC and fifteen (15) feet of well screen positioned between approximately 30 and 45 feet bgs;
- Collect groundwater samples for field (chloride) and laboratory (BTEX and chloride) analysis by EPA SW-846 Methods 8021B and Method 300, respectively;
- Install second temporary monitoring well up gradient (north) of spill if field chloride analysis demonstrate concentration greater than 250 milligrams per liter (mg/L) and construct similar to down gradient well;

- Expand excavation north, south and west between about 5 to 10 feet from current excavation boundary to depth of about 12 feet bgs and collect confirmation bottom sample at approximately 12 feet bgs (HA-1) and sidewalls (north, south, east and west) at approximately 2, 8 and 10 feet bgs and analyze for TPH by EPA SW-846 Method 8015M, including GRO (C6-C12), DRO (>C12-C28) and ODR (>C28-C35);
- Excavate additional soil from sidewalls and bottom as necessary to reduce TPH below 100 mg/Kg;
- Assuming no further soil excavation backfill excavation with caliche to approximately 4 feet bgs;
- Expand excavation to depth of approximately 4 feet bgs north (10 feet), south (5 feet), east (15 feet) and west (30 feet) and collect bottom (4 feet) and sidewall (2 feet) confirmation samples for laboratory analysis (TPH and chloride) by EPA SW-846 Method 8015M and Method 300, respectively, to confirm concentrations below 100 mg/Kg (TPH) and 250 mg/Kg (chloride);
- Expand excavation as needed (north, south, east and west) approximately 4 feet bgs until sidewall confirmation samples report TPH and chloride below 100 mg/Kg and 250 mg/kg, respectively;
- Assuming no further soil excavation install 20 mil thickness poly liner in bottom of excavation at approximately 4 feet bgs, backfill excavation with clean soil and seed to landowner specifications;
- Dispose of excavated soil at Sundance (Parabo) disposal.

XTO will submit a report with final C-141 and proposal for groundwater delineation, if necessary, upon receipt of laboratory analysis and completion of the remediation activities. Figure 3 presents the proposed monitoring well locations, areas of excavations and proposed confirmation soil sample locations.

Tables

Table 1, Soil Sample Analytical Data Summary
1RP-4832
17-0193-01
XTO, EMSU B Satelite #13
Lea County, New Mexico
32° 34' 32.79", 103° 19' 19.06"

Sample	Depth (Feet)	Collection Date	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
RRAL			**10**	**50**				**100**	**250**
Excavation Soil Samples									
HA-1	4 - 5	12/11/2017	--	--	<29.4	66.1	<29.4	66.1	**397**
	5 - 6	12/11/2017	--	--	<27.8	<27.8	<27.8	<27.8	**366**
	6 - 7	12/11/2017	--	--	<27.2	637	132	**769**	**633**
	7 - 8	12/11/2017	--	--	36.0	1,150	233	**1,410**	**786**
	8 - 9	12/11/2017	--	--	<26.3	217	58.8	**275**	**777**
	10	4/24/2018	--	--	--	--	--	--	**551**
	15	4/24/2018	--	--	--	--	--	--	**926**
	20	4/24/2018	--	--	--	--	--	--	**1070**
	25	4/24/2018	--	--	--	--	--	--	**469**
	30	4/24/2018	--	--	--	--	--	--	**859**
	35	4/24/2018	--	--	--	--	--	--	**1,170**
SW-N	2	12/11/2017	--	--	<25.5	627	212	**839**	**1,480**
SW-S	2	12/11/2017	--	--	<26.0	134	40.6	**174**	**1,480**
SW-E	2	12/11/2017	--	--	<28.7	<28.7	<28.7	<28.7	**1,590**
SW-W	2	12/11/2017	--	--	<25.8	105	91.7	**196**	**1,010**
Diect Push Soil Samples									
DP-1	0 - 1	12/8/2017	<0.00109	<0.00761	<27.2	<27.2	<27.2	<27.2	<1.09
	1 - 2	12/8/2017	--	--	<28.7	<28.7	<28.7	<28.7	<1.15
	2 - 3	12/8/2017	--	--	<28.1	<28.1	<28.1	<28.1	<1.12
DP-2	0 - 1	12/8/2017	<0.00105	<0.00737	<26.3	<26.3	<26.3	<26.3	<1.05
	1 - 2	12/8/2017	--	--	<28.4	<28.4	<28.4	<28.4	<1.14
	2 - 3	12/8/2017	--	--	<28.7	<28.7	<28.7	<28.7	<1.15
	3 - 4	12/8/2017	--	--	<28.4	<28.4	<28.4	<28.4	74.1
	4 - 6	12/8/2017	--	--	<26.0	<26.0	<26.0	<26.0	114
	6 - 8	12/8/2017	--	--	<26.3	<26.3	<26.3	<26.3	**375**
	8 - 10	12/8/2017	--	--	<26.9	<26.9	<26.9	<26.9	**573**
	10 - 12	12/8/2017	--	--	<28.7	<28.7	<28.7	<28.7	**789**
	15	4/6/2018	--	--	--	--	--	--	**551**
	20	4/6/2018	--	--	--	--	--	--	**997**
	25	4/6/2018	--	--	--	--	--	--	**735**
DP-3	0 - 1	12/8/2017	<0.00114	<0.00454	<28.4	<28.4	<28.4	<28.4	48.2
	1 - 2	12/8/2017	--	--	<27.2	<27.2	<27.2	<27.2	54.1
	2 - 3	12/8/2017	--	--	<28.1	<28.1	<28.1	<28.1	6.47
	3 - 4	12/8/2017	--	--	<27.8	<27.8	<27.8	<27.8	4.00
	4 - 6	12/8/2017	--	--	<27.8	<27.8	<27.8	<27.8	58.1

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32° 34' 32.79", 103° 19' 19.06"

Sample	Depth (Feet)	Collection Date	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
RRAL			**10**	**50**				**100**	**250**
DP-4	0 - 1	12/8/2017	<0.00106	<0.00744	<26.6	<26.6	<26.6	<26.6	19.0
	1 - 2	12/8/2017	--	--	<26.0	<26.0	<26.0	<26.0	2.11
	2 - 3	12/8/2017	--	--	<26.9	<26.9	<26.9	<26.9	41.2
	3 - 4	12/8/2017	--	--	<27.8	<27.8	<27.8	<27.8	84.9
DP-5	0 - 1	12/8/2017	<0.00105	<0.00737	<26.3	69.5	<26.3	69.5	172
	1 - 2	12/8/2017	--	--	<26.6	<26.6	<26.6	<26.6	**444**
	2 - 3	12/8/2017	--	--	<28.7	<28.7	<28.7	<28.7	**1,450**
	3 - 4	12/8/2017	--	--	<29.1	<29.1	<29.1	<29.1	**1,510**
	5	4/6/2018	--	--	--	--	--	--	**1,510**
	10	4/6/2018	--	--	--	--	--	--	**923**
	15	4/6/2018	--	--	--	--	--	--	**970**
	20	4/6/2018	--	--	--	--	--	--	**813**
	25	4/6/2018	--	--	--	--	--	--	**985**
DP-6	0 - 1	12/8/2017	<0.00104	<0.00728	<26.0	<26.0	<26.0	<26.0	98.1
	1 - 2	12/8/2017	--	--	<25.8	<25.8	<25.8	<25.8	27.9
	2 - 3	12/8/2017	--	--	<27.8	<27.8	<27.8	<27.8	108
	3 - 4	12/8/2017	--	--	<27.8	<27.8	<27.8	<27.8	**562**
	5	4/6/2018	--	--	--	--	--	--	11.1
	10	4/6/2018	--	--	--	--	--	--	**703**
	15	4/6/2018	--	--	--	--	--	--	102
	20	4/6/2018	--	--	--	--	--	--	6.34
	25	4/6/2018	--	--	--	--	--	--	**685**
DP-7	0 - 1	12/11/2017	<0.00105	<0.00737	<26.3	<26.3	<26.3	<26.3	<1.05
	1 - 2	12/11/2017	--	--	<28.1	<28.1	<28.1	<28.1	138
	2 - 3	12/11/2017	--	--	<30.1	<30.1	<30.1	<30.1	**440**
	3 - 4	12/11/2017	--	--	<29.4	<29.4	<29.4	<29.4	162
	4 - 6	12/11/2017	--	--	<30.9	<30.9	<30.9	<30.9	1.23
	6 - 8	12/11/2017	--	--	<28.4	<28.4	<28.4	<28.4	**485**
	8 - 10	12/11/2017	--	--	<28.1	<28.1	<28.1	<28.1	**799**
	10 - 12	12/11/2017	--	--	<29.1	<29.1	<29.1	<29.1	**1,140**
	15	4/24/2018	--	--	--	--	--	--	**942**
	20	4/24/2018	--	--	--	--	--	--	**1,470**
	25	4/24/2018	--	--	--	--	--	--	**967**
	30	4/24/2018	--	--	--	--	--	--	**1,970**
	35	4/24/2018	--	--	--	--	--	--	**1,150**
DP-8	0 - 1	12/11/2017	<0.00102	<0.00714	<25.5	<25.5	<25.5	<25.5	<1.02
	1 - 2	12/11/2017	--	--	<25.5	<25.5	<25.5	<25.5	1.02
	2 - 3	12/11/2017	--	--	<27.2	<27.2	<27.2	<27.2	5.38

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Sample	Depth (Feet)	Collection Date	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
RRAL			**10**	**50**				**100**	**250**
	3 - 4	12/11/2017	--	--	<28.4	<28.4	<28.4	<28.4	9.47
DP-9	0	4/24/2018	--	--	--	--	--	--	9.12
	5	4/24/2018	--	--	--	--	--	--	<1.08
	10	4/24/2018	--	--	--	--	--	--	69.8
	15	4/24/2018	--	--	--	--	--	--	157
	20	4/24/2018	--	--	--	--	--	--	174
	25	4/24/2018	--	--	--	--	--	--	**436**
	30	4/24/2018	--	--	--	--	--	--	**404**
	35	4/24/2018	--	--	--	--	--	--	171
DP-10	0	4/24/2018	--	--	--	--	--	--	44.3
	5	4/24/2018	--	--	--	--	--	--	6.11
	10	4/24/2018	--	--	--	--	--	--	**855**
	15	4/24/2018	--	--	--	--	--	--	**464**
	20	4/24/2018	--	--	--	--	--	--	**907**
	25	4/24/2018	--	--	--	--	--	--	**730**
	30	4/24/2018	--	--	--	--	--	--	**707**
	35	4/24/2018	--	--	--	--	--	--	149
DP-11	0	4/24/2018	--	--	--	--	--	--	5.16
	5	4/24/2018	--	--	--	--	--	--	70.4
	10	4/24/2018	--	--	--	--	--	--	**703**
	15	4/24/2018	--	--	--	--	--	--	**754**
	20	4/24/2018	--	--	--	--	--	--	**1,290**
	25	4/24/2018	--	--	--	--	--	--	**784**
	30	4/24/2018	--	--	--	--	--	--	**457**
	35	4/24/2018	--	--	--	--	--	--	**1,770**
DP-12	0	4/24/2018	--	--	--	--	--	--	8.86
	5	4/24/2018	--	--	--	--	--	--	3.4
	10	4/24/2018	--	--	--	--	--	--	**255**
	15	4/24/2018	--	--	--	--	--	--	**1,040**
	20	4/24/2018	--	--	--	--	--	--	**872**
	25	4/24/2018	--	--	--	--	--	--	**1,110**
	30	4/24/2018	--	--	--	--	--	--	**1,460**
	35	4/24/2018	--	--	--	--	--	--	**2,120**
DP-13	0	4/24/2018	--	--	--	--	--	--	23.9
	5	4/24/2018	--	--	--	--	--	--	**451**
	10	4/24/2018	--	--	--	--	--	--	**275**
	15	4/24/2018	--	--	--	--	--	--	**327**
	20	4/24/2018	--	--	--	--	--	--	**513**

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Sample	Depth (Feet)	Collection Date	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
RRAL			**10**	**50**				**100**	**250**
	25	4/24/2018	--	--	--	--	--	--	**863**
	30	4/24/2018	--	--	--	--	--	--	**2,500**
	35	4/24/2018	--	--	--	--	--	--	**290**

Notes: Laboratory analysis performed by Permian Basin Environmental Lab, Midland, Texas by EPA SW-846 Method 8015M (TPH) and 300 (chloride)
Depth in feet below ground surface (bgs)
mg/Kg: milligrams per kilogram equivalent to parts per million (ppm)
*: OCD delineation level

Bold and highlighted denotes concentration exceeds RRAL (100 mg/Kg)

Bold and highlighted denotes concentration exceeds OCD delineation level (250 mg/Kg)

Figures

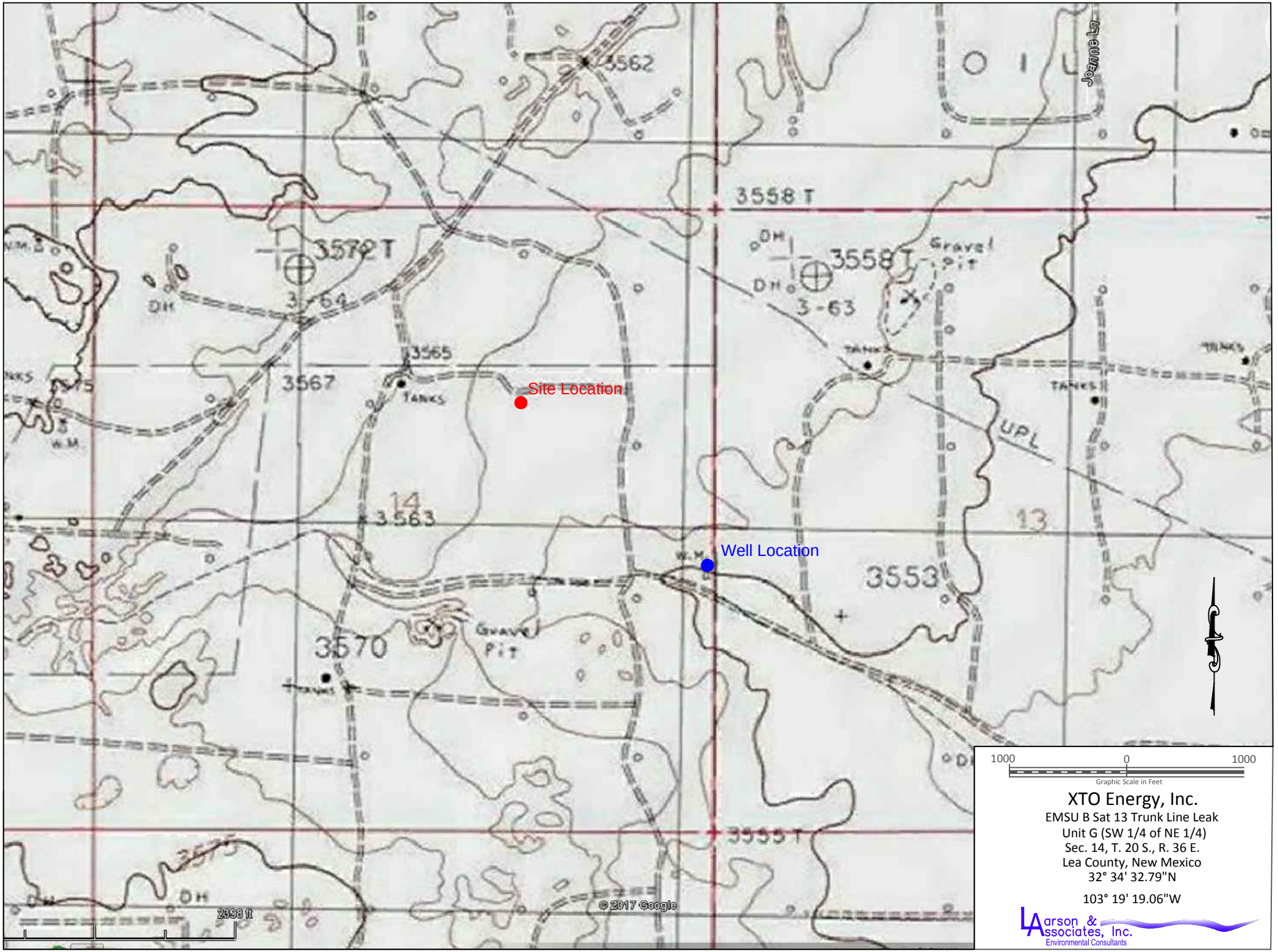

Figure 1 - Topographic Map

Figure 3 - Aerial Map Showing Soil Sample Locations and Excavation Area

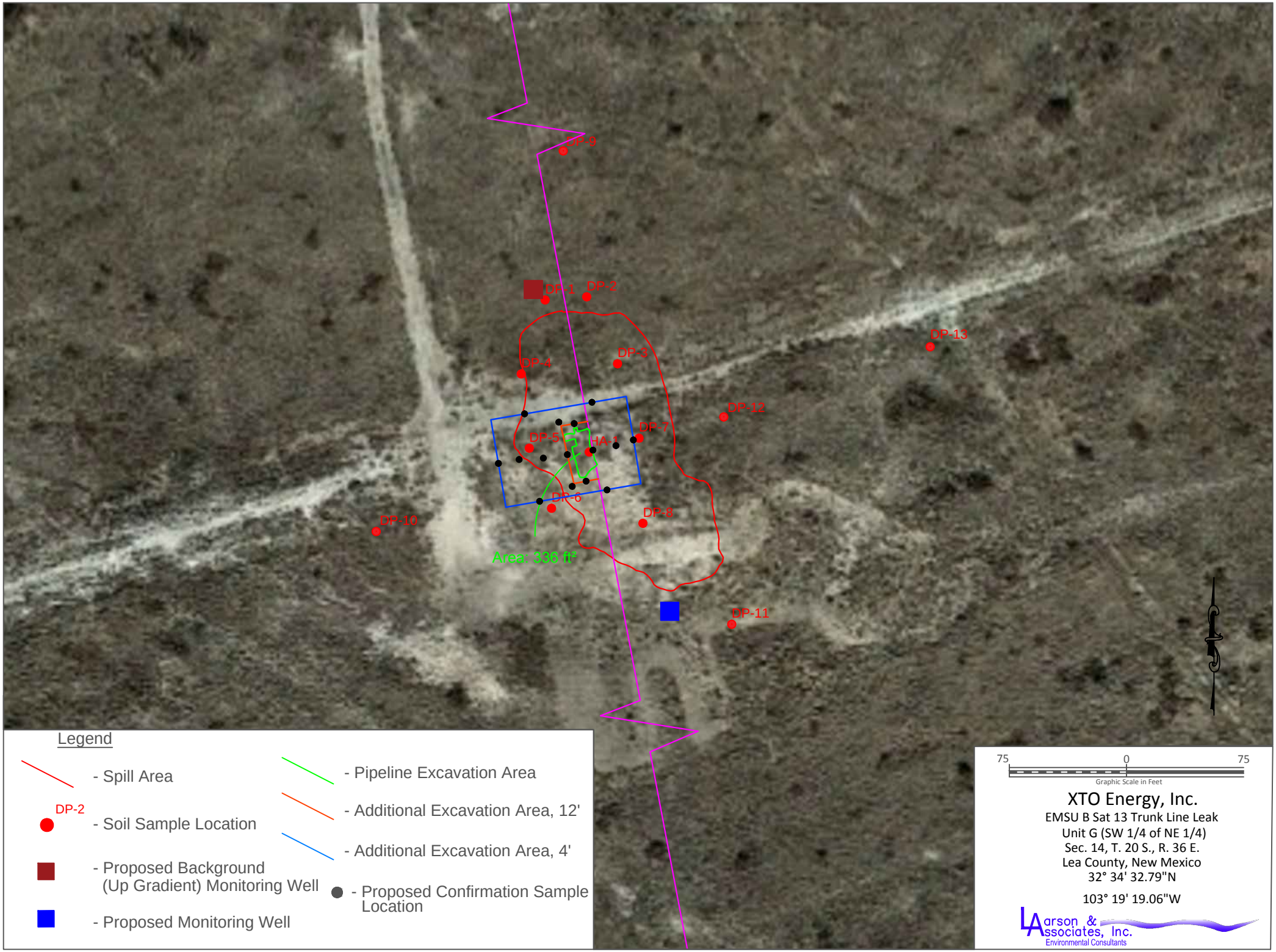

Figure 3 - Aerial Map Showing Excavations and Proposed Confirmation Sample Locations

Attachment A

Initial C-141

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised April 3, 2017

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: XTO ENERGY INC.	Contact SHANNON WALKER
Address: 500 W. ILLINOIS SUITE 100 MIDLAND, TX 79701	Telephone No. 575-394-2089
Facility Name: EMSU B Satelite #13	Facility Type: Satellite

Surface Owner: Jimmie T. Cooper	Mineral Owner: BLM	API No. N/A

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
G	14	20S	36E					

Latitude 32° 34' 32.79"N **Longitude** 103° 19' 19.06'W NAD83

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: 34.06bbls	Volume Recovered:0bbls
Source of Release:4" FG Trunk line	Date and Hour of Occurrence: 09/20/2017	Date and Hour of Discovery 09/20/2017 @ 12:30 MT
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Olivia Yu	
By Whom? Shannon Walker	Date and Hour 09/20/2017	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*
N/A

RECEIVED
By Olivia Yu at 1:35 pm, Sep 29, 2017

Describe Cause of Problem and Remedial Action Taken.*

Line rupture, no remedial action taken at this time. Larson and Associates have been assigned for remediation.
Estimated area affected: L45'x W10'x D4"

Describe Area Affected and Cleanup Action Taken.*
Pasture Land, no remediation has taken place as of this time.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: Patricia Donald

Printed Name: Patricia Donald

Title: Regulatory Analyst

E-mail Address: Patricia_Donald@xtoenergy.com

Date: 09/28/2017 Phone:432-571-8220

OIL CONSERVATION DIVISION

Approved by Environmental Specialist: ONJ

Approval Date: 9/29/2017 Expiration Date:

Conditions of Approval: see attached directive

Attached ☑

* Attach Additional Sheets If Necessary

fOY1727249863 1RP-4832 nOY1727250040 pOY1727250266

Operator/Responsible Party,

The OCD has received the form C-141 you provided on _9/29/2017_ regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number _1RP-4832__ has been assigned. **Please refer to this case number in all future correspondence.**

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

> *The responsible person shall complete division-approved corrective action for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC.* [emphasis added]

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. **As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District _1_ office in __Hobbs____ on or before _10/29/2017_. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.**

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

● Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C_6 thru C_{36}), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.

● Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C_6 thru C_{36}), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.

● Nominal detection limits for field and laboratory analyses must be provided.

● Composite sampling is not generally allowed.

● Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

●Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

● If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

● Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.

Jim Griswold
OCD Environmental Bureau Chief
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
505-476-3465
jim.griswold@state.nm.us

Attachment B

OCD/BLM Communications

Mark Larson

From: Yu, Olivia, EMNRD [Olivia.Yu@state.nm.us]
Sent: Tuesday, November 28, 2017 1:06 PM
To: Mark Larson
Cc: 'Williams, Luke'; 'Donald, Patricia'
Subject: RE: 1RP-4832 - Delineation Plan, EMSU B Satellite #13 Trunk Line Leak, XTO Energy, Inc., October 15, 2017

Mr. Larson:

The proposed delineation report for 1RP-4832 is approved with these stipulations:

- Please note that based on the release outlined in Figure 3, there are 2 NMOSE wells (L04507 & L10135) within 1000 ft. of the GPS coordinates for the site.
- Delineate to 600 mg/kg chloride levels and maintained for 10 ft. further in depth.
- At least two depths for each sample location must have laboratory analyses: depth obtained and depth maintained permissible levels of chlorides, TPH extended, and BTEX. Include all pertinent field data.
- Please be advised that with average depth to groundwater < 50 ft. bgs, a temporary monitoring well may be required.
- In the subsequent delineation report, please include on one or more appropriately scaled maps: 1) the release area and pipeline trench outlined; 2) delineation and proposed confirmation sample locations demarcated with GPS coordinates; 3) and dimensions and depths of proposed excavations annotated.

Please confirm or inform if clarification is required.

Thanks,

Olivia Yu
Environmental Specialist
NMOCD, District I
Olivia.yu@state.nm.us
575-393-6161 x113

From: Mark Larson [mailto:Mark@laenvironmental.com]
Sent: Monday, November 27, 2017 2:41 PM
To: Yu, Olivia, EMNRD <Olivia.Yu@state.nm.us>
Cc: 'Williams, Luke' <Luke_Williams@xtoenergy.com>; 'Donald, Patricia' <Patricia_Donald@xtoenergy.com>
Subject: FW: 1RP-4832 - Delineation Plan, EMSU B Satellite #13 Trunk Line Leak, XTO Energy, Inc., October 15, 2017

Hello Olivia,
This message is submitted on behalf of XTO Energy, Inc. (XTO) as a follow up to the email sent on October 19, 2017, conveying the delineation plan for 1RP-4832, and approval to delineate the spill according to the attached plan? Please contact Luke Williams with XTO at (432) 682-8873 or email Luke_Willaims@xtoenergy.com or me if you have questions.
Respectfully,

Mark J. Larson, P.G.
President/Sr. Project Manager
507 N. Marienfeld St., Suite 205
Midland, Texas 79701
(432) 687-0901 (O)
(432) 556-8656 (C)

LArson & Associates, Inc.
Environmental Consultants

www.LAEnvironmental.com

"Serving the Permian Basin Since 2000"

From: Mark Larson
Sent: Thursday, October 19, 2017 5:44 PM
To: 'Yu, Olivia, EMNRD'
Cc: 'Williams, Luke'; Sarah Johnson
Subject: Re: 1RP-4832 - Delineation Plan, EMSU B Satellite #13 Trunk Line Leak, XTO Energy, Inc., October 15, 2017

Dear Ms. Yu,
Larson & Associates, Inc. (LAI), on behalf of XTO Energy, Inc. (XTO), submits the attached delineation plan for a produced water leak from the flow line from EMSU Satellite #13 trunk line. Please contact Luke Williams with XTO at (432) 682-8873 or email Luke_Willaims@xtoenergy.com or me if you have questions.
Respectfully,

Mark J. Larson, P.G.
President/Sr. Project Manager
507 N. Marienfeld St., Suite 205
Midland, Texas 79701
(432) 687-0901 (O)
(432) 556-8656 (C)

Appendix C

Laboratory Reports

PERMIAN BASIN
ENVIRONMENTAL LAB, LP
1400 Rankin Hwy
Midland, TX 79701

PBELAB

Analytical Report

Prepared for:

Mark Larson

Larson & Associates, Inc.

P.O. Box 50685

Midland, TX 79710

Project: EMSU Sat 13 Trunk Line

Project Number: 17-0193-01

Location:

Lab Order Number: 7L11002

NELAP ACCREDITED TNI LABORATORY

NELAP/TCEQ # T104704516-16-7

Report Date: 12/13/17

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: EMSU Sat 13 Trunk Line
Project Number: 17-0193-01
Project Manager: Mark Larson

Fax: (432) 687-0456

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
DP-1 0-1	7L11002-01	Soil	12/08/17 11:15	12-11-2017 08:53
DP-1 1-2	7L11002-02	Soil	12/08/17 11:16	12-11-2017 08:53
DP-1 2-3	7L11002-03	Soil	12/08/17 11:17	12-11-2017 08:53
DP-2 0-1	7L11002-04	Soil	12/08/17 11:22	12-11-2017 08:53
DP-2 1-2	7L11002-05	Soil	12/08/17 11:23	12-11-2017 08:53
DP-2 2-3	7L11002-06	Soil	12/08/17 11:24	12-11-2017 08:53
DP-2 3-4	7L11002-07	Soil	12/08/17 11:25	12-11-2017 08:53
DP-2 4-6	7L11002-08	Soil	12/08/17 11:26	12-11-2017 08:53
DP-2 6-8	7L11002-09	Soil	12/08/17 11:27	12-11-2017 08:53
DP-2 8-10	7L11002-10	Soil	12/08/17 11:28	12-11-2017 08:53
DP-2 10-12	7L11002-11	Soil	12/08/17 11:29	12-11-2017 08:53
DP-3 0-1	7L11002-12	Soil	12/08/17 11:59	12-11-2017 08:53
DP-3 1-2	7L11002-13	Soil	12/08/17 12:00	12-11-2017 08:53
DP-3 2-3	7L11002-14	Soil	12/08/17 12:01	12-11-2017 08:53
DP-3 3-4	7L11002-15	Soil	12/08/17 12:02	12-11-2017 08:53
DP-3 4-6	7L11002-16	Soil	12/08/17 12:03	12-11-2017 08:53
DP-4 0-1	7L11002-17	Soil	12/08/17 12:16	12-11-2017 08:53
DP-4 1-2	7L11002-18	Soil	12/08/17 12:17	12-11-2017 08:53
DP-4 2-3	7L11002-19	Soil	12/08/17 12:18	12-11-2017 08:53
DP-4 3-4	7L11002-20	Soil	12/08/17 12:20	12-11-2017 08:53
DP-5 0-1	7L11002-21	Soil	12/08/17 12:44	12-11-2017 08:53
DP-5 1-2	7L11002-22	Soil	12/08/17 12:45	12-11-2017 08:53
DP-5 2-3	7L11002-23	Soil	12/08/17 12:46	12-11-2017 08:53
DP-5 3-4	7L11002-24	Soil	12/08/17 12:48	12-11-2017 08:53
DP-6 0-1	7L11002-25	Soil	12/08/17 13:18	12-11-2017 08:53
DP-6 1-2	7L11002-26	Soil	12/08/17 13:19	12-11-2017 08:53
DP-6 2-3	7L11002-27	Soil	12/08/17 13:20	12-11-2017 08:53
DP-6 3-4	7L11002-28	Soil	12/08/17 13:21	12-11-2017 08:53

DP-1 0-1

7L11002-01 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00109	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Toluene	ND	0.00217	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Ethylbenzene	ND	0.00109	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Xylene (p/m)	ND	0.00217	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Xylene (o)	ND	0.00109	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*94.2 %*	*75-125*		*P7L1202*	*12/11/17*	*12/11/17*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*79.6 %*	*75-125*		*P7L1202*	*12/11/17*	*12/11/17*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.09	mg/kg dry	1	P7L1203	12/12/17	12/12/17	EPA 300.0	
% Moisture	**8.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	27.2	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C12-C28	ND	27.2	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C28-C35	ND	27.2	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*116 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*133 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	*S-GC*
Total Petroleum Hydrocarbon C6-C35	ND	27.2	mg/kg dry	1	[CALC]	12/11/17	12/11/17	calc	

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: EMSU Sat 13 Trunk Line
Project Number: 17-0193-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-1 1-2

7L11002-02 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.15	mg/kg dry	1	P7L1203	12/12/17	12/12/17	EPA 300.0	
% Moisture	**13.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.7	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C12-C28	ND	28.7	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C28-C35	ND	28.7	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*103 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*117 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	28.7	mg/kg dry	1	[CALC]	12/11/17	12/11/17	calc	

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: EMSU Sat 13 Trunk Line
Project Number: 17-0193-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-1 2-3

7L11002-03 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.12	mg/kg dry	1	P7L1203	12/12/17	12/12/17	EPA 300.0	
% Moisture	**11.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.1	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C12-C28	ND	28.1	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C28-C35	ND	28.1	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*112 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*131 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	*S-GC*
Total Petroleum Hydrocarbon C6-C35	ND	28.1	mg/kg dry	1	[CALC]	12/11/17	12/11/17	calc	

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: EMSU Sat 13 Trunk Line
Project Number: 17-0193-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-2 0-1

7L11002-04 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00105	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Toluene	ND	0.00211	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Ethylbenzene	ND	0.00105	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Xylene (p/m)	ND	0.00211	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Xylene (o)	ND	0.00105	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*103 %*	*75-125*		*P7L1202*	*12/11/17*	*12/11/17*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*75.1 %*	*75-125*		*P7L1202*	*12/11/17*	*12/11/17*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.05	mg/kg dry	1	P7L1203	12/12/17	12/12/17	EPA 300.0	
% Moisture	**5.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.3	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C12-C28	ND	26.3	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C28-C35	ND	26.3	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*145 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	*S-HI1*
Surrogate: o-Terphenyl		*170 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	*S-HI1*
Total Petroleum Hydrocarbon C6-C35	ND	26.3	mg/kg dry	1	[CALC]	12/11/17	12/11/17	calc	

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: EMSU Sat 13 Trunk Line
Project Number: 17-0193-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-2 1-2

7L11002-05 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.14	mg/kg dry	1	P7L1203	12/12/17	12/12/17	EPA 300.0	
% Moisture	**12.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.4	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C12-C28	ND	28.4	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C28-C35	ND	28.4	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*143 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	*S-HI1*
Surrogate: o-Terphenyl		*169 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	*S-HI1*
Total Petroleum Hydrocarbon C6-C35	ND	28.4	mg/kg dry	1	[CALC]	12/11/17	12/11/17	calc	

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7L11002-06 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.15	mg/kg dry	1	P7L1203	12/12/17	12/12/17	EPA 300.0	
% Moisture	**13.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.7	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C12-C28	ND	28.7	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C28-C35	ND	28.7	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*154 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	*S-HI1*
Surrogate: o-Terphenyl		*182 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	*S-HI1*
Total Petroleum Hydrocarbon C6-C35	ND	28.7	mg/kg dry	1	[CALC]	12/11/17	12/11/17	calc	

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7L11002-07 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**74.1**	1.14	mg/kg dry	1	P7L1203	12/12/17	12/12/17	EPA 300.0	
% Moisture	**12.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.4	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C12-C28	ND	28.4	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C28-C35	ND	28.4	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*87.2 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*102 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	28.4	mg/kg dry	1	[CALC]	12/11/17	12/11/17	calc	

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7L11002-08 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**114**	1.04	mg/kg dry	1	P7L1203	12/12/17	12/12/17	EPA 300.0	
% Moisture	**4.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.0	mg/kg dry	1	P7L1102	12/11/17	12/12/17	TPH 8015M	
>C12-C28	ND	26.0	mg/kg dry	1	P7L1102	12/11/17	12/12/17	TPH 8015M	
>C28-C35	ND	26.0	mg/kg dry	1	P7L1102	12/11/17	12/12/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*153 %*	*70-130*		*P7L1102*	*12/11/17*	*12/12/17*	*TPH 8015M*	*S-HI1*
Surrogate: o-Terphenyl		*176 %*	*70-130*		*P7L1102*	*12/11/17*	*12/12/17*	*TPH 8015M*	*S-HI1*
Total Petroleum Hydrocarbon C6-C35	ND	26.0	mg/kg dry	1	[CALC]	12/11/17	12/12/17	calc	

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7L11002-09 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**375**	1.05	mg/kg dry	1	P7L1203	12/12/17	12/12/17	EPA 300.0	
% Moisture	**5.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.3	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C12-C28	ND	26.3	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C28-C35	ND	26.3	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*82.5 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*98.8 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	26.3	mg/kg dry	1	[CALC]	12/11/17	12/11/17	calc	

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7L11002-10 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**573**	1.08	mg/kg dry	1	P7L1203	12/12/17	12/12/17	EPA 300.0	
% Moisture	**7.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.9	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C12-C28	ND	26.9	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C28-C35	ND	26.9	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*94.3 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*117 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	26.9	mg/kg dry	1	[CALC]	12/11/17	12/11/17	calc	

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7L11002-11 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**789**	1.15	mg/kg dry	1	P7L1203	12/12/17	12/12/17	EPA 300.0	
% Moisture	**13.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.7	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C12-C28	ND	28.7	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C28-C35	ND	28.7	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*107 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*124 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	28.7	mg/kg dry	1	[CALC]	12/11/17	12/11/17	calc	

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7L11002-12 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00114	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Toluene	ND	0.00227	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Ethylbenzene	ND	0.00114	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Xylene (p/m)	ND	0.00227	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Xylene (o)	ND	0.00114	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*81.1 %*	*75-125*		*P7L1202*	*12/11/17*	*12/11/17*	*EPA 8021B*	
Surrogate: 4-Bromofluorobenzene		*97.9 %*	*75-125*		*P7L1202*	*12/11/17*	*12/11/17*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**48.2**	1.14	mg/kg dry	1	P7L1203	12/12/17	12/12/17	EPA 300.0	
% Moisture	**12.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.4	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C12-C28	ND	28.4	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C28-C35	ND	28.4	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*109 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*126 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	28.4	mg/kg dry	1	[CALC]	12/11/17	12/11/17	calc	

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7L11002-13 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**54.1**	1.09	mg/kg dry	1	P7L1203	12/12/17	12/12/17	EPA 300.0	
% Moisture	**8.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	27.2	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C12-C28	ND	27.2	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C28-C35	ND	27.2	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*162 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	*S-HI1*
Surrogate: o-Terphenyl		*184 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	*S-HI1*
Total Petroleum Hydrocarbon C6-C35	ND	27.2	mg/kg dry	1	[CALC]	12/11/17	12/11/17	calc	

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7L11002-14 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**6.47**	1.12	mg/kg dry	1	P7L1203	12/12/17	12/12/17	EPA 300.0	
% Moisture	**11.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.1	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C12-C28	ND	28.1	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C28-C35	ND	28.1	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*137 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	*S-HI1*
Surrogate: o-Terphenyl		*155 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	*S-HI1*
Total Petroleum Hydrocarbon C6-C35	ND	28.1	mg/kg dry	1	[CALC]	12/11/17	12/11/17	calc	

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7L11002-15 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**4.00**	1.11	mg/kg dry	1	P7L1203	12/12/17	12/12/17	EPA 300.0	
% Moisture	**10.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	27.8	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C12-C28	ND	27.8	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C28-C35	ND	27.8	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*129 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*151 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	*S-GC*
Total Petroleum Hydrocarbon C6-C35	ND	27.8	mg/kg dry	1	[CALC]	12/11/17	12/11/17	calc	

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7L11002-16 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**58.1**	1.11	mg/kg dry	1	P7L1203	12/12/17	12/12/17	EPA 300.0	
% Moisture	**10.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	27.8	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C12-C28	ND	27.8	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C28-C35	ND	27.8	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*99.4 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*113 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	27.8	mg/kg dry	1	[CALC]	12/11/17	12/11/17	calc	

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7L11002-17 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00106	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Toluene	ND	0.00213	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Ethylbenzene	ND	0.00106	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Xylene (p/m)	ND	0.00213	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Xylene (o)	ND	0.00106	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*84.8 %*	*75-125*		*P7L1202*	*12/11/17*	*12/11/17*	*EPA 8021B*	
Surrogate: 4-Bromofluorobenzene		*111 %*	*75-125*		*P7L1202*	*12/11/17*	*12/11/17*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**19.0**	1.06	mg/kg dry	1	P7L1203	12/12/17	12/12/17	EPA 300.0	
% Moisture	**6.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.6	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C12-C28	ND	26.6	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C28-C35	ND	26.6	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*97.3 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*115 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	26.6	mg/kg dry	1	[CALC]	12/11/17	12/11/17	calc	

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7L11002-18 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**2.11**	1.04	mg/kg dry	1	P7L1203	12/12/17	12/12/17	EPA 300.0	
% Moisture	**4.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.0	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C12-C28	ND	26.0	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C28-C35	ND	26.0	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*108 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*127 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	26.0	mg/kg dry	1	[CALC]	12/11/17	12/11/17	calc	

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Project Manager: Mark Larson

Fax: (432) 687-0456

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7L11002-19 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**41.2**	1.08	mg/kg dry	1	P7L1203	12/12/17	12/12/17	EPA 300.0	
% Moisture	**7.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.9	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C12-C28	ND	26.9	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C28-C35	ND	26.9	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*104 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*121 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	26.9	mg/kg dry	1	[CALC]	12/11/17	12/11/17	calc	

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7L11002-20 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**84.9**	1.11	mg/kg dry	1	P7L1203	12/12/17	12/12/17	EPA 300.0	
% Moisture	**10.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	27.8	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C12-C28	ND	27.8	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
>C28-C35	ND	27.8	mg/kg dry	1	P7L1102	12/11/17	12/11/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*94.5 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*111 %*	*70-130*		*P7L1102*	*12/11/17*	*12/11/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	27.8	mg/kg dry	1	[CALC]	12/11/17	12/11/17	calc	

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7L11002-21 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00105	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Toluene	ND	0.00211	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Ethylbenzene	ND	0.00105	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Xylene (p/m)	ND	0.00211	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Xylene (o)	ND	0.00105	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*71.9 %*	*75-125*		*P7L1202*	*12/11/17*	*12/11/17*	*EPA 8021B*	*S-GC*
Surrogate: 4-Bromofluorobenzene		*91.2 %*	*75-125*		*P7L1202*	*12/11/17*	*12/11/17*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**172**	1.05	mg/kg dry	1	P7L1301	12/13/17	12/13/17	EPA 300.0	
% Moisture	**5.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.3	mg/kg dry	1	P7L1103	12/11/17	12/12/17	TPH 8015M	
>C12-C28	**69.5**	26.3	mg/kg dry	1	P7L1103	12/11/17	12/12/17	TPH 8015M	
>C28-C35	ND	26.3	mg/kg dry	1	P7L1103	12/11/17	12/12/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*129 %*	*70-130*		*P7L1103*	*12/11/17*	*12/12/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*152 %*	*70-130*		*P7L1103*	*12/11/17*	*12/12/17*	*TPH 8015M*	*S-GC*
Total Petroleum Hydrocarbon C6-C35	**69.5**	26.3	mg/kg dry	1	[CALC]	12/11/17	12/12/17	calc	

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7L11002-22 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**444**	1.06	mg/kg dry	1	P7L1301	12/13/17	12/13/17	EPA 300.0	
% Moisture	**6.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.6	mg/kg dry	1	P7L1103	12/11/17	12/12/17	TPH 8015M	
>C12-C28	ND	26.6	mg/kg dry	1	P7L1103	12/11/17	12/12/17	TPH 8015M	
>C28-C35	ND	26.6	mg/kg dry	1	P7L1103	12/11/17	12/12/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*160 %*	*70-130*		*P7L1103*	*12/11/17*	*12/12/17*	*TPH 8015M*	*S-HI1*
Surrogate: o-Terphenyl		*183 %*	*70-130*		*P7L1103*	*12/11/17*	*12/12/17*	*TPH 8015M*	*S-HI1*
Total Petroleum Hydrocarbon C6-C35	ND	26.6	mg/kg dry	1	[CALC]	12/11/17	12/12/17	calc	

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7L11002-23 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**1450**	5.75	mg/kg dry	5	P7L1301	12/13/17	12/13/17	EPA 300.0	
% Moisture	**13.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.7	mg/kg dry	1	P7L1103	12/11/17	12/12/17	TPH 8015M	
>C12-C28	ND	28.7	mg/kg dry	1	P7L1103	12/11/17	12/12/17	TPH 8015M	
>C28-C35	ND	28.7	mg/kg dry	1	P7L1103	12/11/17	12/12/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*137 %*	*70-130*		*P7L1103*	*12/11/17*	*12/12/17*	*TPH 8015M*	*S-HI1*
Surrogate: o-Terphenyl		*156 %*	*70-130*		*P7L1103*	*12/11/17*	*12/12/17*	*TPH 8015M*	*S-HI1*
Total Petroleum Hydrocarbon C6-C35	ND	28.7	mg/kg dry	1	[CALC]	12/11/17	12/12/17	calc	

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7L11002-24 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**1510**	5.81	mg/kg dry	5	P7L1301	12/13/17	12/13/17	EPA 300.0	
% Moisture	**14.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	29.1	mg/kg dry	1	P7L1103	12/11/17	12/12/17	TPH 8015M	
>C12-C28	ND	29.1	mg/kg dry	1	P7L1103	12/11/17	12/12/17	TPH 8015M	
>C28-C35	ND	29.1	mg/kg dry	1	P7L1103	12/11/17	12/12/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*151 %*	*70-130*		*P7L1103*	*12/11/17*	*12/12/17*	*TPH 8015M*	*S-HI1*
Surrogate: o-Terphenyl		*174 %*	*70-130*		*P7L1103*	*12/11/17*	*12/12/17*	*TPH 8015M*	*S-HI1*
Total Petroleum Hydrocarbon C6-C35	ND	29.1	mg/kg dry	1	[CALC]	12/11/17	12/12/17	calc	

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7L11002-25 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00104	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Toluene	ND	0.00208	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Ethylbenzene	ND	0.00104	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Xylene (p/m)	ND	0.00208	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Xylene (o)	ND	0.00104	mg/kg dry	1	P7L1202	12/11/17	12/11/17	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*111 %*	*75-125*		*P7L1202*	*12/11/17*	*12/11/17*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*83.8 %*	*75-125*		*P7L1202*	*12/11/17*	*12/11/17*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**98.1**	1.04	mg/kg dry	1	P7L1301	12/13/17	12/13/17	EPA 300.0	
% Moisture	**4.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.0	mg/kg dry	1	P7L1103	12/11/17	12/12/17	TPH 8015M	
>C12-C28	ND	26.0	mg/kg dry	1	P7L1103	12/11/17	12/12/17	TPH 8015M	
>C28-C35	ND	26.0	mg/kg dry	1	P7L1103	12/11/17	12/12/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*127 %*	*70-130*		*P7L1103*	*12/11/17*	*12/12/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*148 %*	*70-130*		*P7L1103*	*12/11/17*	*12/12/17*	*TPH 8015M*	*S-GC*
Total Petroleum Hydrocarbon C6-C35	ND	26.0	mg/kg dry	1	[CALC]	12/11/17	12/12/17	calc	

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7L11002-26 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**27.9**	1.03	mg/kg dry	1	P7L1301	12/13/17	12/13/17	EPA 300.0	
% Moisture	**3.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	25.8	mg/kg dry	1	P7L1103	12/11/17	12/12/17	TPH 8015M	
>C12-C28	ND	25.8	mg/kg dry	1	P7L1103	12/11/17	12/12/17	TPH 8015M	
>C28-C35	ND	25.8	mg/kg dry	1	P7L1103	12/11/17	12/12/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*135 %*	*70-130*		*P7L1103*	*12/11/17*	*12/12/17*	*TPH 8015M*	*S-HI1*
Surrogate: o-Terphenyl		*157 %*	*70-130*		*P7L1103*	*12/11/17*	*12/12/17*	*TPH 8015M*	*S-HI1*
Total Petroleum Hydrocarbon C6-C35	ND	25.8	mg/kg dry	1	[CALC]	12/11/17	12/12/17	calc	

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7L11002-27 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**108**	1.11	mg/kg dry	1	P7L1301	12/13/17	12/13/17	EPA 300.0	
% Moisture	**10.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	27.8	mg/kg dry	1	P7L1103	12/11/17	12/12/17	TPH 8015M	
>C12-C28	ND	27.8	mg/kg dry	1	P7L1103	12/11/17	12/12/17	TPH 8015M	
>C28-C35	ND	27.8	mg/kg dry	1	P7L1103	12/11/17	12/12/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*125 %*	*70-130*		*P7L1103*	*12/11/17*	*12/12/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*148 %*	*70-130*		*P7L1103*	*12/11/17*	*12/12/17*	*TPH 8015M*	*S-GC*
Total Petroleum Hydrocarbon C6-C35	ND	27.8	mg/kg dry	1	[CALC]	12/11/17	12/12/17	calc	

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7L11002-28 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**562**	1.11	mg/kg dry	1	P7L1301	12/13/17	12/13/17	EPA 300.0	
% Moisture	**10.0**	0.1	%	1	P7L1217	12/12/17	12/12/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	27.8	mg/kg dry	1	P7L1103	12/11/17	12/12/17	TPH 8015M	
>C12-C28	ND	27.8	mg/kg dry	1	P7L1103	12/11/17	12/12/17	TPH 8015M	
>C28-C35	ND	27.8	mg/kg dry	1	P7L1103	12/11/17	12/12/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*104 %*	*70-130*		*P7L1103*	*12/11/17*	*12/12/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*122 %*	*70-130*		*P7L1103*	*12/11/17*	*12/12/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	27.8	mg/kg dry	1	[CALC]	12/11/17	12/12/17	calc	

Organics by GC - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7L1202 - General Preparation (GC)										
Blank (P7L1202-BLK1)				Prepared & Analyzed: 12/11/17						
Benzene	ND	0.00100	mg/kg wet							
Toluene	ND	0.00200	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00200	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 4-Bromofluorobenzene	*0.0651*		*"*	*0.0600*		*109*	*75-125*			
Surrogate: 1,4-Difluorobenzene	*0.0618*		*"*	*0.0600*		*103*	*75-125*			
LCS (P7L1202-BS1)				Prepared & Analyzed: 12/11/17						
Benzene	0.0923	0.00100	mg/kg wet	0.100		92.3	70-130			
Toluene	0.100	0.00200	"	0.100		100	70-130			
Ethylbenzene	0.118	0.00100	"	0.100		118	70-130			
Xylene (p/m)	0.215	0.00200	"				70-130			
Xylene (o)	0.114	0.00100	"				70-130			
Surrogate: 1,4-Difluorobenzene	*0.0518*		*"*	*0.0600*		*86.4*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*0.0580*		*"*	*0.0600*		*96.6*	*75-125*			
LCS Dup (P7L1202-BSD1)				Prepared & Analyzed: 12/11/17						
Benzene	0.0989	0.00100	mg/kg wet	0.100		98.9	70-130	6.97	20	
Toluene	0.103	0.00200	"	0.100		103	70-130	2.52	20	
Ethylbenzene	0.115	0.00100	"	0.100		115	70-130	2.44	20	
Xylene (p/m)	0.209	0.00200	"				70-130		20	
Xylene (o)	0.113	0.00100	"				70-130		20	
Surrogate: 4-Bromofluorobenzene	*0.0580*		*"*	*0.0600*		*96.6*	*75-125*			
Surrogate: 1,4-Difluorobenzene	*0.0553*		*"*	*0.0600*		*92.2*	*75-125*			
Calibration Blank (P7L1202-CCB1)				Prepared & Analyzed: 12/11/17						
Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	*0.0515*		*"*	*0.0600*		*85.9*	*75-125*			
Surrogate: 1,4-Difluorobenzene	*0.0436*		*"*	*0.0600*		*72.6*	*75-125*			

Organics by GC - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7L1202 - General Preparation (GC)										
Calibration Blank (P7L1202-CCB2)				Prepared & Analyzed: 12/11/17						
Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	*0.0630*		*"*	*0.0600*		*105*	*75-125*			
Surrogate: 1,4-Difluorobenzene	*0.0531*		*"*	*0.0600*		*88.5*	*75-125*			
Calibration Check (P7L1202-CCV1)				Prepared & Analyzed: 12/11/17						
Benzene	0.110	0.00100	mg/kg wet	0.100		110	80-120			
Toluene	0.117	0.00200	"	0.100		117	80-120			
Ethylbenzene	0.109	0.00100	"	0.100		109	80-120			
Xylene (p/m)	0.218	0.00200	"	0.200		109	80-120			
Xylene (o)	0.119	0.00100	"	0.100		119	80-120			
Surrogate: 4-Bromofluorobenzene	*0.0656*		*"*	*0.0600*		*109*	*75-125*			
Surrogate: 1,4-Difluorobenzene	*0.0602*		*"*	*0.0600*		*100*	*75-125*			
Calibration Check (P7L1202-CCV2)				Prepared & Analyzed: 12/11/17						
Benzene	0.0993	0.00100	mg/kg wet	0.100		99.3	80-120			
Toluene	0.101	0.00200	"	0.100		101	80-120			
Ethylbenzene	0.106	0.00100	"	0.100		106	80-120			
Xylene (p/m)	0.218	0.00200	"	0.200		109	80-120			
Xylene (o)	0.117	0.00100	"	0.100		117	80-120			
Surrogate: 1,4-Difluorobenzene	*0.0634*		*"*	*0.0600*		*106*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*0.0676*		*"*	*0.0600*		*113*	*75-125*			
Calibration Check (P7L1202-CCV3)				Prepared & Analyzed: 12/11/17						
Benzene	0.108	0.00100	mg/kg wet	0.100		108	80-120			
Toluene	0.113	0.00200	"	0.100		113	80-120			
Ethylbenzene	0.115	0.00100	"	0.100		115	80-120			
Xylene (p/m)	0.219	0.00200	"	0.200		109	80-120			
Xylene (o)	0.115	0.00100	"	0.100		115	80-120			
Surrogate: 4-Bromofluorobenzene	*0.0700*		*"*	*0.0600*		*117*	*75-125*			
Surrogate: 1,4-Difluorobenzene	*0.0610*		*"*	*0.0600*		*102*	*75-125*			

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7L1203 - * DEFAULT PREP *****										
Blank (P7L1203-BLK1)				Prepared & Analyzed: 12/12/17						
Chloride	ND	1.00	mg/kg wet							
LCS (P7L1203-BS1)				Prepared & Analyzed: 12/12/17						
Chloride	435	1.00	mg/kg wet	400		109	80-120			
LCS Dup (P7L1203-BSD1)				Prepared & Analyzed: 12/12/17						
Chloride	434	1.00	mg/kg wet	400		109	80-120	0.281	20	
Duplicate (P7L1203-DUP1)		**Source: 7L11002-01**		Prepared & Analyzed: 12/12/17						
Chloride	ND	1.09	mg/kg dry		ND				20	
Duplicate (P7L1203-DUP2)		**Source: 7L11002-11**		Prepared & Analyzed: 12/12/17						
Chloride	792	1.15	mg/kg dry		789			0.388	20	
Batch P7L1217 - * DEFAULT PREP *****										
Blank (P7L1217-BLK1)				Prepared & Analyzed: 12/12/17						
% Moisture	ND	0.1	%							
Duplicate (P7L1217-DUP1)		**Source: 7L11002-26**		Prepared & Analyzed: 12/12/17						
% Moisture	3.0	0.1	%		3.0			0.00	20	
Duplicate (P7L1217-DUP2)		**Source: 7L11007-01**		Prepared & Analyzed: 12/12/17						
% Moisture	6.0	0.1	%		6.0			0.00	20	
Batch P7L1301 - * DEFAULT PREP *****										
Blank (P7L1301-BLK1)				Prepared & Analyzed: 12/13/17						
Chloride	ND	1.00	mg/kg wet							

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7L1301 - * DEFAULT PREP *** **										
LCS (P7L1301-BS1)				Prepared & Analyzed: 12/13/17						
Chloride	406	1.00	mg/kg wet	400		102	80-120			
LCS Dup (P7L1301-BSD1)				Prepared & Analyzed: 12/13/17						
Chloride	404	1.00	mg/kg wet	400		101	80-120	0.504	20	
Duplicate (P7L1301-DUP1)		**Source: 7L11002-21**		Prepared & Analyzed: 12/13/17						
Chloride	191	1.05	mg/kg dry		172			10.6	20	
Duplicate (P7L1301-DUP2)		**Source: 7L11004-05**		Prepared & Analyzed: 12/13/17						
Chloride	82.3	1.20	mg/kg dry		80.2			2.65	20	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7L1102 - General Preparation (GC)										
Blank (P7L1102-BLK1)				Prepared & Analyzed: 12/11/17						
C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	*78.2*		*"*	*100*		*78.2*	*70-130*			
Surrogate: o-Terphenyl	*44.5*		*"*	*50.0*		*89.0*	*70-130*			
LCS (P7L1102-BS1)				Prepared & Analyzed: 12/11/17						
C6-C12	871	25.0	mg/kg wet	1000		87.1	75-125			
>C12-C28	819	25.0	"	1000		81.9	75-125			
Surrogate: 1-Chlorooctane	*99.0*		*"*	*100*		*99.0*	*70-130*			
Surrogate: o-Terphenyl	*45.3*		*"*	*50.0*		*90.7*	*70-130*			
LCS Dup (P7L1102-BSD1)				Prepared & Analyzed: 12/11/17						
C6-C12	947	25.0	mg/kg wet	1000		94.7	75-125	8.41	20	
>C12-C28	869	25.0	"	1000		86.9	75-125	5.94	20	
Surrogate: 1-Chlorooctane	*102*		*"*	*100*		*102*	*70-130*			
Surrogate: o-Terphenyl	*47.9*		*"*	*50.0*		*95.8*	*70-130*			
Calibration Blank (P7L1102-CCB1)				Prepared & Analyzed: 12/11/17						
C6-C12	15.8		mg/kg wet							
>C12-C28	6.75		"							
Surrogate: 1-Chlorooctane	*78.2*		*"*	*100*		*78.2*	*70-130*			
Surrogate: o-Terphenyl	*45.5*		*"*	*50.0*		*91.0*	*70-130*			
Calibration Blank (P7L1102-CCB2)				Prepared & Analyzed: 12/11/17						
C6-C12	16.4		mg/kg wet							
>C12-C28	7.76		"							
Surrogate: 1-Chlorooctane	*95.3*		*"*	*100*		*95.3*	*70-130*			
Surrogate: o-Terphenyl	*55.0*		*"*	*50.0*		*110*	*70-130*			

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7L1102 - General Preparation (GC)										
Calibration Check (P7L1102-CCV1)				Prepared & Analyzed: 12/11/17						
C6-C12	504	25.0	mg/kg wet	500		101	85-115			
>C12-C28	431	25.0	"	500		86.2	85-115			
Surrogate: 1-Chlorooctane	*95.4*		*"*	*100*		*95.4*	*70-130*			
Surrogate: o-Terphenyl	*51.2*		*"*	*50.0*		*102*	*70-130*			
Calibration Check (P7L1102-CCV2)				Prepared & Analyzed: 12/11/17						
C6-C12	469	25.0	mg/kg wet	500		93.8	85-115			
>C12-C28	407	25.0	"	500		81.3	85-115			
Surrogate: 1-Chlorooctane	*90.4*		*"*	*100*		*90.4*	*70-130*			
Surrogate: o-Terphenyl	*48.7*		*"*	*50.0*		*97.4*	*70-130*			
Calibration Check (P7L1102-CCV3)				Prepared: 12/11/17 Analyzed: 12/12/17						
C6-C12	544	25.0	mg/kg wet	500		109	85-115			
>C12-C28	485	25.0	"	500		97.0	85-115			
Surrogate: 1-Chlorooctane	*110*		*"*	*100*		*110*	*70-130*			
Surrogate: o-Terphenyl	*56.2*		*"*	*50.0*		*112*	*70-130*			
Duplicate (P7L1102-DUP1)	**Source: 7L11002-20**			Prepared: 12/11/17 Analyzed: 12/12/17						
C6-C12	23.5	27.8	mg/kg dry		21.5			9.28	20	
>C12-C28	ND	27.8	"		ND				20	
Surrogate: 1-Chlorooctane	*115*		*"*	*111*		*103*	*70-130*			
Surrogate: o-Terphenyl	*68.8*		*"*	*55.6*		*124*	*70-130*			
Batch P7L1103 - General Preparation (GC)										
Blank (P7L1103-BLK1)				Prepared: 12/11/17 Analyzed: 12/12/17						
C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	*110*		*"*	*100*		*110*	*70-130*			
Surrogate: o-Terphenyl	*62.8*		*"*	*50.0*		*126*	*70-130*			

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7L1103 - General Preparation (GC)										
LCS (P7L1103-BS1)				Prepared: 12/11/17 Analyzed: 12/12/17						
C6-C12	1080	25.0	mg/kg wet	1000		108	75-125			
>C12-C28	1020	25.0	"	1000		102	75-125			
Surrogate: 1-Chlorooctane	*117*		*"*	*100*		*117*	*70-130*			
Surrogate: o-Terphenyl	*55.6*		*"*	*50.0*		*111*	*70-130*			
LCS Dup (P7L1103-BSD1)				Prepared: 12/11/17 Analyzed: 12/12/17						
C6-C12	1100	25.0	mg/kg wet	1000		110	75-125	1.98	20	
>C12-C28	1030	25.0	"	1000		103	75-125	1.54	20	
Surrogate: 1-Chlorooctane	*122*		*"*	*100*		*122*	*70-130*			
Surrogate: o-Terphenyl	*56.1*		*"*	*50.0*		*112*	*70-130*			
Calibration Blank (P7L1103-CCB1)				Prepared: 12/11/17 Analyzed: 12/12/17						
C6-C12	16.0		mg/kg wet							
>C12-C28	18.4		"							
Surrogate: 1-Chlorooctane	*104*		*"*	*100*		*104*	*70-130*			
Surrogate: o-Terphenyl	*59.7*		*"*	*50.0*		*119*	*70-130*			
Calibration Blank (P7L1103-CCB2)				Prepared: 12/11/17 Analyzed: 12/12/17						
C6-C12	13.8		mg/kg wet							
>C12-C28	19.7		"							
Surrogate: 1-Chlorooctane	*111*		*"*	*100*		*111*	*70-130*			
Surrogate: o-Terphenyl	*62.8*		*"*	*50.0*		*126*	*70-130*			
Calibration Check (P7L1103-CCV1)				Prepared: 12/11/17 Analyzed: 12/12/17						
C6-C12	544	25.0	mg/kg wet	500		109	85-115			
>C12-C28	485	25.0	"	500		97.0	85-115			
Surrogate: 1-Chlorooctane	*110*		*"*	*100*		*110*	*70-130*			
Surrogate: o-Terphenyl	*56.2*		*"*	*50.0*		*112*	*70-130*			

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7L1103 - General Preparation (GC)										
Calibration Check (P7L1103-CCV2)				Prepared: 12/11/17 Analyzed: 12/12/17						
C6-C12	570	25.0	mg/kg wet	500		114	85-115			
>C12-C28	528	25.0	"	500		106	85-115			
Surrogate: 1-Chlorooctane	*113*		*"*	*100*		*113*	*70-130*			
Surrogate: o-Terphenyl	*59.4*		*"*	*50.0*		*119*	*70-130*			
Calibration Check (P7L1103-CCV3)				Prepared: 12/11/17 Analyzed: 12/12/17						
C6-C12	563	25.0	mg/kg wet	500		113	85-115			
>C12-C28	557	25.0	"	500		111	85-115			
Surrogate: 1-Chlorooctane	*117*		*"*	*100*		*117*	*70-130*			
Surrogate: o-Terphenyl	*59.2*		*"*	*50.0*		*118*	*70-130*			
Duplicate (P7L1103-DUP1)	**Source: 7L11007-01**			Prepared: 12/11/17 Analyzed: 12/12/17						
C6-C12	760	133	mg/kg dry		825			8.21	20	
>C12-C28	8040	133	"		8380			4.09	20	
Surrogate: 1-Chlorooctane	*107*		*"*	*106*		*100*	*70-130*			
Surrogate: o-Terphenyl	*56.1*		*"*	*53.2*		*105*	*70-130*			

Notes and Definitions

S-HI1	Both Surrogate recoveries were above the acceptance limits, however, the sample the sample was non-detect for the compounds of interest.
S-GC	Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.
BULK	Samples received in Bulk soil containers
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
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Brent Barron Date: 12/13/2017

Brent Barron, Laboratory Director/Technical Director

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

DATE: 12-11-2017 PAGE 1 OF 1

PO #: _____ LAB WORK ORDER #: 7L1062

PROJECT LOCATION OR NAME: EMSU Sec. 13 Trunk L

LAI PROJECT #: 17-0193-01 COLLECTOR: ZB / AT

Data Reported to:

TRRP report? ☐ Yes ☒ No

TIME ZONE: Time zone/State: MST

S=SOIL W=WATER A=AIR P=PAINT SL=SLUDGE OT=OTHER

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☒ | MTBE ☐ | TRPH 418.1 ☐ | TPH 1005 ☐ | TPH 1006 ☐ | GASOLINE MOD 8015 ☒ | DIESEL - MOD 8015 ☒ | VOC 8260 ☐ | SVOC 8270 ☐ | PAH 8270 ☐ | HOLDPAH ☐ | 8081 PESTICIDES ☐ | 8082 PCBS ☐ | 8151 HERBICIDES ☐ | TCLP - METALS (RCRA) ☐ | TCLP VOC ☐ | TCLP - PEST ☐ | HERB ☐ | Semi-VOC ☐ | TOTAL METALS (RCRA) ☐ | OTHER LIST ☐ | LEAD - TOTAL ☐ | D.W. 200.8 ☐ | TCLP ☐ | RCI ☐ | TOX ☐ | FLASHPOINT ☐ | TDS ☐ | TSS ☐ | % MOISTURE ☐ | CYANIDE ☐ | pH ☐ | HEXAVALENT CHROMIUM ☐ | EXPLOSIVES ☐ | PECHLORATE ☐ | CHLORIDE ☒ | ANIONS ☐ | ALKALINITY ☐ | M 300

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	BTEX ☒	TPH 1005 ☐ TPH 1006 ☐ ☒	GASOLINE MOD 8015 ☒	DIESEL - MOD 8015 ☒	CHLORIDE ☒	FIELD NOTES
DP-1 0-1	1	12/8	11:15	S	1				X		X	X	X		X	ONLY RUN BTEX ON First SAMPLE (0-1) OF EACH LOCATION
1-2	2		11:16													
2-3	3		11:17													
DP-2 0-1	4		11:22													
1-2	5		11:23													
2-3	6		11:24													
3-4	7		11:25													
4-6	8		11:26													
6-8	9		11:27													
8-10	10		11:28													
10-12	11		11:29													
DP-3 0-1	12		11:59													
1-2	13		12:00													
2-3	14		12:01													
3-4	15		12:02													
TOTAL																

RELINQUISHED BY:(Signature) DATE/TIME 12/11/2017 RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature) 12/11/17 853

TURN AROUND TIME
NORMAL ☐
1 DAY ☐
2 DAY ☒
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: -3.4 THERM #: _____
CUSTODY SEALS - ☐ BROKEN ☑ INTACT ☐ NOT USED
☐ CARRIER BILL # _____
☒ HAND DELIVERED

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to:

DATE: 12.11.2017 PAGE 2 OF 4
PO #: LAB WORK ORDER #:
PROJECT LOCATION OR NAME: EMSU Sec. 13 Trunk Line
LAI PROJECT #: 17-0193-01 COLLECTOR: ZB; AT

TRRP report? ☐ Yes ☒ No

TIME ZONE: Time zone/State: MST

S=SOIL W=WATER A=AIR P=PAINT SL=SLUDGE OT=OTHER

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☒ MTBE ☐ | TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐ | GASOLINE MOD 8015 ☒ | DIESEL - MOD 8015 ☒ ONLY | VOC 8260 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ | 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ | 8082 PCBS ☐ | TCLP - METALS (RCRA) ☐ TCLP VOC ☐ | TCLP - PEST ☐ HERB ☐ SemiVOC ☐ | TOTAL METALS (RCRA) ☐ OTHER LIST ☐ | LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐ | RCI ☐ TOX ☐ FLASHPOINT ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | pH ☐ HEXAVALENT CHROMIUM ☐ | EXPLOSIVES ☐ PECHLORATE ☐ | CHLORIDE ☒ ANIONS ☐ ALKALINITY ☐ | M 300

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	BTEX ☒	TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐	GASOLINE MOD 8015 ☒	DIESEL - MOD 8015 ☒ ONLY	VOC 8260 ☐	SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐	8081 PESTICIDES ☐ 8151 HERBICIDES ☐	8082 PCBS ☐	TCLP - METALS (RCRA) ☐ TCLP VOC ☐	TCLP - PEST ☐ HERB ☐ SemiVOC ☐	TOTAL METALS (RCRA) ☐ OTHER LIST ☐	LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐	RCI ☐ TOX ☐ FLASHPOINT ☐	TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐	pH ☐ HEXAVALENT CHROMIUM ☐	EXPLOSIVES ☐ PECHLORATE ☐	CHLORIDE ☒ ANIONS ☐ ALKALINITY ☐	M 300	FIELD NOTES
DP-3 4-6	16	12/8	12:03	S	1				X		X		X	X													X		ONLY RUN BTEX ON FIRST SAMPLE (0-1) OF EACH LOCATION
DP-4 0-1	17		12:16																										
1-2	18		12:17																										
2-3	19		12:18																										
3-4	20		12:20																										
DP-5 0-1	21		12:44																										
1-2	22		12:45																										
2-3	23		12:46																										
3-4	24		12:48																										
DP-6 0-1	25		13:18																										
1-2	26		13:19																										
2-3	27		13:20																										
3-4	28		13:21																										
TOTAL																													

RELINQUISHED BY:(Signature) DATE/TIME 12/11/2017 RECEIVED BY: (Signature)
RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)
RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature) 12-11-17 853

TURN AROUND TIME
NORMAL ☐
1 DAY ☐
2 DAY ☒
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: -3.4 THERM #:
CUSTODY SEALS - ☐ BROKEN ☒ INTACT ☐ NOT USED
☐ CARRIER BILL #
☒ HAND DELIVERED

Frozen

PERMIAN BASIN
ENVIRONMENTAL LAB, LP
1400 Rankin Hwy
Midland, TX 79701

PBELAB

Analytical Report

Prepared for:

Mark Larson

Larson & Associates, Inc.

P.O. Box 50685

Midland, TX 79710

Project: EMSU Sat. B Trunk Line

Project Number: 17-0193-01

Location:

Lab Order Number: 7L12001

NELAP ACCREDITED TNI LABORATORY

NELAP/TCEQ # T104704516-16-7

Report Date: 12/14/17

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: EMSU Sat. B Trunk Line
Project Number: 17-0193-01
Project Manager: Mark Larson

Fax: (432) 687-0456

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
DP-7 0-1	7L12001-01	Soil	12/11/17 10:47	12-12-2017 08:20
DP-7 1-2	7L12001-02	Soil	12/11/17 10:48	12-12-2017 08:20
DP-7 2-3	7L12001-03	Soil	12/11/17 10:49	12-12-2017 08:20
DP-7 3-4	7L12001-04	Soil	12/11/17 10:50	12-12-2017 08:20
DP-7 4-6	7L12001-05	Soil	12/11/17 10:51	12-12-2017 08:20
DP-7 6-8	7L12001-06	Soil	12/11/17 10:52	12-12-2017 08:20
DP-7 8-10	7L12001-07	Soil	12/11/17 10:53	12-12-2017 08:20
DP-7 10-12	7L12001-08	Soil	12/11/17 10:54	12-12-2017 08:20
DP-8 0-1	7L12001-09	Soil	12/11/17 11:29	12-12-2017 08:20
DP-8 1-2	7L12001-10	Soil	12/11/17 11:30	12-12-2017 08:20
DP-8 2-3	7L12001-11	Soil	12/11/17 11:31	12-12-2017 08:20
DP-8 3-4	7L12001-12	Soil	12/11/17 11:32	12-12-2017 08:20
HA-1 4-5	7L12001-13	Soil	12/11/17 12:13	12-12-2017 08:20
HA-1 5-6	7L12001-14	Soil	12/11/17 12:14	12-12-2017 08:20
HA-1 6-7	7L12001-15	Soil	12/11/17 12:15	12-12-2017 08:20
HA-1 7-8	7L12001-16	Soil	12/11/17 12:16	12-12-2017 08:20
HA-1 8-9	7L12001-17	Soil	12/11/17 12:17	12-12-2017 08:20
SW-N-2'	7L12001-18	Soil	12/11/17 12:11	12-12-2017 08:20
SW-S-2'	7L12001-19	Soil	12/11/17 12:09	12-12-2017 08:20
SW-E-2'	7L12001-20	Soil	12/11/17 12:10	12-12-2017 08:20
SW-W-2'	7L12001-21	Soil	12/11/17 12:12	12-12-2017 08:20

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: EMSU Sat. B Trunk Line
Project Number: 17-0193-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-7 0-1

7L12001-01 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
Organics by GC									
Benzene	ND	0.00105	mg/kg dry	1	P7L1212	12/12/17	12/12/17	EPA 8021B	
Toluene	ND	0.00211	mg/kg dry	1	P7L1212	12/12/17	12/12/17	EPA 8021B	
Ethylbenzene	ND	0.00105	mg/kg dry	1	P7L1212	12/12/17	12/12/17	EPA 8021B	
Xylene (p/m)	ND	0.00211	mg/kg dry	1	P7L1212	12/12/17	12/12/17	EPA 8021B	
Xylene (o)	ND	0.00105	mg/kg dry	1	P7L1212	12/12/17	12/12/17	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*102 %*	*75-125*		*P7L1212*	*12/12/17*	*12/12/17*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*105 %*	*75-125*		*P7L1212*	*12/12/17*	*12/12/17*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.05	mg/kg dry	1	P7L1210	12/12/17	12/13/17	EPA 300.0	
% Moisture	**5.0**	0.1	%	1	P7L1305	12/13/17	12/13/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.3	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
>C12-C28	ND	26.3	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
>C28-C35	ND	26.3	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*79.0 %*	*70-130*		*P7L1214*	*12/12/17*	*12/12/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*89.6 %*	*70-130*		*P7L1214*	*12/12/17*	*12/12/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	26.3	mg/kg dry	1	[CALC]	12/12/17	12/12/17	calc	

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7L12001-02 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**138**	1.12	mg/kg dry	1	P7L1210	12/12/17	12/13/17	EPA 300.0	
% Moisture	**11.0**	0.1	%	1	P7L1305	12/13/17	12/13/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.1	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
>C12-C28	ND	28.1	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
>C28-C35	ND	28.1	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*95.8 %*	*70-130*		*P7L1214*	*12/12/17*	*12/12/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*107 %*	*70-130*		*P7L1214*	*12/12/17*	*12/12/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	28.1	mg/kg dry	1	[CALC]	12/12/17	12/12/17	calc	

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7L12001-03 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**440**	1.20	mg/kg dry	1	P7L1210	12/12/17	12/13/17	EPA 300.0	
% Moisture	**17.0**	0.1	%	1	P7L1305	12/13/17	12/13/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	30.1	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
>C12-C28	ND	30.1	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
>C28-C35	ND	30.1	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*90.5 %*	*70-130*		*P7L1214*	*12/12/17*	*12/12/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*101 %*	*70-130*		*P7L1214*	*12/12/17*	*12/12/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	30.1	mg/kg dry	1	[CALC]	12/12/17	12/12/17	calc	

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7L12001-04 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**162**	1.18	mg/kg dry	1	P7L1210	12/12/17	12/13/17	EPA 300.0	
% Moisture	**15.0**	0.1	%	1	P7L1305	12/13/17	12/13/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	29.4	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
>C12-C28	ND	29.4	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
>C28-C35	ND	29.4	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*96.6 %*	*70-130*		*P7L1214*	*12/12/17*	*12/12/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*108 %*	*70-130*		*P7L1214*	*12/12/17*	*12/12/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	29.4	mg/kg dry	1	[CALC]	12/12/17	12/12/17	calc	

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7L12001-05 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**18.2**	1.23	mg/kg dry	1	P7L1210	12/12/17	12/13/17	EPA 300.0	
% Moisture	**19.0**	0.1	%	1	P7L1305	12/13/17	12/13/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	30.9	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
>C12-C28	ND	30.9	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
>C28-C35	ND	30.9	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*95.5 %*	*70-130*		*P7L1214*	*12/12/17*	*12/12/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*107 %*	*70-130*		*P7L1214*	*12/12/17*	*12/12/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	30.9	mg/kg dry	1	[CALC]	12/12/17	12/12/17	calc	

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7L12001-06 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**485**	1.14	mg/kg dry	1	P7L1210	12/12/17	12/13/17	EPA 300.0	
% Moisture	**12.0**	0.1	%	1	P7L1305	12/13/17	12/13/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.4	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
>C12-C28	ND	28.4	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
>C28-C35	ND	28.4	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*99.7 %*	*70-130*		*P7L1214*	*12/12/17*	*12/12/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*112 %*	*70-130*		*P7L1214*	*12/12/17*	*12/12/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	28.4	mg/kg dry	1	[CALC]	12/12/17	12/12/17	calc	

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7L12001-07 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**799**	5.62	mg/kg dry	5	P7L1210	12/12/17	12/13/17	EPA 300.0	
% Moisture	**11.0**	0.1	%	1	P7L1305	12/13/17	12/13/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.1	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
>C12-C28	ND	28.1	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
>C28-C35	ND	28.1	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*97.4 %*	*70-130*		*P7L1214*	*12/12/17*	*12/12/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*110 %*	*70-130*		*P7L1214*	*12/12/17*	*12/12/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	28.1	mg/kg dry	1	[CALC]	12/12/17	12/12/17	calc	

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7L12001-08 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**1140**	5.81	mg/kg dry	5	P7L1210	12/12/17	12/13/17	EPA 300.0	
% Moisture	**14.0**	0.1	%	1	P7L1305	12/13/17	12/13/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	29.1	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
>C12-C28	ND	29.1	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
>C28-C35	ND	29.1	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*93.7 %*	*70-130*		*P7L1214*	*12/12/17*	*12/12/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*105 %*	*70-130*		*P7L1214*	*12/12/17*	*12/12/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	29.1	mg/kg dry	1	[CALC]	12/12/17	12/12/17	calc	

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7L12001-09 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
Organics by GC									
Benzene	ND	0.00102	mg/kg dry	1	P7L1212	12/12/17	12/12/17	EPA 8021B	
Toluene	ND	0.00204	mg/kg dry	1	P7L1212	12/12/17	12/12/17	EPA 8021B	
Ethylbenzene	ND	0.00102	mg/kg dry	1	P7L1212	12/12/17	12/12/17	EPA 8021B	
Xylene (p/m)	ND	0.00204	mg/kg dry	1	P7L1212	12/12/17	12/12/17	EPA 8021B	
Xylene (o)	ND	0.00102	mg/kg dry	1	P7L1212	12/12/17	12/12/17	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*82.1 %*	*75-125*		*P7L1212*	*12/12/17*	*12/12/17*	*EPA 8021B*	
Surrogate: 4-Bromofluorobenzene		*101 %*	*75-125*		*P7L1212*	*12/12/17*	*12/12/17*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.02	mg/kg dry	1	P7L1210	12/12/17	12/13/17	EPA 300.0	
% Moisture	**2.0**	0.1	%	1	P7L1305	12/13/17	12/13/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	25.5	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*96.1 %*	*70-130*		*P7L1214*	*12/12/17*	*12/12/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*109 %*	*70-130*		*P7L1214*	*12/12/17*	*12/12/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	12/12/17	12/12/17	calc	

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7L12001-10 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.02	mg/kg dry	1	P7L1210	12/12/17	12/13/17	EPA 300.0	
% Moisture	**2.0**	0.1	%	1	P7L1305	12/13/17	12/13/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	25.5	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
>C12-C28	ND	25.5	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
>C28-C35	ND	25.5	mg/kg dry	1	P7L1214	12/12/17	12/12/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*102 %*	*70-130*		*P7L1214*	*12/12/17*	*12/12/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*114 %*	*70-130*		*P7L1214*	*12/12/17*	*12/12/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	25.5	mg/kg dry	1	[CALC]	12/12/17	12/12/17	calc	

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7L12001-11 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**5.38**	1.09	mg/kg dry	1	P7L1210	12/12/17	12/13/17	EPA 300.0	
% Moisture	**8.0**	0.1	%	1	P7L1305	12/13/17	12/13/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	27.2	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
>C12-C28	ND	27.2	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
>C28-C35	ND	27.2	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*94.9 %*	*70-130*		*P7L1214*	*12/12/17*	*12/13/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*106 %*	*70-130*		*P7L1214*	*12/12/17*	*12/13/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	27.2	mg/kg dry	1	[CALC]	12/12/17	12/13/17	calc	

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7L12001-12 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**9.47**	1.14	mg/kg dry	1	P7L1210	12/12/17	12/13/17	EPA 300.0	
% Moisture	**12.0**	0.1	%	1	P7L1305	12/13/17	12/13/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.4	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
>C12-C28	ND	28.4	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
>C28-C35	ND	28.4	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*102 %*	*70-130*		*P7L1214*	*12/12/17*	*12/13/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*113 %*	*70-130*		*P7L1214*	*12/12/17*	*12/13/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	28.4	mg/kg dry	1	[CALC]	12/12/17	12/13/17	calc	

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7L12001-13 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**397**	1.18	mg/kg dry	1	P7L1210	12/12/17	12/13/17	EPA 300.0	
% Moisture	**15.0**	0.1	%	1	P7L1305	12/13/17	12/13/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	29.4	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
>C12-C28	**66.1**	29.4	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
>C28-C35	ND	29.4	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*78.1 %*	*70-130*		*P7L1214*	*12/12/17*	*12/13/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*87.8 %*	*70-130*		*P7L1214*	*12/12/17*	*12/13/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	**66.1**	29.4	mg/kg dry	1	[CALC]	12/12/17	12/13/17	calc	

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7L12001-14 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**366**	1.11	mg/kg dry	1	P7L1210	12/12/17	12/13/17	EPA 300.0	
% Moisture	**10.0**	0.1	%	1	P7L1305	12/13/17	12/13/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	27.8	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
>C12-C28	ND	27.8	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
>C28-C35	ND	27.8	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*97.5 %*	*70-130*		*P7L1214*	*12/12/17*	*12/13/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*109 %*	*70-130*		*P7L1214*	*12/12/17*	*12/13/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	27.8	mg/kg dry	1	[CALC]	12/12/17	12/13/17	calc	

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Midland TX, 79710	Project Manager: Mark Larson	

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7L12001-15 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**633**	1.09	mg/kg dry	1	P7L1210	12/12/17	12/13/17	EPA 300.0	
% Moisture	**8.0**	0.1	%	1	P7L1305	12/13/17	12/13/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	27.2	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
>C12-C28	**637**	27.2	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
>C28-C35	**132**	27.2	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*108 %*	*70-130*		*P7L1214*	*12/12/17*	*12/13/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*123 %*	*70-130*		*P7L1214*	*12/12/17*	*12/13/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	**769**	27.2	mg/kg dry	1	[CALC]	12/12/17	12/13/17	calc	

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7L12001-16 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**786**	1.05	mg/kg dry	1	P7L1210	12/12/17	12/13/17	EPA 300.0	
% Moisture	**5.0**	0.1	%	1	P7L1305	12/13/17	12/13/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	**36.0**	26.3	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
>C12-C28	**1150**	26.3	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
>C28-C35	**223**	26.3	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*108 %*	*70-130*		*P7L1214*	*12/12/17*	*12/13/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*123 %*	*70-130*		*P7L1214*	*12/12/17*	*12/13/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	**1410**	26.3	mg/kg dry	1	[CALC]	12/12/17	12/13/17	calc	

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7L12001-17 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**777**	5.26	mg/kg dry	5	P7L1210	12/12/17	12/13/17	EPA 300.0	
% Moisture	**5.0**	0.1	%	1	P7L1305	12/13/17	12/13/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.3	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
>C12-C28	**217**	26.3	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
>C28-C35	**58.8**	26.3	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*101 %*	*70-130*		*P7L1214*	*12/12/17*	*12/13/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*114 %*	*70-130*		*P7L1214*	*12/12/17*	*12/13/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	**275**	26.3	mg/kg dry	1	[CALC]	12/12/17	12/13/17	calc	

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Midland TX, 79710	Project Manager: Mark Larson	

SW-N-2'

7L12001-18 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**1480**	5.10	mg/kg dry	5	P7L1210	12/12/17	12/13/17	EPA 300.0	
% Moisture	**2.0**	0.1	%	1	P7L1305	12/13/17	12/13/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	25.5	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
>C12-C28	**627**	25.5	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
>C28-C35	**212**	25.5	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*86.5 %*	*70-130*		*P7L1214*	*12/12/17*	*12/13/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*90.5 %*	*70-130*		*P7L1214*	*12/12/17*	*12/13/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	**839**	25.5	mg/kg dry	1	[CALC]	12/12/17	12/13/17	calc	

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Midland TX, 79710	Project Manager: Mark Larson	

SW-S-2'

7L12001-19 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**1480**	5.21	mg/kg dry	5	P7L1210	12/12/17	12/13/17	EPA 300.0	
% Moisture	**4.0**	0.1	%	1	P7L1305	12/13/17	12/13/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.0	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
>C12-C28	**134**	26.0	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
>C28-C35	**40.6**	26.0	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*94.3 %*	*70-130*		*P7L1214*	*12/12/17*	*12/13/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*102 %*	*70-130*		*P7L1214*	*12/12/17*	*12/13/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	**174**	26.0	mg/kg dry	1	[CALC]	12/12/17	12/13/17	calc	

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SW-E-2'

7L12001-20 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**1590**	5.75	mg/kg dry	5	P7L1210	12/12/17	12/13/17	EPA 300.0	
% Moisture	**13.0**	0.1	%	1	P7L1305	12/13/17	12/13/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.7	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
>C12-C28	ND	28.7	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
>C28-C35	ND	28.7	mg/kg dry	1	P7L1214	12/12/17	12/13/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*102 %*	*70-130*		*P7L1214*	*12/12/17*	*12/13/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*113 %*	*70-130*		*P7L1214*	*12/12/17*	*12/13/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	28.7	mg/kg dry	1	[CALC]	12/12/17	12/13/17	calc	

SW-W-2'

7L12001-21 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**1010**	5.15	mg/kg dry	5	P7L1211	12/12/17	12/13/17	EPA 300.0	
% Moisture	**3.0**	0.1	%	1	P7L1305	12/13/17	12/13/17	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	25.8	mg/kg dry	1	P7L1215	12/12/17	12/12/17	TPH 8015M	
>C12-C28	**105**	25.8	mg/kg dry	1	P7L1215	12/12/17	12/12/17	TPH 8015M	
>C28-C35	**91.7**	25.8	mg/kg dry	1	P7L1215	12/12/17	12/12/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*87.3 %*	*70-130*		*P7L1215*	*12/12/17*	*12/12/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*98.6 %*	*70-130*		*P7L1215*	*12/12/17*	*12/12/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	**196**	25.8	mg/kg dry	1	[CALC]	12/12/17	12/12/17	calc	

Organics by GC - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7L1212 - General Preparation (GC)										
Blank (P7L1212-BLK1)				Prepared & Analyzed: 12/12/17						
Benzene	ND	0.00100	mg/kg wet							
Toluene	ND	0.00200	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00200	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 1,4-Difluorobenzene	*0.0554*		*"*	*0.0600*		*92.3*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*0.0653*		*"*	*0.0600*		*109*	*75-125*			
LCS (P7L1212-BS1)				Prepared & Analyzed: 12/12/17						
Benzene	0.0962	0.00100	mg/kg wet	0.100		96.2	70-130			
Toluene	0.105	0.00200	"	0.100		105	70-130			
Ethylbenzene	0.116	0.00100	"	0.100		116	70-130			
Xylene (p/m)	0.216	0.00200	"				70-130			
Xylene (o)	0.118	0.00100	"				70-130			
Surrogate: 4-Bromofluorobenzene	*0.0644*		*"*	*0.0600*		*107*	*75-125*			
Surrogate: 1,4-Difluorobenzene	*0.0665*		*"*	*0.0600*		*111*	*75-125*			
LCS Dup (P7L1212-BSD1)				Prepared & Analyzed: 12/12/17						
Benzene	0.108	0.00100	mg/kg wet	0.100		108	70-130	11.4	20	
Toluene	0.118	0.00200	"	0.100		118	70-130	11.2	20	
Ethylbenzene	0.114	0.00100	"	0.100		114	70-130	1.05	20	
Xylene (p/m)	0.213	0.00200	"				70-130		20	
Xylene (o)	0.119	0.00100	"				70-130		20	
Surrogate: 1,4-Difluorobenzene	*0.0599*		*"*	*0.0600*		*99.9*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*0.0693*		*"*	*0.0600*		*115*	*75-125*			
Calibration Blank (P7L1212-CCB1)				Prepared & Analyzed: 12/12/17						
Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 1,4-Difluorobenzene	*0.0565*		*"*	*0.0600*		*94.2*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*0.0639*		*"*	*0.0600*		*107*	*75-125*			

Organics by GC - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7L1212 - General Preparation (GC)										
Calibration Blank (P7L1212-CCB2)				Prepared & Analyzed: 12/12/17						
Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 1,4-Difluorobenzene	*0.0562*		*"*	*0.0600*		*93.6*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*0.0731*		*"*	*0.0600*		*122*	*75-125*			
Calibration Check (P7L1212-CCV1)				Prepared & Analyzed: 12/12/17						
Benzene	0.0996	0.00100	mg/kg wet	0.100		99.6	80-120			
Toluene	0.108	0.00200	"	0.100		108	80-120			
Ethylbenzene	0.116	0.00100	"	0.100		116	80-120			
Xylene (p/m)	0.219	0.00200	"	0.200		109	80-120			
Xylene (o)	0.117	0.00100	"	0.100		117	80-120			
Surrogate: 4-Bromofluorobenzene	*0.0601*		*"*	*0.0600*		*100*	*75-125*			
Surrogate: 1,4-Difluorobenzene	*0.0593*		*"*	*0.0600*		*98.9*	*75-125*			
Calibration Check (P7L1212-CCV2)				Prepared & Analyzed: 12/12/17						
Benzene	0.101	0.00100	mg/kg wet	0.100		101	80-120			
Toluene	0.108	0.00200	"	0.100		108	80-120			
Ethylbenzene	0.111	0.00100	"	0.100		111	80-120			
Xylene (p/m)	0.212	0.00200	"	0.200		106	80-120			
Xylene (o)	0.118	0.00100	"	0.100		118	80-120			
Surrogate: 1,4-Difluorobenzene	*0.0618*		*"*	*0.0600*		*103*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*0.0690*		*"*	*0.0600*		*115*	*75-125*			
Calibration Check (P7L1212-CCV3)				Prepared: 12/12/17 Analyzed: 12/13/17						
Benzene	0.111	0.00100	mg/kg wet	0.100		111	80-120			
Toluene	0.116	0.00200	"	0.100		116	80-120			
Ethylbenzene	0.120	0.00100	"	0.100		120	80-120			
Xylene (p/m)	0.216	0.00200	"	0.200		108	80-120			
Xylene (o)	0.118	0.00100	"	0.100		118	80-120			
Surrogate: 4-Bromofluorobenzene	*0.0756*		*"*	*0.0600*		*126*	*75-125*			*S-GC*
Surrogate: 1,4-Difluorobenzene	*0.0607*		*"*	*0.0600*		*101*	*75-125*			

Organics by GC - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7L1212 - General Preparation (GC)										
Matrix Spike (P7L1212-MS1)	**Source: 7L12001-18**			Prepared: 12/12/17 Analyzed: 12/13/17						
Benzene	0.0362	0.00102	mg/kg dry	0.102	ND	35.5	80-120			QM-05
Toluene	0.0123	0.00204	"	0.102	ND	12.1	80-120			QM-05
Ethylbenzene	0.00632	0.00102	"	0.102	ND	6.19	80-120			QM-05
Xylene (p/m)	0.0111	0.00204	"		ND		80-120			
Xylene (o)	0.00427	0.00102	"		ND		80-120			
Surrogate: 1,4-Difluorobenzene	*0.0694*		*"*	*0.0612*		*113*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*0.0689*		*"*	*0.0612*		*113*	*75-125*			
Matrix Spike Dup (P7L1212-MSD1)	**Source: 7L12001-18**			Prepared: 12/12/17 Analyzed: 12/13/17						
Benzene	0.0220	0.00102	mg/kg dry	0.102	ND	21.6	80-120	48.7	20	QM-05
Toluene	0.00679	0.00204	"	0.102	ND	6.65	80-120	58.1	20	QM-05
Ethylbenzene	0.000735	0.00102	"	0.102	ND	0.720	80-120	158	20	QM-05
Xylene (p/m)	ND	0.00204	"		ND		80-120		20	
Xylene (o)	ND	0.00102	"		ND		80-120		20	
Surrogate: 1,4-Difluorobenzene	*0.0672*		*"*	*0.0612*		*110*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*0.0651*		*"*	*0.0612*		*106*	*75-125*			

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7L1210 - * DEFAULT PREP *** **										
Blank (P7L1210-BLK1)				Prepared: 12/12/17 Analyzed: 12/13/17						
Chloride	ND	1.00	mg/kg wet							
LCS (P7L1210-BS1)				Prepared: 12/12/17 Analyzed: 12/13/17						
Chloride	439	1.00	mg/kg wet	400		110	80-120			
LCS Dup (P7L1210-BSD1)				Prepared: 12/12/17 Analyzed: 12/13/17						
Chloride	436	1.00	mg/kg wet	400		109	80-120	0.746	20	
Duplicate (P7L1210-DUP1)		**Source: 7L12001-01**		Prepared: 12/12/17 Analyzed: 12/13/17						
Chloride	ND	1.05	mg/kg dry		ND				20	
Duplicate (P7L1210-DUP2)		**Source: 7L12001-11**		Prepared: 12/12/17 Analyzed: 12/13/17						
Chloride	6.32	1.09	mg/kg dry		5.38			16.0	20	
Matrix Spike (P7L1210-MS1)		**Source: 7L12001-01**		Prepared: 12/12/17 Analyzed: 12/13/17						
Chloride	1130	1.05	mg/kg dry	1050	ND	107	80-120			
Batch P7L1211 - * DEFAULT PREP *** **										
Blank (P7L1211-BLK1)				Prepared: 12/12/17 Analyzed: 12/13/17						
Chloride	ND	1.00	mg/kg wet							
LCS (P7L1211-BS1)				Prepared: 12/12/17 Analyzed: 12/13/17						
Chloride	403	1.00	mg/kg wet	400		101	80-120			
LCS Dup (P7L1211-BSD1)				Prepared: 12/12/17 Analyzed: 12/13/17						
Chloride	400	1.00	mg/kg wet	400		100	80-120	0.720	20	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7L1211 - * DEFAULT PREP *** **										
Duplicate (P7L1211-DUP1)	**Source: 7L12001-21**			Prepared: 12/12/17 Analyzed: 12/13/17						
Chloride	1130	5.15	mg/kg dry		1010			11.0	20	
Matrix Spike (P7L1211-MS1)	**Source: 7L12001-21**			Prepared: 12/12/17 Analyzed: 12/13/17						
Chloride	2020	5.15	mg/kg dry	1030	1010	98.4	80-120			
Batch P7L1305 - * DEFAULT PREP *** **										
Blank (P7L1305-BLK1)				Prepared & Analyzed: 12/13/17						
% Moisture	ND	0.1	%							
Duplicate (P7L1305-DUP1)	**Source: 7L12002-03**			Prepared & Analyzed: 12/13/17						
% Moisture	2.0	0.1	%		2.0			0.00	20	
Duplicate (P7L1305-DUP2)	**Source: 7L12006-04**			Prepared & Analyzed: 12/13/17						
% Moisture	8.0	0.1	%		9.0			11.8	20	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7L1214 - General Preparation (GC)										
Blank (P7L1214-BLK1)				Prepared & Analyzed: 12/12/17						
C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	*77.8*		*"*	*100*		*77.8*	*70-130*			
Surrogate: o-Terphenyl	*42.9*		*"*	*50.0*		*85.8*	*70-130*			
LCS (P7L1214-BS1)				Prepared: 12/12/17 Analyzed: 12/13/17						
C6-C12	1020	25.0	mg/kg wet	1000		102	75-125			
>C12-C28	1040	25.0	"	1000		104	75-125			
Surrogate: 1-Chlorooctane	*110*		*"*	*100*		*110*	*70-130*			
Surrogate: o-Terphenyl	*51.3*		*"*	*50.0*		*103*	*70-130*			
LCS Dup (P7L1214-BSD1)				Prepared & Analyzed: 12/12/17						
C6-C12	810	25.0	mg/kg wet	1000		81.0	75-125	22.7	20	R
>C12-C28	828	25.0	"	1000		82.8	75-125	22.4	20	R
Surrogate: 1-Chlorooctane	*90.6*		*"*	*100*		*90.6*	*70-130*			
Surrogate: o-Terphenyl	*41.5*		*"*	*50.0*		*83.0*	*70-130*			
Calibration Blank (P7L1214-CCB1)				Prepared: 12/12/17 Analyzed: 12/13/17						
C6-C12	13.7		mg/kg wet							
>C12-C28	9.88		"							
Surrogate: 1-Chlorooctane	*101*		*"*	*100*		*101*	*70-130*			
Surrogate: o-Terphenyl	*56.6*		*"*	*50.0*		*113*	*70-130*			
Calibration Blank (P7L1214-CCB2)				Prepared: 12/12/17 Analyzed: 12/13/17						
C6-C12	15.0		mg/kg wet							
>C12-C28	12.4		"							
Surrogate: 1-Chlorooctane	*86.4*		*"*	*100*		*86.4*	*70-130*			
Surrogate: o-Terphenyl	*47.4*		*"*	*50.0*		*94.8*	*70-130*			

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7L1214 - General Preparation (GC)										
Calibration Check (P7L1214-CCV1)				Prepared: 12/12/17 Analyzed: 12/13/17						
C6-C12	543	25.0	mg/kg wet	500		109	85-115			
>C12-C28	565	25.0	"	500		113	85-115			
Surrogate: 1-Chlorooctane	*120*		*"*	*100*		*120*	*70-130*			
Surrogate: o-Terphenyl	*63.4*		*"*	*50.0*		*127*	*70-130*			
Calibration Check (P7L1214-CCV2)				Prepared & Analyzed: 12/12/17						
C6-C12	486	25.0	mg/kg wet	500		97.1	85-115			
>C12-C28	445	25.0	"	500		89.0	85-115			
Surrogate: 1-Chlorooctane	*92.5*		*"*	*100*		*92.5*	*70-130*			
Surrogate: o-Terphenyl	*45.8*		*"*	*50.0*		*91.6*	*70-130*			
Calibration Check (P7L1214-CCV3)				Prepared: 12/12/17 Analyzed: 12/13/17						
C6-C12	440	25.0	mg/kg wet	500		88.1	85-115			
>C12-C28	428	25.0	"	500		85.5	85-115			
Surrogate: 1-Chlorooctane	*84.9*		*"*	*100*		*84.9*	*70-130*			
Surrogate: o-Terphenyl	*41.3*		*"*	*50.0*		*82.7*	*70-130*			
Matrix Spike (P7L1214-MS1)	**Source: 7L12001-01**			Prepared: 12/12/17 Analyzed: 12/13/17						
C6-C12	982	26.3	mg/kg dry	1050	16.3	91.7	75-125			
>C12-C28	996	26.3	"	1050	ND	94.6	75-125			
Surrogate: 1-Chlorooctane	*128*		*"*	*105*		*122*	*70-130*			
Surrogate: o-Terphenyl	*61.0*		*"*	*52.6*		*116*	*70-130*			
Matrix Spike Dup (P7L1214-MSD1)	**Source: 7L12001-01**			Prepared: 12/12/17 Analyzed: 12/13/17						
C6-C12	1170	26.3	mg/kg dry	1050	16.3	110	75-125	17.7	20	
>C12-C28	1150	26.3	"	1050	ND	109	75-125	14.1	20	
Surrogate: 1-Chlorooctane	*132*		*"*	*105*		*125*	*70-130*			
Surrogate: o-Terphenyl	*66.5*		*"*	*52.6*		*126*	*70-130*			

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7L1215 - General Preparation (GC)										
Blank (P7L1215-BLK1)				Prepared & Analyzed: 12/12/17						
C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	*86.7*		*"*	*100*		*86.7*	*70-130*			
Surrogate: o-Terphenyl	*48.3*		*"*	*50.0*		*96.6*	*70-130*			
LCS (P7L1215-BS1)				Prepared: 12/12/17 Analyzed: 12/13/17						
C6-C12	826	25.0	mg/kg wet	1000		82.6	75-125			
>C12-C28	1090	25.0	"	1000		109	75-125			
Surrogate: 1-Chlorooctane	*123*		*"*	*100*		*123*	*70-130*			
Surrogate: o-Terphenyl	*53.1*		*"*	*50.0*		*106*	*70-130*			
LCS Dup (P7L1215-BSD1)				Prepared: 12/12/17 Analyzed: 12/13/17						
C6-C12	787	25.0	mg/kg wet	1000		78.7	75-125	4.85	20	
>C12-C28	1030	25.0	"	1000		103	75-125	5.48	20	
Surrogate: 1-Chlorooctane	*115*		*"*	*100*		*115*	*70-130*			
Surrogate: o-Terphenyl	*49.8*		*"*	*50.0*		*99.7*	*70-130*			
Calibration Blank (P7L1215-CCB1)				Prepared: 12/12/17 Analyzed: 12/13/17						
C6-C12	8.99		mg/kg wet							
>C12-C28	16.6		"							
Surrogate: 1-Chlorooctane	*91.2*		*"*	*100*		*91.2*	*70-130*			
Surrogate: o-Terphenyl	*51.3*		*"*	*50.0*		*103*	*70-130*			
Calibration Blank (P7L1215-CCB2)				Prepared & Analyzed: 12/12/17						
C6-C12	15.4		mg/kg wet							
>C12-C28	19.7		"							
Surrogate: 1-Chlorooctane	*95.0*		*"*	*100*		*95.0*	*70-130*			
Surrogate: o-Terphenyl	*52.6*		*"*	*50.0*		*105*	*70-130*			

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7L1215 - General Preparation (GC)										
Calibration Check (P7L1215-CCV1)				Prepared: 12/12/17 Analyzed: 12/13/17						
C6-C12	458	25.0	mg/kg wet	500		91.6	85-115			
>C12-C28	560	25.0	"	500		112	85-115			
Surrogate: 1-Chlorooctane	*107*		*"*	*100*		*107*	*70-130*			
Surrogate: o-Terphenyl	*53.3*		*"*	*50.0*		*107*	*70-130*			
Calibration Check (P7L1215-CCV2)				Prepared & Analyzed: 12/12/17						
C6-C12	459	25.0	mg/kg wet	500		91.9	85-115			
>C12-C28	520	25.0	"	500		104	85-115			
Surrogate: 1-Chlorooctane	*105*		*"*	*100*		*105*	*70-130*			
Surrogate: o-Terphenyl	*51.4*		*"*	*50.0*		*103*	*70-130*			
Calibration Check (P7L1215-CCV3)				Prepared: 12/12/17 Analyzed: 12/13/17						
C6-C12	464	25.0	mg/kg wet	500		92.8	85-115			
>C12-C28	519	25.0	"	500		104	85-115			
Surrogate: 1-Chlorooctane	*107*		*"*	*100*		*107*	*70-130*			
Surrogate: o-Terphenyl	*52.2*		*"*	*50.0*		*104*	*70-130*			
Matrix Spike (P7L1215-MS1)	**Source: 7L12001-21**			Prepared: 12/12/17 Analyzed: 12/13/17						
C6-C12	862	25.8	mg/kg dry	1030	21.0	81.6	75-125			
>C12-C28	1140	25.8	"	1030	105	101	75-125			
Surrogate: 1-Chlorooctane	*127*		*"*	*103*		*123*	*70-130*			
Surrogate: o-Terphenyl	*65.0*		*"*	*51.5*		*126*	*70-130*			
Matrix Spike Dup (P7L1215-MSD1)	**Source: 7L12001-21**			Prepared: 12/12/17 Analyzed: 12/13/17						
C6-C12	862	25.8	mg/kg dry	1030	21.0	81.6	75-125	0.00	20	
>C12-C28	1140	25.8	"	1030	105	101	75-125	0.131	20	
Surrogate: 1-Chlorooctane	*125*		*"*	*103*		*121*	*70-130*			
Surrogate: o-Terphenyl	*64.8*		*"*	*51.5*		*126*	*70-130*			

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: EMSU Sat. B Trunk Line
Project Number: 17-0193-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Notes and Definitions

S-GC	Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.
R	The RPD exceeded the method control limit. The individual analyte QA/QC recoveries, however, were within acceptance limits.
QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
BULK	Samples received in Bulk soil containers
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
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Brent Barron Date: 12/14/2017

Brent Barron, Laboratory Director/Technical Director

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to:

DATE: 12-12-2017 PAGE 1 OF 2
PO #: _____ LAB WORK ORDER #: 712001
PROJECT LOCATION OR NAME: EMSU Sat. B Trunk Li
LAI PROJECT #: 17-0193-01 COLLECTOR: ZB + AT

TRRP report? ☐ Yes ☒ No
TIME ZONE: Time zone/State: MST
S=SOIL W=WATER A=AIR P=PAINT SL=SLUDGE OT=OTHER

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
DP-7 0-1	1	12/11	10:47	S	1				X		X	
1-2	2		10:48									
2-3	3		10:49									
3-4	4		10:50									
4-6	5		10:51									
6-8	6		10:52									
8-10	7		10:53									
10-12	8		10:54									
DP-8 0-1	9		11:29							X		
1-2	10		11:30									
2-3	11		11:31									
3-4	12		11:32									
HA-1 4-5	13		12:13									
5-6	14		12:14									
6-7	15		12:15									
TOTAL												

ANALYSES: BTEX ☒ MTBE ☐ | TRPH 418.1 ☐ | TPH 1005 ☐ TPH 1006 ☐ | GASOLINE MOD 8015 ☒ | DIESEL - MOD 8015 ☒ oil | VOC 8260 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ | 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ | 8082 PCBS ☐ | TCLP - METALS (RCRA) ☐ TCLP VOC ☐ | TCLP - PEST ☐ HERB ☐ Semi-VOC ☐ | TOTAL METALS (RCRA) ☐ OTHER LIST ☐ | LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐ | RCI ☐ TOX ☐ FLASHPOINT ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | pH ☐ HEXAVALENT CHROMIUM ☐ | EXPLOSIVES ☐ PECHLORATE ☐ | CHLORIDE ☒ ANIONS ☐ ALKALINITY ☐ | M300

RELINQUISHED BY:(Signature) DATE/TIME 12/12/17 RECEIVED BY: (Signature)
RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)
RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature) 12-12-17 820

TURN AROUND TIME
NORMAL ☐
1 DAY ☐
2 DAY ☒
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 3.0 THERM #: _____
CUSTODY SEALS - ☐ BROKEN ☒ INTACT ☐ NOT USED
☐ CARRIER BILL # _____
☐ HAND DELIVERED

Frozen

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

DATE: 12-12-2017 PAGE 2 OF 2

PO #: _____ LAB WORK ORDER #: _____

PROJECT LOCATION OR NAME: EMSU Sat. 13 Trunk Line

LAI PROJECT #: 17-0193-01 COLLECTOR: ZB / AT

Data Reported to:

TRRP report? ☐ Yes ☒ No

TIME ZONE: Time zone/State: MST

S=SOIL W=WATER A=AIR P=PAINT SL=SLUDGE OT=OTHER

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ | TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐ | GASOLINE MOD 8015 ☒ | DIESEL - MOD 8015 ☒ ORO ☒ | VOC 8260 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ | 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ | 8082 PCBS ☐ | TCLP - METALS (RCRA) ☐ TCLP VOC ☐ | TCLP - PEST ☐ HERB ☐ Semi-VOC ☐ | TOTAL METALS (RCRA) ☐ D.W. 200.8 ☐ OTHER LIST ☐ | LEAD - TOTAL ☐ TOX ☐ FLASHPOINT ☐ TCLP ☐ | RCI ☐ TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | pH ☐ HEXAVALENT CHROMIUM ☐ | EXPLOSIVES ☐ PECHLORATE ☐ | CHLORIDE ☒ ANIONS ☐ ALKALINITY ☐ | M300

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
HA-1 7-8	16	12/11	12:16	S	1				X		TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐: X; GASOLINE MOD 8015 ☒: X; DIESEL - MOD 8015 ☒ ORO ☒: X; TOTAL METALS (RCRA) ☐ D.W. 200.8 ☐ OTHER LIST ☐: X; CHLORIDE ☒ ANIONS ☐ M300: X	
8-9	17	"	12:17	"	"				"		"	
SW-N ~2'	18	"	12:11	"	"				"		"	
SW-S ~2'	19	"	12:09	"	"				"		"	
SW-E ~2'	20	"	12:10	"	"				"		"	
SW-W ~2'	21	"	12:12	"	"				"		"	
TOTAL												

RELINQUISHED BY:(Signature) DATE/TIME 12/13/17 RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature) 12-13-17 820

TURN AROUND TIME
NORMAL ☐
1 DAY ☐
2 DAY ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: -3.4 THERM #: _____
CUSTODY SEALS - ☐ BROKEN ☒ INTACT ☐ NOT USED
☐ CARRIER BILL # _____
☑ HAND DELIVERED

frozen

PERMIAN BASIN
ENVIRONMENTAL LAB, LP
1400 Rankin Hwy
Midland, TX 79701

PBELAB

Analytical Report

Prepared for:

Mark Larson

Larson & Associates, Inc.

P.O. Box 50685

Midland, TX 79710

Project: EMSU SAT #13

Project Number: 17-0193-01

Location: None Given

Lab Order Number: 8D06016

NELAP ACCREDITED TNI LABORATORY

NELAP/TCEQ # T104704516-17-8

Report Date: 04/11/18

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: EMSU SAT #13
Project Number: 17-0193-01
Project Manager: Mark Larson

Fax: (432) 687-0456

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
DP-2 (15ft)	8D06016-01	Soil	03/29/18 08:58	04-06-2018 13:36
DP-2 (20ft)	8D06016-02	Soil	03/29/18 09:00	04-06-2018 13:36
DP-2 (25ft)	8D06016-03	Soil	03/29/18 09:08	04-06-2018 13:36
DP-5 (5ft)	8D06016-06	Soil	03/29/18 09:52	04-06-2018 13:36
DP-5 (10ft)	8D06016-07	Soil	03/29/18 09:54	04-06-2018 13:36
DP-5 (15ft)	8D06016-08	Soil	03/29/18 09:58	04-06-2018 13:36
DP-5 (20ft)	8D06016-09	Soil	03/29/18 10:03	04-06-2018 13:36
DP-5 (25ft)	8D06016-10	Soil	03/29/18 10:07	04-06-2018 13:36
DP-6 (5ft)	8D06016-13	Soil	04/04/18 13:22	04-06-2018 13:36
DP-6 (10ft)	8D06016-14	Soil	04/04/18 13:27	04-06-2018 13:36
DP-6 (15ft)	8D06016-15	Soil	04/04/18 13:30	04-06-2018 13:36
DP-6 (20ft)	8D06016-16	Soil	04/04/18 13:33	04-06-2018 13:36
DP-6 (25ft)	8D06016-17	Soil	04/04/18 13:37	04-06-2018 13:36

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: EMSU SAT #13
Project Number: 17-0193-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-2 (15ft)

8D06016-01 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**551**	5.68	mg/kg dry	5	P8D0910	04/09/18	04/11/18	EPA 300.0	
% Moisture	**12.0**	0.1	%	1	P8D1003	04/10/18	04/10/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

DP-2 (20ft)

8D06016-02 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**997**	5.88	mg/kg dry	5	P8D0910	04/09/18	04/11/18	EPA 300.0	
% Moisture	**15.0**	0.1	%	1	P8D1003	04/10/18	04/10/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

DP-2 (25ft)

8D06016-03 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**735**	5.68	mg/kg dry	5	P8D0910	04/09/18	04/11/18	EPA 300.0	
% Moisture	**12.0**	0.1	%	1	P8D1003	04/10/18	04/10/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

DP-5 (5ft)

8D06016-06 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**1510**	5.68	mg/kg dry	5	P8D0910	04/09/18	04/11/18	EPA 300.0	
% Moisture	**12.0**	0.1	%	1	P8D1003	04/10/18	04/10/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

DP-5 (10ft)

8D06016-07 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**923**	5.75	mg/kg dry	5	P8D0910	04/09/18	04/11/18	EPA 300.0	
% Moisture	**13.0**	0.1	%	1	P8D1003	04/10/18	04/10/18	ASTM D2216	

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: EMSU SAT #13
Project Number: 17-0193-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-5 (15ft)

8D06016-08 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**970**	5.62	mg/kg dry	5	P8D0910	04/09/18	04/11/18	EPA 300.0	
% Moisture	**11.0**	0.1	%	1	P8D1003	04/10/18	04/10/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

DP-5 (20ft)

8D06016-09 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**813**	1.09	mg/kg dry	1	P8D0910	04/09/18	04/11/18	EPA 300.0	
% Moisture	**8.0**	0.1	%	1	P8D1003	04/10/18	04/10/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

DP-5 (25ft)

8D06016-10 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**985**	5.62	mg/kg dry	5	P8D0910	04/09/18	04/11/18	EPA 300.0	
% Moisture	**11.0**	0.1	%	1	P8D1003	04/10/18	04/10/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

DP-6 (5ft)

8D06016-13 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**11.1**	1.30	mg/kg dry	1	P8D0910	04/09/18	04/11/18	EPA 300.0	
% Moisture	**23.0**	0.1	%	1	P8D1003	04/10/18	04/10/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

DP-6 (10ft)

8D06016-14 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**703**	28.4	mg/kg dry	25	P8D1008	04/10/18	04/11/18	EPA 300.0	
% Moisture	**12.0**	0.1	%	1	P8D1003	04/10/18	04/10/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

DP-6 (15ft)

8D06016-15 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**102**	1.41	mg/kg dry	1	P8D1008	04/10/18	04/11/18	EPA 300.0	
% Moisture	**29.0**	0.1	%	1	P8D1003	04/10/18	04/10/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

DP-6 (20ft)

8D06016-16 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**6.34**	1.25	mg/kg dry	1	P8D1008	04/10/18	04/11/18	EPA 300.0	
% Moisture	**20.0**	0.1	%	1	P8D1003	04/10/18	04/10/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

DP-6 (25ft)

8D06016-17 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**685**	5.49	mg/kg dry	5	P8D1008	04/10/18	04/11/18	EPA 300.0	
% Moisture	**9.0**	0.1	%	1	P8D1003	04/10/18	04/10/18	ASTM D2216	

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: EMSU SAT #13
Project Number: 17-0193-01
Project Manager: Mark Larson

Fax: (432) 687-0456

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8D0910 - * DEFAULT PREP *** **										
Blank (P8D0910-BLK1)				Prepared: 04/09/18 Analyzed: 04/11/18						
Chloride	ND	1.00	mg/kg wet							
LCS (P8D0910-BS1)				Prepared: 04/09/18 Analyzed: 04/11/18						
Chloride	393	1.00	mg/kg wet	400		98.3	80-120			
LCS Dup (P8D0910-BSD1)				Prepared: 04/09/18 Analyzed: 04/11/18						
Chloride	389	1.00	mg/kg wet	400		97.2	80-120	1.04	20	
Duplicate (P8D0910-DUP1)		**Source: 8D06014-01**		Prepared: 04/09/18 Analyzed: 04/11/18						
Chloride	1700	6.49	mg/kg dry		1680			1.22	20	
Matrix Spike (P8D0910-MS1)		**Source: 8D06014-01**		Prepared: 04/09/18 Analyzed: 04/11/18						
Chloride	2910	6.49	mg/kg dry	1300	1680	95.2	80-120			
Batch P8D1003 - * DEFAULT PREP *** **										
Blank (P8D1003-BLK1)				Prepared & Analyzed: 04/10/18						
% Moisture	ND	0.1	%							
Duplicate (P8D1003-DUP1)		**Source: 8D06010-02**		Prepared & Analyzed: 04/10/18						
% Moisture	6.0	0.1	%		6.0			0.00	20	
Duplicate (P8D1003-DUP2)		**Source: 8D06014-01**		Prepared & Analyzed: 04/10/18						
% Moisture	19.0	0.1	%		23.0			19.0	20	
Duplicate (P8D1003-DUP3)		**Source: 8D06021-02**		Prepared & Analyzed: 04/10/18						
% Moisture	4.0	0.1	%		4.0			0.00	20	

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: EMSU SAT #13
Project Number: 17-0193-01
Project Manager: Mark Larson

Fax: (432) 687-0456

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8D1003 - * DEFAULT PREP *** **										
Duplicate (P8D1003-DUP4)	**Source: 8D09001-02**			Prepared & Analyzed: 04/10/18						
% Moisture	7.0	0.1	%		7.0			0.00	20	
Batch P8D1008 - * DEFAULT PREP *** **										
Blank (P8D1008-BLK1)				Prepared: 04/10/18 Analyzed: 04/11/18						
Chloride	ND	1.00	mg/kg wet							
LCS (P8D1008-BS1)				Prepared: 04/10/18 Analyzed: 04/11/18						
Chloride	405	1.00	mg/kg wet	400		101	80-120			
LCS Dup (P8D1008-BSD1)				Prepared: 04/10/18 Analyzed: 04/11/18						
Chloride	409	1.00	mg/kg wet	400		102	80-120	0.948	20	
Duplicate (P8D1008-DUP1)	**Source: 8D10002-21**			Prepared: 04/10/18 Analyzed: 04/11/18						
Chloride	ND	1.01	mg/kg dry		ND				20	
Duplicate (P8D1008-DUP2)	**Source: 8D09004-01**			Prepared: 04/10/18 Analyzed: 04/11/18						
Chloride	4640	28.1	mg/kg dry		4660			0.308	20	
Matrix Spike (P8D1008-MS1)	**Source: 8D10002-21**			Prepared: 04/10/18 Analyzed: 04/11/18						
Chloride	ND	1.01	mg/kg dry	1010	ND		80-120			

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
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Brent Barron Date: 4/11/2018

Brent Barron, Laboratory Director/Technical Director

PBEL

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

DATE: 4-6-18 PAGE 1 OF 1

PO #: LAB WORK ORDER #:

PROJECT LOCATION OR NAME: EMSO SAT #13

LAI PROJECT #: 17-0193-01 COLLECTOR: Abstr

Data Reported to:

TRRP report? ☐ Yes ☒ No

TIME ZONE: Time zone/State: MST

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR OT=OTHER

8D060116

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ | TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐ | GASOLINE MOD 8015 ☐ | DIESEL - MOD 8015 ☐ | VOC 8260 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ | 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ | 8082 PCBS ☐ | TCLP - METALS (RCRA) ☐ TCLP VOC ☐ | TCLP - PEST ☐ HERB ☐ Semi-VOC ☐ | TOTAL METALS (RCRA) ☐ OTHER LIST ☐ | LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐ | RCI ☐ TOX ☐ FLASHPOINT ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | pH ☐ HEXAVALENT CHROMIUM ☐ | EXPLOSIVES ☐ PECHLORATE ☐ | CHLORIDE ☒ ANIONS ☐ ALKALINITY ☐ | M300 | Acid | FIELD NOTES

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	HCl	HNO_3	H_2SO_4 NaOH	ICE	UNPRESERVED	CHLORIDE	M300	Acid	FIELD NOTES
DP-2 (15ft)	01	3-29-18	858	S	1				X		X			
(20ft)	02		9:00											
(25ft)	03		908											
(30ft)	04		915								2		X	
(35ft)	05		924								2		X	
DP-5 (5ft)	06		952											
(10ft)	07		954											
(15ft)	08		958											
(20ft)	09		1003											
(25ft)	10		1007											
(30ft)	11		1012								2		X	
(35ft)	12		1015								2		X	
DP-6 (5ft)	13	4-4-18	1322											
(10ft)	14		1327											
(15ft)	15		1330											
TOTAL														

RELINQUISHED BY:(Signature) DATE/TIME 4/4/18 1200 RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

PBEL

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY: NCF
RECEIVING TEMP: 2.0 THERM #:
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL #
☒ HAND DELIVERED

PBEL

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to:

DATE: 4-6-18 PAGE 2 OF 1

PO #: LAB WORK ORDER #:

PROJECT LOCATION OR NAME: FMSU SAT 13

LAI PROJECT #: 17-0193-01 COLLECTOR: Ashton

TRRP report? ☐ Yes ☒ No

TIME ZONE: Time zone/State: Mst

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR OT=OTHER

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ | TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐ | GASOLINE MOD 8015 ☐ | DIESEL - MOD 8015 ☐ | VOC 8260 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ | 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ | 8082 PCBS ☐ | TCLP - METALS (RCRA) ☐ TCLP VOC ☐ | TCLP - PEST ☐ HERB ☐ Semi-VOC ☐ | TOTAL METALS (RCRA) ☐ OTHER LIST ☐ | LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐ | RCI ☐ TOX ☐ FLASHPOINT ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | pH ☐ HEXAVALENT CHROMIUM ☐ | EXPLOSIVES ☐ PECHLORATE ☐ | CHLORIDE ☒ ANIONS ☐ ALKALINITY ☐ | M300 | Weld

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	M300	Weld	FIELD NOTES
DP-6 (20ft)	16	4-4-18	1333	S	1				X		X		
(25ft)	17	"	1337	"	1				"		1		
(30ft)	18	"	1338	"	1				"		3	X	
(35ft)	19	"	1340	"	1				"		4	X	

TOTAL

RELINQUISHED BY:(Signature) DATE/TIME 4/6/18 12:00 RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

PBEL

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: _____ THERM #: _____
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL # _____
☒ HAND DELIVERED

PERMIAN BASIN
ENVIRONMENTAL LAB, LP
1400 Rankin Hwy
Midland, TX 79701

PBELAB

Analytical Report

Prepared for:

Mark Larson

Larson & Associates, Inc.

P.O. Box 50685

Midland, TX 79710

Project: EMSU SAT #13

Project Number: 17-0193-01

Location: None Given

Lab Order Number: 8D25015

NELAP ACCREDITED TNI LABORATORY

NELAP/TCEQ # T104704516-17-8

Report Date: 05/04/18

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: EMSU SAT #13
Project Number: 17-0193-01
Project Manager: Mark Larson

Fax: (432) 687-0456

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
DP-7 (10FT)	8D25015-01	Soil	04/24/18 09:22	04-25-2018 13:29
DP-7 (15FT)	8D25015-02	Soil	04/24/18 09:24	04-25-2018 13:29
DP-7 (20FT)	8D25015-03	Soil	04/24/18 09:25	04-25-2018 13:29
DP-7 (25FT)	8D25015-04	Soil	04/24/18 09:29	04-25-2018 13:29
DP-7 (30FT)	8D25015-05	Soil	04/24/18 09:31	04-25-2018 13:29
DP-7 (35FT)	8D25015-06	Soil	04/24/18 09:37	04-25-2018 13:29
DP-12 (0FT)	8D25015-07	Soil	04/24/18 09:43	04-25-2018 13:29
DP-12 (5FT)	8D25015-08	Soil	04/24/18 09:45	04-25-2018 13:29
DP-12 (10FT)	8D25015-09	Soil	04/24/18 09:46	04-25-2018 13:29
DP-12 (15FT)	8D25015-10	Soil	04/24/18 09:48	04-25-2018 13:29
DP-12 (20FT)	8D25015-11	Soil	04/24/18 09:49	04-25-2018 13:29
DP-12 (25FT)	8D25015-12	Soil	04/24/18 09:53	04-25-2018 13:29
DP-12 (30FT)	8D25015-13	Soil	04/24/18 09:54	04-25-2018 13:29
DP-12 (35FT)	8D25015-14	Soil	04/24/18 09:56	04-25-2018 13:29
DP-13 (0FT)	8D25015-15	Soil	04/24/18 10:06	04-25-2018 13:29
DP-13 (5FT)	8D25015-16	Soil	04/24/18 10:08	04-25-2018 13:29
DP-13 (10FT)	8D25015-17	Soil	04/24/18 10:10	04-25-2018 13:29
DP-13 (15FT)	8D25015-18	Soil	04/24/18 10:12	04-25-2018 13:29
DP-13 (20FT)	8D25015-19	Soil	04/24/18 10:13	04-25-2018 13:29
DP-13 (25FT)	8D25015-20	Soil	04/24/18 10:15	04-25-2018 13:29
DP-13 (30FT)	8D25015-21	Soil	04/24/18 10:17	04-25-2018 13:29
DP-13 (35FT)	8D25015-22	Soil	04/24/18 10:19	04-25-2018 13:29
DP-11 (0FT)	8D25015-23	Soil	04/24/18 10:27	04-25-2018 13:29
DP-11 (5FT)	8D25015-24	Soil	04/24/18 10:29	04-25-2018 13:29
DP-11 (10FT)	8D25015-25	Soil	04/24/18 10:30	04-25-2018 13:29
DP-11 (15FT)	8D25015-26	Soil	04/24/18 10:31	04-25-2018 13:29
DP-11 (20FT)	8D25015-27	Soil	04/24/18 10:32	04-25-2018 13:29
DP-11 (25FT)	8D25015-28	Soil	04/24/18 10:35	04-25-2018 13:29
DP-11 (30FT)	8D25015-29	Soil	04/24/18 10:37	04-25-2018 13:29
DP-11 (35FT)	8D25015-30	Soil	04/24/18 10:38	04-25-2018 13:29
DP-10 (0FT)	8D25015-31	Soil	04/24/18 10:45	04-25-2018 13:29
DP-10 (5FT)	8D25015-32	Soil	04/24/18 10:47	04-25-2018 13:29
DP-10 (10FT)	8D25015-33	Soil	04/24/18 10:49	04-25-2018 13:29
DP-10 (15FT)	8D25015-34	Soil	04/24/18 10:50	04-25-2018 13:29

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: EMSU SAT #13
Project Number: 17-0193-01
Project Manager: Mark Larson

Fax: (432) 687-0456

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
DP-10 (20FT)	8D25015-35	Soil	04/24/18 10:51	04-25-2018 13:29
DP-10 (25FT)	8D25015-36	Soil	04/24/18 10:54	04-25-2018 13:29
DP-10 (30FT)	8D25015-37	Soil	04/24/18 10:55	04-25-2018 13:29
DP-10 (35FT)	8D25015-38	Soil	04/24/18 10:56	04-25-2018 13:29
DP-9 (0FT)	8D25015-39	Soil	04/24/18 11:08	04-25-2018 13:29
DP-9 (5FT)	8D25015-40	Soil	04/24/18 11:09	04-25-2018 13:29
DP-9 (10FT)	8D25015-41	Soil	04/24/18 11:10	04-25-2018 13:29
DP-9 (15FT)	8D25015-42	Soil	04/24/18 11:11	04-25-2018 13:29
DP-9 (20FT)	8D25015-43	Soil	04/24/18 11:12	04-25-2018 13:29
DP-9 (25FT)	8D25015-44	Soil	04/24/18 11:14	04-25-2018 13:29
DP-9 (30FT)	8D25015-45	Soil	04/24/18 11:16	04-25-2018 13:29
DP-9 (35FT)	8D25015-46	Soil	04/24/18 11:19	04-25-2018 13:29
HA-1 (10FT)	8D25015-47	Soil	04/24/18 12:07	04-25-2018 13:29
HA-1 (15FT)	8D25015-48	Soil	04/24/18 12:08	04-25-2018 13:29
HA-1 (20FT)	8D25015-49	Soil	04/24/18 12:10	04-25-2018 13:29
HA-1 (25FT)	8D25015-50	Soil	04/24/18 12:12	04-25-2018 13:29
HA-1 (30FT)	8D25015-51	Soil	04/24/18 12:13	04-25-2018 13:29
HA-1 (35FT)	8D25015-52	Soil	04/24/18 12:14	04-25-2018 13:29

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: EMSU SAT #13
Project Number: 17-0193-01
Project Manager: Mark Larson

Fax: (432) 687-0456

DP-7 (10FT)

8D25015-01 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**841**	5.88	mg/kg dry	5	P8D3003	04/30/18	05/01/18	EPA 300.0	
% Moisture	**15.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

DP-7 (15FT)

8D25015-02 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	**942**	5.62	mg/kg dry	5	P8D3003	04/30/18	05/01/18	EPA 300.0	
% Moisture	**11.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

DP-7 (20FT)

8D25015-03 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**1470**	6.02	mg/kg dry	5	P8D3003	04/30/18	05/01/18	EPA 300.0	
% Moisture	**17.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

DP-7 (25FT)

8D25015-04 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**967**	5.75	mg/kg dry	5	P8D3003	04/30/18	05/01/18	EPA 300.0	
% Moisture	**13.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

DP-7 (30FT)

8D25015-05 (Soil)

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**1970**	12.5	mg/kg dry	10	P8D3003	04/30/18	05/01/18	EPA 300.0	
% Moisture	**20.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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Project Number: 17-0193-01
Project Manager: Mark Larson

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DP-7 (35FT)

8D25015-06 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**1150**	6.10	mg/kg dry	5	P8E0109	05/01/18	05/02/18	EPA 300.0	
% Moisture	**18.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-12 (0FT)

8D25015-07 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**8.86**	1.05	mg/kg dry	1	P8E0109	05/01/18	05/02/18	EPA 300.0	
% Moisture	**5.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-12 (5FT)

8D25015-08 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**3.40**	1.22	mg/kg dry	1	P8E0109	05/01/18	05/02/18	EPA 300.0	
% Moisture	**18.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-12 (10FT)

8D25015-09 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**255**	1.12	mg/kg dry	1	P8E0109	05/01/18	05/02/18	EPA 300.0	
% Moisture	**11.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-12 (15FT)

8D25015-10 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**1040**	5.88	mg/kg dry	5	P8E0109	05/01/18	05/02/18	EPA 300.0	
% Moisture	**15.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-12 (20FT)

8D25015-11 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**872**	6.02	mg/kg dry	5	P8E0109	05/01/18	05/02/18	EPA 300.0	
% Moisture	**17.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-12 (25FT)

8D25015-12 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**1110**	5.75	mg/kg dry	5	P8E0109	05/01/18	05/02/18	EPA 300.0	
% Moisture	**13.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-12 (30FT)

8D25015-13 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**1460**	5.95	mg/kg dry	5	P8E0109	05/01/18	05/02/18	EPA 300.0	
% Moisture	**16.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-12 (35FT)

8D25015-14 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**2120**	13.2	mg/kg dry	10	P8E0109	05/01/18	05/02/18	EPA 300.0	
% Moisture	**24.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-13 (0FT)

8D25015-15 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**23.9**	1.04	mg/kg dry	1	P8E0109	05/01/18	05/02/18	EPA 300.0	
% Moisture	**4.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-13 (5FT)

8D25015-16 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**451**	6.25	mg/kg dry	5	P8E0109	05/01/18	05/02/18	EPA 300.0	
% Moisture	**20.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-13 (10FT)

8D25015-17 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**275**	1.08	mg/kg dry	1	P8E0109	05/01/18	05/02/18	EPA 300.0	
% Moisture	**7.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-13 (15FT)

8D25015-18 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**327**	1.06	mg/kg dry	1	P8E0109	05/01/18	05/02/18	EPA 300.0	
% Moisture	**6.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-13 (20FT)

8D25015-19 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**513**	1.12	mg/kg dry	1	P8E0110	05/01/18	05/03/18	EPA 300.0	
% Moisture	**11.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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Midland TX, 79710	Project Manager: Mark Larson	

DP-13 (25FT)

8D25015-20 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**863**	5.88	mg/kg dry	5	P8E0110	05/01/18	05/03/18	EPA 300.0	
% Moisture	**15.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-13 (30FT)

8D25015-21 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**2500**	13.9	mg/kg dry	10	P8E0110	05/01/18	05/03/18	EPA 300.0	
% Moisture	**28.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-13 (35FT)

8D25015-22 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**290**	1.15	mg/kg dry	1	P8E0110	05/01/18	05/03/18	EPA 300.0	
% Moisture	**13.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-11 (0FT)

8D25015-23 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**5.16**	1.05	mg/kg dry	1	P8E0110	05/01/18	05/03/18	EPA 300.0	
% Moisture	**5.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-11 (5FT)

8D25015-24 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**70.4**	1.12	mg/kg dry	1	P8E0110	05/01/18	05/03/18	EPA 300.0	
% Moisture	**11.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-11 (10FT)

8D25015-25 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**703**	5.62	mg/kg dry	5	P8E0110	05/01/18	05/03/18	EPA 300.0	
% Moisture	**11.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-11 (15FT)

8D25015-26 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**754**	5.62	mg/kg dry	5	P8E0110	05/01/18	05/03/18	EPA 300.0	
% Moisture	**11.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-11 (20FT)

8D25015-27 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**1290**	6.02	mg/kg dry	5	P8E0110	05/01/18	05/03/18	EPA 300.0	
% Moisture	**17.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-11 (25FT)

8D25015-28 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**784**	5.68	mg/kg dry	5	P8E0110	05/01/18	05/03/18	EPA 300.0	
% Moisture	**12.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-11 (30FT)

8D25015-29 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**457**	1.15	mg/kg dry	1	P8E0110	05/01/18	05/03/18	EPA 300.0	
% Moisture	**13.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-11 (35FT)

8D25015-30 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**1770**	7.14	mg/kg dry	5	P8E0110	05/01/18	05/03/18	EPA 300.0	
% Moisture	**30.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-10 (0FT)

8D25015-31 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**44.3**	1.02	mg/kg dry	1	P8E0110	05/01/18	05/03/18	EPA 300.0	
% Moisture	**2.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-10 (5FT)

8D25015-32 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**6.11**	1.06	mg/kg dry	1	P8E0110	05/01/18	05/03/18	EPA 300.0	
% Moisture	**6.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-10 (10FT)

8D25015-33 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**855**	5.68	mg/kg dry	5	P8E0110	05/01/18	05/03/18	EPA 300.0	
% Moisture	**12.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-10 (15FT)

8D25015-34 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**464**	1.08	mg/kg dry	1	P8E0110	05/01/18	05/03/18	EPA 300.0	
% Moisture	**7.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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Project Manager: Mark Larson

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DP-10 (20FT)

8D25015-35 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**907**	5.68	mg/kg dry	5	P8E0110	05/01/18	05/03/18	EPA 300.0	
% Moisture	**12.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-10 (25FT)

8D25015-36 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**730**	5.56	mg/kg dry	5	P8E0110	05/01/18	05/03/18	EPA 300.0	
% Moisture	**10.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-10 (30FT)

8D25015-37 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**707**	5.95	mg/kg dry	5	P8E0110	05/01/18	05/03/18	EPA 300.0	
% Moisture	**16.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-10 (35FT)

8D25015-38 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**149**	1.11	mg/kg dry	1	P8E0110	05/01/18	05/03/18	EPA 300.0	
% Moisture	**10.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

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DP-9 (0FT)

8D25015-39 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**9.12**	1.02	mg/kg dry	1	P8E0206	05/02/18	05/03/18	EPA 300.0	
% Moisture	**2.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

DP-9 (5FT)

8D25015-40 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.08	mg/kg dry	1	P8E0206	05/02/18	05/03/18	EPA 300.0	
% Moisture	**7.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

DP-9 (10FT)

8D25015-41 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**69.8**	1.22	mg/kg dry	1	P8E0206	05/02/18	05/03/18	EPA 300.0	
% Moisture	**18.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

DP-9 (15FT)

8D25015-42 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**157**	1.05	mg/kg dry	1	P8E0206	05/02/18	05/03/18	EPA 300.0	
% Moisture	**5.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

DP-9 (20FT)

8D25015-43 (Soil)

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**174**	1.03	mg/kg dry	1	P8E0206	05/02/18	05/03/18	EPA 300.0	
% Moisture	**3.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

DP-9 (25FT)

8D25015-44 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**436**	5.75	mg/kg dry	5	P8E0206	05/02/18	05/03/18	EPA 300.0	
% Moisture	**13.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

DP-9 (30FT)

8D25015-45 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**404**	1.56	mg/kg dry	1	P8E0206	05/02/18	05/03/18	EPA 300.0	
% Moisture	**36.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

DP-9 (35FT)

8D25015-46 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**171**	1.32	mg/kg dry	1	P8E0206	05/02/18	05/03/18	EPA 300.0	
% Moisture	**24.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

HA-1 (10FT)

8D25015-47 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**551**	5.68	mg/kg dry	5	P8E0206	05/02/18	05/03/18	EPA 300.0	
% Moisture	**12.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

HA-1 (15FT)

8D25015-48 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**926**	5.75	mg/kg dry	5	P8E0206	05/02/18	05/03/18	EPA 300.0	
% Moisture	**13.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

HA-1 (20FT)

8D25015-49 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**1070**	5.95	mg/kg dry	5	P8E0206	05/02/18	05/03/18	EPA 300.0	
% Moisture	**16.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

HA-1 (25FT)

8D25015-50 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**469**	1.11	mg/kg dry	1	P8E0206	05/02/18	05/03/18	EPA 300.0	
% Moisture	**10.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

HA-1 (30FT)

8D25015-51 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**859**	5.62	mg/kg dry	5	P8E0206	05/02/18	05/03/18	EPA 300.0	
% Moisture	**11.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU SAT #13	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0193-01	
Midland TX, 79710	Project Manager: Mark Larson	

HA-1 (35FT)

8D25015-52 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**1170**	6.94	mg/kg dry	5	P8E0206	05/02/18	05/03/18	EPA 300.0	
% Moisture	**28.0**	0.1	%	1	P8D2602	04/26/18	04/26/18	ASTM D2216	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8D2602 - * DEFAULT PREP *** **										
Blank (P8D2602-BLK1)				Prepared & Analyzed: 04/26/18						
% Moisture	ND	0.1	%							
Duplicate (P8D2602-DUP1)		**Source: 8D25005-07**		Prepared & Analyzed: 04/26/18						
% Moisture	13.0	0.1	%		12.0			8.00	20	
Duplicate (P8D2602-DUP2)		**Source: 8D25012-02**		Prepared & Analyzed: 04/26/18						
% Moisture	8.0	0.1	%		8.0			0.00	20	
Duplicate (P8D2602-DUP3)		**Source: 8D25015-25**		Prepared & Analyzed: 04/26/18						
% Moisture	11.0	0.1	%		11.0			0.00	20	
Duplicate (P8D2602-DUP4)		**Source: 8D25015-52**		Prepared & Analyzed: 04/26/18						
% Moisture	29.0	0.1	%		28.0			3.51	20	
Duplicate (P8D2602-DUP5)		**Source: 8D25017-02**		Prepared & Analyzed: 04/26/18						
% Moisture	1.0	0.1	%		1.0			0.00	20	
Batch P8D3003 - * DEFAULT PREP *** **										
Blank (P8D3003-BLK1)				Prepared: 04/30/18 Analyzed: 05/01/18						
Chloride	ND	1.00	mg/kg wet							
LCS (P8D3003-BS1)				Prepared: 04/30/18 Analyzed: 05/01/18						
Chloride	382	1.00	mg/kg wet	400		95.5	80-120			
Duplicate (P8D3003-DUP1)		**Source: 8D27010-01**		Prepared: 04/30/18 Analyzed: 05/01/18						
Chloride	2270	10.4	mg/kg dry		1920			16.7	20	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8D3003 - * DEFAULT PREP *** **										
Duplicate (P8D3003-DUP2)	**Source: 8D25006-02**			Prepared: 04/30/18 Analyzed: 05/01/18						
Chloride	670	1.08	mg/kg dry		645			3.80	20	
Matrix Spike (P8D3003-MS1)	**Source: 8D27010-01**			Prepared: 04/30/18 Analyzed: 05/01/18						
Chloride	3270	10.4	mg/kg dry	1040	1920	129	80-120			
Batch P8E0109 - * DEFAULT PREP *** **										
Blank (P8E0109-BLK1)				Prepared: 05/01/18 Analyzed: 05/02/18						
Chloride	ND	1.00	mg/kg wet							
LCS (P8E0109-BS1)				Prepared: 05/01/18 Analyzed: 05/02/18						
Chloride	385	1.00	mg/kg wet	400		96.3	80-120			
LCS Dup (P8E0109-BSD1)				Prepared: 05/01/18 Analyzed: 05/02/18						
Chloride	390	1.00	mg/kg wet	400		97.5	80-120	1.25	20	
Duplicate (P8E0109-DUP1)	**Source: 8D25015-06**			Prepared: 05/01/18 Analyzed: 05/02/18						
Chloride	1080	6.10	mg/kg dry		1150			6.24	20	
Duplicate (P8E0109-DUP2)	**Source: 8D25015-09**			Prepared: 05/01/18 Analyzed: 05/02/18						
Chloride	255	1.12	mg/kg dry		255			0.0836	20	
Matrix Spike (P8E0109-MS1)	**Source: 8D25015-06**			Prepared: 05/01/18 Analyzed: 05/02/18						
Chloride	2400	6.10	mg/kg dry	1220	1150	102	80-120			
Batch P8E0110 - * DEFAULT PREP *** **										
Blank (P8E0110-BLK1)				Prepared: 05/01/18 Analyzed: 05/03/18						
Chloride	ND	1.00	mg/kg wet							

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8E0110 - * DEFAULT PREP *** **										
LCS (P8E0110-BS1)				Prepared: 05/01/18 Analyzed: 05/03/18						
Chloride	370	1.00	mg/kg wet	400		92.4	80-120			
LCS Dup (P8E0110-BSD1)				Prepared: 05/01/18 Analyzed: 05/03/18						
Chloride	372	1.00	mg/kg wet	400		93.0	80-120	0.618	20	
Duplicate (P8E0110-DUP1)		**Source: 8D25015-20**		Prepared: 05/01/18 Analyzed: 05/03/18						
Chloride	875	5.88	mg/kg dry		863			1.44	20	
Duplicate (P8E0110-DUP2)		**Source: 8D25015-29**		Prepared: 05/01/18 Analyzed: 05/03/18						
Chloride	458	1.15	mg/kg dry		457			0.266	20	
Matrix Spike (P8E0110-MS1)		**Source: 8D25015-20**		Prepared: 05/01/18 Analyzed: 05/03/18						
Chloride	1950	5.88	mg/kg dry	1180	863	92.2	80-120			
Batch P8E0206 - * DEFAULT PREP *** **										
Blank (P8E0206-BLK1)				Prepared: 05/02/18 Analyzed: 05/03/18						
Chloride	ND	1.00	mg/kg wet							
LCS (P8E0206-BS1)				Prepared: 05/02/18 Analyzed: 05/03/18						
Chloride	393	1.00	mg/kg wet	400		98.2	80-120			
LCS Dup (P8E0206-BSD1)				Prepared: 05/02/18 Analyzed: 05/03/18						
Chloride	395	1.00	mg/kg wet	400		98.7	80-120	0.566	20	
Duplicate (P8E0206-DUP1)		**Source: 8E02012-01**		Prepared: 05/02/18 Analyzed: 05/03/18						
Chloride	3240	11.0	mg/kg dry		3010			7.45	20	

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: EMSU SAT #13
Project Number: 17-0193-01
Project Manager: Mark Larson

Fax: (432) 687-0456

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8E0206 - * DEFAULT PREP *** **										
Duplicate (P8E0206-DUP2)	**Source: 8D25015-43**			Prepared: 05/02/18 Analyzed: 05/03/18						
Chloride	177	1.03	mg/kg dry		174			1.63	20	
Matrix Spike (P8E0206-MS1)	**Source: 8E02012-01**			Prepared: 05/02/18 Analyzed: 05/03/18						
Chloride	4510	11.0	mg/kg dry	1100	3010	136	80-120			

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: EMSU SAT #13
Project Number: 17-0193-01
Project Manager: Mark Larson

Fax: (432) 687-0456

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
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Brent Barron Date: 5/4/2018

Brent Barron, Laboratory Director/Technical Director

PBEL

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to:

DATE: 4-24-18 PAGE 1 OF

PO #: LAB WORK ORDER #:

PROJECT LOCATION OR NAME: EMSU SAT 13

LAI PROJECT #: 17-0193-01 COLLECTOR: Ash

TRRP report? ☐ Yes ☒ No

TIME ZONE: Time zone/State: MST

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR OT=OTHER

8D2505

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
DP-7 (10ft)	01	4-24-18	9:22	S	1				X			
(15ft)	02		9:24									
(20ft)	03		9:25									
(25ft)	04		9:29									
(30ft)	05		9:31									
(35ft)	06		9:37									
DP-12 (0ft)	07		9:43									
(5ft)	08		9:45									
(10ft)	09		9:46									
(15ft)	10		9:48									
(20ft)	11		9:49									
(25ft)	12		9:53									
(30ft)	13		9:54									
(35ft)	14		9:56									
DP-13 (0ft)	15		10:06									
TOTAL												

ANALYSES: BTEX ☐ MTBE ☐ | TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐ | GASOLINE MOD 8015 ☐ | DIESEL - MOD 8015 ☐ | VOC 8260 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ | 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ | 8082 PCBS ☐ | TCLP - METALS (RCRA) ☐ TCLP VOC ☐ | TCLP - PEST ☐ HERB ☐ Semi-VOC ☐ | TOTAL METALS (RCRA) ☐ OTHER LIST ☐ | LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐ | RCI ☐ TOX ☐ FLASHPOINT ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | pH ☐ HEXAVALENT CHROMIUM ☐ | EXPLOSIVES ☐ PECHLORATE ☐ | CHLORIDE ☒ ANIONS ☐ ALKALINITY ☐ | M300

RELINQUISHED BY:(Signature) DATE/TIME 4-24-18 RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME 4/24/18 16:40 RECEIVED BY: (Signature) Amanda Haddock

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 5.4 THERM #:
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL #
☐ HAND DELIVERED

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to:

DATE: 4-24-18 PAGE 2 OF 4

PO #: LAB WORK ORDER #:

PROJECT LOCATION OR NAME: EMSU SAT 13

LAI PROJECT #: 17-0193-01 COLLECTOR: Ashton

TRRP report? ☐ Yes ☒ No

TIME ZONE: Time zone/State: MST

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR OT=OTHER

SD2515

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES: BTEX ☐ MTBE ☐	TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐	GASOLINE MOD 8015 ☐	DIESEL - MOD 8015 ☐	VOC 8260 ☐	SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐	8081 PESTICIDES ☐ 8151 HERBICIDES ☐	8082 PCBS ☐	TCLP - METALS (RCRA) ☐ TCLP VOC ☐	TCLP - PEST ☐ HERB ☐ Semi-VOC ☐	TOTAL METALS (RCRA) ☐ OTHER LIST ☐	LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐	RCI ☐ TOX ☐ FLASHPOINT ☐	TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐	pH ☐ HEXAVALENT CHROMIUM ☐	EXPLOSIVES ☐ PECHLORATE ☐	CHLORIDE ☒ ANIONS ☐ ALKALINITY ☐ M300	FIELD NOTES
DP-13 (5ft)	16	4-24-18	10:08	S	1				X																		X	
(10ft)	17		10:10																									
(15ft)	18		10:12																									
(20ft)	19		10:13																									
(25ft)	20		10:15																									
(30ft)	21		10:17																									
(35ft)	22		10:19																									
DP-11 (0ft)	23		10:27																									
(5ft)	24		10:29																									
(10ft)	25		10:30																									
(15ft)	26		10:31																									
(20ft)	27		10:32																									
(25ft)	28		10:35																									
(30ft)	29		10:37																									
(35ft)	30		10:38																									
TOTAL																												

RELINQUISHED BY:(Signature) DATE/TIME 4-24-18 RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME 4/24/18 16:40 RECEIVED BY: (Signature) Jessa Haddock

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 5.4 THERM #:
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL #
☐ HAND DELIVERED

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to:

DATE: 4-24-18 PAGE 3 OF 4

PO #: LAB WORK ORDER #:

PROJECT LOCATION OR NAME: EMSU SAT 13

LAI PROJECT #: 17-0193-01 COLLECTOR: Ashley

TRRP report? ☐ Yes ☒ No

TIME ZONE: Time zone/State: MST

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR OT=OTHER

8D25015

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
DP-10 (0ft)	31	4-24-18	10:45	S	1				X			
(5ft)	32		10:47									
(10ft)	33		10:49									
(15ft)	34		10:50									
(20ft)	35		10:51									
(25ft)	36		10:54									
(30ft)	37		10:55									
(35ft)	38		10:56									
DP-9 (0ft)	39		11:08									
(5ft)	40		11:09									
(10ft)	41		11:10									
(15ft)	42		11:11									
(20ft)	43		11:12									
(25ft)	44		11:14									
(30ft)	45		11:16									
TOTAL												

ANALYSES: BTEX ☐ MTBE ☐ | TRPH 418.1 ☐ | TPH 1005 ☐ | TPH 1006 ☐ | GASOLINE MOD 8015 ☐ | DIESEL - MOD 8015 ☐ | VOC 8260 ☐ | SVOC 8270 ☐ | PAH 8270 ☐ | HOLDPAH ☐ | 8081 PESTICIDES ☐ | 8151 HERBICIDES ☐ | 8082 PCBS ☐ | TCLP - METALS (RCRA) ☐ | TCLP VOC ☐ | TCLP - PEST ☐ | HERB ☐ | Semi-VOC ☐ | TOTAL METALS (RCRA) ☐ | OTHER LIST ☐ | LEAD - TOTAL ☐ | D.W. 200.8 ☐ | TCLP ☐ | RCI ☐ | TOX ☐ | FLASHPOINT ☐ | TDS ☐ | TSS ☐ | % MOISTURE ☐ | CYANIDE ☐ | pH ☐ | HEXAVALENT CHROMIUM ☐ | EXPLOSIVES ☐ | PECHLORATE ☐ | CHLORIDE ☒ | ANIONS ☐ | ALKALINITY ☐

RELINQUISHED BY:(Signature) DATE/TIME 4-24-18 RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME 4/24/18 16:40 RECEIVED BY: (Signature) Alyssa Paddock

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 5.4 THERM #:
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL #
☐ HAND DELIVERED

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to:

DATE: 4-24-18 PAGE 4 OF 4

PO #: _____ LAB WORK ORDER #: _____

PROJECT LOCATION OR NAME: EMSU SAT 13

LAI PROJECT #: 17-0193-01 COLLECTOR: Adam

TRRP report? ☐ Yes ☒ No

TIME ZONE: Time zone/State: MST

S=SOIL W=WATER A=AIR P=PAINT SL=SLUDGE OT=OTHER

8D25015

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ | TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐ | GASOLINE MOD 8015 ☐ | DIESEL - MOD 8015 ☐ | VOC 8260 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ | 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ | 8082 PCBS ☐ | TCLP - METALS (RCRA) ☐ TCLP VOC ☐ | TCLP - PEST ☐ HERB ☐ Semi-VOC ☐ | TOTAL METALS (RCRA) ☐ OTHER LIST ☐ | LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐ | RCI ☐ TOX ☐ FLASHPOINT ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | pH ☐ HEXAVALENT CHROMIUM ☐ | EXPLOSIVES ☐ PECHLORATE ☐ | CHLORIDE ☒ ANIONS ☐ ALKALINITY ☐ | Hard

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
DP-9 (35ft)	46	4-24-18	11:19	S	1				X		Hard	
HA-1 (10ft)	47		12:07									
(15ft)	48		12:08									
(20ft)	49		12:10									
(25ft)	50		12:12									
(30ft)	51		12:13									
(35ft)	52		12:14									

TOTAL

RELINQUISHED BY:(Signature) DATE/TIME 4-24-18 RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME 4/24/18 14:40 RECEIVED BY: (Signature) Alyssa Haddock

TURN AROUND TIME

NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:

RECEIVING TEMP: 5.4 THERM #: _____

CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED

☐ CARRIER BILL # _____

☐ HAND DELIVERED

Appendix D

Boring Logs

BORING RECORD

Start: 12:04
Finish: 12:14

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG	PID READING (PPM X 1)	SAMPLE NUMBER	SAMPLE PID READING	SAMPLE RECOVERY	SAMPLE DEPTH	REMARKS BACKGROUND PID READING
	0	Sand, 7.5YR, 6/4, Light Brown, Fine Grained Quartz Sand, Sub-Rounded	SW						0	12:04
	5	Caliche, 7.5YR, 8/2, Pinkish-White, Medium Grained Quartz Sand, Sub-Angular	Caliche						5	12:06
	10								10	12:07
	15								15	12:08
	20								20	12:10
	25	Sand, 8/3, Pink, Fine Grained Quartz Sand, Sub-Rounded	SW						25	12:12
	30								30	12:13
	34	Wet at 35'								12:14
	35	TD: 35'							35	

PID READING scale: 2 4 6 8 10 12 14 16 18

REMARKS: SOIL : _____ PPM; SOIL : _____ PPM

ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
L LABORATORY TEST LOCATION
\+ PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

JOB NUMBER : XTO Energy / 17-0193-01
HOLE DIAMETER : 7.25"
LOCATION : EMSU B SAT 13
LAI GEOLOGIST : A. Thielke
DRILLING CONTRACTOR : SDC
DRILLING METHOD : Air Rotary

Larson & Associates, Inc. Environmental Consultants

DRILL DATE : 04-24-2018

BORING NUMBER : HA-1

BORING RECORD

Start: 8:53
Finish: 9:33

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG	PID READING (PPM X 1)	SAMPLE NUMBER	SAMPLE PID READING	SAMPLE RECOVERY	SAMPLE DEPTH	REMARKS BACKGROUND PID READING
	0	Sand, 7.5YR, 4/6, Strong Brown, Fine Grained Quartz Sand, Well Rounded	SW						0	8:53
	5	Caliche, 7.5YR, 8/3, Pink, Fine Grained Quartz Sand, Sub-Rounded, 8/2, Pinkish White	Caliche						5	8:54
	10								10	8:56
	15								15	8:58
	20								20	9:00
	25								25	9:08
	30								30	9:15
	35	Sand, 7.5YR, 6/4, Light Brown, Damp, Sub-Rounded, Fine Grain Quartz Sand	SW						35	9:29
	40	TD: 40'							40	9:33

PID READING scale: 2 4 6 8 10 12 14 16 18

SOIL : _____ PPM
SOIL : _____ PPM

ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
L LABORATORY TEST LOCATION
\+ PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

JOB NUMBER : XTO Energy / 17-0193-01
HOLE DIAMETER : 7.25"
LOCATION : EMSU B SAT 13 Trunkline
LAI GEOLOGIST : A. Thielke
DRILLING CONTRACTOR : SDC
DRILLING METHOD : Air Rotary

Larson & Associates, Inc.
Environmental Consultants

DRILL DATE : 3-29-2018

BORING NUMBER : DP-2

BORING RECORD

Start: 9:48
Finish: 10:20

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG	PID READING (PPM X 1)	SAMPLE NUMBER	SAMPLE PID READING	SAMPLE RECOVERY	SAMPLE DEPTH	REMARKS BACKGROUND PID READING
	0	Sand, Brown, 7.5YR, 4/4, Well Rounded, Fine Grained Quartz Sand	SW						0	9:49
	3									
	5	Caliche, 7.5YR 8/3, Pink, Sub-Rounded, Fine Grained Quartz Sand	Caliche						5	9:52
	10								10	9:54
	15								15	9:58
	20								20	10:03
	25	Sand, 8/3, Pink, Fine Grained Quartz Sand, Sub-Rounded	SW						25	10:07
	30								30	10:12
	35	Wet at 35'							35	10:15
	40	TD: 40'							40	10:20

PID READING scale: 2 4 6 8 10 12 14 16 18

REMARKS: BACKGROUND PID READING
SOIL : _____ PPM
SOIL : _____ PPM

ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
L LABORATORY TEST LOCATION
\+ PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

JOB NUMBER : XTO Energy / 17-0193-01
HOLE DIAMETER : 7.25"
LOCATION : EMSU B SAT13
LAI GEOLOGIST : A. Thielke
DRILLING CONTRACTOR : SDC
DRILLING METHOD : Air Rotary

Larson & Associates, Inc.
Environmental Consultants

DRILL DATE : 3-29-2018

BORING NUMBER : DP-5

BORING RECORD

Start: 13:20
Finish: 13:40

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG	PID READING (PPM X 1)	SAMPLE NUMBER	SAMPLE PID READING	SAMPLE RECOVERY	SAMPLE DEPTH	REMARKS BACKGROUND PID READING
	0	Sand, 7.5YR, 5/6, Strong Brown, Fine Grain Quartz Sand, Well Rounded	SW						0	13:20
	5	Caliche, 7.5YR, 8/2, Pinkish White, Well Cemented, Fine Grained Quartz Sand, Sub- Angular	Caliche						5	13:22
	10								10	13:27
	15								15	13:30
	20	Sand, 7.5YR, 8/2, Loamy Sand, Well Sorted, Fine Grained Quartz Sand	SW						20	13:33
	25								25	13:37
	30								30	13:38
	35	TD: 35'							35	13:40

PID READING scale: 2 4 6 8 10 12 14 16 18

REMARKS: BACKGROUND PID READING
SOIL : _____ PPM
SOIL : _____ PPM

ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
L LABORATORY TEST LOCATION
\+ PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

JOB NUMBER : XTO Energy / 17-0193-01
HOLE DIAMETER : 7.25"
LOCATION : EMSU B SAT 13 Trunkline
LAI GEOLOGIST : A. Thielke
DRILLING CONTRACTOR : SDC
DRILLING METHOD : Air Rotary

Larson & Associates, Inc. Environmental Consultants

DRILL DATE : 04-04-2018

BORING NUMBER : DP-6

BORING RECORD

Start: 9:18
Finish: 9:33

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG	PID READING (PPM X 1)	SAMPLE NUMBER	SAMPLE PID READING	SAMPLE RECOVERY	SAMPLE DEPTH	REMARKS BACKGROUND PID READING
	0	Sand, 7.5YR, 6/6, Reddish Yellow, Well Rounded, Fine Grained Quartz Sand	SW						0	9:18
	5								5	9:20
	10	Caliche, 7.5YR, 8/3, Pink, Well Cemented, Quartz Sand, Sub-Angular, Saturated	Caliche						10	9:23
	15								15	9:24
	20								20	9:25
	25	Sand, 8/3, Pink, Fine Grained Quartz Sand, Sub-Rounded	SW						25	9:29
	30								30	9:31
	35	Wet at 35'							35	9:33

PID READING scale: 2 4 6 8 10 12 14 16 18

REMARKS: SOIL : _____ PPM; SOIL : _____ PPM

ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
L LABORATORY TEST LOCATION
\+ PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

JOB NUMBER : XTO Energy/ 17-0193-01
HOLE DIAMETER : _____
LOCATION : EMSU B SAT 13
LAI GEOLOGIST : A. Thielke
DRILLING CONTRACTOR : SDC
DRILLING METHOD : Air Rotary

Larson & Associates, Inc. Environmental Consultants

DRILL DATE : 04-24-2018

BORING NUMBER : DP-7

BORING RECORD

Start: 11:08
Finish: 11:17

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG	PID READING (PPM X 1)	SAMPLE NUMBER	SAMPLE PID READING	SAMPLE RECOVERY	SAMPLE DEPTH	REMARKS BACKGROUND PID READING
	0	Sand, 7.5YR, 4/4, Brown, Fine Grained Quartz Sand, Sub- Rounded	SW						0	11:08
	5								5	11:09
		Caliche, 7.5YR, 8/3, Pink, Sub- Angular, Quartz Sand	Caliche							
	10								10	11:10
		7.5YR, 4/4, Brown								
	15	Sand, Fine Grained Sand, Sub- Rounded, Quartz Sand	SW						15	11:11
	19									
	20	Caliche, 7.5YR, 5/3, Pink, Quartz Sand, Medium Grained 20%, Fine Grained 80%							20	11:12
	25								25	11:14
		Sand, 8/3, Pink, Fine Grained Quartz Sand, Sub-Rounded	SW							
	30								30	11:16
		Wet at 35'								
	35								35	11:17
		TD: 35'								

SOIL : _____ PPM
SOIL : _____ PPM

ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
L LABORATORY TEST LOCATION
\+ PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

JOB NUMBER : XTO Energy/ 17-0193-01
HOLE DIAMETER : 7.25"
LOCATION : EMSU B SAT 13
LAI GEOLOGIST : A. Thielke
DRILLING CONTRACTOR : SDC
DRILLING METHOD : Air Rotary

Larson & Associates, Inc. Environmental Consultants

DRILL DATE : 04-24-2018

BORING NUMBER : DP-9

BORING RECORD

Start: 10:45
Finish: 10:56

PID READING: PPM X 1 (2 4 6 8 10 12 14 16 18)

SAMPLE: NUMBER | PID READING | RECOVERY | DEPTH

REMARKS: BACKGROUND PID READING
SOIL : _____ PPM
SOIL : _____ PPM

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG	SAMPLE DEPTH	REMARKS
	0	Sand, 7.5YR, 4/4, Brown, Fine Grained Quartz Sand, Sub- Rounded	SW		0	10:45
	5				5	10:47
		Caliche, 7.5YR, 8/3, Pink Fine Grained Quartz Sand, Sub- Angular	Caliche			
	10				10	10:49
		7.5YR, 8/3, Pink				10:50
	15	Sand, Fine Grained Quartz Sand, Sub- Rounded	SW		15	
	20				20	10:51
	22	Caliche, 7.5YR, 8/3, Pink, Fine Grained Quartz Sand	Caliche			
	25				25	10:54
		Sand, 8/3, Pink, Fine Grained Quartz Sand, Sub-Rounded	SW			
	30				30	10:55
		Wet at 35'				
	35					10:56
		TD: 35'			35	

ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
L LABORATORY TEST LOCATION
\+ PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

JOB NUMBER : XTO Energy/ 17-0193-01
HOLE DIAMETER : 7.25"
LOCATION : EMSU B SAT 13
LAI GEOLOGIST : A. Thielke
DRILLING CONTRACTOR : SDC
DRILLING METHOD : Air Rotary

Larson & Associates, Inc. Environmental Consultants

DRILL DATE : 04-24-2018

BORING NUMBER : DP-10

BORING RECORD

Start: 10:27
Finish: 10:38

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG	PID READING (PPM X 1; 2 4 6 8 10 12 14 16 18)	SAMPLE NUMBER	SAMPLE PID READING	SAMPLE RECOVERY	SAMPLE DEPTH	REMARKS BACKGROUND PID READING (SOIL : PPM; SOIL : PPM)
	0	Sand, 7.5YR, 7/4, Pink Fine Grain Quartz Sand, Sub-Rounded	SW						0	10:27
	5	Caliche, 7.5YR, 8/2, Pinkish White, Fine Grained Quartz Sand							5	10:29
	10		Caliche						10	10:30
	15								15	10:31
	20	Medium Grained Quartz Sand							20	10:32
	25	Sand, 8/3, Pink, Fine Grained Quartz Sand, Sub-Rounded							25	10:35
	30								30	10:31
	35	Wet at 35'								
		TD: 35'							35	10:38

ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
L LABORATORY TEST LOCATION
\+ PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

JOB NUMBER : XTO Energy/ 17-0193-01
HOLE DIAMETER : 7.25"
LOCATION : EMSU B SAT 13
LAI GEOLOGIST : A. Thielke
DRILLING CONTRACTOR : SDC
DRILLING METHOD : Air Rotary

Larson & Associates, Inc. Environmental Consultants

DRILL DATE : 04-24-2018

BORING NUMBER : DP-11

BORING RECORD

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG	PID READING	SAMPLE NUMBER	SAMPLE PID READING	SAMPLE RECOVERY	SAMPLE DEPTH	REMARKS
		Start: 9:43 Finish: 9:56			PPM X 1 2 4 6 8 10 12 14 16 18					BACKGROUND PID READING SOIL : _____ PPM SOIL : _____ PPM
	0	Sand, 7.5YR, 7/4, Pink Fine Grained Quartz Sand, Sub- Rounded	SW						0	9:43
	5								5	9:45
	10	Caliche, 7.5YR, 8/3, Pink Well Cemented, Quartz Sand, Sub- Angular	Caliche						10	9:46
	15								15	9:48
	20								20	9:49
	25								25	9:53
	30	Sand, 8/3, Pink, Fine Grained Quartz Sand, Sub-Rounded	SW						30	9:54
	35	Wet at 35'								9:56
		TD: 35'	Water						35	

ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
L LABORATORY TEST LOCATION
\+ PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

JOB NUMBER : XTO Energy/ 17-0193-01
HOLE DIAMETER : _____
LOCATION : EMSU B SAT 13
LAI GEOLOGIST : A. Thielke
DRILLING CONTRACTOR : SDC
DRILLING METHOD : Air Rotary

Larson & Associates, Inc. Environmental Consultants

DRILL DATE : 04-24-2018

BORING NUMBER : DP-12

BORING RECORD

Start: 10:06
Finish: 10:19

PID READING: PPM X 1 (2 4 6 8 10 12 14 16 18)

SAMPLE: NUMBER | PID READING | RECOVERY | DEPTH

REMARKS: BACKGROUND PID READING
SOIL : _____ PPM
SOIL : _____ PPM

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG	SAMPLE DEPTH	REMARKS
	0	Sand, 7.5YR, 5/4, Brown, Fine Grained Quartz Sand, Sub-Rounded	SW		0	10:06
	5	Caliche, 7.5YR, 8/3, Pink, Fine Medium Grained Quartz Sand	Caliche		5	10:08
	10				10	10:10
	15				15	10:12
	20				20	10:13
	25	Sand, 8/3, Pink, Fine Grained Quartz Sand, Sub-Rounded	SW		25	10:15
	30				30	10:17
	35	Wet at 35'				
		TD: 35'			35	10:19

ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
L LABORATORY TEST LOCATION
\+ PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

JOB NUMBER : XTO Energy/ 17-0193-01
HOLE DIAMETER : 7.25"
LOCATION : EMSU B SAT 13
LAI GEOLOGIST : A. Thielke
DRILLING CONTRACTOR : SDC
DRILLING METHOD : Air Rotary

Larson & Associates, Inc. Environmental Consultants

DRILL DATE : 04-24-2018

BORING NUMBER : DP-13

Appendix E

Photographs

Trunk Line Viewing North

Trunk Line Viewing South

From:	Hernandez, Christina, EMNRD
To:	"Mark Larson"; "Tucker, Shelly"; Yu, Olivia, EMNRD
Cc:	"Pennington, Shelby"
Subject:	RE: 1RP-4832 - Delineation Report, EMSU B Satellite #13 Trunk Line Leak, XTO Energy, Inc., July 6, 2018
Date:	Monday, July 23, 2018 2:52:00 PM
Attachments:	Approved1RP-4832 EMSU B Satellite 13 Trunk Line Leak Delineation Report.pdf

Dear Mr. Larson:

Notes

- Please use different colors within a single map to facilitate interpretation and approval.
- Please clarify location of the 4' extended excavation relative to the other excavations as it is unclear. Will it be 10 ft north of the current excavation or 10 ft north of the proposed 12' extended excavation?
- Areas that show historic releases (DP-2, DP-6, DP-7, DP-9, DP-10, DP-11, DP-12, DP-13) must be remediated as well due to high mobility of chlorides.

Delineation completed and proposed remediation is approved with the following stipulations:

- Please note that both proposed monitoring wells are required, one up gradient and one down gradient from spill release location as noted. (Mr. Brad Billings, NMOCD Santa Fe, may have additional stipulations).
- Please be advised that all laboratory analyses (Benzene, BTEX, and TPH extended) are required for proposed 12' and 4' extended excavation confirmation bottom and sidewall sample locations; complete laboratory analyses will also be required for groundwater testing.
- Please address historical releases; please be advised to excavate to 4' at these (DP-2, DP-6, DP-7, DP-9, DP-10, DP-11, DP-12, DP-13) locations and collect sidewall samples as well.
- After proper placement of 20 mil liner and back filling, sample every 50 cubic yards.

Thanks,
Christina Hernandez
EMNRD-OCD
Environmental Specialist
1625 N. French Drive
Hobbs, NM 88240
575-393-6161 x111
Christina.Hernandez@state.nm.us

From: Mark Larson <Mark@laenvironmental.com>

Sent: Friday, July 13, 2018 3:03 PM
To: 'Tucker, Shelly' <stucker@blm.gov>; Yu, Olivia, EMNRD <Olivia.Yu@state.nm.us>; Hernandez, Christina, EMNRD <Christina.Hernandez@state.nm.us>
Cc: 'Pennington, Shelby' <Shelby_Pennington@xtoenergy.com>
Subject: FW: 1RP-4832 - Delineation Report, EMSU B Satellite #13 Trunk Line Leak, XTO Energy, Inc., July 6, 2018

Shelly,
Please accept my apology for not including you on the attached submittal to OCD District 1. Please contact Shelby Pennington with XTO at (432) 682-8873 or email Shelby_Pennington@xtoenergy.com or me if you have questions.
Respectfully,

Mark J. Larson, P.G.
President/Sr. Project Manager
507 N. Marienfeld St., Suite 205
Midland, Texas 79701
(432) 687-0901 (O)
(432) 556-8656 (C)

www.LAEnvironmental.com

"Serving the Permian Basin Since 2000"

From: Mark Larson
Sent: Friday, July 13, 2018 4:00 PM
To: 'Yu, Olivia, EMNRD'; 'Christina.Hernandez@state.nm.us'
Cc: 'Pennington, Shelby'
Subject: Re: 1RP-4832 - Delineation Report, EMSU B Satellite #13 Trunk Line Leak, XTO Energy, Inc., July 6, 2018

Dear Ms. Yu and Ms. Hernandez,
Larson & Associates, Inc. (LAI), on behalf of XTO Energy, Inc. (XTO), submits the attached delineation report for a produced water leak from the EMSU Satellite #13 trunk line. XTO proposes the following remedial actions in response to the spill:

- Install one (1) monitoring well down gradient (south) of the spill constructed with 2 inch schedule 40 threaded PVC and fifteen (15) feet of well screen positioned between approximately 30 and 45 feet bgs;
- Collect groundwater samples for field (chloride) and laboratory (BTEX and chloride) analysis

by EPA SW-846 Methods 8021B and Method 300, respectively;

- Install second temporary monitoring well up gradient (north) of spill if field chloride analysis demonstrate concentration greater than 250 milligrams per liter (mg/L) and construct similar to down gradient well;
- Expand excavation north, south and west between about 5 to 10 feet from current excavation boundary to depth of about 12 feet bgs and collect confirmation bottom sample at approximately 12 feet bgs (HA-1) and sidewalls (north, south, east and west) at approximately 2, 8 and 10 feet bgs and analyze for TPH by EPA SW-846 Method 8015M, including GRO (C6-C12), DRO (>C12-C28) and ODR (>C28-C35);
- Excavate additional soil from sidewalls and bottom as necessary to reduce TPH below 100 mg/Kg;
- Assuming no further soil excavation backfill excavation with caliche to approximately 4 feet bgs;
- Expand excavation to depth of approximately 4 feet bgs north (10 feet), south (5 feet), east (15 feet) and west (30 feet) and collect bottom (4 feet) and sidewall (2 feet) confirmation samples for laboratory analysis (TPH and chloride) by EPA SW-846 Method 8015M and Method 300, respectively, to confirm concentrations below 100 mg/Kg (TPH) and 250 mg/Kg (chloride);
- Expand excavation as needed (north, south, east and west) approximately 4 feet bgs until sidewall confirmation samples report TPH and chloride below 100 mg/Kg and 250 mg/kg, respectively;
- Assuming no further soil excavation install 20 mil thickness poly liner in bottom of excavation at approximately 4 feet bgs, backfill excavation with clean soil and seed to landowner specifications;
- Dispose of excavated soil at Sundance (Parabo) disposal.

Your approval of the delineation report and proposed remediation plan are appreciated. Please contact Shelby Pennington with XTO at (432) 682-8873 or email Shelby_Pennington@xtoenergy.com or me if you have questions.
Respectfully,

Mark J. Larson, P.G.
President/Sr. Project Manager
507 N. Marienfeld St., Suite 205
Midland, Texas 79701
(432) 687-0901 (O)
(432) 556-8656 (C)

Larson & Associates, Inc.
Environmental Consultants

www.LAEnvironmental.com

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From: Yu, Olivia, EMNRD [mailto:Olivia.Yu@state.nm.us]
Sent: Tuesday, November 28, 2017 1:06 PM
To: Mark Larson
Cc: 'Williams, Luke'; 'Donald, Patricia'
Subject: RE: 1RP-4832 - Delineation Plan, EMSU B Satellite #13 Trunk Line Leak, XTO Energy, Inc., October 15, 2017

Mr. Larson:

The proposed delineation report for 1RP-4832 is approved with these stipulations:

- Please note that based on the release outlined in Figure 3, there are 2 NMOSE wells (L04507 & L10135) within 1000 ft. of the GPS coordinates for the site.
- Delineate to 600 mg/kg chloride levels and maintained for 10 ft. further in depth.
- At least two depths for each sample location must have laboratory analyses: depth obtained and depth maintained permissible levels of chlorides, TPH extended, and BTEX. Include all pertinent field data.
- Please be advised that with average depth to groundwater < 50 ft. bgs, a temporary monitoring well may be required.
- In the subsequent delineation report, please include on one or more appropriately scaled maps: 1) the release area and pipeline trench outlined; 2) delineation and proposed confirmation sample locations demarcated with GPS coordinates; 3) and dimensions and depths of proposed excavations annotated.

Please confirm or inform if clarification is required.

Thanks,

Olivia Yu
Environmental Specialist
NMOCD, District I
Olivia.yu@state.nm.us
575-393-6161 x113

From: Mark Larson [mailto:Mark@laenvironmental.com]
Sent: Monday, November 27, 2017 2:41 PM
To: Yu, Olivia, EMNRD <Olivia.Yu@state.nm.us>
Cc: 'Williams, Luke' <Luke_Williams@xtoenergy.com>; 'Donald, Patricia' <Patricia_Donald@xtoenergy.com>
Subject: FW: 1RP-4832 - Delineation Plan, EMSU B Satellite #13 Trunk Line Leak, XTO Energy, Inc., October 15, 2017

Hello Olivia,
This message is submitted on behalf of XTO Energy, Inc. (XTO) as a follow up to the email sent on October 19, 2017, conveying the delineation plan for 1RP-4832, and approval to delineate the spill according to the attached plan? Please contact Luke Williams with XTO at (432) 682-8873 or email Luke_Willaims@xtoenergy.com or me if you have questions.
Respectfully,

Mark J. Larson, P.G.
President/Sr. Project Manager
507 N. Marienfeld St., Suite 205
Midland, Texas 79701
(432) 687-0901 (O)
(432) 556-8656 (C)

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From: Mark Larson
Sent: Thursday, October 19, 2017 5:44 PM
To: 'Yu, Olivia, EMNRD'
Cc: 'Williams, Luke'; Sarah Johnson
Subject: Re: 1RP-4832 - Delineation Plan, EMSU B Satellite #13 Trunk Line Leak, XTO Energy, Inc., October 15, 2017

Dear Ms. Yu,
Larson & Associates, Inc. (LAI), on behalf of XTO Energy, Inc. (XTO), submits the attached delineation plan for a produced water leak from the flow line from EMSU Satellite #13 trunk line. Please contact Luke Williams with XTO at (432) 682-8873 or email Luke_Willaims@xtoenergy.com or me if you have questions.
Respectfully,

Mark J. Larson, P.G.
President/Sr. Project Manager
507 N. Marienfeld St., Suite 205
Midland, Texas 79701
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