#### SITE INFORMATION **Report Type: Closure Report** 1RP-4959 **General Site Information:** Site: Madera 19 Federal 1 Marathon Oil Permian, LLC Company: Section, Township and Range Unit L Sec. 19 T 26S R 35E API No. 30-025-36645 Lease Number: County: Lea County GPS: 32.026836º N 103.411465° W Surface Owner: Federal Mineral Owner: From the intersection of NM 3 and Beckham Rd in rural Lea County, travel west on Beckham Rd Directions: for approximately 9.3 miles, turn northwest onto leaes road for 0.60 miles, turn south onto lease road for 0.10 mi to location. Release Data: Date Released: 1/31/2018 Type Release: Condensate & Produced Water Source of Contamination: 500 bbl tank Fluid Released: 150 bbls Fluids Recovered: 0 bbls **Official Communication:** Name: Callie Karrigan Ike Tavarez Company: Marathon Oil Permian, LLC. Tetra Tech Address: 2423 Bonita St. 4000 N. Big Spring Ste 401 City: Carlsbad, NM 88220 Midland, Texas Phone number: (575) 297-0956 (432) 687-8110 Fax: Email: cnkarrigan@marathonoil.com Ike.Tavarez@tetratech.com

### Ranking Criteria Depth to Groundwater: Ranking Score Site Data <50 ft 20 50-99 ft 10 >100 ft. 0 150'-175' 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: 0

Acceptab	Acceptable Soil RRAL (mg/kg)						
Benzene	Total BTEX	TPH					
10	50	5,000					



June 18, 2018

NMOCD grants closure to 1RP-4959.

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 Company, Madera 19 Federal #1, Unit L, Section 19, Township 26 South, Range 35 East, Lea County, New Mexico. 1RP-4959.

Ms. Yu:

Tetra Tech, Inc. (Tetra Tech) was contacted by Marathon Oil Company (Marathon) to investigate and assess a release that occurred at the Madera 19 Federal #1, Unit L, Section 19, Township 26 South, Range 35 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.026836°, W 103.411465°. The site location is shown on Figures 1 and 2.

### Background

According to the State of New Mexico C-141 Initial Report, the release was discovered on January 31, 2018, and released approximately 150 barrels of condensate and produced water due to tank leak. None of the fluids were recovered. The release occurred inside the facility berm from a leaking tank bottom and remained on the facility pad, impacting an area measuring approximately 40' x 110'. The initial C-141 form is included in Appendix A.

### Groundwater

No wells are listed within Section 19 in the New Mexico Office of the State Engineers database, the USGS National Water Information System, or the Geology and Groundwater Conditions in Southern Lea County, NM (Report 6). However, the State Engineers database lists a well in Section 24, approximately 5.2 miles east of the site, with a reported depth to water of 250' below surface. According to the Chevron Texaco Groundwater Trend map, the average depth to groundwater in the area is between 150' and 175' below surface. The groundwater data is shown 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 5,000 mg/kg.

### **Soil Assessment and Remediation Activities**

During the assessment and remediation activities, selected samples collected were submitted to the laboratory for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B, and chloride by EPA method 300.0. Copies of the laboratory analysis and chain-of-custody documentation are included in Appendix C. The laboratory results are summarized in Table 1. The sample locations are shown on Figure 3.

### Initial Assessment

On February 8, 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 spill footprint to total depths between 5.0' and 5.5' below surface.

Referring to Table 1, none of the samples analyzed showed benzene concentrations above the RRAL. However, the areas of auger holes (AH-1, AH-2 and AH-3) showed total BTEX concentrations of 691 mg/kg, 729 mg/kg, and 622 mg/kg at 0-1' below surface, respectively. The BTEX concentrations then declined with depth to below the RRAL at 1.0-1.5' below surface.

Additionally, elevated TPH concentrations were detected at 0-1' below surface, with concentrations of 17,300 mg/kg (AH-1), 14,020 mg/kg (AH-2), and 12,120 mg/kg (AH-3). The TPH concentrations then declined with depth to below the RRAL at 1.0-1.5' below surface, with concentrations of 530 mg/kg (AH-1), 18.2 mg/kg (AH-2), and 1,136 mg/kg (AH-3). In addition, none of the samples collected showed chloride concentrations above the 600 mg/kg threshold.

### Initial Excavation and Additional Sampling

Based on the results from the initial assessment, a work plan dated February 26, 2018 was submitted and approved, which detailed the proposed excavation of the areas of auger holes (AH-1, AH-2, and AH-3) to approximately 1.0' below surface.



On March 8, 2018, the proposed work plan was implemented. During the excavation activities, two (2) bottom hole samples (North bottom hole and South bottom hole) and six sidewall (6) confirmation samples (North sidewall, South sidewall, Northeast sidewall, Northwest sidewall, Southeast sidewall, and Southwest sidewall) were collected for evaluation.

Referring to Table 1, the areas of North and South Bottom holes showed TPH and total BTEX concentrations exceeding the RRALs. The sidewall sample (Northeast sidewall) showed a total BTEX concentration of 83.4 mg/kg. None of the remaining sidewall samples showed TPH or total BTEX concentrations above the thresholds. Additionally, none of the confirmation samples showed benzene concentrations above 10 mg/kg or chloride concentrations above the 600 mg/kg threshold.

Based on the laboratory results, the area was excavated to 2.0' below surface and the area of sidewall sample (Northeast sidewall) was expanded to remove the impacted soils. Additional confirmation samples were collected at North bottom hole, South bottom hole, and Northeast sidewall. The area of sidewall (Northeast sidewall) showed a total BTEX concentration below the RRAL of 0.922 mg/kg. However, the bottom hole samples collected at 2.0' BEB exceeded the RRALs for TPH (North bottom hole) and total BTEX (North bottom hole and South bottom hole). All of the material excavated was hauled to proper disposal.

### Trench Installation - Additional Investigation

On March 20, 2018, three (3) backhoe trenches (Trench 1, Trench 2, and Trench 3) were installed inside the release footprint to total depths between 8.0' and 10.0' below the excavation bottom (BEB), in an attempt to vertically define the extents of the hydrocarbon impact. All of the trenches showed bottom samples above the RRAL for TPH and total BTEX concentrations and these areas were not vertically defined. None of the samples collected showed benzene concentrations above 10 mg/kg or chloride concentrations above 600 mg/kg.

### **Borehole Installation**

Based on the laboratory results, Tetra Tech corresponded with the NMOCD and proposed installing boreholes in the release area in order to vertically define the extents of the hydrocarbon impact. On March 26, 2018, three (3) boreholes (BH-1, BH-2, and BH-3) were installed in the 2.0' excavation bottom to total depths ranging from 14'-15' (BH-2 and BH-3) and 34'-35' (BH-1) below the excavation bottom.

Referring to Table 1, the area of borehole (BH-3) did not show any TPH, benzene, or total BTEX concentrations above the RRALs. The area of borehole (BH-2) showed TPH and total BTEX highs of 6,219 mg/kg (TPH) and 337 mg/kg (BTEX) at 6.0'-7.0' BEB. The elevated TPH and total BTEX concentrations in the area declined with depth to below the RRALs at 9-10' BEB. The area of borehole (BH-1) showed elevated TPH and total BTEX concentrations to 14-15' BEB, which then declined with depth below the RRALs at 24-25' BEB. None of the samples collected at boreholes (BH-1, BH-2, and BH-3) detected benzene concentrations above the RRAL.



### **Remediation Activities**

Based on the results of the investigation, the NMOCD was contacted and provided the assessment data and discussed proposed activities for the site. As approved by the NMOCD, Tetra Tech proposed the removal of the impacted soil to the appropriate depth and the remediation of the excavated material onsite. As proposed, the stockpile remediation consisted of segregating the excavated material into 40 to 50 cubic yards stockpiles to work the soils below the RRAL. Once achieved, the material would be placed back into the excavation.

On March 27, 2018, the area of borehole (BH-3) was excavated to approximately 5' below surface, the area of borehole (BH-2) was excavated to approximately 10.0', and the area of borehole (BH-1) was excavated to approximately 20.0' below surface. To ensure proper removal of the impacted soils, bottom hole samples (South, and Middle) were collected. The area of North Trench (5' BEB) was collected to confirm the spike detected in Trench 3 at approximately 10.0' below surface.

Referring to Table 1, bottom hole South sample collected at 20.0' below surface showed TPH and benzene concentrations below the laboratory reporting limit and a total BTEX concentration of 0.00558 mg/kg. The area of bottom hole Middle collected at 10.0' below surface detected a TPH concentration of 2,440 mg/kg, a benzene concentration of <0.0994 mg/kg, and a total BTEX concentration of 48.0 mg/kg. Additionally, the North Trench (5' BEB) showed a TPH concentration of 857 mg/kg, a benzene concentration of <0.00199 mg/kg, and a total BTEX concentration of 0.466 mg/kg.

### Stockpile Remediation

Once the excavation depths were achieved, the removed material was segregated into approximately 40-50 cubic yard stockpiles on the pad, worked and then sampled for evaluation. A total of thirty-five (35) stockpile samples (Stockpile #1 through Stockpile #35) were collected and submitted to the laboratory for TPH analysis by EPA method 8015 modified and BTEX by EPA Method 8021B. Copies of the laboratory analysis and chain-of-custody documentation are included in Appendix C. The laboratory results are summarized on Table 2.

Referring to Table 2, none of the samples collected showed TPH or benzene concentrations above the RRALs. However, Stockpile #1, Stockpile #4, Stockpile #11, Stockpile #20, and Stockpile #25 detected total BTEX concentrations of 56.2 mg/kg, 56.6 mg/kg, 57.7 mg/kg, 55.5 mg/kg, and 53.1 mg/kg, respectively. These stockpiled were reworked on the pad and resampled for TPH and BTEX, which showed the concentrations declined below the RRAL. The remaining stockpile samples showed total BTEX concentrations below 50 mg/kg. Based on the laboratory data, the stockpiled material was then used to backfill the excavation, as approved.



### **Conclusion and Recommendations**

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

Respectfully submitted, TETRA TECH

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Clair Gonzales, Project Manager

cc: Shelly Tucker - BLM Callie Karrigan - Marathon

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Ike Tavarez, Senior Project Manager, P.G.

# Figures



Mapped By: Isabel Marmolejo



Mapped By: Isabel Marmolejo





BORE HOLE SAMPLE LOCATIONS TRENCH SAMPLE LOCATIONS

EXCAVATED AREAS

SCALE: 1 IN = 49 FEET

Project : 212C-MD-01102.200

Lea County, New Mexico

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# Tables

### Table 1 Marathon Oil Company Madera 19 Federal #1 Lea County, New Mexico

Sample ID	Sample	Sample	Excavation	Soil	Status		TPH	(mg/kg)		Benzene	Toluene	Ethlybenzene	Xylene	Total BTEX	Chloride
	Date	Depth (ft)	Bottom (ft)	In-Situ	Removed	GRO	DRO	ORO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
South Excavation															
AH-1	2/8/2018	0-1	-		Х	8,940	8,360	-	17,300	2.41	161	27.1	500	691	161
		1-1.5	-		Х	56.3	474	-	530	<0.00199	0.0570	0.0381	0.942	1.04	61.5
		2-2.5	-		Х	-	-	-	-	-	-	-	-	-	54.8
		3-3.5	-		Х	-	-	-	-	-	-	-	-	-	50.0
		4-4.5	-		Х	-	-	-	-	-	-	-	-	-	38.8
		4.5-5.0	-		Х	-	-	-	-	-	-	-	-	-	437
South Bottomhole	3/9/2018	-	1.0		Х	7,150	7,260	350	14,800	4.61	95.9	28.1	489	615	413
	3/14/2018	-	2.0		Х	1,800	2,080	41.4	3,921	<1.00	34.4	10.2	151	196	-
Trench 1	3/20/2018	2	2		Х	1,800	4,330	114	6,244	<1.00	18.2	7.56	82.2	108	80
(South)		4	2		Х	2,160	3,070	52.4	5,282	<1.00	12.9	<1.00	239	252	192
		6	2		Х	1,990	2,380	39.4	4,409	<1.00	8.03	<1.00	144	152	80
		8	2		Х	6,210	5,420	123.0	11,753	<5.00	103	27.7	481	612	160
		10	2		Х	5,500	5,090	96.2	10,686	<2.00	127	31.4	430	589	112
BH-1	3/26/2018	2-3	2		Х	3,610	7,120	344	11,074	<1.00	51.8	18.0	233	303	-
(South)		6-7	2		Х	2,710	3,730	148	6,588	<1.00	18.9	14.1	270	303	-
		14-15	2		Х	2,780	3,380	129	6,289	<1.00	45.5	18.3	245	308	-
		24-25	2	Х		<10.0	38.6	<10.0	38.6	<0.050	0.239	<0.050	0.439	0.678	-
	"	29-30	2	Х		<10.0	105	<10.0	105	<0.050	0.070	<0.050	0.214	<0.300	-
		34-35	2	Х		<10.0	108	<10.0	108	<0.050	<0.050	<0.050	<0.150	<0.300	-
Bottomhole South #1	3/29/2018	0-1	5		Х	8,780	9,240	<74.9	18,020	<2.01	13.7	8.72	204	226	-
Bottomhole South #2	3/29/2018	0-1	5		Х	1,510	2,370	<150	3,880	<0.998	14.7	8.6	207	230	-
Bottomhole South	4/2/2018	-	15-16		Х	859	938	29	1,830	<0.100	6.28	2.66	47.1	56.0	-
Bottomhole South	4/6/2018	-	20'	Х		<15.0	<15.0	<15.0	<15.0	<0.00201	<0.00201	<0.00201	0.00558	0.00558	-

### Table 1 Marathon Oil Company Madera 19 Federal #1 Lea County, New Mexico

Sample ID	Sample	le Sample	nple Excavation	Soil	Status		TPH	(mg/kg)		Benzene Toluene	Ethlybenzene Xylene	Total BTEX C	Chloride		
Sample ID	Date	Depth (ft)	Bottom (ft)	In-Situ	Removed	GRO	DRO	ORO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Middle Excavation															
AH-2	2/8/2018	0-1	-		Х	8,660	5,360	-	14,020	3.21	188	27.3	510	729	143
	"	1-1.5	-		Х	<15.0	18.2	-	18.2	<0.00201	0.00271	<0.00201	0.0141	0.0168	52.8
	"	2-2.5	-		Х	-	-	-	-	-	-	-	-	-	26.3
		3-3.5	-		Х	-	-	-	-	-	-	-	-	-	54.5
	"	4-4.5	-		Х	-	-	-	-	-	-	-	-	-	68.9
	"	5-5.5	-		Х	-	-	-	-	-	-	-	-	-	<4.90
Trench 2	3/20/2018	2	2		Х	245	473	<10.0	718	<0.050	2.58	1.53	21.0	25.0	64
(Middle)		4	2		Х	<10.0	<10.0	<10.0	<10.0	<0.050	0.143	<0.050	0.422	0.565	176
	"	6	2		Х	1,020	1,370	27.6	2,418	<0.500	6.10	3.95	69	79.1	96
	"	8	2		Х	2,470	2,740	50.1	5,260	<1.00	27.5	12.5	209	249.0	112
BH-2	3/26/2018	2-3	2		Х	247	786	30.8	1,064	< 0.050	1.70	1.17	13.5	16.3	-
(Middle)	"	6-7	2		Х	2,610	3,480	129	6,219	3.88	71.6	18.9	243	337	-
	"	9-10	2		Х	267	900	25.4	1,192	0.060	1.16	0.660	8.78	10.7	-
	"	14-15	2	Х		<10.0	37.5	<10.0	37.5	<0.050	<0.050	<0.050	0.228	<0.300	-
Bottomhole Middle	3/29/2018	0-6"	10		Х	1,100	1,340	<15.0	2,440	< 0.0994	3.03	2.43	42.5	48.0	-
North Excavation															
AH-3	2/8/2018	0-1	-		Х	6,450	5,670	-	12,120	7.94	203	22.6	388	622	<4.90
	"	1-1.5	-		Х	300.0	836	-	1,136	<0.101	0.324	0.289	7.62	8.23	<4.91
		2-2.5	-		Х	-	-	-	-	-	-	-	-	-	13.4
		3-3.5	-		Х	-	-	-	-	-	-	-	-	-	18.9
	"	4-4.5	-		Х	-	-	-	-	-	-	-	-	-	40.6
	"	5-5.5	-		Х	-	-	-	-	-	-	-	-	-	45.7
North Bottomhole	3/8/2018	-	1.0		Х	3,700	3,520	138	7,360	<0.398	31.3	12.1	194	238	174
	3/14/2018	-	2.0		Х	4,820	7,030	147	11,997	<2.00	63.0	25.3	399	487	-
Trench 3	3/20/2018	2	2		Х	312	2,710	76.9	3,099	< 0.050	1.13	<0.050	7.02	8.15	240
(North)	"	4	2		Х	724	2,260	41.4	3,025	<0.200	1.65	3.34	39.1	44	160
	"	6	2	Х		1,130	1,590	26.9	2,747	<0.500	4.11	4.35	87.1	95.6	80
	"	8	2	Х		3,660	4,070	86.5	7,817	<2.00	35.5	21.6	434	491	160
BH-3	3/26/2018	2-3	2		Х	18.1	335	<10.0	353	< 0.050	0.099	0.208	0.481	0.788	-
(North)		4-5	2		х	512	1,750	45.0	2,307	<0.200	2.59	4.89	34.9	42.4	-
	"	6-7	2	Х		<10.0	121	<10.0	121	<0.500	<0.050	0.062	0.432	0.494	-
	"	9-10	2	Х		<10.0	142	<10.0	142	<0.050	<0.050	<0.050	0.310	0.310	-
	"	14-15	2	Х		<10.0	44.5	<10.0	44.5	<0.500	<0.500	<0.500	<0.150	<0.300	-
North Trench @ 5' (BEB) confirmation	4/6/2018	10'	5	Х		174	660	22.8	857	<0.00199	0.00980	0.00878	0.447	0.466	-
South Sidewall	3/9/2018	-	-	Х		<15.0	92.9	<15.0	92.9	<0.00200	0.00516	<.00200	0.0320	0.0372	11.4
North Sidewall	3/9/2018	-	-	Х		<15.0	92.9	<15.0	92.9	<0.00200	0.00516	<.00200	0.0320	0.0372	11.4
Northeast Sidewall	3/9/2018	_	_		X	1 160	1 370	83.5	2 610	0.250	15.3	4 10	63.7	83.4	<4.94
Northouse Oldewall	3/14/2018	-	-	Х	~	-	-	-		<0.050	0,205	0,100	0.617	0.922	-
Nextlement Of L 1	0/0/0016	1				400	4.050	70	4.050	0.0000	0.0100	0.100	0.010	0.022	
Northwest Sidewall	3/9/2018	-	-	X		423	1,350	/8	1,850	<0.00200	0.0166	0.0462	0.246	0.309	11.4
Southeast Sidewall	3/9/2018	-	-	Х		<14.9	<14.9	<14.9	<14.9	<0.00199	0.00309	<0.00199	0.0118	0.0149	<4.99
Southwest Sidewall	3/9/2018	-	-	Х		89.5	595	27.5	712	<0.00200	0.00968	0.0255	0.0168	0.0520	<4.95

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Not Analyzed Excavated Depths

### Table 2 Marathon Oil Company Madera 19 Federal #1 Lea County, New Mexico

Sample ID	Sample	Sample	Soil	Status		ТРН	(mg/kg)		Benzene	Toluene	Ethlybenzene	Xylene	Total BTEX
Sample ID	Date	Depth (ft)	In-Situ	Removed	GRO	DRO	ORO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Stockpile #1	3/28/2018	-	Х		1,690	1,870	62.8	3,623	<0.0504	4.46	2.11	49.6	56.2
	4/2/2018	-	Х		-	-	-	-	<0.00202	0.0564	0.00942	0.702	0.768
Stockpile #2	3/28/2018	-	Х		1,180	1,780	63.1	3,023	<0.0200	1.78	0.990	41.6	44.4
Stockpile #3	3/28/2018	-	Х		1300	2010	70.3	3,380	<0.0996	3.46	1.62	43.6	48.7
Stockpile #4	3/28/2018	-	Х		1290	2010	72.0	3,370	<0.100	4.49	2.05	50.1	56.6
	4/2/2018	-	Х		-	-	-	-	<0.00199	0.0296	<0.00199	0.583	0.613
Stockpile #5	3/28/2018	-	Х		1340	2210	79.9	3630	<0.100	3.70	1.65	44.1	49.5
Stockpile #6	3/28/2018	-	Х		725	1130	40.8	1900	<0.101	2.25	0.754	24.9	27.9
Stockpile #7	3/28/2018	-	Х		508	988	32.0	1530	<0.0996	0.938	0.400	14.5	15.9
Stockpile #8	3/28/2018	-	Х		626	1170	42.7	1840	<0.100	1.49	0.380	17.4	19.3
Stockpile #9	3/28/2018	-	Х		431	888	32.3	1350	<0.0996	0.773	0.233	11.5	12.5
Stockpile #10	3/28/2018	-	Х		812	1110	40.4	1960	<0.0998	2.49	0.899	25.1	28.5
Stockpile #11	3/28/2018	-	Х		1370	1440	52.1	2,860	<0.100	6.42	1.97	49.3	57.7
	4/2/2018	-	Х		-	-	-	-	<0.00201	0.00566	<0.00201	0.580	0.586
Stockpile #12	3/28/2018	-	Х		646	1000	36.2	1680	<0.101	2.21	0.745	23.6	26.6
Stockpile #13	4/3/2018	-	Х		588	1,610	<15.0	2,200	<0.100	0.363	0.222	14.8	15.4
Stockpile #14	4/3/2018	-	Х		603	1,650	<15.0	2,250	<0.100	1.02	0.506	16.6	18.1
Stockpile #15	4/3/2018	-	Х		606	1,620	<14.9	2,230	<0.0998	1.89	0.509	21.9	24.3
Stockpile #16	4/3/2018	-	Х		299	1,360	<15.0	1,660	<0.501	0.141	0.139	4.59	4.87
Stockpile #17	4/3/2018	-	Х		417	1,670	17.7	2,100	<0.00201	0.0177	0.00684	0.704	0.729
Stockpile #18	4/3/2018	-	Х		758	2,030	<15.0	2,790	<0.0498	1.73	0.646	18.1	20.5
Stockpile #19	4/3/2018	-	Х		968	1,970	<15.0	2,940	<0.0499	1.56	0.670	19.2	21.5

# Table 2Marathon Oil CompanyMadera 19 Federal #1Lea County, New Mexico

Sample ID Sample		Sample	Soil	Status		TPH	(mg/kg)		Benzene	Toluene	Ethlybenzene	Xylene	Total BTEX
Sample ID	Date	Depth (ft)	In-Situ	Removed	GRO	DRO	ORO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Stockpile #20	4/3/2018	-		Х	1,170	2,190	<15.0	3,360	<0.100	4.72	1.75	49.0	55.5
	4/6/2018	-	Х		1,030	1,590	47.6	2,670	<0.0998	1.73	0.521	28.1	30.3
Stockpile #21	4/3/2018	-	Х		1,250	2,510	<15.0	3,760	<0.0504	2.63	0.893	25.0	28.6
Stockpile #22	4/4/2018	-	Х		659	1,240	41.8	1,940	<0.00201	0.0286	0.0139	0.592	0.635
Stockpile #23	4/4/2018	-	Х		1,030	1,550	52.3	2,630	<0.00202	0.0481	0.0113	0.527	0.586
Stockpile #24	4/4/2018	-	Х		1,170	1,680	55.9	2,910	<0.00199	0.0493	0.0197	0.608	0.677
Stockpile #25	4/6/2018	-	Х		918	1,340	40.2	2,300	<0.0994	3.76	2.38	47.0	53.1
	4/11/2018	-	Х		241	1,660	30.8	1,930	<0.00200	0.0614	0.00511	0.725	0.792
Stockpile #26	4/6/2018	-	Х		1,060	1,730	58.7	2,850	<0.100	3.00	1.45	34.5	39.0
Stockpile #27	4/6/2018	-	Х		945	1,340	42.4	2,330	<0.0990	2.79	1.17	32.7	36.6
Stockpile #28	4/6/2018	-	Х		998	1,530	44.9	2,570	<0.0998	1.53	0.873	26.4	28.8
Stockpile #29	4/6/2018	-	Х		1,240	1,690	51.6	2,980	<0.102	3.21	1.25	39.7	44.2
Stockpile #30	4/6/2018	-	Х		1,230	1,710	55.4	3,000	<0.0992	4.03	1.70	42.5	48.2
Stockpile #31	4/6/2018	-	Х		1,130	1,900	59.2	3,090	<0.0996	3.28	1.33	37.4	42.0
Stockpile #32	4/6/2018	-	Х		1,010	1,800	58.2	2,870	<0.0994	1.90	0.792	28.9	31.6
Stockpile #33	4/6/2018	-	Х		929	1,750	53.6	2,730	<0.100	1.60	0.523	27.0	29.1
Stockpile #34	4/6/2018	-	Х		1,290	2,100	61.6	3,450	<0.0998	3.28	1.51	39.1	43.9
Stockpile #35	4/6/2018	-	Х		1,300	2,100	59.5	3,460	<0.101	3.88	1.65	42.4	47.9

(-)

Not Analyzed

Stockpiles Worked Onsite and Remediated Below RRALs

# Photos



View West - Excavated Area of BH-1



View South – Excavated Area of BH-2



View South - Excavated area of BH-3



View South – Excavation Area



View North – Excavation Area



View North – Backfilled Excavation Area



View North – Backfilled Excavation Area



View South – Backfilled Excavation Area

# Appendix A

State of New Mexico **Energy Minerals and Natural Resources** 

> **Oil Conservation Division** 1220 South St. Francis Dr. Canta E. ND & OBEOE

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

			C	anta Fe	e, NM 8/3	200					
		Kel	ease Notifi	catio	n and Co	orrective A	ction	$\Sigma$			
Numerof		011 0	<u> </u>		OPERA'	TOR	In:	itial Report		Final Report	
Address 2423	pany Marathon	Oil Permian	LLC		Contact Cal	llie Karrigan					
Facility Name	• Madera 19 Fe	<u>sbau, inivi 88</u> ideral 1			Telephone I	No. 405-202-102	28 (cell) 575-2	97-0956 (offi	ice)		
Tuenny Tunne						be On and gas pi	roduction facili				
Surface: Own	er: Federal		Mineral:	Owner:	er: API No. : 33-025-36645						
			LOC	ATIO	ION OF RELEASE						
Unit Letter S	Section Towns	ship Range	Feet from the	North/	South Line	Feet from the	East/West Line	e County			
	203	1 33 1		<u> </u>		<u> </u>	l	LEA			
			Latitude 32	2.026836	5.Longitud	e -103.411465					
			NAT	<b>FURE</b>	OF REL	EASE					
Type of Release	: Condensate and	1 Produced Wa	iter		Volume of	Release 150 bbl	s Volume	Recovered N	lone		
Source of Relea	se: 500 bbl tank				Date and H	lour of Occurrenc	e Date an	d Hour of Dis	cover	y	
Was Immediate	Notice Given?				If YES To	Whom?		18 12:00 pm			
		🛛 Yes 🛛	🗌 No 🔲 Not R	Required	Olivia Yu	, whom.					
By Whom? Call	lie Karrigan			1	Date and H	lour 1/31/2018 5:	:40 pm				
Was a Watercou	irse Reached?		Z No.		If YES, Vo	olume Impacting t	he Watercourse.				
If a Watercourse	e was Impacted, I	Describe Fully.	*								
Not applicable.											
	·										
Describe Cause	of Problem and F	Remedial Actio	n Taken.*								
were observed.	ited in releasing	1 DU DOIS ONIO 1	he pad. The tank	was strap	ped to identi	fy remaining fluid	l level and then h	auled off. No	standi	ng fluids	
Describe Area A	fforted and Class	A	1	_							
Condensate and	produced water of	nup Action Ta overfilled seco	ken.* ndary containmen	it (annrox	imately 56'r	33') and an additi	onal area (annra	vienetals: 401-1	17) 4	41.1.1	
will collect soil	samples and asse	ss spill area.	ioury containinen	a (approx	annatory 50 x	55 y and an auditi	onai area (appro.	cimatery 49 x:	55). A	third party	
The sector sector											
regulations all o	that the informati	on given above ired to report a	e is true and comp pd/or file certain	plete to the	te best of my	knowledge and u	nderstand that pu	rsuant to NM	OCD I	ules and	
public health or	the environment.	The acceptan	ce of a C-141 rep	ort by the	NMOCD m	arked as "Final Re	uve actions for n eport" does not n	cleases which clieve the oper	may e	ndanger f liability	
should their ope	rations have faile	d to adequatel	y investigate and i	remediate	e contaminati	on that pose a thre	eat to ground wat	er, surface wa	ter, hi	iman health	
or the environm	ent. In addition, l	NMOCD acce	ptance of a C-141	report do	pes not reliev	e the operator of r	esponsibility for	compliance w	ith an	y other	
redenii, state, or		ricgulations.				OIL CONS	EDVATION		NNT		
1						<u>OIL CONS</u>	<u>DERVATIOI</u>		<u>IN</u>	ĺ	
Signature: Call	ie Karrigan			56							
Printed Name: R	aquel Charon				Approved by	Environmental Sp	ecialist:				
Tinted Pane. I	aquer enacion										
Title: HES Profe	essional - Environ	imental		/	Approval Date	<u>e:</u>	Expiration	n Date:	_		
   E-mail Address	enkarrigan@mar	rathonoil com			Ponditions - 6	A					
man Address.	<u>envarigan@illa</u>	anonon.com		—   '	Londitions of	Approval:		Attachad			
Date:								Anached			
Phone: 405-202	2-1028 (cell) 57.	<u>5-297-0956 (</u>	office)								
Attach Addition	nal Shoote If Ma	OOCCOP1/									

\* Attach Additional Sheets If Necessary

Surface Owner: Federal

State of New Mexico Energy Minerals and Natural Resources

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

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

API No. 33-025-36645

### **Release Notification and Corrective Action**

	OPERATOR	Initial Report	Final Report
Name of Company Marathon Oil Permian, LLC.	Contact Callie Karrigan		
Address 2423 Bonita St, Carlsbad, NM 88220	Telephone No. (575)297-0956		
Facility Name Madera 19 Federal 1	Facility Type <b>Production Faci</b>	lity	

### LOCATION OF RELEASE

Mineral Owner

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
L	19	26S	35E					Lea

Latitude N 32.026836° Longitude W 103.411465°

### NATURE OF RELEASE

Type of Release: Condensate and Produced Water	Volume of Release 150 bbls	Volume Recovered 0 bbls						
Source of Release: 500 bbl tank	Date and Hour of Occurrence	Date and Hour of Discovery						
	unknown	01/31/2018 12:00pm						
Was Immediate Notice Given?	If YES, To Whom?							
Yes No Not Required	Olivia Yu – NMOCD							
By Whom? Callie Karrigan	Date and Hour 01/31/2018 540 p	om						
Was a Watercourse Reached?	If YES, Volume Impacting the Wa	atercourse.						
🗌 Yes 🖾 No	N/A							
If a Watercourse was Impacted, Describe Fully.*								
N/A	By Olivia Yu a	at 2:09 pm, Sep 13, 2018						
Describe Cause of Problem and Remedial Action Taken.*								
A tank leak resulted in the release of 150 bbls of fluids onto the pad area	. Condensate and produced water ove	rilled the secondary containment and						
Inigrated onto the pad.								
Describe Area Affected and Cleanup Action Taken.*								
······································								
Tetra Tech inspected site and collected samples to define spills extent. See	oil that exceeded RRAL was removed	and hauled away for proper disposal or						
where worked onsite and used to backfill the excavation, once laboratory	data showed the soils were below the	RRALs. Site was then brought up to surface						
grade with clean backfill material. Tetra Tech prepared closure report an	d submitted to NMOCD for review.							
I hereby certify that the information given above is true and complete to	the best of my knowledge and underst	and that pursuant to NMOCD rules and						
regulations all operators are required to report and/or file certain release	notifications and perform corrective ad	ctions for releases which may endanger						
should their operations have failed to adequately investigate and remedia	the NMOCD marked as Final Report	does not relieve the operator of hability						
or the environment. In addition NMOCD acceptance of a C-141 report.	does not relieve the operator of respon	gibility for compliance with any other						
federal, state, or local laws and/or regulations.	does not reneve the operator of respon	sionity for compliance with any other						
	OIL CONSER	VATION DIVISION						
Ch. D	<u>OIL CONSER</u>	VATION DIVISION						
Signature:		Call						
	Approved by District Supervisor	$\cap^{Q}$						
Printed Name: Ike Tavarez	rippio ted by District Supervisor.							
	0/13/2018	xx/xx/xxxx						
Title: Project Manager	Approval Date: 3713/2010	Expiration Date:						
E-mail Address: Ike.Tavarez@TetraTech.com	Conditions of Approval:	Attached						
Date: 06/18/18 Phone: (432) 682-4559	BLM approval	_						

\* Attach Additional Sheets If Necessary



Appendix B

### Water Well Data Average Depth to Groundwater (ft) Marathon - Madera 19 Federal 1 Lea County, New Mexico 25 South 35 East

	25 Sc	outh	34	East	
6	5	4	3	2	1
					260
7	8	9	10	11	12
18	17	16	15 <b>135</b>	14	13
19	20	21	22	23	24 <b>300</b>
30	29 <b>50</b>	28	27	26	25
31	32	33	34	35	36

6	5	4	3 <b>108</b>	2	1
	165				
7	8	9	10	11	12
18	17	16	15	14	13
230					
19	20	21	22	23	24
		218			
30	29	28	27	26	25
80					
31	32	33	34	35	36

	25 So	outh	36		
6 <b>295</b>	5	4	3	2	1
7	8	9	10300 180	11	12
18	17	16	15 <b>120</b>	14	13
19	20	21	22	23 <b>53.7</b>	24 <b>455</b>
30	29	28	27	26	25
31	32	33 <mark>80</mark>	34	35	36

	26 Sc	outh	34	East	
6 1 <mark>60</mark> 175	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

	26 Sc	outh	35	East	
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13 <b>230</b>
19	20	21	22	23	24 <b>250</b>
30	29	28	27	26	25
31	32	33	34	35	36

	26 So	outh	36	East	
6	5	4	3	2	1
7	8	9 <b>175</b> 177	10	11	12
18 <b>220</b>	17	16	15	14	13
19 1 <u>9</u> 8	20	21	22	23 1 <b>51</b>	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

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)	(R=POD replaced, O=orpha C=the file closed)	has been ned, e is	ו (qu (qu	iarter iarter	s are s are	1=NV small	W 2=N est to l	E 3=SW largest)	7 4=SE) (NAD8	3 UTM in meter	rs)	(In feet)	
		POD		•	~ ~								
BOD Number	Cada	Sub-	County	Q	Q G A	<b>S</b>	True	Dura	v	v	DonthWallDor	V AthWatan Ca	Vater
C 03795 POD1	Coue	C	LE	4	4 3	24	26S	35E	658419	3544221	496	250	24(
<u>J 00005 POD1</u>			LE	2	2 2	13	26S	35E	659200	3547174* 🧧	601	230	37
										Average Depth	to Water:	240 fee	t
										Minim	um Depth:	230 fee	t
										Maximu	um Depth:	250 fee	t
Record Count: 2													
PLSS Search:													
Township: 26S	Range:	35E											

2/26/18 1:33 PM

WATER

Appendix C

## Analytical Report 576035

for Tetra Tech- Midland

**Project Manager: Ike Tavarez** 

Madera la Fed. 1

### 21-FEB-18

Collected By: Client





### 1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122): Texas (T104704215-17-23), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054) Oklahoma (2017-142)

> Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-17-15), 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 (T104704400-17-13) 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)



21-FEB-18



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

Reference: XENCO Report No(s): **576035 Madera la Fed. 1** 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) 576035. 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. 576035 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,

Huns hoah

Kelsey Brooks Project Manager

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994. Certified and approved by numerous States and Agencies. A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America



## Sample Cross Reference 576035



## Tetra Tech- Midland, Midland, TX

Madera la Fed. 1

Matrix	Date Collected	Sample Depth	Lab Sample Id
S	02-08-18 00:00		576035-001
S	02-08-18 00:00		576035-002
S	02-08-18 00:00		576035-003
S	02-08-18 00:00		576035-004
S	02-08-18 00:00		576035-005
S	02-08-18 00:00		576035-006
S	02-08-18 00:00		576035-007
S	02-08-18 00:00		576035-008
S	02-08-18 00:00		576035-009
S	02-08-18 00:00		576035-010
S	02-08-18 00:00		576035-011
S	02-08-18 00:00		576035-012
S	02-08-18 00:00		576035-013
S	02-08-18 00:00		576035-014
S	02-08-18 00:00		576035-015
S	02-08-18 00:00		576035-016
S	02-08-18 00:00		576035-017
S	02-08-18 00:00		576035-018

AH 1 (0-1)
AH 1 (1-1.5)
AH 1 (2-2.5)
AH 1 (3-3.5)
AH 1 (4-4.5)
AH 1 (4.5-5)
AH 2 (0-1)
AH 2 (1-1.5)
AH 2 (2-2.5)
AH 2 (3-3.5)
AH 2 (4-4.5)
AH 2 (5-5.5)
AH 3 (0-1
AH 3 (1-1.5)
AH 3 (2-2.5)
AH 3 (3-3.5)
AH 3 (4-4.5)
AH 3 (5-5.5)

Sample Id



Client Name: Tetra Tech- Midland Project Name: Madera la Fed. 1

Project ID: Work Order Number(s): 576035 Report Date: 21-FEB-18 Date Received: 02/09/2018

### Sample receipt non conformances and comments:

### Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments: Batch: LBA-3040996 BTEX by EPA 8021B Surrogate 1,4-Difluorobenzene recovered below QC limits. Matrix interferences is suspected; data confirmed by re-analysis. Samples affected are: 575590-005 S,575590-005 SD,576035-002. Surrogate 4-Bromofluorobenzene recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis. Samples affected are: 576035-002. Samples affected are: 576035-002. Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

### Batch: LBA-3041032 TPH By SW8015 Mod

Lab Sample ID 576035-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Gasoline Range Hydrocarbons recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Diesel Range Organics recovered above QC limits in the Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 576035-001, -002, -007, -008, -013, -014.

The Laboratory Control Sample for Gasoline Range Hydrocarbons, Diesel Range Organics is within laboratory Control Limits, therefore the data was accepted.

Batch: LBA-3041091 BTEX by EPA 8021B

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

Batch: LBA-3041576 Inorganic Anions by EPA 300/300.1

Lab Sample ID 576035-002 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered above QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 576035-001, -002, -003, -004, -005, -006, -007, -008, -009.

The Laboratory Control Sample for Chloride is within laboratory Control Limits, therefore the data was accepted.



## CASE NARRATIVE

Client Name: Tetra Tech- Midland Project Name: Madera la Fed. 1

Project ID: Work Order Number(s): 576035 Report Date: 21-FEB-18 Date Received: 02/09/2018

Batch: LBA-3041591 Inorganic Anions by EPA 300/300.1

Lab Sample ID 576035-010 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered above QC limits in the Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 576035-010, -011, -012, -013, -014, -015, -016, -017, -018.

The Laboratory Control Sample for Chloride is within laboratory Control Limits, therefore the data was accepted.



Certificate of Analysis Summary 576035

Tetra Tech- Midland, Midland, TX Project Name: Madera la Fed. 1



Project Id:Contact:Ike TavarezProject Location:Lea County New Mexico

Date Received in Lab:Fri Feb-09-18 10:54 amReport Date:21-FEB-18Project Manager:Kelsey Brooks

	Lab Id:	576035-0	001	576035-	002	576035-003		576035-004		576035-005		576035-006	
Analysis Paguested	Field Id:	AH 1 (0	-1)	AH 1 (1-1.5)		AH 1 (2-2	2.5)	AH 1 (3-3.5)		AH 1 (4-4.5)		AH 1 (4.5-5)	
Analysis Kequestea	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Feb-08-18	Feb-08-18 00:00		Feb-08-18 00:00		00:00	Feb-08-18 00:00		Feb-08-18 00:00		Feb-08-18	00:00
BTEX by EPA 8021B	Extracted:	Feb-14-18	Feb-14-18 10:00		Feb-12-18 17:00								
	Analyzed:	Feb-14-18	Feb-14-18 12:55		Feb-12-18 21:37								
	Units/RL:	mg/kg	RL	mg/kg	RL								
Benzene		2.41	2.02	< 0.00199	0.00199								
Toluene		161	2.02	0.0570	0.00199								
Ethylbenzene		27.1	2.02	0.0381	0.00199								
m,p-Xylenes		382	4.04	0.659	0.00398								
o-Xylene		118	2.02	0.283	0.00199								
Total Xylenes		500	2.02	0.942	0.00199								
Total BTEX		691	2.02	1.04	0.00199								
Inorganic Anions by EPA 300/300.1	Extracted:	Feb-19-18	11:00	Feb-19-18 11:00 Feb-19-18 11:00		11:00	Feb-19-18 11:00		Feb-19-18 11:00		Feb-19-18 11:00		
	Analyzed:	Feb-19-18	15:02	Feb-19-18	16:16	Feb-19-18	17:02	Feb-19-18	17:07	Feb-19-18 1	7:12	Feb-19-18	17:18
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		163	4.91	61.5	4.90	54.8	4.90	50.0	5.00	38.8	4.90	437	4.99
TPH By SW8015 Mod	Extracted:	Feb-13-18	07:00	Feb-13-18	07:00								
	Analyzed:	Feb-14-18	03:56	Feb-13-18	11:05								
	Units/RL:	mg/kg	RL	mg/kg	RL								
Gasoline Range Hydrocarbons	1	8940	74.9	56.3	15.0								
Diesel Range Organics		8360	74.9	474	15.0								

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Huns Boah

Kelsey Brooks Project Manager



Ike Tavarez

**Contact:** 

**Project Location:** 

Certificate of Analysis Summary 576035

Tetra Tech- Midland, Midland, TX Project Name: Madera la Fed. 1



Lea County New Mexico

Date Received in Lab: Fri Feb-09-18 10:54 am **Report Date:** 21-FEB-18 Project Manager: Kelsey Brooks

	Lab Id:	576035-0	007	576035-0	008	576035-0	09	576035-010		576035-011		576035-012	
Analysis Paguested	Field Id:	AH 2 (0	-1)	AH 2 (1-1.5)		AH 2 (2-2	2.5)	AH 2 (3-3.5)		AH 2 (4-4.5)		AH 2 (5-5.5)	
Analysis Kequesiea	Depth:												
	Matrix:	SOIL		SOIL	SOIL			SOIL		SOIL		SOIL	
	Sampled:	Feb-08-18	Feb-08-18 00:00		Feb-08-18 00:00		00:00	Feb-08-18 (	Feb-08-18 00:00		Feb-08-18 00:00		00:00
BTEX by EPA 8021B	Extracted:	Feb-14-18 10:00		Feb-12-18	17:00								
	Analyzed:	Feb-14-18 12:18		Feb-12-18	21:18								
	Units/RL:	mg/kg	RL	mg/kg	RL								
Benzene		3.21	2.00	< 0.00201	0.00201								
Toluene		188	2.00	0.00271	0.00201								
Ethylbenzene		27.3	2.00	< 0.00201	0.00201								
m,p-Xylenes		386	3.99	0.00947	0.00402								
o-Xylene		124	2.00	0.00460	0.00201								
Total Xylenes		510	2.00	0.0141	0.00201								
Total BTEX		729	2.00	0.0168	0.00201								
Inorganic Anions by EPA 300/300.1	Extracted:	Feb-19-18	11:00	Feb-19-18 11:00		Feb-19-18 11:00 Feb-19-18 14:00		4:00	Feb-19-18 14:00		Feb-19-18 14:00		
	Analyzed:	Feb-19-18	17:28	Feb-19-18	17:41	Feb-19-18 1	7:46	Feb-19-18 1	8:18	Feb-19-18 1	8:34	Feb-19-18 1	18:39
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		143	4.92	52.8	4.96	26.3	4.94	54.5	4.92	68.9	5.00	<4.90	4.90
TPH By SW8015 Mod	Extracted:	Feb-13-18	07:00	Feb-13-18	07:00								
	Analyzed:	Feb-14-18	07:20	Feb-13-18	11:45								
	Units/RL:	mg/kg	RL	mg/kg	RL								
Gasoline Range Hydrocarbons		8660	74.9	<15.0	15.0								
Diesel Range Organics		5360	74.9	18.2	15.0								

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing,

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Huns Boah

Kelsey Brooks Project Manager



Ike Tavarez

Lea County New Mexico

**Contact:** 

**Project Location:** 

Certificate of Analysis Summary 576035

Tetra Tech- Midland, Midland, TX Project Name: Madera la Fed. 1



Date Received in Lab: Fri Feb-09-18 10:54 am Report Date: 21-FEB-18 Project Manager: Kelsey Brooks

	Lab Id:	576035-0	013	576035-0	14	576035-0	15	576035-016		576035-017		576035-018	
Analysis Paguastad	Field Id:	AH 3 (0-	-1	AH 3 (1-1.5)		AH 3 (2-2	2.5)	AH 3 (3-3.5)		AH 3 (4-4.5)		AH 3 (5-5	5.5)
Analysis Kequesiea	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Feb-08-18 (	Feb-08-18 00:00		Feb-08-18 00:00		00:00	Feb-08-18 00:00		Feb-08-18 00:00		Feb-08-18 00:00	
BTEX by EPA 8021B	Extracted:	Feb-14-18 10:00		Feb-14-18 10:00									
	Analyzed:	Feb-14-18 12:36		Feb-14-18 15:43									
	Units/RL:	mg/kg	RL	mg/kg	RL								
Benzene		7.94	2.00	< 0.101	0.101								
Toluene		203	2.00	0.324	0.101								
Ethylbenzene		22.6	2.00	0.289	0.101								
m,p-Xylenes		301	4.01	5.30	0.201								
o-Xylene		87.4	2.00	2.32	0.101								
Total Xylenes		388	2.00	7.62	0.101								
Total BTEX		622	2.00	8.23	0.101								
Inorganic Anions by EPA 300/300.1	Extracted:	Feb-19-18	14:00	Feb-19-18 1	4:00	Feb-19-18 1	Feb-19-18 14:00 Feb-19-18 14:00		4:00	Feb-19-18 14:00		Feb-19-18 14:00	
	Analyzed:	Feb-19-18	18:44	Feb-19-18 1	8:50	Feb-19-18 1	9:05	Feb-19-18 1	9:11	Feb-19-18 1	9:16	Feb-19-18	19:21
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		<4.90	4.90	<4.91	4.91	13.4	4.90	18.9	5.00	40.6	4.90	45.7	4.90
TPH By SW8015 Mod	Extracted:	Feb-13-18 (	07:00	Feb-13-18 (	07:00								
	Analyzed:	Feb-14-18 (	07:41	Feb-13-18 1	2:25								
	Units/RL:	mg/kg	RL	mg/kg	RL								
Gasoline Range Hydrocarbons		6450	74.8	300	15.0								
Diesel Range Organics		5670	74.8	836	15.0								

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Huns Boah

Kelsey Brooks Project Manager

Final 1.000


### **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
- + NELAC certification not offered for this compound.
- \* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

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(602) 437-0330	
	(281) 240-4200 (214) 902 0300 (210) 509-3334 (432) 563-1800 (602) 437-0330



Project Name: Madera la Fed. 1

Work Or	ders: 57603	35,		Project ID:			
Lab Batch	#: 3040996	Sample: 576035-008 / SMP	Batch	n: 1 Matrix:	Soil		
Units:	mg/kg	Date Analyzed: 02/12/18 21:18	SU	RROGATE RI	ECOVERY	STUDY	
	BTE	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1.4-Difluor	obenzene		0.0322	0.0300	107	80-120	
4-Bromoflu	orobenzene		0.0322	0.0300	94	80-120	
Lab Batch	#: 3040996	Sample: 576035-002 / SMP	Batch	n: 1 Matrix:	Soil	00 120	
Units:	mg/kg	Date Analyzed: 02/12/18 21:37	SU	RROGATE RI	ECOVERY	STUDY	
	BTE	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1 4-Difluor	obenzene		0.0225	0.0300	75	80-120	**
4-Bromoflu	orobenzene		0.0583	0.0300	194	80-120	**
Lab Batch	#: 3041032	Sample: 576035-002 / SMP	Batch	n: 1 Matrix:	Soil	00 120	
Units:	mg/kg	<b>Date Analyzed:</b> 02/13/18 11:05	SU	RROGATE RI	ECOVERY	STUDY	
	TPH	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			נען		
1-Chlorooct	tane		95.6	99.7	96	70-135	
o-Terpheny	l //	0 b 576025 000 / 000	52.3	49.9	105	70-135	
Lab Batch	#: 3041032	Sample: 576035-0087 SMP	Batch	i: 1 Matrix:	5011		
Units:	mg/kg	Date Analyzed: 02/13/18 11:45	SU	RROGATE RI	ECOVERY	STUDY	
	TPH	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	tane		102	99.8	102	70-135	
o-Terpheny	1		50.9	49.9	102	70-135	
Lab Batch	<b>#:</b> 3041032	Sample: 576035-014 / SMP	Batch	n: 1 Matrix:	Soil		
Units:	mg/kg	Date Analyzed: 02/13/18 12:25	SU	RROGATE RI	ECOVERY	STUDY	
	TPH	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
				1	1		
1-Chlorooct	tane		102	99.9	102	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



Project Name: Madera la Fed. 1

Work Or	rders: 57603	5, Somelar 576025 001 / SMB	Datah	Project ID:	Soil		
Lab Datch	#: 3041032	<b>Data Analyzed:</b> $02/14/18 03:56$	Datch				
Units.	mg/kg	Date Analyzeu: 02/14/18 05.50	SUF	ROGATE R	ECOVERY	STUDY	
	TPH I	3y SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes					
1-Chlorooct	tane		117	99.9	117	70-135	
o-Terpheny	1		54.5	50.0	109	70-135	
Lab Batch	#: 3041032	Sample: 576035-007 / SMP	Batch	: 1 Matrix:	: Soil		
Units:	mg/kg	Date Analyzed: 02/14/18 07:20	SUF	RROGATE R	ECOVERY	STUDY	
	TPH I	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	tane	Anaryus	102	00.8	102	70.125	
o-Terpheny	1		55.2	40.0	102	70-135	
Lab Batch	#• 3041032	Sample: 576035-013 / SMP	Batch	49.9	Soil	/0-133	
Lab Datch	mg/kg	Deta Apolyzod: 02/14/18 07:41	Daten				
	iiig/kg	Date Analyzeu: 02/14/18 07.41	SUF	ROGATE R	ECOVERY	STUDY	
	TPH I	3y SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooct	tane		82.5	99.7	83	70-135	
o-Terpheny	1		45.4	49.9	91	70-135	
Lab Batch	#: 3041091	Sample: 576035-007 / SMP	Batch	: 1 Matrix:	: Soil		
Units:	mg/kg	Date Analyzed: 02/14/18 12:18	SUF	RROGATE R	ECOVERY	STUDY	
	ВТЕХ	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluor	obenzene		0.0250	0.0300	83	80-120	
4-Bromoflu	orobenzene		0.0352	0.0300	117	80-120	
Lab Batch	#: 3041091	Sample: 576035-013 / SMP	Batch	: 1 Matrix:	: Soil		
Units:	mg/kg	Date Analyzed: 02/14/18 12:36	SUF	RROGATE R	ECOVERY	STUDY	
	BTEX	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluor	obenzene		0.0248	0.0300	83	80-120	
4-Bromoflu	orobenzene		0.0333	0.0300	111	80-120	

\* 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



Project Name: Madera la Fed. 1

Work Or	ders : 57603	35,		Project ID:			
Lab Batch	#: 3041091	Sample: 576035-001 / SMP	Batch	1: 1 Matrix:	Soil		
Units:	mg/kg	<b>Date Analyzed:</b> 02/14/18 12:55	SU	RROGATE RI	ECOVERY	STUDY	
	BTE	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluoro	benzene		0.0279	0.0300	93	80-120	
4-Bromoflue	orobenzene		0.0324	0.0300	108	80-120	
Lab Batch	#: 3041091	Sample: 576035-014 / SMP	Batch	n: 1 Matrix:	Soil		
Units:	mg/kg	Date Analyzed: 02/14/18 15:43	SU	RROGATE RI	ECOVERY	STUDY	
	BTE	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1.4-Difluoro	benzene		0.0246	0.0300	82	80-120	
4-Bromoflue	orobenzene		0.0338	0.0300	113	80-120	
Lab Batch	#: 3040996	Sample: 7639096-1-BLK / I	BLK Batch	n: 1 Matrix:	Solid		
Units:	mg/kg	Date Analyzed: 02/12/18 19:28	SU	RROGATE RI	ECOVERY	STUDY	
	BTEX	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluoro	benzene		0.0241	0.0300	80	80-120	
4-Bromoflue	orobenzene		0.0258	0.0300	86	80-120	
Lab Batch	#: 3041032	Sample: 7639062-1-BLK / I	BLK Batch	n: 1 Matrix:	Solid		
Units:	mg/kg	Date Analyzed: 02/13/18 09:02	SU	RROGATE RI	ECOVERY	STUDY	
	TPH	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	ane		96.1	100	96	70-135	
o-Terphenyl			50.1	50.0	100	70-135	
Lab Batch	#: 3041091	Sample: 7639146-1-BLK / I	BLK Batch	n: 1 Matrix:	Solid		
Units:	mg/kg	Date Analyzed: 02/14/18 11:05	SU.	RROGATE RI	ECOVERY	STUDY	
	BTE	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluoro	benzene		0.0277	0.0300	92	80-120	
4-Bromoflue	orobenzene		0.0295	0.0200	05	00.100	

\* 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



Project Name: Madera la Fed. 1

Work Or	<b>:ders :</b> 57603	5,		Project ID:			
Lab Batch	#: 3040996	Sample: 7639096-1-BKS / 1	BKS Batch	n: 1 Matrix:	Solid		
Units:	mg/kg	Date Analyzed: 02/12/18 18:14	SU	RROGATE RI	ECOVERY	STUDY	
	ВТЕХ	K by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluor	obenzene		0.0312	0.0300	104	80-120	
4-Bromoflu	orobenzene		0.0271	0.0300	90	80-120	
Lab Batch	#: 3041032	Sample: 7639062-1-BKS / 1	BKS Batch	n: 1 Matrix:	Solid		
Units:	mg/kg	Date Analyzed: 02/13/18 09:22	SU	RROGATE RI	ECOVERY	STUDY	
	TPH I	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes					
1-Chlorooct	ane		122	100	122	70-135	
I oh Potoh	#• 30/1001	Sample: 7630146 1 BKS /	01./	50.0	Solid	70-135	
Lan Daten	#: 5041091	Data Analyzad: 02/14/18 00:34	DK5 Datci			~~~~~	
	mg/kg	Date Analyzeu: 02/14/18 09.34	SU.	RROGATE RI	ECOVERY	STUDY	
	BTEX	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluor	obenzene		0.0308	0.0300	103	80-120	
4-Bromoflu	orobenzene		0.0292	0.0300	97	80-120	
Lab Batch	#: 3040996	Sample: 7639096-1-BSD /	BSD Batch	n: 1 Matrix:	Solid		
Units:	mg/kg	Date Analyzed: 02/12/18 18:32	SU	RROGATE RI	ECOVERY	STUDY	
	ВТЕХ	K by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluor	obenzene		0.0242	0.0300	81	80-120	
4-Bromoflu	orobenzene		0.0288	0.0300	96	80-120	
Lab Batch	#: 3041032	Sample: 7639062-1-BSD /	BSD Batch	n: 1 Matrix:	Solid		
Units:	mg/kg	Date Analyzed: 02/13/18 09:44	SU	RROGATE RI	ECOVERY	STUDY	
	TPHI	3y SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	tane		106	100	106	70-135	
o-Terphenv	1		52.1	50.0	104	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



Project Name: Madera la Fed. 1

Work Or	ders : 57603	5,		Project ID:	a 1: 1		
Lab Batch	#: 3041091	Sample: 7639146-1-BSD / ]	BSD Batcl	h: 1 Matrix:	Solid		
Units:	mg/kg	<b>Date Analyzed:</b> 02/14/18 09:52	SU	RROGATE R	ECOVERY	STUDY	
	ВТЕХ	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1.4-Difluor	benzene	Anarytes	0.0242	0.0300	01	80.120	
4-Bromoflu	orobenzene		0.0242	0.0300	01	80.120	
Lab Batch	#: 3040996	Sample: 575590-005 S / MS	Batcl	h: 1 Matrix:	Soil	00-120	
Units:	mg/kg	Date Analyzed: 02/12/18 18:51	SU	RROGATE RI	ECOVERY	STUDY	
	BTEX	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1 4-Difluor	obenzene	111111 100	0.0137	0.0300	46	80-120	**
4-Bromoflu	orobenzene		0.0248	0.0300	83	80-120	
Lab Batch	#: 3041032	Sample: 576035-001 S / MS	Batcl	h: 1 Matrix:	Soil	00 120	
Units:	mg/kg	<b>Date Analyzed:</b> 02/14/18 04:18	SU	RROGATE RI	ECOVERY	STUDY	
			Amount			Control	
	IPHI	Analytes	Found [A]	Amount [B]	Recovery %R [D]	Limits %R	Flags
1-Chlorooct	ane	1 mary tes	106	100	106	70.135	
o-Terpheny	1		50.5	50.0	100	70-135	
Lab Batch	#: 3041091	<b>Sample:</b> 575871-010 S / MS	S Batc	h: 1 Matrix:	Soil	10 155	
Units:	mg/kg	<b>Date Analyzed:</b> 02/14/18 10:10	SU	RROGATE RI	ECOVERY	STUDY	
	0.0						
	BTEX	K by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluoro	obenzene		0.0270	0.0300	90	80-120	
4-Bromoflu	orobenzene		0.0284	0.0300	95	80-120	
Lab Batch	#: 3040996	Sample: 575590-005 SD / N	ASD Batcl	h: 1 Matrix:	Soil		
Units:	mg/kg	Date Analyzed: 02/12/18 19:09	SU	RROGATE RI	ECOVERY	STUDY	
	ВТЕХ	K by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluoro	obenzene		0.0127	0.0300	42	80-120	**
4-Bromoflu	orobenzene		0.0262	0.0300	87	80-120	

\* 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



## Project Name: Madera la Fed. 1

Work O	rders : 57603	5,		Project ID:			
Lab Batch	<b>n #:</b> 3041032	Sample: 576035-001 SD / M	ASD Bate	h: 1 Matrix:	Soil		
Units:	mg/kg	Date Analyzed: 02/14/18 04:38	SU	JRROGATE RI	ECOVERYS	STUDY	
	TPH F	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			נטן		
1-Chlorooc	ctane		100	99.9	100	70-135	
o-Terpheny	yl		50.5	50.0	101	70-135	
Lab Batch	<b>h</b> #: 3041091	Sample: 575871-010 SD / M	ASD Bate	h: 1 Matrix:	Soil		
Units:	mg/kg	Date Analyzed: 02/14/18 10:29	SU	JRROGATE RI	ECOVERY	STUDY	
	BTEX	A nalvtes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1400	,	1×11a1 y tt.5	0.0055			00.100	
1,4-Difluor	robenzene		0.0257	0.0300	86	80-120	
4-Bromoflu	uorobenzene		0.0282	0.0300	94	80-120	

\* 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



### **BS / BSD Recoveries**



#### Project Name: Madera la Fed. 1

Work Order #: 576035							Proj	ject ID:			
Analyst: ALJ	D	ate Prepar	red: 02/12/20	18			Date A	nalyzed:	02/12/2018		
Lab Batch ID: 3040996         Sample: 7639096-1	-BKS	Bate	<b>h #:</b> 1					Matrix:	Solid		
Units: mg/kg		BLAN	K /BLANK	SPIKE / 1	BLANK	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
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	<0.00201	0.101	0.100	99	0.100	0.112	112	11	70-130	35	
Toluene	< 0.00201	0.101	0.0986	98	0.100	0.107	107	8	70-130	35	
Ethylbenzene	< 0.00201	0.101	0.103	102	0.100	0.112	112	8	71-129	35	
m,p-Xylenes	< 0.00402	0.201	0.210	104	0.200	0.227	114	8	70-135	35	
o-Xylene	< 0.00201	0.101	0.102	101	0.100	0.111	111	8	71-133	35	
Analyst: ALJ	D	ate Prepar	ed: 02/14/20	18			Date A	nalyzed:	02/14/2018		
Lab Batch ID: 3041091 Sample: 7639146-1	-BKS	Batc	<b>h #:</b> 1					Matrix:	Solid		
Units: mg/kg		BLAN	K /BLANK	SPIKE / 2	BLANK	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
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	< 0.00202	0.101	0.105	104	0.100	0.103	103	2	70-130	35	
Toluene	< 0.00202	0.101	0.101	100	0.100	0.0967	97	4	70-130	35	
Ethylbenzene	< 0.00202	0.101	0.107	106	0.100	0.102	102	5	71-129	35	
m,p-Xylenes	<0.00403	0.202	0.218	108	0.201	0.207	103	5	70-135	35	
o-Xylene	< 0.00202	0.101	0.105	104	0.100	0.100	100	5	71-133	35	

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: Madera la Fed. 1**

Work Order #: 576035							Proj	ject ID:			
Analyst: OJS	D	ate Prepar	ed: 02/19/201	8			Date A	nalyzed: (	02/19/2018		
Lab Batch ID: 3041576 Sample: 7639421-1-	BKS	Batch	<b>n #:</b> 1					Matrix: S	Solid		
Units: mg/kg		BLAN	K /BLANK S	SPIKE / ]	BLANK	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
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	273	250	273	109	250	275	110	1	90-110	20	
Analyst: OJS	D	ate Prepar	ed: 02/19/201	8	4		Date A	nalyzed: (	)2/19/2018	l	·'
Lab Batch ID: 3041591 Sample: 7639422-1-	BKS	Batch	<b>n #:</b> 1					Matrix: S	Solid		
Units: mg/kg	BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY										
Inorganic Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[B]	[C]	נטן	[E]	Kesult [F]	[6]				ļ
Chloride	267	250	267	107	250	274	110	3	90-110	20	
Analyst: ARM	D	ate Prepar	ed: 02/13/201	8			Date A	nalyzed: (	02/13/2018		
Lab Batch ID: 3041032 Sample: 7639062-1-	BKS	Batch	<b>n #:</b> 1					Matrix: S	Solid		
Units: mg/kg		BLAN	K /BLANK S	SPIKE / ]	BLANK S	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
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	<15.0	1000	1050	105	1000	913	91	14	70-135	35	
Diesel Range Organics	<15.0	1000	1150	115	1000	985	99	15	70-135	35	

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



#### Project Name: Madera la Fed. 1



<b>WORK URDER # :</b> 570035						Project II	):				
Lab Batch ID: 3040996	QC- Sample ID:	575590	-005 S	Ba	tch #:	1 Matrix	: Soil				
<b>Date Analyzed:</b> 02/12/2018	Date Prepared:	02/12/2	018	An	alyst: A	ALJ					
Reporting Units: mg/kg		Μ	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA'	FE RECO	OVERY S	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	0.0998	0.0763	76	0.100	0.0805	81	5	70-130	35	
Toluene	<0.00200	0.0998	0.0622	62	0.100	0.0652	65	5	70-130	35	Х
Ethylbenzene	< 0.00200	0.0998	0.0479	48	0.100	0.0515	52	7	71-129	35	Х
m,p-Xylenes	< 0.00399	0.200	0.0943	47	0.200	0.102	51	8	70-135	35	Х
o-Xylene	< 0.00200	0.0998	0.0476	48	0.100	0.0509	51	7	71-133	35	Х
Lab Batch ID: 3041091	QC- Sample ID:	575871	-010 S	Ba	tch #:	1 Matrix	: Soil				
<b>Date Analyzed:</b> 02/14/2018	Date Prepared:	02/14/2	018	An	alyst: A	ALJ					
							TE DECA				
<b>Reporting Units:</b> mg/kg		$\mathbf{M}$	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	IE KEU	OVERY S	STUDY		
Reporting Units:     mg/kg       BTEX by EPA 8021B       Analytes	Parent Sample Result [A]	M Spike Added [B]	IATRIX SPIKI Spiked Sample Result [C]	E / MAT Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	OVERY S RPD %	STUDY Control Limits %R	Control Limits %RPD	Flag
Reporting Units:     mg/kg       BTEX by EPA 8021B       Analytes       Benzene	Parent Sample Result [A] <0.00200	M Spike Added [B] 0.100	ATRIX SPIKI Spiked Sample Result [C] 0.0974	E / MAT Spiked Sample %R [D] 97	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G] 88	OVERY S RPD %	Control Limits %R	Control Limits %RPD	Flag
Reporting Units:     mg/kg       BTEX by EPA 8021B       Analytes       Benzene       Toluene	Parent Sample Result [A]           <0.00200	M Spike Added [B] 0.100 0.100	ATRIX SPIKI Spiked Sample Result [C] 0.0974 0.0903	E / MAT Spiked Sample %R [D] 97 77	<b>Spike</b> Added [E] 0.101 0.101	Duplicate       Spiked Sample       Result [F]       0.0892       0.0800	Spiked Dup. %R [G] 88 66	<b>PVERY S</b> <b>RPD</b> % 9 12	Control Limits %R 70-130 70-130	Control Limits %RPD 35 35	Flag
Reporting Units:     mg/kg       BTEX by EPA 8021B       Analytes       Benzene       Toluene       Ethylbenzene	Parent Sample Result [A]           <0.00200	M Spike Added [B] 0.100 0.100 0.100	ATRIX SPIKI           Spiked Sample           Result           [C]           0.0974           0.0903           0.0849	E / MAT Spiked Sample %R [D] 97 77 85	Spike           Added           [E]           0.101           0.101           0.101	Duplicate       Spiked Sample       Result [F]       0.0892       0.0800       0.0709	Spiked           Dup.           %R           [G]           88           66           70	RPD         %           9         12           18         18	Control         Limits           %R         70-130           70-130         71-129	Control Limits %RPD 35 35 35	Flag X X
Reporting Units:     mg/kg       BTEX by EPA 8021B       Analytes       Benzene       Toluene       Ethylbenzene       m,p-Xylenes	Parent Sample Result [A]           <0.00200	Spike           Added           [B]           0.100           0.100           0.100           0.200	ATRIX SPIKI           Spiked Sample           Result           [C]           0.0974           0.0903           0.0849           0.172	E / MAT Spiked Sample %R [D] 97 77 85 84	Spike           Added           [E]           0.101           0.101           0.101           0.201	Duplicate Spiked Sample Result [F]0.08920.08000.07090.138	Spiked           Dup.           %R           [G]           88           66           70           66	Second state         Second state           9         12           18         22	Control           Limits           %R           70-130           70-130           71-129           70-135	Control Limits %RPD 35 35 35 35 35	Flag X X X X

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



#### Project Name: Madera la Fed. 1



Work Order # :	576035						Project II	):				
Lab Batch ID:	3041576	QC- Sample ID:	576035	-001 S	Ba	tch #:	1 Matrix	<b>k:</b> Soil				
Date Analyzed:	02/19/2018	Date Prepared:	02/19/2	018	An	alyst: (	OJS					
<b>Reporting Units:</b>	mg/kg		Μ	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorgai	nic Anions by EPA 300/300.1	Parent Sample Posult	Spike	Spiked Sample Result	Spiked Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
	Analytes	[A]	Added [B]		%K [D]	E]	Kesuit [F]	%K [G]	70	%K	%KPD	
Chloride		163	246	417	103	246	403	98	3	90-110	20	
Lab Batch ID:	3041576	QC- Sample ID:	576035	-002 S	Ba	tch #:	1 Matri	<b>k:</b> Soil				
Date Analyzed:	02/19/2018	Date Prepared:	02/19/2	018	An	alyst: (	OJS					
<b>Reporting Units:</b>	mg/kg		Μ	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorgai	nic Anions by EPA 300/300.1	Parent Sample Result	Spike Added	Spiked Sample Result	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes	[A]	[B]	[0]	[D]	[E]	itesute [1]	[G]			/01012	
Chloride		61.5	245	337	112	245	334	111	1	90-110	20	Х
Lab Batch ID:	3041591	QC- Sample ID:	576035	-010 S	Ba	tch #:	1 Matri	<b>x:</b> Soil				
Date Analyzed:	02/19/2018	Date Prepared:	02/19/2	018	An	alyst: (	OJS					
<b>Reporting Units:</b>	mg/kg		Μ	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorgai	nic Anions by EPA 300/300.1	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	Anary wo	54.5	246	306	102	246	344	118	12	90-110	20	x
Cinoriae		54.5	240	500	102	240	J J T T	110	12	20110	20	

Matrix Spike Percent Recovery  $[D] = 100^{\circ}(C-A)/B$ Relative Percent Difference RPD =  $200^{\circ}|(C-F)/(C+F)|$  Matrix Spike Duplicate Percent Recovery [G] = 100\*(F-A)/E



#### Project Name: Madera la Fed. 1



Work Order # :	576035						Project II	D:				
Lab Batch ID:	3041032	QC- Sample ID:	576035	-001 S	Ba	tch #:	1 Matri	x: Soil				
Date Analyzed:	02/14/2018	Date Prepared:	02/13/2	018	Ar	alyst: A	ARM					
<b>Reporting Units:</b>	mg/kg	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY										
1	TPH By SW8015 Mod	Parent Sample Bacult	Spike	Spiked Sample Result	Spiked Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
	Analytes	[A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	<b>%</b> 0	% <b>R</b>	%RPD	
Gasoline Range l	Hydrocarbons	8940	1000	8750	0	999	9300	36	6	70-135	35	X
Diesel Range Or	ganics	8360	1000	9490	113	999	9860	150	4	70-135	35	Х

Matrix Spike Percent Recovery  $[D] = 100^{*}(C-A)/B$ Relative Percent Difference RPD =  $200^{*}|(C-F)/(C+F)|$  Matrix Spike Duplicate Percent Recovery  $[G] = 100^{*}(F-A)/E$ 



Relinquished by: telinquished by: Relinguished by: state) comments: Analysis Request of Chain of Custody Record leceiving Labbratory: voice to: lient Name: roject Location: roject Name LAB USE LAB # 0 a 1 hear AH AH 3 AH 3 AH AH 3 AH 2 AH 3 County, Sa Marathon Madera N w Xenco Hall BTER exceeds 2-2.5 en 0-1 4-4.5 3-3.5 1-1.5 5-5.5 4-4.5 Tetra Tech, Inc. excreds RC 5-5. SAMPLE IDENTIFICATION Cm 5 5 9 21-12 Date: Date: Date: Fed. 9 Time: Ime Time: ddd my 0 C s ORIGINAL COPY 2-8-Received by: Received by: Received by Sampler Signature: Site Manager: YEAR: Project #: Ben zene DATE 25 SAMPLING 18 KP Q TIME deeper Sterling ā ckreeds 0 WATER MATRIX Q.VOVAZ 1 SOIL × × K 1 4000 N. Big Spring Street, Ste 401 Midland, Texas 79705 Tel (432) 682-4559 MD Fax (432) 682-3946 Date: Date: Date: 3 HCL PRESERVATIVE 1 HNO<sub>3</sub> 2 PE Mike 01102 0 × XX XXX ICE Time:  $\times$ Time Ime molley C (TOSK200) 6 XI # CONTAINERS 5 2 2 2 3 2 2 ζ FILTERED (Y/N) (Circle) HAND DELIVERED Sample Temperature LAB USE ONLY 3 BTEX 80218 BTEX 8260B  $\leq$ TPH TX1005 (Ext to C35) TPH 8015M ( GRO - DRO - ORO - MRO) PAH 8270C Circle or Specify Method No Total Metals Ag As Ba Cd Cr Pb Se Hg TCLP Metals Ag As Ba Cd Cr Pb Se Hg REMARKS: TCLP Volatiles ANALYSIS REQUEST RUSH: TCLP Semi Volatiles FEDEX Rush Charges Authorized Special Report Limits or TRRP Report RCI GC/MS Vol. 8260B / 624 UPS GC/MS Semi. Vol. 8270C/625 Same Day 603 PCB's 8082/608 Tracking #: U NORM tenclard Page PLM (Asbestos) 24 hr 2-6-6 KK 5 6 Chloride Chloride Sulfate TDS 48 hr General Water Chemistry (see attached list) Anion/Cation Balance 72 hr of Hold Final 1.000



### **XENCO** Laboratories BORATORIES Prelogin/Nonconformance Report- Sample Log-In



Client: Tetra Tech- Midland	Acceptable Temperature Range: 0 - 6 degC					
Date/ Time Received: 02/09/2018 10:54:00 AM	Air and Metal samples Acceptable Range: Ambient					
Work Order #: 576035	Temperature Measuring device used : R8					
Sample Reco	eipt Checklist Comments					
#1 *Temperature of cooler(s)?	2.5					
#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?	Νο					
#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)?	Νο					
#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#:

Date: 02/09/2018

Checklist completed by: Shawnee Smith Checklist reviewed by: Mary Moak Kelsey Brooks

Date: 02/11/2018

# Analytical Report 578928

for Tetra Tech- Midland

**Project Manager: Ike Tavarez** 

Madera 19 Fed #1

#### 212C-MD-01102.200

#### 13-MAR-18

Collected By: Client





#### 1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122): Texas (T104704215-18-24), 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)



13-MAR-18



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

Reference: XENCO Report No(s): **578928 Madera 19 Fed #1** 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) 578928. 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. 578928 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,

Huns hoah

Kelsey Brooks Project Manager

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994. Certified and approved by numerous States and Agencies. A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America



### CASE NARRATIVE

#### Client Name: Tetra Tech- Midland Project Name: Madera 19 Fed #1

 Project ID:
 212C-MD-01102.200

 Work Order Number(s):
 578928

Report Date: *13-MAR-18* Date Received: *03/12/2018* 

#### Sample receipt non conformances and comments:

None

#### Sample receipt non conformances and comments per sample:

None

#### Analytical non conformances and comments: Batch: LBA-3043503 BTEX by EPA 8021B Surrogate 4-Bromofluorobenzene recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis. Samples affected are: 578928-006. Soil samples were not received in Terracore kits and therefore were prepared by method 5030. Dilutions necessitated due to poor resolution of internal standards caused by matrix interference.

Batch: LBA-3043522 TPH By SW8015 Mod

Lab Sample ID 578928-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Diesel Range Organics (DRO), Gasoline Range Hydrocarbons (GRO) 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: 578928-001, -002, -003, -004, -005, -006, -007, -008.

The Laboratory Control Sample for Gasoline Range Hydrocarbons (GRO), Diesel Range Organics (DRO) is within laboratory Control Limits, therefore the data was accepted.

Batch: LBA-3043536 BTEX by EPA 8021B

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



Certificate of Analysis Summary 578928

Tetra Tech- Midland, Midland, TX Project Name: Madera 19 Fed #1



Project Id:212C-MD-01102.200Contact:Ike TavarezProject Location:Lea County, NM

Date Received in Lab:Mon Mar-12-18 11:11 amReport Date:13-MAR-18Project Manager:Kelsey Brooks

	Lab Id:	578928-0	001	578928-0	002	578928-	003	578928-	004	578928-0	005	578928-	006
Anglusis Deguested	Field Id:	N-Bottom Hole	(1' Deep)	S-Bottom Hole	le (1' Deep) N-SW		7	S-SW		NE-SW		NW-SW	
Analysis Kequestea	Depth:												
	Matrix:	SOIL		SOIL		SOIL	,	SOIL	,	SOIL		SOII	_
	Sampled:	Mar-08-18	16:40	Mar-09-18	13:05	Mar-09-18	16:10	Mar-09-18	15:20	Mar-09-18	15:50	Mar-09-18	16:35
BTEX by EPA 8021B	Extracted:	Mar-12-18	11:30	Mar-13-18	08:00	Mar-12-18	11:30	Mar-12-18	11:30	Mar-12-18	11:30	Mar-12-18	11:30
	Analyzed:	Mar-12-18	17:00	Mar-13-18	10:49	Mar-12-18	13:56	Mar-12-18	14:15	Mar-12-18	16:22	Mar-12-18	14:34
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		< 0.398	0.398	1.64	0.996	< 0.00202	0.00202	< 0.00200	0.00200	0.250	0.199	< 0.00200	0.00200
Toluene		31.3	0.398	95.9	0.996	0.00882	0.00202	0.00516	0.00200	15.3	0.199	0.0166	0.00200
Ethylbenzene		12.1	0.398	28.1	0.996	< 0.00202	0.00202	< 0.00200	0.00200	4.19	0.199	0.0462	0.00200
m,p-Xylenes		151	0.795	383	1.99	0.0221	0.00403	0.0216	0.00401	50.0	0.398	0.192	0.00401
o-Xylene		43.1	0.398	106	0.996	0.00848	0.00202	0.0104	0.00200	13.7	0.199	0.0543	0.00200
Total Xylenes		194	0.398	489	0.996	0.0306	0.00202	0.0320	0.00200	63.7	0.199	0.246	0.00200
Total BTEX		238	0.398	615	0.996	0.0394	0.00202	0.0372	0.00200	83.4	0.199	0.309	0.00200
Inorganic Anions by EPA 300/300.1	Extracted:	Mar-12-18	16:00	Mar-12-18	16:00	Mar-12-18	16:00	Mar-12-18	16:00	Mar-12-18	16:00	Mar-12-18	16:00
	Analyzed:	Mar-13-18	15:21	Mar-13-18	15:44	Mar-13-18	16:48	Mar-13-18	15:55	Mar-13-18	16:53	Mar-13-18	16:16
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		174	4.94	413	4.95	<4.93	4.93	11.4	5.00	<4.94	4.94	<4.96	4.96
TPH By SW8015 Mod	Extracted:	Mar-12-18	17:00	Mar-12-18	17:00	Mar-12-18	17:00	Mar-12-18	17:00	Mar-12-18	17:00	Mar-12-18	17:00
	Analyzed:	Mar-12-18	20:54	Mar-13-18	06:03	Mar-12-18	22:13	Mar-12-18	22:33	Mar-12-18 2	22:53	Mar-12-18	23:13
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)		3700	15.0	7150	74.8	<15.0	15.0	<15.0	15.0	1160	15.0	423	15.0
Diesel Range Organics (DRO)		3520	15.0	7260	74.8	41.7	15.0	92.9	15.0	1370	15.0	1350	15.0
Oil Range Hydrocarbons (ORO)		138	15.0	350	74.8	<15.0	15.0	<15.0	15.0	83.5	15.0	77.8	15.0
Total TPH		7360	15.0	14800	74.8	41.7	15.0	92.9	15.0	2610	15.0	1850	15.0

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Huns Boah

Kelsey Brooks Project Manager



Ike Tavarez

Lea County, NM

**Contact:** 

**Project Location:** 

### Certificate of Analysis Summary 578928

Tetra Tech- Midland, Midland, TX Project Name: Madera 19 Fed #1



Date Received in Lab:Mon Mar-12-18 11:11 amReport Date:13-MAR-18Project Manager:Kelsey Brooks

	Lab Id:	578928-0	007	578928-0	008		
Analysis Paguastad	Field Id:	SE-SW	7	SW-SV	V		
Analysis Kequesiea	Depth:						
	Matrix:	SOIL		SOIL			
	Sampled:	Mar-09-18	13:55	Mar-09-18	12:25		
BTEX by EPA 8021B	Extracted:	Mar-12-18	11:30	Mar-12-18	11:30		
	Analyzed:	Mar-12-18	14:54	Mar-12-18	15:13		
	Units/RL:	mg/kg	RL	mg/kg	RL		
Benzene		< 0.00199	0.00199	< 0.00200	0.00200		
Toluene		0.00309	0.00199	0.00968	0.00200		
Ethylbenzene		< 0.00199	0.00199	0.0255	0.00200		
m,p-Xylenes		0.00814	0.00398	0.00464	0.00399		
o-Xylene		0.00366	0.00199	0.0122	0.00200		
Total Xylenes		0.0118	0.00199	0.0168	0.00200		
Total BTEX		0.0149	0.00199	0.0520	0.00200		
Inorganic Anions by EPA 300/300.1	Extracted:	Mar-12-18	16:00	Mar-12-18	16:00		
	Analyzed:	Mar-13-18	16:21	Mar-13-18	16:27		
	Units/RL:	mg/kg	RL	mg/kg	RL		
Chloride		<4.99	4.99	<4.95	4.95		
TPH By SW8015 Mod	Extracted:	Mar-12-18	17:00	Mar-12-18	17:00		
	Analyzed:	Mar-12-18	23:33	Mar-12-18	23:52		
	Units/RL:	mg/kg	RL	mg/kg	RL		
Gasoline Range Hydrocarbons (GRO)		<14.9	14.9	89.5	15.0		
Diesel Range Organics (DRO)		<14.9	14.9	595	15.0		
Oil Range Hydrocarbons (ORO)		<14.9	14.9	27.5	15.0		
Total TPH		<14.9	14.9	712	15.0		

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Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Huns Boah

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 LimitSDLSample Detection LimitLOD Limit of Detection
- PQL Practical Quantitation Limit MQL Method Quantitation Limit LOQ Limit of Quantitation
- DL Method Detection Limit
- NC Non-Calculable

SMP Clier	nt Sample	BLK	Method Blank	
BKS/LCS	Blank Spike/Laboratory Control Sample	BKSD/LCSD	Blank Spike Duplicate/Labor	atory 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



## Project Name: Madera 19 Fed #1

Work O	rders: 57892	8, Somelar 578028 003 / SMD	Datah	Project ID:	212C-MD-0	01102.200	
Lao Daten	mg/kg	Date Analyzed: 03/12/18 13:56					
Cints.	iiig/kg	Date Analyzet: 03/12/18 13:30	SUP	RROGATE R	ECOVERYS	STUDY	
	BTEX	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluor	obenzene		0.0222	0.0300	74	70-130	
4-Bromoflu	orobenzene		0.0342	0.0300	114	70-130	
Lab Batch	#: 3043503	Sample: 578928-004 / SMP	Batch	: 1 Matrix:	: Soil		
Units:	mg/kg	Date Analyzed: 03/12/18 14:15	SUI	RROGATE R	ECOVERY S	STUDY	
	BTEX	A by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1.4-Difluor	obenzene		0.0241	0.0300	80	70-130	
4-Bromoflu	lorobenzene		0.0294	0.0300	98	70-130	
Lah Batch	#• 3043503	Sample: 578928-006 / SMP	Batch	• 1 Matrix	· Soil	70-150	
Units.	mg/kg	<b>Date Analyzed:</b> $03/12/18$ 14:34	GU				
omts.	ing/kg	Date Analyzet. 05/12/10 14.54	SUP	KRUGATE K	ECOVERYS	STUDY	
	BTEX	Applytos	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
140.0	,	Anarytes	0.0014	0.0200		50.400	
1,4-Dilluor	obenzene		0.0214	0.0300	/1	70-130	aleale
4-Bromoliu	#• 2042502	Sample: 578028 007 / SMD	0.10/	0.0300	<u>35/</u>	70-130	**
	#: 3043303	<b>Sample:</b> 578928-0077 SMP	Datch		5011		
Units:	mg/kg	Date Analyzed: 03/12/18 14:34	SUI	RROGATE R	ECOVERY S	STUDY	
	BTEX	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluor	obenzene		0.0214	0.0300	71	70-130	
4-Bromoflu	orobenzene		0.0354	0.0300	118	70-130	
Lab Batch	#: 3043503	Sample: 578928-008 / SMP	Batch	: 1 Matrix	Soil	-	
Units:	mg/kg	Date Analyzed: 03/12/18 15:13	SUI	RROGATE R	ECOVERY S	STUDY	
	ВТЕХ	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluor	obenzene		0.0218	0.0300	73	70-130	
4-Bromoflu	orobenzene		0.0376	0.0300	125	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



Project Name: Madera 19 Fed #1

Work O	rders: 57892	8, 9	D - 4 - 1	Project ID:	212C-MD-0	01102.200	
Lab Batch	#: 3043303	Sample: 578928-005 / SMP	Bater		5011		
Units:	mg/kg	Date Analyzed: 03/12/18 16:22	SU	RROGATE RI	ECOVERY	STUDY	
	BTEX	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
1.4.5:0		Analytes					]
1,4-Difluor	obenzene		0.0223	0.0300	74	70-130	
4-Bromoflu	iorobenzene	Sec. 579029.001 / SMD	0.0320	0.0300	107	70-130	
Lab Batch	#: 3043505	Sample: 578928-0017 SMP	Bater	n: 1 Matrix:	5011		
Units:	mg/kg	Date Analyzed: 03/12/18 17:00	SU	RROGATE RI	ECOVERY	STUDY	
	BTEX	A palvtes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1 4-Difluor	ohenzene		0.0316	0.0300	105	70-130	
4-Bromoflu	lorobenzene		0.0310	0.0300	103	70-130	
Lab Batch	#: 3043522	Sample: 578928-001 / SMP	Batch	1  0.0500	Soil	10 150	
Units:	mg/kg	Date Analyzed: 03/12/18 20:54	SU	RROGATE RI	ECOVERY	STUDY	
	TPH I	3y SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooc	tane		100	99.8	100	70-135	
o-Terpheny	/1		48.5	49.9	97	70-135	
Lab Batch	#: 3043522	Sample: 578928-003 / SMP	Batch	n: 1 Matrix:	Soil	10 100	
Units:	mg/kg	Date Analyzed: 03/12/18 22:13	SU	RROGATE RI	ECOVERY	STUDY	
	TPH I	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooc	tane		92.7	99.7	93	70-135	
o-Terpheny	rl		47.5	49.9	95	70-135	
Lab Batch	#: 3043522	Sample: 578928-004 / SMP	Batch	n: 1 Matrix:	Soil		
Units:	mg/kg	Date Analyzed: 03/12/18 22:33	SU	RROGATE R	ECOVERY	STUDY	
	TPH I	3y SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooc	tane		99.0	99.9	99	70-135	
o-Terpheny	/1		48.8	50.0	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



## Project Name: Madera 19 Fed #1

Work Or	rders: 57892	8, Sample: 578928.005 / SMP	Project ID: 212C-MD-01102.200 P Batch: 1 Matrix: Soil							
Units:	mσ/kσ	Date Analyzed: 03/12/18 22:53				STUDY				
	ing ng	Duce 11111, 201, 05, 12, 10 22.55	50	KROGATE K						
	TPH I	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
		Analytes								
1-Chlorooct	tane		113	100	113	70-135				
o-Terpheny	1		49.2	50.0	98	70-135				
Lab Batch	#: 3043522	Sample: 578928-006 / SMP	Batch	h: 1 Matrix:	: Soil					
Units:	mg/kg	Date Analyzed: 03/12/18 23:13	SU	RROGATE R	ECOVERY S	STUDY				
	TPH I	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1-Chlorooct	tane		109	99.8	109	70-135				
o-Terpheny	1		45.4	49.9	91	70-135				
Lab Batch	#: 3043522	Sample: 578928-007 / SMP	Batch	h: 1 Matrix:	: Soil					
Units:	mg/kg	Date Analyzed: 03/12/18 23:33	SURROGATE RECOVERY STUDY							
	TPH I	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
		Analytes								
1-Chlorooct	tane		89.6	99.6	90	70-135				
o-Terpheny	1	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	44.2	49.8	89	70-135				
Lab Batch	#: 3043522	Sample: 578928-008 / SMP	Batch	h: 1 Matrix:	: Soil					
Units:	mg/kg	Date Analyzed: 03/12/18 23:52	SU	RROGATE R	ECOVERY S	STUDY				
	TPH I	3y SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1-Chlorooct	tane		99.6	99.7	100	70-135				
o-Terpheny	1		44.0	49.9	88	70-135				
Lab Batch	#: 3043522	Sample: 578928-002 / SMP	Batch	h: 1 Matrix	Soil					
Units:	mg/kg	Date Analyzed: 03/13/18 06:03	SU	RROGATE R	ECOVERY S	STUDY				
	TPH I	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1-Chlorooct	tane		95.2	99.7	95	70-135				
o-Terpheny	1		47.3	49.9	95	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



Project Name: Madera 19 Fed #1

Work Oı	ders : 57892	8,		Project ID:	212C-MD-0	01102.200		
Lab Batch	#: 3043536	Sample: 578928-002 / SMP	Batch	: 1 Matrix:	: Soil			
Units:	mg/kg	<b>Date Analyzed:</b> 03/13/18 10:49	SUI	RROGATE R	ECOVERY	STUDY		
	BTEX	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
1 4 Diffuor	hanzana	Anarytes	0.0220	0.0200	76	70.120		
1,4-Dilluon	orohonzono		0.0229	0.0300	/0	70-130		
I ob Potob	#• 30/3503	Sample: 7640672 1 BLK / I	0.0345	0.0300	Solid	/0-130		
Lab Daten	#: 3043303	Deta Analyza (12/12/18/00:07	JLK Batch		Solid			
Units:	mg/kg	Date Analyzed: 05/12/18 09:07	SUI	RROGATE R	ECOVERY	STUDY		
	ВТЕХ	K by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
1,4-Difluor	obenzene		0.0250	0.0300	83	70-130		
4-Bromoflu	orobenzene		0.0331	0.0300	110	70-130		
Lab Batch	#: 3043522	Sample: 7640686-1-BLK / I	BLK Batch	: 1 Matrix:	: Solid			
Units:	mg/kg	Date Analyzed: 03/12/18 19:56	SURROGATE RECOVERY STUDY					
	TPH I	3y SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
		Analytes			[D]			
1-Chlorooct	tane		85.7	100	86	70-135		
o-Terpheny	1		46.5	50.0	93	70-135		
Lab Batch	<b>#:</b> 3043536	Sample: 7640690-1-BLK / I	BLK Batch	: 1 Matrix	Solid			
Units:	mg/kg	Date Analyzed: 03/13/18 08:34	SUI	RROGATE R	ECOVERYS	STUDY		
	втех	K by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
1,4-Difluor	obenzene		0.0264	0.0300	88	70-130		
4-Bromoflu	orobenzene		0.0324	0.0300	108	70-130		
Lab Batch	#: 3043503	Sample: 7640672-1-BKS / H	BKS Batch	: 1 Matrix:	Solid			
Units:	mg/kg	Date Analyzed: 03/12/18 06:55	SUI	RROGATE R	ECOVERY	STUDY		
BTEX by EPA 8021B Analytes			Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
1,4-Difluor	obenzene		0.0257	0.0300	86	70-130		
4-Bromoflu	orobenzene		0.0357	0.0300	119	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



Project Name: Madera 19 Fed #1

Work Or Lab Batch	r <b>ders :</b> 57892 #: 3043522	8, Sample: 7640686-1-BKS /	BKS Batcl	Project ID: h: 1 Matrix	212C-MD-0 Solid	01102.200	
Units:	mg/kg	Date Analyzed: 03/12/18 20:15	SU	RROGATE R	ECOVERY	STUDY	
	TPH	3y SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooct	tane		97.8	100	98	70-135	
o-Terpheny	1		46.0	50.0	92	70-135	
Lab Batch	#: 3043536	<b>Sample:</b> 7640690-1-BKS /	BKS Batcl	h: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 03/13/18 06:58	SU	RROGATE R	ECOVERY	STUDY	
	втех	K by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluor	obenzene	•	0.0276	0.0300	92	70-130	
4-Bromoflu	orobenzene		0.0330	0.0300	110	70-130	
Lab Batch	#: 3043503	Sample: 7640672-1-BSD /	BSD Batcl	h: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 03/12/18 07:14	SU	RROGATE R	ECOVERY	STUDY	
	втех	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
140.0	1	Anarytes	0.0050	0.0200		50.400	
1,4-Diffuoro	obenzene		0.0253	0.0300	84	70-130	
4-Diomonu	#• 2042522	Sample: 7640696 1 DSD /		0.0300	118 Solid	/0-130	
	#: 3043522	Sample: 7640686-1-BSD7	BSD Batch		: 50110		
Units:	mg/kg	Date Analyzed: 03/12/18 20:34	SU	RROGATE R	ECOVERYS	STUDY	
	TPH	3y SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	tane		102	100	102	70-135	
o-Terpheny	1		45.2	50.0	90	70-135	
Lab Batch	#: 3043536	Sample: 7640690-1-BSD /	BSD Batcl	h: 1 Matrix	: Solid	-	
Units:	mg/kg	Date Analyzed: 03/13/18 07:17	SU	RROGATE R	ECOVERYS	STUDY	
	втех	K by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluor	obenzene		0.0269	0.0300	90	70-130	
4-Bromoflu	orobenzene		0.0346	0.0300	115	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



## Project Name: Madera 19 Fed #1

Work Or	<b>ders :</b> 57892	8,		Project ID:	212C-MD-0	01102.200				
Lab Batch	#: 3043503	<b>Sample:</b> 578649-001 S / MS								
Units:	mg/kg	Date Analyzed: 03/12/18 07:34	SU	RROGATE R	ECOVERY S	STUDY				
	BTEX	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
		Analytes			[D]					
1,4-Difluoro	obenzene		0.0248	0.0300	83	70-130				
4-Bromoflu	orobenzene		0.0359	0.0300	120	70-130				
Lab Batch	#: 3043522	<b>Sample:</b> 578928-001 S / MS	S Batch	n: 1 Matrix	: Soil					
Units:	mg/kg	Date Analyzed: 03/12/18 21:15	SU	RROGATE R	ECOVERY S	STUDY				
	TPH I	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1-Chlorooct	tane		99.5	99.9	100	70-135				
o-Terpheny	1		53.2	50.0	106	70-135				
Lab Batch	#: 3043536	Sample: 578597-001 S / MS	5 Batch	n: 1 Matrix	: Soil					
Units:	mg/kg	Date Analyzed: 03/13/18 07:37	SURROGATE RECOVERY STUDY							
	BTEX	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
		Analytes			[D]					
1,4-Difluoro	obenzene		0.0266	0.0300	89	70-130				
4-Bromoflu	orobenzene		0.0341	0.0300	114	70-130				
Lab Batch	#: 3043503	Sample: 578649-001 SD / M	ASD Batch	n: 1 Matrix	: Soil					
Units:	mg/kg	Date Analyzed: 03/12/18 07:53	SU	RROGATE R	ECOVERY S	STUDY				
	ВТЕХ	K by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1,4-Difluoro	obenzene		0.0262	0.0300	87	70-130				
4-Bromoflu	orobenzene		0.0387	0.0300	129	70-130				
Lab Batch	<b>#:</b> 3043522	Sample: 578928-001 SD / M	ASD Batch	n: 1 Matrix	: Soil					
Units:	mg/kg	Date Analyzed: 03/12/18 21:34	SU.	RROGATE R	ECOVERY S	STUDY				
	TPH I	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1-Chlorooct	tane		96.7	99.8	97	70-135				
o Tombonyi	1			i	i	1				

\* 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



## Project Name: Madera 19 Fed #1

Work Orders : 578928,           Lab Batch #: 3043536         Sample: 578597-001 SD /	MSD Batcl	Project ID: h: 1 Matrix:	212C-MD-0 Soil	01102.200				
<b>Units:</b> mg/kg <b>Date Analyzed:</b> 03/13/18 07:56	SU	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	0.0380	0.0300	127	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



### **BS / BSD Recoveries**



#### Project Name: Madera 19 Fed #1

Work Order #: 578928							Proj	ject ID:	212C-MD-(	01102.200					
Analyst: ALJ	D	ate Prepar	red: 03/12/201	18			Date A	nalyzed: (	03/12/2018						
Lab Batch ID: 3043503 Sample: 7640672-1	-BKS	Bate	<b>h #:</b> 1					Matrix: S	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	< 0.00202	0.101	0.0909	90	0.100	0.0883	88	3	70-130	35					
Toluene	< 0.00202	0.101	0.0972	96	0.100	0.0942	94	3	70-130	35					
Ethylbenzene	< 0.00202	0.101	0.111	110	0.100	0.109	109	2	70-130	35					
m,p-Xylenes	< 0.00403	0.202	0.219	108	0.200	0.214	107	2	70-130	35					
o-Xylene	< 0.00202	0.101	0.106	105	0.100	0.105	105	1	70-130	35					
Analyst: ALJ	D	ate Prepar	red: 03/13/201	18			Date A	nalyzed: (	)3/13/2018	•					
Lab Batch ID: 3043536 Sample: 7640690-1	-BKS	Bate	<b>h #:</b> 1					Matrix: S	Solid						
Units: mg/kg		BLAN	K /BLANK S	SPIKE / 1	BLANK S	SPIKE DUP	LICATE	RECOV	ERY STUI	DY					
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	0.0768	77	0.100	0.0766	77	0	70-130	35					
Toluene	<0.00199	0.0994	0.0824	83	0.100	0.0825	83	0	70-130	35					
Ethylbenzene	< 0.00199	0.0994	0.0953	96	0.100	0.0962	96	1	70-130	35					
m,p-Xylenes	< 0.00398	0.199	0.189	95	0.200	0.190	95	1	70-130	35					
o-Xylene	<0.00199	0.0994	0.0951	96	0.100	0.0959	96	1	70-130	35					

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: Madera 19 Fed #1

Work Order	r #: 578928							Proj	ject ID:	212C-MD-(	01102.200	
Analyst:	OJS	D	ate Prepar	ed: 03/12/202	18			Date A	nalyzed: (	03/13/2018		
Lab Batch ID	<b>Sample:</b> 7640646-1	-BKS	Batcl	<b>n #:</b> 1					Matrix: S	Solid		
Units:	mg/kg		BLAN	K/BLANK	SPIKE / I	BLANK S	SPIKE DUP	LICATE	RECOV	ERY STUE	DY	
Inorg	anic Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analy	ytes		[0]				Kesut [F]	[0]				
Chloride		<5.00	250	271	108	250	244	98	10	90-110	20	
Analyst:	ARM	D	ate Prepar	ed: 03/12/202	18	+		Date A	nalyzed: (	)3/12/2018	1	·1
Analyst: Lab Batch ID	ARM <b>5:</b> 3043522 <b>Sample:</b> 7640686-2	D -BKS	ate Prepar Batcl	ed: 03/12/201	18	+	-	Date A	nalyzed: ( Matrix: S	)3/12/2018 Solid		,, ,
Analyst: Lab Batch ID Units:	ARM <b>5:</b> 3043522 <b>Sample:</b> 7640686-1 mg/kg	D I-BKS	ate Prepar Batcl BLAN	ed: 03/12/202 h #: 1 K /BLANK \$	18 SPIKE / 1	BLANK S	SPIKE DUP	Date A	nalyzed: ( Matrix: S RECOVI	)3/12/2018 Solid E <b>RY STUI</b>	DY	·`
Analyst: Lab Batch ID Units: Analy	ARM 9: 3043522 Sample: 7640686-1 mg/kg TPH By SW8015 Mod ytes	D -BKS Blank Sample Result [A]	ate Prepar Batcl BLAN Spike Added [B]	ed: 03/12/200 h #: 1 K /BLANK S Blank Spike Result [C]	SPIKE / ] Blank Spike %R [D]	BLANK S Spike Added [E]	SPIKE DUP Blank Spike Duplicate Result [F]	Date A LICATE Blk. Spk Dup. %R [G]	nalyzed: ( Matrix: S RECOVI RPD %	03/12/2018 Solid ERY STUI Control Limits %R	DY Control Limits %RPD	Flag
Analyst: Lab Batch ID Units: Analy Gasoline	ARM p: 3043522 Sample: 7640686-: mg/kg TPH By SW8015 Mod ytes Range Hydrocarbons (GRO)	D BKS Blank Sample Result [A] <15.0	ate Prepar Batcl BLAN Spike Added [B] 1000	ed: 03/12/202 h #: 1 K /BLANK ( Blank Spike Result [C] 914	SPIKE / 1 Blank Spike %R [D] 91	BLANK S Spike Added [E] 1000	SPIKE DUP Blank Spike Duplicate Result [F] 909	Date A LICATE Blk. Spk Dup. %R [G] 91	nalyzed: ( Matrix: S RECOVI RPD %	03/12/2018 Solid ERY STUE Control Limits %R 70-135	DY Control Limits %RPD 35	Flag

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



#### Project Name: Madera 19 Fed #1



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Work Order # :	578928						Project II	<b>):</b> 212C-1	MD-0110	2.200		
Lab Batch ID:	3043503	QC- Sample ID:	578649	-001 S	Ba	tch #:	1 Matrix	<b>k:</b> Soil				
Date Analyzed:	03/12/2018	Date Prepared:	03/12/2	018	An	alyst: A	ALJ					
<b>Reporting Units:</b>	mg/kg		Μ	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
	BTEX by EPA 8021B	Parent Sample	Spike	Spiked Sample Result	Spiked Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
	Analytes	[A]	Added [B]	[C]	%R [D]	Added [E]	Kesult [F]	%R [G]	<b>%</b> 0	%K	%RPD	
Benzene		<0.00199	0.0996	0.0584	59	0.100	0.0656	66	12	70-130	35	X
Toluene		< 0.00199	0.0996	0.0607	61	0.100	0.0664	66	9	70-130	35	X
Ethylbenzene		< 0.00199	0.0996	0.0666	67	0.100	0.0704	70	6	70-130	35	X
m,p-Xylenes		<0.00398	0.199	0.131	66	0.200	0.138	69	5	70-130	35	X
o-Xylene		<0.00199	0.0996	0.0651	65	0.100	0.0709	71	9	70-130	35	X
Lab Batch ID:	3043536	QC- Sample ID:	578597	-001 S	Ba	tch #:	1 Matrix	<b>k:</b> Soil				
Date Analyzed:	03/13/2018	Date Prepared:	03/13/2	018	An	alyst: A	ALJ					
m,p-Xylenes         o-Xylene         Lab Batch ID:       3043536         Date Analyzed:       03/13/2018         Reporting Units:       mg/kg	mg/kg		Μ	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
	BTEX by EPA 8021B	Parent Sample	Spike	Spiked Sample Result	Spiked Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
	Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	

0.0674

0.0640

0.0617

0.113

0.0602

67

64

62

57

60

0.101

0.101

0.101

0.202

0.101

0.0563

0.0594

0.0613

0.113

0.0585

56

59

61

56

58

18

7

1

0

3

70-130

70-130

70-130

70-130

70-130

< 0.00200

< 0.00200

< 0.00200

< 0.00401

< 0.00200

0.100

0.100

0.100

0.200

0.100

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

Benzene

Toluene

Ethylbenzene

m,p-Xylenes

o-Xylene

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



#### Project Name: Madera 19 Fed #1



Work Order # :	578928						Project II	D: 212C-	MD-01102	2.200		
Lab Batch ID:	3043580	QC- Sample ID:	578928	-001 S	Ba	tch #:	1 Matri	x: Soil				
Date Analyzed:	03/13/2018	Date Prepared:	03/12/2	2018	Ar	nalyst: (	SIC					
<b>Reporting Units:</b>	mg/kg		N	IATRIX SPIK	E / MAT	'RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Inorga	nic Anions by EPA 300/300.1	Parent Sample Bogult	Spike	Spiked Sample Result	Spiked Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
	Analytes	[A]	Added [B]	[C]	%R [D]	Added [E]	Kesuit [F]	%R [G]	70	%K	%RPD	
Chloride		174	247	444	109	247	442	109	0	90-110	20	
Lab Batch ID:	3043522	QC- Sample ID:	578928	-001 S	Ba	tch #:	1 Matri	x: Soil				
Date Analyzed:	03/12/2018	Date Prepared:	03/12/2	2018	Ar	halyst:	ARM					
<b>Reporting Units:</b>	mg/kg		N	IATRIX SPIK	E / MAT	'RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
,	Parent Sample Bosult	Spike	Spiked Sample Result	Spiked Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag	
	Analytes	[A]	Added [B]	[C]	%R [D]	E]	Kesut [F]	% <b>K</b> [G]	70	%0K	%KPD	
Gasoline Range	Hydrocarbons (GRO)	3700	999	3980	28	998	3700	0	7	70-135	35	X
Diesel Range O	rganics (DRO)	3520	999	3420	0	998	3200	0	7	70-135	35	X

Matrix Spike Percent Recovery [D] = 100\*(C-A)/BRelative Percent Difference RPD = 200\*|(C-F)/(C+F)| Matrix Spike Duplicate Percent Recovery  $[G] = 100^{*}(F-A)/E$ 

			Relinquished by	nominquistico o	Polinguichod by	Relinquished b										LAB USE	LAB #		NIA	Comments:	Receiving Laborate	Invoice to: Tetra Tech, Inc.	Project Locatio Lea County, NA	Madera 19 Fed	Marathon Oil C			
			y: Date: Time:	y. Date: lime:	Desour 3/12/18 /11/1	y: Date: Time:		SW-SW	SE-SW	NW-SW	NE-SW	S-SW	N-SW	S-Bottom Hole (1' Deep)	N-Bottom Hole (1' Deep)		SAMPLE IDENTIFICATION				oratory: ories		A DI	#1	ompany	Tetra Tech, Inc.		
Corr	ORIC CF:(		Received by:	<ul> <li>Received by:</li> </ul>	All A	Received by:		3/9/2018	3/9/2018	3/9/2018	3/9/2018	3/9/2018	3/9/2018	3/9/2018	3/8/2018	DATE	YEAR:	SAMPLIN		2Churn	Sampler Signatur		Project #: 212C-N		Site Manager: Ike Tavarez			
(6-23: +0	(0-6: -0.2	П		5	2	5	C			1225	1355	1635	1550	1520	1610	1305	1640			AG		Bran	re:		AD-01102.20			
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-n	IR		ate:	ate:	K	ate:	-			_	_					HCL HNO		PR								3ig Spring dland, Te (432) 68 (432) 68		
0.	ID:R-8		Time:	Time:	2/18	Time:		<	<	<	<	<	<	<	<	ICE	_	ESERVATIVE METHOD								) Street, Ste xas 79705 2-4559 2-3946		
					1111	E		-	_	_	_	-		1	-1	# CONTA	INEF	RS										
																FILTERED	) (Y/	'N)	_									
	Circle)			Sample		-		<	<	<	<	<	<	<	<	BTEX 802 TPH TX10	21B 005 (	BTEX Ext to C	8260B	3	-	-	-	-1				
	HAND			Temp	ONL			<	<	<	<	<	<	<	<	TPH 8015	M (G	GRO - D	RO - M	RO	)					57		
	DELL			prature	< 0 F											Total Meta	Is Ag	g As Ba	Cd Cr F	b S	Se Hg	1			2	Ĩ		
	/ERE		-		-	RE			-	-		-		-	1	TCLP Meta	als A	g As Ba	Cd Cr	Pb	Se H	9		0	Þ	To		
	Ä					MAR										TCLP Sem	i Vol	atiles						_ 0r 0	NAL	50		
	DEX	pecia	lush (	HSU		KS:					-					GC/MS Vo	1. 82	260B / 6	24	-				- pec	SISA	NI		
	UPS	I Rep	Charg	Sar				-	-	-	-	-		_	_	GC/MS Ser	mi. V	/ol. 827	70C/625		-				RE	6		
	Trac	ort Lin	es Au	ne Da		E										NORM							_	Vieti	QUE	$\bigcirc$		
	king #:	nits or	horize	V Q				<		<	<		<	<	<	PLM (Asbe Chloride	stos	)			-			- lod	ST			
		TRR	ed	Đ		F		Ì	Ì	Ì	Ì	Ì	Ì	Ì	Ì	Chloride	Sul	fate	TDS									
		P Rep		48 hr		F	+	-	-	-	-	+	-	-		General W Anion/Catio	on B	Chemi alance	stry (se	e a	ttach	ed list)	-	_ :				
		port		72		F					-	1												_				
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### XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In



Client: Tetra Tech- Midland Acceptable Temperature Range: 0 - 6 degC Air and Metal samples Acceptable Range: Ambient Date/ Time Received: 03/12/2018 11:11:00 AM Temperature Measuring device used : R8 Work Order #: 578928 Comments Sample Receipt Checklist #1 \*Temperature of cooler(s)? 5.5 #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 TPH in bulk container #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:

Katie Lowe

Date: 03/12/2018

Checklist reviewed by:

Date: 03/12/2018

Page 19 of 19

# **Analytical Report 580725**

for Tetra Tech- Midland

**Project Manager: Ike Tavarez** 

Marathon - Madera 19 Federal #1

212C-MD-01102.200

30-MAR-18

Collected By: Client





1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122): Texas (T104704215-18-24), 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)



30-MAR-18



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

Reference: XENCO Report No(s): **580725** Marathon - Madera 19 Federal #1 Project Address: Lea Co., 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) 580725. 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. 580725 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 Vramer

Jessica Kramer Project Assistant

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994. Certified and approved by numerous States and Agencies. A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America


### Sample Id

Stockpile #1 Composite
Stockpile #2 Composite
Stockpile #3 Composite
Stockpile #4 Composite
Stockpile #5 Composite
Stockpile #6 Composite
Stockpile #7 Composite
Stockpile #8 Composite
Stockpile #9 Composite
Stockpile #10 Composite
Stockpile #11 Composite
Stockpile #12 Composite

## Sample Cross Reference 580725



Marathon - Madera 19 Federal #1

Matrix	Date Collected	Sample Depth	Lab Sample Id
S	03-28-18 00:00		580725-001
S	03-28-18 00:00		580725-002
S	03-28-18 00:00		580725-003
S	03-28-18 00:00		580725-004
S	03-28-18 00:00		580725-005
S	03-28-18 00:00		580725-006
S	03-28-18 00:00		580725-007
S	03-28-18 00:00		580725-008
S	03-28-18 00:00		580725-009
S	03-28-18 00:00		580725-010
S	03-28-18 00:00		580725-011
S	03-28-18 00:00		580725-012



## CASE NARRATIVE

Client Name: Tetra Tech- Midland Project Name: Marathon - Madera 19 Federal #1

 Project ID:
 212C-MD-01102.200

 Work Order Number(s):
 580725

Report Date:30-MAR-18Date Received:03/29/2018

#### Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

#### Analytical non conformances and comments:

Batch: LBA-3045220 BTEX by EPA 8021B

Surrogate 4-Bromofluorobenzene recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 580725-002.

Soil samples were not received in Terracore kits and therefore were prepared by method 5030. Samples analyzed at a dilution due to poor resolution of internal standard caused by matrix interference.



Certificate of Analysis Summary 580725

Tetra Tech- Midland, Midland, TX

Project Name: Marathon - Madera 19 Federal #1



Project Id:212C-MD-01102.200Contact:Ike TavarezProject Location:Lea Co., NM

Date Received in Lab:Thu Mar-29-18 09:55 amReport Date:30-MAR-18Project Manager:Jessica Kramer

	Lab Id:	580725-0	001	580725-0	002	580725-0	003	580725-0	004	580725-0	05	580725-0	006
Analysis Paguested	Field Id:	Stockpile #1 Composite Sto		Stockpile #2 C	omposite	Stockpile #3 C	omposite	Stockpile #4 Co	omposite	Stockpile #5 Co	omposite	Stockpile #6 C	omposite
Analysis Kequesiea	Depth:												
Matrix:		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Mar-28-18	00:00	Mar-28-18	00:00	Mar-28-18	00:00	Mar-28-18	00:00	Mar-28-18 (	00:00	Mar-28-18	00:00
BTEX by EPA 8021B	Extracted:	Mar-29-18	10:00	Mar-29-18	10:00	Mar-29-18	10:00	Mar-29-18	10:00	Mar-29-18 1	10:00	Mar-29-18	10:00
	Analyzed:	Mar-29-18	13:30	Mar-29-18	13:52	Mar-29-18	14:33	Mar-29-18	14:54	Mar-29-18 1	16:50	Mar-29-18	17:09
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		< 0.0504	0.0504	< 0.0200	0.0200	< 0.0996	0.0996	< 0.100	0.100	< 0.100	0.100	< 0.101	0.101
Toluene		4.46	0.0504	1.78	0.0200	3.46	0.0996	4.49	0.100	3.70	0.100	2.25	0.101
Ethylbenzene		2.11	0.0504	0.990	0.0200	1.62	0.0996	2.05	0.100	1.65	0.100	0.754	0.101
m,p-Xylenes		37.9 D	0.199	31.0 D	0.202	32.8	0.199	37.7	0.200	32.9	0.200	18.5	0.201
o-Xylene		11.7 D	0.0996	10.6 D	0.101	10.8	0.0996	12.4	0.100	11.2	0.100	6.40	0.101
Total Xylenes		49.6	0.0996	41.6	0.101	43.6	0.0996	50.1	0.100	44.1	0.100	24.9	0.101
Total BTEX		56.2	0.0504	44.4	0.0200	48.7	0.0996	56.6	0.100	49.5	0.100	27.9	0.101
TPH By SW8015 Mod	Extracted:	Mar-29-18	10:00	Mar-29-18	10:00	Mar-29-18	10:00	Mar-29-18	10:00	Mar-29-18 1	10:00	Mar-29-18	10:00
	Analyzed:	Mar-29-18	10:54	Mar-29-18	10:14	Mar-29-18	10:35	Mar-29-18	10:56	Mar-29-18 1	11:16	Mar-29-18	11:36
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)		1690	15.0	1180	15.0	1300	14.9	1290	15.0	1340	15.0	725	15.0
Diesel Range Organics (DRO)		1870	15.0	1780	15.0	2010	14.9	2010	15.0	2210	15.0	1130	15.0
Oil Range Hydrocarbons (ORO)		62.8	15.0	63.1	15.0	70.3	14.9	72.0	15.0	79.9	15.0	40.8	15.0
Total TPH		3620	15.0	3020	15.0	3380	14.9	3370	15.0	3630	15.0	1900	15.0

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Jessica Kramer Project Assistant



Certificate of Analysis Summary 580725

Tetra Tech- Midland, Midland, TX Project Name: Marathon - Madera 19 Federal #1 SUP ACCREDUE

Project Id:212C-MD-01102.200Contact:Ike TavarezProject Location:Lea Co., NM

Date Received in Lab:Thu Mar-29-18 09:55 amReport Date:30-MAR-18Project Manager:Jessica Kramer

Labi		580725-0	007	580725-0	008	580725-0	009	580725-0	010	580725-0	)11	580725-0	012
Analysis Paguested	Field Id:	Stockpile #7 C	omposite	posite Stockpile #8 Composite		Stockpile #9 Composite		Stockpile #10 Composite		Stockpile #11 Composite		Stockpile #12 Compo	
Analysis Kequestea	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Mar-28-18	00:00	Mar-28-18 (	00:00	Mar-28-18	00:00	Mar-28-18	00:00	Mar-28-18 (	00:00	Mar-28-18	00:00
BTEX by EPA 8021B	Extracted:	Mar-29-18	10:00	Mar-29-18	10:00	Mar-29-18	10:00	Mar-29-18	10:00	Mar-29-18	10:00	Mar-29-18	10:00
	Analyzed:	Mar-29-18	17:28	Mar-29-18	17:47	Mar-29-18	16:30	Mar-29-18	18:06	Mar-29-18	18:25	Mar-29-18	18:45
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		< 0.0996	0.0996	< 0.100	0.100	< 0.0996	0.0996	<0.0998	0.0998	< 0.100	0.100	< 0.101	0.101
Toluene		0.938	0.0996	1.49	0.100	0.773	0.0996	2.49	0.0998	6.42	0.100	2.21	0.101
Ethylbenzene		0.400	0.0996	0.380	0.100	0.233	0.0996	0.899	0.0998	1.97	0.100	0.745	0.101
m,p-Xylenes		10.8	0.199	13.0	0.201	8.42	0.199	18.9	0.200	37.4	0.201	17.8	0.202
o-Xylene		3.74	0.0996	4.44	0.100	3.04	0.0996	6.19	0.0998	11.9	0.100	5.80	0.101
Total Xylenes		14.5	0.0996	17.4	0.100	11.5	0.0996	25.1	0.0998	49.3	0.100	23.6	0.101
Total BTEX		15.9	0.0996	19.3	0.100	12.5	0.0996	28.5	0.0998	57.7	0.100	26.6	0.101
TPH By SW8015 Mod	Extracted:	Mar-29-18	10:00	Mar-29-18	10:00	Mar-29-18	10:00	Mar-29-18	10:00	Mar-29-18	10:00	Mar-29-18	10:00
	Analyzed:	Mar-29-18	11:57	Mar-29-18	12:17	Mar-29-18	12:38	Mar-29-18	12:58	Mar-29-18	14:04	Mar-29-18	14:44
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)		508	15.0	626	15.0	431	15.0	812	14.9	1370	15.0	646	15.0
Diesel Range Organics (DRO)		988	15.0	1170	15.0	888	15.0	1110	14.9	1440	15.0	1000	15.0
Oil Range Hydrocarbons (ORO)		32.0	15.0	42.7	15.0	32.3	15.0	40.4	14.9	52.1	15.0	36.2	15.0
Total TPH		1530	15.0	1840	15.0	1350	15.0	1960	14.9	2860	15.0	1680	15.0

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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 LimitSDLSample Detection LimitLOD Limit of Detection
- PQL Practical Quantitation Limit MQL Method Quantitation Limit LOQ Limit of Quantitation
- DL Method Detection Limit
- NC Non-Calculable

SMP Clier	nt Sample	BLK	Method Blank	
BKS/LCS	Blank Spike/Laboratory Control Sample	BKSD/LCSD	Blank Spike Duplicate/Labor	atory 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



Work Or Lab Batch	r <b>ders :</b> 58072: #: 3045206	5, Sample: 580725-002 / SMP	Batcl	Project ID: h: 1 Matrix:	212C-MD-0 Soil	)1102.200	
Units:	mg/kg	Date Analyzed: 03/29/18 10:14	SU	RROGATE R	ECOVERYS	STUDY	
	TPH I	3y SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooct	tane		83.0	99.8	83	70-135	
o-Terpheny	1		35.9	49.9	72	70-135	
Lab Batch	<b>#:</b> 3045206	Sample: 580725-003 / SMP	Batcl	h: 1 Matrix:	Soil		
Units:	mg/kg	Date Analyzed: 03/29/18 10:35	SU	RROGATE R	ECOVERYS	STUDY	
	TPH I	3y SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	tane		88.6	99.6	89	70-135	
o-Terpheny	1		40.7	49.8	82	70-135	
Lab Batch	#: 3045206	Sample: 580725-001 / SMP	Batcl	h: 1 Matrix:	Soil	I	
Units:	mg/kg	Date Analyzed: 03/29/18 10:54	SU	RROGATE R	ECOVERYS	STUDY	
TPH By SW8015 Mod			Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1 Chlanssof		Anarytes	00.2	00.0		70.105	
1-Chiorooct			90.2	99.8	90	70-135	
o-Terpneny	H: 2045206	Secondar 590725 004 / SMD	36.7	49.9	C = 11	70-135	
	#: 3045206	Sample: 580725-0047 SMP	Batch	n: 1 Matrix:	5011		
Units:	mg/kg	Date Analyzed: 03/29/18 10:56	SU	RROGATE RI	ECOVERY	STUDY	
	TPH I	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	tane		87.6	99.9	88	70-135	
o-Terpheny	1		38.0	50.0	76	70-135	
Lab Batch	#: 3045206	Sample: 580725-005 / SMP	Batcl	h: 1 Matrix:	Soil		
Units:	mg/kg	Date Analyzed: 03/29/18 11:16	SU	RROGATE R	ECOVERYS	STUDY	
	TPH I	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	tane		94.6	99.7	95	70-135	
o-Terpheny	1		41.2	/0.0	83	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



Work Or Lab Batch	rders : 58072: #: 3045206	5, Sample: 580725-006 / SMP	Bate	Project ID: h: 1 Matrix:	212C-MD-0 Soil	01102.200	
Units:	mg/kg	Date Analyzed: 03/29/18 11:36	SU	RROGATE R	ECOVERY	STUDY	
	TPH I	3y SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooct	ane		84.7	99.9	85	70-135	
o-Terphenyl	1		38.2	50.0	76	70-135	
Lab Batch	#: 3045206	Sample: 580725-007 / SMP	Batc	h: 1 Matrix:	Soil		
Units:	mg/kg	Date Analyzed: 03/29/18 11:57	SU	RROGATE R	ECOVERY	STUDY	
	TPH I	3y SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	ane		83.5	99.8	84	70-135	
o-Terphenyl	1		38.4	49.9	77	70-135	
Lab Batch	#: 3045206	Sample: 580725-008 / SMP	Batc	h: 1 Matrix:	Soil		
Units:	mg/kg	Date Analyzed: 03/29/18 12:17	su	RROGATE R	ECOVERY	STUDY	
	TPH I	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1 Chloroost		Anarytes	00.2	100	00	70.125	
1-Chiorooct			90.2	100	90	70-135	
Leb Poteb	#• 2045206	Sample: 580725.000 / SMD	43.8 Poto	50.0	88 Soil	/0-135	
LaD Daten	#: 3043200	<b>D</b> -4. A = 1 = 1, 02/20/18 12:28	Date		5011		
Units:	mg/kg	Date Analyzed: 03/29/18 12:38	st	RROGATE R	ECOVERY	STUDY	
	TPH I	3y SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	ane		79.2	99.8	79	70-135	
o-Terphenyl	1		37.3	49.9	75	70-135	
Lab Batch	#: 3045206	Sample: 580725-010 / SMP	Batc	h: 1 Matrix:	Soil		
Units:	mg/kg	Date Analyzed: 03/29/18 12:58	SU	RROGATE R	ECOVERYS	STUDY	
	ТРН І	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	ane		80.8	99.6	81	70-135	
1							

\* 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



Work Oi Lab Batch	r <b>ders :</b> 58072: #: 3045220	5, Sample: 580725-001 / SMP	Bate	Project ID h: 1 Matrix	: 212C-MD-0 : Soil	01102.200	
Units:	mg/kg	Date Analyzed: 03/29/18 13:30	SU	JRROGATE R	ECOVERY S	STUDY	
	BTEX	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			נען		
1,4-Difluor	obenzene		0.0298	0.0300	99	70-130	
4-Bromoflu	lorobenzene		0.0346	0.0300	115	70-130	
Lab Batch	#: 3045220	Sample: 580725-002 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 03/29/18 13:52	SU	JRROGATE R	ECOVERY S	STUDY	
	BTEX	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluor	obenzene		0.0276	0.0300	92	70-130	
4-Bromoflu	orobenzene		0.0400	0.0300	133	70-130	**
Lab Batch	#: 3045206	Sample: 580725-011 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 03/29/18 14:04	SU	JRROGATE R	ECOVERY	STUDY	
	TPH F	3y SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes					
1-Chlorooc	tane		87.4	99.7	88	70-135	
o-Terpheny	<u>'l</u>		40.4	49.9	81	70-135	
Lab Batch	#: 3045220	Sample: 580725-003 / SMP	Bate	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 03/29/18 14:33	SU	JRROGATE R	ECOVERY S	STUDY	
	BTEX	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluor	obenzene		0.0257	0.0300	86	70-130	
4-Bromoflu	orobenzene		0.0386	0.0300	129	70-130	
Lab Batch	#: 3045206	Sample: 580725-012 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 03/29/18 14:44	SU	<b>RROGATE R</b>	ECOVERY S	STUDY	
	TPH I	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooc	tane		79.1	99.7	79	70-135	
Tombony	1		29.0	40.0		70.105	

\* 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



Work Or Lab Batch	<b>ders :</b> 58072: #: 3045220	5, Sample: 580725-004 / SMP	Batel	Project ID: h: 1 Matrix	212C-MD-0	)1102.200					
Units:	mg/kg	Date Analyzed: 03/29/18 14:54	SU	RROGATE R	ECOVERY	STUDY					
	BTEX	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags				
		Analytes			[D]						
1,4-Difluoro	obenzene		0.0284	0.0300	95	70-130					
4-Bromoflue	orobenzene		0.0377	0.0300	126	70-130					
Lab Batch	#: 3045220	Sample: 580725-001 / DL	Batel	h: 1 Matrix	: Soil						
Units:	mg/kg	Date Analyzed: 03/29/18 15:52	SURROGATE RECOVERY STUDY								
	BTEX	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags				
1,4-Difluoro	obenzene		0.0252	0.0300	84	70-130					
4-Bromoflue	orobenzene		0.0270	0.0300	90	70-130					
Lab Batch	#: 3045220	Sample: 580725-002 / DL	Batcl	h: 1 Matrix	: Soil						
Units:	mg/kg	Date Analyzed: 03/29/18 16:11	SU	RROGATE R	ECOVERY	STUDY					
	BTEX	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags				
1.4.0.0	1	Analytes									
1,4-Difluoro	benzene		0.0275	0.0300	92	70-130					
4-Bromoflue	orobenzene	Same 520725 000 / SMD	0.0365	0.0300	122	70-130					
Lab Batch	#: 3045220	Sample: 580725-0097 SMP	Bate	n: 1 Matrix	: 5011						
Units:	mg/kg	<b>Date Analyzed:</b> 03/29/18 16:30	SU	RROGATE R	ECOVERY	STUDY					
	BTEX	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags				
1,4-Difluoro	obenzene		0.0268	0.0300	89	70-130					
4-Bromoflu	orobenzene		0.0316	0.0300	105	70-130					
Lab Batch	#: 3045220	Sample: 580725-005 / SMP	Batcl	h: 1 Matrix	: Soil						
Units:	mg/kg	Date Analyzed: 03/29/18 16:50	SU	RROGATE R	ECOVERY	STUDY					
	BTEX	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags				
1,4-Difluoro	obenzene		0.0304	0.0300	101	70-130					
4-Bromoflue	orobenzene		0.0382	0.0300	127	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



Work Or Lab Batch	rders : 58072: #: 3045220	5, Sample: 580725-006 / SMP	Bate	Project ID: h: 1 Matrix	212C-MD-0	)1102.200	
Units:	mg/kg	Date Analyzed: 03/29/18 17:09	SU	RROGATE R	ECOVERY S	STUDY	
	BTEX	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluor	obenzene		0.0277	0.0300	92	70-130	
4-Bromoflu	orobenzene		0.0376	0.0300	125	70-130	
Lab Batch	#: 3045220	Sample: 580725-007 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 03/29/18 17:28	SU	RROGATE R	ECOVERY S	STUDY	
	BTEX	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluoro	obenzene		0.0272	0.0300	91	70-130	
4-Bromoflu	orobenzene		0.0344	0.0300	115	70-130	
Lab Batch	#: 3045220	Sample: 580725-008 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	<b>Date Analyzed:</b> 03/29/18 17:47	SU	RROGATE R	ECOVERYS	STUDY	
	BTEX	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluoro	obenzene		0.0249	0.0300	83	70-130	
4-Bromoflu	orobenzene		0.0366	0.0300	122	70-130	
Lab Batch	#: 3045220	Sample: 580725-010 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 03/29/18 18:06	SU	RROGATE R	ECOVERY S	STUDY	
	BTEX	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluor	obenzene		0.0285	0.0300	95	70-130	
4-Bromoflu	orobenzene		0.0341	0.0300	114	70-130	
Lab Batch	#: 3045220	Sample: 580725-011 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 03/29/18 18:25	SU	RROGATE R	ECOVERY S	STUDY	
	BTEX	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
k						50.100	
1,4-Difluor	obenzene		0.0263	0.0300	88	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



Work Or	<b>ders :</b> 58072	5, Somelar 580725 012 / SMB	Project ID: 212C-MD-01102.200 P Batch: 1 Matrix: Soil						
Lab Batch	#: 5045220	Date Applyzed: 02/20/18 19:45	Batch						
	mg/kg	Date Analyzeu: 03/29/18 18.43	SU	RROGATE RI	ECOVERY	STUDY			
	BTEX	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
		Analytes			[D]				
1,4-Difluor	obenzene		0.0273	0.0300	91	70-130			
4-Bromoflu	orobenzene		0.0381	0.0300	127	70-130			
Lab Batch	#: 3045206	Sample: 7641726-1-BLK / ]	BLK Batch	a: 1 Matrix:	Solid				
Units:	mg/kg	Date Analyzed: 03/29/18 08:52	SU	RROGATE RI	ECOVERY S	STUDY			
	TPH I	3y SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1-Chlorooct	tane		72.8	100	73	70-135			
o-Terpheny	1		38.8	50.0	78	70-135			
Lab Batch	#: 3045220	Sample: 7641736-1-BLK / 1	BLK Batch	1 Matrix:	Solid				
Units:	mg/kg	<b>Date Analyzed:</b> 03/29/18 10:53	SU	RROGATE RI	ECOVERY	STUDY			
	ВТЕХ	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
		Analytes			[U]				
1,4-Difluor	obenzene		0.0287	0.0300	96	70-130			
4-Bromoflu	orobenzene		0.0243	0.0300	81	70-130			
Lab Batch	#: 3045220	Sample: 7641736-1-BKS / ]	BKS Batch	a: 1 Matrix:	Solid				
Units:	mg/kg	Date Analyzed: 03/29/18 08:55	SU	RROGATE RI	ECOVERY S	STUDY			
	ВТЕХ	K by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluor	obenzene		0.0310	0.0300	103	70-130			
4-Bromoflu	orobenzene		0.0260	0.0300	87	70-130			
Lab Batch	#: 3045206	Sample: 7641726-1-BKS / ]	BKS Batch	1 Matrix:	Solid		·		
Units:	mg/kg	Date Analyzed: 03/29/18 09:12	SU	RROGATE R	ECOVERY S	STUDY			
	TPH I	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1-Chlorooct	tane		72.9	100	73	70-135			
o-Terpheny	1		41.4	50.0	02	70.125			

\* 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



Work Or Lab Batch	cders : 58072: #: 3045220	5, <b>Sample:</b> 7641736-1-BSD / H	BSD Batch	Project ID: h: 1 Matrix:	212C-MD-0 Solid	)1102.200	
Units:	mg/kg	Date Analyzed: 03/29/18 09:14	SU	RROGATE RI	ECOVERY	STUDY	
	BTEX	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluoro	obenzene		0.0310	0.0300	103	70-130	
4-Bromoflu	orobenzene		0.0279	0.0300	93	70-130	
Lab Batch	#: 3045206	Sample: 7641726-1-BSD / H	BSD Batch	h: 1 Matrix:	Solid		
Units:	mg/kg	Date Analyzed: 03/29/18 09:33	SU	<b>RROGATE RI</b>	ECOVERY	STUDY	
	TPH I	3y SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	tane		73.0	100	73	70-135	
o-Terpheny	1		37.3	50.0	75	70-135	
Lab Batch	#: 3045220	Sample: 580687-003 S / MS	Batch	h: 1 Matrix:	Soil		
Units:	mg/kg	Date Analyzed: 03/29/18 09:38	SU	RROGATE RI	ECOVERY	STUDY	
	BTEX	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluoro	obenzene	-	0.0300	0.0300	100	70-130	
4-Bromoflu	orobenzene		0.0264	0.0300	88	70-130	
Lab Batch	#: 3045206	Sample: 580630-003 S / MS	Batch	h: 1 Matrix:	Soil		
Units:	mg/kg	Date Analyzed: 03/29/18 17:51	SU	RROGATE RI	ECOVERY	STUDY	
	TPH I	3y SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	tane		77.8	99.9	78	70-135	
o-Terpheny	1		38.6	50.0	77	70-135	
Lab Batch	#: 3045220	Sample: 580687-003 SD / M	ISD Batch	h: 1 Matrix:	Soil		
Units:	mg/kg	Date Analyzed: 03/29/18 09:57	SU	RROGATE RI	ECOVERY	STUDY	
	BTEX	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluor	obenzene		0.0298	0.0300	99	70-130	
4-Bromoflu	orobenzene		0.0276	0.0300	92	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



Work Orders : 580725,			Project ID:	212C-MD-0	1102.200	
Lab Batch #: 3045206	Sample: 580630-003 SD / M	MSD Batch	n: 1 Matrix:	Soil		
Units: mg/kg	Date Analyzed: 03/29/18 18:12	SU	RROGATE RE	ECOVERY S	STUDY	
TPH By	SW8015 Mod nalytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane		75.8	99.8	76	70-135	
o-Terphenyl		35.2	49.9	71	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



## **BS / BSD Recoveries**



### Project Name: Marathon - Madera 19 Federal #1

Work Order #: 580725							Pro	ject ID:	212C-MD-(	01102.200	
Analyst: ALJ	D	ate Prepar	red: 03/29/20	18			Date A	nalyzed: (	03/29/2018		
Lab Batch ID: 3045220 Sample: 7641736	1-BKS	Bate	<b>h #:</b> 1					Matrix:	Solid		
Units: mg/kg		BLAN	K /BLANK	SPIKE / ]	BLANK	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
BTEX by EPA 8021B	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	<0.00201	0.101	0.102	101	0.100	0.101	101	1	70-130	35	
Toluene	<0.00201	0.101	0.0993	98	0.100	0.0999	101	1	70-130	35	
Ethylbenzene	<0.00201	0.101	0.0972	96	0.100	0.0971	97	0	70-130	35	
m,p-Xylenes	<0.00402	0.201	0.199	99	0.201	0.198	99	1	70-130	35	
o-Xylene	<0.00201	0.101	0.0996	99	0.100	0.0999	100	0	70-130	35	
Analyst: ARM	D	ate Prepar	red: 03/29/20	18	ł	1	Date A	nalyzed: (	)3/29/2018	1	
Lab Batch ID: 3045206 Sample: 7641726	1-BKS	Batc	<b>h #:</b> 1					Matrix:	Solid		
Units: mg/kg		BLAN	K /BLANK	SPIKE / ]	BLANK	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
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	818	82	1000	854	85	4	70-135	20	
Diesel Range Organics (DRO)	<15.0	1000	802	80	1000	825	83	3	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 - Madera 19 Federal #1



Work Order # :	580725						Project II	<b>D:</b> 212C-1	MD-0110	2.200		
Lab Batch ID:	3045220	QC- Sample ID:	580687	-003 S	Ba	tch #:	1 Matri	<b>x:</b> Soil				
Date Analyzed:	03/29/2018	Date Prepared:	03/29/2	018	An	alyst: A	ALJ					
<b>Reporting Units:</b>	mg/kg		Μ	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
	BTEX by EPA 8021B	Parent Sample Result	Spike	Spiked Sample Result	Spiked Sample	Spike	Duplicate Spiked Sample Besult [F]	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
	Analytes	[A]	[B]	[C]	[D]	[E]	Kesunt [F]	[G]	/0	70K	70 KI D	
Benzene		<0.00200	0.0998	0.0534	54	0.0994	0.0528	53	1	70-130	35	X
Toluene		0.00201	0.0998	0.0525	51	0.0994	0.0516	50	2	70-130	35	X
Ethylbenzene		<0.00200	0.0998	0.0506	51	0.0994	0.0487	49	4	70-130	35	X
m,p-Xylenes		0.00640	0.200	0.106	50	0.199	0.102	48	4	70-130	35	X
o-Xylene		<0.00200	0.0998	0.0516	52	0.0994	0.0502	51	3	70-130	35	X
Lab Batch ID:	3045206	QC- Sample ID:	580630	-003 S	Ba	tch #:	1 Matri	<b>x:</b> Soil				
Date Analyzed:	03/29/2018	Date Prepared:	03/29/2	018	An	alyst: A	ARM					
<b>Reporting Units:</b>	mg/kg		Μ	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
	TPH By SW8015 Mod	Parent		Spiked Sample	Spiked		Duplicate	Spiked		Control	Control	

TPH By SW8015 Mod	Sample	Spike	Spiked Sample Result	Spiked Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Gasoline Range Hydrocarbons (GRO)	<15.0	999	842	84	998	780	78	8	70-135	20	
Diesel Range Organics (DRO)	<15.0	999	764	76	998	751	75	2	70-135	20	

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

	Relinquished by	Relinquished by	A MULLING	Doline A									( LAB USE )	LAB #		Comments:	Receiving Laborat	involce to.	state)	Project Name:	Client Name: N	F	
	Date: Time:	Date: Time:	2 3/2a/18 955	Start like # 10 compassion	Street alle # 9 Comparate	Strack il I A Compusite	Stank ale # (o Comparts	Stockpile # 5 Composibe	Stock file # 4 Composite	Stock pile # 3 Campaite	Stock aile # 2 Composite	Arckpile #1 Composite		SAMPLE IDENTIFICATION			ory: Xenco	Tetra Tech	Leg Co., NM	Nadara 19 Federal #1	lara thou	Tetra Tech, Inc.	
ORIGINAL COPY	Received by:	Received by:	Hecenved by:	V r	1	1		R	1	1	-	3.28.18 -	DATE	YEAR: 2017	SAMPLING		Sampler Signature:		Project #: 212C-		Site Manager:		
	Date:	/ Date:	3/29	×	×	× ×	×	×	X	×	×	×	WATEF SOIL HCL	7	MATRIX		han Mr. Ne		MD-01102		Ike Tavarez	4000 N. Big Spri 401 Midland,T Tel (432) 6 Fax (432) 6	
	Time:	Time:	ILA 955		X	×>	< ×	×	x 1	X I	XIII	X	HNO <sub>3</sub> ICE None # CONT	AINE	METHOD		U		.200			ng Street, Ste 'exas 79705 82-4559 82-3946	
(Circle) H		Sample Tr	LABU		×	XX	X	×	×	XX	×	×	FILTERI BTEX 80 TPH TX	ED () 021B 1005	(/N) BTEX (Ext to C	8260E	3			_			
Temp: CF:(0-6:		emperature		×	^			×	×	×	×	×	PAH 82 Total Me TCLP Me TCLP Vo	70C tals A etals /	ng As Ba Ag As Ba S	Cd Cr I	Pb Se I	Hg Hg			AN,	86	
	Special Report L	RUSH: Same D	STANDAR										RCI GC/MS V GC/MS S PCB'S 8 NORM	/ol. 8 Semi. 082 /	260B / 6 Vol. 827 608	24 70C/625	5				ALYSIS REQUE	2770	
3 ID:R-8	imits or TRRP Rep.	a) 24 hr 48 hr											PLM (As Chloride Chloride General Anion/Ca	Si Wate	ulfate er Chem Balance	TDS istry (s	ee atta	achec	t list)		ST	)	
	ion	72 hr											Hold							_			

	Relinquished by:	Relinquished by:	A A			LAB #		Receiving Laboratory: Comments:	Project Location: (i state) Invoice to:	Project Name:	Client Name: IM
	Date: Time:	Date: Time:	2	tock file # 12 ( amprik	Stack pile # 11 Composite	SAMPLE IDENTIFICATION		Kenco	(la Co., NM	adera 19 Federal #1	Tetra Tech, Inc.
ORIGINAL COP	Received by:	Received by:		3.28.18 -	3.28.11 -	DATE DATE	SAMPLING	Sampler Signature:	Project #: 212		Site Manager:
×	Date	Date Date		×	X	WATER SOIL HCL	MATRIX	hash P.	C-MD -0	ike lavarez	4000 N. Big St 401 Midland Fel (432) Fax (432
	e: Time:	e: Time: 29/18 OS e: Time:		×	×	HNO <sub>3</sub> ICE None	PRESERVATIVE	Kell	1102.200		ning Street, Ste d,Texas 79705 ) 682-4559 ) 682-3946
(Ci		sa r			- ×	# CONTAIN FILTERED ( BTEX 8021E	ERS Y/N) B BTEX	8260B			
rcle) HAND DEL		AB USE ONLY mple Temperature		×	×	TPH TX1005 TPH 8015M PAH 8270C Total Metals	G (Ext to C3 ( GRO - DI Ag As Ba C	35) RO - ORO	1 1	(Circ	5
Temp: CF:(0-6: -0. (6-23: + Corrected	Snecial					TCLP Volatile TCLP Semi V RCI GC/MS Vol.	volatiles 8260B / 62	4	3	le or Specif	H080
2°C) 0.2°C) femp: - C	Renard Limite or 1	ANDARD Same Day 241				PCB's 8082 NORM PLM (Asbeste Chloride	, vol. 8270 / 608 os)	5201020		y Method M	2S
ар. 2		hr) 48 hr 72 hr				Chloride S General Wat Anion/Cation	Bulfate T ter Chemis Balance	DS stry (see attack	hed list)	No.)	
Ц						Hold			Final 4		



## **XENCO** Laboratories Prelogin/Nonconformance Report- Sample Log-In



Client: Tetra Tech- Midland	Acceptable Temperature Range: 0 - 6 degC						
Date/ Time Received: 03/29/2018 09:55:00 AM	Air and Metal samples	Acceptable Range: Ambient					
Work Order #: 580725	Temperature Measurin	g device used:R8					
Sample Rece	eipt Checklist	Comments					
#1 *Temperature of cooler(s)?	-5.2						
#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	TPH received in bulk containers					
#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:

Katie Lowe

Date: 03/29/2018

Checklist reviewed by: Jession Veamer

Jessica Kramer

Date: 03/29/2018

# Analytical Report 580928

for Tetra Tech- Midland

**Project Manager: Ike Tavarez** 

Marathon - Madera 19 Federal #1

212C-MD-01102.200

### 02-APR-18

Collected By: Client





### 1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122): Texas (T104704215-18-24), 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)



02-APR-18

SUP ACCREDING

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

Reference: XENCO Report No(s): **580928** Marathon - Madera 19 Federal #1 Project Address: Lea

#### 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) 580928. 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. 580928 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 Vramer

Jessica Kramer Project Assistant

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994. Certified and approved by numerous States and Agencies. A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America



## Sample Cross Reference 580928



## Tetra Tech- Midland, Midland, TX

Marathon - Madera 19 Federal #1

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
Bottomhole Central @ 0-6", 10' BEB	S	03-29-18 00:00		580928-001
Bottomhole South #1 @ 0-1', 5' BEB	S	03-29-18 00:00		580928-002
Bottomhole South #2 @ 0-1', 5' BEB	S	03-29-18 00:00		580928-003



## CASE NARRATIVE

Client Name: Tetra Tech- Midland Project Name: Marathon - Madera 19 Federal #1

 Project ID:
 212C-MD-01102.200

 Work Order Number(s):
 580928

Report Date:02-APR-18Date Received:03/30/2018

#### Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

### Analytical non conformances and comments:

Batch: LBA-3045438 BTEX by EPA 8021B

Soil samples were not received in Terracore kits and therefore were prepared by method 5030. Surrogate 4-Bromofluorobenzene recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 580928-003.

Dilutions based upon poor resolution of internal standard.



Ike Tavarez

Lea

**Contact:** 

**Project Location:** 

Certificate of Analysis Summary 580928

Tetra Tech- Midland, Midland, TX

Project Name: Marathon - Madera 19 Federal #1



Date Received in Lab:Fri Mar-30-18 11:03 amReport Date:02-APR-18Project Manager:Jessica Kramer

	Lab Id:	580928-0	001	580928-0	02	580928-0	03		
Analysis Requested	Field Id:	Bottomhole Centr	al @ 0-6",	Bottomhole South	#1 @ 0-1'	Bottomhole South	#2 @ 0-1'		
Analysis Requested	Depth:								
	Matrix:	SOIL		SOIL		SOIL			
	Sampled:	Mar-29-18	00:00	Mar-29-18 (	00:00	Mar-29-18 (	00:00		
BTEX by EPA 8021B	Extracted:	Mar-30-18	11:15	Mar-30-18 1	1:15	Mar-30-18 1	1:15		
	Analyzed:	Mar-30-18	12:23	Mar-30-18 1	9:31	Mar-30-18 1	3:36		
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Benzene		< 0.0994	0.0994	<2.01	2.01	< 0.998	0.998		
Toluene		3.03	0.0994	13.7	2.01	14.7	0.998		
Ethylbenzene		2.43	0.0994	8.72	2.01	8.64	0.998		
m,p-Xylenes		32.0	0.199	141	4.02	147	2.00		
o-Xylene		10.5	0.0994	62.6	2.01	59.7	0.998		
Total Xylenes		42.5	0.0994	204	2.01	207	0.998		
Total BTEX		48.0	0.0994	226	2.01	230	0.998		
TPH By SW8015 Mod	Extracted:	Apr-01-18	10:00	Apr-01-18 1	0:00	Apr-01-18 1	0:00		
	Analyzed:	Apr-02-18	12:28	Apr-02-18 1	3:47	Apr-02-18 1	4:14		
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Gasoline Range Hydrocarbons (GRO)		1100	15.0	8780	74.9	1510	150		
Diesel Range Organics (DRO)		1340	15.0	9240	74.9	2370	150		
Oil Range Hydrocarbons (ORO)		<15.0	15.0	<74.9	74.9	<150	150		
Total TPH		2440	15.0	18000	74.9	3880	150		

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

fession kenner

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 LimitSDLSample Detection LimitLOD Limit of Detection
- PQL Practical Quantitation Limit MQL Method Quantitation Limit LOQ Limit of Quantitation
- DL Method Detection Limit
- NC Non-Calculable

SMP Clier	nt Sample	BLK	Method Blank	
BKS/LCS	Blank Spike/Laboratory Control Sample	BKSD/LCSD	Blank Spike Duplicate/Labor	atory 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



Work Or Lab Batch	r <b>ders :</b> 580928 #: 3045438	8, Sample: 580928-001 / SMP	Bate	Project ID: h: 1 Matrix:	212C-MD-0 Soil	01102.200	
Units:	mg/kg	Date Analyzed: 03/30/18 12:23	SU	RROGATE R	ECOVERY S	STUDY	
	BTEX	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluoro	obenzene		0.0243	0.0300	81	70-130	
4-Bromoflue	orobenzene		0.0373	0.0300	124	70-130	
Lab Batch	<b>#:</b> 3045438	Sample: 580928-003 / SMP	Batc	h: 1 Matrix	: Soil		
Units:	mg/kg	<b>Date Analyzed:</b> 03/30/18 13:36	SU	RROGATE R	ECOVERY S	STUDY	
	BTEX	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluoro	obenzene		0.0229	0.0300	76	70-130	
4-Bromoflu	orobenzene		0.0484	0.0300	161	70-130	**
Lab Batch	#: 3045438	Sample: 580928-002 / SMP	Batc	h: 1 Matrix:	Soil		
Units:	mg/kg	<b>Date Analyzed:</b> 03/30/18 19:31	SU	RROGATE R	ECOVERY	STUDY	
	BTEX	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes					
1,4-Difluoro	obenzene		0.0266	0.0300	89	70-130	
4-Bromoflue	orobenzene	G L 500000.001 / 01/D	0.0341	0.0300	114	70-130	
Lab Batch	#: 3045471	Sample: 580928-001 / SMP	Batc	h: 1 Matrix	Soll		
Units:	mg/kg	Date Analyzed: 04/02/18 12:28	SU	<b>RROGATE R</b>	ECOVERY S	STUDY	
	TPH F	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	ane		120	99.9	120	70-135	
o-Terphenyl	l		56.4	50.0	113	70-135	
Lab Batch	#: 3045471	Sample: 580928-002 / SMP	Batc	h: 1 Matrix:	Soil		
Units:	mg/kg	Date Analyzed: 04/02/18 13:47	SU	RROGATE R	ECOVERY S	STUDY	
	TPH F	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	ane		123	99.8	123	70-135	
o-Ternhenvl				1	i	i	

\* 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



Work Or	rders : 58092	8,	<b>D</b> / 1	Project ID:	212C-MD-0	01102.200	
Lab Batch	#: 30454/1	Sample: 580928-003 / SMP	Batch	n: 1 Matrix	Soll		
Units:	mg/kg	<b>Date Analyzed:</b> 04/02/18 14:14	SU	RROGATE R	ECOVERYS	STUDY	
	TPH I	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes					
1-Chlorooct	tane		99.7	100	100	70-135	
o-Terpheny	1		42.5	50.0	85	70-135	
Lab Batch	#: 3045438	Sample: 7641863-1-BLK / I	BLK Batch	n: 1 Matrix:	Solid		
Units:	mg/kg	Date Analyzed: 03/30/18 10:10	SU	RROGATE R	ECOVERY S	STUDY	
	ВТЕХ	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluor	obenzene		0.0269	0.0300	90	70-130	
4-Bromoflu	orobenzene		0.0235	0.0300	78	70-130	
Lab Batch	#: 3045471	Sample: 7641866-1-BLK / 1	BLK Batch	n: 1 Matrix	Solid	10 100	
Units:	mg/kg	Date Analyzed: 04/02/18 06:49	SU	RROGATE R	ECOVERY S	STUDY	
	TPH I	3y SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes					
1-Chlorooct	tane		100	100	100	70-135	
o-Terpheny	1		51.5	50.0	103	70-135	
Lab Batch	#: 3045438	<b>Sample:</b> 7641863-1-BKS / I	BKS Batch	n: 1 Matrix:	: Solid		
Units:	mg/kg	Date Analyzed: 03/30/18 08:15	SU	RROGATE R	ECOVERY S	STUDY	
	ВТЕХ	K by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluor	obenzene		0.0288	0.0300	96	70-130	
4-Bromoflu	orobenzene		0.0272	0.0300	91	70-130	
Lab Batch	#: 3045471	Sample: 7641866-1-BKS / I	BKS Batch	n: 1 Matrix	Solid		
Units:	mg/kg	Date Analyzed: 04/02/18 07:15	SU	RROGATE R	ECOVERY S	STUDY	
	TPH I	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	tane		108	100	108	70-135	
o-Terpheny	1		52.2	50.0	107	70.125	

\* 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



Work Or Lab Batch	r <b>ders :</b> 580928 #: 3045438	8, <b>Sample:</b> 7641863-1-BSD / 1	BSD Batcl	Project ID: h: 1 Matrix:	212C-MD-0 Solid	01102.200						
Units:	mg/kg	Date Analyzed: 03/30/18 08:34	SU	RROGATE R	ECOVERY	STUDY						
	BTEX	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags					
		Analytes			[D]							
1,4-Difluoro	obenzene		0.0291	0.0300	97	70-130						
4-Bromoflu	orobenzene		0.0293	0.0300	98	70-130						
Lab Batch	<b>#:</b> 3045471	Sample: 7641866-1-BSD / 1	BSD Batch	h: 1 Matrix:	Solid							
Units:	mg/kg	Date Analyzed: 04/02/18 07:43	SU	RROGATE R	ECOVERYS	STUDY						
	TPH I	3y SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags					
1-Chlorooct	tane		106	100	106	70-135						
o-Terpheny	1		52.2	50.0	104	70-135						
Lab Batch	#: 3045438	Sample: 580894-001 S / MS	5 Batcl	Batch: 1 Matrix: Soil								
Units:         mg/kg         Date Analyzed: 03/30/18 08:53         SURROGATE RECOVERY STUD												
	BTEX	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags					
1.4-Difluor	obenzene		0.0306	0.0300	102	70-130						
4-Bromoflu	orobenzene		0.0311	0.0300	104	70-130						
Lab Batch	#: 3045471	<b>Sample:</b> 580869-049 S / MS	S Batcl	h: 1 Matrix:	Soil							
Units:	mg/kg	<b>Date Analyzed:</b> 04/02/18 08:35	SURROGATE RECOVERY STUDY									
	TPH F	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags					
1-Chlorooct	tane		111	99.9	111	70-135						
o-Terpheny	1		53.1	50.0	106	70-135						
Lab Batch	<b>#:</b> 3045438	Sample: 580894-001 SD / N	ASD Batcl	h: 1 Matrix:	Soil							
Units:	mg/kg	Date Analyzed: 03/30/18 09:12	SU	RROGATE R	ECOVERY	STUDY						
	BTEX	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags					
1,4-Difluor	obenzene		0.0285	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



Work Orders : 580928, Project ID: 212C-MD-01102.200											
Lab Batch #: 3045471	n: 1 Matrix:	Soil									
Units: mg/kg	Date Analyzed: 04/02/18 09:00	nalyzed:     04/02/18 09:00     SURROGATE RECOVERY STUDY									
TPH By	SW8015 Mod nalytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags					
1-Chlorooctane		110	99.7	110	70-135						
o-Terphenyl		52.8	49.9	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



## **BS / BSD Recoveries**



### Project Name: Marathon - Madera 19 Federal #1

Work Order #: 580928							Pro	ject ID:	212C-MD-(	01102.200					
Analyst: ALJ	D	ate Prepar	red: 03/30/20	18	<b>Date Analyzed:</b> 03/30/2018										
Lab Batch ID: 3045438 Sample: 7641863-1	-BKS	Bate	<b>h #:</b> 1					Matrix: S	Solid						
Units: mg/kg		BLAN	K/BLANK	SPIKE / I	E / 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	0.0926	93	0.100	0.0908	91	2	70-130	35					
Toluene	< 0.00200	0.0998	0.0917	92	0.100	0.0892	89	3	70-130	35					
Ethylbenzene	< 0.00200	0.0998	0.0897	90	0.100	0.0889	89	1	70-130	35					
m,p-Xylenes	< 0.00399	0.200	0.184	92	0.201	0.181	90	2	70-130	35					
o-Xylene	< 0.00200	0.0998	0.0943	94	0.100	0.0933	93	1	70-130	35					
Analyst: ARM	D	ate Prepar	ed: 04/01/20	18			Date A	nalyzed: (	04/02/2018						
Lab Batch ID: 3045471 Sample: 7641866-1	-BKS	Bate	<b>h #:</b> 1					Matrix: S	Solid						
Units: mg/kg		BLAN	K/BLANK	SPIKE / I	BLANK S	SPIKE DUP	LICATE	RECOV	ERY STUI	DY					
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	1040	104	1000	1020	102	2	70-135	20					
Diesel Range Organics (DRO)	<15.0	1000	1080	108	1000	1050	105	3	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 - Madera 19 Federal #1



Work Order # :	580928						Project II	<b>D:</b> 212C-1	MD-0110	2.200			
Lab Batch ID:	3045438	QC- Sample ID:	580894	-001 S	Ba	tch #:	1 Matrix	<b>k:</b> Soil					
Date Analyzed:	03/30/2018	Date Prepared:	ared: 03/30/2018			alyst: A	ALJ						
<b>Reporting Units:</b>	mg/kg	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY											
	BTEX by EPA 8021B	Parent Sample Possilt	Spike	Spiked Sample Result	Spiked Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag	
	Analytes	[A]	Added [B]	[C]	%R [D]	E]	Kesuit [F]	%R [G]	<b>%</b> 0	%K	%RPD		
Benzene		<0.00200	0.0998	0.0786	79	0.100	0.0747	75	5	70-130	35		
Toluene		<0.00200	0.0998	0.0771	77	0.100	0.0732	73	5	70-130	35		
Ethylbenzene		<0.00200	0.0998	0.0769	77	0.100	0.0727	73	6	70-130	35		
m,p-Xylenes		<0.00399	0.200	0.158	79	0.200	0.148	74	7	70-130	35		
o-Xylene		<0.00200	0.0998	0.0806	81	0.100	0.0754	75	7	70-130	35		
Lab Batch ID:	3045471	QC- Sample ID:	580869	-049 S	Ba	tch #:	1 Matrix	<b>k:</b> Soil					
Date Analyzed:	04/02/2018	Date Prepared:	<b>Date Prepared:</b> 04/01/2018				Analyst: ARM						
<b>Reporting Units:</b>	mg/kg		Μ	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY			
,	TPH By SW8015 Mod	Parent	Enilia	Spiked Sample	Spiked	Cuilto	Duplicate	Spiked	DDD	Control	Control	Flag	

TPH By SW8015 Mod	Sample	Spike	Result	Spiked	Spike	Spiked Sample	Spiked Dup.	RPD	Limits	Limits	Flag
Analytes	[A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Gasoline Range Hydrocarbons (GRO)	<15.0	999	1010	101	997	1030	103	2	70-135	20	
Diesel Range Organics (DRO)	<15.0	999	1060	106	997	1070	107	1	70-135	20	

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

	nemiquisned by		Relinquished by	Relinauished by							( LAB USE )	LAB #		comments:		Receiving Labor	state) Invoice to:	Project Location	Project Name:	Client Name:
	7. Date: Time:	Date: Time:	1111 3.30.18 1/20	C.   J. A. Dato: Time:				Batton have South#2 12 0-1'. 5' BEB	Battenhole South # 100-1' S'BEB	Bottomhole Contral @ 0-6", 10'BEE		SAMPLE IDENTIFICATION			Xenco	Tetra tech	lea ( o., NM	Madera 19 Federal #1	Marathon	Tetra Tech, Inc.
ORIGINAL	Received by:	Received by:	Heceiver by:					3.29.11	3.24.10	3.29.18	DATE	YEAR: 2017	SAMP		Sampler Signa		Project #: 2 (			Sile Manager
СОРУ			Inne					1	1	1	TIME		PLING		ature: Jch		2 c - m			
	D	D	Mr B					X	×	X	WATEF SOIL	1	MATRIX		rather		D-611		Ike Tavar	4000 N. B 401 Mi Tel Fax
	ate: Time:	áte: Time:	ate: Time:						5	X	HCL HNO <sub>3</sub> ICE None		PRESERVATIV METHOD		P. Cel		02.200		.ez	lig Spring Street, Ste dland, Texas 79705 (432) 682-4559 (432) 682-3946
			11:00				-		-	-	# CONT/	AINE	RS							
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rcle) H		mple To	AB U				T				TPH TX1	005	(Ext to C	35)		_		_		
AND D		empera	SE O						-	X	PAH 801	oM ( 0C	GHO - D	лно - О	HO - N	MRO)		_		
		lure	NLY		$\left  \right $			+	+	-	Total Meta TCLP Met	als A	g As Ba Ag As Ba	Cd Cr P	b Se H Pb Se	Hg Hg	-			
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1p:	Spe							1	+		RCI	III VO	naules		-				ALY	5
06	cial F	SH:	STA					-	-	-	GC/MS Vo	ol. 82	260B / 62	24			-	ech	SIS	2
2°C	lepor	Same	ND						+	1	PCB's 80	82 / 6	608	00/625	-	-			REQ	0
-	t Limi	Day	RD						1	1	NORM	_						leth	UES	2
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R-8	Rep	48 hr	ł			$\left  \right $	++	+	+	4	General V Anion/Cat	Vate	r Chemi Balance	stry (se	e atta	ched I	ist)			
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## **XENCO** Laboratories Prelogin/Nonconformance Report- Sample Log-In



Client: Tetra Tech- Midland Acceptable Temperature Range: 0 - 6 degC Air and Metal samples Acceptable Range: Ambient Date/ Time Received: 03/30/2018 11:03:00 AM Temperature Measuring device used : R8 Work Order #: 580928 Comments Sample Receipt Checklist 1.4 #1 \*Temperature of cooler(s)? #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:

Date: 03/30/2018

Checklist reviewed by: fession Whamer

Jessica Kramer

Date: 03/30/2018

# Analytical Report 581078

for Tetra Tech- Midland

**Project Manager: Ike Tavarez** 

Madera 19 Federal #1

212c-MD-01102-200

03-APR-18

Collected By: Client





1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122): Texas (T104704215-18-24), 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)



03-APR-18



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

Reference: XENCO Report No(s): **581078 Madera 19 Federal #1** Project Address: Lea CO.,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) 581078. 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. 581078 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 Vramer

Jessica Kramer Project Assistant

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994. Certified and approved by numerous States and Agencies. A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America



## Sample Cross Reference 581078

Tetra Tech- Midland, Midland, TX Madera 19 Federal #1



### Sample Id

Stockpile #1 Composite #2
Stockpile #4 Composite #2
Stockpile #11 Composite #2
Bottomhole South @ 15-16

Matrix	Date Collected	Sample Depth	Lab Sample Id
S	04-02-18 00:00		581078-001
S	04-02-18 00:00		581078-002
S	04-02-18 00:00		581078-003
S	04-02-18 00:00		581078-004



## CASE NARRATIVE

### Client Name: Tetra Tech- Midland Project Name: Madera 19 Federal #1

 Project ID:
 212c-MD-01102-200

 Work Order Number(s):
 581078

Report Date: 03-APR-18 Date Received: 04/03/2018

#### Sample receipt non conformances and comments:

None

#### Sample receipt non conformances and comments per sample:

None

#### Analytical non conformances and comments:

Batch: LBA-3045540 TPH By SW8015 Mod

Diesel Range Organics (DRO), Gasoline Range Hydrocarbons (GRO) RPD was outside laboratory control limits.

Samples in the analytical batch are: 581078-004

Batch: LBA-3045561 BTEX by EPA 8021B

Surrogate 4-Bromofluorobenzene recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 581078-002.

Soil samples were not received in Terracore kits and therefore were prepared by method 5030. Lab Sample ID 581078-003 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Ethylbenzene, Toluene, m,p-Xylenes, o-Xylene 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: 581078-001, -002, -003, -004.

The Laboratory Control Sample for Toluene, m,p-Xylenes, Ethylbenzene, o-Xylene is within laboratory Control Limits, therefore the data was accepted.


Tetra Tech- Midland, Midland, TX Project Name: Madera 19 Federal #1



Project Id:212c-MD-01102-200Contact:Ike TavarezProject Location:Lea CO.,NM

Date Received in Lab: Tue Apr-03-18 08:49 am Report Date: 03-APR-18 Project Manager: Jessica Kramer

	Lab Id:	581078-	001	581078-	002	581078-	003	581078-0	04	
Analysis Requested	Field Id:	Stockpile #1 Co	mposite #2	Stockpile #4 Co	mposite #2	Stockpile #11 Co	omposite #2	Bottomhole Sout	h @ 15-16	
Analysis Requested	Depth:									
	Matrix:	SOIL	SOIL			SOIL		SOIL		
	Sampled:	Apr-02-18	00:00	Apr-02-18	00:00	Apr-02-18	00:00	Apr-02-18 (	00:00	
BTEX by EPA 8021B	Extracted:	Apr-03-18	09:00	Apr-03-18	09:00	Apr-03-18	09:00	Apr-03-18 (	09:00	
	Analyzed:	Apr-03-18	12:33	Apr-03-18	12:52	Apr-03-18	11:42	Apr-03-18 1	3:32	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	
Benzene		< 0.00202	0.00202	< 0.00199	0.00199	< 0.00201	0.00201	< 0.100	0.100	
Toluene		0.0564	0.00202	0.0296	0.00199	0.00566	0.00201	6.28	0.100	
Ethylbenzene		0.00942	0.00202	< 0.00199	0.00199	< 0.00201	0.00201	2.66	0.100	
m,p-Xylenes		0.485	0.00404	0.367	0.00398	0.433	0.00402	35.6	0.201	
o-Xylene		0.217	0.00202	0.216	0.00199	0.147	0.00201	11.5	0.100	
Total Xylenes		0.702	0.00202	0.583	0.00199	0.580	0.00201	47.1	0.100	
Total BTEX		0.768	0.00202	0.613	0.00199	0.586	0.00201	56.0	0.100	
TPH By SW8015 Mod	Extracted:							Apr-03-18 (	09:00	
	Analyzed:							Apr-03-18 1	0:49	
	Units/RL:							mg/kg	RL	
Gasoline Range Hydrocarbons (GRO)								859	15.0	
Diesel Range Organics (DRO)								938	15.0	
Oil Range Hydrocarbons (ORO)								28.5	15.0	
Total TPH								1830	15.0	

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Version: 1.%

fession kenner

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 LimitSDLSample Detection LimitLOD Limit of Detection
- PQL Practical Quantitation Limit MQL Method Quantitation Limit LOQ Limit of Quantitation
- DL Method Detection Limit
- NC Non-Calculable

SMP Clier	nt Sample	BLK	Method Blank	
BKS/LCS	Blank Spike/Laboratory Control Sample	BKSD/LCSD	Blank Spike Duplicate/Labor	atory 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



## Project Name: Madera 19 Federal #1

Work Or Lab Batch	<b>ders :</b> 58107	8, Sample: 581078-004 / SMP	Project ID: 212c-MD-01102-200 P Batch: 1 Matrix: Soil									
Units:	mg/kg	<b>Date Analyzed:</b> 04/03/18 10:49	SU	RROGATE R	FCOVERV 9	STUDY						
	TPH I	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags					
1.011		Analytes				70.107						
T-Chlorooct	tane		73.2	99.8	73	70-135						
o-Terpneny	L 20455(1	C	36.2	49.9	73	70-135						
Lab Batch	#: 3043361	Sample: 581078-0037 SMP	Batch		: 5011							
Units:	mg/kg	Date Analyzed: 04/03/18 11:42	SURROGATE RECOVERY STUDY									
	втех	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags					
1,4-Difluoro	obenzene		0.0258	0.0300	86	70-130						
4-Bromoflu	orobenzene		0.0337	0.0300	112	70-130						
Lab Batch	#: 3045561	Sample: 581078-001 / SMP	Batch	h: 1 Matrix	: Soil							
Units:	mg/kg	Date Analyzed: 04/03/18 12:33	SURROGATE RECOVERY STUDY									
	втех	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags					
1 4 Difference	-1	Anarytes	0.0251	0.0200	0.1	70.100						
1,4-Dilluoro	obenzene		0.0251	0.0300	84	70-130						
4-Diomonu	#• 2045561	Sample: 581078 002 / SMD	0.0350	0.0300		/0-130						
	#: 3043301	Sample: 381078-0027 SMP	Datci		5011							
Units:	mg/kg	Date Analyzed: 04/03/18 12:52	SU	RROGATE R	ECOVERY S	STUDY						
	BTEX	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags					
1,4-Difluoro	obenzene		0.0267	0.0300	89	70-130						
4-Bromoflu	orobenzene		0.0416	0.0300	139	70-130	**					
Lab Batch	<b>#:</b> 3045561	Sample: 581078-004 / SMP	Batch	h: 1 Matrix:	Soil							
Units:	mg/kg	Date Analyzed: 04/03/18 13:32	SU	RROGATE R	ECOVERY S	STUDY						
	втех	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags					
1,4-Difluoro	obenzene		0.0298	0.0300	99	70-130						
4-Bromoflu	orobenzene		0.0350	0.0300	117	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



Project Name: Madera 19 Federal #1

Work Or	ders: 58107	8, Sample: 7641020 1 BLK /	RIK Dotak	Project ID:	212c-MD-0	1102-200				
Units:	mg/kg	Date Analyzed: 04/03/18 09:35		RROGATE R	FCOVERV	STUDV	]			
	TPH	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1-Chlorooct	ane	Analytes	89.2	100	00	70 125	]			
o-Ternhenvl			88.5 46.5	50.0	00	70-135				
I ah Batch	#• 3045561	Sample: 7641952-1-BLK /	BIK Batch	JU.U h: 1 Matrix	• Solid	70-133				
Units:	mg/kg	Date Analyzed: 04/03/18 11:23	23 SURROGATE RECOVERY STUDY							
	BTE	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1.4-Difluoro	benzene		0.0288	0.0300	96	70-130				
4-Bromoflue	orobenzene		0.0267	0.0300	89	70-130				
Lab Batch	#: 3045561	Sample: 7641952-1-BKS /	BKS Batch	h: 1 Matrix	: Solid	10 150				
Units:	mg/kg	Date Analyzed: 04/03/18 09:27	SURROGATE RECOVERY STUDY							
	BTEX	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
140.0	1	Analytes	0.0000	0.0200	105	50.100				
1,4-Dilluoro	obenzene		0.0322	0.0300	107	70-130				
I ob Potob	#• 2045540	Sample: 7641020 1 PKS /	DVS Detak	0.0300	97 • Solid	/0-130				
	#: 5045540	<b>Sample:</b> 7041929-1-DKS/	DKS Datci		: Solid					
Units:	mg/kg	Date Analyzed: 04/03/18 09:58	SU	RROGATE R	ECOVERY S	STUDY				
	TPH	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1-Chlorooct	ane		109	100	109	70-135				
o-Terphenyl			47.3	50.0	95	70-135				
Lab Batch	#: 3045561	Sample: 7641952-1-BSD /	BSD Batch	h: 1 Matrix	: Solid					
Units:	mg/kg	Date Analyzed: 04/03/18 09:46	SU	<b>RROGATE R</b>	ECOVERY S	STUDY				
	BTE	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1,4-Difluoro	obenzene		0.0296	0.0300	99	70-130				
4-Bromoflue	orobenzene		0.0299	0.0300	100	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



Project Name: Madera 19 Federal #1

Work Or Lab Batch	<b>ders :</b> 58107	8, Sample: 7641929-1-BSD / <sup>7</sup>	RSD Batch	Project ID	212c-MD-0	1102-200		
Units:	mg/kg	Date Analyzed: 04/03/18 10:21	SU SU	RROGATE R	ECOVERY	STUDY		
	TPH I	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
		Analytes			[0]			
1-Chlorooct	ane		129	100	129	70-135		
o-Terpheny	1		62.1	50.0	124	70-135		
Lab Batch	<b>#:</b> 3045561	<b>Sample:</b> 581078-003 S / MS	S Batch	n: 1 Matrix	: Soil			
Units:	inits: mg/kg Date Analyzed: 04/03/18 10:05 SURROGATE RECOVERY STU							
	втех	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
1.4-Difluor	benzene		0.0260	0.0300	87	70-130		
4-Bromoflu	orobenzene		0.0338	0.0300	113	70-130		
Lab Batch	#: 3045540	<b>Sample:</b> 580999-001 S / MS	S Batch	n: 1 Matrix	: Soil	/0150		
Units:	mg/kg	Date Analyzed: 04/03/18 11:42	SU	RROGATE R	ECOVERY	STUDY		
	TPHI	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
		Analytes			[D]			
1-Chlorooct	ane		104	99.9	104	70-135		
o-Terpheny	1		46.0	50.0	92	70-135		
Lab Batch	<b>#:</b> 3045561	Sample: 581078-003 SD / M	MSD Batch	n: 1 Matrix	: Soil			
Units:	mg/kg	Date Analyzed: 04/03/18 10:24	SU	RROGATE R	ECOVERY	STUDY		
	втех	K by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
1,4-Difluoro	obenzene		0.0273	0.0300	91	70-130		
4-Bromoflu	orobenzene		0.0309	0.0300	103	70-130		
Lab Batch	#: 3045540	Sample: 580999-001 SD / M	MSD Batch	n: 1 Matrix	: Soil			
Units:	mg/kg	Date Analyzed: 04/03/18 12:05	SU	RROGATE R	ECOVERY	STUDY		
	TPH I	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
1-Chlorooct	ane		93.3	99.9	93	70-135		
o-Terpheny	1		42.6	50.0	85	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



## **BS / BSD Recoveries**



### Project Name: Madera 19 Federal #1

Work Order #: 581078							Pro	ject ID:	212c-MD-0	1102-200		
Analyst: ALJ	D	ate Prepai	ed: 04/03/20	18			Date A	nalyzed:	04/03/2018			
Lab Batch ID: 3045561 Sample: 7641952-1	1952-1-BKS         Batch #: 1					Matrix: Solid						
Units: mg/kg		BLAN	K /BLANK	SPIKE / ]	BLANK	SPIKE DUP	LICATE	RECOV	ERY STU	DY		
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	0.124	124	0.100	0.121	121	2	70-130	35		
Toluene	< 0.00200	0.0998	0.118	118	0.100	0.115	115	3	70-130	35		
Ethylbenzene	< 0.00200	0.0998	0.116	116	0.100	0.113	113	3	70-130	35		
m,p-Xylenes	< 0.00399	0.200	0.239	120	0.201	0.231	115	3	70-130	35		
o-Xylene	< 0.00200	0.0998	0.118	118	0.100	0.114	114	3	70-130	35		
Analyst: ARM	D	ate Prepai	ed: 04/03/20	18			Date A	nalyzed:	04/03/2018			
Lab Batch ID: 3045540 Sample: 7641929-1	-BKS	Batc	<b>h #:</b> 1					Matrix:	Solid			
Units: mg/kg		BLAN	K /BLANK	SPIKE / ]	BLANK	SPIKE DUP	LICATE	RECOV	ERY STU	DY		
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	901	90	1000	1150	115	24	70-135	20	F	
Diesel Range Organics (DRO)	<15.0	1000	942	94	1000	1190	119	23	70-135	20	F	

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: Madera 19 Federal #1



Work Order # :	581078						Project II	<b>):</b> 212c-N	AD-01102	2-200		
Lab Batch ID:	3045561	QC- Sample ID:	581078	-003 S	Ba	tch #:	1 Matrix	<b>k:</b> Soil				
Date Analyzed:	04/03/2018	Date Prepared:	04/03/2	018	An	alyst: A	ALJ					
<b>Reporting Units:</b>	mg/kg		Μ	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
	BTEX by EPA 8021B	Parent Sample Result	Spike	Spiked Sample Result	Spiked Sample	Spike	Duplicate Spiked Sample Bosult [F]	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
	Analytes	[A]	[B]		[D]	[E]	Kesun [F]	[G]	/0	701	70KI D	
Benzene		<0.00202	0.101	0.0783	78	0.100	0.0795	80	2	70-130	35	
Toluene		0.00566	0.101	0.0662	60	0.100	0.0690	63	4	70-130	35	X
Ethylbenzene		<0.00202	0.101	0.0535	53	0.100	0.0510	51	5	70-130	35	X
m,p-Xylenes		0.433	0.202	0.392	0	0.201	0.352	0	11	70-130	35	X
o-Xylene		0.147	0.101	0.165	18	0.100	0.146	0	12	70-130	35	X
Lab Batch ID:	3045540	QC- Sample ID:	580999	-001 S	Ba	tch #:	1 Matrix	<b>k:</b> Soil				
Date Analyzed:	04/03/2018	Date Prepared:	04/03/2	018	An	alyst: A	ARM					
<b>Reporting Units:</b>	mg/kg	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY										
	TPH By SW8015 Mod	Parent Sample	Spike	Spiked Sample Result	Spiked Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
	Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	

1020

1100

102

110

999

999

926

1040

93

104

10

6

70-135

70-135

20 20

<15.0

<15.0

999

999

Gasoline Range Hydrocarbons (GRO)

Diesel Range Organics (DRO)

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

	Relinquished by	Relinquished by		Dolinguishod b						( LAB USE )	LAB #		Comments:	Commonte:	Depairing	state)	Project Name:	Cilent Name:	5
	: Date: Time:	". Date: Time:	222 4-3-18 8:49 am			Pattern hale South in 15-16	Stock Die #11 (ander site #	Stock pile #4 Composite #2	Hock pla #1 Composite #2		SAMPLE IDENTIFICATION		Lush - Same	Xenco	Tetratect	Lea Co., NM	Madera 19 Federal #1	Marathon	Tetra Tech, Inc.
ORIGINAL (	Received by:	Received by:	Received by:			4.2.18	2 4.2.18	4.2.18	4.2.18	DATE	YEAR: 2017	SAMPL	day	Sampler Signatu		Project #: 2.12		Site Manager:	
COPY			Alla			1	1	1	)		3	ING MA		Ine: John		C-MD		Ike	
	Date: T	Date: T	Y/HIS			X		X	X	HCL HNO <sub>3</sub>	_	TRIX PRESE		N-Milel		- 01102		Tavarez	4000 N. Big Spring Stre 401 Midland, Texas 7 Tel (432) 682-455 Fax (432) 682-394
	ime:	ime:	ime: B:UO			-	×	^	×	None # CONT.	AINE	HOD RS		1		.200			et, Ste 9705 9
(Circle		Samp	LAE			×	X	X	×	FILTERE	ED (Y )21B	/N) BTE	X 8260	в				_	
B) HAND DELIVE		le Temperature	B USE ONLY			×			-	TPH 1X TPH 801 PAH 827 Total Met TCLP Me	5M ( 70C tals Ag	GRO g As E	a Cd Cr	Pb Se	MRO) Hg				
Ten CF:	Rush (	X RUSH	REMARKS:							TCLP Vo TCLP Se RCI GC/MS V	latiles mi Vo ol. 82	latiles 260B /	624				e or spec	ANALYSIS	50
np: -0.9 (0-6: -0.2°C (6-23: +0.2°	Harges Authoriz	Same Day 24	ANDARD							GC/MS S PCB's 80 NORM PLM (Ast Chloride	emi. V 082 / 6 Destos	Vol. 8 608 6)	270C/62	5			ITY Method	REQUEST	(010
C) IR ID:	ed • TRRP Report	4 hr 48 hr 72 h								Chloride General Anion/Ca	Su Wate	ilfate r Chei Baland	TDS mistry (s ce	ee atta	ached	list)	No.)		~
8-F		Υ					-			Hold									



# **XENCO Laboratories** ATORIES Prelogin/Nonconformance Report- Sample Log-In



Client: Tetra Tech- Midland	Acceptable Temperature Range: 0 - 6 degC						
Date/ Time Received: 04/03/2018 08:49:00 AM	Air and Metal samples A	Acceptable Range: Ambient					
Work Order #: 581078	Temperature Measuring device used : R8						
Sample Reco	eipt Checklist	Comments					
#1 *Temperature of cooler(s)?	.7						
#2 *Shipping container in good condition?	Yes						
#3 *Samples received on ice?	Yes						
#4 *Custody Seals intact on shipping container/ cooler?	Yes						
#5 Custody Seals intact on sample bottles?	N/A						
#6*Custody Seals Signed and dated?	N/A						
#7 *Chain of Custody present?	N/A						
#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	TPH was received in bulk containers.					
#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: Balla Tal Brianna Teel

Date: 04/03/2018

Checklist reviewed by: Jessica Wramer Jessica Kramer

Date: 04/03/2018

# Analytical Report 581420

for Tetra Tech- Midland

**Project Manager: Ike Tavarez** 

Marathon-Madera 19 Federal #1

212C-MD-01102-200

### 05-APR-18

Collected By: Client





### 1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122): Texas (T104704215-18-24), 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)



05-APR-18



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

### Reference: XENCO Report No(s): **581420 Marathon-Madera 19 Federal #1** Project Address: Lea Co 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) 581420. 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. 581420 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,

Jession KRAMER

Jessica Kramer Project Assistant

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#### Sample Id

Stockpile #22 Composite Stockpile #23 Composite Stockpile #24 Composite

## Sample Cross Reference 581420



Marathon-Madera 19 Federal #1

Matrix	Date Collected	Sample Depth	Lab Sample Id
S	04-04-18 00:00		581420-001
S	04-04-18 00:00		581420-002
S	04-04-18 00:00		581420-003





## CASE NARRATIVE

Client Name: Tetra Tech- Midland Project Name: Marathon-Madera 19 Federal #1

 Project ID:
 212C-MD-01102-200

 Work Order Number(s):
 581420

Report Date:05-APR-18Date Received:04/05/2018

#### Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments: Batch: LBA-3045814 BTEX by EPA 8021B Soil samples were not received in Terracore kits and therefore were prepared by method 5030.



Tetra Tech- Midland, Midland, TX Project Name: Marathon-Madera 19 Federal #1



Project Id:212C-MD-01102-200Contact:Ike TavarezProject Location:Lea Co NM

Date Received in Lab:Thu Apr-05-18 10:00 amReport Date:05-APR-18Project Manager:Jessica Kramer

	Lab Id:	581420-	001	581420-	002	581420-	003		
Analysis Requested	Field Id:	Stockpile #22	Composite	Stockpile #23 0	Composite	Stockpile #24 Composite			
Analysis Requested	Depth:								
	Matrix:	SOIL		SOIL		SOIL	,		
	Sampled:	Apr-04-18	00:00	Apr-04-18	00:00	Apr-04-18	00:00		
BTEX by EPA 8021B	Extracted:	Apr-05-18	10:00	Apr-05-18	10:00	Apr-05-18	10:00		
	Analyzed:	Apr-05-18	11:57	Apr-05-18	12:16	Apr-05-18	12:55		
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Benzene		< 0.00201	0.00201	< 0.00202	0.00202	< 0.00199	0.00199		
Toluene		0.0286	0.00201	0.0481	0.00202	0.0493	0.00199		
Ethylbenzene		0.0139	0.00201	0.0113	0.00202	0.0197	0.00199		
m,p-Xylenes		0.436	0.00402	0.394	0.00403	0.455	0.00398		
o-Xylene		0.156	0.00201	0.133	0.00202	0.153	0.00199		
Total Xylenes		0.592	0.00201	0.527	0.00202	0.608	0.00199		
Total BTEX		0.635	0.00201	0.586	0.00202	0.677	0.00199		
TPH By SW8015 Mod	Extracted:	Apr-05-18	12:00	Apr-05-18	12:00	Apr-05-18	12:00		
	Analyzed:	Apr-05-18	14:13	Apr-05-18	14:34	Apr-05-18	14:55		
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Gasoline Range Hydrocarbons (GRO)		659	15.0	1030	15.0	1170	15.0		
Diesel Range Organics (DRO)		1240	15.0	1550	15.0	1680	15.0		
Oil Range Hydrocarbons (ORO)		41.8	15.0	52.3	15.0	55.9	15.0		
Total TPH		1940	15.0	2630	15.0	2910	15.0		

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Version: 1.%

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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 LimitSDLSample Detection LimitLOD Limit of Detection
- PQL Practical Quantitation Limit MQL Method Quantitation Limit LOQ Limit of Quantitation
- DL Method Detection Limit
- NC Non-Calculable

SMP Clier	nt Sample	BLK	Method Blank	
BKS/LCS	Blank Spike/Laboratory Control Sample	BKSD/LCSD	Blank Spike Duplicate/Labor	atory 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



Units:mg/kgDate Analyzed:GURROGATERECOVERY STUDYBTEX by EPA 8021BAnalytes $nonontFoundLAITrueAnalytesRecovery% R0.0300Recovery% R0.0300Controlbinits% R% R% RControl% R% R$	Work Ore Lab Batch #	<b>ders :</b> 581420 #: 3045814	0, Sample: 581420-001 / SMP	Batcl	Project ID: h: 1 Matrix:	212C-MD-0 Soil	01102-200	
BTEX by EPA 8021B Analytes         Amount [A]         True Anount [A]         True Anount [A]         Recovery (B]         Control Limits         Flags           1.4-Difhorobenzee         0.0266         0.0300         127         70-130            1.4-Difhorobenzee         0.0382         0.0300         127         70-130            1.4b Batch #:         3045814         Sample: 581420-002 /SMP         Batch :         1         Matrix: Soil            Units:         mg/kg         Date Analyzed: 04/05/18 12:16         SURROGATE RECOVERY STUDY         Flags         %R         Plags           1.4-Difhorobenzene         0.0253         0.0300         84         70-130             1.4-Difhorobenzene         0.0253         0.0300         84         70-130             1.4-Difhorobenzene         0.0253         0.0300         84         70-130             1.4-Difhorobenzene         0.0234         0.0300         84         70-130             1.4-Difhorobenzene         0.0234         0.0300         110         70-130             1.4-Difhorobenzene         0.0377         0.0300         100	Units:	mg/kg	Date Analyzed: 04/05/18 11:57	SU	RROGATE RI	ECOVERYS	STUDY	
Analytes         (P)         (P)           1.4-Diffuorbenzene         0.0266         0.0300         89         70-130           Lab Batch #; 3045814         Sample: 581420-002 / SMP         Batt: 1         Matrix: S		BTEX	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
1.4-Diffuorobenzene       0.0266       0.0300       89       70-130         4-Bromofloorobenzene       0.0382       0.0300       127       70-130         Lab Batch #: 3045814       Sample: 581420-002 / SMP       Batch : 1       Matrix: Solf         Units:       mg/kg       Date Analyzed: 04/05/18 12:16       SUEROGATE RECOVERY       Flags         Analytes       0.0253       0.0300       844       70-130         1.4-Diffuorobenzene       0.0253       0.0300       844       70-130         1.4-Diffuorobenzene       0.0253       0.0300       844       70-130         1.4-Diffuorobenzene       0.0253       0.0300       844       70-130         1.4-Bronofluorobenzene       0.0253       0.0300       844       70-130         1.4-Bronofluorobenzene       0.0253       0.0300       844       70-130         1.4-Bronofluorobenzene       0.0254       0.0300       844       70-130         1.4-Bronofluorobenzene       0.0284       0.0300       95       70-130         1.4-Bronofluorobenzene       0.0284       0.0300       126       70-130         1.4-Bronofluorobenzene       0.0284       0.0300       126       70-130         1.4-Bronofluorobenzene			Analytes			[D]		
4-BromeRhoorobenzene       0.0382       0.0300       127       70-130         Lab Batch #:       3045814       Sample:       581420-002/SMP       Batch::       1       Matrix:       Soil         Units:       mg/kg       Date Analyzed:       04/05/18 12:10       GUERRGGATE       Recovery $Single       Control8%R       Plags         1.4-Diffuorobenzene       0.0253       0.0300       84       70-130       -         4-Bromofluorobenzene       0.0253       0.0300       84       70-130       -         4-Bromofluorobenzene       0.0253       0.0300       84       70-130       -         Lab Batch #:       3045814       Sample:       S81420-003/SMP       Batch::       1       Matrix:       Soil       -         Lab Batch #:       3045814       Sample:       S81420-003/SMP       Batch::       1       Matrix:       Soil       Plags         Lab Batch #:       3045814       Sample:       S81420-001/SMP       Batch::       1       Matrix:       Soil       Plags         Lab Batch #:       3045830       Sample:       S81420-001/SMP       Amount[A]       Recovery[B]       Matrix:       Soil       Control[B]       Signe       Plags     $	1,4-Difluorol	benzene		0.0266	0.0300	89	70-130	
Lab Batch #:         3045814         Sample:         581420-002 / SMP         Batch:         1         Matrix:         Solt           Units:         mg/kg         Date Analyzed:         04/05/18 12:16         SURROGATE         Recovery %G         Control 1/SMR         Plags           IA:         BTEX by EPA 8021B         Analytes         0.0253         0.0300         844         70-130         -           1.4:         Ditorobenzee         0.0253         0.0300         844         70-130         -           Lab Batch #:         3045814         Sample:         581420-003/SMP         Batch:         1         Matrix:         Solt         -	4-Bromofluo	robenzene		0.0382	0.0300	127	70-130	
Units:         mg/kg         Date Analyzed:         SURROGATE RECOVERY STUDY           BTEX by EPA 8021B Analytes         Amount [A]         True Amount [B]         Recovery %R [D]         Control Limits %R         Flags           1.4-Difluorobenzene         0.0253         0.0300         8.4         70-130         -           1.4-Difluorobenzene         0.0334         0.0300         8.4         70-130         -           1.4-Difluorobenzene         0.0344         0.0300         8.4         70-130         -           Lab Batch #:         3045814         Sample: 581420-003 / SMP         Batch:         1         Matrix:         SUTEXCGATE RECOVERY STUDY           Units:         mg/kg         Date Analyzed:         04/05/18 12:55         SURGGATE RECOVERY STUDY         Flags           1.4-Difluorobenzene         0.0284         0.0300         95         70-130         -           1.4-Difluorobenzene         0.0284         0.0300         95         70-130         -           1.4-Difluorobenzene         0.0377         0.0300         126         70-130         -           1.4-Difluorobenzene         Date Analyzed: 04/05/18 14:13         SURECOATE RECOVERY STUDY         -         -           1.4-Difluorobenzene         Date Analyzed: 04/05/	Lab Batch #	<b>#:</b> 3045814	Sample: 581420-002 / SMP	Batcl	h: 1 Matrix:	Soil		
BTEX by EPA 8021B Analytes         Amount [A]         True Amount [A]         True Amount [B]         Recovery %R [D]         Control Limits %R         Flags           1.4-Diffuorobenzene         0.0253         0.0300         84         70-130            4-Bromofluorobenzene         0.0334         0.0300         111         70-130            Lab Batch #:         3045814         Sample:         581420-003 / SMP         Batch:         1         Matrix:         Soil           Units:         mg/kg         Date Analyzed:         04/05/18 12:55         SURROGATE         RECOVERY STUDY           BTEX by EPA 8021B         Amount [A]         Mount [A]         True Amount [B]         Recovery %R [D]         Control Limits %R         Flags           1.4-Difluorobenzene         0.0284         0.0300         95         70-130            Lab Batch #:         3045830         Sample: 581420-001 / SMP         Batch:         1         Matrix: Soil            Units:         mg/kg         Date Analyzed:         04/05/18 14:13         SURROGATE         Recovery %R [D]         Control Limits %R         Flags %R           1-Chlorooctane         04/05/18 14:13         SURROGATE         Recovery f00         70-135	Units:	mg/kg	Date Analyzed: 04/05/18 12:16	SU	RROGATE RI	ECOVERY	STUDY	
1.4-Difluorobenzene         0.0253         0.0300         84         70-130           4-Bromofluorobenzene         0.0334         0.0300         111         70-130           Lab Batch #: 3045814         Sample: 581420-003 / SMP         Batch:         1         Matrix: Soil           Units:         mg/kg         Date Analyzed: 04/05/18 12:55         SURROGATE RECOVERY STUDY           BTEX by EPA 8021B         Amount [A]         Amount Found [A]         True Amount [B]         Recovery %R         Control Limits         Flags           1.4-Difluorobenzene         0.0284         0.0300         95         70-130            1.4-Difluorobenzene         0.0284         0.0300         95         70-130            Lab Batch #: 3045830         Sample: 581420-001 / SMP         Batch:         1         Matrix: Soil            Units:         mg/kg         Date Analyzed: 04/05/18 14:13         SURROGATE RECOVERY STUDY          Flags           1-Chlorooctane         105         99.7         105         70-135            1-Chlorooctane         Sample: 581420-002 / SMP         Match:         1         Matrix: Soil            Lab Batch #: 3045830         Sample: 581420-002 / SMP         Match:         1<		BTEX	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene         0.0334         0.0300         111         70-130           Lab Batch #: 3045814         Sample: 581420-003 / SMP         Batch:         1         Matrix: Soil           Units:         mg/kg         Date Analyzed:         04/05/18 12:55         SURROGATE RECOVERY STUDY           BTEX by EPA 8021B         Amount (A)         True (B)         Recovery %R         Control Limits %R         Flags           1.4-Difluorobenzene         0.0284         0.0300         95         70-130            1.4-Difluorobenzene         0.0377         0.0300         126         70-130            4-Bromofluorobenzene         0.0377         0.0300         126         70-130            Lab Batch #: 3045830         Sample: 581420-001 / SMP         Batch:         1         Matrix: Soil            Units:         mg/kg         Date Analyzed:         04/05/18 14:13         SURROGATE RECOVERY STUDY            1-Chlorooctane         105         99.7         105         70-135         Flags           0-Terphenyl         49.0         49.9         98         70-135         Flags           Lab Batch #: 3045830         Sample: 581420-002 / SMP         Batch:         1         Matrix: S	1,4-Difluorol	benzene		0.0253	0.0300	84	70-130	
Lab Batch #:       3045814       Sample:       581420-003 / SMP       Batch:       1       Matrix:       Soil         Units:       mg/kg       Date Analyzed:       04/05/18 12:55       SURROGATE       RECOVERY STUDY         BTEX by EPA 8021B       Amount Found [A]       True Amount [B]       Recovery %R [D]       Control Linnis %R [D]       Flags         1.4-Diffuorobenzene       0.0284       0.0300       95       70-130       -         4-Bromofluorobenzene       0.0284       0.0300       126       70-130       -         Lab Batch #:       3045830       Sample:       581420-001 / SMP       Batch:       1       Matrix:       Soil         Units:       mg/kg       Date Analyzed:       04/05/18 14:13       SURROGATE       Recovery [D]       Control Linnis %R [D]       Flags         TPH By SW8015 Mod Analytes       Amount [A]       True Analytes       Recovery [D]       Control Linnis %R [D]       Flags         1-Cchlorooctane o-Terphenyl       105       99.7       105       70-135       -         Lab Batch #:       3045830       Sample:       Sample:       Satch:       1       Matrix:       Soil         Units:       mg/kg       Date Analyzed:       04/05/18 14:34       Guroda	4-Bromofluo	robenzene		0.0334	0.0300	111	70-130	
Units:       mg/kg       Date Analyzed:       04/05/18 12:55       SURROGATE RECOVERY STUDY         BTEX by EPA 8021B       Amount       True       Amount       Recovery       Control       Flags         1.4-Diffuorobenzene       0.0284       0.0300       95       70-130          4-Bromofluorobenzene       0.0377       0.0300       126       70-130          Lab Batch #:       3045830       Sample:       581420-001 / SMP       Batch:       1       Matrix:       Soit          Units:       mg/kg       Date Analyzed:       04/05/18 14:13       SURROGATE RECOVERY       Flags       Flags         1-Chlorooctane       0.0377       0.0300       126       70-130           1-Chlorooctane       Date Analyzed:       04/05/18 14:13       SURROGATE RECOVERY       Flags         1-Chlorooctane       105       99.7       105       70-135          1-Chlorooctane       105       99.7       105       70-135          1-Sub Batch #:       3045830       Sample:       Sample:       Sub Sub Sol           1-Chlorooctane       Markits:       Matrix:       Sol       True Analytes <td< td=""><td>Lab Batch #</td><td><b>#:</b> 3045814</td><td>Sample: 581420-003 / SMP</td><td>Batcl</td><td>h: 1 Matrix:</td><td>Soil</td><td></td><td></td></td<>	Lab Batch #	<b>#:</b> 3045814	Sample: 581420-003 / SMP	Batcl	h: 1 Matrix:	Soil		
BTEX by EPA 8021B AnalytesAmount Found [A]True Amount [B]Recovery $%R$ [D]Control Limits $%R$ [D]Flags1.4-Difluorobenzene0.02840.03009570-1304-Bromofluorobenzene0.03770.030012670-1304-Bromofluorobenzene0.03770.030012670-130Lab Batch #: 3045830Sample: 581420-001 / SMPBatch:1Matrix: SoilUnits:mg/kgDate Analyzed: 04/05/18 14:13SURROGATE RECOVERY STUDYFlagsTPH By SW8015 Mod o-TerphenylAmount [A]True [B]Recovery $%R$ [D]Control $%R$ Flags1-Chlorooctane10599.710570-135o-Terphenyl49.049.99870-135Lab Batch #: 3045830Sample: 581420-002 / SMP Batch:Batch:1Matrix: SoilUnits:mg/kgDate Analyzed: 04/05/18 14:34SURROGATE RECOVERY STUDYUnits:mg/kgDate Analyzed: 04/05/18 14:34FlagsUnits:mg/kgDate Analyzed: 04/05/18 14:34Control LimitsTPH By SW8015 Mod AnalytesAmount Found [A]True Mount Recovery Batch:Control Matrix: SoilTChlorooctaneDate Analyzed: 04/05/18 14:34Control Control InitisFlags1-Chlorooctane11699.911670-1351-Chlorooctane11699.911670-135 <tr <td="">Flags1-Chlorooctane&lt;</tr>	Units:	mg/kg	Date Analyzed: 04/05/18 12:55	SU	RROGATE RI	ECOVERY	STUDY	
Analytes         I.e.		ВТЕХ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
1.4-Difluorobenzene       0.0284       0.0300       95       70-130         4-Bromofluorobenzene       0.0377       0.0300       126       70-130         Lab Batch #: 3045830       Sample: 581420-001 / SMP       Batch:       1       Matrix: Soil         Units:       mg/kg       Date Analyzed: 04/05/18 14:13       SURROGATE RECOVERY STUDY         TPH By SW8015 Mod       Amount [A]       True found [A]       Recovery biological       Control Limits %R       Flags         1-Chlorooctane       105       99.7       105       70-135       -         Lab Batch #: 3045830       Sample: 581420-002 / SMP       Batch:       1       Matrix: Soil       -         Lab Batch #: 3045830       Sample: 581420-002 / SMP       Batch:       1       Matrix: Soil       -         Units:       mg/kg       Date Analyzed: 04/05/18 14:34       SURROGATE RECOVERY STUDY       -       -         Lab Batch #: 3045830       Sample: 581420-002 / SMP       Batch:       1       Matrix: Soil       -         Units:       mg/kg       Date Analyzed: 04/05/18 14:34       SURROGATE RECOVERY STUDY       -       -         Lobatch #: 3045830       Sample: 581420-002 / SMP       Batch:       1       Matrix: Soil       -         Units: <td></td> <td></td> <td>Analytes</td> <td></td> <td></td> <td>[0]</td> <td></td> <td></td>			Analytes			[0]		
4-Bromofluorobenzene         0.0377         0.0300         126         70-130           Lab Batch #:         3045830         Sample:         581420-001 / SMP         Batch:         1         Matrix:         Soil           Units:         mg/kg         Date Analyzed:         04/05/18 14:13         SURROGATE         RECOVERY STUDY           TPH By SW8015 Mod         Amount Found [A]         True Amount [B]         Recovery %R [D]         Control Limits %R         Flags           1-Chlorooctane         105         99.7         105         70-135            o-Terphenyl         49.0         49.9         98         70-135            Lab Batch #:         3045830         Sample:         581420-002 / SMP         Batch:         1         Matrix:         Soil           Units:         mg/kg         Date Analyzed:         04/05/18 14:34         SURROGATE         RECOVERY STUDY           Units:         mg/kg         Date Analyzed:         04/05/18 14:34         SURROGATE         RECOVERY STUDY           TPH By SW8015 Mod         Amount [A]         Flags         %R [D]         Control Limits %R         Flags           1-Chlorooctane         Int         60-00         116         70-135	1,4-Difluorol	benzene		0.0284	0.0300	95	70-130	
Lab Batch #: 3045830Sample: 581420-001 / SMPBatch: 1Matrix: SolUnits:mg/kgDate Analyzed: 04/05/18 14:13SURROGATE RECOVERY STUDYTPH By SW8015 ModAmount Found [A]True Amount [B]Recovery %R [D]Control Limits %R [D]Flags1-Chlorooctane10599.710570-135-o-Terphenyl49.049.99870-135-Lab Batch #: 3045830Sample: 581420-002 / SMPBatch: 1Matrix: Soil-Units:mg/kgDate Analyzed: 04/05/18 14:34SURROGATE RECOVERY STUDY-TPH By SW8015 ModAmount Found [A]True Amount [B]Recovery %R [D]Control Limits %RFlags1-Chlorooctane04/05/18 14:34SURROGATE RECOVERY STUDY-I-Chlorooctane04/05/18 14:34SURROGATE RECOVERY STUDYI-Chlorooctane04/05/18 14:34-TPH By SW8015 ModAmount Found [A]Recovery %R [D]Control Limits %R %R [D]1-Chlorooctane11699.911670-1351-Chlorooctane11699.911670-1351-Chlorooctane11699.911670-1351-Chlorooctane11699.911670-135	4-Bromofluo	robenzene		0.0377	0.0300	126	70-130	
Units:       mg/kg       Date Analyzed:       04/05/18       14:13       SURROGATE RECOVERY STUDY         TPH By SW8015 Mod       Amount Found [A]       True Amount [B]       True Amount [B]       Recovery %R [D]       Control Limits %R       Flags         1-Chlorooctane       105       99.7       105       70-135       -         o-Terphenyl       49.0       49.9       98       70-135       -         Lab Batch #:       3045830       Sample:       581420-002 / SMP       Batch:       1       Matrix:       Soit         Units:       mg/kg       Date Analyzed:       04/05/18       14:34       SURROGATE RECOVERY STUDY       -         TPH By SW8015 Mod       Amount Found [A]       True Amount [B]       Recovery %R [D]       Control Limits %R       Flags         1-Chlorooctane       116       99.9       116       70-135       -         1-Chlorooctane       116       99.9       116       70-135       -         0-Terphenyl       49.8       50.0       100       70-135       -	Lab Batch #	<b>:</b> 3045830	Sample: 581420-001 / SMP	Batcl	h: 1 Matrix:	Soil		
TPH by SW8015 ModAmount Found [A]True Amount Found [B]True Amount [B]Recovery $%R$ [D]Control Limits $%R$ (P)1-Chlorooctane10599.710570-135 $$	Units:	mg/kg	Date Analyzed: 04/05/18 14:13	SU	RROGATE R	ECOVERY	STUDY	
1-Chlorooctane       105       99.7       105       70-135         o-Terphenyl       49.0       49.9       98       70-135         Lab Batch #: 3045830       Sample: 581420-002 / SMP       Batch:       1       Matrix: Soil         Units:       mg/kg       Date Analyzed: 04/05/18 14:34       SURROGATE RECOVERY STUDY         TPH By SW8015 Mod       Amount Found [A]       True Amount [B]       Recovery % % R       Flags         1-Chlorooctane       116       99.9       116       70-135         o-Terphenyl       49.8       50.0       100       70-135		TPH I	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl       49.0       49.9       98       70-135         Lab Batch #: 3045830       Sample: 581420-002 / SMP       Batch: 1       Matrix: Soil         Units:       mg/kg       Date Analyzed: 04/05/18 14:34       SURROGATE RECOVERY STUDY         TPH By SW8015 Mod       Amount [A]       True Amount [A]       Recovery %R [D]       %R %R       Flags         1-Chlorooctane       116       99.9       116       70-135         o-Terphenyl       49.8       50.0       100       70-135	1-Chloroocta	ine		105	99.7	105	70-135	
Lab Batch #: 3045830Sample: 581420-002 / SMPBatch:1Matrix:SoilUnits:mg/kgDate Analyzed:04/05/1814:34SURROGATERECOVERYSTUDYTPH By SW8015 ModAnalytesAmount [A][B]Recovery %R [D]Flags1-Chlorooctane11699.911670-135o-Terphenyl49.850.010070-135	o-Terphenyl			49.0	49.9	98	70-135	
Units:mg/kgDate Analyzed:04/05/1814:34SURROGATERECOVERYSUDYTPH By SW8015 ModAmount Found [A]True Amount [B]Recovery %R [D]Control Limits %R %R [D]Flags1-Chlorooctane11699.911670-135o-Terphenyl49.850.010070-135	Lab Batch #	<b>#:</b> 3045830	Sample: 581420-002 / SMP	Batcl	h: 1 Matrix:	Soil		
TPH By SW8015 ModAmount Found [A]True Amount [B]Control Limits %R [D]Flags1-Chlorooctane11699.911670-135o-Terphenyl49.850.010070-135	Units:	mg/kg	Date Analyzed: 04/05/18 14:34	SU	RROGATE RI	ECOVERY	STUDY	
1-Chlorooctane     116     99.9     116     70-135       o-Terphenyl     49.8     50.0     100     70-135		TPH I	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl 49.8 50.0 100 70-135	1-Chloroocta	ine		116	99.9	116	70-135	
	o-Terphenyl			49.8	50.0	100	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



Work Or Lab Batch	r <b>ders :</b> 581420 #: 3045830	0, Sample: 581420-003 / SMF	e Batc	Project ID h: 1 Matrix	212C-MD-0 Soil	01102-200	
Units:	mg/kg	Date Analyzed: 04/05/18 14:55	SU	JRROGATE R	ECOVERY S	STUDY	
	TPH I	3y SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooct	tane		108	99.7	108	70-135	
o-Terpheny	1		46.5	49.9	93	70-135	
Lab Batch	#: 3045814	Sample: 7642116-1-BLK /	BLK Batc	h: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 04/05/18 11:19	SU	JRROGATE R	ECOVERY S	STUDY	
	BTEX	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluor	obenzene		0.0269	0.0300	90	70-130	
4-Bromoflu	orobenzene		0.0256	0.0300	85	70-130	
Lab Batch	#: 3045830	Sample: 7642101-1-BLK /	BLK Batc	h: 1 Matrix	: Solid		
Units:	mg/kg	<b>Date Analyzed:</b> 04/05/18 13:09	SU	JRROGATE R	ECOVERY S	STUDY	
	TPH I	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			נשן		
1-Chlorooct	tane		92.7	100	93	70-135	
o-Terpheny	1		43.3	50.0	87	70-135	
Lab Batch	#: 3045814	Sample: 7642116-1-BKS /	BKS Bate	h: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 04/05/18 09:22	SU	JRROGATE R	ECOVERY S	STUDY	
	BTEX	K by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluor	obenzene		0.0313	0.0300	104	70-130	
4-Bromoflu	orobenzene		0.0314	0.0300	105	70-130	
Lab Batch	#: 3045830	Sample: 7642101-1-BKS /	BKS Bate	h: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 04/05/18 13:31	SU	JRROGATE R	ECOVERY S	STUDY	
	TPH I	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	tane		97.1	100	97	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



Work Oi Lab Batch	r <b>ders :</b> 581420 #: 3045814	0, Sample: 7642116-1-BSD / I	BSD Bate	Project ID: h: 1 Matrix	212C-MD-0 Solid	01102-200						
Units:	mg/kg	Date Analyzed: 04/05/18 09:42	SU	RROGATE R	ECOVERY	STUDY						
	BTEX	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags					
		Analytes			[D]							
1,4-Difluor	obenzene		0.0301	0.0300	100	70-130						
4-Bromoflu	orobenzene		0.0297	0.0300	99	70-130						
Lab Batch	<b>#:</b> 3045830	Sample: 7642101-1-BSD / 1	BSD Bate	h: 1 Matrix	: Solid							
Units:	mg/kg	Date Analyzed: 04/05/18 13:52	SURROGATE RECOVERY STUDY									
	TPH I	3y SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags					
1-Chlorooc	tane		99.2	100	99	70-135						
o-Terpheny	1		49.3	50.0	99	70-135						
Lab Batch	#: 3045814	<b>Sample:</b> 581096-004 S / MS	Batc	h: 1 Matrix	: Soil							
Units:	mg/kg	Date Analyzed: 04/05/18 10:01	SU	RROGATE R	ECOVERYS	STUDY						
	BTEX	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags					
1.4.5		Analytes										
1,4-Diffuor	obenzene		0.0274	0.0300	91	70-130						
4-Bromoflu	lorobenzene		0.0278	0.0300	93	70-130						
Lab Batch	#: 3045830	Sample: 581096-005 87 MS	S Batc	h: 1 Matrix	: Soil							
Units:	mg/kg	<b>Date Analyzed:</b> 04/05/18 15:36	SU	RROGATE R	ECOVERY	STUDY						
	TPH I	3y SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags					
1-Chlorooc	tane		109	99.8	109	70-135						
o-Terpheny	1		53.5	49.9	107	70-135						
Lab Batch	<b>#:</b> 3045814	Sample: 581096-004 SD / N	ASD Bate	h: 1 Matrix	Soil							
Units:	mg/kg	Date Analyzed: 04/05/18 10:20	SU	RROGATE R	ECOVERY	STUDY						
	ВТЕХ	K by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags					
1,4-Difluor	obenzene		0.0276	0.0300	92	70-130						
4 Bromoflu	1		0.0204	0.0000	101	50.100						

\* 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



Work Orders: 581420,		Project ID: 212C-MD-01102-200									
Lab Batch #: 3045830 Sample:	581096-005 SD / MSD Ba	tch: 1 Matrix:	Soil								
Units: mg/kg Date Analyzed:	04/05/18 15:57	SURROGATE RECOVERY STUDY									
TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags						
1-Chlorooctane	124	100	124	70-135							
o-Terphenyl	47.7	50.0	95	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



## **BS / BSD Recoveries**



### Project Name: Marathon-Madera 19 Federal #1

Work Order #: 58	81420							Proj	ect ID:	212C-MD-0	01102-200	)							
Analyst: ALJ		D	ate Prepar	red: 04/05/20	18			Date A	nalyzed: (	04/05/2018									
Lab Batch ID: 3045	Sample: 7642116-1-	BKS	Batcl	<b>h #:</b> 1					Matrix: S	Solid									
Units: mg/k	g		BLAN	K/BLANK	SPIKE / I	BLANK S	SPIKE DUP	LICATE	RECOV	ERY STUI	DY								
BTE	EX by EPA 8021B	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		<0.00201	0.100	0.127	127	0.101	0.120	119	6	70-130	35								
Toluene		<0.00201	0.100	0.120	120	0.101	0.113	112	6	70-130	35								
Ethylbenzene		<0.00201	0.100	0.115	115	0.101	0.108	107	6	70-130	35								
m,p-Xylenes		<0.00402	0.201	0.238	118	0.202	0.223	110	7	70-130	35								
o-Xylene		<0.00201	0.100	0.117	117	0.101	0.111	110	5	70-130	35								
Analyst: ARM	1	Date Prepared:         04/05/2018         Date Analyzed:         04/05/2018																	
Lab Batch ID: 3045	<b>Sample:</b> 7642101-1-	BKS	Batcl	<b>h #:</b> 1					Matrix: S	Solid									
Units: mg/kg	g		BLAN	K/BLANK	SPIKE / I	BLANK S	SPIKE DUP	LICATE	RECOV	ERY STUI	%RPD       35       35       35       35       35       35       35       35       35       35       35       35       35       35       35       35       35       35       35       36       JDY       Control       Limits       %RPD       Flag								
TPH Analytes	I By SW8015 Mod	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 H	Hydrocarbons (GRO)	<15.0	1000	859	86	1000	897	90	4	70-135	20								
Diesel Range Org	ganics (DRO)	<15.0	1000	910	91	1000	951	95	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-Madera 19 Federal #1



Work Order # :	581420						Project II	<b>D:</b> 212C-N	MD-01102	2-200		
Lab Batch ID:	3045814	QC- Sample ID:	-004 S	Ba	tch #:	1 Matrix	x: Soil					
Date Analyzed:	04/05/2018	Date Prepared:	04/05/2	018	Ar	alyst: A	ALJ					
<b>Reporting Units:</b>	mg/kg		Μ	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
	BTEX by EPA 8021B	Parent Sample Boopt	Spike	Spiked Sample Result	Spiked Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
	Analytes	[A]	Added [B]	[C]	%R [D]	Added [E]	Kesult [F]	%R [G]	<b>%</b>	%K	%RPD	
Benzene		<0.00202	0.101	0.0537	53	0.0994	0.0583	59	8	70-130	35	X
Toluene		<0.00202	0.101	0.0365	36	0.0994	0.0414	42	13	70-130	35	X
Ethylbenzene		<0.00202	0.101	0.0248	25	0.0994	0.0327	33	27	70-130	35	X
m,p-Xylenes		0.00869	0.202	0.0597	25	0.199	0.0707	31	17	70-130	35	X
o-Xylene		0.00436	0.101	0.0315	27	0.0994	0.0399	36	24	70-130	35	X
Lab Batch ID:	3045830	QC- Sample ID:	581096	-005 S	Ba	tch #:	1 Matrix	x: Soil				
Date Analyzed:	04/05/2018	Date Prepared:	04/05/2	018	Ar	alyst: A	ARM					
<b>Reporting Units:</b>	mg/kg		Μ	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
,	TPH By SW8015 Mod	Parent		Spiked Sample	Spiked	~ •	Duplicate	Spiked		Control	Control	

TPH By SW8015 Mod	Sample	Spike	Spiked Sample Result	Spiked Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
Analytes	[A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Gasoline Range Hydrocarbons (GRO)	91.9	998	1020	93	1000	990	90	3	70-135	20	
Diesel Range Organics (DRO)	743	998	1860	112	1000	1880	114	1	70-135	20	

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

	Relinquished by:	Relinquished by	Relinquished by:					( LAB USE )	LAB #		Receiving Laborato Comments:	Invoice to:	Project Location: (county, state)	Project Name:	Client Name:	Analysis Requ
	Date: Time:	Rude 4-5-18 1015 Date: Time:	Date: Time:	South Reported to 7 or 8 2	Stack pile #24 Compasite	Stack pile #23 Composite	Stackpile #22 Composite		SAMPLE IDENTIFICATION		" Xenco	Tetre Tech	loc / MM	arathon 19 Robert #1	Tetra Tech, Inc.	uest of Chain of Custody Record
ORIGINAL COPY	Received by:	Received by:	Boroined hy:	11-11	4/4/18 -	4/4/10 -	4/4/18 -	DATE TIME	YEAR:		Sampler Signature:	1 6160-	Project #:	The	Site Manager:	
	Date: Time:	UU 4/5/18 IV- Date: Time:			X	X	XXX	WATER SOIL HCL HNO <sub>3</sub> ICE	MATRIX METHOD	PRESERVATI	herether I'll	VVID - 01102 .		Tayarce	4000 N. Big Spring Street, Ste 401 Midland,Texas 79705 Tel (432) 682-4559 Fax (432) 682-3946	
(Cr		Sar			-	- ×	- X	# CONTAI FILTERED BTEX 8021	NERS 0 (Y/N) 1B B <sup>-</sup>	TEX 8260	DB	200				
de) HAND DI Te CF		DNLY			X	×	×	TPH TX100 TPH 8015M PAH 82700 Total Metals TCLP Metal	05 (Ext M ( GRC C s Ag As Is Ag As	to C35) D - DRO - Ba Cd Cr s Ba Cd C	ORO - MF Pb Se Hg r Pb Se Hg	RO) I 9		(Circle		001
imp: 8, 4 -:(0-6: -0.2°C) (6-23: +0.2°C)	Rush Charges Au Special Report Li	RUSH Same D						TCLP Volati TCLP Semi RCI GC/MS Vol. GC/MS Sen PCB's 8082 NORM	Volatile 8260E ni. Vol. 2 / 608	s 3 / 624 8270C/62	25			ANALYSIS REQUI		1
IR ID:R-8	uthorized imits or TRRP Report	1ay 24 hr 48 hr 72						PLM (Asbes Chloride Chloride General Wa Anion/Catio	stos) Sulfate ater Che n Balar	TDS emistry (s	ee attach	ed list)		EST thod No.)		Page /
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## **XENCO** Laboratories



**XENCO Laboratories** BORATORIES Prelogin/Nonconformance Report- Sample Log-In

Client: Tetra Tech- Midland	Acceptable Temperature Range: 0 - 6 degC Air and Metal samples Acceptable Range: Ambien Temperature Measuring device used : R8							
Date/ Time Received: 04/05/2018 10:00:00 AM								
Work Order #: 581420								
Sample Rec	eipt Checklist	Comments						
#1 *Temperature of cooler(s)?	8.6							
#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: Ballo Tal Brianna Teel

Date: 04/05/2018

Checklist reviewed by: Jession Veramer

Jessica Kramer

Date: 04/05/2018

# Analytical Report 581780

for Tetra Tech- Midland

**Project Manager: Ike Tavarez** 

Madera 19 Federal #1

212C-MD-01102.200

10-APR-18

Collected By: Client





1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122): Texas (T104704215-18-24), 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)



10-APR-18



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

Reference: XENCO Report No(s): **581780 Madera 19 Federal #1** Project Address: Lea Co., 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) 581780. 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. 581780 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,

**Julian Martinez** Project Manager

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994. Certified and approved by numerous States and Agencies. A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America



### Sample Id

South Bottomhole @ 20'
Stockpile #20 Composite #2
Stockpile #25 Composite
Stockpile #26 Composite
Stockpile #27 Composite
Stockpile #28 Composite
Stockpile #29 Composite
Stockpile #30 Composite
Stockpile #31 Composite
Stockpile #32 Composite
Stockpile #33 Composite
Stockpile #34 Composite
Stockpile #35 Composite

## Sample Cross Reference 581780



Madera 19 Federal #1

Matrix	Date Collected	Sample Depth	Lab Sample Id
S	04-06-18 00:00		581780-001
S	04-06-18 00:00		581780-002
S	04-06-18 00:00		581780-003
S	04-06-18 00:00		581780-004
S	04-06-18 00:00		581780-005
S	04-06-18 00:00		581780-006
S	04-06-18 00:00		581780-007
S	04-06-18 00:00		581780-008
S	04-06-18 00:00		581780-009
S	04-06-18 00:00		581780-010
S	04-06-18 00:00		581780-011
S	04-06-18 00:00		581780-012
S	04-06-18 00:00		581780-013





## CASE NARRATIVE

Client Name: Tetra Tech- Midland Project Name: Madera 19 Federal #1

 Project ID:
 212C-MD-01102.200

 Work Order Number(s):
 581780

Report Date: 10-APR-18 Date Received: 04/09/2018

#### Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments: Batch: LBA-3046117 BTEX by EPA 8021B Soil samples were not received in Terracore kits and therefore were prepared by method 5030.



Tetra Tech- Midland, Midland, TX Project Name: Madera 19 Federal #1



Project Id:212C-MD-01102.200Contact:Ike TavarezProject Location:Lea Co., NM

Date Received in Lab:Mon Apr-09-18 11:07 amReport Date:10-APR-18Project Manager:Jessica Kramer

	Lab Id:	581780-	001	581780-0	002	581780-	003	581780-0	004	581780-0	005	581780-006	
Analysis Requested	Field Id:	South Bottomh	ole @ 20'	Stockpile #20 Co	mposite #2	Stockpile #25 C	Composite	Stockpile #26 C	omposite	Stockpile #27 C	Composite	Stockpile #28 Composit	
Analysis Requested	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Apr-06-18	00:00	Apr-06-18	00:00	Apr-06-18	00:00	Apr-06-18 (	00:00	Apr-06-18 00:00		Apr-06-18 00:00	
BTEX by EPA 8021B	Extracted:	Apr-09-18	11:30	Apr-09-18	11:30	Apr-09-18	11:30	Apr-09-18 11:30		Apr-09-18 11:30		Apr-09-18	11:30
	Analyzed:	Apr-09-18	14:06	Apr-09-18	14:28	Apr-09-18	15:01	Apr-09-18	16:19	Apr-09-18	17:00	Apr-09-18	17:19
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		< 0.00201	0.00201	<0.0998	0.0998	< 0.0994	0.0994	< 0.100	0.100	< 0.0990	0.0990	<0.0998	0.0998
Toluene		< 0.00201	0.00201	1.73	0.0998	3.76	0.0994	3.00	0.100	2.79	0.0990	1.53	0.0998
Ethylbenzene		< 0.00201	0.00201	0.521	0.0998	2.38	0.0994	1.45	0.100	1.17	0.0990	0.873	0.0998
m,p-Xylenes		0.00558	0.00402	20.7	0.200	34.1	0.199	25.3	0.200	24.4	0.198	19.4	0.200
o-Xylene		< 0.00201	0.00201	7.39	0.0998	12.9	0.0994	9.23	0.100	8.28	0.0990	6.99	0.0998
Total Xylenes		0.00558	0.00201	28.1	0.0998	47.0	0.0994	34.5	0.100	32.7	0.0990	26.4	0.0998
Total BTEX		0.00558	0.00201	30.3	0.0998	53.1	0.0994	39.0	0.100	36.6	0.0990	28.8	0.0998
TPH By SW8015 Mod	Extracted:	Apr-09-18	12:00	Apr-09-18	12:00	Apr-09-18 12:00		Apr-09-18	12:00	Apr-09-18	12:00	Apr-09-18	12:00
	Analyzed:	Apr-09-18	12:23	Apr-09-18	12:45	Apr-09-18	13:07	Apr-09-18	13:29	Apr-09-18	13:50	Apr-09-18	14:11
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)		<15.0	15.0	1030	15.0	918	15.0	1060	14.9	945	15.0	998	15.0
Diesel Range Organics (DRO)		<15.0	15.0	1590	15.0	1340	15.0	1730	14.9	1340	15.0	1530	15.0
Oil Range Hydrocarbons (ORO)		<15.0	15.0	47.6	15.0	40.2	15.0	58.7	14.9	42.4	15.0	44.9	15.0
Total TPH		<15.0	15.0	2670	15.0	2300	15.0	2850	14.9	2330	15.0	2570	15.0

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Julian Martinez Project Manager

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi



Tetra Tech- Midland, Midland, TX Project Name: Madera 19 Federal #1



Project Id:212C-MD-01102.200Contact:Ike TavarezProject Location:Lea Co., NM

Date Received in Lab:Mon Apr-09-18 11:07 amReport Date:10-APR-18Project Manager:Jessica Kramer

	Lab Id:	581780-0	007	581780-0	008	581780-0	009	581780-0	010	581780-0	11	581780-0	012
Analysis Requested	Field Id:	Stockpile #29 C	omposite	Stockpile #30 C	Composite	Stockpile #31 C	Composite	Stockpile #32 C	Composite	Stockpile #33 C	omposite	Stockpile #34 C	Composite
Analysis Requested	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL	,	SOIL		SOIL	,
	Sampled:	Apr-06-18	00:00	Apr-06-18	00:00	Apr-06-18	00:00	Apr-06-18	00:00	Apr-06-18 (	00:00	Apr-06-18	00:00
BTEX by EPA 8021B	Extracted:	Apr-09-18	11:30	Apr-09-18	11:30	Apr-09-18	11:30	Apr-09-18	11:30	Apr-09-18 1	1:30	Apr-09-18	11:30
	Analyzed:	Apr-09-18	17:39	Apr-09-18	17:58	Apr-09-18	18:17	Apr-09-18	18:36	Apr-09-18 1	8:55	Apr-09-18	19:15
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		< 0.102	0.102	<0.0992	0.0992	<0.0996	0.0996	< 0.0994	0.0994	< 0.100	0.100	<0.0998	0.0998
Toluene		3.21	0.102	4.03	0.0992	3.28	0.0996	1.90	0.0994	1.60	0.100	3.28	0.0998
Ethylbenzene		1.25	0.102	1.70	0.0992	1.33	0.0996	0.792	0.0994	0.523	0.100	1.51	0.0998
m,p-Xylenes		29.4	0.204	31.8	0.198	27.9	0.199	21.5	0.199	20.0	0.200	29.1	0.200
o-Xylene		10.3	0.102	10.7	0.0992	9.50	0.0996	7.41	0.0994	6.97	0.100	9.96	0.0998
Total Xylenes		39.7	0.102	42.5	0.0992	37.4	0.0996	28.9	0.0994	27.0	0.100	39.1	0.0998
Total BTEX		44.2	0.102	48.2	0.0992	42.0	0.0996	31.6	0.0994	29.1	0.100	43.9	0.0998
TPH By SW8015 Mod	Extracted:	Apr-09-18	12:00	Apr-09-18	12:00	Apr-09-18	12:00	Apr-09-18	12:00	Apr-09-18 1	2:00	Apr-09-18	12:00
	Analyzed:	Apr-09-18	14:32	Apr-09-18	14:52	Apr-09-18	15:13	Apr-09-18	16:15	Apr-09-18 1	6:36	Apr-09-18	16:56
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)		1240	15.0	1230	15.0	1130	15.0	1010	15.0	929	15.0	1290	15.0
Diesel Range Organics (DRO)		1690	15.0	1710	15.0	1900	15.0	1800	15.0	1750	15.0	2100	15.0
Oil Range Hydrocarbons (ORO)		51.6	15.0	55.4	15.0	59.2	15.0	58.2	15.0	53.6	15.0	61.6	15.0
Total TPH		2980	15.0	3000	15.0	3090	15.0	2870	15.0	2730	15.0	3450	15.0

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Julian Martinez Project Manager

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi



Tetra Tech- Midland, Midland, TX Project Name: Madera 19 Federal #1



Project Id:212C-MD-01102.200Contact:Ike TavarezProject Location:Lea Co., NM

Date Received in Lab:Mon Apr-09-18 11:07 amReport Date:10-APR-18Project Manager:Jessica Kramer

	Lab Id:	581780-0	13			
Analysis Requested	Field Id:	Stockpile #35 C	omposite			
Anulysis Requested	Depth:					
	Matrix:	SOIL				
	Sampled:	Apr-06-18 0	0:00			
BTEX by EPA 8021B	Extracted:	Apr-09-18 1	1:30	1		
	Analyzed:	Apr-09-18 1	9:34			
	Units/RL:	mg/kg	RL			
Benzene		< 0.101	0.101			
Toluene		3.88	0.101			
Ethylbenzene		1.65	0.101			
m,p-Xylenes		31.7	0.202			
o-Xylene		10.7	0.101			
Total Xylenes		42.4	0.101			
Total BTEX		47.9	0.101			
TPH By SW8015 Mod	Extracted:	Apr-09-18 1	2:00			
	Analyzed:	Apr-09-18 1	7:17			
	Units/RL:	mg/kg	RL			
Gasoline Range Hydrocarbons (GRO)		1300	14.9			
Diesel Range Organics (DRO)		2100	14.9			
Oil Range Hydrocarbons (ORO)		59.5	14.9			
Total TPH		3460	14.9			

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Version: 1.%



Julian Martinez 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 LimitSDLSample Detection LimitLOD Limit of Detection
- PQL Practical Quantitation Limit MQL Method Quantitation Limit LOQ Limit of Quantitation
- DL Method Detection Limit
- NC Non-Calculable

SMP Clier	nt Sample	BLK	Method Blank				
BKS/LCS	Blank Spike/Laboratory Control Sample	BKSD/LCSD	Blank Spike Duplicate/Labor	atory 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



## Project Name: Madera 19 Federal #1

Work Or	ders: 58178	0, Samalar 581780 001 / SMD	Project ID: 212C-MD-01102.200							
	#: 5040091	Data Analyzada 04/00/18 12:22								
Units:	mg/kg	Date Analyzed: 04/09/18 12:23	SURROGATE RECOVERY STUDY							
	TPH I	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
		Analytes			[D]					
1-Chlorooct	tane		87.1	99.8	87	70-135				
o-Terphenyl	1		42.9	49.9	86	70-135				
Lab Batch	#: 3046091	Sample: 581780-002 / SMP	Batc	h: 1 Matrix	: Soil					
Units:	mg/kg	Date Analyzed: 04/09/18 12:45	SU	RROGATE R	ECOVERY S	STUDY				
	TPH I	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1-Chlorooct	tane		105	99.7	105	70-135				
o-Terphenyl	1		47.3	49.9	95	70-135				
Lab Batch	#: 3046091	Sample: 581780-003 / SMP	Batc	h: 1 Matrix	: Soil	11				
Units:	mg/kg	Date Analyzed: 04/09/18 13:07	SU	RROGATE R	ECOVERY S	STUDY				
TPH By SW8015 Mod			Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
		Analytes			נען					
1-Chlorooct	tane		102	99.7	102	70-135				
o-Terphenyl	1		48.5	49.9	97	70-135				
Lab Batch	#: 3046091	Sample: 581780-004 / SMP	Batc	h: 1 Matrix	: Soil					
Units:	mg/kg	Date Analyzed: 04/09/18 13:29	SU	RROGATE R	ECOVERY S	STUDY				
	TPH I	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1-Chlorooct	tane		107	99.6	107	70-135				
o-Terphenyl	1		48.5	49.8	97	70-135				
Lab Batch	#: 3046091	Sample: 581780-005 / SMP	Batc	h: 1 Matrix	: Soil					
Units:	mg/kg	Date Analyzed: 04/09/18 13:50	SU	RROGATE R	ECOVERY S	STUDY				
	TPH I	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
		Analytes								
1-Chlorooct	tane	Analytes	108	99.9	108	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



## Project Name: Madera 19 Federal #1

Work Or	rders : 58178	0,	Project ID: 212C-MD-01102.200							
Lab Batch	#: 3046117	Sample: 581780-001 / SMP	Batch: 1 Matrix: Soil							
Units:	mg/kg	Date Analyzed: 04/09/18 14:06	SURROGATE RECOVERY STUDY							
	ВТЕХ	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
		Analytes			נען					
1,4-Difluor	obenzene		0.0260	0.0300	87	70-130				
4-Bromoflu	orobenzene		0.0319	0.0300	106	70-130				
Lab Batch	#: 3046091	Sample: 581780-006 / SMP	Batch	: 1 Matrix	: Soil					
Units:	mg/kg	Date Analyzed: 04/09/18 14:11	SUI	RROGATE R	ECOVERY S	STUDY				
	TPH I	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1-Chlorooct	tane		104	99.8	104	70-135				
o-Terpheny	1		49.5	49.9	99	70-135				
Lab Batch	#: 3046117	Sample: 581780-002 / SMP	Batch	: 1 Matrix	: Soil					
Units:	mg/kg	Date Analyzed: 04/09/18 14:28	SUI	RROGATE R	ECOVERY S	STUDY				
	ВТЕХ	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
		Analytes			נען					
1,4-Difluor	obenzene		0.0221	0.0300	74	70-130				
4-Bromoflu	orobenzene		0.0342	0.0300	114	70-130				
Lab Batch	#: 3046091	Sample: 581780-007 / SMP	Batch	: 1 Matrix	: Soil					
Units:	mg/kg	Date Analyzed: 04/09/18 14:32	SUI	RROGATE R	ECOVERY S	STUDY				
	TPH I	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1-Chlorooct	tane		106	99.9	106	70-135				
o-Terpheny	1		48.4	50.0	97	70-135				
Lab Batch	#: 3046091	Sample: 581780-008 / SMP	Batch	: 1 Matrix	: Soil					
Units:	mg/kg	Date Analyzed: 04/09/18 14:52	SUI	RROGATE R	ECOVERY S	STUDY				
	TPH I	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1-Chlorooct	tane		96.4	99.7	97	70-135				
L					1					

\* 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



## Project Name: Madera 19 Federal #1

Work Oi	rders : 58178	0,	Project ID: 212C-MD-01102.200						
Lab Batch	#: 3046117	Sample: 581780-003 / SMP	Batch: 1 Matrix: Soil						
Units:     mg/kg     Date Analyzed: 04/09/18 15:01     SURROGATE RECOVERY STUD									
	втех	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
		Analytes			[IJ]				
1,4-Difluor	obenzene		0.0270	0.0300	90	70-130			
4-Bromoflu	lorobenzene		0.0388	0.0300	129	70-130			
Lab Batch	#: 3046091	Sample: 581780-0097 SMP	Batch	: 1 Matrix	: Soil				
Units:	mg/kg	Date Analyzed: 04/09/18 15:13	SUI	RROGATE R	ECOVERY S	STUDY			
	TPH I	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1-Chlorooc	tane		93.9	100	94	70-135			
o-Terpheny	1		48.3	50.0	97	70-135			
Lab Batch	#: 3046091	Sample: 581780-010 / SMP	Batch	: 1 Matrix	: Soil				
Units:	mg/kg	Date Analyzed: 04/09/18 16:15	SUI	RROGATE R	ECOVERY	STUDY			
	TPH I	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
		Analytes			[D]				
1-Chlorooc	tane		98.4	99.8	99	70-135			
o-Terpheny	1		48.3	49.9	97	70-135			
Lab Batch	#: 3046117	Sample: 581780-004 / SMP	Batch	: 1 Matrix	: Soil				
Units:	mg/kg	Date Analyzed: 04/09/18 16:19	SUI	RROGATE R	ECOVERY S	STUDY			
	втех	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluor	obenzene		0.0217	0.0300	72	70-130			
4-Bromoflu	orobenzene		0.0359	0.0300	120	70-130			
Lab Batch	#: 3046091	Sample: 581780-011 / SMP	Batch	: 1 Matrix	: Soil				
Units:	mg/kg	Date Analyzed: 04/09/18 16:36	SUI	RROGATE R	ECOVERY S	STUDY			
	TPH I	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1-Chlorooc	tane		92.1	100	92	70-135			
o-Terpheny	/]		46.0	50.0	02	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



## Project Name: Madera 19 Federal #1

Work Or Lab Batch	<b>ders :</b> 58178 #: 3046091	0, Sample: 581780-012 / SMP	Project ID: 212C-MD-01102.200 Batch: 1 Matrix: Soil							
Units:	mg/kg	<b>Date Analyzed:</b> 04/09/18 16:56	SURROGATE RECOVERY STUDY							
	TPH I	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
		Analytes			[10]					
1-Chlorooct	tane		97.3	99.9	97	70-135				
o-Terpheny	1		49.6	50.0	99	70-135				
Lab Batch	#: 3046117	Sample: 581780-005 / SMP	Batch	h: 1 Matrix	: Soil					
Units:	mg/kg	Date Analyzed: 04/09/18 17:00	SU	RROGATE R	ECOVERY	STUDY				
	BTEX	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1,4-Difluoro	obenzene		0.0276	0.0300	92	70-130				
4-Bromoflu	orobenzene		0.0372	0.0300	124	70-130				
Lab Batch	#: 3046091	Sample: 581780-013 / SMP	Batcl	h: 1 Matrix	: Soil					
Units:	mg/kg	Date Analyzed: 04/09/18 17:17	SU	RROGATE R	ECOVERY	STUDY				
	TPH I	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
1.011		Anarytes								
1-Chlorooct	tane		95.3	99.6	96	70-135				
o-Terpneny	l #. 2046117	Commun 591790 000 / SMD	47.8	49.8	96	70-135				
Lab Batch	#: 3046117	Sample: 581/80-006/ SMP	Batci		: 5011					
Units:	mg/kg	Date Analyzed: 04/09/18 17:19	SU	RROGATE R	ECOVERY	STUDY				
	BTEX	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1,4-Difluoro	obenzene		0.0255	0.0300	85	70-130				
4-Bromoflu	orobenzene		0.0377	0.0300	126	70-130				
Lab Batch	#: 3046117	Sample: 581780-007 / SMP	Batch	h: 1 Matrix	: Soil					
Units:	mg/kg	Date Analyzed: 04/09/18 17:39	SU	RROGATE R	ECOVERY	STUDY				
	ВТЕХ	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1,4-Difluoro	obenzene		0.0272	0.0300	91	70-130				
4-Bromoflu	orobenzene		0.0389	0.0300	130	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



## Project Name: Madera 19 Federal #1

Work Or	ders : 58178	0,	Project ID: 212C-MD-01102.200						
Lab Batch #: 3046117         Sample: 581780-008 / SMP			Batch	h: 1 Matrix	: Soil				
Units: mg/kg Date Analyzed: 04/09/18 17:58 SURROGATE RECOVERY STU									
	BTEX	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
		Analytes			[D]				
1,4-Difluor	obenzene		0.0230	0.0300	77	70-130			
4-Bromoflu	orobenzene		0.0369	0.0300	123	70-130			
Lab Batch	#: 3046117	Sample: 581780-009 / SMP	Batch	h: 1 Matrix	: Soil				
Units:	mg/kg	Date Analyzed: 04/09/18 18:17	SU	<b>RROGATE R</b>	ECOVERY	STUDY			
	BTEX	A by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1.4-Difluor	obenzene		0.0247	0.0300	82	70-130			
4-Bromoflu	orobenzene		0.0347	0.0300	116	70-130			
Lab Batch	#: 3046117	Sample: 581780-010 / SMP	Batch	h: 1 Matrix	: Soil	10 100			
Units:	mg/kg	<b>Date Analyzed:</b> 04/09/18 18:36	SU	RROGATE R	ECOVERY	STUDY			
	BTEX	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
		Analytes			[D]				
1,4-Difluor	obenzene		0.0260	0.0300	87	70-130			
4-Bromoflu	orobenzene		0.0374	0.0300	125	70-130			
Lab Batch	#: 3046117	Sample: 581780-011 / SMP	Batch	h: 1 Matrix	: Soil				
Units:	mg/kg	Date Analyzed: 04/09/18 18:55	SU	<b>RROGATE R</b>	ECOVERY	STUDY			
	ВТЕХ	K by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluor	obenzene		0.0224	0.0300	75	70-130			
4-Bromoflu	orobenzene		0.0374	0.0300	125	70-130			
Lab Batch	#: 3046117	Sample: 581780-012 / SMP	Batch	h: 1 Matrix	: Soil				
Units:	mg/kg	Date Analyzed: 04/09/18 19:15	SU	RROGATE R	ECOVERY	STUDY			
	ВТЕХ	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluor	obenzene		0.0267	0.0300	89	70-130			
4-Bromoflu	orobenzene		0.0379	0.0300	126	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


## Project Name: Madera 19 Federal #1

Work Or	<b>:ders :</b> 58178	0,		Project ID:	: 212C-MD-0	01102.200	
Lab Batch	#: 3046117	Sample: 581780-013 / SMF	Batch	n: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 04/09/18 19:34	SU	RROGATE R	ECOVERY	STUDY	
	BTEX	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
140.0	1	Analytes	0.0000	0.0200		50.100	
1,4-Difluor	obenzene		0.0288	0.0300	96	70-130	
4-Bromoflu	orobenzene	Sec. 1. 7(422(9, 1, D. K. /	0.0376	0.0300	125	70-130	
Lab Batch	#: 3046091	Sample: 7042208-1-BLK7	BLK Bater		: Solid		
Units:	mg/kg	Date Analyzed: 04/09/18 09:14	SU	RROGATE R	ECOVERY	STUDY	
	TPH I	3y SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooc	tane	Analytes	06.0	100	06	70 125	
o-Terpheny	1		90.0	50.0	100	70-135	
Lah Batch	<b>#•</b> 3046117	Sample: 7642285-1-BLK /	HIK Batch	∣ <sup>50.0</sup> • 1 Matriv	· Solid	70-133	
Units:	mg/kg	Date Analyzed: 04/09/18 11:27		PROCATE P	FCOVERV	STUDV	
	BTEX	K by EPA 8021B	Amount Found	True Amount	Recovery	Control Limits	Flags
		Analytes	[A]	[B]	%K [D]	%K	
1,4-Difluor	obenzene		0.0286	0.0300	95	70-130	
4-Bromoflu	orobenzene		0.0288	0.0300	96	70-130	
Lab Batch	#: 3046117	Sample: 7642285-1-BKS / 1	BKS Batch	n: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 04/09/18 09:12	SU	RROGATE R	ECOVERY	STUDY	
	ВТЕХ	K by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluor	obenzene		0.0303	0.0300	101	70-130	
4-Bromoflu	orobenzene		0.0334	0.0300	111	70-130	
Lab Batch	#: 3046091	Sample: 7642268-1-BKS /	BKS Batch	n: 1 Matrix	: Solid	1	1
Units:	mg/kg	Date Analyzed: 04/09/18 09:35	SU	RROGATE R	ECOVERY	STUDY	
	TPH I	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooc	tane		129	100	129	70-135	
o-Terpheny	1		60.9	50.0	122	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



Project Name: Madera 19 Federal #1

Work Or Lab Batch	<b>:ders :</b> 58178 #: 3046117	0, <b>Sample:</b> 7642285-1-BSD /	BSD Batch	Project ID: n: 1 Matrix	212C-MD-0	01102.200	
Units:	mg/kg	<b>Date Analyzed:</b> 04/09/18 09:32	SU	RROGATE R	ECOVERY S	STUDY	
	BTEX	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluoro	obenzene		0.0301	0.0300	100	70-130	
4-Bromoflue	orobenzene		0.0322	0.0300	107	70-130	
Lab Batch	#: 3046091	Sample: 7642268-1-BSD /	BSD Batch	n: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 04/09/18 09:57	SU	RROGATE R	ECOVERY S	STUDY	
	TPH	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	tane		97.3	100	97	70-135	
o-Terphenyl	1		46.6	50.0	93	70-135	
Lab Batch	#: 3046117	Sample: 581430-001 S / M	S Batch	n: 1 Matrix	: Soil		
Units:	mg/kg	<b>Date Analyzed:</b> 04/09/18 09:51	SU	RROGATE R	ECOVERY	STUDY	
	BTEX	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1 4 Diffuore	hanzana	Analytes	0.0207	0.0200	00	70.120	
1,4-Dilluoit	orohonzono		0.0296	0.0300	99	70-130	
I ab Batch	#• 3046001	Sample: 581762 001 S / M	0.0332	0.0300		/0-150	
Lau Datti	<b>#.</b> 5040091	Date Applyzed: 04/00/18 10:40					
Units:	iiig/kg	Date Analyzeu: 04/09/18 10.40	SU.	RROGATE R	ECOVERY	STUDY	
	TPH	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	tane		94.5	99.7	95	70-135	
o-Terphenyl	1		42.8	49.9	86	70-135	
Lab Batch	#: 3046117	Sample: 581430-001 SD / M	ASD Batch	n: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 04/09/18 10:10	SU	RROGATE R	ECOVERY S	STUDY	
	втех	K by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluoro	obenzene		0.0288	0.0300	96	70-130	
4-Bromoflu	orobenzene		0.0220	0.0200	107	70.120	

\* 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



## Project Name: Madera 19 Federal #1

Work Orders : 581780,		Project ID:	212C-MD-0	1102.200	
Lab Batch #: 3046091 Sample: 58	1762-001 SD / MSD Ba	tch: 1 Matrix:	Soil		
Units: mg/kg Date Analyzed: 04/	/09/18 11:01	SURROGATE RI	ECOVERY S	STUDY	
TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	102	99.8	102	70-135	
o-Terphenyl	47.1	49.9	94	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



## **BS / BSD Recoveries**



#### Project Name: Madera 19 Federal #1

Work Order #: 581780							Pro	ject ID:	212C-MD-	01102.200	
Analyst: ALJ	D	ate Prepar	ed: 04/09/20	18			Date A	nalyzed: (	04/09/2018		
Lab Batch ID: 3046117 Sample: 7642285-1	-BKS	Bate	<b>h #:</b> 1					Matrix: S	Solid		
Units: mg/kg		BLAN	K /BLANK	SPIKE / ]	BLANK S	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
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	0.100	0.118	118	0.101	0.118	117	0	70-130	35	
Toluene	< 0.00200	0.100	0.114	114	0.101	0.113	112	1	70-130	35	
Ethylbenzene	< 0.00200	0.100	0.114	114	0.101	0.115	114	1	70-130	35	
m,p-Xylenes	< 0.00401	0.200	0.236	118	0.202	0.235	116	0	70-130	35	
o-Xylene	< 0.00200	0.100	0.117	117	0.101	0.117	116	0	70-130	35	
Analyst: ARM	D	ate Prepar	red: 04/09/20	18	ł		Date A	nalyzed: (	4/09/2018	ł	ļ
Lab Batch ID: 3046091 Sample: 7642268-1	-BKS	Batc	<b>h #:</b> 1					Matrix:	Solid		
Units: mg/kg		BLAN	K /BLANK	SPIKE / ]	BLANK	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
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	1060	106	1000	995	100	6	70-135	20	
Diesel Range Organics (DRO)	<15.0	1000	1160	116	1000	1130	113	3	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: Madera 19 Federal #1



Work Order # :	581780						Project II	<b>D:</b> 212C-N	MD-0110	2.200		
Lab Batch ID:	3046117	QC- Sample ID:	581430	-001 S	Ba	tch #:	1 Matrix	<b>x:</b> Soil				
Date Analyzed:	04/09/2018	Date Prepared:	04/09/2	018	An	alyst: A	ALJ					
<b>Reporting Units:</b>	mg/kg		Μ	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
	BTEX by EPA 8021B	Parent Sample Bogult	Spike	Spiked Sample Result	Spiked Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
	Analytes	[A]	Added [B]	[C]	%R [D]	Added [E]	Kesuit [F]	%R [G]	<b>%</b> 0	%K	%RPD	
Benzene		<0.00201	0.100	0.0701	70	0.0994	0.0979	98	33	70-130	35	
Toluene		<0.00201	0.100	0.0589	59	0.0994	0.0825	83	33	70-130	35	X
Ethylbenzene		<0.00201	0.100	0.0523	52	0.0994	0.0672	68	25	70-130	35	X
m,p-Xylenes		<0.00402	0.201	0.0949	47	0.199	0.135	68	35	70-130	35	X
o-Xylene		<0.00201	0.100	0.0478	48	0.0994	0.0680	68	35	70-130	35	X
Lab Batch ID:	3046091	QC- Sample ID:	581762	-001 S	Ba	tch #:	1 Matrix	<b>x:</b> Soil				
Date Analyzed:	04/09/2018	Date Prepared:	04/09/2	018	An	alyst: A	ARM					
<b>Reporting Units:</b>	mg/kg		Μ	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
,	TPH By SW8015 Mod	Parent Sample	Snike	Spiked Sample Result	Spiked Sample	Snike	Duplicate	Spiked	RPD	Control Limits	Control	Flag

TPH By SW8015 Mod	Sample	Spike	Result	Sample	Spike	Spiked Sample	Dup.	RPD	Limits	Limits	Flag
Analytes	[A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Gasoline Range Hydrocarbons (GRO)	<15.0	997	810	81	998	831	83	3	70-135	20	
Diesel Range Organics (DRO)	30.4	997	848	82	998	922	89	8	70-135	20	

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

	Relinquished by	Relinquished by		Belinguished by									( LAB USE )	LAB #		Comments:	neceiving Labor		(county, state)	Project Location	Droject Name:	1
	: Date: Time:	: Date: Time:	Blant 4/5/18 /1:07	Vtdpile #31 Compesite	Shelpite #30 Comprise	Stockpile #29 Compastic	Stackple #27 Composite	Stockpile #26 Comparite	Sheek pile # 25 Composite	Stockpile #20 Compacise #2	Sauth Battenhole @ 20'	Versit See ton Trans. (a) St 185 1000	186	SAMPLE IDENTIFICATION			Xen G	Tetra Tech	lea (r., NM	Nadera 19 Federal #1	Nava than	Tetra Tech, Inc.
ORIGINAL	Received by:	Received by:	Haceiveerby:	V							4.6.18	S March	DATE	YEAR:	SAMPL		Sampler Signati		Project #: 2		Site Manager:	
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	Dat	Da	A	×	×	XX	X	×	×	X	×	X	SOIL		IATRIX		alla		10 -		191	4000 N. Big 401 Midla Tel (43 Fax (4)
	te: Time:	te: Time:	19/18	X	X	××	×	×	×	×	×	XX	HCL HNO3 ICE		PRESERVATIV		- P.Ke		54110		arez	Spring Street, Ste and, Texas 79705 32) 682-4559 32) 682-3946
			1-07	~			-	-	-	-	1	+	# CONT	AINE	RS		Q		.200			
		Sa	1	×	×	XX	X	×	×	×	X	X	FILTERE	D (Y	/N) BTEX	8260B						
Tem CF:(		mple Tem	LAB	X	X>	< X	X	×	X	X	X	×	TPH TX1 TPH 801	005 ( 5M (	Ext to C GRO - D	35) )RO - O	RO - N	IRO)		_		12
p:√ 0-6: -0 6-23:		perature	USE		+							1	PAH 827 Total Met	OC als Ag	g As Ba	Cd Cr P	b Se H	g			10	70
+0.2°C		•	REM.		1	-							TCLP Me TCLP Vol	tals A atiles	g As Ba	Cd Cr H	b Se I	Чg	_		AN	
0	]Rush ( ]Specia	HUSH	ARKS:		-		-				-		RCI GC/MS V	ol. 82	260B / 62	24	_				ALYSIS	10
R ID:	Charges Il Repor	Same				-							GC/MS S PCB's 80	emi. \ 182 / 6	/ol. 827	0C/625		_	_		REQ	0
R-8	s Author t Limits	e Day (		_		-						_	NORM PLM (Asb	estos	)						UEST	
	ized or TRA	24 Ar			-				_		-	-	Chloride Chloride	Sul	fate T	DS	-	-				
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	Relinquished by	Relinquished by:	Helinquished by:							LAB #		comments:	Receiving Labora	invoice to:	(county, state)		Client Name:	1 T
	Date: Time:	Date: Time:	USER 4/1/18 11:07			Stackpil #35 Composite	Stark pive #34 Compusite	Stack of le # 33 Composite	Stack pile # 32 Composite	SAMPLE IDENTIFICATION			ory: Xenes	Tetra Teur	Lea Co., NM	aders 19 feders 1#1	larathon	Tetra Tech, Inc.
	Received by:	Received by:	Hecelved by:			4	)	1	4.6.18 -		SAMPLING		Sampler Signature:		Project #: 2.12.0	1	Site Manager: TLe	
	Date:	Date:	Aloli	3		×	x	X	X	WATER SOIL HCL HNO3	MATRIX PRE		meth-P.		-MD-OL		Taver er	4000 N. Big Spring : 401 Midland,Texa Tel (432) 682- Fax (432) 682-
	Time:	Time:	7 11:07			X	×	X	X	ICE # CONTAINE	METHOD		ANN /		162.20			Street, Ste as 79705 4559 3946
L		ŝ					X			FILTERED (	Y/N)	X 8260			õ			
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j,		empera	B US			Ĺ	X	^	X.	PAH 8270C	( uno -	010	0110-1	win to j		_	Ô	
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Ē			REM		-	-			-	TCLP Volatile TCLP Semi V	es /olatiles	-	_			_	ANA	17
FEDE	Rus  Spe	DHAT STAR	ARKS							RCI	0000D /	004		_			LYS	$\tilde{0}$
UP	h Cha cial Re	H: C	/							GC/MS Semi	. Vol. 8	270C/62	5			_	IS RE	11
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CF:(0-6: -0.2°C) (6-23: +0.2°C) Corrected Temp: 2



### XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In



Client: Tetra Tech- Midland Acceptable Temperature Range: 0 - 6 degC Air and Metal samples Acceptable Range: Ambient Date/ Time Received: 04/09/2018 11:07:00 AM Temperature Measuring device used : R8 Work Order #: 581780 Comments Sample Receipt Checklist 2 #1 \*Temperature of cooler(s)? #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: 04/09/2018

Checklist reviewed by:

fession VRAMER

Jessica Kramer

Date: 04/09/2018

# Analytical Report 581781

for Tetra Tech- Midland

**Project Manager: Ike Tavarez** 

Madera 19 Federal #1

212C-MD-01102.200

10-APR-18

Collected By: Client





1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122): Texas (T104704215-18-24), 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)



10-APR-18



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

Reference: XENCO Report No(s): **581781 Madera 19 Federal #1** Project Address: Lea Co., 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) 581781. 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. 581781 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,

**Julian Martinez** Project Manager

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994. Certified and approved by numerous States and Agencies. A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America



## Sample Cross Reference 581781



## Tetra Tech- Midland, Midland, TX

Madera 19 Federal #1

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
North Section Trench @ 5' (5'BEB)	S	04-06-18 00:00		581781-001



## CASE NARRATIVE

Client Name: Tetra Tech- Midland Project Name: Madera 19 Federal #1

 Project ID:
 212C-MD-01102.200

 Work Order Number(s):
 581781

Report Date: 10-APR-18 Date Received: 04/09/2018

#### Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

### Analytical non conformances and comments: Batch: LBA-3046117 BTEX by EPA 8021B Surrogate 4-Bromofluorobenzene recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis. Samples affected are: 581781-001. Soil samples were not received in Terracore kits and therefore were prepared by method 5030.



Ike Tavarez

Lea Co., NM

**Contact:** 

**Project Location:** 

## Certificate of Analysis Summary 581781

Tetra Tech- Midland, Midland, TX Project Name: Madera 19 Federal #1



Date Received in Lab:Mon Apr-09-18 11:07 amReport Date:10-APR-18Project Manager:Jessica Kramer

	Lab Id:	581781-	001			
Analysis Requested	Field Id:	North Section Tre	ench @ 5' (			
Analysis Kequestea	Depth:					
	Matrix:	SOIL				
	Sampled:	Apr-06-18	00:00			
BTEX by EPA 8021B	Extracted:	Apr-09-18	11:15			
	Analyzed:	Apr-09-18	13:42			
	Units/RL:	mg/kg	RL			
Benzene		<0.00199	0.00199			
Toluene		0.00980	0.00199			
Ethylbenzene		0.00878	0.00199			
m,p-Xylenes		0.302	0.00398			
o-Xylene		0.145	0.00199			
Total Xylenes		0.447	0.00199			
Total BTEX		0.466	0.00199			
TPH By SW8015 Mod	Extracted:	Apr-09-18	12:00			
	Analyzed:	Apr-09-18	17:38			
	Units/RL:	mg/kg	RL			
Gasoline Range Hydrocarbons (GRO)		174	15.0			
Diesel Range Organics (DRO)		660	15.0			
Oil Range Hydrocarbons (ORO)		22.8	15.0			
Total TPH		857	15.0			

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Julian Martinez 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 LimitSDLSample Detection LimitLOD Limit of Detection
- PQL Practical Quantitation Limit MQL Method Quantitation Limit LOQ Limit of Quantitation
- DL Method Detection Limit
- NC Non-Calculable

SMP Clier	nt Sample	BLK	Method Blank	
BKS/LCS	Blank Spike/Laboratory Control Sample	BKSD/LCSD	Blank Spike Duplicate/Labor	atory 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



# Project Name: Madera 19 Federal #1

Work Or	ders: 58178	1,		Project ID:	212C-MD-0	01102.200	
Lab Batch	<b>#:</b> 3046117	Sample: 581781-001 / SMP	Batch	n: 1 Matrix:	: Soil		
Units:	mg/kg	Date Analyzed: 04/09/18 13:42	SU	RROGATE R	ECOVERY	STUDY	
	BTEX	Applytos	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1.4 Difluor	hanzana	Analytes	0.0210	0.0200	72	70.120	
1,4-Dilluoit	orohonzono		0.0219	0.0300	13	70-130	**
I ob Potob	#• 3046001	Sample: 581781.001 / SMP	0.0439	0.0300		/0-130	4.4.
Units:	mg/kg	Date Analyzed: 04/09/18 17:38	SU	RROGATE R	ECOVERY S	STUDY	
			50				
	TPH I	3y SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1 Chlorooct	ana	Anarytes	101	00.8	101	70.125	
o-Terphenyl	1		51.9	99.8	101	70-135	
I ab Batch	#• 3046091	Sample: 7642268-1-BLK / I	JI.0 BLK Batch	49.9 • 1 Metriv:	Solid	/0-155	
Lab Daten	mg/kg	Date Analyzed: 04/09/18 09:14					
Cintos.	ing/kg	Date Analyzet. 04/05/10 05:14	50	KRUGAIE K	ECOVERY	STUDY	
	TPH I	3y SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooct	ane		96.0	100	96	70-135	
o-Terphenyl	1		49.8	50.0	100	70-135	
Lab Batch	#: 3046117	Sample: 7642285-1-BLK / 1	BLK Batch	n: 1 Matrix:	Solid		
Units:	mg/kg	Date Analyzed: 04/09/18 11:27	SU	RROGATE R	ECOVERYS	STUDY	
	ВТЕХ	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluoro	obenzene		0.0286	0.0300	95	70-130	
4-Bromoflu	orobenzene		0.0288	0.0300	96	70-130	
Lab Batch	#: 3046117	Sample: 7642285-1-BKS / I	BKS Batch	n: 1 Matrix:	Solid		
Units:	mg/kg	Date Analyzed: 04/09/18 09:12	SU	RROGATE R	ECOVERY	STUDY	
	ВТЕХ	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluoro	obenzene		0.0303	0.0300	101	70-130	
4-Bromoflu	orobenzene		0.0334	0.0300	111	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



Project Name: Madera 19 Federal #1

Work Or Lab Batch	rders : 58178 #: 3046091	1, Sample: 7642268-1-BKS / ]	BKS Batch	Project ID: n: 1 Matrix	212C-MD-0 Solid	01102.200	
Units:	mg/kg	Date Analyzed: 04/09/18 09:35	SU	RROGATE R	ECOVERY S	STUDY	
	TPH I	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes					
1-Chlorooct	tane		129	100	129	70-135	
o-Terpheny	1		60.9	50.0	122	70-135	
Lab Batch	#: 3046117	Sample: 7642285-1-BSD / 1	BSD Batch	n: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 04/09/18 09:32	SU	RROGATE R	ECOVERY S	STUDY	
	BTEX	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluoro	obenzene		0.0301	0.0300	100	70-130	
4-Bromoflu	orobenzene		0.0322	0.0300	107	70-130	
Lab Batch	#: 3046091	Sample: 7642268-1-BSD / ]	BSD Batch	n: 1 Matrix	: Solid		
Units:	mg/kg	<b>Date Analyzed:</b> 04/09/18 09:57	SU	RROGATE R	ECOVERY	STUDY	
	TPH I	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooct	tane		97.3	100	97	70-135	
o-Terpheny	1		46.6	50.0	93	70-135	
Lab Batch	#: 3046117	Sample: 581430-001 S / MS	S Batch	n: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 04/09/18 09:51	SU	RROGATE R	ECOVERY S	STUDY	
	ВТЕХ	K by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluoro	obenzene		0.0296	0.0300	99	70-130	
4-Bromoflu	orobenzene		0.0332	0.0300	111	70-130	
Lab Batch	#: 3046091	Sample: 581762-001 S / MS	B Batch	n: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 04/09/18 10:40	SU	RROGATE R	ECOVERY S	STUDY	
	TPH I	3y SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	tane		94.5	99.7	95	70-135	
o-Terpheny	1		42.8	49.9	86	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



Project Name: Madera 19 Federal #1

Work O	rders : 58178	1,		Project ID:	212C-MD-0	01102.200	
Lab Batch	#: 3046117	Sample: 581430-001 SD / M	MSD Batcl	h: 1 Matrix:	Soil		
Units:	mg/kg	Date Analyzed: 04/09/18 10:10	SU	RROGATE RI	ECOVERYS	STUDY	
	BTEX	( by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluor	obenzene	Analytes	0.0288	0.0300	96	70-130	
4-Bromoflu	iorobenzene		0.0320	0.0300	107	70-130	
Lab Batch	#: 3046091	Sample: 581762-001 SD / M	MSD Batel	h: 1 Matrix:	Soil		
Units:	mg/kg	Date Analyzed: 04/09/18 11:01	SU	RROGATE RI	ECOVERY	STUDY	
	TPH I	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooc	tane		102	99.8	102	70-135	
o-Terpheny	ıl		47.1	49.9	94	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



## **BS / BSD Recoveries**



#### Project Name: Madera 19 Federal #1

<b>Work Order #: </b> 581781							Pro	ject ID:	212C-MD-(	01102.200	)
Analyst: ALJ	D	ate Prepai	red: 04/09/20	18			Date A	nalyzed: (	04/09/2018		
Lab Batch ID: 3046117 Sample: 764228	5-1-BKS	Bate	<b>h #:</b> 1					Matrix: S	Solid		
Units: mg/kg		BLAN	K /BLANK	SPIKE / 1	BLANK	K 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	0.100	0.118	118	0.101	0.118	117	0	70-130	35	
Toluene	< 0.00200	0.100	0.114	114	0.101	0.113	112	1	70-130	35	
Ethylbenzene	< 0.00200	0.100	0.114	114	0.101	0.115	114	1	70-130	35	
m,p-Xylenes	<0.00401	0.200	0.236	118	0.202	0.235	116	0	70-130	35	
o-Xylene	< 0.00200	0.100	0.117	117	0.101	0.117	116	0	70-130	35	
Analyst: ARM	D	ate Prepai	red: 04/09/20	18			Date A	nalyzed: (	04/09/2018		
Lab Batch ID: 3046091 Sample: 764226	8-1-BKS	Bate	<b>h #:</b> 1					Matrix: S	Solid		
Units: mg/kg		BLAN	K /BLANK	SPIKE / I	BLANK S	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
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	1060	106	1000	995	100	6	70-135	20	
Diesel Range Organics (DRO)	<15.0	1000	1160	116	1000	1130	113	3	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: Madera 19 Federal #1



Work Order # :	581781						Project II	<b>D:</b> 212C-N	MD-0110	2.200		
Lab Batch ID:	3046117	QC- Sample ID:	581430	-001 S	Ba	tch #:	1 Matrix	<b>k:</b> Soil				
Date Analyzed:	04/09/2018	Date Prepared:	04/09/2	018	An	alyst: A	ALJ					
<b>Reporting Units:</b>	mg/kg		Μ	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
	BTEX by EPA 8021B	Parent Sample Bosult	Spike	Spiked Sample Result	Spiked Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
	Analytes	[A]	Added [B]	[C]	%K [D]	E]	Kesuit [F]	%K [G]	70	%0K	%KPD	
Benzene		<0.00201	0.100	0.0701	70	0.0994	0.0979	98	33	70-130	35	
Toluene		<0.00201	0.100	0.0589	59	0.0994	0.0825	83	33	70-130	35	X
Ethylbenzene		<0.00201	0.100	0.0523	52	0.0994	0.0672	68	25	70-130	35	X
m,p-Xylenes		<0.00402	0.201	0.0949	47	0.199	0.135	68	35	70-130	35	X
o-Xylene		<0.00201	0.100	0.0478	48	0.0994	0.0680	68	35	70-130	35	X
Lab Batch ID:	3046091	QC- Sample ID:	581762	-001 S	Ba	tch #:	1 Matrix	<b>k:</b> Soil				
Date Analyzed:	04/09/2018	Date Prepared:	04/09/2	018	An	alyst: A	ARM					
<b>Reporting Units:</b>	mg/kg		Μ	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
,	TPH By SW8015 Mod	Parent Sample	Snike	Spiked Sample Result	Spiked Sample	Snike	Duplicate Spiked Sample	Spiked	RPD	Control Limits	Control Limits	Flag

TPH By SW8015 Mod	Sample	Spike	Result	Sample	Spike	Spiked Sample	Dup.	RPD	Limits	Limits	Flag
Analytes	[A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Gasoline Range Hydrocarbons (GRO)	<15.0	997	810	81	998	831	83	3	70-135	20	
Diesel Range Organics (DRO)	30.4	997	848	82	998	922	89	8	70-135	20	

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

Tetra Tech, Inc.     and an answer historic services       Mark Hvn     Interview       None Einentrifection     Sample inentrifection       Sample inentrifection     Sample inentrifection       None     Interview       Mark Hvn     Interview       None       None     Interview	Relinquished by Relinquished by		LAB #	Project Location (county, state) Invoice to: Receiving Labor Comments:	Project Name:	Client Name:	
Source of the spend store, so the spe	Bodder Time: Bodder Halvs 11:07 Date: Time: Date: Time:	North Section Trend Q) 5' (5'BER	SAMPLE IDENTIFICATION	Lea Co, MM Tetra Tech alory: Kenco	Marathan 101 Acdem 1#1	Tetra Tech, Inc.	
and Nall Sping Start, Start In (KB2) Ges 306       In (KB2)       In (KB2) <th col<="" td=""><td>Received by: Received by:</td><td>4.6.18 -</td><td>DATE SAMPLING</td><td>Project #: 2.12.C- Sampler Signature:</td><td>Site Manager:</td><td></td></th>	<td>Received by: Received by:</td> <td>4.6.18 -</td> <td>DATE SAMPLING</td> <td>Project #: 2.12.C- Sampler Signature:</td> <td>Site Manager:</td> <td></td>	Received by: Received by:	4.6.18 -	DATE SAMPLING	Project #: 2.12.C- Sampler Signature:	Site Manager:	
Image: Construction of the subset of the	Date: Time: Date: Time: Date: Time:		WATER SOIL HCL HNO <sub>3</sub> ICE	MD-01102.2	e Towarez	4000 N. Big Spring Street, Ste 401 Midland, Texas 79705 Tel (432) 682-4559 Fax (432) 682-3946	
ANALYSIS REQUEST CF:(0-6: -0.2°C) Temp:			# CONTAINERS FILTERED (Y/N) BTEX 8021B BTEX 8260	0.00			
	Ample Temperature Temp: CF:(0-6: -0.2°C) Ample Temperature Temp: CF:(0-6: -0.2°C) Temp:		TPH TX1005 (Ext to C35) TPH 8015M (GRO - DRO - 0 PAH 8270C Total Metals Ag As Ba Cd Cr TCLP Metals Ag As Ba Cd Cr TCLP Volatiles TCLP Semi Volatiles RCI GC/MS Vol. 8260B / 624 GC/MS Semi. Vol. 8270C/62 PCB's 8082 / 608 NORM PLM (Asbestos) Chloride Chloride Sulfate TDS General Water Chemistry (si Anion/Cation Balance	DRO - MRO) Pb Se Hg Pb Se Hg 5 5 6 6 6 6 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7	ANALYSIS REQUEST (Circle or Specify Method No.)	184 18G	



### XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In



Client: Tetra Tech- Midland Acceptable Temperature Range: 0 - 6 degC Air and Metal samples Acceptable Range: Ambient Date/ Time Received: 04/09/2018 11:07:00 AM Temperature Measuring device used : R8 Work Order #: 581781 Comments Sample Receipt Checklist 2 #1 \*Temperature of cooler(s)? #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: 04/09/2018

Checklist reviewed by:

fession kramer

Jessica Kramer

Date: 04/09/2018

# Analytical Report 582068

for Tetra Tech- Midland

**Project Manager: Ike Tavarez** 

Madera 19 Federal #1

212C-MD-01102.200

12-APR-18

Collected By: Client





1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122): Texas (T104704215-18-24), 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)



12-APR-18



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

Reference: XENCO Report No(s): **582068 Madera 19 Federal #1** Project Address: Lea Co., 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) 582068. 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. 582068 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,

Jession KRAMER

Jessica Kramer Project Assistant

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994. Certified and approved by numerous States and Agencies. A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America



## Sample Cross Reference 582068



Tetra Tech- Midland, Midland, TX

Madera 19 Federal #1

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
Stockpile #25 Composite #2	S	04-11-18 00:00		582068-001



## CASE NARRATIVE

Client Name: Tetra Tech- Midland Project Name: Madera 19 Federal #1

 Project ID:
 212C-MD-01102.200

 Work Order Number(s):
 582068

Report Date: 12-APR-18 Date Received: 04/12/2018

#### Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments: Batch: LBA-3046466 BTEX by EPA 8021B Soil samples were not received in Terracore kits and therefore were prepared by method 5030.



Ike Tavarez

Lea Co., NM

**Contact:** 

**Project Location:** 

## Certificate of Analysis Summary 582068

Tetra Tech- Midland, Midland, TX Project Name: Madera 19 Federal #1



Date Received in Lab:Thu Apr-12-18 09:15 amReport Date:12-APR-18Project Manager:Jessica Kramer

	Lab Id:	582068-	001			
Analysis Requested	Field Id:	Stockpile #25 Co	omposite #2	2		
Analysis Kequesiea	Depth:					
	Matrix:	SOIL				
	Sampled:	Apr-11-18	00:00			
BTEX by EPA 8021B	Extracted:	Apr-12-18	09:30			
	Analyzed:	Apr-12-18	11:24			
	Units/RL:	mg/kg	RL			
Benzene		< 0.00200	0.00200			
Toluene		0.0614	0.00200			
Ethylbenzene		0.00511	0.00200			
m,p-Xylenes		0.522	0.00399			
o-Xylene		0.203	0.00200			
Total Xylenes		0.725	0.00200			
Total BTEX		0.792	0.00200			
TPH By SW8015 Mod	Extracted:	Apr-12-18	10:00			
	Analyzed:	Apr-12-18	11:31			
	Units/RL:	mg/kg	RL			
Gasoline Range Hydrocarbons (GRO)		241	15.0			
Diesel Range Organics (DRO)		1660	15.0			
Oil Range Hydrocarbons (ORO)		30.8	15.0			
Total TPH		1930	15.0			

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Version: 1.%

fession kenner

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 LimitSDLSample Detection LimitLOD Limit of Detection
- PQL Practical Quantitation Limit MQL Method Quantitation Limit LOQ Limit of Quantitation
- DL Method Detection Limit
- NC Non-Calculable

SMP Clier	nt Sample	BLK	Method Blank	
BKS/LCS	Blank Spike/Laboratory Control Sample	BKSD/LCSD	Blank Spike Duplicate/Labor	atory 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



## Project Name: Madera 19 Federal #1

Work Or	r <b>ders :</b> 58206	8,		Project ID:	212C-MD-0	01102.200	
Lab Batch	#: 3046466	Sample: 582068-001 / SMP	Batch	n: 1 Matrix:	Soil		
Units:	mg/kg	Date Analyzed: 04/12/18 11:24	SU	RROGATE RI	ECOVERYS	STUDY	
	BTEX	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
140.0	1	Analytes	0.02.55	0.0200		70.100	
1,4-Diffuoro	obenzene		0.0265	0.0300	88	70-130	
4-Bromofiu	H. 2046457	Samelar 592069 001 / SMD	0.0390	0.0300	130 Soil	70-130	
	#: 3046457	Sample: 582068-001 / SMP	Batch	i: 1 Matrix:	5011		
Units:	mg/kg	Date Analyzed: 04/12/18 11:31	SU	RROGATE RI	ECOVERY	STUDY	
	TPH	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	tane		102	99.7	102	70-135	
o-Terpheny	1		50.9	49.9	102	70-135	
Lab Batch	#: 3046466	Sample: 7642499-1-BLK / ]	BLK Batch	n: 1 Matrix:	Solid		
Units:	mg/kg	Date Analyzed: 04/12/18 09:51	SU	RROGATE RI	ECOVERY	STUDY	
	BTEX	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluor	obenzene		0.0300	0.0300	100	70-130	
4-Bromoflu	orobenzene		0.0242	0.0300	81	70-130	
Lab Batch	#: 3046457	Sample: 7642444-1-BLK / 1	BLK Batch	n: 1 Matrix:	Solid		
Units:	mg/kg	Date Analyzed: 04/12/18 23:55	SU	RROGATE RI	ECOVERY	STUDY	
	TPH I	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	tane		95.0	100	95	70-135	
o-Terpheny	1		49.3	50.0	99	70-135	
Lab Batch	#: 3046457	Sample: 7642444-1-BKS / 1	BKS Batch	n: 1 Matrix:	Solid		
Units:	mg/kg	Date Analyzed: 04/12/18 00:22	SU	RROGATE R	ECOVERYS	STUDY	
	TPH	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	tane		121	100	121	70-135	
- m 1			1		1		

\* 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



Project Name: Madera 19 Federal #1

Work Ore Lab Batch #	<b>ders :</b> 58206 <b>#</b> : 3046466	8, <b>Sample:</b> 7642499-1-BKS / ]	BKS Batch	Project ID: n: 1 Matrix	212C-MD-0	01102.200	
Units:	mg/kg	Date Analyzed: 04/12/18 07:54	SU	RROGATE R	ECOVERYS	STUDY	
	BTEX	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluorol	benzene		0.0310	0.0300	103	70-130	
4-Bromofluo	robenzene		0.0303	0.0300	101	70-130	
Lab Batch #	<b>:</b> 3046457	Sample: 7642444-1-BSD /	BSD Batch	n: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 04/12/18 00:50	SU	RROGATE R	ECOVERY	STUDY	
	TPH ]	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chloroocta	ne		117	100	117	70-135	]
o-Terphenvl			57.9	50.0	116	70-135	
Lab Batch #	<b>#:</b> 3046466	<b>Sample:</b> 7642499-1-BSD /	BSD Batch	n: 1 Matrix	: Solid	10 155	
Units:	mg/kg	Date Analyzed: 04/12/18 08:13	SU	RROGATE R	ECOVERYS	STUDY	
	BTEX	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1 4 Diffuorel		Anaryus	0.0200	0.0200	00	70.120	]
1,4-Diffuolo	rohonzono		0.0298	0.0300	100	70-130	
I ab Batch #	t. 3046457	Sample: 581058-013 S / M	0.0299 S Batch	0.0500	• Soil	/0-150	
Lab Daten 7	mg/kg	Date Analyzed: 04/12/18 03:06					
omus.	ing/kg	Date Analyzet. 04/12/10 03:00	50	RRUGAIE R	ECOVERY	STUDY	
	TPH	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chloroocta	ne		118	99.8	118	70-135	
o-Terphenyl			52.7	49.9	106	70-135	
Lab Batch #	<b>:</b> 3046466	Sample: 581958-010 S / MS	S Batch	n: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 04/12/18 08:32	SU	RROGATE R	ECOVERYS	STUDY	
	ВТЕХ	K by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorol	oenzene		0.0304	0.0300	101	70-130	
4-Bromofluo	robenzene		0.0297	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



Project Name: Madera 19 Federal #1

Work O	rders : 582068	3,		Project ID:	212C-MD-0	01102.200	
Lab Batch	#: 3046457	Sample: 581958-013 SD / M	ASD Batch	h: 1 Matrix:	Soil		
Units:	mg/kg	Date Analyzed: 04/12/18 03:35	SU	RROGATE RI	ECOVERYS	STUDY	
	TPH I	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooc	tane	Analytes	117	00.0	117	70.125	
1-C1101000	tane		117	99.9	117	70-155	
o-Terpheny	/1		53.0	50.0	106	70-135	
Lab Batch	#: 3046466	Sample: 581958-010 SD / N	ASD Batch	h: 1 Matrix:	Soil		·
Units:	mg/kg	Date Analyzed: 04/12/18 08:52	SU	RROGATE RI	ECOVERYS	STUDY	
	BTEX	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluor	obenzene	•	0.0322	0.0300	107	70-130	
4-Bromoflu	ıorobenzene		0.0311	0.0300	104	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



## **BS / BSD Recoveries**



#### **Project Name:** Madera 19 Federal #1

Work Order #: 582068							Pro	ject ID:	212C-MD-	01102.200	)
Analyst: ALJ	D	<b>Date Prepared:</b> 04/12/2018 <b>Date Analyzed:</b> 04/12/2018									
Lab Batch ID: 3046466 Sample: 7642499	1-BKS	Batc	<b>h #:</b> 1					Matrix:	Solid		
Units: mg/kg		BLAN	K /BLANK	SPIKE / ]	BLANK	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
BTEX by EPA 8021B	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	<0.00201	0.101	0.108	107	0.101	0.108	107	0	70-130	35	
Toluene	<0.00201	0.101	0.103	102	0.101	0.104	103	1	70-130	35	
Ethylbenzene	<0.00201	0.101	0.103	102	0.101	0.103	102	0	70-130	35	
m,p-Xylenes	< 0.00402	0.201	0.211	105	0.202	0.209	103	1	70-130	35	
o-Xylene	< 0.00201	0.101	0.108	107	0.101	0.106	105	2	70-130	35	
Analyst: ARM	D	ate Prepa	red: 04/11/20	18			Date A	nalyzed:	04/12/2018		
Lab Batch ID: 3046457 Sample: 7642444	1-BKS	Batc	<b>h #:</b> 1					Matrix:	Solid		
Units: mg/kg		BLAN	K /BLANK	SPIKE / ]	BLANK	SPIKE DUP	LICATE	RECOV	ERY STU	DY	
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	1070	107	1000	1060	106	1	70-135	20	
Diesel Range Organics (DRO)	<15.0	1000	1110	111	1000	1090	109	2	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: Madera 19 Federal #1



<b>Work Order # :</b> 58206	8	Project ID: 212C-MD-01102.200										
Lab Batch ID: 30464	466 Q	C- Sample ID:	581958	-010 S	Ba	tch #:	1 Matrix	k: Soil				
Date Analyzed: 04/12/	/2018	Date Prepared:	04/12/2	018	An	alyst: A	ALJ					
<b>Reporting Units:</b> mg/kg	5		Μ	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERYS	STUDY		
BTEX	by EPA 8021B	Parent Sample Result	Spike	Spiked Sample Result	Spiked Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
A	nalytes	[A]	[B]	[C]	/0K [D]	[E]	Kesunt [F]	70K [G]	70	70K	70 KI D	
Benzene		<0.00199	0.0994	0.0878	88	0.0998	0.0932	93	6	70-130	35	
Toluene		< 0.00199	0.0994	0.0814	82	0.0998	0.0833	83	2	70-130	35	
Ethylbenzene		<0.00199	0.0994	0.0725	73	0.0998	0.0746	75	3	70-130	35	
m,p-Xylenes		< 0.00398	0.199	0.145	73	0.200	0.148	74	2	70-130	35	
o-Xylene		< 0.00199	0.0994	0.0757	76	0.0998	0.0746	75	1	70-130	35	
Lab Batch ID: 30464	57 Q	C- Sample ID:	581958	-013 S	Ba	tch #:	1 Matrix	<b>s:</b> Soil				
Date Analyzed: 04/12/	/2018	Date Prepared:	04/11/2	018	An	alyst: A	ARM					
<b>Reporting Units:</b> mg/kg	Ş		Μ	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERYS	STUDY		
ТРН В	y SW8015 Mod	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	nalytes	[A]	[B]		[D]	[E]		[G]				
Gasoline Range Hydrocar	bons (GRO)	<15.0	998	1020	102	999	1020	102	0	70-135	20	
Diesel Range Organics (I	DRO)	<15.0	998	1110	111	999	1120	112	1	70-135	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

Date: Time: Received by: Date: Time: ORIGINAL COPY	elinquished by: elinquished by:			UNLY )	LAB #		omments:	eceiving Laborati	IVOICE TO:	roject Location: county, state)		Shent Name:	4	Analysis Req
Received by: Date: Time: ORIGINAL COPY	Date: Time: S 4-12-13 SIT Date: Time:		Stackpile #25 Composite #2		SAMPLE IDENTIFICATION		Shue Day 1 fran	Kenco	Tetra Tech	Lea Lo., NM	ladera 19 Federal #1	arathon	Tetra Tech, Inc.	uest of Chain of Custody Record
	Received by: Time: Time: Time:		H-11-18 - X X 1	DATE TIME WATEF SOIL HCL HNO <sub>3</sub> ICE # CONT.	YEAR:	SAMPLING MATRIX PRESERVATIVE	agand	Sampler Signature: John of them I. Lel		Project #: 212 C - MD - 01162.200		site Manager: Ike Tawaye E	4000 N. Big Spring Street, Ste 401 Midland,Texas 79705 Tel (432) 682-3946 Fax (432) 682-3946	
□ Rush Charges Authorized □ Special Report Limits or TRRP Report CF:(0-6: -0.2°C) (6-23: +0.2°C) Corrected Temp: 5. J	LAB USE REMARKS: ONLY Sample Temperature			FILTERE BTEX 80 TPH TX' TPH 801 PAH 827 Total Mer TCLP Me TCLP Vo TCLP Se RCI GC/MS V GC/MS S PCB'S 80 NORM PLM (Ast Chloride General Anion/Ca	ED (Y// D21B 1005 (I 15M ( C 70C tals Ag etals A	N) BTE Ext to GRO - GRO - g As B g As B as B as B as B as B as B as B as B a	X 8260E C35) • DRO - ( a Cd Cr Ba Cd Cr Ba Cd Cr 624 270C/623 TDS mistry (s ce	3 DRO - N Pb Se N Pb Se	/IRO) Hg Hg ched li	st)		Circle or Specify Mathed No. 1	582068	Page 1 of 1



March 28, 2018

IKE TAVAREZ TETRA TECH 1910 N. BIG SPRING STREET MIDLAND, TX 79705

RE: MARATHON / MADERA 19 FED #1

Enclosed are the results of analyses for samples received by the laboratory on 03/26/18 15:03.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-17-10. 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 <a href="https://www.tceq.texas.gov/field/qa/lab\_accred\_certif.html">www.tceq.texas.gov/field/qa/lab\_accred\_certif.html</a>.

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

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

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

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. Keine

Celey D. Keene Lab Director/Quality Manager



#### Analytical Results For:

TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705	Project: Project Number: Project Manager: Fax To:	MARATHON / MADERA 19 FED #1 212C-MD-01102.200 IKE TAVAREZ (432) 682-3946	Reported: 28-Mar-18 08:31
--	--	---	------------------------------

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH #1 (2-3') 1.5' BEB	H800851-02	Soil	26-Mar-18 00:00	26-Mar-18 15:03
BH #1 (6-7') 1.5' BEB	H800851-04	Soil	26-Mar-18 00:00	26-Mar-18 15:03
BH #1 (14-15') 1.5' BEB	H800851-06	Soil	26-Mar-18 00:00	26-Mar-18 15:03
BH #1 (24-25') 1.5' BEB	H800851-08	Soil	26-Mar-18 00:00	26-Mar-18 15:03
BH #1 (29-30') 1.5' BEB	H800851-09	Soil	26-Mar-18 00:00	26-Mar-18 15:03
BH #1 (34-35') 1.5' BEB	H800851-10	Soil	26-Mar-18 00:00	26-Mar-18 15:03
BH #2 (2-3') 2' BEB	H800851-15	Soil	26-Mar-18 00:00	26-Mar-18 15:03
BH #2 (6-7') 2' BEB	H800851-17	Soil	26-Mar-18 00:00	26-Mar-18 15:03
BH #2 (9-10') 2' BEB	H800851-18	Soil	26-Mar-18 00:00	26-Mar-18 15:03
BH #2 (14-15') 2' BEB	H800851-19	Soil	26-Mar-18 00:00	26-Mar-18 15:03
BH #3 (2-3') 2' BEB	H800851-26	Soil	26-Mar-18 00:00	26-Mar-18 15:03
BH #3 (4-5') 2' BEB	H800851-27	Soil	26-Mar-18 00:00	26-Mar-18 15:03
BH #3 (6-7') 2' BEB	H800851-28	Soil	26-Mar-18 00:00	26-Mar-18 15:03
BH #3 (9-10') 2' BEB	H800851-29	Soil	26-Mar-18 00:00	26-Mar-18 15:03
BH #3 (14-15') 2' BEB	H800851-30	Soil	26-Mar-18 00:00	26-Mar-18 15:03

#### **Cardinal Laboratories**

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whitstoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based to reproduced except in full with written approval of Cardinal Loaratories.

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



#### Analytical Results For:

TETRA TECH 1910 N. BIG SPRING STREE MIDLAND TX, 79705	Г	Project: MARATHON / MADERA 19 FED #1 Project Number: 212C-MD-01102.200 Project Manager: IKE TAVAREZ Fax To: (432) 682-3946					Reported: 28-Mar-18 08:31					
			BH #1 (2	2-3') 1.5'	BEB							
H800851-02 (Soil)												
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes		
			Cardina	l Laborat	tories							
Volatile Organic Compounds b	y EPA Method 8	8021										
Benzene*	<1.00		1.00	mg/kg	1000	8032607	MS	26-Mar-18	8021B			
Toluene*	51.8		1.00	mg/kg	1000	8032607	MS	26-Mar-18	8021B			
Ethylbenzene*	18.0		1.00	mg/kg	1000	8032607	MS	26-Mar-18	8021B			
Total Xylenes*	233		3.00	mg/kg	1000	8032607	MS	26-Mar-18	8021B			
Total BTEX	303		6.00	mg/kg	1000	8032607	MS	26-Mar-18	8021B			
Surrogate: 4-Bromofluorobenzene (PID)			134 %	72-	148	8032607	MS	26-Mar-18	8021B			
Petroleum Hydrocarbons by G	C FID									S-04		
GRO C6-C10*	3610		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B			
DRO >C10-C28*	7120		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B			
EXT DRO >C28-C36	344		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B			
Surrogate: 1-Chlorooctane			356 %	41-	142	8032606	MS	27-Mar-18	8015B			
Surrogate: 1-Chlorooctadecane			172 %	37.6	-147	8032606	MS	27-Mar-18	8015B			

#### **Cardinal Laboratories**

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence ar any other cause whitstoewer shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether su claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reprodued except in full with written approval of Cardinal Laboratories.

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager


TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705	Project: MARATHON / MADERA 19 FED #1 Project Number: 212C-MD-01102.200 Project Manager: IKE TAVAREZ Fax To: (432) 682-3946								Reported: 28-Mar-18 08:31		
			BH #1 (6	5-7') 1.5'	BEB						
			H8008	851-04 (So	oil)						
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes	
			Cardina	l Laborat	tories						
Volatile Organic Compounds by	EPA Method	8021									
Benzene*	<1.00		1.00	mg/kg	1000	8032607	MS	27-Mar-18	8021B		
Toluene*	18.9		1.00	mg/kg	1000	8032607	MS	27-Mar-18	8021B		
Ethylbenzene*	14.1		1.00	mg/kg	1000	8032607	MS	27-Mar-18	8021B		
Total Xylenes*	270		3.00	mg/kg	1000	8032607	MS	27-Mar-18	8021B		
Total BTEX	303		6.00	mg/kg	1000	8032607	MS	27-Mar-18	8021B		
Surrogate: 4-Bromofluorobenzene (PID)			139 %	72-	148	8032607	MS	27-Mar-18	8021B		
Petroleum Hydrocarbons by GC	FID									<b>S-04</b>	
GRO C6-C10*	2710		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B		
DRO >C10-C28*	3730		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B		
EXT DRO >C28-C36	148		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B		
Surrogate: 1-Chlorooctane			279 %	41-	142	8032606	MS	27-Mar-18	8015B		
Surrogate: 1-Chlorooctadecane			204 %	37.6	-147	8032606	MS	27-Mar-18	8015B		

# **Cardinal Laboratories**

\*=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705			Proj Project Num Project Mana Fax	ject: MAI ber: 212 ger: IKE To: (43)	RATHON / C-MD-0110 TAVAREZ 2) 682-394	MADERA 19 02.200 6	9 FED #1	Reported: 28-Mar-18 08:31		
			BH #1 (14	-15') 1.:	5' BEB					
			H8008	851-06 (So	oil)					
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	l Laborat	tories					
Volatile Organic Compounds by	EPA Method	8021								
Benzene*	<1.00		1.00	mg/kg	1000	8032607	MS	27-Mar-18	8021B	
Toluene*	45.5		1.00	mg/kg	1000	8032607	MS	27-Mar-18	8021B	
Ethylbenzene*	18.3		1.00	mg/kg	1000	8032607	MS	27-Mar-18	8021B	
Total Xylenes*	245		3.00	mg/kg	1000	8032607	MS	27-Mar-18	8021B	
Total BTEX	308		6.00	mg/kg	1000	8032607	MS	27-Mar-18	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			127 %	72-	148	8032607	MS	27-Mar-18	8021B	
Petroleum Hydrocarbons by GC	FID									S-04
GRO C6-C10*	2780		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
DRO >C10-C28*	3380		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
EXT DRO >C28-C36	129		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
Surrogate: 1-Chlorooctane			258 %	41-	142	8032606	MS	27-Mar-18	8015B	
Surrogate: 1-Chlorooctadecane			196 %	37.6	-147	8032606	MS	27-Mar-18	8015B	

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Celey D. Keene, Lab Director/Quality Manager



TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705			Project Num Project Num Project Mana Fax BH #1 (24	ject: MAF ber: 212 ger: IKE To: (432	RATHON / 1 C-MD-0110 TAVAREZ 2) 682-394 5' BEB	MADERA 19 02.200 6	9 FED #1	Reported: 28-Mar-18 08:31		
			H8008	851-08 (So	oil)					
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	l Laborat	ories					
Volatile Organic Compounds by	EPA Method	8021								
Benzene*	< 0.050		0.050	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Toluene*	0.239		0.050	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Ethylbenzene*	< 0.050		0.050	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Total Xylenes*	0.439		0.150	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Total BTEX	0.678		0.300	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			107 %	72-	148	8032607	MS	27-Mar-18	8021B	
Petroleum Hydrocarbons by GC	FID									
GRO C6-C10*	<10.0		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
DRO >C10-C28*	38.6		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
Surrogate: 1-Chlorooctane			90.8 %	41-	142	8032606	MS	27-Mar-18	8015B	
Surrogate: 1-Chlorooctadecane			97.2 %	37.6	-147	8032606	MS	27-Mar-18	8015B	

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Celey D. Keene, Lab Director/Quality Manager



TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705	Project: MARATHON / MADERA 19 FED #1 Project Number: 212C-MD-01102.200 Project Manager: IKE TAVAREZ Fax To: (432) 682-3946 BH #1 (29-30') 1.5' BEB							Reported: 28-Mar-18 08:31		
			H8008	351-09 (So	oil)					
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	l Laborat	tories					
Volatile Organic Compounds by	EPA Method	8021								
Benzene*	< 0.050		0.050	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Toluene*	0.070		0.050	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Ethylbenzene*	< 0.050		0.050	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Total Xylenes*	0.214		0.150	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Total BTEX	< 0.300		0.300	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			108 %	72-	148	8032607	MS	27-Mar-18	8021B	
Petroleum Hydrocarbons by GC	FID									
GRO C6-C10*	<10.0		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
DRO >C10-C28*	105		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
Surrogate: 1-Chlorooctane			89.8 %	41-	142	8032606	MS	27-Mar-18	8015B	
Surrogate: 1-Chlorooctadecane			99.1 %	37.6	-147	8032606	MS	27-Mar-18	8015B	

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Celey D. Keene, Lab Director/Quality Manager



TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705			Project Num Project Num Project Mana Fax BH #1 (34	ject: MAF ber: 212 ger: IKE To: (432 <b>I-35') 1.</b>	RATHON /   C-MD-0110 TAVAREZ 2) 682-394 5' BEB	MADERA 19 02.200 6	9 FED #1	21	Reported: 28-Mar-18 08:31		
			H8008	851-10 (So	oil)						
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes	
			Cardina	l Laborat	ories						
Volatile Organic Compounds by	EPA Method	8021									
Benzene*	< 0.050		0.050	mg/kg	50	8032607	MS	27-Mar-18	8021B		
Toluene*	< 0.050		0.050	mg/kg	50	8032607	MS	27-Mar-18	8021B		
Ethylbenzene*	< 0.050		0.050	mg/kg	50	8032607	MS	27-Mar-18	8021B		
Total Xylenes*	< 0.150		0.150	mg/kg	50	8032607	MS	27-Mar-18	8021B		
Total BTEX	< 0.300		0.300	mg/kg	50	8032607	MS	27-Mar-18	8021B		
Surrogate: 4-Bromofluorobenzene (PID)			101 %	72-	148	8032607	MS	27-Mar-18	8021B		
Petroleum Hydrocarbons by GC	FID										
GRO C6-C10*	<10.0		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B		
DRO >C10-C28*	108		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B		
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B		
Surrogate: 1-Chlorooctane			94.4 %	41-	142	8032606	MS	27-Mar-18	8015B		
Surrogate: 1-Chlorooctadecane			102 %	37.6	-147	8032606	MS	27-Mar-18	8015B		

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Celey D. Keene, Lab Director/Quality Manager



TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705			Project Num Project Mana Fax	ject: MAI ber: 212 ger: IKE To: (43)	RATHON / C-MD-0110 TAVAREZ 2) 682-394	MADERA 19 02.200 6	9 FED #1	Reported: 28-Mar-18 08:31		
			BH #2 (	(2-3') 2'	BEB					
			H8008	551-15 (80	511)					
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	l Laborat	tories					
Volatile Organic Compounds by	EPA Method	8021								S-04
Benzene*	< 0.050		0.050	mg/kg	50	8032607	MS	26-Mar-18	8021B	
Toluene*	1.70		0.050	mg/kg	50	8032607	MS	26-Mar-18	8021B	
Ethylbenzene*	1.17		0.050	mg/kg	50	8032607	MS	26-Mar-18	8021B	
Total Xylenes*	13.5		0.150	mg/kg	50	8032607	MS	26-Mar-18	8021B	
Total BTEX	16.3		0.300	mg/kg	50	8032607	MS	26-Mar-18	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			158 %	72-	148	8032607	MS	26-Mar-18	8021B	
Petroleum Hydrocarbons by GG	C FID									
GRO C6-C10*	247		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
DRO >C10-C28*	786		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
EXT DRO >C28-C36	30.8		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
Surrogate: 1-Chlorooctane			129 %	41-	142	8032606	MS	27-Mar-18	8015B	
Surrogate: 1-Chlorooctadecane		133 % 37.6-147 8032606 MS 27-Mar-18 8015B								

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Celey D. Keene, Lab Director/Quality Manager



TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705			Project Num Project Nana Project Mana Fax	ject: MAI ber: 212 ger: IKE To: (43)	RATHON / C-MD-0110 TAVAREZ 2) 682-394	MADERA 19 02.200 6	9 FED #1	Reported: 28-Mar-18 08:31		
			BH #2 (	6-7') 2'	BEB					
			H8008	851-17 (Se	oil)					
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	l Laborat	tories					
Volatile Organic Compounds by	EPA Method	8021								
Benzene*	3.88		1.00	mg/kg	1000	8032607	MS	27-Mar-18	8021B	
Toluene*	71.6		1.00	mg/kg	1000	8032607	MS	27-Mar-18	8021B	
Ethylbenzene*	18.9		1.00	mg/kg	1000	8032607	MS	27-Mar-18	8021B	
Total Xylenes*	243		3.00	mg/kg	1000	8032607	MS	27-Mar-18	8021B	
Total BTEX	337		6.00	mg/kg	1000	8032607	MS	27-Mar-18	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			126 %	72-	148	8032607	MS	27-Mar-18	8021B	
Petroleum Hydrocarbons by GC	FID									<b>S-04</b>
GRO C6-C10*	2610		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
DRO >C10-C28*	3480		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
EXT DRO >C28-C36	129		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
Surrogate: 1-Chlorooctane			253 %	41-	142	8032606	MS	27-Mar-18	8015B	
Surrogate: 1-Chlorooctadecane			202 %	37.6	-147	8032606	MS	27-Mar-18	8015B	

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TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705			Project Num Project Mana Fax BH #2 (9	ject: MAI ber: 212 ger: IKE To: (432 )-10') 2'	RATHON /   C-MD-0110 TAVAREZ 2) 682-394 BEB	28	Reported: 28-Mar-18 08:31			
			H8008	851-18 (So	oil)					
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	l Laborat	ories					
Volatile Organic Compounds by 1	EPA Method	8021								
Benzene*	0.060		0.050	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Toluene*	1.16		0.050	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Ethylbenzene*	0.660		0.050	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Total Xylenes*	8.78		0.150	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Total BTEX	10.7		0.300	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			139 %	72-	148	8032607	MS	27-Mar-18	8021B	
Petroleum Hydrocarbons by GC	FID									
GRO C6-C10*	267		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
DRO >C10-C28*	900		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
EXT DRO >C28-C36	25.4		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
Surrogate: 1-Chlorooctane			128 %	41-	142	8032606	MS	27-Mar-18	8015B	
Surrogate: 1-Chlorooctadecane		128 % 41-142 8032000 Mis 27-Mar-18 8015B								

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TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705			Project Num Project Nana Fax BH #2 (1	ject: MAF ber: 212 ger: IKE To: (43) <b>4-15') 2</b>	MADERA 19 02.200 6	9 FED #1	l Reported: 28-Mar-18 08:31			
			H8008	851-19 (So	oil)					
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	l Laborat	tories					
Volatile Organic Compounds by	EPA Method	8021								
Benzene*	< 0.050		0.050	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Toluene*	< 0.050		0.050	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Ethylbenzene*	< 0.050		0.050	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Total Xylenes*	0.228		0.150	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Total BTEX	< 0.300		0.300	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			104 %	72-	148	8032607	MS	27-Mar-18	8021B	
Petroleum Hydrocarbons by GC	FID									
GRO C6-C10*	<10.0		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
DRO >C10-C28*	37.5		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
Surrogate: 1-Chlorooctane			94.5 %	41-	142	8032606	MS	27-Mar-18	8015B	
Surrogate: 1-Chlorooctadecane			97.5 %	37.6	-147	8032606	MS	27-Mar-18	8015B	

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TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705			Project Num Project Mana Fax BH #3 (	9 FED #1	21	Reported: 3-Mar-18 08:	ed: 8 08:31			
Analyte	Result	MDI	Reporting	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	l Laborat	ories			-		
Volatile Organic Compounds by	EPA Method	8021								
Benzene*	< 0.050		0.050	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Toluene*	0.099		0.050	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Ethylbenzene*	0.208		0.050	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Total Xylenes*	0.481		0.150	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Total BTEX	0.788		0.300	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			122 %	72-	148	8032607	MS	27-Mar-18	8021B	
Petroleum Hydrocarbons by GC	C FID									
GRO C6-C10*	18.1		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
DRO >C10-C28*	335		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
Surrogate: 1-Chlorooctane			88.9 %	41-	142	8032606	MS	27-Mar-18	8015B	
Surrogate: 1-Chlorooctadecane		97.8 % 37.6-147 8032606 MS 27-Mar-18 8015B								

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TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705			Project Num Project Nana Project Mana Fax	ject: MAI ber: 212 ger: IKE To: (43)	RATHON / C-MD-0110 TAVAREZ 2) 682-394	9 FED #1	Reported: 28-Mar-18 08:31			
			BH #3 (	4-5') 2'	BEB					
			H8008	851-27 (Se	oil)					
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	l Laborat	tories					
Volatile Organic Compounds by	EPA Method	8021								S-04
Benzene*	< 0.200		0.200	mg/kg	200	8032607	MS	27-Mar-18	8021B	
Toluene*	2.59		0.200	mg/kg	200	8032607	MS	27-Mar-18	8021B	
Ethylbenzene*	4.89		0.200	mg/kg	200	8032607	MS	27-Mar-18	8021B	
Total Xylenes*	34.9		0.600	mg/kg	200	8032607	MS	27-Mar-18	8021B	
Total BTEX	42.4		1.20	mg/kg	200	8032607	MS	27-Mar-18	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			186 %	72-	148	8032607	MS	27-Mar-18	8021B	
Petroleum Hydrocarbons by GC	C FID									S-04
GRO C6-C10*	512		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
DRO >C10-C28*	1750		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
EXT DRO >C28-C36	45.0		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
Surrogate: 1-Chlorooctane			164 %	41-	142	8032606	MS	27-Mar-18	8015B	
Surrogate: 1-Chlorooctadecane			141 %	37.6-147		8032606	MS	27-Mar-18	8015B	

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Celey D. Keene, Lab Director/Quality Manager



TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705			Project Num Project Nana Fax BH #3 (	ject: MAF ber: 212 ger: IKE To: (432	RATHON /   C-MD-0110 TAVAREZ 2) 682-394 BEB	MADERA 19 02.200 6	9 FED #1	Reported: 28-Mar-18 08:31		
			H8008	351-28 (So	oil)					
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	l Laborat	ories					
Volatile Organic Compounds by	EPA Method	8021								
Benzene*	< 0.050		0.050	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Toluene*	< 0.050		0.050	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Ethylbenzene*	0.062		0.050	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Total Xylenes*	0.432		0.150	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Total BTEX	0.494		0.300	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			110 %	72-	148	8032607	MS	27-Mar-18	8021B	
Petroleum Hydrocarbons by GC	FID									
GRO C6-C10*	<10.0		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
DRO >C10-C28*	121		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
Surrogate: 1-Chlorooctane			91.9 %	41-	142	8032606	MS	27-Mar-18	8015B	
Surrogate: 1-Chlorooctadecane			102 %	37.6	-147	8032606	MS	27-Mar-18	8015B	

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Celey D. Keene, Lab Director/Quality Manager



TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705			Project Num Project Mana Fax BH #3 (1	ject: MAF ber: 212 ger: IKE To: (43)	RATHON / 1 C-MD-0110 TAVAREZ 2) 682-394 BEB	MADERA 19 02.200 6	9 FED #1	28	Reported: 3-Mar-18 08:	31
[			H8008	851-29 (So	oil)					
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	l Laborat	ories					
Volatile Organic Compounds by	EPA Method	8021								
Benzene*	< 0.050		0.050	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Toluene*	< 0.050		0.050	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Ethylbenzene*	< 0.050		0.050	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Total Xylenes*	0.310		0.150	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Total BTEX	0.310		0.300	mg/kg	50	8032607	MS	27-Mar-18	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			112 %	72-	148	8032607	MS	27-Mar-18	8021B	
Petroleum Hydrocarbons by GC	FID									
GRO C6-C10*	<10.0		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
DRO >C10-C28*	142		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
Surrogate: 1-Chlorooctane			87.6%	41-	142	8032606	MS	27-Mar-18	8015B	
Surrogate: 1-Chlorooctadecane			95.7 %	37.6	-147	8032606	MS	27-Mar-18	8015B	

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Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705			Pro Project Num Project Mana Fay BH #3 (1	Reported: 28-Mar-18 08:31						
			H800	851-30 (So	oil)					
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	l Laborat	ories					
Volatile Organic Compounds by	EPA Method	8021								
Benzene*	< 0.050		0.050	mg/kg	50	8032607	MS	26-Mar-18	8021B	
Toluene*	< 0.050		0.050	mg/kg	50	8032607	MS	26-Mar-18	8021B	
Ethylbenzene*	< 0.050		0.050	mg/kg	50	8032607	MS	26-Mar-18	8021B	
Total Xylenes*	< 0.150		0.150	mg/kg	50	8032607	MS	26-Mar-18	8021B	
Total BTEX	< 0.300		0.300	mg/kg	50	8032607	MS	26-Mar-18	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			111 %	72-	148	8032607	MS	26-Mar-18	8021B	
Petroleum Hydrocarbons by GC	FID									
GRO C6-C10*	<10.0		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
DRO >C10-C28*	44.5		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	8032606	MS	27-Mar-18	8015B	
Surrogate: 1-Chlorooctane			105 %	41-	142	8032606	MS	27-Mar-18	8015B	
Surrogate: 1-Chlorooctadecane			118 %	37.6	-147	8032606	MS	27-Mar-18	8015B	

**Cardinal Laboratories** 

\*=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



TETRA TECH 1910 N. BIG SPRING STREET	Project: Project Number:	MARATHON / MADERA 19 FED #1 212C-MD-01102.200	Reported: 28-Mar-18 08:31
MIDLAND TX, 79705	Project Manager:	IKE TAVAREZ	
	Fax To:	(432) 682-3946	

# Volatile Organic Compounds by EPA Method 8021 - Quality Control

		Cardiı	1al Lab	oratories						
		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 8032607 - Volatiles										
Blank (8032607-BLK1)				Prepared &	& Analyzed:	26-Mar-18	3			
Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (PID)	0.105		mg/kg	0.100		105	72-148			
LCS (8032607-BS1)				Prepared &	k Analyzed:	26-Mar-18	3			
Benzene	1.64	0.050	mg/kg	2.00		82.0	79.5-124			
Toluene	1.92	0.050	mg/kg	2.00		96.1	75.5-127			
Ethylbenzene	2.01	0.050	mg/kg	2.00		101	77.7-125			
Total Xylenes	5.89	0.150	mg/kg	6.00		98.2	70.9-124			
Surrogate: 4-Bromofluorobenzene (PID)	0.104		mg/kg	0.100		104	72-148			
LCS Dup (8032607-BSD1)				Prepared &	& Analyzed:	26-Mar-18	3			
Benzene	1.61	0.050	mg/kg	2.00		80.4	79.5-124	1.88	6.5	
Toluene	1.89	0.050	mg/kg	2.00		94.5	75.5-127	1.68	7.02	
Ethylbenzene	1.98	0.050	mg/kg	2.00		99.2	77.7-125	1.53	7.83	
Total Xylenes	5.77	0.150	mg/kg	6.00		96.2	70.9-124	2.12	7.78	
Surrogate: 4-Bromofluorobenzene (PID)	0.100		mg/kg	0.100		100	72-148			

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Celey D. Keine



TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705	Project: Project Number: Project Manager: Fax To:	MARATHON / MADERA 19 FED #1 212C-MD-01102.200 IKE TAVAREZ (432) 682-3946	Reported: 28-Mar-18 08:31
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# Petroleum Hydrocarbons by GC FID - Quality Control

Cardinal	Laboratories
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		Reporting		Spike	Source		%REC		RPD		
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes	
Batch 8032606 - General Prep - Organics											
Blank (8032606-BLK1)				Prepared &	Analyzed:	26-Mar-18					
GRO C6-C10	ND	10.0	mg/kg								
DRO >C10-C28	ND	10.0	mg/kg								
EXT DRO >C28-C35	ND	10.0	mg/kg								
EXT DRO >C28-C36	ND	10.0	mg/kg								
Total TPH C6-C28	ND	10.0	mg/kg								
Surrogate: 1-Chlorooctane	44.7		mg/kg	50.0		89.4	41-142				
Surrogate: 1-Chlorooctadecane	49.8		mg/kg	50.0		99.7	37.6-147				
LCS (8032606-BS1)				Prepared &	d & Analyzed: 26-Mar-18						
GRO C6-C10	193	10.0	mg/kg	200		96.5	76.5-133				
DRO >C10-C28	209	10.0	mg/kg	200		105	72.9-138				
Total TPH C6-C28	402	10.0	mg/kg	400		101	78-132				
Surrogate: 1-Chlorooctane	50.5		mg/kg	50.0		101	41-142				
Surrogate: 1-Chlorooctadecane	53.7		mg/kg	50.0		107	37.6-147				
LCS Dup (8032606-BSD1)		Prepared &	Analyzed:	26-Mar-18			D       Limit       Notes         7       20.6       20.6         2       18       18				
GRO C6-C10	207	10.0	mg/kg	200		103	76.5-133	6.97	20.6		
DRO >C10-C28	238	10.0	mg/kg	200		119	72.9-138	13.0	20.6		
Total TPH C6-C28	445	10.0	mg/kg	400		111	78-132	10.2	18		
Surrogate: 1-Chlorooctane	51.1		mg/kg	50.0		102	41-142				
Surrogate: 1-Chlorooctadecane	60.0		mg/kg	50.0		120	37.6-147				

# **Cardinal Laboratories**

# \*=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



# **Notes and Definitions**

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
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

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construction of the source of	Relinquished by:	Relinquished by:	Relinquisbed by:	10 384#1 (3	9 134#1 (29-	B 13H#1 /24-	7 RH# (192	1 AH#1 /14-1	2 1171 1411		2 101 10-0	2 1441 (7-	1 84#1 10-	UNLY )	LAB # SAMPL	1 280081	omments:	eceiving Laboratory: Curcline	woice to: I the Tec	roject Location: (county, ate)	roject Name: Madara 19	ient Name: Maration	Tet:
Annu Bag Server, Star Market Star Star Star Star Star Star Star Sta	Date: Time:	Date: Time:	Yaulia Ime:	14-35) 1-5 BEB	30') 1-5 BEB	25) 1.5850	20) 1.5 BEB	5) 1.5 000	I IS REA	I CREA	C I CREA	1 1 = 8 = 3	1) 1.5'050		E IDENTIFICATION		4 hr Kish	al tabs	F.	mty Nm	7 Federal #1		ra Tech, Inc.
And Yold Based States     ING Taylor Based States <td>Received by:</td> <td>Received by:</td> <td>Hegewed by:</td> <td>K</td> <td>5</td> <td>-</td> <td></td> <td></td> <td></td> <td>-</td> <td>-</td> <td>-</td> <td>3/26/18</td> <td>DATE</td> <td>YEAR: 2017</td> <td>SAMPLIN</td> <td></td> <td>Sampler Signature</td> <td></td> <td>Project #: 21</td> <td></td> <td>Site Manager:</td> <td></td>	Received by:	Received by:	Hegewed by:	K	5	-				-	-	-	3/26/18	DATE	YEAR: 2017	SAMPLIN		Sampler Signature		Project #: 21		Site Manager:	
And restantion of the service of the			Menso	V		1	_	~	_		-	1		TIME WATE SOIL	R	VG MATRIX		mike c		2C-MD-		Ike Tava	4000 N 401   Te Fa
ANALYSIS REQUEST Circle or Specify Method No.) FILTERED (Y/N) Support Temperature FILTERED (Y/N) Support Temperature	Date: Time:	Date: Time:	M Stabli		×	\$	\$	<>	• >	<	<>	×	X	HCL HNO <sub>3</sub> ICE None		( PRESERVATIVE METHOD		Jehn K		01102 7		arez	Big Spring Street, Ste Midland, Texas 79705 9l (422) 682-4559 1x (432) 682-3946
ANALYSIS REQUEST (Circle or Specify Method No.) TPH TX1005 (Ext to C35) 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 Volatiles TCLP Volatiles TCLP Semi Volatiles TCLP Semi Volatiles TCLP Semi Volatiles TCLP Semi Volatiles StranDARD PCB's 8082 / 608 NORM NORM NORM PLM (Asbestos) Chloride Chloride Suffate TDS General Water Chemistry (see attached list) Anion/Cation Balance TCLP Report Limits or THRP Report			8 2:45	-		-	-		-	-	-	-	1	# CON	ED (	ERS Y/N)				25/0 200			
AVALYSIS REQUEST AVALYSIS REQ	5. 20 20 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -	Sample Temperat	LAB USE O	XX	XX	XX		XX	>	×	>	XX		BTEX 8 TPH TX TPH 80 PAH 82	1021E	G (Ext to (GRO	EX 8260 o C35) - DRO -	ORO ·	MRO)			(C	
Cial Report Limits or TRRP Report	25 Dspe	ure Rus		DEMADVO								_		TCLP M TCLP V TCLP S RCI	etals letals olatile emi V	Ag As Ag As os /olatile	Ba Cd Cd Ba Cd C	r Pb Se	e Hg			ANALYS	
or TRRP Report 48 hr 72	cial Report Limits	h Charges Author	STANDARD											GC/MS PCB's I NORM PLM (As	sbest	Vol. / 608	8270C/6	25		_	_	IS REQUEST	
	or TRRP Repor	rized	of the AB by To											Chloride Chlorid Genera Anion/C	e S I Wa Catior	Sulfate ter Ch Bala	TDS emistry nce	(see a	ttacheo	d list)	_	d No.)	



Analysis Request of Chain of Custody Record 1580084 Project Name: omments nvoice to: tate) roject Location: Relinquished by: Relinquished by lelinquished by lient Name: ceiving Laboratory: LAB USE LAB # **H** 55 23 23 5 26 3 36 33 Ľ Marathan 5## BH# CHHSI BH#2 BH#2 13H #2 13H#2 BH#3 SH#3 440 adeva (county, ctra 0 5 J 5-10 6-7-) Tetra Tech, Inc. 20 24.25 34-35 2 4.5 39-40 29-30 HR 01 SAMPLE IDENTIFICATION ech 14-15 5 U. - coher 70 5 Dady C UBEN ( USE Date: 2'300 Date DIBED near 1.13EB 2.1960 )'GEO 9,060 2'BUB 3 # Time: Time: I Ime: 3/26/10 Sampler Signature Project #: Site Manager ORIGINAL COPY Received by Hecaived by Received by DATE 2017 SAMPLING 5 TIME 1 Mike Ike Tavarez WATER 3 MATRIX 4000 N. Big Spring Street, Ste 401 Midland, Texas 79705 Tel (432) 682-4559  $\boldsymbol{\zeta}$ SOIL 0 Fax (432) 682-3946 P Date: Date: Date: ١ HCL PRESERVATIVE 010 HNO SP ICE × × Time Time IIme N 12 None 6 Task Lo. Sh:281 # CONTAINERS FILTERED (Y/N) Sample Temperature **BTEX 8260B** × ĸ BTEX 8021B LAB USE ONLY x ĸ × Circle) HAND DELIVERED 2.30 TPH TX1005 (Ext to C35) TPH 8015M (GRO - DRO - ORO - MRO) × × PAH 8270C Circle or Specify Method Total Metals Ag As Ba Cd Cr Pb Se Hg TCLP Metals Ag As Ba Cd Cr Pb Se Hg TCLP Volatiles REMARKS: ANALYSIS REQUEST RUSH: Same Day TCLP Semi Volatiles FEDEX Rush Charges Authorized Special Report Limits or TRRP Report RCI STANDARD GC/MS Vol. 8260B / 624 UPS GC/MS Semi. Vol. 8270C/625 PCB's 8082 / 608 racking NORM Page PLM (Asbestos) 24 hr Chloride No TDS Sulfate Chloride 48 hr General Water Chemistry (see attached list) Anion/Cation Balance 72 hr 9 Page 23 of 24 × ~ × × Hold



March 15, 2018

IKE TAVAREZ TETRA TECH 1910 N. BIG SPRING STREET MIDLAND, TX 79705

RE: MARATHON / MADERA 19 FED #1

Enclosed are the results of analyses for samples received by the laboratory on 03/14/18 13:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-17-10. 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 <a href="https://www.tceq.texas.gov/field/qa/lab\_accred\_certif.html">www.tceq.texas.gov/field/qa/lab\_accred\_certif.html</a>.

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

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

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

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. Keine

Celey D. Keene Lab Director/Quality Manager



TETRA TECHProje1910 N. BIG SPRING STREETProject NumbMIDLAND TX, 79705Project ManagFax TFax T	ct:     MARATHON / MADERA 19 FED #1     Reported:       er:     212C-MD-01102.200     15-Mar-18 09:08       er:     IKE TAVAREZ       o:     (432) 682-3946
--	---

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
NORTH BOTTOM (3')	H800741-01	Soil	14-Mar-18 10:20	14-Mar-18 13:00
NORTH BOTTOM (4')	H800741-02	Soil	14-Mar-18 10:25	14-Mar-18 13:00
NORTH BOTTOM (5')	H800741-03	Soil	14-Mar-18 10:30	14-Mar-18 13:00
SOUTH BOTTOM (3')	H800741-04	Soil	14-Mar-18 10:40	14-Mar-18 13:00
SOUTH BOTTOM (4')	H800741-05	Soil	14-Mar-18 10:45	14-Mar-18 13:00
SOUTH BOTTOM (5')	H800741-06	Soil	14-Mar-18 10:50	14-Mar-18 13:00
NORTH EAST SIDEWALL (5')	H800741-07	Soil	14-Mar-18 11:00	14-Mar-18 13:00

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Celey D. Keene, Lab Director/Quality Manager



TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705	Project: Project Number: Project Manager: Fax To:	MARATHON / MADERA 19 FED #1 212C-MD-01102.200 IKE TAVAREZ (432) 682-3946	Reported: 15-Mar-18 09:08
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# NORTH BOTTOM (3')

# H800741-01 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	al Laborat	ories					
Volatile Organic Compounds b	oy EPA Method	8021								
Benzene*	<2.00		2.00	mg/kg	2000	8031401	MS	14-Mar-18	8021B	
Toluene*	70.1		2.00	mg/kg	2000	8031401	MS	14-Mar-18	8021B	
Ethylbenzene*	27.3		2.00	mg/kg	2000	8031401	MS	14-Mar-18	8021B	
Total Xylenes*	443		6.00	mg/kg	2000	8031401	MS	14-Mar-18	8021B	
Total BTEX	541		12.0	mg/kg	2000	8031401	MS	14-Mar-18	8021B	
Surrogate: 4-Bromofluorobenzene (PID)	)		101 %	72-	148	8031401	MS	14-Mar-18	8021B	
Petroleum Hydrocarbons by G	GC FID									S-04
GRO C6-C10*	4640		10.0	mg/kg	1	8031406	MS	14-Mar-18	8015B	
DRO >C10-C28*	7160		10.0	mg/kg	1	8031406	MS	14-Mar-18	8015B	
EXT DRO >C28-C36	175		10.0	mg/kg	1	8031406	MS	14-Mar-18	8015B	
Surrogate: 1-Chlorooctane			363 %	41-	142	8031406	MS	14-Mar-18	8015B	
Surrogate: 1-Chlorooctadecane			167 %	37.6	-147	8031406	MS	14-Mar-18	8015B	

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TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705			Project Num Project Num Project Mana Fax NORTH H8007	ject: MAF ber: 212 ger: IKE To: (43) BOTTO	RATHON / 1 C-MD-011( TAVAREZ 2) 682-394 M (4')	MADERA 19 02.200 6	9 FED #1	1:	Reported: 5-Mar-18 09	:08
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	l Laborat	tories					
Volatile Organic Compounds by	EPA Method	8021								
Benzene*	<2.00		2.00	mg/kg	2000	8031401	MS	14-Mar-18	8021B	
Toluene*	82.6		2.00	mg/kg	2000	8031401	MS	14-Mar-18	8021B	
Ethylbenzene*	30.7		2.00	mg/kg	2000	8031401	MS	14-Mar-18	8021B	
Total Xylenes*	479		6.00	mg/kg	2000	8031401	MS	14-Mar-18	8021B	
Total BTEX	592		12.0	mg/kg	2000	8031401	MS	14-Mar-18	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			103 %	72-	148	8031401	MS	14-Mar-18	8021B	
Petroleum Hydrocarbons by GC	FID									S-04
GRO C6-C10*	5420		10.0	mg/kg	1	8031406	MS	14-Mar-18	8015B	
DRO >C10-C28*	7280		10.0	mg/kg	1	8031406	MS	14-Mar-18	8015B	
EXT DRO >C28-C36	177		10.0	mg/kg	1	8031406	MS	14-Mar-18	8015B	
Surrogate: 1-Chlorooctane			376 %	41-	142	8031406	MS	14-Mar-18	8015B	
Surrogate: 1-Chlorooctadecane			165 %	37.6	-147	8031406	MS	14-Mar-18	8015B	

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TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705		Project: MARATHON / MADERA 19 FED #1 Project Number: 212C-MD-01102.200 Project Manager: IKE TAVAREZ Fax To: (432) 682-3946							Reported: 15-Mar-18 09:08		
			NORTH H8002	БОТТО 741-03 (Sc	wi (5') oil)						
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes	
			Cardina	l Laborat	ories						
Volatile Organic Compounds by	EPA Method	8021									
Benzene*	<2.00		2.00	mg/kg	2000	8031401	MS	14-Mar-18	8021B		
Toluene*	80.9		2.00	mg/kg	2000	8031401	MS	14-Mar-18	8021B		
Ethylbenzene*	34.4		2.00	mg/kg	2000	8031401	MS	14-Mar-18	8021B		
Total Xylenes*	545		6.00	mg/kg	2000	8031401	MS	14-Mar-18	8021B		
Total BTEX	660		12.0	mg/kg	2000	8031401	MS	14-Mar-18	8021B		
Surrogate: 4-Bromofluorobenzene (PID)			103 %	72-	148	8031401	MS	14-Mar-18	8021B		
Petroleum Hydrocarbons by GC	C FID									S-04	
GRO C6-C10*	5340		10.0	mg/kg	1	8031406	MS	14-Mar-18	8015B		
DRO >C10-C28*	6540		10.0	mg/kg	1	8031406	MS	14-Mar-18	8015B		
EXT DRO >C28-C36	137		10.0	mg/kg	1	8031406	MS	14-Mar-18	8015B		
Surrogate: 1-Chlorooctane			353 %	41-	142	8031406	MS	14-Mar-18	8015B		
Surrogate: 1-Chlorooctadecane			151 %	37.6	-147	8031406	MS	14-Mar-18	8015B		

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Celey Ditreene



TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705	-		Project Num Project Nana Fax SOUTH	ject: MAR ber: 212 ger: IKE To: (43) BOTTO	RATHON /   C-MD-0110 TAVAREZ 2) 682-394 M (3')	MADERA 19 02.200 6	9 FED #1	1:	Reported: 5-Mar-18 09:	08
			H800'	741-04 (So	oil)					
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	l Laborat	ories					
Volatile Organic Compounds by	y EPA Method	8021								
Benzene*	< 0.050		0.050	mg/kg	50	8031401	MS	14-Mar-18	8021B	
Toluene*	2.28		0.050	mg/kg	50	8031401	MS	14-Mar-18	8021B	
Ethylbenzene*	< 0.050		0.050	mg/kg	50	8031401	MS	14-Mar-18	8021B	
Total Xylenes*	16.7		0.150	mg/kg	50	8031401	MS	14-Mar-18	8021B	
Total BTEX	19.0		0.300	mg/kg	50	8031401	MS	14-Mar-18	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			129 %	72-	148	8031401	MS	14-Mar-18	8021B	
Petroleum Hydrocarbons by GG	C FID									
GRO C6-C10*	244		10.0	mg/kg	1	8031406	MS	14-Mar-18	8015B	
DRO >C10-C28*	469		10.0	mg/kg	1	8031406	MS	14-Mar-18	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	8031406	MS	14-Mar-18	8015B	
Surrogate: 1-Chlorooctane			103 %	41-	142	8031406	MS	14-Mar-18	8015B	
Surrogate: 1-Chlorooctadecane			72.6 %	37.6	-147	8031406	MS	14-Mar-18	8015B	

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TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705			Project Num Project Nana Fax SOUTH	ject: MAF Iber: 212 Iger: IKE To: (43) BOTTO	RATHON /   C-MD-0110 TAVAREZ 2) 682-394 M (4')	MADERA 19 02.200 6	9 FED #1	1:	Reported: 5-Mar-18 09:	08
			H8007	741-05 (So	oil)					
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	l Laborat	ories					
Volatile Organic Compounds by	EPA Method	8021								
Benzene*	< 0.050		0.050	mg/kg	50	8031401	MS	14-Mar-18	8021B	
Toluene*	1.05		0.050	mg/kg	50	8031401	MS	14-Mar-18	8021B	
Ethylbenzene*	< 0.050		0.050	mg/kg	50	8031401	MS	14-Mar-18	8021B	
Total Xylenes*	11.2		0.150	mg/kg	50	8031401	MS	14-Mar-18	8021B	
Total BTEX	12.2		0.300	mg/kg	50	8031401	MS	14-Mar-18	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			123 %	72-	148	8031401	MS	14-Mar-18	8021B	
Petroleum Hydrocarbons by GC	C FID									
GRO C6-C10*	203		10.0	mg/kg	1	8031406	MS	14-Mar-18	8015B	
DRO >C10-C28*	424		10.0	mg/kg	1	8031406	MS	14-Mar-18	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	8031406	MS	14-Mar-18	8015B	
Surrogate: 1-Chlorooctane			104 %	41-	142	8031406	MS	14-Mar-18	8015B	
Surrogate: 1-Chlorooctadecane			79.5 %	37.6	-147	8031406	MS	14-Mar-18	8015B	

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TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705	r		Project Num Project Mana Fax SOUTH	ject: MAF ber: 212 ger: IKE To: (432	RATHON /   C-MD-011( TAVAREZ 2) 682-394 <b>M (5')</b>	MADERA 19 02.200 6	9 FED #1	1:	Reported: 5-Mar-18 09:	08
			H800'	741-06 (So	oil)					
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	l Laborat	ories					
Volatile Organic Compounds by	y EPA Method	8021								
Benzene*	< 0.050		0.050	mg/kg	50	8031401	MS	14-Mar-18	8021B	
Toluene*	0.089		0.050	mg/kg	50	8031401	MS	14-Mar-18	8021B	
Ethylbenzene*	< 0.050		0.050	mg/kg	50	8031401	MS	14-Mar-18	8021B	
Total Xylenes*	1.28		0.150	mg/kg	50	8031401	MS	14-Mar-18	8021B	
Total BTEX	1.37		0.300	mg/kg	50	8031401	MS	14-Mar-18	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			98.9 %	72-	148	8031401	MS	14-Mar-18	8021B	
Petroleum Hydrocarbons by G	C FID									
GRO C6-C10*	16.1		10.0	mg/kg	1	8031406	MS	14-Mar-18	8015B	
DRO >C10-C28*	93.6		10.0	mg/kg	1	8031406	MS	14-Mar-18	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	8031406	MS	14-Mar-18	8015B	
Surrogate: 1-Chlorooctane			94.4 %	41-	142	8031406	MS	14-Mar-18	8015B	
Surrogate: 1-Chlorooctadecane			77.8 %	37.6	-147	8031406	MS	14-Mar-18	8015B	

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TETRA TECH 1910 N. BIG SPRING STRE MIDLAND TX, 79705	EET		Pro Project Num Project Mana Fay	nject: MAI nber: 212 ager: IKE < To: (43)	RATHON / C-MD-0110 TAVAREZ 2) 682-394	Reported: 15-Mar-18 09:08				
		]	NORTH EAS	ST SIDE' 741-07 (S4	WALL (5'	)				
			11000	741-07 (50	511)					
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	ıl Laborat	tories					
Volatile Organic Compounds	by EPA Method 8	8021								
Benzene*	< 0.050		0.050	mg/kg	50	8031401	MS	14-Mar-18	8021B	
Toluene*	< 0.050		0.050	mg/kg	50	8031401	MS	14-Mar-18	8021B	
Ethylbenzene*	< 0.050		0.050	mg/kg	50	8031401	MS	14-Mar-18	8021B	
Total Xylenes*	< 0.150		0.150	mg/kg	50	8031401	MS	14-Mar-18	8021B	
Total BTEX	< 0.300		0.300	mg/kg	50	8031401	MS	14-Mar-18	8021B	
Surrogate: 4-Bromofluorobenzene (PI	D)		91.6 %	72-	148	8031401	MS	14-Mar-18	8021B	

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MIDLAND TX, 79705 Froject Manager: IKE TAVAREZ Fax To: (432) 682-3946	TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705	Project: Project Number: Project Manager: Fax To:	MARATHON / MADERA 19 FED #1 212C-MD-01102.200 IKE TAVAREZ (432) 682-3946	Reported: 15-Mar-18 09:08
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# Volatile Organic Compounds by EPA Method 8021 - Quality Control

		Cardir	1al Lab	oratories						
		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 8031401 - Volatiles										
Blank (8031401-BLK1)				Prepared &	analyzed:	14-Mar-18	3			
Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (PID)	0.0915		mg/kg	0.100		91.5	72-148			
LCS (8031401-BS1)				Prepared &	analyzed:	14-Mar-18	3			
Benzene	2.05	0.050	mg/kg	2.00		103	79.5-124			
Toluene	2.09	0.050	mg/kg	2.00		105	75.5-127			
Ethylbenzene	2.05	0.050	mg/kg	2.00		102	77.7-125			
Total Xylenes	6.21	0.150	mg/kg	6.00		104	70.9-124			
Surrogate: 4-Bromofluorobenzene (PID)	0.0912		mg/kg	0.100		91.2	72-148			
LCS Dup (8031401-BSD1)				Prepared &	analyzed:	14-Mar-18	3			
Benzene	2.00	0.050	mg/kg	2.00		99.9	79.5-124	2.69	6.5	
Toluene	2.02	0.050	mg/kg	2.00		101	75.5-127	3.66	7.02	
Ethylbenzene	2.00	0.050	mg/kg	2.00		99.9	77.7-125	2.43	7.83	
Total Xylenes	6.08	0.150	mg/kg	6.00		101	70.9-124	2.13	7.78	
Surrogate: 4-Bromofluorobenzene (PID)	0.0910		mg/kg	0.100		91.0	72-148			

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TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705	Project: Project Number: Project Manager: Fax To:	MARATHON / MADERA 19 FED #1 212C-MD-01102.200 IKE TAVAREZ (432) 682-3946	Reported: 15-Mar-18 09:08
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# Petroleum Hydrocarbons by GC FID - Quality Control

Cardinal	l Laboratories

		Reporting	TT	Spike	Source	A/DEC	%REC	DDD	RPD	N
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 8031406 - General Prep - Organics										
Blank (8031406-BLK1)				Prepared &	Analyzed:	14-Mar-18				
GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
EXT DRO >C28-C35	ND	10.0	mg/kg							
EXT DRO >C28-C36	ND	10.0	mg/kg							
Total TPH C6-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	45.9		mg/kg	50.0		91.7	41-142			
Surrogate: 1-Chlorooctadecane	37.3		mg/kg	50.0		74.6	37.6-147			
LCS (8031406-BS1)				Prepared &	Analyzed:	14-Mar-18				
GRO C6-C10	183	10.0	mg/kg	200		91.5	76.5-133			
DRO >C10-C28	171	10.0	mg/kg	200		85.6	72.9-138			
Total TPH C6-C28	354	10.0	mg/kg	400		88.5	78-132			
Surrogate: 1-Chlorooctane	46.4		mg/kg	50.0		92.8	41-142			
Surrogate: 1-Chlorooctadecane	42.2		mg/kg	50.0		84.4	37.6-147			
LCS Dup (8031406-BSD1)				Prepared &	Analyzed:	14-Mar-18				
GRO C6-C10	183	10.0	mg/kg	200		91.6	76.5-133	0.0563	20.6	
DRO >C10-C28	163	10.0	mg/kg	200		81.4	72.9-138	5.04	20.6	
Total TPH C6-C28	346	10.0	mg/kg	400		86.5	78-132	2.38	18	
Surrogate: 1-Chlorooctane	46.9		mg/kg	50.0		93.8	41-142			
Surrogate: 1-Chlorooctadecane	41.3		mg/kg	50.0		82.7	37.6-147			

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Celeg D. Keine



# **Notes and Definitions**

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
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

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Celey Ditreene

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# CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

# 101 East Marland, Hobbs, NM 88240 (575) 393-2326 FAX (575) 393-2476

	1010 000 2020 1 MA (010) 000 - 21	10					
Company Name	Tetre Tech		BILL TO		ANALYSIS	REQUEST	
Project Manager	" I've Twarez		P.O. #:	_			
Address: 1/1	DOO N. Bis Saling St	Suite 401	Company:				
city: Mid	and State: (	+217 : q12×	Attn:				
Phone #:	Fax #:	The second s	Address:				
Project #:	Project Own	r: Maratton	City:	3	D		
Project Name:	Madera 19 Fed #1		State: Zip:	( [	10		
<b>Project Location</b>	: ( a lo un		Phone #:	2	1		
Sampler Name:	Chit Merrit		Fax #:	30	5		
FOR LAB USE ONLY		P. MATRIX	PRESERV. SAMP	LING	01:		
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMF # CONTAINERS GROUNDWATER WASTEWATER SOIL OIL SLUDGE	OTHER : ACID/BASE: ICE / COOL OTHER :	BTEX	<u>ТРН 8</u>		
-	Vant Totton (3')	X	3/14	X X ac:ol			
(2 M	Worth Botton (41)	<>		XXXIIII			
۲.	South Bottom (3.)	· X		10: 40 X X			
- (a	South Bottom (4')	1 ×		10:45 X X			
16	South Bottom (5')			6:50 X X			
T	both East Side Woull (5")	1 X	4	11:00 X			
PLEASE NOTE: Liability and	Damages. Cardinal's lability and client's exclusive remedy for	any daim arising whether based in contract	or tort, shall be limited to the amount p	ald by the client for the			
service. In no event shall Can affiliates or successors arising	answer or regargence and any correct cause whethoever shall be final be liable for incidental or consequential damages, including out of or related to the performance of services hereunder by 0	oceaned waived unless made in writing and 3 without limitation, business interruptions, I pardinal, regardless of whether such daim is provided to the second second second second second second second particular second second second second second second second particular second s	I received by Cardinal within 30 days at loss of use, or loss of profits incurred by is based upon any of the above stated r	ter completion of the applicable / client, its subsidiaries, easons or otherwise.			
	huer of Time 3:00	HOUL JU	moon	Phone Result: Fax Result: REMARKS:	fes □ No Add'i Phone # fes □ No Add'i Fax #:		
Kelinquished By:	Time:	Réceived By:		24hr R	ush		
Delivered By:	(Circle One) #70	Sample Conditi	on CHECKED BY:				
Sampler - UPS -	Bus - Other: 2,42 2,8	So Yes Tyes	MM.				_

+ Cardinal cannot accept verbal changes. Please fax written changes to (575) 322326



March 15, 2018

IKE TAVAREZ TETRA TECH 1910 N. BIG SPRING STREET MIDLAND, TX 79705

RE: MARATHON / MADERA 19 FED #1

Enclosed are the results of analyses for samples received by the laboratory on 03/14/18 13:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-17-10. 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 <a href="https://www.tceq.texas.gov/field/ga/lab\_accred\_certif.html">www.tceq.texas.gov/field/ga/lab\_accred\_certif.html</a>.

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

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

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

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. Keine

Celey D. Keene Lab Director/Quality Manager



Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705	Pr Prc	Project: oject Number: oject Manager: Fax To:	MARATHON / MADERA 19 FED #1 212C-MD-01102.200 IKE TAVAREZ (432) 682-3946	Reported: 15-Mar-18 09:00

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
NORTH BOTTOM (2.0')	H800740-01	Soil	14-Mar-18 10:15	14-Mar-18 13:00
SOUTH BOTTOM (2.0')	H800740-02	Soil	14-Mar-18 10:35	14-Mar-18 13:00
NORTH EAST SIDEWALL	H800740-03	Soil	14-Mar-18 10:55	14-Mar-18 13:00

# **Cardinal Laboratories**

# \*=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager


TETRA TECHF1910 N. BIG SPRING STREETProject NoMIDLAND TX, 79705Project MaFF	Project: MARATHON / MADERA 19 FED #1   lumber: 212C-MD-01102.200 15-   anager: IKE TAVAREZ   Fax To: (432) 682-3946	Reported: -Mar-18 09:00
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# NORTH BOTTOM (2.0')

### H800740-01 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	al Laborat	ories					
Volatile Organic Compounds b	oy EPA Method	8021								
Benzene*	<2.00		2.00	mg/kg	2000	8031401	MS	14-Mar-18	8021B	
Toluene*	63.0		2.00	mg/kg	2000	8031401	MS	14-Mar-18	8021B	
Ethylbenzene*	25.3		2.00	mg/kg	2000	8031401	MS	14-Mar-18	8021B	
Total Xylenes*	399		6.00	mg/kg	2000	8031401	MS	14-Mar-18	8021B	
Total BTEX	487		12.0	mg/kg	2000	8031401	MS	14-Mar-18	8021B	
Surrogate: 4-Bromofluorobenzene (PID)	)		100 %	72-	148	8031401	MS	14-Mar-18	8021B	
Petroleum Hydrocarbons by G	GC FID									S-04
GRO C6-C10*	4820		10.0	mg/kg	1	8031406	MS	14-Mar-18	8015B	
DRO >C10-C28*	7030		10.0	mg/kg	1	8031406	MS	14-Mar-18	8015B	
EXT DRO >C28-C36	147		10.0	mg/kg	1	8031406	MS	14-Mar-18	8015B	
Surrogate: 1-Chlorooctane			365 %	41-	142	8031406	MS	14-Mar-18	8015B	
Surrogate: 1-Chlorooctadecane			172 %	37.6	-147	8031406	MS	14-Mar-18	8015B	

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#### \*=Accredited Analyte

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TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705	Project: MARATHON / MADERA 19 FED #1 Project Number: 212C-MD-01102.200 Project Manager: IKE TAVAREZ Fax To: (432) 682-3946						Reported: 15-Mar-18 09:00			
			SOUTH E	BOTTON	A (2.0')					
			H8007	740-02 (So	oil)					
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	l Laborat	tories					
Volatile Organic Compounds by	EPA Method	8021								
Benzene*	<1.00		1.00	mg/kg	1000	8031401	MS	14-Mar-18	8021B	
Toluene*	34.4		1.00	mg/kg	1000	8031401	MS	14-Mar-18	8021B	
Ethylbenzene*	10.2		1.00	mg/kg	1000	8031401	MS	14-Mar-18	8021B	
Total Xylenes*	151		3.00	mg/kg	1000	8031401	MS	14-Mar-18	8021B	
Total BTEX	196		6.00	mg/kg	1000	8031401	MS	14-Mar-18	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			102 %	72-	148	8031401	MS	14-Mar-18	8021B	
Petroleum Hydrocarbons by GC	FID									S-04
GRO C6-C10*	1800		10.0	mg/kg	1	8031406	MS	14-Mar-18	8015B	
DRO >C10-C28*	2080		10.0	mg/kg	1	8031406	MS	14-Mar-18	8015B	
EXT DRO >C28-C36	41.4		10.0	mg/kg	1	8031406	MS	14-Mar-18	8015B	
Surrogate: 1-Chlorooctane			173 %	41-	142	8031406	MS	14-Mar-18	8015B	
Surrogate: 1-Chlorooctadecane			103 %	37.6	-147	8031406	MS	14-Mar-18	8015B	

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TETRA TECH 1910 N. BIG SPRING STRE MIDLAND TX, 79705	EET		Project: MARATHON / MADERA 19 FED #1 Project Number: 212C-MD-01102.200 Project Manager: IKE TAVAREZ Fax To: (432) 682-3946					Reported: 15-Mar-18 09:00		
			NORTH E	AST SID	EWALL					
			H800'	740-03 (Se	oil)					
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	l Laborat	tories					
Volatile Organic Compounds	by EPA Method 8	8021								
Benzene*	< 0.050		0.050	mg/kg	50	8031401	MS	14-Mar-18	8021B	
Toluene*	0.205		0.050	mg/kg	50	8031401	MS	14-Mar-18	8021B	
Ethylbenzene*	0.100		0.050	mg/kg	50	8031401	MS	14-Mar-18	8021B	
Total Xylenes*	0.617		0.150	mg/kg	50	8031401	MS	14-Mar-18	8021B	
Total BTEX	0.922		0.300	mg/kg	50	8031401	MS	14-Mar-18	8021B	
Surrogate: 4-Bromofluorobenzene (PI	D)		94.7 %	72-	148	8031401	MS	14-Mar-18	8021B	

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MIDLAND TX, 79705 Project Manager: IKE TAVAREZ Fax To: (432) 682-3946	TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705	Project: Project Number: Project Manager: Fax To:	MARATHON / MADERA 19 FED #1 212C-MD-01102.200 IKE TAVAREZ (432) 682-3946	Reported: 15-Mar-18 09:00
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### Volatile Organic Compounds by EPA Method 8021 - Quality Control

Cardinal Laboratories										
	Reporting Spike Source %REC RPD									
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 8031401 - Volatiles										
Blank (8031401-BLK1)				Prepared &	analyzed:	14-Mar-18	3			
Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (PID)	0.0915		mg/kg	0.100		91.5	72-148			
LCS (8031401-BS1)				Prepared &	analyzed:	14-Mar-18	3			
Benzene	2.05	0.050	mg/kg	2.00		103	79.5-124			
Toluene	2.09	0.050	mg/kg	2.00		105	75.5-127			
Ethylbenzene	2.05	0.050	mg/kg	2.00		102	77.7-125			
Total Xylenes	6.21	0.150	mg/kg	6.00		104	70.9-124			
Surrogate: 4-Bromofluorobenzene (PID)	0.0912		mg/kg	0.100		91.2	72-148			
LCS Dup (8031401-BSD1)				Prepared &	analyzed:	14-Mar-18	3			
Benzene	2.00	0.050	mg/kg	2.00		99.9	79.5-124	2.69	6.5	
Toluene	2.02	0.050	mg/kg	2.00		101	75.5-127	3.66	7.02	
Ethylbenzene	2.00	0.050	mg/kg	2.00		99.9	77.7-125	2.43	7.83	
Total Xylenes	6.08	0.150	mg/kg	6.00		101	70.9-124	2.13	7.78	
Surrogate: 4-Bromofluorobenzene (PID)	0.0910		mg/kg	0.100		91.0	72-148			

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TETRA TECH 1910 N. BIG SPRING STREET MIDLAND TX, 79705	Project: Project Number: Project Manager: Fax To:	MARATHON / MADERA 19 FED #1 212C-MD-01102.200 IKE TAVAREZ (432) 682-3946	Reported: 15-Mar-18 09:00
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### Petroleum Hydrocarbons by GC FID - Quality Control

Cardinal	Laboratories
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		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 8031406 - General Prep - Organics										
Blank (8031406-BLK1)				Prepared &	Analyzed:	14-Mar-18				
GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
EXT DRO >C28-C35	ND	10.0	mg/kg							
EXT DRO >C28-C36	ND	10.0	mg/kg							
Total TPH C6-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	45.9		mg/kg	50.0		91.7	41-142			
Surrogate: 1-Chlorooctadecane	37.3		mg/kg	50.0		74.6	37.6-147			
LCS (8031406-BS1)				Prepared &	Analyzed:	14-Mar-18				
GRO C6-C10	183	10.0	mg/kg	200		91.5	76.5-133			
DRO >C10-C28	171	10.0	mg/kg	200		85.6	72.9-138			
Total TPH C6-C28	354	10.0	mg/kg	400		88.5	78-132			
Surrogate: 1-Chlorooctane	46.4		mg/kg	50.0		92.8	41-142			
Surrogate: 1-Chlorooctadecane	42.2		mg/kg	50.0		84.4	37.6-147			
LCS Dup (8031406-BSD1)				Prepared &	Analyzed:	14-Mar-18				
GRO C6-C10	183	10.0	mg/kg	200		91.6	76.5-133	0.0563	20.6	
DRO >C10-C28	163	10.0	mg/kg	200		81.4	72.9-138	5.04	20.6	
Total TPH C6-C28	346	10.0	mg/kg	400		86.5	78-132	2.38	18	
Surrogate: 1-Chlorooctane	46.9		mg/kg	50.0		93.8	41-142			
Surrogate: 1-Chlorooctadecane	41.3		mg/kg	50.0		82.7	37.6-147			

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### **Notes and Definitions**

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
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

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