APPROVED
By Olivia Yu at 1:35 pm, Feb 15, 2018

NMOCD approves of the proposed remediation plan and grants backfill approval to 1RP-4166.

1RP-4166
REMEDIATION CONFIRMATION REPORT
LMPSU #286 Flowline
Crude Oil Spill
Lea County, New Mexico

Latitude: 32° 21' 50.10"
Longitude: 103° 10' 35.76"

LAI Project No. 17-0175-19

January 9, 2018

Prepared for:
Legacy Reserves Operating, LP
303 West Wall Street, Suite 1300
Midland, Texas 79701

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

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

Sarah R. Johnson
Staff Geologist

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1.0 INTRODUCTION

Larson & Associates, Inc. (LAI), has prepared this remediation confirmation report on behalf of Legacy Reserves Operating, Inc. (Legacy) for submittal to the New Mexico Oil Conservation Division (OCD) District 1 and New Mexico State Land Office (SLO) for a crude oil spill at the LMPSU #286 flowline (Site) located in Unit H (SE/4, NE/4), Section 29, Township 22 South, Range 37 East in Lea County, New Mexico. The geodetic position is North 32° 21' 50.10" and West 103° 10' 35.76". Figure 1 presents a topographic map. Figure 2 presents an aerial map.

1.1 Background

The release occurred on January 12, 2014 due to ruptured flowline allowing for approximately 100 barrels (bbl) of crude oil to be released. Approximately 70 bbl were recovered. The spill area measured about 2,200 square feet at the time of release. The spill was reported to the OCD on January 21, 2014 (verbal communication with Geoff Leking). The initial C-141 was submitted and assigned remediation permit number 1RP-4166. Appendix A presents the initial C-141.

On January 22, 2014 Environmental Plus Inc. (EPI) collected soil samples at seven (7) locations (TS1 through TS7). The samples were collected at depths of between 3 feet below ground (bgs) surface and 16 feet bgs. The soil samples were analyzed in the field for chloride by titration method with a LaMotte Chloride Kit. Select portions from the samples were analyzed for organic vapors with a Mini-Rae Photoionization Detector (PID).

Chloride tested above the delineation limit (600 mg/Kg) in the following samples:

- TS2, 3' (1,200 mg/Kg)
- TS5, 9' (1,600 mg/Kg)
- TS6, 8' (1,200 mg/Kg)
- TS6, 13' (1,400 mg/Kg)
- TS6, 15' (2,300 mg/Kg)
- TS7, 12' (1,400 mg/Kg)

On January 23, 2014 EPI personnel collected soil samples at three (3) locations (SP 1 through SP 3) within the spill area. The samples were collected at depths of 7 feet bgs (SP 1), 8 feet bgs (SP 2) and 16 feet (SP 3). An additional sample was collected approximately 25 feet west of the spill at a depth of 5 feet bgs to determine background conditions. The samples were analyzed by Cardinal Laboratories (Cardinal) in Hobbs New Mexico, for the sum of benzene, toluene, ethylbenzene and xylenes (BTEX), total petroleum hydrocarbons (TPH), including gasoline range organics (GRO) and diesel range organics (DRO), and chloride by titration method SM4500 CL-B. All samples reported below the RRAL for BTEX and TPH and below the delineation limit for chloride. The oil range fraction of TPH was not analyzed.

In January of 2014 soil was excavated from the spill area to approximately 5 feet bgs on the east end, 3 feet bgs on the west end and 8 feet bgs in the middle. The excavation measured approximately 2,700 square feet.The contaminated soil was hauled to an OCD approved landfill and disposed. Appendix B presents EPI work plan.

1.2 Physical Setting

The physical setting is as follows:

- The surface elevation is approximately 3,360 feet above mean sea level (msl);
- The topography slopes gently to the southeast;
- There are no surface water features within 1,000 feet of the Site;
- The soils are designated as "Pyote and maljamar fine sands, 0 to 3 percent slope", consisting of 0 to 30 inched fine sand underlain by 30 to 60 inches of fine sandy loam;
- The geology is Eolian and piedmont deposits (Holocene to middle Pleistocene) – interlayed eolian sands and piedmont-slope deposits;
- Groundwater occurs in the Ogallala Formation at approximately 61 feet below ground surface (bgs) (1996);
- The nearest groundwater well is located in Unit L (NW/4, SW/4), Section 28, Township 22 South, Range 37 East about 0.30 miles southeast of the Site.

1.3 Recommended Remediation Action Levels

The recommended 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 – 99 Feet	10
Wellhead Protection Area	No	0
Distance to Surface Water Body	>1,000 Horizontal Feet	0

The following RRAL apply to the release for ranking score: 10

- Benzene 10 mg/Kg
- BTEX 50 mg/Kg
- TPH 1,000 mg/Kg

Depth to groundwater between 50 and 99 feet bgs requires vertical delineation of chloride to 600 milligrams per kilogram (mg/Kg) and maintained for an additional 5 feet.

2.0 REMEDIATION CONFIRMATION

On January 5, 2018, LAI collected soil samples at three (3) locations (S-1 through S-3) in the bottom of the excavation. The samples were collected with a stainless steel hand auger at 1 foot intervals to depth of approximately 7 feet bgs (S-1), 10 feet bgs (S-2) and 4 feet bgs (S-3) or until caliche was reached. Additional samples were collected at a depth of 2 feet bgs from both side walls opposite of each samples, as well as the east and west sidewall. The samples were delivered under chain of custody and preservation to Permian Basin Environmental Lab (PBEL) in Midland Texas. The upper samples were analyzed for BTEX and TPH by EPA SW-846 8021B and 8015M, respectively. All samples were analyzed for chloride by EPA Method 300. BTEX and TPH reported below the RRALs in all samples. Chloride reported below the delineation limit (600 mg/Kg) in all samples. Appendix D presents photographs.

3.0 RECOMMENDATION

Legacy believes no additional soil remediation is necessary and requests approval to fill the excavation to approximately 1 foot bgs with caliche and to surface with top soil. The surface will be seeded to New Mexico State Land Office requirement. A final report to include photographs and final C-141 will be submitted to OCD and SLO upon completion of the work.

Figures

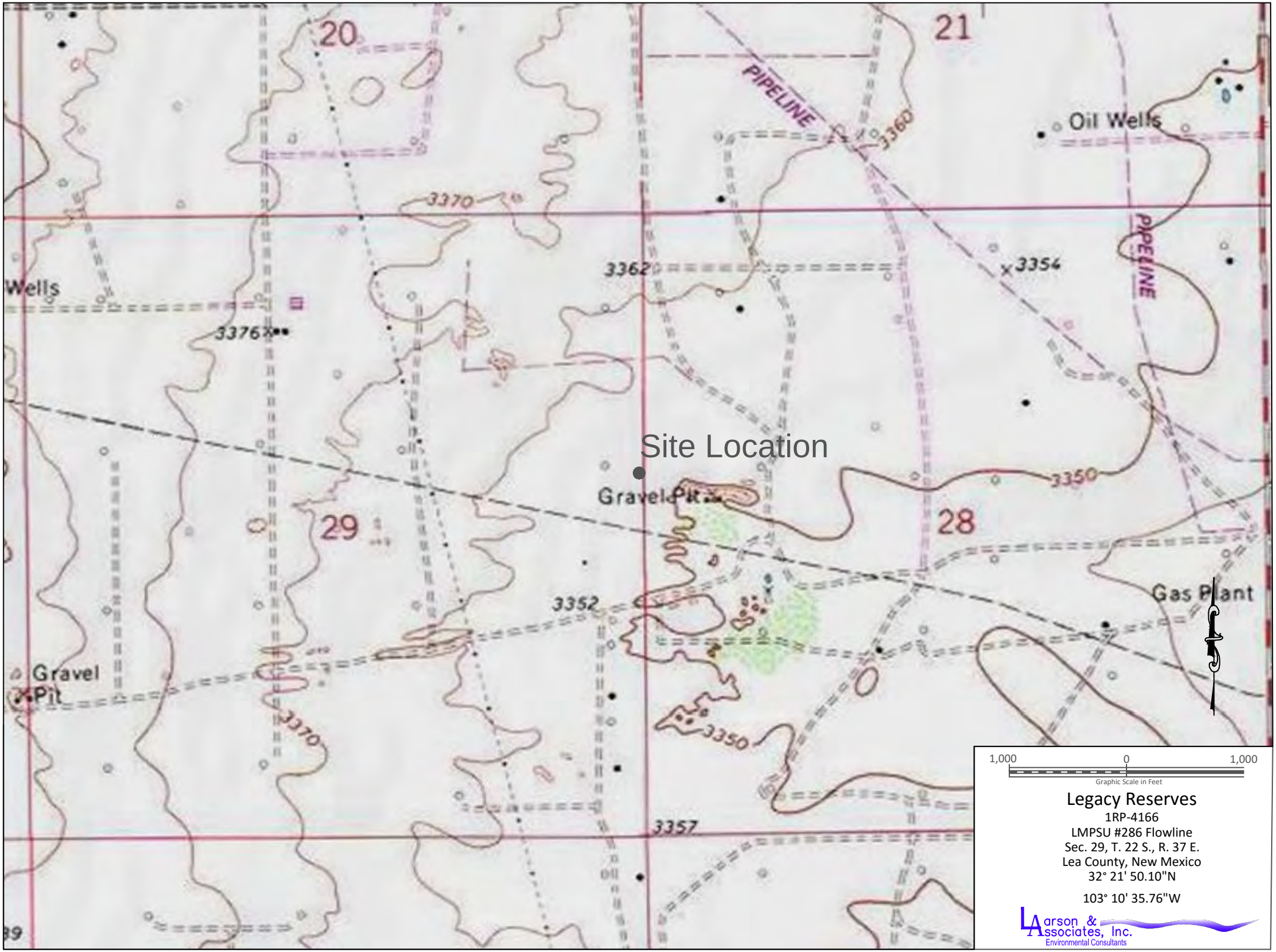

Figure 1 - Topographic Map

Figure 2 - Aerial Map

Tables

Table 1
1RP-4166
Confirmation Soil Sample Analytical Data Summary
Legacy Reserves Operating, Inc. LMPSU #286 Flowline
Lea County, New Mexico

Sample	Collection Date	Depth (Feet)	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C10 (mg/Kg)	>C10 - C28 (mg/Kg)	>C28 - C35 (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
RRAL:								**1,000**	***600**
Spill Area Soil Sample									
S-1	1/5/2018	5 - 6	<0.00111	<0.00777	<27.8	<27.8	<27.8	<27.8	<1.11
	1/5/2018	6 - 7	--	--	--	--	--	--	<1.11
S-2	1/5/2018	8 - 9	<0.00112	<0.00786	<28.1	<28.1	<28.1	<28.1	<1.12
	1/5/2018	9 - 10	--	--	--	--	--	--	<1.14
S-3	1/5/2018	3 - 4	<0.00115	<0.00805	<28.7	<28.7	<28.7	<28.7	<1.15
Side Wall Samples									
S-1 N	1/5/2018	2	<0.00110	<0.0077	<27.5	<27.5	<27.5	<27.5	<1.10
S-1 S	1/5/2018	2	<0.00108	<0.00754	<26.9	<26.9	<26.9	<26.9	<1.08
S-2 N	1/5/2018	2	<0.00112	<0.00932	<28.1	<28.1	<28.1	<28.1	<28.1
S-2 S	1/5/2018	2	<0.00111	<0.00902	<27.8	<27.8	<27.8	<27.8	<1.11
S-3 N	1/5/2018	2	<0.00115	<0.01119	<28.7	<28.7	<28.7	<28.7	15.6
S-3 S	1/5/2018	2	<0.00115	<0.00805	<28.7	<28.7	<28.7	<28.7	<1.15
East	1/5/2018	2	<0.00110	<0.00816	<27.5	<27.5	<27.5	<27.5	<1.10
West	1/5/2018	2	<0.00112	<0.00786	<28.1	<28.1	<28.1	<28.1	<1.12

Notes: Laboratory analysis performed by Permian Basin Environmental Lab, Midland, Texas, by SW-846 Method 8021B (BTEX), Method 8015M (GRO, DRO and ORO) and Method 300 (chloride).
Depth in feet below ground surface (bgs)
mg/Kg: milligrams per kilogram equivalent to parts per million (ppm)
--: No data available (no sample in sampler)
*: OCD delineation limit

Appendix A

Initial C-141

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, 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 October 10, 2003

Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: Legacy LP	**Contact:** Greg Skiles
Address: P.O. Box 10848 Midland, TX 79702	**Telephone No.:** (432) 528 – 4014
Facility Name: LMPSU #286 Flowline	**Facility Type:** Flowline

Surface Owner: State of New Mexico	**Mineral Owner:**	**API:**

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
H	29	22S	37E					Lea

E-28-22-37
30.625.16494

Latitude: N 32° 21' 50.01" **Longitude:** W 103° 10' 35.76"

NATURE OF RELEASE

Type of Release: Oil	**Volume of Release:** 100 bbls	**Volume Recovered:** 70 bbls
Source of Release: flow-line	**Date and Hour of Occurrence:** 1/17/14	**Date and Hour of Discovery:** 1/17/14
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	**If YES, To Whom?** Geoff Leking	
By Whom? Greg Skiles	**Date and Hour:** 1/21/14	
Was a Watercourse Reached? ☐ Yes ☒ No	**If YES, Volume Impacting the Watercourse:** Not Applicable	

Depth to Water. ~70 ft bgs

If a Watercourse was Impacted, Describe Fully.* Not Applicable

Describe Cause of Problem and Remedial Action Taken.* Approximately 100 bbls of oil were released when the sidewall of a flow-line split. There was approximately 70 bbls recovered. An Emergency Response Team arrived at the release area and began continuous abatement of the impacted area. Visibly stained soil was excavated and hauled away for disposal at a state approved facility.

Describe Area Affected and Cleanup Action Taken.* Approximately 2,200 square feet of surface area was impacted by the release. Soil samples will be collected from release area and submitted to Cardinal Laboratories for testing. Upon receipt of laboratory analytical data from soil samples collected during delineation operations, EPI will prepare and present a Remediation Proposal for approval.

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 [illegible] surface water, human health or the environment. In addition, NMOCD accep[t] for compliance with any other federal, state, or local laws and/or regulations.

Signature: Greg Skiles

Printed Name: Greg Skiles

Title: Production Foreman

E-mail Address: gskiles@legacylp.com

Date: 1/21/14 **Phone:** (432) 528-4014

APPROVED

Appl

Appl 2/8/14 **Expiration Date:**

Conditions of Approval:

Attached ☐

*** Attach Additional Sheets If Necessary**

1RP 4166

Appendix B
EPI Work Plan

ENVIRONMENTAL PLUS, INC.

2100 Ave 'O'
P.O. Box 1558
Eunice, NM 88231
ddominguezepi@gmail.com
Office: (575) 394-3481
Fax: (575) 394-2601

Site Characterization and Work Plan

Legacy, L.P.
LMPSU #286 Flowline
Lea County, New Mexico
Unit Letter "H", Section 29, Township 22 South, Range 37 East
Latitude 32.363983 North, Longitude 103.176722 West
NMOCD Reference # 1RP-4166

Prepared For:

Legacy, L.P.
P.O. Box 10848
Midland, Texas 79702

Prepared By:

Environmental Plus, Inc.
2100 Ave 'O'
Eunice, NM 88231

July 2017

Daniel Dominguez
Project Manager

The following *Site Characterization and Work Plan* serves as a condensed update on field activities undertaken and proposed actions for the afore referenced Site.

Background:
The site is located in Unit Letter H (SE ¼ NE ¼), Section 29, Township 22 South, Range 37 East, approximately four miles south of Eunice, in Lea County, New Mexico. The property is owned by the State of New Mexico.

The release site is located in the pasture just off a lease road; latitude 32.363983 North, longitude 103.176722 West. Area Map, Site Location Map, and Sample/Site Map are included as Figure 1, Figure 2, and Figure 3, respectively. The Initial NMOCD Form C-141 indicate the release occurred on January 17, 2014 when approximately 100 barrels of oil were released when a flowline sidewall split releasing the fluid to pasture. A vacuum truck was dispatched to the site and recovered approximately 70 barrels, resulting in a net loss of 30 barrels. The visually stained area covers approximately 2,200 square feet of pasture. The Initial NMOCD Form C-141 is included as Attachment IV.

NMOCD Site Classification:
A search for water wells was completed utilizing the New Mexico Office of the State Engineer's (NMOSE) website. There are six wells located in the area surrounding the release site (reference *Table 1*). Also, no wells (domestic, agriculture or public) and no bodies of surface water exist within a 1,000-foot radius of the release site (reference *Figure 2*). The NMOSE database indicates average depth to water is approximately 62 feet below ground surface (bgs) within a 2,000-meter radius (reference *Attachment II*).

Utilizing this information, the NMOCD guidelines indicate the LMPSU #286 Flowline release site to have a ranking score of ten. Based on this score, the NMOCD Recommended Remedial Action Levels (RRALs) for delineation at this Site were determined as follows: Benzene – 10 mg/Kg, BTEX – 50 mg/Kg, TPH – 1,000 mg/Kg, and Chloride – 600 mg/Kg.

The fluid spread to the west of the flowline approximately 125' into pasture area consisting of approximately two feet of topsoil atop caliche (reference *Figure 3*).

Delineation Progress:
On January 22, 2014 EPI personnel mobilized on site to collect soil samples to determine the vertical extent of contamination. A total of ten soil samples were collected from seven sample locations; TS1 – TS7. All ten samples were field tested for chlorides. Field testing indicates elevated chlorides between three and sixteen feet bgs (reference *Figure 3* and *Table 2*).

On January 23, 2014 EPI personnel collected soil samples for laboratory analysis. A total of four soil samples were collected from four sample locations; SP1 – SP3, background. All samples were sent to Cardinal Labs in Hobbs, New Mexico, for testing. Laboratory analytical results indicate that Benzene, BTEX, TPH, and Chloride concentrations at depth of sample collection, are below NMOCD RRALs (reference *Figure 3* and *Table 2*).

ENVIRONMENTAL PLUS, INC.

Portions of select soil samples were field tested for organic vapors and chloride concentrations. Soil samples collected for field testing of organic vapors were placed in self-sealing polyethylene bags and allowed to equilibrate to ~70° F. Field testing of organic vapors utilized a Mini-Rae™ Photoionization Detector (PID) equipped with a 10.6 electron-volt (eV) calibrated for benzene response. Chloride concentrations were determined via use of a LaMotte Chloride Kit (Titration Method).

Soil samples designated for laboratory analyses were collected into laboratory provided glass containers, labeled and inserted into self-sealing polyethylene bags, placed in a cooler, chilled and transported to an independent laboratory for quantification of contaminant concentrations under Chain-of-Custody protocol.

In January 2014, in conjunction with sampling activities, the release area was excavated to approximately four feet bgs at the west end and approximately eight feet bgs at the east end. All contaminated soil was hauled to a state approved disposal facility.

Proposed Actions:
Taking into consideration the age of the release, the open excavation, and field testing indicating elevated chlorides, EPI proposes to install a twenty-mil poly-ethylene liner in the excavation floor then backfill with clean soil to finish grade. As the depth of the excavation varies along the length of the excavation, caliche will be used as backfill to within three feet of ground surface, at which point topsoil will be used as backfill to finish grade.

Top soil, and caliche will be free of deleterious material or rocks or large clumps. Backfilling will continue until the entire excavation is closed. Upon completion of backfill activities, the entire disturbed area will be contoured to blend with existing pasture area and protected against wind/water erosion. The disturbed pasture area will also be seeded and watered.

Revegetation Plan:
In an attempt to achieve native plant cover and diversity levels equal to or exceeding the natural potential levels in undisturbed soils adjacent to the release area, the disturbed pasture area will be seeded with BLM mixture #2 at a rate of 22 lbs per acre. Seed will be applied to the area utilizing a drill seeder in early spring 2018 when ground conditions are more conducive to vegetative growth. After seeding has been competed the area will be thoroughly watered. After a period of three months the area will be examined for vegetative growth and re-seeded if no growth has occurred.

Noxious Weed Management Plan:
In an effort to prevent the spread of noxious weeds such as African Rue, Siberian Elm, Jointed Goatgrass, Russian Olive, Camelthorn, Saltcedar, Starthistle varieties, Hoary Cress and Russian Knapweed, the area will be confirmed to be clear of any noxious weeds. If any are located they will be removed by hand and the area treated with an appropriate herbicide. Applied seed mix will contain no primary or secondary noxious weeds and will either be certified or registered seed. After a period of three months the area will be examined for noxious weed growth and re-treated if any growth has occurred.

Following completion of NMOCD and NMSLO approved Proposed Actions, EPI will provide a detailed *Final Closure Report* to Legacy, L.P., NMOCD, and NMSLO personnel. Legacy, L.P. and EPI personnel would welcome an opportunity to briefly discuss the *Work Plan* at your earliest convenience.

Should you have any questions or concerns please feel free to contact me at (575) 394-3481 or via e-mail at ddominguezepi@gmail.com or Mr. Steven Dittman at (432) 312-4757 or via e-mail at sdittman@legacylp.com. All official communication should be addressed to:

Mr. Steven Dittman
Legacy, L.P.
P.O. Box 10848
Midalnd, TX 79702

Sincerely,

ENVIRONMENTAL PLUS, INC.

Daniel Dominguez
Environmental Consultant

cc: Olivia Yu, Environmental Specialist – NMOCD District 1, Hobbs
Amber Groves, Remediation Specialist – NMSLO, Hobbs, NM
Steven Dittman, Production Tech – Legacy, L.P.
File

Encl.: Figure 1 – Area Map
Figure 2 – Site Location Map
Figure 3 – Sample/Site Map
Table 1 – Well Data
Table 2 – Summary of Soil Sample Field Testing and Laboratory Analytical Results
Attachment I – Photographs
Attachment II – NMOSE Average Depth to Groundwater
Attachment III – Laboratory Analytical Results
Attachment IV – Copy of Initial NMOCD Form C-141

FIGURES

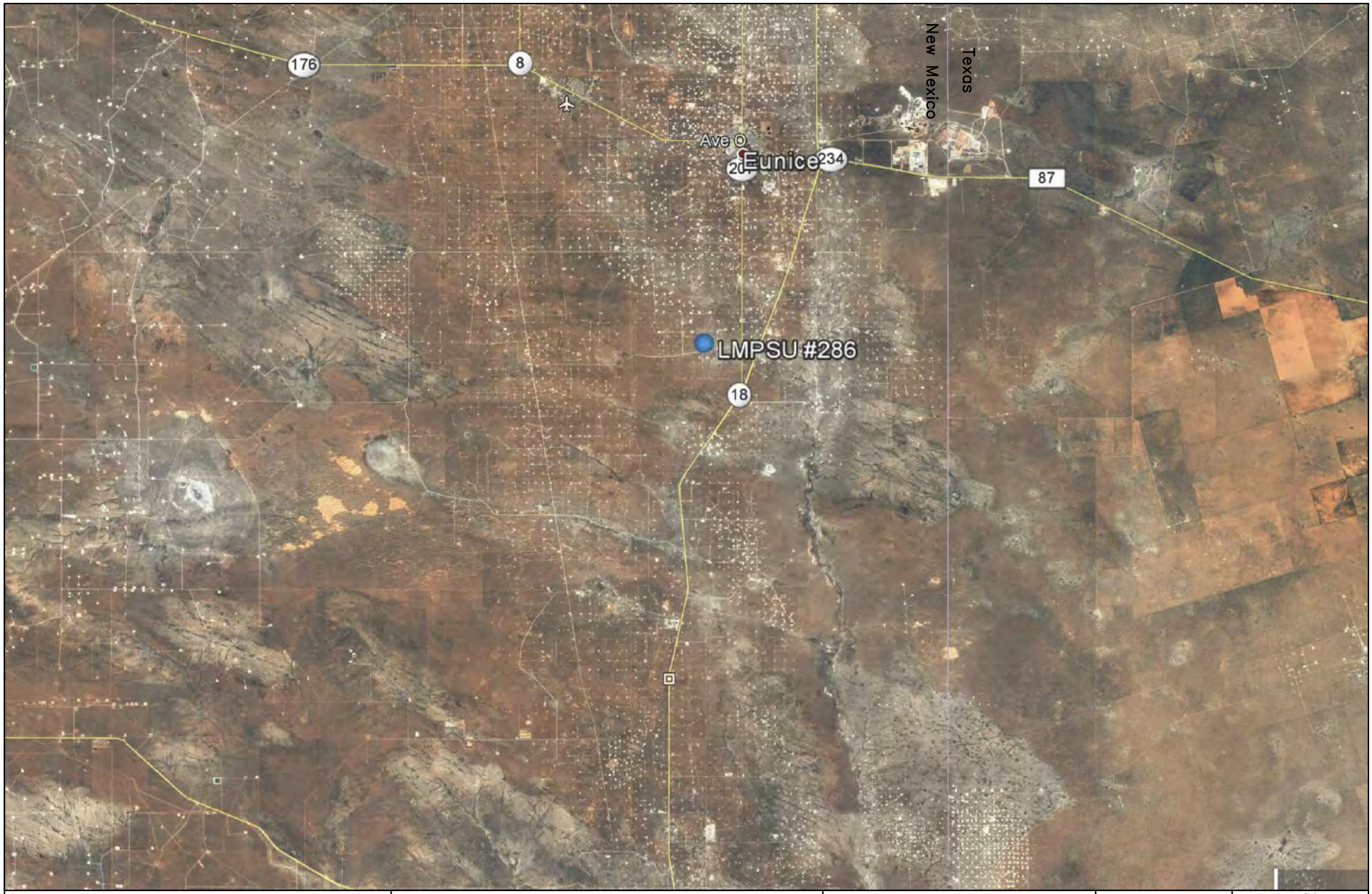

Figure 1 Area Map Legacy, L.P. LMPSU #286 Flowline	Lea County, New Mexico SE 1/4 of NE 1/4, Sec. 29, T22S, R37E N 32° 21' 50.01" W 103° 10' 35.76" Elevation: 3,355 feet amsl	DWG By: D Dominguez July 2017	REVISED:	N
		0 3 6 Miles	SHEET 1 of 1	

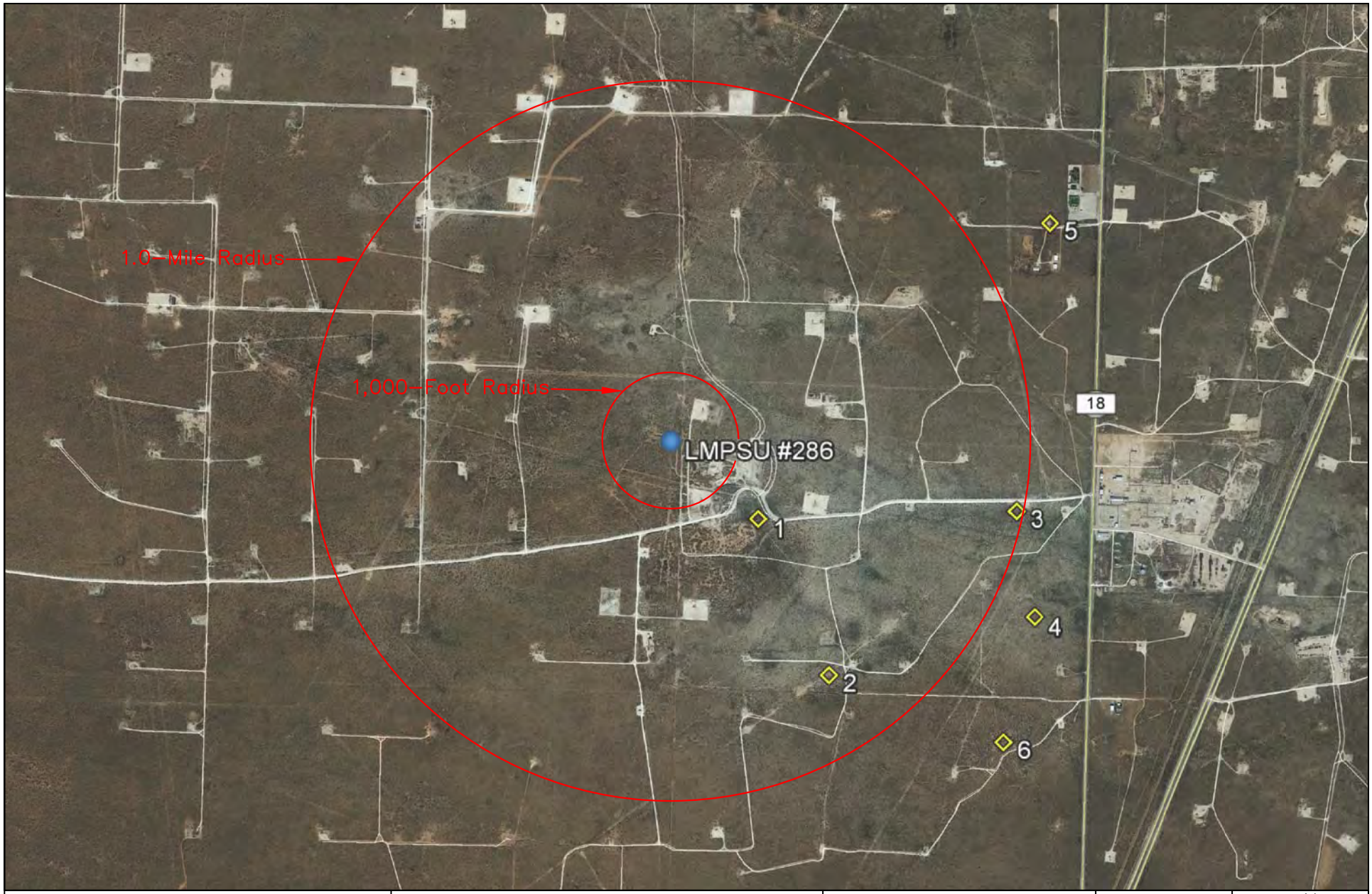

Figure 2 Site Location Map Legacy, L.P. LMPSU #286 Flowline	Lea County, New Mexico SE 1/4 of NE 1/4, Sec. 29, T22S, R37E N 32° 21' 50.01" W 103° 10' 35.76" Elevation: 3,355 feet amsl	DWG By: D Dominguez July 2017 0 2,000 4,000 Feet	REVISED: SHEET 1 of 1

Figure 3
Sample/Site Map
Legacy, L.P.
LMPSU #286 Flowline

Lea County, New Mexico
SE 1/4 of NE 1/4, Sec. 29, T22S, R37E
N 32° 21' 50.01" W 103° 10' 35.76"
Elevation: 3,355 feet amsl

DWG By: D Dominguez
July 2017

REVISED:

0 20 40
Feet

SHEET
1 of 1

N

TABLES

TABLE 1

Well Data

Legacy, L.P. - LMPSU #286 Flowline

Ref #	Well Number	Use	Diversion[A]	Owner	q64	q16	q4	Sec	Twsp	Rng	Easting	Northing	Distance[B]	Date Measured	Surface Elevation[C]	Depth to Water (ft bgs)
1	USGS 1				3	1	2	28	22S	37E	671896	3581961	446	06-Jan-16	3,342	61
2	USGS 2				3	2	3	28	22S	37E	672194	3581381	1,076	18-Mar-81	3,352	69
3	CP 00396	COM	10	E.F. KING	1	2	4	28	22S	37E	672886	3582037	1,354	31-Dec-40	3,345	59
4	USGS 3				4	2	1	28	22S	37E	672974	3581640	1,547	28-Oct-65	3,346	59
5	CP 00503	DOL	3	TOMMY HENDERSON		4	4	21	22S	37E	672965	3583144	1,680	15-Sep-72	3,346	65
6	USGS 4				2	2	3	33	22S	37E	672877	3581158	1,715	14-Feb-96	3,346	73

Data obtained from the New Mexico Office of the State Engineer Website (http://iwaters.ose.state.nm.us:7001/iWATERS/wr_RegisServlet1) and USGS Database

[A] = In acre feet per annum [B] = In meters [C] = Elevation interpolated from Google Earth based on referenced location.

COM = Commercial

DOL = 72-12-1 Domestic and Livestock watering

quarters are 1=NW, 2=NE, 3=SW, 4=SE; quarters are smallest to biggest

TABLE 2

Summary of Soil Sample Field Testing and Laboratory Analytical Results

Legacy, L.P. - LMPSU #286 Flowline

Sample ID	Depth (feet)	Soil Status	Sample Date	PID Reading (ppm)	Field Chloride (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Total Xylenes (mg/Kg)	Total BTEX (mg/Kg)	GRO C6-C10 (mg/Kg)	DRO C10-C28 (mg/Kg)	Total TPH (mg/Kg)	Chloride (mg/Kg)
TS1	4	In Situ	22-Jan-14	--	200	--	--	--	--	--	--	--	--	--
TS2	3	In Situ	22-Jan-14	--	1,200	--	--	--	--	--	--	--	--	--
TS3	4	In Situ	22-Jan-14	--	800	--	--	--	--	--	--	--	--	--
TS4	5	In Situ	22-Jan-14	--	340	--	--	--	--	--	--	--	--	--
TS5	9	In Situ	22-Jan-14	--	1,600	--	--	--	--	--	--	--	--	--
TS6	8	In Situ	22-Jan-14	--	1,200	--	--	--	--	--	--	--	--	--
	13	In Situ	22-Jan-14	--	1,400	--	--	--	--	--	--	--	--	--
	15	In Situ	22-Jan-14	--	2,300	--	--	--	--	--	--	--	--	--
TS7	12	In Situ	22-Jan-14	--	1,400	--	--	--	--	--	--	--	--	--
	16	In Situ	22-Jan-14	--	360	--	--	--	--	--	--	--	--	--
Background	5	In Situ	23-Jan-14	--	200	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	11.1	11.1	<16.0
SP 1	7	In Situ	23-Jan-14	--	400	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<20.0	592
SP 2	8	In Situ	23-Jan-14	--	300	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<20.0	96
SP 3	16	In Situ	23-Jan-14	--	360	<0.050	<0.050	<0.050	<0.150	<0.300	<10.0	<10.0	<20.0	384
NMOCD Recommended Remedial Action Levels				100		10				50			1,000	600

- - = Not Analyzed

ATTACHMENTS

ATTACHMENT I
Photographs

Photograph #1- Looking across release area.

Photograph #2- Looking across release area toward release point.

Photograph #3- Looking across release area.

Photograph #4- Looking across release area.

Photograph #5- Looking across excavated area.

Photograph #6- Looking across excavated area.

Photograph #7- Current state of excavation

Photograph #8- Current state of excavation

ATTACHMENT II
NMOSE Average Depth to Groundwater

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest)

(NAD83 UTM in meters)

(In feet)

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
CP 00395 POD1		CP	LE	4	2	3	28	22S	37E	672282	3581822*	847	90		
CP 00149 POD1		CP	LE		4	1	29	22S	37E	670568	3582296*	980			
CP 00396 POD1		CP	LE	1	2	4	28	22S	37E	672886	3582037*	1354	100	59	41
CP 01657 POD1		CP	LE	2	2	4	28	22S	37E	673077	3582073	1539	123		
CP 00503		CP	LE		4	4	21	22S	37E	672965	3583144*	1680	115	65	50
CP 00911		CP	LE	4	4	4	21	22S	37E	673064	3583043*	1715	153		
CP 00243 POD1		CP	LE	3	3	1	27	22S	37E	673281	3582246*	1734	106		
CP 00231 POD1		CP	LE	3	1	3	27	22S	37E	673288	3581844*	1786	145		
CP 00234 POD1		CP	LE	3	1	3	27	22S	37E	673288	3581844*	1786	135		
CP 00081 POD1		CP	LE	2	4	4	21	22S	37E	673064	3583243*	1816	120		
CP 01101 POD1		CP	LE	2	4	4	21	22S	37E	673064	3583281	1838	142		
CP 00247 POD1		CP	LE	1	3	3	27	22S	37E	673295	3581642*	1848	100		
CP 01657 POD2		CP	LE	2	2	2	33	22S	37E	673162	3581337	1851	75		
CP 00257 POD1		CP	LE	3	3	3	22	22S	37E	673266	3583050*	1899	136		
CP 00232 POD1		CP	LE	4	1	3	27	22S	37E	673488	3581844*	1981	150		
CP 00233 POD1		CP	LE	4	1	3	27	22S	37E	673488	3581844*	1981	182		
CP 01157 POD1		CP	LE	1	1	1	34	22S	37E	673325	3581348	1990	143		
CP 00256 POD1	R	CP	LE	1	3	3	22	22S	37E	673266	3583250*	1992	146		

Average Depth to Water: **62 feet**

Minimum Depth: **59 feet**

Maximum Depth: **65 feet**

Record Count: 18

UTMNAD83 Radius Search (in meters):

Easting (X): 671547 **Northing (Y):** 3582243 **Radius:** 2000

***UTM location was derived from PLSS - see Help**

ATTACHMENT III
Laboratory Analytical Results

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

January 30, 2014

Daniel Dominguez

Environmental Plus, Inc.

P.O. Box 1558

Eunice, NM 88231

RE: LMPSU #286 FLOWLINE

Enclosed are the results of analyses for samples received by the laboratory on 01/23/14 16:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Environmental Plus, Inc.
Daniel Dominguez
P.O. Box 1558
Eunice NM, 88231
Fax To: (505) 394-2601

Received:	01/23/2014	Sampling Date:	01/23/2014
Reported:	01/30/2014	Sampling Type:	Soil
Project Name:	LMPSU #286 FLOWLINE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	UL-H SEC. 29, T22S, R37E		

Sample ID: BACKGROUND (5') (H400226-01)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	01/29/2014	ND	2.32	116	2.00	2.43	
Toluene*	<0.050	0.050	01/29/2014	ND	2.26	113	2.00	2.06	
Ethylbenzene*	<0.050	0.050	01/29/2014	ND	2.26	113	2.00	1.91	
Total Xylenes*	<0.150	0.150	01/29/2014	ND	6.59	110	6.00	1.55	
Total BTEX	<0.300	0.300	01/29/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID *109 %* *89.4-126*

Chloride, SM4500Cl-B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	01/29/2014	ND	400	100	400	3.92	

TPH 8015M mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	01/27/2014	ND	185	92.5	200	0.200	
DRO >C10-C28	**11.1**	10.0	01/27/2014	ND	177	88.3	200	0.787	

Surrogate: 1-Chlorooctane *92.9 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *93.7 %* *63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Environmental Plus, Inc.
Daniel Dominguez
P.O. Box 1558
Eunice NM, 88231
Fax To: (505) 394-2601

Received:	01/23/2014	Sampling Date:	01/23/2014
Reported:	01/30/2014	Sampling Type:	Soil
Project Name:	LMPSU #286 FLOWLINE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	UL-H SEC. 29, T22S, R37E		

Sample ID: SP 1 (7') (H400226-02)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	01/29/2014	ND	2.32	116	2.00	2.43	
Toluene*	<0.050	0.050	01/29/2014	ND	2.26	113	2.00	2.06	
Ethylbenzene*	<0.050	0.050	01/29/2014	ND	2.26	113	2.00	1.91	
Total Xylenes*	<0.150	0.150	01/29/2014	ND	6.59	110	6.00	1.55	
Total BTEX	<0.300	0.300	01/29/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID *109 %* *89.4-126*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**592**	16.0	01/29/2014	ND	400	100	400	3.92	

TPH 8015M mg/kg **Analyzed By: ms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	01/27/2014	ND	185	92.5	200	0.200	
DRO >C10-C28	<10.0	10.0	01/27/2014	ND	177	88.3	200	0.787	

Surrogate: 1-Chlorooctane *87.4 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *88.0 %* *63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Environmental Plus, Inc.
Daniel Dominguez
P.O. Box 1558
Eunice NM, 88231
Fax To: (505) 394-2601

Received:	01/23/2014	Sampling Date:	01/23/2014
Reported:	01/30/2014	Sampling Type:	Soil
Project Name:	LMPSU #286 FLOWLINE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	UL-H SEC. 29, T22S, R37E		

Sample ID: SP 2 (8') (H400226-03)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	01/29/2014	ND	2.32	116	2.00	2.43	
Toluene*	<0.050	0.050	01/29/2014	ND	2.26	113	2.00	2.06	
Ethylbenzene*	<0.050	0.050	01/29/2014	ND	2.26	113	2.00	1.91	
Total Xylenes*	<0.150	0.150	01/29/2014	ND	6.59	110	6.00	1.55	
Total BTEX	<0.300	0.300	01/29/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID *110 %* *89.4-126*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**96.0**	16.0	01/29/2014	ND	400	100	400	3.92	

TPH 8015M mg/kg **Analyzed By: ms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	01/27/2014	ND	185	92.5	200	0.200	
DRO >C10-C28	<10.0	10.0	01/27/2014	ND	177	88.3	200	0.787	

Surrogate: 1-Chlorooctane *87.8 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *94.1 %* *63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Environmental Plus, Inc.
Daniel Dominguez
P.O. Box 1558
Eunice NM, 88231
Fax To: (505) 394-2601

Received:	01/23/2014	Sampling Date:	01/23/2014
Reported:	01/30/2014	Sampling Type:	Soil
Project Name:	LMPSU #286 FLOWLINE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	UL-H SEC. 29, T22S, R37E		

Sample ID: SP 3 (16') (H400226-04)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	01/29/2014	ND	2.32	116	2.00	2.43	
Toluene*	<0.050	0.050	01/29/2014	ND	2.26	113	2.00	2.06	
Ethylbenzene*	<0.050	0.050	01/29/2014	ND	2.26	113	2.00	1.91	
Total Xylenes*	<0.150	0.150	01/29/2014	ND	6.59	110	6.00	1.55	
Total BTEX	<0.300	0.300	01/29/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID *110 %* *89.4-126*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**384**	16.0	01/29/2014	ND	400	100	400	3.92	

TPH 8015M mg/kg **Analyzed By: ms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	01/27/2014	ND	185	92.5	200	0.200	
DRO >C10-C28	<10.0	10.0	01/27/2014	ND	177	88.3	200	0.787	

Surrogate: 1-Chlorooctane *91.7 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *90.8 %* *63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

Environmental Plus, Inc.

2100 Avenue O, Eunice, NM 88231 P.O. Box 1558, Eunice, NM 88231
(575) 394-3481 FAX: (575) 394-2601

Chain of Custody Form

LAB Cardinal

Company Name	Environmental Plus, Inc.
EPI Project Manager	Daniel Dominguez
Mailing Address	P.O. BOX 1558
City, State, Zip	Eunice New Mexico 88231
EPI Phone#/Fax#	575-394-3481 / 575-394-2601
Client Company	Legacy LP
Facility Name	LMPSU #286 Flowline
Location	UL-H Sec. 29, T22S, R37E
Project Reference	
EPI Sampler Name	Dustin Crockett

Bill To

Attn: Daniel Dominguez
P.O. Box 1558
Eunice, NM 88231

ANALYSIS REQUEST

LAB I.D.	SAMPLE I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUND WATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER:	PRESERV.: ACID/BASE	ICE/COOL	OTHER	SAMPLING: DATE	TIME	BTEX 8021B	TPH 8015M	CHLORIDES (Cl^-)	SULFATES ($SO_4^{=}$)	pH	TCLP	OTHER >>>	PAH
H400226																						
1	Background (5')	G	1			X							23-Jan-14	7:30	X	X	X					
2	SP1 (7')	G	1			X							23-Jan-14	8:35	X	X	X					
3	SP2 (8')	G	1			X							23-Jan-14	8:40	X	X	X					
4	SP3 (16')	G	1			X							23-Jan-14	9:00	X	X	X					
5																						
6																						
7																						
8																						
9																						
10																						

Sampler Relinquished: Date 1/23/14 Time 1:00pm Received By:

Relinquished by: Date 1/23/14 Time 4:00 pm Received By: (lab staff) Jodi Henson

Delivered by: 1.8°C Sample Cool & Intact Yes No Checked by:

E-mail results to: ddominguezepi@gmail.com & gskiles@legacylp.com

NOTES:

#54

ATTACHMENT IV
Copy of Initial NMOCD Form C-141

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, 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 October 10, 2003

Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: Legacy LP	**Contact:** Greg Skiles
Address: P.O. Box 10848 Midland, TX 79702	**Telephone No.:** (432) 528 – 4014
Facility Name: LMPSU #286 Flowline	**Facility Type:** Flowline

Surface Owner: State of New Mexico	**Mineral Owner:**	**API:**

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
H	29	22S	37E					Lea

E-28-22-37
30.625.16494

Latitude: N 32° 21' 50.01" **Longitude:** W 103° 10' 35.76"

NATURE OF RELEASE

Type of Release: Oil	**Volume of Release:** 100 bbls	**Volume Recovered:** 70 bbls
Source of Release: flow-line	**Date and Hour of Occurrence:** 1/17/14	**Date and Hour of Discovery:** 1/17/14
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	**If YES, To Whom?** Geoff Leking	
By Whom? Greg Skiles	**Date and Hour:** 1/21/14	
Was a Watercourse Reached? ☐ Yes ☒ No	**If YES, Volume Impacting the Watercourse:** Not Applicable	

Depth to Water. ~70 ft bgs

If a Watercourse was Impacted, Describe Fully.* Not Applicable

Describe Cause of Problem and Remedial Action Taken.* Approximately 100 bbls of oil were released when the sidewall of a flow-line split. There was approximately 70 bbls recovered. An Emergency Response Team arrived at the release area and began continuous abatement of the impacted area. Visibly stained soil was excavated and hauled away for disposal at a state approved facility.

Describe Area Affected and Cleanup Action Taken.* Approximately 2,200 square feet of surface area was impacted by the release. Soil samples will be collected from release area and submitted to Cardinal Laboratories for testing. Upon receipt of laboratory analytical data from soil samples collected during delineation operations, EPI will prepare and present a Remediation Proposal for approval.

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 [illegible] surface water, human health or the environment. In addition, NMOCD accep[t] for compliance with any other federal, state, or local laws and/or regulations.

Signature: Greg Skiles

Printed Name: Greg Skiles

Title: Production Foreman

E-mail Address: gskiles@legacylp.com

Date: 1/21/14 **Phone:** (432) 528-4014

APPROVED

Appl

Appl 2/8/14 **Expiration Date:**

Conditions of Approval:

Attached ☐

*** Attach Additional Sheets If Necessary**

1RP 4166

Appendix C

Analytical 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: Legacy LMPSU 286

Project Number: 17-0175-19

Location: NM

Lab Order Number: 8A05009

NELAP ACCREDITED TNI LABORATORY

NELAP/TCEQ # T104704516-16-7

Report Date: 01/10/18

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

Project: Legacy LMPSU 286
Project Number: 17-0175-19
Project Manager: Mark Larson

Fax: (432) 687-0456

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
S-1 5'-6'	8A05009-01	Soil	01/05/18 10:50	01-05-2018 16:53
S-1 6'-7'	8A05009-02	Soil	01/05/18 10:58	01-05-2018 16:53
S-2 8'-9'	8A05009-03	Soil	01/05/18 11:05	01-05-2018 16:53
S-2 9'-10'	8A05009-04	Soil	01/05/18 11:20	01-05-2018 16:53
S-3 3'-4'	8A05009-05	Soil	01/05/18 11:32	01-05-2018 16:53
S-1N2'	8A05009-06	Soil	01/05/18 11:42	01-05-2018 16:53
S-1S2'	8A05009-07	Soil	01/05/18 11:49	01-05-2018 16:53
E-Wall2'	8A05009-08	Soil	01/05/18 11:58	01-05-2018 16:53
S-2S2'	8A05009-09	Soil	01/05/18 12:13	01-05-2018 16:53
S-2N2'	8A05009-10	Soil	01/05/18 12:03	01-05-2018 16:53
S-3N2'	8A05009-11	Soil	01/05/18 12:18	01-05-2018 16:53
S-3S2'	8A05009-12	Soil	01/05/18 12:25	01-05-2018 16:53
W-Wall 2'	8A05009-13	Soil	01/05/18 12:31	01-05-2018 16:53

S-1 5'-6'

8A05009-01 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00111	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Toluene	ND	0.00222	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Ethylbenzene	ND	0.00111	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Xylene (p/m)	ND	0.00222	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Xylene (o)	ND	0.00111	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*99.7 %*	*75-125*		*P8A0909*	*01/09/18*	*01/09/18*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*80.0 %*	*75-125*		*P8A0909*	*01/09/18*	*01/09/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.11	mg/kg dry	1	P8A0910	01/09/18	01/10/18	EPA 300.0	
% Moisture	**10.0**	0.1	%	1	P8A0906	01/09/18	01/09/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	27.8	mg/kg dry	1	P8A0806	01/08/18	01/08/18	TPH 8015M	
>C12-C28	ND	27.8	mg/kg dry	1	P8A0806	01/08/18	01/08/18	TPH 8015M	
>C28-C35	ND	27.8	mg/kg dry	1	P8A0806	01/08/18	01/08/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*108 %*	*70-130*		*P8A0806*	*01/08/18*	*01/08/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*113 %*	*70-130*		*P8A0806*	*01/08/18*	*01/08/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	27.8	mg/kg dry	1	[CALC]	01/08/18	01/08/18	calc	

Larson & Associates, Inc.	Project: Legacy LMPSU 286	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0175-19	
Midland TX, 79710	Project Manager: Mark Larson	

S-1 6'-7'

8A05009-02 (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	ND	1.11	mg/kg dry	1	P8A0910	01/09/18	01/10/18	EPA 300.0	
% Moisture	**10.0**	0.1	%	1	P8A0906	01/09/18	01/09/18	ASTM D2216	

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

Project: Legacy LMPSU 286
Project Number: 17-0175-19
Project Manager: Mark Larson

Fax: (432) 687-0456

S-2 8'-9'

8A05009-03 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
Organics by GC									
Benzene	ND	0.00112	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Toluene	ND	0.00225	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Ethylbenzene	ND	0.00112	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Xylene (p/m)	ND	0.00225	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Xylene (o)	ND	0.00112	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*74.1 %*	*75-125*		*P8A0909*	*01/09/18*	*01/09/18*	*EPA 8021B*	*S-GC*
Surrogate: 4-Bromofluorobenzene		*99.2 %*	*75-125*		*P8A0909*	*01/09/18*	*01/09/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.12	mg/kg dry	1	P8A0910	01/09/18	01/10/18	EPA 300.0	
% Moisture	**11.0**	0.1	%	1	P8A0906	01/09/18	01/09/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.1	mg/kg dry	1	P8A0806	01/08/18	01/08/18	TPH 8015M	
>C12-C28	ND	28.1	mg/kg dry	1	P8A0806	01/08/18	01/08/18	TPH 8015M	
>C28-C35	ND	28.1	mg/kg dry	1	P8A0806	01/08/18	01/08/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*90.1 %*	*70-130*		*P8A0806*	*01/08/18*	*01/08/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*93.0 %*	*70-130*		*P8A0806*	*01/08/18*	*01/08/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	28.1	mg/kg dry	1	[CALC]	01/08/18	01/08/18	calc	

Larson & Associates, Inc.	Project: Legacy LMPSU 286	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0175-19	
Midland TX, 79710	Project Manager: Mark Larson	

S-2 9'-10'

8A05009-04 (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	ND	1.14	mg/kg dry	1	P8A0910	01/09/18	01/10/18	EPA 300.0	
% Moisture	**12.0**	0.1	%	1	P8A0906	01/09/18	01/09/18	ASTM D2216	

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Project Number: 17-0175-19
Project Manager: Mark Larson

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S-3 3'-4'

8A05009-05 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00115	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Toluene	ND	0.00230	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Ethylbenzene	ND	0.00115	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Xylene (p/m)	ND	0.00230	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Xylene (o)	ND	0.00115	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*76.2 %*	*75-125*		*P8A0909*	*01/09/18*	*01/09/18*	*EPA 8021B*	
Surrogate: 4-Bromofluorobenzene		*103 %*	*75-125*		*P8A0909*	*01/09/18*	*01/09/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.15	mg/kg dry	1	P8A0910	01/09/18	01/10/18	EPA 300.0	
% Moisture	**13.0**	0.1	%	1	P8A0906	01/09/18	01/09/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.7	mg/kg dry	1	P8A0806	01/08/18	01/08/18	TPH 8015M	
>C12-C28	ND	28.7	mg/kg dry	1	P8A0806	01/08/18	01/08/18	TPH 8015M	
>C28-C35	ND	28.7	mg/kg dry	1	P8A0806	01/08/18	01/08/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*113 %*	*70-130*		*P8A0806*	*01/08/18*	*01/08/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*119 %*	*70-130*		*P8A0806*	*01/08/18*	*01/08/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	28.7	mg/kg dry	1	[CALC]	01/08/18	01/08/18	calc	

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Project: Legacy LMPSU 286
Project Number: 17-0175-19
Project Manager: Mark Larson

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S-1N2'

8A05009-06 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00110	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Toluene	ND	0.00220	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Ethylbenzene	ND	0.00110	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Xylene (p/m)	ND	0.00220	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Xylene (o)	ND	0.00110	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*91.1 %*	*75-125*		*P8A0909*	*01/09/18*	*01/09/18*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*71.5 %*	*75-125*		*P8A0909*	*01/09/18*	*01/09/18*	*EPA 8021B*	*S-GC*
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.10	mg/kg dry	1	P8A0910	01/09/18	01/10/18	EPA 300.0	
% Moisture	**9.0**	0.1	%	1	P8A0906	01/09/18	01/09/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	27.5	mg/kg dry	1	P8A0806	01/08/18	01/08/18	TPH 8015M	
>C12-C28	ND	27.5	mg/kg dry	1	P8A0806	01/08/18	01/08/18	TPH 8015M	
>C28-C35	ND	27.5	mg/kg dry	1	P8A0806	01/08/18	01/08/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*104 %*	*70-130*		*P8A0806*	*01/08/18*	*01/08/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*101 %*	*70-130*		*P8A0806*	*01/08/18*	*01/08/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	27.5	mg/kg dry	1	[CALC]	01/08/18	01/08/18	calc	

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Project Manager: Mark Larson

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S-1S2'

8A05009-07 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00108	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Toluene	ND	0.00215	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Ethylbenzene	ND	0.00108	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Xylene (p/m)	ND	0.00215	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Xylene (o)	ND	0.00108	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*98.3 %*	*75-125*		*P8A0909*	*01/09/18*	*01/09/18*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*78.1 %*	*75-125*		*P8A0909*	*01/09/18*	*01/09/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.08	mg/kg dry	1	P8A0910	01/09/18	01/10/18	EPA 300.0	
% Moisture	**7.0**	0.1	%	1	P8A0906	01/09/18	01/09/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.9	mg/kg dry	1	P8A0806	01/08/18	01/08/18	TPH 8015M	
>C12-C28	ND	26.9	mg/kg dry	1	P8A0806	01/08/18	01/08/18	TPH 8015M	
>C28-C35	ND	26.9	mg/kg dry	1	P8A0806	01/08/18	01/08/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*110 %*	*70-130*		*P8A0806*	*01/08/18*	*01/08/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*112 %*	*70-130*		*P8A0806*	*01/08/18*	*01/08/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	26.9	mg/kg dry	1	[CALC]	01/08/18	01/08/18	calc	

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Project Number: 17-0175-19
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E-Wall2'

8A05009-08 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00110	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Toluene	**0.00266**	0.00220	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Ethylbenzene	ND	0.00110	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Xylene (p/m)	ND	0.00220	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Xylene (o)	ND	0.00110	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*110 %*	*75-125*		*P8A0909*	*01/09/18*	*01/09/18*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*78.7 %*	*75-125*		*P8A0909*	*01/09/18*	*01/09/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.10	mg/kg dry	1	P8A0910	01/09/18	01/10/18	EPA 300.0	
% Moisture	**9.0**	0.1	%	1	P8A0906	01/09/18	01/09/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	27.5	mg/kg dry	1	P8A0806	01/08/18	01/08/18	TPH 8015M	
>C12-C28	ND	27.5	mg/kg dry	1	P8A0806	01/08/18	01/08/18	TPH 8015M	
>C28-C35	ND	27.5	mg/kg dry	1	P8A0806	01/08/18	01/08/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*108 %*	*70-130*		*P8A0806*	*01/08/18*	*01/08/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*109 %*	*70-130*		*P8A0806*	*01/08/18*	*01/08/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	27.5	mg/kg dry	1	[CALC]	01/08/18	01/08/18	calc	

S-2S2'

8A05009-09 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00111	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Toluene	**0.00347**	0.00222	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Ethylbenzene	ND	0.00111	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Xylene (p/m)	ND	0.00222	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Xylene (o)	ND	0.00111	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*86.5 %*	*75-125*		*P8A0909*	*01/09/18*	*01/09/18*	*EPA 8021B*	
Surrogate: 4-Bromofluorobenzene		*84.1 %*	*75-125*		*P8A0909*	*01/09/18*	*01/09/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.11	mg/kg dry	1	P8A0910	01/09/18	01/10/18	EPA 300.0	
% Moisture	**10.0**	0.1	%	1	P8A0906	01/09/18	01/09/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	27.8	mg/kg dry	1	P8A0806	01/08/18	01/08/18	TPH 8015M	
>C12-C28	ND	27.8	mg/kg dry	1	P8A0806	01/08/18	01/08/18	TPH 8015M	
>C28-C35	ND	27.8	mg/kg dry	1	P8A0806	01/08/18	01/08/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*105 %*	*70-130*		*P8A0806*	*01/08/18*	*01/08/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*110 %*	*70-130*		*P8A0806*	*01/08/18*	*01/08/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	27.8	mg/kg dry	1	[CALC]	01/08/18	01/08/18	calc	

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Midland TX, 79710	Project Manager: Mark Larson	

S-2N2'

8A05009-10 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
Organics by GC									
Benzene	ND	0.00112	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Toluene	ND	0.00225	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Ethylbenzene	**0.00258**	0.00112	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Xylene (p/m)	ND	0.00225	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Xylene (o)	ND	0.00112	mg/kg dry	1	P8A0909	01/09/18	01/09/18	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*89.0 %*	*75-125*		*P8A0909*	*01/09/18*	*01/09/18*	*EPA 8021B*	
Surrogate: 4-Bromofluorobenzene		*100 %*	*75-125*		*P8A0909*	*01/09/18*	*01/09/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.12	mg/kg dry	1	P8A0910	01/09/18	01/10/18	EPA 300.0	
% Moisture	**11.0**	0.1	%	1	P8A0906	01/09/18	01/09/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.1	mg/kg dry	1	P8A0806	01/08/18	01/08/18	TPH 8015M	
>C12-C28	ND	28.1	mg/kg dry	1	P8A0806	01/08/18	01/08/18	TPH 8015M	
>C28-C35	ND	28.1	mg/kg dry	1	P8A0806	01/08/18	01/08/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*108 %*	*70-130*		*P8A0806*	*01/08/18*	*01/08/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*92.1 %*	*70-130*		*P8A0806*	*01/08/18*	*01/08/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	28.1	mg/kg dry	1	[CALC]	01/08/18	01/08/18	calc	

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Project: Legacy LMPSU 286
Project Number: 17-0175-19
Project Manager: Mark Larson

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S-3N2'

8A05009-11 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00115	mg/kg dry	1	P8A0909	01/09/18	01/10/18	EPA 8021B	
Toluene	**0.00249**	0.00230	mg/kg dry	1	P8A0909	01/09/18	01/10/18	EPA 8021B	
Ethylbenzene	**0.00256**	0.00115	mg/kg dry	1	P8A0909	01/09/18	01/10/18	EPA 8021B	
Xylene (p/m)	**0.00360**	0.00230	mg/kg dry	1	P8A0909	01/09/18	01/10/18	EPA 8021B	
Xylene (o)	**0.00139**	0.00115	mg/kg dry	1	P8A0909	01/09/18	01/10/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*73.2 %*	*75-125*		*P8A0909*	*01/09/18*	*01/10/18*	*EPA 8021B*	*S-GC*
Surrogate: 1,4-Difluorobenzene		*82.2 %*	*75-125*		*P8A0909*	*01/09/18*	*01/10/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**15.6**	1.15	mg/kg dry	1	P8A0910	01/09/18	01/10/18	EPA 300.0	
% Moisture	**13.0**	0.1	%	1	P8A0906	01/09/18	01/09/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.7	mg/kg dry	1	P8A0806	01/08/18	01/08/18	TPH 8015M	
>C12-C28	ND	28.7	mg/kg dry	1	P8A0806	01/08/18	01/08/18	TPH 8015M	
>C28-C35	ND	28.7	mg/kg dry	1	P8A0806	01/08/18	01/08/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*111 %*	*70-130*		*P8A0806*	*01/08/18*	*01/08/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*101 %*	*70-130*		*P8A0806*	*01/08/18*	*01/08/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	28.7	mg/kg dry	1	[CALC]	01/08/18	01/08/18	calc	

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Midland TX, 79710

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Project Number: 17-0175-19
Project Manager: Mark Larson

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S-3S2'

8A05009-12 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00115	mg/kg dry	1	P8A0909	01/09/18	01/10/18	EPA 8021B	
Toluene	ND	0.00230	mg/kg dry	1	P8A0909	01/09/18	01/10/18	EPA 8021B	
Ethylbenzene	ND	0.00115	mg/kg dry	1	P8A0909	01/09/18	01/10/18	EPA 8021B	
Xylene (p/m)	ND	0.00230	mg/kg dry	1	P8A0909	01/09/18	01/10/18	EPA 8021B	
Xylene (o)	ND	0.00115	mg/kg dry	1	P8A0909	01/09/18	01/10/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*80.9 %*	*75-125*		*P8A0909*	*01/09/18*	*01/10/18*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*86.6 %*	*75-125*		*P8A0909*	*01/09/18*	*01/10/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.15	mg/kg dry	1	P8A0910	01/09/18	01/10/18	EPA 300.0	
% Moisture	**13.0**	0.1	%	1	P8A0906	01/09/18	01/09/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.7	mg/kg dry	1	P8A0806	01/08/18	01/09/18	TPH 8015M	
>C12-C28	ND	28.7	mg/kg dry	1	P8A0806	01/08/18	01/09/18	TPH 8015M	
>C28-C35	ND	28.7	mg/kg dry	1	P8A0806	01/08/18	01/09/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*115 %*	*70-130*		*P8A0806*	*01/08/18*	*01/09/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*114 %*	*70-130*		*P8A0806*	*01/08/18*	*01/09/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	28.7	mg/kg dry	1	[CALC]	01/08/18	01/09/18	calc	

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W-Wall 2'

8A05009-13 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00112	mg/kg dry	1	P8A0909	01/09/18	01/10/18	EPA 8021B	
Toluene	ND	0.00225	mg/kg dry	1	P8A0909	01/09/18	01/10/18	EPA 8021B	
Ethylbenzene	ND	0.00112	mg/kg dry	1	P8A0909	01/09/18	01/10/18	EPA 8021B	
Xylene (p/m)	ND	0.00225	mg/kg dry	1	P8A0909	01/09/18	01/10/18	EPA 8021B	
Xylene (o)	ND	0.00112	mg/kg dry	1	P8A0909	01/09/18	01/10/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*84.3 %*	*75-125*		*P8A0909*	*01/09/18*	*01/10/18*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*98.6 %*	*75-125*		*P8A0909*	*01/09/18*	*01/10/18*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	ND	1.12	mg/kg dry	1	P8A0910	01/09/18	01/10/18	EPA 300.0	
% Moisture	**11.0**	0.1	%	1	P8A0906	01/09/18	01/09/18	ASTM D2216	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.1	mg/kg dry	1	P8A0806	01/08/18	01/09/18	TPH 8015M	
>C12-C28	ND	28.1	mg/kg dry	1	P8A0806	01/08/18	01/09/18	TPH 8015M	
>C28-C35	ND	28.1	mg/kg dry	1	P8A0806	01/08/18	01/09/18	TPH 8015M	
Surrogate: 1-Chlorooctane		*110 %*	*70-130*		*P8A0806*	*01/08/18*	*01/09/18*	*TPH 8015M*	
Surrogate: o-Terphenyl		*103 %*	*70-130*		*P8A0806*	*01/08/18*	*01/09/18*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	28.1	mg/kg dry	1	[CALC]	01/08/18	01/09/18	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 P8A0909 - General Preparation (GC)										
Blank (P8A0909-BLK1)				Prepared & Analyzed: 01/09/18						
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	*0.0576*		*"*	*0.0600*		*95.9*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*0.0680*		*"*	*0.0600*		*113*	*75-125*			
LCS (P8A0909-BS1)				Prepared & Analyzed: 01/09/18						
Benzene	0.104	0.00100	mg/kg wet	0.100		104	70-130			
Toluene	0.110	0.00200	"	0.100		110	70-130			
Ethylbenzene	0.118	0.00100	"	0.100		118	70-130			
Xylene (p/m)	0.218	0.00200	"				70-130			
Xylene (o)	0.117	0.00100	"				70-130			
Surrogate: 1,4-Difluorobenzene	*0.0660*		*"*	*0.0600*		*110*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*0.0725*		*"*	*0.0600*		*121*	*75-125*			
LCS Dup (P8A0909-BSD1)				Prepared & Analyzed: 01/09/18						
Benzene	0.103	0.00100	mg/kg wet	0.100		103	70-130	1.10	20	
Toluene	0.112	0.00200	"	0.100		112	70-130	1.81	20	
Ethylbenzene	0.118	0.00100	"	0.100		118	70-130	0.424	20	
Xylene (p/m)	0.216	0.00200	"				70-130		20	
Xylene (o)	0.116	0.00100	"				70-130		20	
Surrogate: 4-Bromofluorobenzene	*0.0712*		*"*	*0.0600*		*119*	*75-125*			
Surrogate: 1,4-Difluorobenzene	*0.0687*		*"*	*0.0600*		*114*	*75-125*			
Calibration Blank (P8A0909-CCB1)				Prepared & Analyzed: 01/09/18						
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	*0.0558*		*"*	*0.0600*		*93.0*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*0.0721*		*"*	*0.0600*		*120*	*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 P8A0909 - General Preparation (GC)										
Calibration Blank (P8A0909-CCB2)				Prepared & Analyzed: 01/09/18						
Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	*0.0598*		*"*	*0.0600*		*99.7*	*75-125*			
Surrogate: 1,4-Difluorobenzene	*0.0539*		*"*	*0.0600*		*89.8*	*75-125*			
Calibration Check (P8A0909-CCV1)				Prepared & Analyzed: 01/09/18						
Benzene	0.108	0.00100	mg/kg wet	0.100		108	80-120			
Toluene	0.117	0.00200	"	0.100		117	80-120			
Ethylbenzene	0.115	0.00100	"	0.100		115	80-120			
Xylene (p/m)	0.216	0.00200	"	0.200		108	80-120			
Xylene (o)	0.117	0.00100	"	0.100		117	80-120			
Surrogate: 4-Bromofluorobenzene	*0.0766*		*"*	*0.0600*		*128*	*75-125*			*S-GC*
Surrogate: 1,4-Difluorobenzene	*0.0653*		*"*	*0.0600*		*109*	*75-125*			
Calibration Check (P8A0909-CCV2)				Prepared & Analyzed: 01/09/18						
Benzene	0.0903	0.00100	mg/kg wet	0.100		90.3	80-120			
Toluene	0.0947	0.00200	"	0.100		94.7	80-120			
Ethylbenzene	0.0976	0.00100	"	0.100		97.6	80-120			
Xylene (p/m)	0.202	0.00200	"	0.200		101	80-120			
Xylene (o)	0.112	0.00100	"	0.100		112	80-120			
Surrogate: 1,4-Difluorobenzene	*0.0619*		*"*	*0.0600*		*103*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*0.0689*		*"*	*0.0600*		*115*	*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 P8A0906 - * DEFAULT PREP *** **										
Blank (P8A0906-BLK1)				Prepared & Analyzed: 01/09/18						
% Moisture	ND	0.1	%							
Duplicate (P8A0906-DUP1)		**Source: 8A05009-01**		Prepared & Analyzed: 01/09/18						
% Moisture	9.0	0.1	%		10.0			10.5	20	
Duplicate (P8A0906-DUP2)		**Source: 8A05014-01**		Prepared & Analyzed: 01/09/18						
% Moisture	6.0	0.1	%		7.0			15.4	20	
Batch P8A0910 - * DEFAULT PREP *** **										
Blank (P8A0910-BLK1)				Prepared: 01/09/18 Analyzed: 01/10/18						
Chloride	ND	1.00	mg/kg wet							
LCS (P8A0910-BS1)				Prepared: 01/09/18 Analyzed: 01/10/18						
Chloride	399	1.00	mg/kg wet	400		99.8	80-120			
LCS Dup (P8A0910-BSD1)				Prepared: 01/09/18 Analyzed: 01/10/18						
Chloride	394	1.00	mg/kg wet	400		98.5	80-120	1.30	20	
Duplicate (P8A0910-DUP1)		**Source: 8A05009-01**		Prepared: 01/09/18 Analyzed: 01/10/18						
Chloride	ND	1.11	mg/kg dry		ND				20	
Duplicate (P8A0910-DUP2)		**Source: 8A05009-11**		Prepared: 01/09/18 Analyzed: 01/10/18						
Chloride	15.4	1.15	mg/kg dry		15.6			1.63	20	
Matrix Spike (P8A0910-MS1)		**Source: 8A05009-01**		Prepared: 01/09/18 Analyzed: 01/10/18						
Chloride	1200	1.11	mg/kg dry	1110	ND	108	80-120			

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 P8A0806 - General Preparation (GC)										
Blank (P8A0806-BLK1)				Prepared & Analyzed: 01/08/18						
C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	*122*		*"*	*100*		*122*	*70-130*			
Surrogate: o-Terphenyl	*64.6*		*"*	*50.0*		*129*	*70-130*			
LCS (P8A0806-BS1)				Prepared & Analyzed: 01/08/18						
C6-C12	879	25.0	mg/kg wet	500		176	75-125			
>C12-C28	993	25.0	"	500		199	75-125			
Surrogate: 1-Chlorooctane	*129*		*"*	*100*		*129*	*70-130*			
Surrogate: o-Terphenyl	*56.6*		*"*	*50.0*		*113*	*70-130*			
LCS Dup (P8A0806-BSD1)				Prepared & Analyzed: 01/08/18						
C6-C12	956	25.0	mg/kg wet	500		191	75-125	8.35	20	
>C12-C28	1030	25.0	"	500		206	75-125	3.63	20	
Surrogate: 1-Chlorooctane	*115*		*"*	*100*		*115*	*70-130*			
Surrogate: o-Terphenyl	*58.5*		*"*	*50.0*		*117*	*70-130*			
Calibration Blank (P8A0806-CCB1)				Prepared & Analyzed: 01/08/18						
C6-C12	15.6		mg/kg wet							
>C12-C28	11.9		"							
Surrogate: 1-Chlorooctane	*117*		*"*	*100*		*117*	*70-130*			
Surrogate: o-Terphenyl	*61.8*		*"*	*50.0*		*124*	*70-130*			
Calibration Blank (P8A0806-CCB2)				Prepared & Analyzed: 01/08/18						
C6-C12	16.8		mg/kg wet							
>C12-C28	12.2		"							
Surrogate: 1-Chlorooctane	*121*		*"*	*100*		*121*	*70-130*			
Surrogate: o-Terphenyl	*60.9*		*"*	*50.0*		*122*	*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 P8A0806 - General Preparation (GC)										
Calibration Check (P8A0806-CCV1)				Prepared & Analyzed: 01/08/18						
C6-C12	519	25.0	mg/kg wet	500		104	85-115			
>C12-C28	574	25.0	"	500		115	85-115			
Surrogate: 1-Chlorooctane	*127*		*"*	*100*		*127*	*70-130*			
Surrogate: o-Terphenyl	*62.1*		*"*	*50.0*		*124*	*70-130*			
Calibration Check (P8A0806-CCV2)				Prepared & Analyzed: 01/08/18						
C6-C12	546	25.0	mg/kg wet	500		109	85-115			
>C12-C28	574	25.0	"	500		115	85-115			
Surrogate: 1-Chlorooctane	*122*		*"*	*100*		*122*	*70-130*			
Surrogate: o-Terphenyl	*63.1*		*"*	*50.0*		*126*	*70-130*			
Calibration Check (P8A0806-CCV3)				Prepared: 01/08/18 Analyzed: 01/09/18						
C6-C12	554	25.0	mg/kg wet	500		111	85-115			
>C12-C28	568	25.0	"	500		114	85-115			
Surrogate: 1-Chlorooctane	*127*		*"*	*100*		*127*	*70-130*			
Surrogate: o-Terphenyl	*64.5*		*"*	*50.0*		*129*	*70-130*			
Matrix Spike (P8A0806-MS1)		**Source: 8A05009-06**		Prepared: 01/08/18 Analyzed: 01/09/18						
C6-C12	1100	27.5	mg/kg dry	549	10.9	197	75-125			
>C12-C28	1170	27.5	"	549	11.6	211	75-125			
Surrogate: 1-Chlorooctane	*132*		*"*	*110*		*120*	*70-130*			
Surrogate: o-Terphenyl	*66.8*		*"*	*54.9*		*122*	*70-130*			
Matrix Spike Dup (P8A0806-MSD1)		**Source: 8A05009-06**		Prepared: 01/08/18 Analyzed: 01/09/18						
C6-C12	1120	27.5	mg/kg dry	549	10.9	203	75-125	2.55	20	
>C12-C28	1190	27.5	"	549	11.6	214	75-125	1.73	20	
Surrogate: 1-Chlorooctane	*129*		*"*	*110*		*118*	*70-130*			
Surrogate: o-Terphenyl	*65.6*		*"*	*54.9*		*119*	*70-130*			

Notes and Definitions

S-GC	Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.
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: 1/10/2018

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: Jan 5 2018 PAGE ___ OF ___

PO #: ______ LAB WORK ORDER #: ______

PROJECT LOCATION OR NAME: Legacy LMBSU 286

LAI PROJECT #: 17-0175-19 COLLECTOR: SJ

Data Reported to:

TRRP report? ☐ Yes ☒ No

TIME ZONE: Time zone/State: MST/NM

Matrix codes: S=SOIL (circled), W=WATER, A=AIR, P=PAINT, SL=SLUDGE, OT=OTHER

8A05009

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) ☐ 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	ICE	BTEX	GASOLINE MOD 8015	DIESEL - MOD 8015	CHLORIDE	FIELD NOTES
S-1 5'-6'	01	1/5/18	10:50	S	1	✓	✓	✓	✓	✓	
6'-7'	02	↓	10:58	↓	↓					↓	
S-2 8'-9'	03	↓	11:05	↓	↓		✓	✓	✓	↓	
9'-10'	04	↓	11:20	↓	↓					↓	
S-3 3'-4'	05	↓	11:32	↓	↓		✓	✓	✓	↓	
S-1N2'	06	↓	11:42	↓	↓		✓	✓	✓	↓	
S-1S2'	07	↓	11:49	↓	↓		✓	✓	✓	↓	
E.Wall2'	08	↓	11:58	↓	↓		✓	✓	✓	↓	
S-2S2'	09	↓	12:13	↓	↓		✓	✓	✓	↓	
S-2N2'	10	↓	12:03	↓	↓		✓	✓	✓	↓	
S-3N2'	11	↓	12:18	↓	↓		✓	✓	✓	↓	
S-3S2'	12	↓	12:25	↓	↓		✓	✓	✓	↓	
N.Wall2'	13	↓	12:31	↓	↓		✓	✓	✓	↓	

TOTAL

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	1/5/18	
RELINQUISHED BY: (Signature) [signature]	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature) [signature] 1-5-18 15:45

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

LABORATORY USE ONLY:
RECEIVING TEMP: 3.0 NCF THERM #: 4
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL # ______
☐ HAND DELIVERED

Appendix D

Photographs

Site Location

Excavation Viewing West, January 5 ,2018

Excavation Viewing North, January 5, 2018

Excavation Viewing North, January 5, 2018

Excavation Viewing East, January 5, 2018