SITE INFORMATION

Report Type: Closure Report 1RP-5023

General Site Information:						
Site:	**Angell B #2**					
Company:	**Marathon Oil Company**					
Section, Township and Range	**Unit B**	**Sec. 11**	**T 17S**	**R 36E**		
Lease Number:	**API No. 30-025-39076**					
County:	**Lea County**					
GPS:	**32.8559071° N**			**103.3214257° W**		
Surface Owner:	Fee					
Mineral Owner:	State					
Directions:	From the intersection of HWY 18 and Stiles Road, travel west on Stiles Rd for 2.4 mi, turn south onto lease road 0.15 mi, turn west onto lease road for 0.35 mile to location.					

Release Data:	
Date Released:	4/9/2018
Type Release:	Oil
Source of Contamination:	Oil Tank
Fluid Released:	11 bbls
Fluids Recovered:	<1 bbl

Official Communication:			
Name:	Callie Karrigan		Clair Gonzales
Company:	Marathon Oil		Tetra Tech
Address:	5555 San Felipe Street		4000 N. Big Spring
Ste			Ste 401
City:	Houston, TX 77056		Midland, Texas
Phone number:	(575) 297-0956		(432) 687-8110
Fax:			
Email:	cnkarrigan@marrathonoil.com		Clair.Gonzales@tetratech.com

Ranking Criteria		
Depth to Groundwater:	***Ranking Score***	***Site Data***
<50 ft	***20***	*48'*
50-99 ft	10	
>100 ft.	0	
WellHead Protection:	***Ranking Score***	***Site Data***
Water Source <1,000 ft., Private <200 ft.	*20*	
Water Source >1,000 ft., Private >200 ft.	***0***	*0*
Surface Body of Water:	***Ranking Score***	***Site Data***
<200 ft.	*20*	
200 ft - 1,000 ft.	10	
>1,000 ft.	***0***	*0*
Total Ranking Score:	***20***	

Acceptable Soil RRAL (mg/kg)		
Benzene	***Total BTEX***	***TPH***
10	50	100

TETRA TECH

APPROVED
By Olivia Yu at 8:56 am, Sep 13, 2018

July 3, 2018

NMOCD approves 1RP-5023 for closure.

Ms. Olivia Yu
Environmental Engineer Specialist
Oil Conservation Division, District 1
1625 North French Drive
Hobbs, New Mexico 88240

Re: Closure Report for the Marathon Oil, Angell B #2, Unit B, Section 11, Township 17 South, Range 36 East, Lea County, New Mexico.
1RP-5023.

Ms. Yu:

Tetra Tech, Inc. (Tetra Tech) was contacted by Marathon Oil (Marathon) to remediate a spill from Angell B #2, Unit B, Section 11, Township 17 South, Range 36 East, Lea County, New Mex (site). The spill site coordinates are N 32.8559071º, W 103.3214257º. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on April 9, 2018, and released approximately eleven (11) barrels of oil from an oil tank. Less than one barrel of oil was recovered. The release occurred around the base of the tank and impacted an area measuring approximately 20' x 30'. The initial C-141 form is included in Appendix A.

Groundwater

No water wells were listed in Section 11 on the New Mexico Office of the State Engineer's (NMOSE) database, the USGS National Water Information System, or the Geology and Ground-Water Conditions in Southern Lea County, New Mexico (Report 6). The nearest well is listed in Section 12 on the NMOSE database, approximately 0.9 miles southwest of the site, with a reported depth to groundwater of 48 feet below surface. According to the Chevron Texaco Groundwater Trend map, the average depth to groundwater in the area is less than 50 feet below surface. The groundwater data is included in Appendix B.

Regulatory

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene,

ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 100 mg/kg.

Soil Assessment and Analytical Results

On May 15, 2018, Tetra Tech personnel were onsite to evaluate and sample the release area. A total of three (3) auger holes (AH-1, AH-2, and AH-3) were installed in the release area around the oil tank to total depths of 0-1' below surface. Deeper samples were not collected due to a dense formation in the area. The samples were submitted to the laboratory for analysis of TPH by EPA method 8015 extended, BTEX by EPA method 8021B, and chlorides by EPA method 300.0. Copies of the laboratory results and chain-of-custody documentation are included in Appendix C. The laboratory results are summarized in Table 1. The auger hole locations are shown in Figure 3.

Referring to Table 1, all of the samples collected showed elevated TPH concentrations of 18,000 mg/kg (AH-1), 20,100 mg/kg (AH-2), and 23,600 mg/kg (AH-3). None of the samples collected showed benzene concentrations above 10 mg/kg. However, the area of auger hole (AH-2) showed a total BTEX concentration above the RRAL of 90.9 mg/kg. The areas of auger holes (AH-1 and AH-3) did not show total BTEX concentrations above the RRALs. The areas of auger holes (AH-1, AH-2, and AH-3) showed chloride concentrations of 2,860 mg/kg, 8,260 mg/kg, and 565 mg/kg, respectively. The hydrocarbon and chloride impact was not vertically defined in all areas.

Remediation Activities

After the sampling event, the failed oil tank was removed for replacement. Remediation activities were scheduled prior to the new tank installation to ensure access for proper removal of the impacted soils. Tetra Tech was onsite on June 27, 2018, to supervise the excavation of the release area prior to the new tank installment.

The release area was excavated to 2.0' below surface. One bottom hole (Bottom Hole #1) and four sidewall samples (North Sidewall, South Sidewall, West Sidewall, and East Sidewall) were collected to ensure proper removal of the impacted soils. The samples were submitted to the laboratory for analysis of TPH by EPA method 8015 extended, BTEX by EPA method 8021B, and chlorides by EPA method 300.0. Copies of the laboratory results and chain-of-custody documentation are included in Appendix C. The laboratory results are summarized in Table 1. The confirmation sample locations are shown in Figure 4.

Referring to Table 1, all of the confirmation samples collected showed TPH, benzene, and total BTEX concentrations below the laboratory reporting limits. Additionally, the chloride concentrations detected were below the 600 mg/kg threshold. Once the excavation was completed, the area was backfilled with clean material to surface grade, and the excavated material was hauled for proper disposal.

TETRA TECH

Conclusions and Recommendations

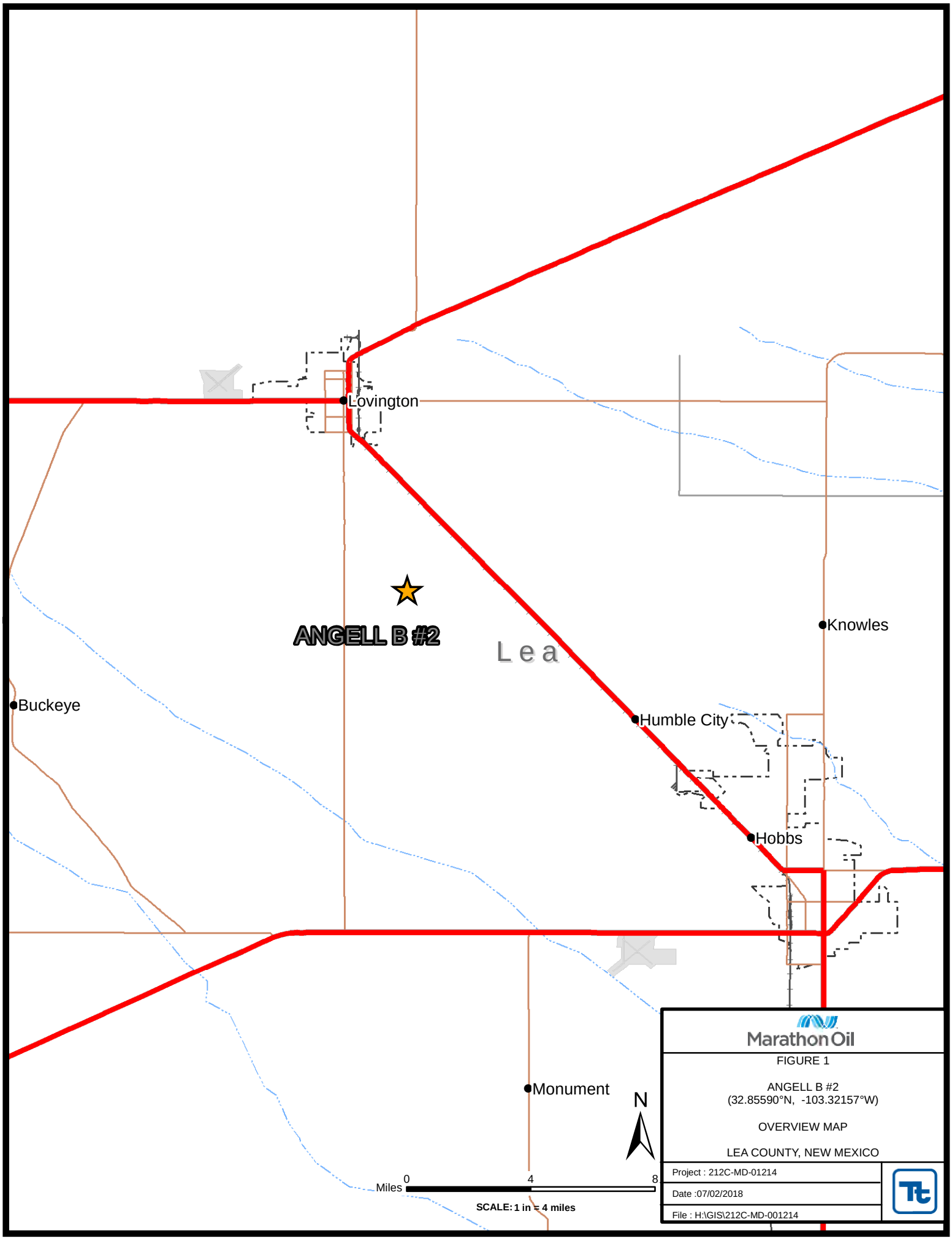
Based on the soil assessment and remediation work performed at the site, Marathon requests closure of this spill. The final C-141 is enclosed in Appendix A. If you have any questions or comments concerning the assessment or the remediation activities for this site, please call at (432) 682-4559.

Respectfully submitted,
TETRA TECH

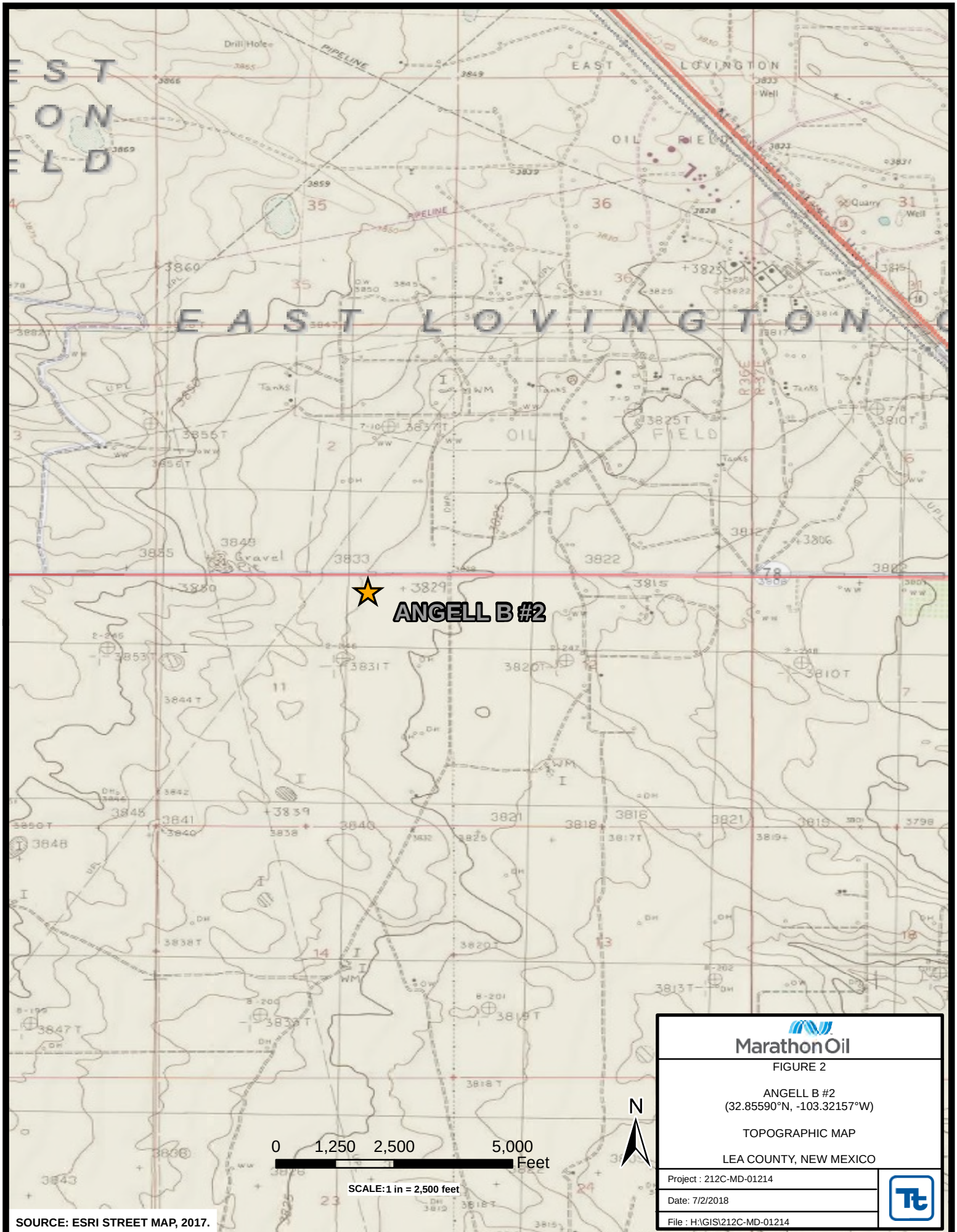
Clair Gonzales,
Project Manager

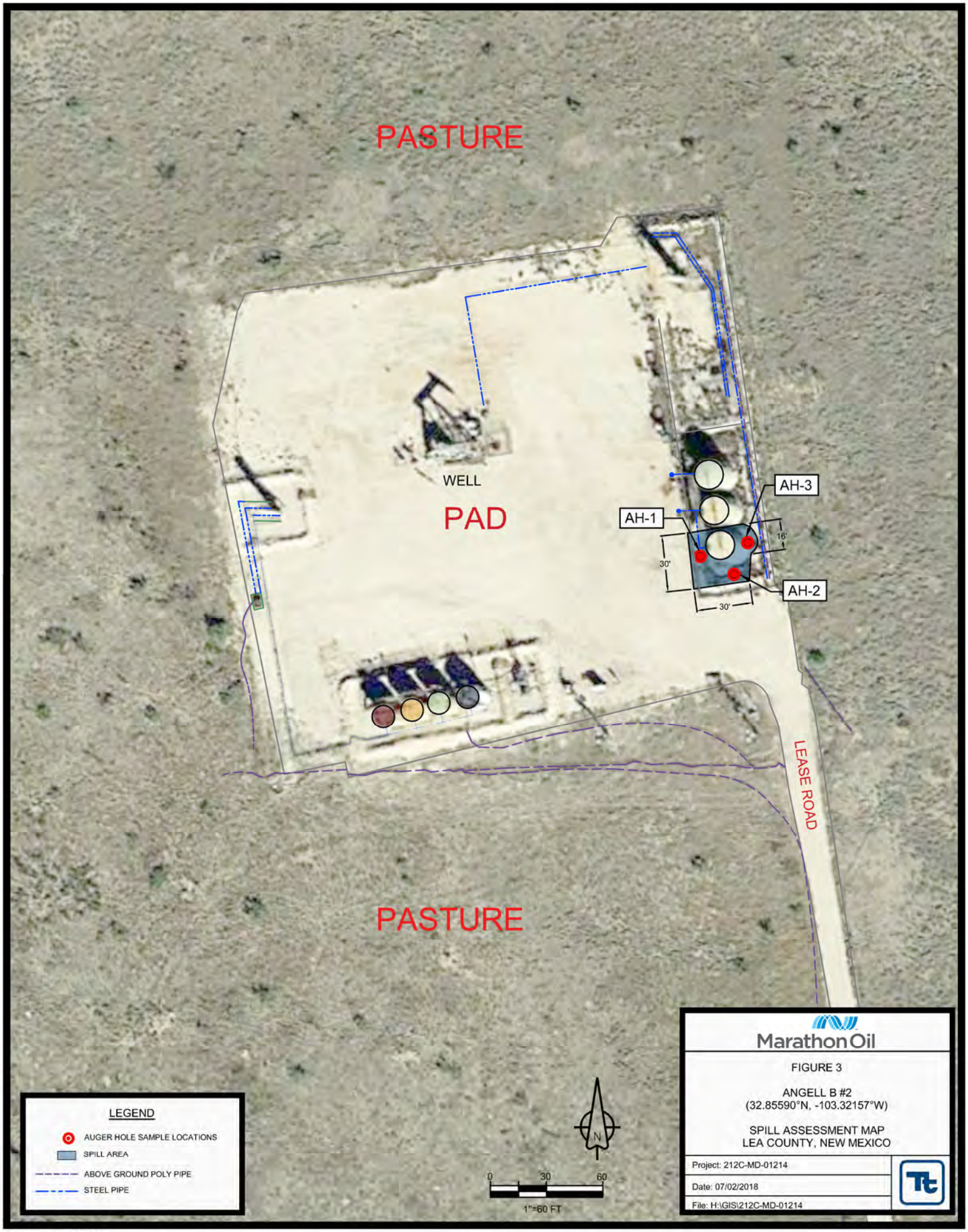
cc: Callie Karrigan - Marathon

Figures

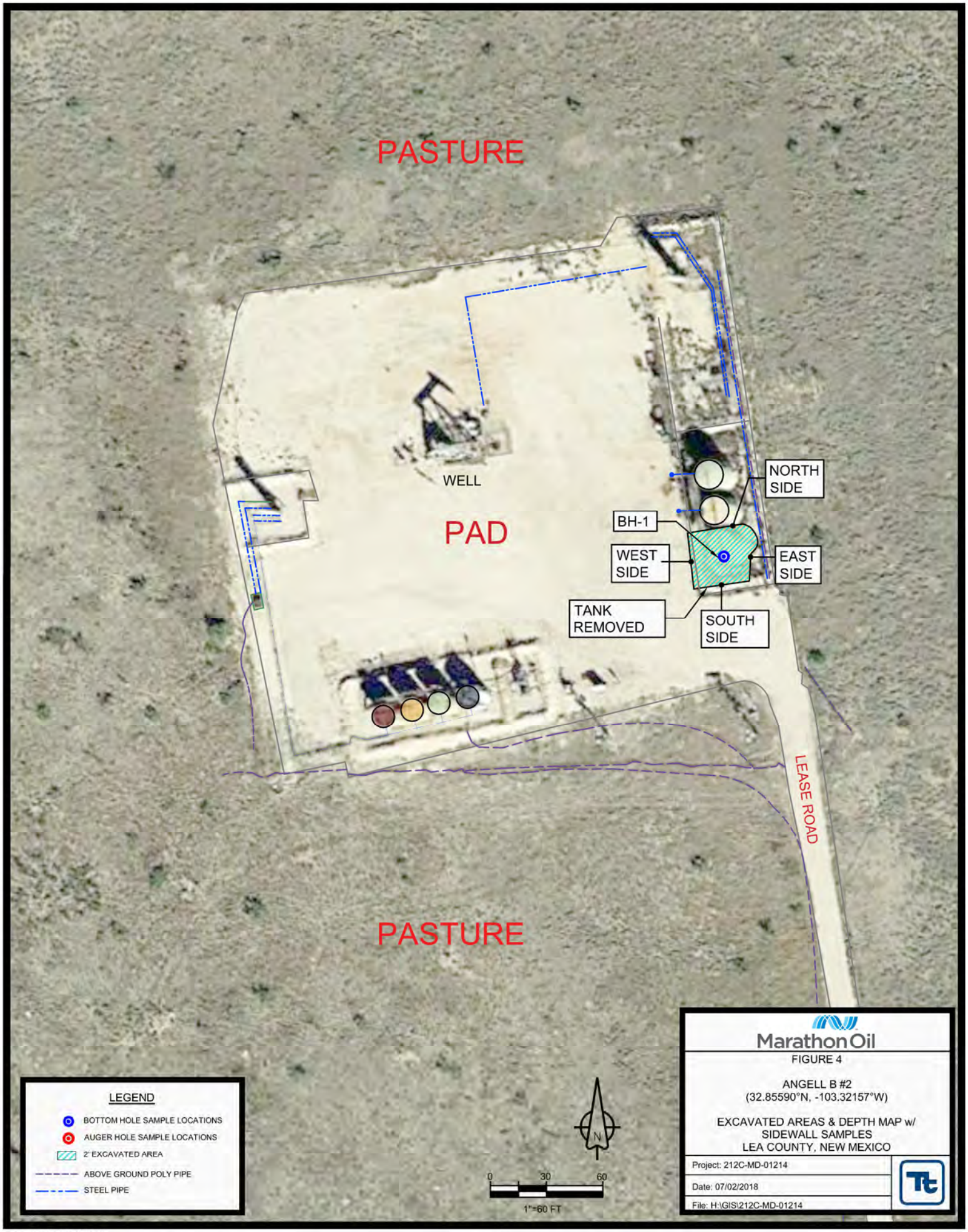


Mapped By: Isabel Marmolejo





Drawn By: MISTI MORGAN



Marathon Oil

FIGURE 4

ANGELL B #2
(32.85590°N, -103.32157°W)

EXCAVATED AREAS & DEPTH MAP w/
SIDEWALL SAMPLES
LEA COUNTY, NEW MEXICO

Project: 212C-MD-01214

Date: 07/02/2018

File: H:\GIS\212C-MD-01214

Drawn By: MISTI MORGAN

Tables

Table 1
Marathon
Angell B #2
Lea County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	BEB Sample Depth (ft)	Soil Status		TPH (mg/kg)				Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	ORO	Total						
AH-1	5/15/2018	0-1	-		X	1,430	16,100	422	**18,000**	<0.0992	5.19	19.8	20.8	45.8	**2,860**
AH-2	5/15/2018	0-1	-		X	2,480	17,200	372	**20,100**	<0.200	8.33	39.8	42.8	**90.9**	**8,260**
AH-3	5/15/2018	0-1	-		X	592	22,400	566	**23,600**	0.0796	2.40	6.36	6.68	15.5	565
Bottom Hole #1	6/27/2018	0-0.5	2.0	X		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	571
North Sidewall	6/27/2018	0-1	-	X		<15.0	<15.0	<15.0	<15.0	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	15.8
South Sidewall	6/27/2018	0-1	-	X		<15.0	<15.0	<15.0	<15.0	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	34.5
West Sidewall	6/27/2018	0-1	-	X		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	35.6
East Sidewall	6/27/2018	0-1	-	X		<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	278

BEB Below Excavation Bottom

Excavated & Removed

Photos

Marathon Oil Permian, LLC.
Angell B #2
Lea County, New Mexico

View North – Release Area

View North – Release Area

Marathon Oil Permian, LLC.
Angell B #2
Lea County, New Mexico

View East – Release Area

View South – Excavated Area

Marathon Oil Permian, LLC.
Angell B #2
Lea County, New Mexico

View East – Excavated Area

Appendix A

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 Marathon Oil Permian LLC	Contact Callie Karrigan
Address 5555 San Felipe Street, Houston, Texas 77056	Telephone No. 405-202-1028 (cell) 575-297-0956 (office)
Facility Name: Angell B No. 2	Facility Type Oil and gas production facilities

Surface: Owner: state	Mineral: Owner: state	API No. : 30-025-39076

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
B	11	17S	36	330	N	1650	E	Lea

Latitude 32.8559071 **Longitude** -103.3214257

NATURE OF RELEASE

Type of Release: oil	Volume of Release: 11 bbls	Volume Recovered: <1 bbls
Source of Release: oil tank	Date and Hour of Occurrence unknown	Date and Hour of Discovery 04/09/2018 4:00 pm
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Olivia Yu and Ryan Mann	
By Whom? Callie Karrigan	Date and Hour 04/10/2018 3:34 pm	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

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

Describe Cause of Problem and Remedial Action Taken.*
Operator was onsite conducting daily rounds and observed oil pooling around the base of the oil tank. Operator immediately dispatched a hauling company to pull remaining contents of tank. Approximately 11 barrels of oil was released and verified by gauge sheets. The tank is currently isolated.

Describe Area Affected and Cleanup Action Taken.*
The pooling and staining is around the base of the tank in a 4x8 area with an additional 1.5x3 area. The tank emptied and isolated. Tetratech will assess the spill and develop a clean-up plan to be submitted to the NMOCD 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 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.

Callie Karrigan Signature:	OIL CONSERVATION DIVISION		
Printed Name: Callie Karrigan	Approved by Environmental Specialist:		
Title: HES Professional	Approval Date:	Expiration Date:	
E-mail Address: cnkarrigan@marathonoil.com	Conditions of Approval:	Attached ☐	
Date: 04/17/2018 Phone: 405-02-1028(cell) 575-297-0956 (office)			

* Attach Additional Sheets If Necessary

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 **Marathon Oil Permian LLC.**	Contact **Callie Karrigan**
Address **5555 San Felipe St., Houston, TX 77056**	Telephone No. **(575) 297-0956**
Facility Name Angell B #2	Facility Type **Production Facility**

Surface Owner: Fee	Mineral Owner State	API No. 30-025-39076

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
B	11	17S	36E	330	N	1650	E	Lea

Latitude N 32.8559071° **Longitude** W 103.3214257°

NATURE OF RELEASE

Type of Release: Oil	Volume of Release 11 bbls	Volume Recovered <1 bbls
Source of Release: Oil Tank	Date and Hour of Occurrence Unknown	Date and Hour of Discovery 04/09/2018 4:00 pm
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? **Olivia Yu, NMOCD and Ryan Mann SLO**	
By Whom? Callie Karrigan	Date and Hour 04/10/2018 3:34 pm	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

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

APPROVED
By Olivia Yu at 8:58 am, Sep 13, 2018

Describe Cause of Problem and Remedial Action Taken.*

An oil tank failed, resulting in the release of 11 bbls of oil. The remaining contents in the tank were removed to prevent any further impact to the surrounding soils.

Describe Area Affected and Cleanup Action Taken.*

Tetra Tech inspected site and collected samples to define spills extent. Soil that exceeded RRAL was removed and hauled away for proper disposal. Site was then brought up to surface grade with clean backfill material. Tetra Tech prepared closure report and submitted to NMOCD for review.

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: Clair Gonzales	OIL CONSERVATION DIVISION
Printed Name: Clair Gonzales	Approved by District Supervisor:
Title: Project Manager	Approval Date: 9/13/2018 Expiration Date: xx/xx/xxxx
E-mail Address: Clair.Gonzales@tetratech.com	Conditions of Approval: NMSLO approval Attached ☐
Date: Phone: (432) 682-4559	

* Attach Additional Sheets If Necessary

1RP-5023

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
Angell B #2
Lea County, New Mexico

16 South 35 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

16 South 36 East

6	5	4	3	2	1
7	8	9 Lovington	10	11	12
18 54	17	16	15	14	13
19	20 70	21 70	22 63 63	23 70 61	24 55
30 82	29	28	27	26 63	25 68
31 74	32 65	33	34	35 41	36 60

16 South 37 East

6	5	4	3	2	1
7 66	8	9	10	11 80	12
18	17	16	15	14	13
19 55 82	20 44	21 50	22	23	24
30 52	29 44	28 34	27 73	26	25 70
31 Site 53	32 38	33 60	34 60	35	36

17 South 35 East

6	5	4	3	2	1 50
7	8	9	10	11	12
18 40	17 55	16	15	14	13
19 85	20 60	21	22	23	24
30 83	29	28 70	27	26	25
31 106	32	33 63	34 56	35 40	36 50

17 South 36 East

6 50	5 120	4 65	3 60	2 60 69	1 83 74
7	8	9	10 43 43	11 Site	12 44 46
18	17	16	15	14 48	13
19	20	21	22	23	24
30	29	28 40	27	26	25
31	32	33	34	35	36

17 South 37 East

6 75	5 57 62	4 40	3 60 55	2 67	1 51
7 65	8 50	9 42	10 70 64	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

18 South 35 East

6 89 Buckeye	5 69	4 SITE 58	3 62	2 55 51	1
7 85	8	9 72	10 49	11 59 48	12
18 90	17 90 124	16 75	15	14 90	13 135
19 74 70	20 85 50	21	22 70	23	24
30	29 95	28	27 68	26 60	25
31	32 58	33 80	34	35 58	36

18 South 36 East

6 45	5 35	4 65	3	2 60	1 50
7 65	8	9 85	10	11 38	12 40
18 25	17	16	15 53	14 55	13
19	20 59	21 58	22 60	23 39	24 28
30	29 55	28 45	27 55	26 55	25 62
31	32	33	34 70	35	36

18 South 37 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

88 New Mexico State Engineers Well Reports

105 USGS Well Reports

90 Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6)

Geology and Groundwater Resources of Eddy County, NM (Report 3)

34 NMOCD - Groundwater Data

123 Tetra Tech installed temporary wells and field water level

143 NMOCD Groundwater map well location

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	Depth Well	Depth Water	Water Column
L 00373		L	LE	4	4	4	18	17S	36E	651019	3633420*	120		
L 00374		L	LE	3	1	1	35	17S	36E	656116	3629884*	120		
L 00375		L	LE	1	4	4	17	17S	36E	652432	3633650*	100		
L 00376		L	LE	1	3	3	34	17S	36E	654527	3628843*	90		
L 00377		L	LE	2	1	4	27	17S	36E	655498	3630879*	100		
L 00378		L	LE	1	3	1	27	17S	36E	654487	3631269*	100		
L 00379		L	LE	1	2	1	12	17S	36E	658031	3636570*	110		
L 00380		L	LE	1	4	1	10	17S	36E	654811	3636117	90		
L 00380	R	L	LE	1	4	1	10	17S	36E	654811	3636117	90		
L 00381		L	LE	1	4	1	08	17S	36E	651586	3636052*	110		
L 01227 POD1		L	LE		1	3	28	17S	36E	652985	3630739*	94	40	54
L 01584 POD1		L	LE		2	1	01	17S	36E	658107	3638083*	110	48	62
L 01629	R	L	LE			4	33	17S	36E	654023	3628931*	125	33	92
L 01629 POD2		L	LE	1	1	4	33	17S	36E	652858	3628151	100		
L 01629 S		L	LE	4	3	3	33	17S	36E	653116	3628615*	100		
L 01629 S2		L	LE	3	2	3	33	17S	36E	653312	3629027*	120	54	66
L 01630	R	L	LE	1	1	3	33	17S	36E	652909	3629220*	120	80	40
L 01713		L	LE		1	1	01	17S	36E	657703	3638076*	150	72	78
L 01716		L	LE	1	1	4	02	17S	36E	656808	3637357*	145	50	95
L 01723		L	LE	1	1	3	05	17S	36E	651164	3637252*	162	120	42
L 01723 S		L	LE	4	2	3	05	17S	36E	651767	3637060*	162	86	76
L 01723 S2		L	LE	1	2	3	05	17S	36E	651567	3637260*	140	120	20
L 01723 S3		L	LE	2	1	4	05	17S	36E	652170	3637268*	140	118	22
L 01724		L	LE			2	03	17S	36E	655492	3637835*	146	80	66
L 01724 S		L	LE	3	4	2	03	17S	36E	655593	3637539*	135	85	50
L 01724 S2		L	LE			1	02	17S	36E	656298	3637848*	140	128	12
L 01724 S3		L	LE	2	1	3	02	17S	36E	656201	3637343*	140	125	15
L 01919	R	L	LE	1	1	2	29	17S	36E	652063	3631626*	135	31	104
L 01919 S		L	LE	2	2	2	29	17S	36E	652667	3631634*	225	110	115
L 02119		L	LE	1	4	3	01	17S	36E	658024	3636973*	130		
L 02199		L	LE		4	4	14	17S	36E	657369	3633640*	110	45	65
L 02205		L	LE		2	2	12	17S	36E	658939	3636485*	110	45	65
L 02331		L	LE		4	4	01	17S	36E	658933	3636888*	105	48	57

L 02413	L	LE		4	4	02	17S	36E	657318	3636861*	90	90	0
L 02426	L	LE		4	4	02	17S	36E	657318	3636861*	115	48	67
L 02480	L	LE		1	2	02	17S	36E	656897	3638063*	130	58	72
L 02481	L	LE	4	4	2	02	17S	36E	657405	3637566*	150	76	74
L 02508	L	LE	2	2	2	01	17S	36E	659013	3638194*	120	40	80
L 02566	L	LE	3	3	3	25	17S	36E	657723	3630314*	110	40	70
L 02984	L	LE		1	1	10	17S	36E	654502	3636414*	125	45	80
L 03086	L	LE		1	1	25	17S	36E	657804	3631628*	122	60	62
L 03194	L	LE		4	3	25	17S	36E	658227	3630422*	120	40	80
L 03577	L	LE				26	17S	36E	656813	3630992*	160	60	100
L 03676	L	LE		4	2	02	17S	36E	657306	3637667*	75	68	7
L 03882	L	LE		3	1	14	17S	36E	656147	3634430*	120	57	63
L 04171	L	LE		4	1	18	17S	36E	650102	3634311*	128	128	0
L 04549	L	LE		1	2	20	17S	36E	652137	3633140*	121	48	73
L 04570	L	LE	1	3	2	29	17S	36E	652070	3631223*	106	85	21
L 04570 POD2	L	LE	1	3	2	29	17S	36E	652070	3631223*	210	58	152
L 04599	L	LE		2	1	20	17S	36E	651733	3633133*	128	38	90
L 04601	L	LE		1	1	30	17S	36E	649772	3631482*	125	50	75
L 04602	L	LE	2	4	3	17	17S	36E	651825	3633635*	115	45	70
L 04623	L	LE	1	1	1	31	17S	36E	649697	3629969*	135	75	60
L 04640	L	LE		4	4	31	17S	36E	651004	3628681*	90	50	40
L 04722	L	LE	3	3	3	32	17S	36E	651306	3628587*	128	65	63
L 04876	L	LE		4	3	29	17S	36E	651782	3630308*	130	75	55
L 04936	L	LE		3	1	21	17S	36E	652950	3632752*	125	55	70
L 04988	L	LE		1	2	01	17S	36E	658510	3638089*	195	55	140
L 04988 S	L	LE	3	2	1	01	17S	36E	658006	3637982*	182	55	127
L 05161	L	LE		2	4	14	17S	36E	657363	3634043*	105	36	69
L 05179	L	LE				16	17S	36E	653539	3634162*	120	65	55
L 05181	L	LE		4	1	20	17S	36E	651740	3632729*	125	75	50
L 05248	L	LE		1	2	32	17S	36E	652192	3629914*	118	85	33
L 05281	L	LE		2	4	24	17S	36E	659002	3632453*	110	52	58
L 05301	L	LE		1	4	31	17S	36E	650594	3629077*	101	48	53
L 05361	L	LE		3	3	20	17S	36E	651350	3631914*	123	90	33
L 05407	L	LE		4	1	19	17S	36E	650128	3632699*	108	49	59
L 05413	L	LE		3	3	12	17S	36E	657747	3635257*	100	48	52
L 05481	L	LE			2	04	17S	36E	653879	3637806*	140	115	25
L 05486	L	LE	2	3	1	01	17S	36E	657808	3637773*	225	62	163
L 05486 POD2	L	LE	2	1	1	01	17S	36E	657802	3638175*	232	83	149
L 05616	L	LE		2	3	04	17S	36E	653280	3637194*	130	65	65
L 05879	L	LE		4	4	10	17S	36E	655731	3635227*	120	40	80
L 06077	L	LE		3	3	15	17S	36E	654548	3633592*	101	40	61

L 06156		L	LE		2	2	21	17S	36E	654152	3633180*	115	60	55
L 06395		L	LE		4	1	12	17S	36E	658138	3636069*	112	47	65
L 07042		L	LE	3	4	2	03	17S	36E	655593	3637539*	100	60	40
L 07862		L	LE		4	3	20	17S	36E	651754	3631922*	100	58	42
L 07907		L	LE		3	2	29	17S	36E	652171	3631124*	150	45	105
L 08266		L	LE	1	3	1	29	17S	36E	651264	3631206*	130	45	85
L 09342		L	LE	3	4	3	20	17S	36E	651653	3631821*	138	60	78
L 09666		L	LE		2	3	13	17S	36E	658170	3634055*	150		
L 09892		L	LE	3	1	3	06	17S	36E	649581	3637025*	135	50	85
L 09952		L	LE	3	3	2	16	17S	36E	653628	3634281*	150	45	105
L 10633	R	L	LE			4	13	17S	36E	659026	3637389*	209	80	129
L 10633 POD4		L	LE	1	4	4	01	17S	36E	658832	3636987*	209	80	129
L 10633 POD5		L	LE	2	4	4	01	17S	36E	659032	3636987*	228	120	108
L 10633 POD6		L	LE	3	4	4	01	17S	36E	658832	3636787*	196	80	116
L 10633 S	R	L	LE			4	13	17S	36E	659026	3637189*	228	120	108
L 10633 S2	R	L	LE			4	13	17S	36E	659032	3636987*	196	80	116
L 10633 S3		L	LE	4	4	4	01	17S	36E	659032	3636787*	188	80	108
L 10633 S4		L	LE	2	4	4	01	17S	36E	659032	3636987*	204	110	94
L 11198		L	LE	3	3	3	01	17S	36E	657620	3636766*	186		
L 12562 POD11		L	LE	2	4	2	01	17S	36E	658989	3637831	112	97	15
L 12562 POD9		L	LE	1	4	4	25	17S	36E	658980	3630480	122	107	15
L 12881 POD1		L	LE	2	3	2	01	17S	36E	658291	3648926	130	100	30
L 13272 POD1		L	LE	2	2	3	03	17S	36E	674360	3637724	185		
L 14187 POD1		L	LE	3	1	3	02	17S	36E	656130	3637225	78		
L 14187 POD2		L	LE	3	1	3	02	17S	36E	656095	3637201	77		
L 14187 POD3		L	LE	3	1	3	02	17S	36E	656141	3637232	80		
L 14187 POD4		L	LE	3	1	3	02	17S	36E	656103	3637219	80		
L 14207 POD1		L	LE	3	3	2	01	17S	36E	658500	3637679	240	100	140
L 14207 POD2		L	LE	2	4	1	01	17S	36E	658222	3637712	230	101	129
L 14263 POD1		L	LE	4	4	4	01	17S	36E	658944	3636867	226		
L 14263 POD2		L	LE	4	4	4	01	17S	36E	658944	3636867	223		
L 14263 POD3		L	LE	4	4	4	01	17S	36E	658914	3638715	225		
L 14263 POD4		L	LE	4	4	4	01	17S	36E	658944	3636867	235		
L 14263 POD6		L	LE	4	4	4	01	17S	36E	658944	3636867	124		
L 14263 POD7		L	LE	3	4	4	01	17S	36E	658785	3636874	124		
L 14453 POD1		L	LE	4	1	1	26	17S	36E	656205	3631599	58	50	8

Average Depth to Water: **69 feet**

Minimum Depth: **31 feet**

Maximum Depth: **128 feet**

Record Count: 110

PLSS Search:

Township: 17S **Range:** 36E

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

6/29/18 10:08 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER

Appendix C

Analytical Report 586590

for

Tetra Tech- Midland

Project Manager: Ike Tavarez

Marathon-Angell B #2

29-MAY-18

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-18-25), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-17-16), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-17-12)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-17-16)
Xenco-Odessa (EPA Lab Code: TX00158): Texas (T104704400-18-14)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Phoenix Mobile (EPA Lab Code: AZ00901): Arizona (AZM757)
Xenco-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429)
Xenco-Lakeland: Florida (E84098)

29-MAY-18

Project Manager: **Ike Tavarez**
Tetra Tech- Midland
4000 N. Big Spring Suite 401
Midland, TX 79705

Reference: XENCO Report No(s): **586590**
Marathon-Angell B #2
Project Address: Lea County, New Mexico

Ike Tavarez:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 586590. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 586590 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Kelsey Brooks
Project Manager

Sample Cross Reference 586590

Tetra Tech- Midland, Midland, TX

Marathon-Angell B #2

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
AH #1 (0-1')	S	05-15-18 00:00		586590-001
AH #2 (0-1')	S	05-15-18 00:00		586590-002
AH #3 (0-1')	S	05-15-18 00:00		586590-003

CASE NARRATIVE

Client Name: Tetra Tech- Midland

Project Name: Marathon-Angell B #2

Project ID:
Work Order Number(s): *586590*

Report Date: *29-MAY-18*
Date Received: *05/18/2018*

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3051176 Inorganic Anions by EPA 300/300.1
Lab Sample ID 586649-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 586590-001, -002, -003.
The Laboratory Control Sample for Chloride is within laboratory Control Limits, therefore the data was accepted.

Batch: LBA-3051528 BTEX by EPA 8021B
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Certificate of Analysis Summary 586590

Tetra Tech- Midland, Midland, TX

Project Name: Marathon-Angell B #2

Project Id:

Contact: Ike Tavarez

Project Location: Lea County, New Mexico

Date Received in Lab: Fri May-18-18 01:30 pm

Report Date: 29-MAY-18

Project Manager: Kelsey Brooks

Analysis Requested									
	Lab Id:	586590-001		586590-002		586590-003				
	Field Id:	AH #1 (0-1')		AH #2 (0-1')		AH #3 (0-1')				
	Depth:									
	Matrix:	SOIL		SOIL		SOIL				
	Sampled:	May-15-18 00:00		May-15-18 00:00		May-15-18 00:00				
BTEX by EPA 8021B	***Extracted:***	May-25-18 17:00		May-25-18 17:00		May-25-18 17:00				
	Analyzed:	May-26-18 12:15		May-26-18 11:58		May-26-18 11:40				
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL			
Benzene		<0.0992	0.0992	<0.200	0.200	0.0796	0.0399			
Toluene		5.19	0.0992	8.33	0.200	2.40	0.0399			
Ethylbenzene		19.8	0.0992	39.8	0.200	6.36	0.0399			
m,p-Xylenes		12.7	0.198	29.0	0.401	4.30	0.0798			
o-Xylene		8.08	0.0992	13.8	0.200	2.38	0.0399			
Total Xylenes		20.8	0.0992	42.8	0.200	6.68	0.0399			
Total BTEX		45.8	0.0992	90.9	0.200	15.5	0.0399			
Inorganic Anions by EPA 300/300.1	***Extracted:***	May-23-18 08:30		May-23-18 08:30		May-23-18 08:30				
	Analyzed:	May-23-18 10:13		May-23-18 10:19		May-23-18 09:55				
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL			
Chloride		2860	25.0	8260	99.4	565	4.99			
TPH By SW8015 Mod	***Extracted:***	May-18-18 14:00		May-18-18 14:00		May-18-18 14:00				
	Analyzed:	May-20-18 12:32		May-20-18 13:03		May-20-18 13:33				
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL			
Gasoline Range Hydrocarbons (GRO)		1430	150	2480	150	592	150			
Diesel Range Organics (DRO)		16100	150	17200	150	22400	150			
Oil Range Hydrocarbons (ORO)		422	150	372	150	566	150			
Total TPH		18000	150	20100	150	23600	150			

Kelsey Brooks
Project Manager

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

***** (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

Form 2 - Surrogate Recoveries

Project Name: Marathon-Angell B #2

Work Orders : 586590,

Project ID:

Lab Batch #: 3050664 **Sample:** 586590-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 05/20/18 12:32

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	118	100	118	70-135	
o-Terphenyl	44.5	50.0	89	70-135	

Lab Batch #: 3050664 **Sample:** 586590-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 05/20/18 13:03

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	128	99.8	128	70-135	
o-Terphenyl	46.4	49.9	93	70-135	

Lab Batch #: 3050664 **Sample:** 586590-003 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 05/20/18 13:33

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	112	99.7	112	70-135	
o-Terphenyl	43.5	49.9	87	70-135	

Lab Batch #: 3051528 **Sample:** 586590-003 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 05/26/18 11:40

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0272	0.0300	91	70-130	
4-Bromofluorobenzene	0.0263	0.0300	88	70-130	

Lab Batch #: 3051528 **Sample:** 586590-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 05/26/18 11:58

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0256	0.0300	85	70-130	
4-Bromofluorobenzene	0.0292	0.0300	97	70-130	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Marathon-Angell B #2

Work Orders : 586590,

Project ID:

Lab Batch #: 3051528 **Sample:** 586590-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 05/26/18 12:15

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0241	0.0300	80	70-130	
4-Bromofluorobenzene	0.0242	0.0300	81	70-130	

Lab Batch #: 3050664 **Sample:** 7645050-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 05/20/18 02:38

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	97.2	100	97	70-135	
o-Terphenyl	50.5	50.0	101	70-135	

Lab Batch #: 3051528 **Sample:** 7655506-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 05/26/18 02:08

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0268	0.0300	89	70-130	
4-Bromofluorobenzene	0.0260	0.0300	87	70-130	

Lab Batch #: 3050664 **Sample:** 7645050-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 05/20/18 03:05

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	118	100	118	70-135	
o-Terphenyl	53.0	50.0	106	70-135	

Lab Batch #: 3051528 **Sample:** 7655506-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 05/26/18 00:39

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0272	0.0300	91	70-130	
4-Bromofluorobenzene	0.0256	0.0300	85	70-130	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Marathon-Angell B #2

Work Orders : 586590,

Project ID:

Lab Batch #: 3050664 **Sample:** 7645050-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 05/20/18 03:32

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	123	100	123	70-135	
o-Terphenyl	57.9	50.0	116	70-135	

Lab Batch #: 3051528 **Sample:** 7655506-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 05/26/18 00:57

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0309	0.0300	103	70-130	
4-Bromofluorobenzene	0.0260	0.0300	87	70-130	

Lab Batch #: 3050664 **Sample:** 586189-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 05/20/18 04:26

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	128	99.9	128	70-135	
o-Terphenyl	52.2	50.0	104	70-135	

Lab Batch #: 3051528 **Sample:** 586647-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 05/26/18 01:13

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0297	0.0300	99	70-130	
4-Bromofluorobenzene	0.0323	0.0300	108	70-130	

Lab Batch #: 3050664 **Sample:** 586189-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 05/20/18 04:53

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	118	99.8	118	70-135	
o-Terphenyl	48.9	49.9	98	70-135	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Marathon-Angell B #2

Work Orders : 586590,

Project ID:

Lab Batch #: 3051528 **Sample:** 586647-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 05/26/18 01:31

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0275	0.0300	92	70-130	
4-Bromofluorobenzene	0.0298	0.0300	99	70-130	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

BS / BSD Recoveries

Project Name: Marathon-Angell B #2

Work Order #: 586590 **Project ID:**

Analyst: ALJ **Date Prepared:** 05/25/2018 **Date Analyzed:** 05/26/2018

Lab Batch ID: 3051528 **Sample:** 7655506-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00200	0.0998	0.0904	91	0.100	0.0934	93	3	70-130	35	
Toluene	<0.00200	0.0998	0.0871	87	0.100	0.0896	90	3	70-130	35	
Ethylbenzene	<0.00200	0.0998	0.0901	90	0.100	0.0905	91	0	70-130	35	
m,p-Xylenes	<0.00399	0.200	0.188	94	0.201	0.192	96	2	70-130	35	
o-Xylene	<0.00200	0.0998	0.0982	98	0.100	0.103	103	5	70-130	35	

Analyst: SCM **Date Prepared:** 05/23/2018 **Date Analyzed:** 05/23/2018

Lab Batch ID: 3051176 **Sample:** 7645290-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<5.00	250	234	94	250	234	94	0	90-110	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

BS / BSD Recoveries

Project Name: Marathon-Angell B #2

Work Order #: 586590 **Project ID:**

Analyst: ARM **Date Prepared:** 05/18/2018 **Date Analyzed:** 05/20/2018

Lab Batch ID: 3050664 **Sample:** 7645050-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	1000	100	1000	1030	103	3	70-135	20	
Diesel Range Organics (DRO)	<15.0	1000	1100	110	1000	1150	115	4	70-135	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Form 3 - MS / MSD Recoveries

Project Name: Marathon-Angell B #2

Work Order # : 586590 **Project ID:**

Lab Batch ID: 3051528 **QC- Sample ID:** 586647-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 05/26/2018 **Date Prepared:** 05/25/2018 **Analyst:** ALJ

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00201	0.100	0.0572	57	0.101	0.0681	67	17	70-130	35	X
Toluene	<0.00201	0.100	0.0556	56	0.101	0.0647	64	15	70-130	35	X
Ethylbenzene	<0.00201	0.100	0.0510	51	0.101	0.0665	66	26	70-130	35	X
m,p-Xylenes	<0.00402	0.201	0.107	53	0.202	0.139	69	26	70-130	35	X
o-Xylene	<0.00201	0.100	0.0573	57	0.101	0.0764	76	29	70-130	35	X

Lab Batch ID: 3051176 **QC- Sample ID:** 586590-003 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 05/23/2018 **Date Prepared:** 05/23/2018 **Analyst:** SCM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	565	250	783	87	250	782	87	0	90-110	20	X

Lab Batch ID: 3051176 **QC- Sample ID:** 586649-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 05/23/2018 **Date Prepared:** 05/23/2018 **Analyst:** SCM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<4.98	249	226	91	249	226	91	0	90-110	20	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Form 3 - MS / MSD Recoveries

Project Name: Marathon-Angell B #2

Work Order # : 586590 **Project ID:**

Lab Batch ID: 3050664 **QC- Sample ID:** 586189-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 05/20/2018 **Date Prepared:** 05/18/2018 **Analyst:** ARM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	999	1020	102	998	939	94	8	70-135	20	
Diesel Range Organics (DRO)	61.8	999	1220	116	998	1110	105	9	70-135	20	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Analysis Request of Chain of Custody Record

586590

Page 1 of 1

Tetra Tech, Inc.

4000 N. Big Spring Street, Ste
401 Midland,Texas 79705
Tel (432) 682-4559
Fax (432) 682-3946

Client Name: Marathon

Site Manager: Ike Tavarez

Project Name: Angell B #2

Project Location: (county, state) Lea County, New Mexico

Project #: 212C-MD-01214

Invoice to: Tetra Tech, Inc.

Receiving Laboratory: Xenco

Sampler Signature: Mike Carmona

Comments:

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING YEAR: 2018 DATE	SAMPLING TIME	MATRIX WATER	MATRIX SOIL	MATRIX	PRESERVATIVE METHOD HCL	PRESERVATIVE METHOD HNO_3	PRESERVATIVE METHOD ICE	PRESERVATIVE METHOD None	PRESERVATIVE METHOD	# CONTAINERS	FILTERED (Y/N)	BTEX 8021B / BTEX 8260B	TPH TX1005 (Ext to C35)	TPH 8015M (GRO - DRO - ORO - MRO)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8260B / 624	GC/MS Semi. Vol. 8270C/625	PCB's 8082 / 608	NORM	PLM (Asbestos)	Chloride	Chloride Sulfate TDS	General Water Chemistry (see attached list)	Anion/Cation Balance				Hold
	AH #1 (0-1')	5/15/2018			X				X			1	N	X		X												X							
	AH #2 (0-1')	5/15/2018			X				X			1	N	X		X												X							
	AH #3 (0-1')	5/15/2018			X				X			1	N	X		X												X							

Relinquished by: Date: 5/16/18 Time: 1:30

Received by: Date: 5/16/18 Time: 1330

Relinquished by: Date: Time:

Received by: Date: Time:

Relinquished by: Date: Time:

Received by: Date: Time:

LAB USE ONLY

Sample Temperature 2.6 NS

REMARKS:

☒ STANDARD

☐ RUSH: Same Day 24 hr 48 hr 72 hr

☐ Rush Charges Authorized

☐ Special Report Limits or TRRP Report

(Circle) HAND DELIVERED FEDEX UPS Tracking #:

ORIGINAL COPY

Final 1.000

Page 15 of 16

XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In

Client: Tetra Tech- Midland

Date/ Time Received: 05/18/2018 01:30:00 PM

Work Order #: 586590

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	2.6
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**N/A**
#5 Custody Seals intact on sample bottles?	**N/A**
#6*Custody Seals Signed and dated?	**N/A**
#7 *Chain of Custody present?	**Yes**
#8 Any missing/extra samples?	**No**
#9 Chain of Custody signed when relinquished/ received?	**Yes**
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**
#11 Container label(s) legible and intact?	**Yes**
#12 Samples in proper container/ bottle?	**Yes**
#13 Samples properly preserved?	**Yes**
#14 Sample container(s) intact?	**Yes**
#15 Sufficient sample amount for indicated test(s)?	**Yes**
#16 All samples received within hold time?	**Yes**
#17 Subcontract of sample(s)?	**N/A**
#18 Water VOC samples have zero headspace?	**N/A**

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: PH Device/Lot#:

Checklist completed by: Brianna Teel Date: 05/18/2018

Brianna Teel

Checklist reviewed by: Kelsey Brooks Date: 05/23/2018

Kelsey Brooks

Analytical Report 590649

for

Tetra Tech- Midland

Project Manager: Ike Tavarez

Marathon- Angell B#2

212C-MD-01214

28-JUN-18

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-18-26), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-17-16), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-17-12)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-17-16)
Xenco-Odessa (EPA Lab Code: TX00158): Texas (T104704400-18-15)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Phoenix Mobile (EPA Lab Code: AZ00901): Arizona (AZM757)
Xenco-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429)
Xenco-Lakeland: Florida (E84098)

28-JUN-18

Project Manager: **Ike Tavarez**
Tetra Tech- Midland
4000 N. Big Spring Suite 401
Midland, TX 79705

Reference: XENCO Report No(s): **590649**
Marathon- Angell B#2
Project Address: Lea County, NM

Ike Tavarez:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 590649. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 590649 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Jessica Kramer

Jessica Kramer
Project Assistant

Sample Cross Reference 590649

Tetra Tech- Midland, Midland, TX

Marathon- Angell B#2

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
Bottom Hole (0"-6") 2'BEB	S	06-27-18 00:00		590649-001
North Side Wall	S	06-27-18 00:00		590649-002
South Side Wall	S	06-27-18 00:00		590649-003
East Side Wall	S	06-27-18 00:00		590649-004
West Side Wall	S	06-27-18 00:00		590649-005

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3054831 BTEX by EPA 8021B

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Certificate of Analysis Summary 590649

Tetra Tech- Midland, Midland, TX

Project Name: Marathon- Angell B#2

Project Id: 212C-MD-01214
Contact: Ike Tavarez
Project Location: Lea County, NM

Date Received in Lab: Wed Jun-27-18 04:19 pm
Report Date: 28-JUN-18
Project Manager: Jessica Kramer

Analysis Requested												
	Lab Id:	590649-001		590649-002		590649-003		590649-004		590649-005		
	Field Id:	Bottom Hole (0"-6") 2'BEB		North Side Wall		South Side Wall		East Side Wall		West Side Wall		
	Depth:											
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		
	Sampled:	Jun-27-18 00:00		Jun-27-18 00:00		Jun-27-18 00:00		Jun-27-18 00:00		Jun-27-18 00:00		
BTEX by EPA 8021B	***Extracted:***	Jun-27-18 17:00		Jun-27-18 17:00		Jun-27-18 17:00		Jun-27-18 17:00		Jun-27-18 17:00		
	Analyzed:	Jun-28-18 07:15		Jun-28-18 07:33		Jun-28-18 07:50		Jun-28-18 08:08		Jun-28-18 08:26		
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	
Benzene		<0.00200	0.00200	<0.00202	0.00202	<0.00201	0.00201	<0.00199	0.00199	<0.00200	0.00200	
Toluene		<0.00200	0.00200	<0.00202	0.00202	<0.00201	0.00201	<0.00199	0.00199	<0.00200	0.00200	
Ethylbenzene		<0.00200	0.00200	<0.00202	0.00202	<0.00201	0.00201	<0.00199	0.00199	<0.00200	0.00200	
m,p-Xylenes		<0.00400	0.00400	<0.00403	0.00403	<0.00402	0.00402	<0.00398	0.00398	<0.00399	0.00399	
o-Xylene		<0.00200	0.00200	<0.00202	0.00202	<0.00201	0.00201	<0.00199	0.00199	<0.00200	0.00200	
Total Xylenes		<0.00200	0.00200	<0.00202	0.00202	<0.00201	0.00201	<0.00199	0.00199	<0.00200	0.00200	
Total BTEX		<0.00200	0.00200	<0.00202	0.00202	<0.00201	0.00201	<0.00199	0.00199	<0.00200	0.00200	
TPH By SW8015 Mod	***Extracted:***	Jun-28-18 07:00		Jun-28-18 07:00		Jun-28-18 07:00		Jun-28-18 07:00		Jun-28-18 07:00		
	Analyzed:	Jun-28-18 13:25		Jun-28-18 13:46		Jun-28-18 14:07		Jun-28-18 14:28		Jun-28-18 14:49		
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	
Gasoline Range Hydrocarbons (GRO)		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<14.9	14.9	
Diesel Range Organics (DRO)		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<14.9	14.9	
Oil Range Hydrocarbons (ORO)		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<14.9	14.9	
Total TPH		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<14.9	14.9	

Jessica Kramer
Project Assistant

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

***** (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

Form 2 - Surrogate Recoveries

Project Name: Marathon- Angell B#2

Work Orders : 590649,

Project ID: 212C-MD-01214

Lab Batch #: 3054831 **Sample:** 590649-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 06/28/18 07:15

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0304	0.0300	101	70-130	
4-Bromofluorobenzene	0.0287	0.0300	96	70-130	

Lab Batch #: 3054831 **Sample:** 590649-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 06/28/18 07:33

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0323	0.0300	108	70-130	
4-Bromofluorobenzene	0.0290	0.0300	97	70-130	

Lab Batch #: 3054831 **Sample:** 590649-003 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 06/28/18 07:50

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0259	0.0300	86	70-130	
4-Bromofluorobenzene	0.0260	0.0300	87	70-130	

Lab Batch #: 3054831 **Sample:** 590649-004 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 06/28/18 08:08

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0304	0.0300	101	70-130	
4-Bromofluorobenzene	0.0258	0.0300	86	70-130	

Lab Batch #: 3054831 **Sample:** 590649-005 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 06/28/18 08:26

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0289	0.0300	96	70-130	
4-Bromofluorobenzene	0.0269	0.0300	90	70-130	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Marathon- Angell B#2

Work Orders : 590649,

Project ID: 212C-MD-01214

Lab Batch #: 3054940 **Sample:** 590649-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 06/28/18 13:25

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	97.1	99.9	97	70-135	
o-Terphenyl	51.6	50.0	103	70-135	

Lab Batch #: 3054940 **Sample:** 590649-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 06/28/18 13:46

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	98.4	99.7	99	70-135	
o-Terphenyl	51.3	49.9	103	70-135	

Lab Batch #: 3054940 **Sample:** 590649-003 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 06/28/18 14:07

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	101	99.7	101	70-135	
o-Terphenyl	52.7	49.9	106	70-135	

Lab Batch #: 3054940 **Sample:** 590649-004 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 06/28/18 14:28

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	95.9	99.9	96	70-135	
o-Terphenyl	50.2	50.0	100	70-135	

Lab Batch #: 3054940 **Sample:** 590649-005 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 06/28/18 14:49

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	99.2	99.6	100	70-135	
o-Terphenyl	53.0	49.8	106	70-135	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Marathon- Angell B#2

Work Orders : 590649,

Project ID: 212C-MD-01214

Lab Batch #: 3054831 **Sample:** 7657458-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 06/27/18 23:27

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0288	0.0300	96	70-130	
4-Bromofluorobenzene	0.0283	0.0300	94	70-130	

Lab Batch #: 3054940 **Sample:** 7657513-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 06/28/18 10:09

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	81.8	100	82	70-135	
o-Terphenyl	42.8	50.0	86	70-135	

Lab Batch #: 3054831 **Sample:** 7657458-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 06/27/18 21:55

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0315	0.0300	105	70-130	
4-Bromofluorobenzene	0.0302	0.0300	101	70-130	

Lab Batch #: 3054940 **Sample:** 7657513-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 06/28/18 10:29

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	115	100	115	70-135	
o-Terphenyl	62.0	50.0	124	70-135	

Lab Batch #: 3054831 **Sample:** 7657458-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 06/27/18 22:13

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0306	0.0300	102	70-130	
4-Bromofluorobenzene	0.0286	0.0300	95	70-130	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Marathon- Angell B#2

Work Orders : 590649,

Project ID: 212C-MD-01214

Lab Batch #: 3054940 **Sample:** 7657513-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 06/28/18 10:50

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	127	100	127	70-135	
o-Terphenyl	63.3	50.0	127	70-135	

Lab Batch #: 3054831 **Sample:** 590094-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 06/27/18 22:32

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0322	0.0300	107	70-130	
4-Bromofluorobenzene	0.0268	0.0300	89	70-130	

Lab Batch #: 3054940 **Sample:** 590434-020 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 06/28/18 11:31

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	118	99.8	118	70-135	
o-Terphenyl	54.2	49.9	109	70-135	

Lab Batch #: 3054831 **Sample:** 590094-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 06/27/18 22:50

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0295	0.0300	98	70-130	
4-Bromofluorobenzene	0.0334	0.0300	111	70-130	

Lab Batch #: 3054940 **Sample:** 590434-020 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 06/28/18 11:52

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	118	99.9	118	70-135	
o-Terphenyl	54.5	50.0	109	70-135	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

BS / BSD Recoveries

Project Name: Marathon- Angell B#2

Work Order #: 590649 **Project ID:** 212C-MD-01214

Analyst: ALJ **Date Prepared:** 06/27/2018 **Date Analyzed:** 06/27/2018

Lab Batch ID: 3054831 **Sample:** 7657458-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00199	0.0994	0.0976	98	0.0998	0.0897	90	8	70-130	35	
Toluene	<0.00199	0.0994	0.101	102	0.0998	0.0922	92	9	70-130	35	
Ethylbenzene	<0.00199	0.0994	0.102	103	0.0998	0.0929	93	9	70-130	35	
m,p-Xylenes	<0.00398	0.199	0.210	106	0.200	0.192	96	9	70-130	35	
o-Xylene	<0.00199	0.0994	0.0976	98	0.0998	0.0907	91	7	70-130	35	

Analyst: ARM **Date Prepared:** 06/28/2018 **Date Analyzed:** 06/28/2018

Lab Batch ID: 3054940 **Sample:** 7657513-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	978	98	1000	1020	102	4	70-135	20	
Diesel Range Organics (DRO)	<15.0	1000	1070	107	1000	1130	113	5	70-135	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Form 3 - MS / MSD Recoveries

Project Name: Marathon- Angell B#2

Work Order # : 590649 **Project ID:** 212C-MD-01214

Lab Batch ID: 3054831 **QC- Sample ID:** 590094-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 06/27/2018 **Date Prepared:** 06/27/2018 **Analyst:** ALJ

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00200	0.100	0.0606	61	0.0996	0.0578	58	5	70-130	35	X
Toluene	<0.00200	0.100	0.0433	43	0.0996	0.0463	46	7	70-130	35	X
Ethylbenzene	0.0158	0.100	0.0445	29	0.0996	0.0469	31	5	70-130	35	X
m,p-Xylenes	0.0441	0.200	0.0937	25	0.199	0.0913	24	3	70-130	35	X
o-Xylene	0.0553	0.100	0.0786	23	0.0996	0.0703	15	11	70-130	35	X

Lab Batch ID: 3054940 **QC- Sample ID:** 590434-020 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 06/28/2018 **Date Prepared:** 06/28/2018 **Analyst:** ARM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	998	888	89	999	922	92	4	70-135	20	
Diesel Range Organics (DRO)	<15.0	998	962	96	999	1010	101	5	70-135	20	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Analysis Request of Chain of Custody Record

590649

Page 1 of 1

Tetra Tech, Inc.

4000 N. Big Spring Street, Ste
401 Midland,Texas 79705
Tel (432) 682-4559
Fax (432) 682-3946

Client Name: MARATHON

Site Manager: IKE TAVAREZ

Project Name: ANGELL B#2

Project Location: (county, state) LEA COUNTY, NM

Project #: 212C-MD-01284

Invoice to:

Receiving Laboratory: ~~XENCO~~ XENCO

Sampler Signature: MIKE CARMONA/ CONNER MOEHRING

Comments:

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING DATE	SAMPLING TIME	MATRIX WATER	MATRIX SOIL	PRESERVATIVE METHOD HCL	PRESERVATIVE METHOD HNO_3	PRESERVATIVE METHOD ICE	PRESERVATIVE METHOD None	# CONTAINERS	FILTERED (Y/N)
	Bottom Hole (0"-6") 2' BEB	6/27/18			X			X		1	N
	NORTH SIDE WALL	6/27/18			X			X		1	N
	SOUTH SIDE WALL	6/27/18			X			X		1	N
	EAST SIDE WALL	6/27/18			X			X		1	N
	WEST SIDE WALL	6/27/18			X			X		1	N

ANALYSIS REQUEST
(Circle or Specify Method No.)

BTEX 8021B BTEX 8260B	TPH TX1005 (Ext to C35)	TPH 8015M (GRO - DRO - ORO - MRO)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8260B / 624	GC/MS Semi. Vol. 8270C/625	PCB's 8082 / 608	NORM	PLM (Asbestos)	Chloride	Chloride Sulfate TDS	General Water Chemistry (see attached list)	Anion/Cation Balance				Hold
X		X																			
X		X																			
X		X																			
X		X																			
X		X																			

Relinquished by: mike Carmona Date: 6/27/18 Time: 4:18pm

Received by: Date: 6/27 Time: 1419

Relinquished by: Date: Time:

Received by: Date: Time:

Relinquished by: Date: Time:

Received by: Date: Time:

LAB USE ONLY

Sample Temperature 6.5/0.0 RD

REMARKS:

- ☐ STANDARD
- ☒ RUSH: Same Day (24 hr) 48 hr 72 hr
- ☐ Rush Charges Authorized
- ☐ Special Report Limits or TRRP Report

(Circle) HAND DELIVERED FEDEX UPS Tracking #: _____

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Analysis Request of Chain of Custody Record

590649

Page 1 of 1

Tetra Tech, Inc.

4000 N. Big Spring Street, Ste
401 Midland,Texas 79705
Tel (432) 682-4559
Fax (432) 682-3946

Client Name: MARATHON

Site Manager: IKE TAVAREZ

Project Name: ANGELL B#2

Project Location: (county, state) LEA COUNTY, NM

Project #: 212C-MD-01284

Invoice to:

Receiving Laboratory: ~~XEN~~ XENCO

Sampler Signature: MIKE CARMONA/ CONNER MOEHRING

Comments:

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING DATE	SAMPLING TIME	MATRIX: WATER	MATRIX: SOIL	MATRIX:	PRESERVATIVE METHOD: HCL	PRESERVATIVE METHOD: HNO_3	PRESERVATIVE METHOD: ICE	PRESERVATIVE METHOD: None	PRESERVATIVE METHOD:	# CONTAINERS	FILTERED (Y/N)
	Bottom Hole (0"-6") 2' BEB	6/27/18			X				X			1	N
	NORTH SIDE WALL	6/27/18			X				X			1	N
	SOUTH SIDE WALL	6/27/18			X				X			1	N
	EAST SIDE WALL	6/27/18			X				X			1	N
	WEST SIDE WALL	6/27/18			X				X			1	N

ANALYSIS REQUEST
(Circle or Specify Method No.)

BTEX 8021B BTEX 8260B	TPH TX1005 (Ext to C35)	TPH 8015M (GRO - DRO - ORO - MRO)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8260B / 624	GC/MS Semi. Vol. 8270C/625	PCB's 8082 / 608	NORM	PLM (Asbestos)	Chloride	Chloride Sulfate TDS	General Water Chemistry (see attached list)	Anion/Cation Balance					Hold
X		X																				
X		X																				
X		X																				
X		X																				
X		X																				

Relinquished by: mike Conner Date: 6/27/18 Time: 4:18pm

Received by: Date: 6/27 Time: 1419

Relinquished by: Date: Time:

Received by: Date: Time:

Relinquished by: Date: Time:

Received by: Date: Time:

LAB USE ONLY

Sample Temperature 6.5/0.0 RD

REMARKS:

- ☐ STANDARD
- ☒ RUSH: Same Day (24 hr) 48 hr 72 hr
- ☐ Rush Charges Authorized
- ☐ Special Report Limits or TRRP Report

(Circle) HAND DELIVERED FEDEX UPS Tracking #:

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XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Tetra Tech- Midland

Date/ Time Received: 06/27/2018 04:19:00 PM

Work Order #: 590649

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	6.5
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**N/A**
#5 Custody Seals intact on sample bottles?	**N/A**
#6*Custody Seals Signed and dated?	**N/A**
#7 *Chain of Custody present?	**Yes**
#8 Any missing/extra samples?	**No**
#9 Chain of Custody signed when relinquished/ received?	**Yes**
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**
#11 Container label(s) legible and intact?	**Yes**
#12 Samples in proper container/ bottle?	**Yes**
#13 Samples properly preserved?	**Yes**
#14 Sample container(s) intact?	**Yes**
#15 Sufficient sample amount for indicated test(s)?	**Yes**
#16 All samples received within hold time?	**Yes**
#17 Subcontract of sample(s)?	**N/A**
#18 Water VOC samples have zero headspace?	**N/A**

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: PH Device/Lot#:

Checklist completed by: Brianna Teel Date: 06/27/2018

Brianna Teel

Checklist reviewed by: Jessica Kramer Date: 06/28/2018

Jessica Kramer

Analytical Report 590650

for

Tetra Tech- Midland

Project Manager: Ike Tavarez

Angell B#2

212C-MD-01214

28-JUN-18

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-18-26), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-17-16), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-17-12)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-17-16)
Xenco-Odessa (EPA Lab Code: TX00158): Texas (T104704400-18-15)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Phoenix Mobile (EPA Lab Code: AZ00901): Arizona (AZM757)
Xenco-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429)
Xenco-Lakeland: Florida (E84098)

28-JUN-18

Project Manager: **Ike Tavarez**
Tetra Tech- Midland
4000 N. Big Spring Suite 401
Midland, TX 79705

Reference: XENCO Report No(s): **590650**
Angell B#2
Project Address: Lea County,NM

Ike Tavarez:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 590650. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 590650 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Jessica Kramer

Jessica Kramer
Project Assistant

Sample Cross Reference 590650

Tetra Tech- Midland, Midland, TX

Angell B#2

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
Bottom Hole (0-6") 2' BEB	S	06-27-18 00:00		590650-001
North Side Wall	S	06-27-18 00:00		590650-002
South Side Wall	S	06-27-18 00:00		590650-003
East Side Wall	S	06-27-18 00:00		590650-004
West Side Wall	S	06-27-18 00:00		590650-005

CASE NARRATIVE

Client Name: Tetra Tech- Midland

Project Name: Angell B#2

Project ID: *212C-MD-01214*
Work Order Number(s): *590650*

Report Date: *28-JUN-18*
Date Received: *06/27/2018*

Sample receipt non conformances and comments:

TPH TX1005 RECEIVED IN BULK JAR

Sample receipt non conformances and comments per sample:

None

Certificate of Analysis Summary 590650

Tetra Tech- Midland, Midland, TX

Project Name: Angell B#2

Project Id: 212C-MD-01214
Contact: Ike Tavarez
Project Location: Lea County,NM

Date Received in Lab: Wed Jun-27-18 04:30 pm
Report Date: 28-JUN-18
Project Manager: Jessica Kramer

Analysis Requested											
	Lab Id:	590650-001		590650-002		590650-003		590650-004		590650-005	
	Field Id:	Bottom Hole (0-6") 2' BEB		North Side Wall		South Side Wall		East Side Wall		West Side Wall	
	Depth:										
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-27-18 00:00		Jun-27-18 00:00		Jun-27-18 00:00		Jun-27-18 00:00		Jun-27-18 00:00	
Inorganic Anions by EPA 300/300.1	***Extracted:***	Jun-27-18 17:00		Jun-27-18 17:00		Jun-27-18 17:00		Jun-27-18 17:00		Jun-27-18 17:00	
	Analyzed:	Jun-27-18 20:18		Jun-27-18 20:23		Jun-27-18 20:28		Jun-27-18 20:34		Jun-27-18 20:39	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		571	4.99	15.8	4.92	34.5	4.97	35.6	4.95	278	4.98

Jessica Kramer
Project Assistant

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

***** (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

BS / BSD Recoveries

Project Name: Angell B#2

Work Order #: 590650 **Project ID:** 212C-MD-01214

Analyst: SCM **Date Prepared:** 06/27/2018 **Date Analyzed:** 06/27/2018

Lab Batch ID: 3054858 **Sample:** 7657472-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<5.00	250	238	95	250	238	95	0	90-110	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Form 3 - MS / MSD Recoveries

Project Name: Angell B#2

Work Order # : 590650 **Project ID:** 212C-MD-01214

Lab Batch ID: 3054858 **QC- Sample ID:** 590390-021 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 06/27/2018 **Date Prepared:** 06/27/2018 **Analyst:** SCM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	613	248	803	77	248	804	77	0	90-110	20	X

Lab Batch ID: 3054858 **QC- Sample ID:** 590390-026 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 06/27/2018 **Date Prepared:** 06/27/2018 **Analyst:** SCM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	9.93	246	251	98	246	251	98	0	90-110	20	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Analysis Request of Chain of Custody Record

Page 1 of 1

Tetra Tech, Inc.

4000 N. Big Spring Street, Ste
401 Midland, Texas 79705
Tel (432) 682-4559
Fax (432) 682-3946

590650

Client Name: MARATHON

Site Manager: IKE TAVAREZ

Project Name: ANGELL B#2

Project Location: (county, state) LEA COUNTY, NM

Project #: 2126-MD-01214

Invoice to:

Receiving Laboratory: XENCO

Sampler Signature: MIKE CARMONA / CONNER MOEHRING

Comments:

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING DATE	SAMPLING TIME	MATRIX: WATER	MATRIX: SOIL	MATRIX:	PRESERVATIVE METHOD: HCL	PRESERVATIVE METHOD: HNO_3	PRESERVATIVE METHOD: ICE	PRESERVATIVE METHOD: None	PRESERVATIVE METHOD:	# CONTAINERS	FILTERED (Y/N)
	Bottom HOLE (0"-6") 2' BEB	6/27/18			X				X			1	N
	NORTH SIDE WALL	6/27/18			X				X			1	N
	SOUTH SIDE WALL	6/27/18			X				X			1	N
	EAST SIDE WALL	6/27/18			X				X			1	N
	WEST SIDE WALL	6/27/18			X				X			1	N

ANALYSIS REQUEST
(Circle or Specify Method No.)

BTEX 8021B BTEX 8260B	TPH TX1005 (Ext to C35)	TPH 8015M (GRO - DRO - ORO - MRO)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8260B / 624	GC/MS Semi. Vol. 8270C/625	PCB's 8082 / 608	NORM	PLM (Asbestos)	Chloride	Chloride Sulfate TDS	General Water Chemistry (see attached list)	Anion/Cation Balance				Hold
														X							
														X							
														X							
														X							
														X							

Final 1.000

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Relinquished by: Mike / Conner Date: 6/27/18 Time: 418pm

Received by: [signature] Date: 6/27 Time: 1614

Relinquished by: Date: Time:

Received by: Date: Time:

Relinquished by: Date: Time:

Received by: Date: Time:

LAB USE ONLY

Sample Temperature 6-5/0.0 NE

REMARKS:

- ☐ STANDARD
- ☒ RUSH: Same Day (24 hr) 48 hr 72 hr
- ☐ Rush Charges Authorized
- ☐ Special Report Limits or TRRP Report

(Circle) HAND DELIVERED FEDEX UPS Tracking #:

ORIGINAL COPY

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Tetra Tech- Midland

Date/ Time Received: 06/27/2018 04:30:14 PM

Work Order #: 590650

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	6.5
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**N/A**
#5 Custody Seals intact on sample bottles?	**N/A**
#6*Custody Seals Signed and dated?	**N/A**
#7 *Chain of Custody present?	**Yes**
#8 Any missing/extra samples?	**No**
#9 Chain of Custody signed when relinquished/ received?	**Yes**
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**
#11 Container label(s) legible and intact?	**Yes**
#12 Samples in proper container/ bottle?	**Yes**
#13 Samples properly preserved?	**Yes**
#14 Sample container(s) intact?	**Yes**
#15 Sufficient sample amount for indicated test(s)?	**Yes**
#16 All samples received within hold time?	**Yes**
#17 Subcontract of sample(s)?	**No**
#18 Water VOC samples have zero headspace?	**N/A**

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst:

PH Device/Lot#:

Checklist completed by: Shawnee Gomez Date: 06/27/2018

Checklist reviewed by: Jessica Kramer Date: 06/28/2018