Delineation and Site Characterization Report

July 16, 2019

Oilfield Water Logistics SWD Operating, LLC Produced Water Release
Fulfer Saltwater Disposal Facility
Unit Letter F and G, Section 25, T25S, R36E,
Lea County, New Mexico Case No. 1RP-5489

Prepared For:

Mr. Phillip Sanders
Oilfield Water Logistics SWD Operating, LLC
8201 Preston Road, Suite 520
Dallas, Texas 75225

New Mexico Energy Minerals and Natural Resources Department
Oil Conservation Division
Mr. Dylan Rose-Coss
1220 South Saint Francis Drive
Santa Fe, New Mexico 87505

Prepared By:

500 Moseley Road
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KJE
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July 16, 2019

Mr. Phillip Sanders
Oilfield Water Logistics SWD Operating, LLC
8201 Preston Road, Suite 520
Dallas, Texas 75225

RE: **Delineation and Site Characterization Report: Oilfield Water Logistics (OWL) SWD Operating, LLC, Fulfer Saltwater Disposal (SWD) Facility, Unit Letter F and G, Section 25, T25S, R36E, Lea County, New Mexico – Case No. 1RP-5489**

Dear Mr. Sanders:

KJ Environmental Mgt., Inc. (KJE) is pleased to submit this Delineation and Site Characterization Report for the produced water release located at the Fulfer SWD facility in Lea County, New Mexico. This report discusses background information, assessment purpose and scope of work, execution of work, and documents the corresponding results.

We appreciate your selection of KJE for this project and look forward to assisting you further on other projects. If you have any questions, please do not hesitate to contact either of the undersigned at 940-387-0805. Thank you for the opportunity to provide professional environmental consulting services. It has been a pleasure working with you.

Best Regards,

William B. Soderstrom
Environmental Project Manager

Dena M. Vandenberg, REM, LEED AP
Director of Environmental Services

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APPENDICES

Executive Summary

KJ Environmental Mgt., Inc. (KJE), was retained by Oilfield Water Logistics (OWL) SWD Operating, LLC to complete certain delineation activities for a produced water release at the Fulfer SWD facility in Lea County, New Mexico.

On April 30, 2019, KJE was notified by Mr. Phillip Sanders, Safety Director with OWL SWD Operating, LLC, regarding a release of produced water at the above referenced location. Following the New Mexico Oil Conservation Division (NMOCD), part of the New Mexico Energy, Minerals, and Natural Resources Department (EMNRD) notification and approval, the release was assigned a remediation case number, 1RP-5489, and delineation and site characterization activities commenced.

Based on conversations with OWL SWD Operating, LLC, the produced water release occurred within the Fulfer well pad and did not breach the earthen berm located on the perimeter of the Fulfer SWD facility. Pursuant to New Mexico Administrative Code (NMAC) 19.15.29 issued on August 8, 2018, KJE performed delineation and site characterization activities in an attempt to delineate the release horizontally and vertically. KJE advanced four (4) soil borings (SB-01F through SB-04F) within the spill area, but allowed a minimum 10-foot setback to the active saltwater pipeline, to collect representative soil samples. In addition, KJE advanced one (1) background boring approximately 400 feet to the west in an attempt to obtain background soil concentrations for comparison.

Based on laboratory results, various soil samples were detected at chloride concentrations above the laboratory reporting limit; however, these concentrations are below the NMAC closure criteria of 600 mg/kg.

Based on the Fulfer SWD well pad being constructed of an impervious surface cover (caliche), soil sample analytical results below the NMAC closure criteria, and known depth to groundwater in the vicinity of the Fulfer SWD facility (>100 feet below ground surface [bgs]), additional investigation of the produced water release is not warranted at this time and KJE formally requests closure of 1RP-5489.

1.0 Introduction

On April 30, 2019, KJE was provided notification by Mr. Phillip Sanders, Safety Director with OWL SWD Operating, LLC, regarding a release of produced water at the Fulfer SWD facility located approximately two (2) miles southwest of Jal, Lea County, New Mexico. According to OWL personnel, the hose from the discharge pump broke free and caused the release. KJE notified the NMOCD of the spill on May 2, 2019, and it was determined approximately 60 barrels (BBLs) of produced water was released. According to OWL personnel, the release occurred within the Fulfer SWD facility and did not breach the earthen berm located on the perimeter of the Fulfer well pad. In addition, KJE submitted Form C-141 to the NMOCD on May 3, 2019 for review. A response was received from Mr. Dylan Rose-Coss, with the NMOCD, indicating the incident was assigned remediation case number 1RP-5489. Additionally, based on conversations with Mr. James Amos, with the Bureau of Land Management (BLM), OWL was not required to perform an archeological survey for the Fulfer SWD facility. The general view of the spill is illustrated in Appendix A on Figure 1.

Pursuant to NMAC 19.15.29 on August 8, 2018, KJE arrived on-site June 12, 2019, to begin delineation and site characterization procedures. The NMOCD approved C-141 form is located in Appendix F of this report.

2.0 Environmental Assessment Activities

2.1 Delineation Activities

On May 13, 2019, KJE personnel were on-site to visually assess the Fulfer SWD facility and collect Global Positioning System (GPS) coordinates of the extent of the produced water release. KJE did not collect delineation soil samples utilizing hand tools (hand auger).

On June 12, 2019, under the supervision of KJE personnel, JR Drilling, LLC, (JR Drilling) of Edgewood, New Mexico, advanced four (4) soil borings (SB-01F through SB-04F) within the spill area, but allowed a minimum 10-foot setback to the active saltwater pipeline, to collect representative soil samples. In addition, KJE advanced one (1) background boring approximately 400 feet to the west in an attempt to obtain background soil concentrations for comparison. The soil borings and background boring were advanced utilizing a Geoprobe 7822DT (direct-push techniques) to total depths ranging from 16 feet bgs in soil boring SB-01F, 12 feet bgs in soil borings SB-02F through SB-04F, and eight (8) feet bgs in background boring BG-01F. Additionally, groundwater was not encountered during the advancement of the soil borings or background boring; therefore, groundwater was not sampled or considered during the sampling event.

Field screening for chloride concentrations and soil conductivity was conducted using a calibrated Hanna HI993310 soil conductivity meter. In addition, field screening for volatile organic

compounds (VOCs) was conducted using a calibrated photoionization detector (PID) (Model RAE MINIRAE Lite 0-5K ppm) to screen for the highest readings from each of the borings. The soil boring logs are included in Appendix C.

2.2 Deviations from the Scope

Soil borings were field adjusted due to the proximity of the active saltwater pipeline and minimum 10-foot setback set forth by OWL to maintain structural integrity and address safety concerns. During the installation of the soil borings, KJE encountered refusal due to caliche between 8 feet bgs and 16 feet bgs in background boring BG-01F and SB-01F, respectively. The soil boring locations and approximate spill area are included in Appendix A.

3.0 Soil Sample Collection / Handling Procedures

3.1 Soil Samples

Soil samples were collected based on field indicators or depth of potential impact as noted above, and all samples were collected in four-ounce laboratory supplied glass containers for laboratory analysis. The collected soil samples were placed in laboratory-supplied containers, labeled, placed in an insulated container with ice, providing a 4^{o}C environment for sufficient preservation until delivery to Xenco Laboratories (a third-party, independent, and licensed environmental laboratory in Midland, Texas) accompanied by completed chain-of-custody. The soil samples were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) via Method 8260, extended range total petroleum hydrocarbons (TPH) via Method 8015 modified, and chlorides via Method EPA 300. The sample collection and handling activities were conducted in accordance with USEPA Standard Operating Procedures and strict chain-of-custody protocols.

The sample results were compared to the NMOCD closure applicable criteria, as detailed below and in Appendix B.

3.2 Groundwater Samples

Groundwater was not encountered in the soil borings advanced, nor was it anticipated to be encountered. According to records obtained from the New Mexico Office of the State Engineer's Office Hydrology Bureau records, the closest water well to the release area is located approximately 0.35 miles east of the site in Section 25, Township 25S, Range 36E, labeled under POD number CP01310, and has a recorded total depth of 420 feet bgs. In 2017, the depth to water was reported at 340 feet bgs; however, the static water level is 265 feet bgs. As such, and based on analytical data which explored soil borings to depths five (5) feet below the known areas of impact, potential groundwater impact is not anticipated. Based on the absence of shallow groundwater and lack as a known source of drinking water in the vicinity of the release source, there is no complete exposure pathway to shallow groundwater. No use of groundwater is

expected following proposed site remediation. As such, KJE does not recommend further action regarding potential groundwater impact. A copy of the New Mexico well log is included in Appendix G.

4.0 Summary of Analytical Results

4.1 NMOCD Closure Criteria

The NMOCD required delineation of BTEX, extended range TPH, and chlorides for the release area. Published values for BTEX and TPH were obtained from the NMOCD document "New Mexico Administrative Code Title 19, Natural Resources and Wildlife, Chapter 15, Oil and Gas, Part 29, Releases, issued August 14, 2018". Horizontal and vertical delineation concentrations were determined to be 10 mg/kg benzene, 50 mg/kg BTEX, 100 mg/kg TPH and 600 mg/kg chloride based on the potential of groundwater to be located within 50 feet of the ground surface. See Figure 1 in Appendix A for soil boring locations.

4.2 Soil Analytical Results

Analytical soil data did not identify concentrations of BTEX or TPH above the laboratory method detection limit. Analytical results identified chloride concentrations above laboratory sample detection limits; however, the concentrations were below the NMAC closure criteria of 600 mg/kg.

A summary table of the analytical results are included in Appendix B and copies of the laboratory analytical reports with chain-of-custody forms are included in Appendix E.

5.0 Conclusions/Recommendations

Based on laboratory analytical results, BTEX and TPH were not detected above laboratory sample detection limits from any soil sample submitted for laboratory analysis. Chloride concentrations were detected above laboratory sample detection limits; however, these concentrations were below the NMAC closure criteria of 600 mg/kg.

Based on the Fulfer SWD well pad being constructed of an impervious surface cover (caliche), soil sample analytical results below the NMAC closure criteria, and known depth to groundwater in the vicinity of the Fulfer SWD facility (>100 feet bgs), additional investigation of the produced water release is not warranted at this time and KJE formally requests closure of 1RP-5489.

If we can be of further assistance, please do not hesitate to contact us at 940-387-0805. Thank you for the opportunity to provide professional environmental consulting services. It has been a pleasure working with you.

6.0 Qualifications of Environmental Professional

This is to certify the remediation activities completed at the site located on the Fulfer SWD facility in Lea County, New Mexico; was performed following EPA, NMOCD, and industry-approved standards/protocols. This work was conducted between May 13 and June 12, 2019, for Mr. Phillip Sanders with OWL SWD Operating, LLC, and all field activities were completed under the supervision of Mr. William B. Soderstrom. Mr. Soderstrom's credentials are included in Appendix I.

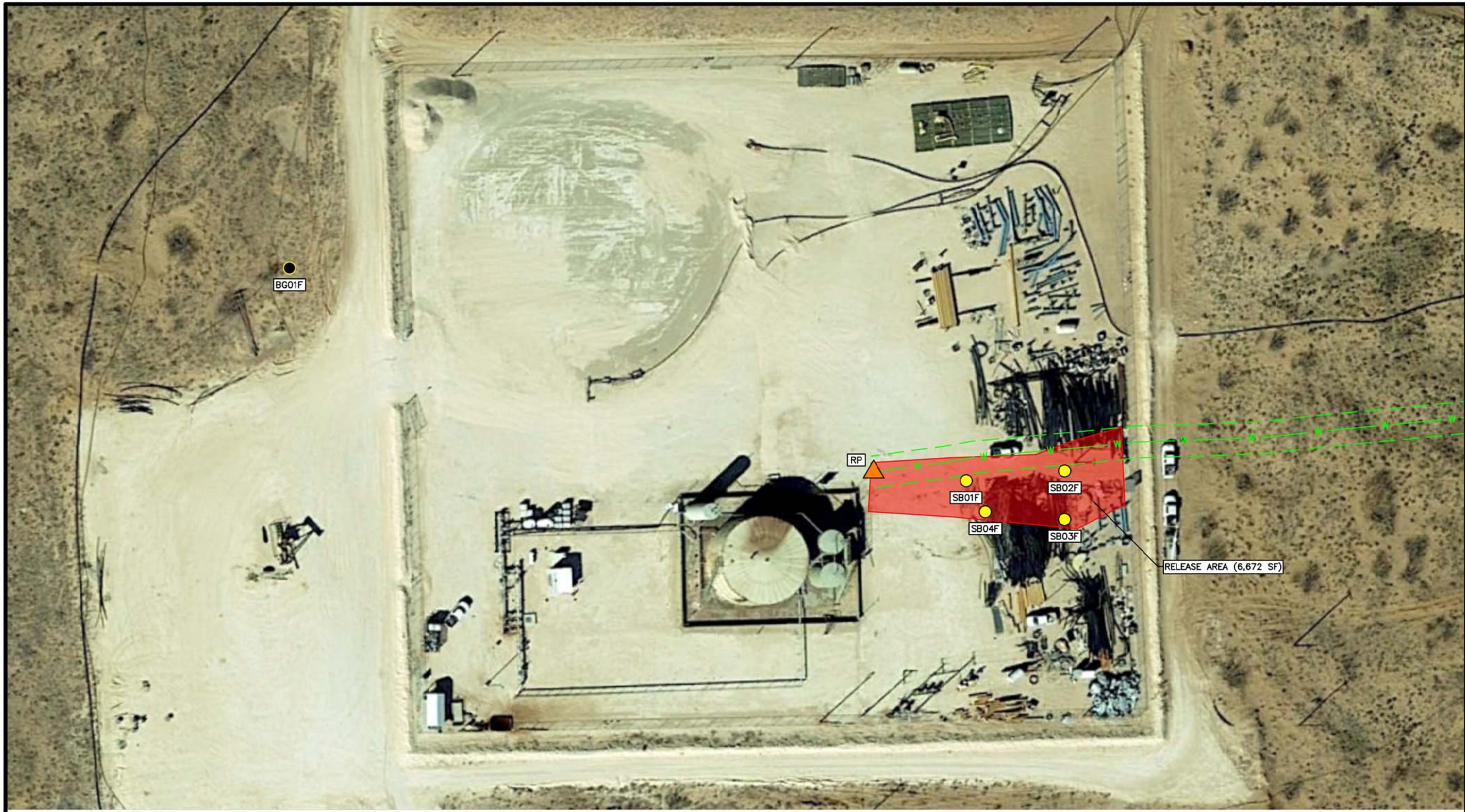
7.0 Signature of Environmental Professional

07/16/2019

William B. Soderstrom — Date
Environmental Professional
Environmental Project Manager

APPENDIX A

Figures



REVISIONS:

THIS DRAWING IS TO BE USED FOR PERMIT INFORMATION PURPOSES ONLY.

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(TBPE # F-12214)

SOIL BORING & RELEASE AREA LOCATION MAP
OWL SWD OPERATING, LLC
LEA COUNTY, NEW MEXICO
UNIT B, SECTION 25, TOWNSHIP 25S, RANGE 36E
CASE NO. 1RP-5489

DATE: 7/15/2019

FIGURE: 1

LEGEND

RELEASE POINT
SOIL BORING (TOTAL: 4)
BACKGROUND SAMPLE
RELEASE AREA
OWL PRODUCED WATER LINE (WITH 10' BUFFER ON EACH SIDE)

60 0 30 60
SCALE: 1" = 60'

N

NOTES:
1. RELEASE AREA DELINEATED BY OPEN RANGE FIELD SERVICES, LLC ON MAY 19, 2019.
2. GOOGLE EARTH WAS USED AS AN UNDERLAY IMAGE FOR THIS MAP. (http://google.com/earth)

APPENDIX B

Analytical Data

Table 1: Soil Analytical Data
Fulfer Well Pad
32.095342, -103.219894
Jal, Lea County, New Mexico

Laboratory Sample Designation		Units	NMAC Closure Criteria[1]	627725-001	627725-002	627725-003	627725-004	627725-005	627725-006	627725-007	627725-008	627725-009	627725-010	627725-011	627725-012	627725-013	627725-014	627725-015
Sample Designation				SB-01	SB-01	SB-01	SB-01	SB-01	SB-01	SB-01	SB-01	SB-02	SB-02	SB-02	SB-02	SB-02	SB-02	SB-03
Date Collected				6/12/2019	6/12/2019	6/12/2019	6/12/2019	6/12/2019	6/12/2019	6/12/2019	6/12/2019	6/12/2019	6/12/2019	6/12/2019	6/12/2019	6/12/2019	6/12/2019	6/12/2019
Sample Depth				0 - 2'	2 - 4'	4 - 6'	6 - 8'	8 - 10'	10 - 12'	12 - 14'	14 - 16'	0 - 2'	2 - 4'	4 - 6'	6 - 8'	8 - 10'	10 - 12'	0 - 2'
Method	Analyte																	
8015	TPH[2]	mg/kg	100	<15.6	--	--	--	--	--	--	--	<15.5	--	--	--	--	--	<16.7
8260	BENZENE	mg/kg	10	<0.00104	--	--	--	--	--	--	--	<0.00103	--	--	--	--	--	<0.00111
	ETHYLBENZENE	mg/kg	--	<0.00104	--	--	--	--	--	--	--	<0.00103	--	--	--	--	--	<0.00111
	TOLUENE	mg/kg	--	<0.00104	--	--	--	--	--	--	--	<0.00103	--	--	--	--	--	<0.00111
	XYLENE	mg/kg	--	<0.00104	--	--	--	--	--	--	--	<0.00103	--	--	--	--	--	<0.00111
	TOTAL BTEX[3]	mg/kg	50	<0.00104	--	--	--	--	--	--	--	<0.00103	--	--	--	--	--	<0.00111
300	CHLORIDE	mg/kg	600	<5.21	<5.25	**6.04**	<5.33	**13.7**	**13.0**	**7.09**	<5.66	<5.22	**69.4**	**6.61**	**11.6**	<5.68	<5.57	**79.9**

Laboratory Sample Designation		Units	NMAC Closure Criteria[1]	627725-016	627725-017	627725-018	627725-019	627725-020	627725-021	627725-022	627725-023	627725-024	627725-025	627725-026	627725-027	627725-028	627725-029	627725-030
Sample Designation				SB-03	SB-03	SB-03	SB-03	SB-03	SB-04	SB-04	SB-04	SB-04	SB-04	SB-04	BG-01	BG-01	BG-01	BG-01
Date Collected				6/12/2019	6/12/2019	6/12/2019	6/12/2019	6/12/2019	6/12/2019	6/12/2019	6/12/2019	6/12/2019	6/12/2019	6/12/2019	6/12/2019	6/12/2019	6/12/2019	6/12/2019
Sample Depth				2 - 4'	4 - 6'	6 - 8'	8 - 10'	10 - 12'	0 - 2'	2 - 4'	4 - 6'	6 - 8'	8 - 10'	10 - 12'	0 - 2'	2 - 4'	4 - 6'	6 - 8'
Method	Analyte																	
8015	TPH[2]	mg/kg	100	--	--	--	--	--	<15.6	--	--	--	--	--	<15.1	--	--	--
8260	BENZENE	mg/kg	10	--	--	--	--	--	<0.00104	--	--	--	--	--	<0.00101	--	--	--
	ETHYLBENZENE	mg/kg	--	--	--	--	--	--	<0.00104	--	--	--	--	--	<0.00101	--	--	--
	TOLUENE	mg/kg	--	--	--	--	--	--	<0.00104	--	--	--	--	--	<0.00101	--	--	--
	XYLENE	mg/kg	--	--	--	--	--	--	<0.00104	--	--	--	--	--	<0.00101	--	--	--
	TOTAL BTEX[3]	mg/kg	50	--	--	--	--	--	<0.00104	--	--	--	--	--	<0.00101	--	--	--
300	CHLORIDE	mg/kg	600	**52.5**	<5.37	<5.34	<5.43	**236**	**12.2**	<5.40	<5.30	**9.32**	**265**	**29.3**	<4.98	<5.01	<5.03	<5.09

Notes:
1) New Mexico Administrative Code (NMAC) Title 19, Chapter 15, Part 29, Table 1 Closure Criteria for Soils Impacted by a Release, issued August 8, 2018
2) TPH = Total petroleum hydrocarbons
3) BTEX = Benzene, toluene, ethylbenzene, and xylenes
mg/kg = milligrams per killogram
Bold = Analyte was detected at concentrations above laboratory sample detection limits
Highlighted = Analyte was detected at concentrations above NMAC Closure Criteria
"--" = Not applicable

Table 2: GPS Coordiantes
Fulfer Well Pad
32.095342, -103.219894
Jal, Lea County, New Mexico

Location	Description	Latitude	Longitude
SB01F	Soil Boring - Fulfer	32.09505	-103.21862
SB02F	Soil Boring - Fulfer	32.09505	-103.21842
SB03F	Soil Boring - Fulfer	32.09496	-103.21842
SB04F	Soil Boring - Fulfer	32.09496	-103.21858
BG01F	Background Boring - Fulfer	32.09551	-103.21998

Notes:

GPS coordinates were collected on June 12, 2019, by Mr. William B. Soderstrom utilizing Garmin GPSMAP 64sc unit ID 3951309141.

APPENDIX C

Boring Logs

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RECORD OF SUBSURFACE EXPLORATION

KJ Environmental & Civil Engineering
500 Moseley Road • Cross Roads, TX 76227
940-387-0805 • FAX 940-387-0830

Client Name:	OWL SWD Operating, LLC			**Well/Boring #**	SB-01	**Date Drilled:**	June 12, 2019
Client Address:	8201 Preston Road, Suite 520, Dallas, Texas 75225			**Depth of Boring:**	16’	**Diameter of Boring:**	2.25”
Project Name:	1RP-5489 – Fulfer Well Pad			**Depth of Well:**	N/A	**Diameter of Screen:**	N/A
Project Address:	32.09526, -103.21933			**Length of Screen:**	N/A	**Diameter of Casing:**	N/A
Driller:	JR Drilling, LLC			**Length of Casing:**	N/A	**Slot Size:**	N/A
Drilling Method:	DP	**Sampling Method:**	Acetate Sleeve	**Logged By:**	WS	**Well Material:**	N/A

Description / Remarks (Color, Grain Size, Texture, Structure, Consistency, Moisture)	Depth (feet)	Sample Interval (feet)	PID (ppm)	Chloride Screening (ppm)	Well Completion *(graphical representation only, not to scale)*
SAND (SP), light brown, loose, non-plastic, poorly graded, dry, no odor	-0-	0 – 2	0.4	--	
	-1-			--	
	-2-	2 – 4	0.3	--	
	-3-			--	
	-4-	4 – 6	0.1	--	
	-5-			--	
	-6-	6 – 8	0.1	--	
	-7-			--	
	-8-	8 – 10	0.2	--	
SAND (SP), yellowish orange, loose, non-plastic, poorly graded, dry, no odor	-9-			--	
	-10-	10 – 12	0.1	--	
	-11-			--	
SAND (SP), loose, yellowish orange, caliche nodules, non-plastic, poorly graded, dry, no odor	-12-	12 – 14	0.0	--	
	-13-			--	
Refusal at 16’ due to caliche	-14-	14 – 16	0.1	--	
	-15-			--	
NOTE: No water was encountered during installation of this boring.	-16-	--	--	--	
	-17-	--	--	--	
	-18-	--	--	--	
	-19-	--	--	--	
	-20-	--	--	--	

These logs should not be used separately from the original report.

RECORD OF SUBSURFACE EXPLORATION

KJ Environmental & Civil Engineering
500 Moseley Road • Cross Roads, TX 76227
940-387-0805 • FAX 940-387-0830

Client Name:	OWL SWD Operating, LLC			**Well/Boring #**	SB-02	**Date Drilled:**	June 12, 2019
Client Address:	8201 Preston Road, Suite 520, Dallas, Texas 75225			**Depth of Boring:**	12’	**Diameter of Boring:**	2.25”
Project Name:	1RP-5489 – Fulfer Well Pad			**Depth of Well:**	N/A	**Diameter of Screen:**	N/A
Project Address:	32.09526, -103.21933			**Length of Screen:**	N/A	**Diameter of Casing:**	N/A
Driller:	JR Drilling, LLC			**Length of Casing:**	N/A	**Slot Size:**	N/A
Drilling Method:	DP	**Sampling Method:**	Acetate Sleeve	**Logged By:**	WS	**Well Material:**	N/A

Description / Remarks (Color, Grain Size, Texture, Structure, Consistency, Moisture)	Depth (feet)	Sample Interval (feet)	PID (ppm)	Chloride Screening (ppm)	Well Completion *(graphical representation only, not to scale)*
SAND (SP), light brown, loose, non-plastic, poorly graded, dry, no odor	-0-	0 – 2	0.4	--	
	-1-			--	
	-2-	2 – 4	0.1	--	
	-3-			--	
	-4-	4 – 6	0.3	--	
SAND (SP), light red, some clay, medium dense, low plasticity, poorly graded, dry, no odor	-5-			--	
	-6-	6 – 8	0.2	--	
	-7-			--	
	-8-	8 – 10	0.2	--	
SAND (SP), dense, yellowish orange, caliche nodules, non-plastic, poorly graded, dry, no odor	-9-			--	
	-10-	10 – 12	0.1	--	
Refusal at 12’ due to caliche	-11-			--	
NOTE: No water was encountered during installation of this boring.	-12-	--	--	--	
	-13-	--	--	--	
	-14-	--	--	--	
	-15-	--	--	--	
	-16-	--	--	--	
	-17-	--	--	--	
	-18-	--	--	--	
	-19-	--	--	--	
	-20-	--	--	--	

These logs should not be used separately from the original report.

RECORD OF SUBSURFACE EXPLORATION

KJ Environmental & Civil Engineering
500 Moseley Road • Cross Roads, TX 76227
940-387-0805 • FAX 940-387-0830

Client Name:	OWL SWD Operating, LLC			**Well/Boring #**	SB-03	**Date Drilled:**	June 12, 2019
Client Address:	8201 Preston Road, Suite 520, Dallas, Texas 75225			**Depth of Boring:**	12’	**Diameter of Boring:**	2.25”
Project Name:	1RP-5489 – Fulfer Well Pad			**Depth of Well:**	N/A	**Diameter of Screen:**	N/A
Project Address:	32.09526, -103.21933			**Length of Screen:**	N/A	**Diameter of Casing:**	N/A
Driller:	JR Drilling, LLC			**Length of Casing:**	N/A	**Slot Size:**	N/A
Drilling Method:	DP	**Sampling Method:**	Acetate Sleeve	**Logged By:**	WS	**Well Material:**	N/A

Description / Remarks (Color, Grain Size, Texture, Structure, Consistency, Moisture)	Depth (feet)	Sample Interval (feet)	PID (ppm)	Chloride Screening (ppm)	Well Completion *(graphical representation only, not to scale)*
SAND (SP), light brown, loose, non-plastic, poorly graded, dry, no odor	-0-	0 – 2	0.1	--	
	-1-			--	
	-2-	2 – 4	0.2	--	
	-3-			--	
SAND (SP), light red, loose, non-plastic, poorly graded, dry, no odor	-4-	4 – 6	0.1	--	
	-5-			--	
	-6-	6 – 8	0.1	--	
	-7-			--	
	-8-	8 – 10	0.1	--	
	-9-			--	
SAND (SP), light red, some clay, dense, caliche nodules, low plasticity, poorly graded, dry, no odor	-10-	10 – 12	0.1	--	
	-11-			--	
Refusal at 12’ due to caliche					
NOTE: No water was encountered during installation of this boring.	-12-	--	--	--	
	-13-	--	--	--	
	-14-	--	--	--	
	-15-	--	--	--	
	-16-	--	--	--	
	-17-	--	--	--	
	-18-	--	--	--	
	-19-	--	--	--	
	-20-	--	--	--	

These logs should not be used separately from the original report.

RECORD OF SUBSURFACE EXPLORATION

KJ Environmental & Civil Engineering
500 Moseley Road • Cross Roads, TX 76227
940-387-0805 • FAX 940-387-0830

Client Name:	OWL SWD Operating, LLC			**Well/Boring #**	SB-04	**Date Drilled:**	June 12, 2019
Client Address:	8201 Preston Road, Suite 520, Dallas, Texas 75225			**Depth of Boring:**	12’	**Diameter of Boring:**	2.25”
Project Name:	1RP-5489 – Fulfer Well Pad			**Depth of Well:**	N/A	**Diameter of Screen:**	N/A
Project Address:	32.09526, -103.21933			**Length of Screen:**	N/A	**Diameter of Casing:**	N/A
Driller:	JR Drilling, LLC			**Length of Casing:**	N/A	**Slot Size:**	N/A
Drilling Method:	DP	**Sampling Method:**	Acetate Sleeve	**Logged By:**	WS	**Well Material:**	N/A

Description / Remarks (Color, Grain Size, Texture, Structure, Consistency, Moisture)	Depth (feet)	Sample Interval (feet)	PID (ppm)	Chloride Screening (ppm)	Well Completion *(graphical representation only, not to scale)*
SAND (SP), light brown, loose, non-plastic, poorly graded, dry, no odor	-0-	0 – 2	0.4	--	
	-1-			--	
	-2-	2 – 4	0.6	--	
	-3-			--	
	-4-	4 – 6	0.3	--	
	-5-			--	
SAND (SP), light red, some clay, medium dense, low plasticity, poorly graded, dry, no odor	-6-	6 – 8	0.1	--	
	-7-			--	
	-8-	8 – 10	0.1	--	
	-9-			--	
SAND (SP), loose, yellowish orange, caliche nodules, non-plastic, poorly graded, dry, no odor	-10-	10 – 12	0.1	--	
Refusal at 12’ due to caliche	-11-			--	
NOTE: No water was encountered during installation of this boring.	-12-	--	--	--	
	-13-	--	--	--	
	-14-	--	--	--	
	-15-	--	--	--	
	-16-	--	--	--	
	-17-	--	--	--	
	-18-	--	--	--	
	-19-	--	--	--	
	-20-	--	--	--	

These logs should not be used separately from the original report.

RECORD OF SUBSURFACE EXPLORATION

KJ Environmental & Civil Engineering
500 Moseley Road • Cross Roads, TX 76227
940-387-0805 • FAX 940-387-0830

Client Name:	OWL SWD Operating, LLC			**Well/Boring #**	BG-01	**Date Drilled:**	June 12, 2019
Client Address:	8201 Preston Road, Suite 520, Dallas, Texas 75225			**Depth of Boring:**	8’	**Diameter of Boring:**	2.25”
Project Name:	1RP-5489 – Fulfer Well Pad			**Depth of Well:**	N/A	**Diameter of Screen:**	N/A
Project Address:	32.09526, -103.21933			**Length of Screen:**	N/A	**Diameter of Casing:**	N/A
Driller:	JR Drilling, LLC			**Length of Casing:**	N/A	**Slot Size:**	N/A
Drilling Method:	DP	**Sampling Method:**	Acetate Sleeve	**Logged By:**	WS	**Well Material:**	N/A

Description / Remarks (Color, Grain Size, Texture, Structure, Consistency, Moisture)	Depth (feet)	Sample Interval (feet)	PID (ppm)	Chloride Screening (ppm)	Well Completion *(graphical representation only, not to scale)*
SAND (SP), light brown, loose, non-plastic, poorly graded, dry, no odor	-0-	0 – 2	0.3	--	
	-1-			--	
	-2-	2 – 4	0.5	--	
	-3-			--	
SAND (SP), light red, some clay, dense, caliche nodules, low plasticity, poorly graded, dry, no odor	-4-	4 – 6	0.2	--	
	-5-			--	
Refusal at 8’ due to caliche	-6-	6 – 8	0.1	--	
	-7-			--	
NOTE: No water was encountered during installation of this boring.	-8-	--	--	--	
	-9-	--	--	--	
	-10-	--	--	--	
	-11-	--	--	--	
	-12-	--	--	--	
	-13-	--	--	--	
	-14-	--	--	--	
	-15-	--	--	--	
	-16-	--	--	--	
	-17-	--	--	--	
	-18-	--	--	--	
	-19-	--	--	--	
	-20-	--	--	--	

These logs should not be used separately from the original report.

APPENDIX D

Laboratory Analytical Reports

Certificate of Analysis Summary 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Project Name: Fulfer Well Pad 1R-5489

Project Id: OWL043019D-2
Contact: Will Soderstrom
Project Location:

Date Received in Lab: Thu Jun-13-19 06:33 pm
Report Date: 20-JUN-19
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	627725-001		627725-002		627725-003		627725-004		627725-005		627725-006	
	Field Id:	SB-01 0-2'		SB-01 2-4'		SB-01 4-6'		SB-01 6-8'		SB-01 8-10'		SB-01 10-12'	
	Depth:	0-2		2-4		4-6		6-8		8-10		10-12	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-12-19 14:59		Jun-12-19 15:02		Jun-12-19 15:05		Jun-12-19 15:08		Jun-12-19 15:11		Jun-12-19 15:14	
BTEX by SW 8260C SUB: T104704215-19-29	***Extracted:***	Jun-18-19 16:10											
	Analyzed:	Jun-19-19 01:52											
	Units/RL:	mg/kg	RL										
Benzene		<0.00104	0.00104										
Toluene		<0.00104	0.00104										
Ethylbenzene		<0.00104	0.00104										
m,p-Xylenes		<0.00209	0.00209										
o-Xylene		<0.00104	0.00104										
Total Xylenes		<0.00104	0.00104										
Total BTEX		<0.00104	0.00104										
Chloride by EPA 300	***Extracted:***	Jun-14-19 15:20		Jun-14-19 15:20		Jun-14-19 15:20		Jun-14-19 15:20		Jun-14-19 15:20		Jun-14-19 15:35	
	Analyzed:	Jun-14-19 23:28		Jun-14-19 23:35		Jun-14-19 23:42		Jun-14-19 23:49		Jun-14-19 23:57		Jun-15-19 00:40	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		<5.21	5.21	<5.25	5.25	6.04	5.33	<5.33	5.33	13.7	5.33	13.0	5.53
Percent Moisture	***Extracted:***												
	Analyzed:	Jun-14-19 17:35		Jun-14-19 17:35		Jun-14-19 17:35		Jun-14-19 17:35		Jun-14-19 17:35		Jun-14-19 17:35	
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		4.20		5.43		6.20		6.11		6.14		9.56	
TPH by SW8015 Mod	***Extracted:***	Jun-15-19 16:00											
	Analyzed:	Jun-16-19 23:50											
	Units/RL:	mg/kg	RL										
Gasoline Range Hydrocarbons (GRO)		<15.6	15.6										
Diesel Range Organics (DRO)		<15.6	15.6										
Motor Oil Range Hydrocarbons (MRO)		<15.6	15.6										
Total TPH		<15.6	15.6										

Jessica Kramer
Project Assistant

Certificate of Analysis Summary 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Project Name: Fulfer Well Pad 1R-5489

Project Id: OWL043019D-2
Contact: Will Soderstrom
Project Location:

Date Received in Lab: Thu Jun-13-19 06:33 pm
Report Date: 20-JUN-19
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	627725-007		627725-008		627725-009		627725-010		627725-011		627725-012	
	Field Id:	SB-01 12-14'		SB-01 14-16'		SB-02 0-2'		SB-02 2-4'		SB-02 4-6'		SB-02 6-8'	
	Depth:	12-14		14-16		0-2		2-4		4-6		6-8	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-12-19 15:17		Jun-12-19 15:20		Jun-12-19 15:30		Jun-12-19 15:33		Jun-12-19 15:36		Jun-12-19 15:39	
BTEX by SW 8260C SUB: T104704215-19-29	***Extracted:***					Jun-19-19 11:40							
	Analyzed:					Jun-19-19 16:54							
	Units/RL:					mg/kg	RL						
Benzene						<0.00103	0.00103						
Toluene						<0.00103	0.00103						
Ethylbenzene						<0.00103	0.00103						
m,p-Xylenes						<0.00205	0.00205						
o-Xylene						<0.00103	0.00103						
Total Xylenes						<0.00103	0.00103						
Total BTEX						<0.00103	0.00103						
Chloride by EPA 300	***Extracted:***	Jun-14-19 15:35		Jun-14-19 15:35		Jun-14-19 15:35		Jun-14-19 15:35		Jun-14-19 15:35		Jun-14-19 15:35	
	Analyzed:	Jun-15-19 01:02		Jun-15-19 01:09		Jun-15-19 01:17		Jun-15-19 01:24		Jun-15-19 01:46		Jun-15-19 01:53	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		7.09	5.39	<5.66	5.66	<5.22	5.22	69.4	5.48	6.61	5.93	11.6	5.78
Percent Moisture	***Extracted:***												
	Analyzed:	Jun-14-19 17:35		Jun-14-19 17:35		Jun-14-19 17:35		Jun-14-19 17:35		Jun-14-19 17:35		Jun-14-19 17:35	
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		7.98		11.8		3.19		9.16		15.7		13.0	
TPH by SW8015 Mod	***Extracted:***					Jun-15-19 16:00							
	Analyzed:					Jun-17-19 00:14							
	Units/RL:					mg/kg	RL						
Gasoline Range Hydrocarbons (GRO)						<15.5	15.5						
Diesel Range Organics (DRO)						<15.5	15.5						
Motor Oil Range Hydrocarbons (MRO)						<15.5	15.5						
Total TPH						<15.5	15.5						

Jessica Kramer
Project Assistant

Certificate of Analysis Summary 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Project Name: Fulfer Well Pad 1R-5489

Project Id: OWL043019D-2
Contact: Will Soderstrom
Project Location:

Date Received in Lab: Thu Jun-13-19 06:33 pm
Report Date: 20-JUN-19
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	627725-013		627725-014		627725-015		627725-016		627725-017		627725-018	
	Field Id:	SB-02 8-10'		SB-02 10-12'		SB-03 0-2'		SB-03 2-4'		SB-03 4-6'		SB-03 6-8'	
	Depth:	8-10		10-12		0-2		2-4		4-6		6-8	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-12-19 15:43		Jun-12-19 15:47		Jun-12-19 15:57		Jun-12-19 16:00		Jun-12-19 16:03		Jun-12-19 16:06	
BTEX by SW 8260C SUB: T104704215-19-29	***Extracted:***					Jun-18-19 16:10							
	Analyzed:					Jun-19-19 02:31							
	Units/RL:					mg/kg	RL						
Benzene						<0.00111	0.00111						
Toluene						<0.00111	0.00111						
Ethylbenzene						<0.00111	0.00111						
m,p-Xylenes						<0.00223	0.00223						
o-Xylene						<0.00111	0.00111						
Total Xylenes						<0.00111	0.00111						
Total BTEX						<0.00111	0.00111						
Chloride by EPA 300	***Extracted:***	Jun-14-19 15:35		Jun-14-19 15:35		Jun-14-19 15:35		Jun-14-19 15:35		Jun-14-19 15:35		Jun-14-19 15:35	
	Analyzed:	Jun-15-19 02:00		Jun-15-19 02:07		Jun-15-19 02:15		Jun-15-19 02:22		Jun-15-19 02:44		Jun-15-19 02:51	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		<5.68	5.68	<5.57	5.57	79.9	5.51	52.5	5.75	<5.37	5.37	<5.34	5.34
Percent Moisture	***Extracted:***												
	Analyzed:	Jun-14-19 17:35		Jun-14-19 17:35		Jun-14-19 17:35		Jun-14-19 17:35		Jun-14-19 17:35		Jun-14-19 17:35	
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		12.4		11.1		10.2		13.0		6.58		5.34	
TPH by SW8015 Mod	***Extracted:***					Jun-15-19 16:00							
	Analyzed:					Jun-17-19 00:38							
	Units/RL:					mg/kg	RL						
Gasoline Range Hydrocarbons (GRO)						<16.7	16.7						
Diesel Range Organics (DRO)						<16.7	16.7						
Motor Oil Range Hydrocarbons (MRO)						<16.7	16.7						
Total TPH						<16.7	16.7						

Jessica Kramer
Project Assistant

Certificate of Analysis Summary 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Project Name: Fulfer Well Pad 1R-5489

Project Id: OWL043019D-2
Contact: Will Soderstrom
Project Location:

Date Received in Lab: Thu Jun-13-19 06:33 pm
Report Date: 20-JUN-19
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	627725-019		627725-020		627725-021		627725-022		627725-023		627725-024	
	Field Id:	SB-03 8-10'		SB-03 10-12'		SB-04 0-2'		SB-04 2-4'		SB-04 4-6'		SB-04 6-8'	
	Depth:	8-10		10-12		0-2		2-4		4-6		4-6	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-12-19 16:09		Jun-12-19 16:13		Jun-12-19 16:28		Jun-12-19 16:31		Jun-12-19 16:34		Jun-12-19 16:37	
BTEX by SW 8260C SUB: T104704215-19-29	***Extracted:***					Jun-18-19 16:10							
	Analyzed:					Jun-19-19 05:27							
	Units/RL:					mg/kg	RL						
Benzene						<0.00104	0.00104						
Toluene						<0.00104	0.00104						
Ethylbenzene						<0.00104	0.00104						
m,p-Xylenes						<0.00208	0.00208						
o-Xylene						<0.00104	0.00104						
Total Xylenes						<0.00104	0.00104						
Total BTEX						<0.00104	0.00104						
Chloride by EPA 300	***Extracted:***	Jun-14-19 15:35		Jun-14-19 15:35		Jun-14-19 15:35		Jun-14-19 15:35		Jun-14-19 15:35		Jun-14-19 15:35	
	Analyzed:	Jun-15-19 03:13		Jun-15-19 03:20		Jun-15-19 03:27		Jun-15-19 03:34		Jun-15-19 03:42		Jun-15-19 03:49	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		<5.43	5.43	236	5.76	12.2	5.16	<5.40	5.40	<5.30	5.30	9.32	5.51
Percent Moisture	***Extracted:***												
	Analyzed:	Jun-14-19 17:35		Jun-14-19 17:35		Jun-14-19 17:35		Jun-14-19 17:35		Jun-14-19 17:35		Jun-14-19 17:35	
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		7.72		13.6		4.13		6.70		5.32		8.83	
TPH by SW8015 Mod	***Extracted:***					Jun-15-19 15:00							
	Analyzed:					Jun-17-19 11:29							
	Units/RL:					mg/kg	RL						
Gasoline Range Hydrocarbons (GRO)						<15.6	15.6						
Diesel Range Organics (DRO)						<15.6	15.6						
Motor Oil Range Hydrocarbons (MRO)						<15.6	15.6						
Total TPH						<15.6	15.6						

Jessica Kramer
Project Assistant

Certificate of Analysis Summary 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Project Name: Fulfer Well Pad 1R-5489

Project Id: OWL043019D-2
Contact: Will Soderstrom
Project Location:

Date Received in Lab: Thu Jun-13-19 06:33 pm
Report Date: 20-JUN-19
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	627725-025		627725-026		627725-027		627725-028		627725-029		627725-030	
	Field Id:	SB-04 8-10'		SB-04 10-12'		BG-01 0-2'		BG-01 2-4'		BG-01 4-6'		BG-01 6-8'	
	Depth:	6-8		10-12		0-2		2-4		4-6		6-8	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-12-19 16:40		Jun-12-19 16:44		Jun-12-19 17:00		Jun-12-19 17:03		Jun-12-19 17:06		Jun-12-19 17:09	
BTEX by SW 8260C SUB: T104704215-19-29	***Extracted:***					Jun-18-19 16:10							
	Analyzed:					Jun-19-19 06:07							
	Units/RL:					mg/kg	RL						
Benzene						<0.00101	0.00101						
Toluene						<0.00101	0.00101						
Ethylbenzene						<0.00101	0.00101						
m,p-Xylenes						<0.00201	0.00201						
o-Xylene						<0.00101	0.00101						
Total Xylenes						<0.00101	0.00101						
Total BTEX						<0.00101	0.00101						
Chloride by EPA 300	***Extracted:***	Jun-14-19 15:35		Jun-14-19 18:25		Jun-14-19 18:25		Jun-14-19 18:25		Jun-17-19 10:55		Jun-17-19 10:55	
	Analyzed:	Jun-15-19 03:56		Jun-14-19 19:08		Jun-14-19 19:25		Jun-14-19 19:30		Jun-17-19 11:37		Jun-17-19 11:51	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		265	5.40	29.3	5.35	<4.98	4.98	<5.01	5.01	<5.03	5.03	<5.09	5.09
Percent Moisture	***Extracted:***												
	Analyzed:	Jun-14-19 17:35		Jun-14-19 17:35		Jun-14-19 17:35		Jun-14-19 17:35		Jun-14-19 17:35		Jun-14-19 17:35	
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		7.46		7.48		0.580		1.12		0.800		1.13	
TPH by SW8015 Mod	***Extracted:***					Jun-14-19 12:00							
	Analyzed:					Jun-15-19 07:48							
	Units/RL:					mg/kg	RL						
Gasoline Range Hydrocarbons (GRO)						<15.1	15.1						
Diesel Range Organics (DRO)						<15.1	15.1						
Motor Oil Range Hydrocarbons (MRO)						<15.1	15.1						
Total TPH						<15.1	15.1						

Jessica Kramer
Project Assistant

Analytical Report 627725

for

KJ Environmental & Civil Engineering

Project Manager: Will Soderstrom

Fulfer Well Pad 1R-5489

OWL043019D-2

20-JUN-19

Collected By: Client

1211 W. Florida Ave
Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-19-29), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-19-19), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-20)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-18)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-18-4)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429), North Carolina (483)

20-JUN-19

Project Manager: **Will Soderstrom**
KJ Environmental & Civil Engineering
500 Moseley Rd
Aubrey, TX 76227

Reference: XENCO Report No(s): **627725**
Fulfer Well Pad 1R-5489
Project Address:

Will Soderstrom:

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) 627725. 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. 627725 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

Jessica Kramer

Jessica Kramer
Project Assistant

Sample Cross Reference 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SB-01 0-2'	S	06-12-19 14:59	0 - 2	627725-001
SB-01 2-4'	S	06-12-19 15:02	2 - 4	627725-002
SB-01 4-6'	S	06-12-19 15:05	4 - 6	627725-003
SB-01 6-8'	S	06-12-19 15:08	6 - 8	627725-004
SB-01 8-10'	S	06-12-19 15:11	8 - 10	627725-005
SB-01 10-12'	S	06-12-19 15:14	10 - 12	627725-006
SB-01 12-14'	S	06-12-19 15:17	12 - 14	627725-007
SB-01 14-16'	S	06-12-19 15:20	14 - 16	627725-008
SB-02 0-2'	S	06-12-19 15:30	0 - 2	627725-009
SB-02 2-4'	S	06-12-19 15:33	2 - 4	627725-010
SB-02 4-6'	S	06-12-19 15:36	4 - 6	627725-011
SB-02 6-8'	S	06-12-19 15:39	6 - 8	627725-012
SB-02 8-10'	S	06-12-19 15:43	8 - 10	627725-013
SB-02 10-12'	S	06-12-19 15:47	10 - 12	627725-014
SB-03 0-2'	S	06-12-19 15:57	0 - 2	627725-015
SB-03 2-4'	S	06-12-19 16:00	2 - 4	627725-016
SB-03 4-6'	S	06-12-19 16:03	4 - 6	627725-017
SB-03 6-8'	S	06-12-19 16:06	6 - 8	627725-018
SB-03 8-10'	S	06-12-19 16:09	8 - 10	627725-019
SB-03 10-12'	S	06-12-19 16:13	10 - 12	627725-020
SB-04 0-2'	S	06-12-19 16:28	0 - 2	627725-021
SB-04 2-4'	S	06-12-19 16:31	2 - 4	627725-022
SB-04 4-6'	S	06-12-19 16:34	4 - 6	627725-023
SB-04 6-8'	S	06-12-19 16:37	4 - 6	627725-024
SB-04 8-10'	S	06-12-19 16:40	6 - 8	627725-025
SB-04 10-12'	S	06-12-19 16:44	10 - 12	627725-026
BG-01 0-2'	S	06-12-19 17:00	0 - 2	627725-027
BG-01 2-4'	S	06-12-19 17:03	2 - 4	627725-028
BG-01 4-6'	S	06-12-19 17:06	4 - 6	627725-029
BG-01 6-8'	S	06-12-19 17:09	6 - 8	627725-030

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3092435 TPH by SW8015 Mod
Surrogate o-Terphenyl recovered below QC limits. Matrix interferences is suspected.
Samples affected are: 627725-027.

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-01 0-2'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-001	Date Collected:	06.12.19 14.59	Sample Depth:	0 - 2

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	4.2
Analyst:	CHE	Date Prep:	06.14.19 15.20	Basis:	Dry Weight
Seq Number:	3092454				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<5.21	5.21	mg/kg	06.14.19 23.28	U	1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	4.2
Analyst:	ARM	Date Prep:	06.15.19 16.00	Basis:	Dry Weight
Seq Number:	3092643				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.6	15.6	mg/kg	06.16.19 23.50	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.6	15.6	mg/kg	06.16.19 23.50	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.6	15.6	mg/kg	06.16.19 23.50	U	1
Total TPH	PHC635	<15.6	15.6	mg/kg	06.16.19 23.50	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	106	%	70-135	06.16.19 23.50	
o-Terphenyl	84-15-1	86	%	70-135	06.16.19 23.50	

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-01 0-2'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-001	Date Collected:	06.12.19 14.59	Sample Depth:	0 - 2
Analytical Method:	BTEX by SW 8260C			Prep Method:	SW5035A
Tech:	HOP			% Moisture:	4.2
Analyst:	HOP	Date Prep:	06.18.19 16.10	Basis:	Dry Weight
Seq Number:	3092727			SUB:	T104704215-19-29

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00104	0.00104	mg/kg	06.19.19 01.52	U	1
Toluene	108-88-3	<0.00104	0.00104	mg/kg	06.19.19 01.52	U	1
Ethylbenzene	100-41-4	<0.00104	0.00104	mg/kg	06.19.19 01.52	U	1
m,p-Xylenes	179601-23-1	<0.00209	0.00209	mg/kg	06.19.19 01.52	U	1
o-Xylene	95-47-6	<0.00104	0.00104	mg/kg	06.19.19 01.52	U	1
Total Xylenes	1330-20-7	<0.00104	0.00104	mg/kg	06.19.19 01.52	U	1
Total BTEX		<0.00104	0.00104	mg/kg	06.19.19 01.52	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
Dibromofluoromethane	1868-53-7	106	%	74-126	06.19.19 01.52	
1,2-Dichloroethane-D4	17060-07-0	110	%	80-120	06.19.19 01.52	
Toluene-D8	2037-26-5	99	%	73-132	06.19.19 01.52	
4-Bromofluorobenzene	460-00-4	88	%	58-152	06.19.19 01.52	

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-01 2-4'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-002	Date Collected:	06.12.19 15.02	Sample Depth:	2 - 4
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	5.43
Analyst:	CHE	Date Prep:	06.14.19 15.20	Basis:	Dry Weight
Seq Number:	3092454				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<5.25	5.25	mg/kg	06.14.19 23.35	U	1

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-01 4-6'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-003	Date Collected:	06.12.19 15.05	Sample Depth:	4 - 6
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	6.2
Analyst:	CHE	Date Prep:	06.14.19 15.20	Basis:	Dry Weight
Seq Number:	3092454				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**6.04**	5.33	mg/kg	06.14.19 23.42		1

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-01 6-8'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-004	Date Collected:	06.12.19 15.08	Sample Depth:	6 - 8
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	6.11
Analyst:	CHE	Date Prep:	06.14.19 15.20	Basis:	Dry Weight
Seq Number:	3092454				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<5.33	5.33	mg/kg	06.14.19 23.49	U	1

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-01 8-10'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-005	Date Collected:	06.12.19 15.11	Sample Depth:	8 - 10
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	6.14
Analyst:	CHE	Date Prep:	06.14.19 15.20	Basis:	Dry Weight
Seq Number:	3092454				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**13.7**	5.33	mg/kg	06.14.19 23.57		1

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-01 10-12'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-006	Date Collected:	06.12.19 15.14	Sample Depth:	10 - 12
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	9.56
Analyst:	CHE	Date Prep:	06.14.19 15.35	Basis:	Dry Weight
Seq Number:	3092458				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**13.0**	5.53	mg/kg	06.15.19 00.40		1

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-01 12-14'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-007	Date Collected:	06.12.19 15.17	Sample Depth:	12 - 14
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	7.98
Analyst:	CHE	Date Prep:	06.14.19 15.35	Basis:	Dry Weight
Seq Number:	3092458				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**7.09**	5.39	mg/kg	06.15.19 01.02		1

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-01 14-16'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-008	Date Collected:	06.12.19 15.20	Sample Depth:	14 - 16
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	11.81
Analyst:	CHE	Date Prep:	06.14.19 15.35	Basis:	Dry Weight
Seq Number:	3092458				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<5.66	5.66	mg/kg	06.15.19 01.09	U	1

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-02 0-2'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-009	Date Collected:	06.12.19 15.30	Sample Depth:	0 - 2

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	3.19
Analyst:	CHE	Date Prep:	06.14.19 15.35	Basis:	Dry Weight
Seq Number:	3092458				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<5.22	5.22	mg/kg	06.15.19 01.17	U	1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	3.19
Analyst:	ARM	Date Prep:	06.15.19 16.00	Basis:	Dry Weight
Seq Number:	3092643				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.5	15.5	mg/kg	06.17.19 00.14	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.5	15.5	mg/kg	06.17.19 00.14	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.5	15.5	mg/kg	06.17.19 00.14	U	1
Total TPH	PHC635	<15.5	15.5	mg/kg	06.17.19 00.14	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	106	%	70-135	06.17.19 00.14	
o-Terphenyl	84-15-1	72	%	70-135	06.17.19 00.14	

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Fulfer Well Pad 1R-5489

Sample Id:	**SB-02 0-2'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-009	Date Collected:	06.12.19 15.30	Sample Depth:	0 - 2
Analytical Method:	BTEX by SW 8260C			Prep Method:	SW5035A
Tech:	HOP			% Moisture:	3.19
Analyst:	HOP	Date Prep:	06.19.19 11.40	Basis:	Dry Weight
Seq Number:	3092809			SUB:	T104704215-19-29

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00103	0.00103	mg/kg	06.19.19 16.54	U	1
Toluene	108-88-3	<0.00103	0.00103	mg/kg	06.19.19 16.54	U	1
Ethylbenzene	100-41-4	<0.00103	0.00103	mg/kg	06.19.19 16.54	U	1
m,p-Xylenes	179601-23-1	<0.00205	0.00205	mg/kg	06.19.19 16.54	U	1
o-Xylene	95-47-6	<0.00103	0.00103	mg/kg	06.19.19 16.54	U	1
Total Xylenes	1330-20-7	<0.00103	0.00103	mg/kg	06.19.19 16.54	U	1
Total BTEX		<0.00103	0.00103	mg/kg	06.19.19 16.54	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
Dibromofluoromethane	1868-53-7	112	%	74-126	06.19.19 16.54	
1,2-Dichloroethane-D4	17060-07-0	107	%	80-120	06.19.19 16.54	
Toluene-D8	2037-26-5	96	%	73-132	06.19.19 16.54	
4-Bromofluorobenzene	460-00-4	93	%	58-152	06.19.19 16.54	

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Fulfer Well Pad 1R-5489

Sample Id:	**SB-02 2-4'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-010	Date Collected:	06.12.19 15.33	Sample Depth:	2 - 4
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	9.16
Analyst:	CHE	Date Prep:	06.14.19 15.35	Basis:	Dry Weight
Seq Number:	3092458				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**69.4**	5.48	mg/kg	06.15.19 01.24		1

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KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-02 4-6'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-011	Date Collected:	06.12.19 15.36	Sample Depth:	4 - 6
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	15.67
Analyst:	CHE	Date Prep:	06.14.19 15.35	Basis:	Dry Weight
Seq Number:	3092458				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**6.61**	5.93	mg/kg	06.15.19 01.46		1

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-02 6-8'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-012	Date Collected:	06.12.19 15.39	Sample Depth:	6 - 8
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	12.96
Analyst:	CHE	Date Prep:	06.14.19 15.35	Basis:	Dry Weight
Seq Number:	3092458				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**11.6**	5.78	mg/kg	06.15.19 01.53		1

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-02 8-10'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-013	Date Collected:	06.12.19 15.43	Sample Depth:	8 - 10
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	12.35
Analyst:	CHE	Date Prep:	06.14.19 15.35	Basis:	Dry Weight
Seq Number:	3092458				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<5.68	5.68	mg/kg	06.15.19 02.00	U	1

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-02 10-12'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-014	Date Collected:	06.12.19 15.47	Sample Depth:	10 - 12
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	11.14
Analyst:	CHE	Date Prep:	06.14.19 15.35	Basis:	Dry Weight
Seq Number:	3092458				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<5.57	5.57	mg/kg	06.15.19 02.07	U	1

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-03 0-2'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-015	Date Collected:	06.12.19 15.57	Sample Depth:	0 - 2

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	10.15
Analyst:	CHE	Date Prep:	06.14.19 15.35	Basis:	Dry Weight
Seq Number:	3092458				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**79.9**	5.51	mg/kg	06.15.19 02.15		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	10.15
Analyst:	ARM	Date Prep:	06.15.19 16.00	Basis:	Dry Weight
Seq Number:	3092643				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<16.7	16.7	mg/kg	06.17.19 00.38	U	1
Diesel Range Organics (DRO)	C10C28DRO	<16.7	16.7	mg/kg	06.17.19 00.38	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<16.7	16.7	mg/kg	06.17.19 00.38	U	1
Total TPH	PHC635	<16.7	16.7	mg/kg	06.17.19 00.38	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	108	%	70-135	06.17.19 00.38	
o-Terphenyl	84-15-1	78	%	70-135	06.17.19 00.38	

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-03 0-2'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-015	Date Collected:	06.12.19 15.57	Sample Depth:	0 - 2
Analytical Method:	BTEX by SW 8260C			Prep Method:	SW5035A
Tech:	HOP			% Moisture:	10.15
Analyst:	HOP	Date Prep:	06.18.19 16.10	Basis:	Dry Weight
Seq Number:	3092727			SUB:	T104704215-19-29

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00111	0.00111	mg/kg	06.19.19 02.31	U	1
Toluene	108-88-3	<0.00111	0.00111	mg/kg	06.19.19 02.31	U	1
Ethylbenzene	100-41-4	<0.00111	0.00111	mg/kg	06.19.19 02.31	U	1
m,p-Xylenes	179601-23-1	<0.00223	0.00223	mg/kg	06.19.19 02.31	U	1
o-Xylene	95-47-6	<0.00111	0.00111	mg/kg	06.19.19 02.31	U	1
Total Xylenes	1330-20-7	<0.00111	0.00111	mg/kg	06.19.19 02.31	U	1
Total BTEX		<0.00111	0.00111	mg/kg	06.19.19 02.31	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
Dibromofluoromethane	1868-53-7	107	%	74-126	06.19.19 02.31	
1,2-Dichloroethane-D4	17060-07-0	103	%	80-120	06.19.19 02.31	
Toluene-D8	2037-26-5	97	%	73-132	06.19.19 02.31	
4-Bromofluorobenzene	460-00-4	87	%	58-152	06.19.19 02.31	

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-03 2-4'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-016	Date Collected:	06.12.19 16.00	Sample Depth:	2 - 4
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	13
Analyst:	CHE	Date Prep:	06.14.19 15.35	Basis:	Dry Weight
Seq Number:	3092458				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**52.5**	5.75	mg/kg	06.15.19 02.22		1

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-03 4-6'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-017	Date Collected:	06.12.19 16.03	Sample Depth:	4 - 6
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	6.58
Analyst:	CHE	Date Prep:	06.14.19 15.35	Basis:	Dry Weight
Seq Number:	3092458				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<5.37	5.37	mg/kg	06.15.19 02.44	U	1

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KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-03 6-8'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-018	Date Collected:	06.12.19 16.06	Sample Depth:	6 - 8
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	5.34
Analyst:	CHE	Date Prep:	06.14.19 15.35	Basis:	Dry Weight
Seq Number:	3092458				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<5.34	5.34	mg/kg	06.15.19 02.51	U	1

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KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-03 8-10'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-019	Date Collected:	06.12.19 16.09	Sample Depth:	8 - 10
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	7.72
Analyst:	CHE	Date Prep:	06.14.19 15.35	Basis:	Dry Weight
Seq Number:	3092458				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<5.43	5.43	mg/kg	06.15.19 03.13	U	1

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-03 10-12'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-020	Date Collected:	06.12.19 16.13	Sample Depth:	10 - 12
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	13.56
Analyst:	CHE	Date Prep:	06.14.19 15.35	Basis:	Dry Weight
Seq Number:	3092458				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**236**	5.76	mg/kg	06.15.19 03.20		1

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-04 0-2'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-021	Date Collected:	06.12.19 16.28	Sample Depth:	0 - 2

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	4.13
Analyst:	CHE	Date Prep:	06.14.19 15.35	Basis:	Dry Weight
Seq Number:	3092458				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**12.2**	5.16	mg/kg	06.15.19 03.27		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	4.13
Analyst:	ARM	Date Prep:	06.15.19 15.00	Basis:	Dry Weight
Seq Number:	3092645				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.6	15.6	mg/kg	06.17.19 11.29	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.6	15.6	mg/kg	06.17.19 11.29	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.6	15.6	mg/kg	06.17.19 11.29	U	1
Total TPH	PHC635	<15.6	15.6	mg/kg	06.17.19 11.29	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	115	%	70-135	06.17.19 11.29	
o-Terphenyl	84-15-1	95	%	70-135	06.17.19 11.29	

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-04 0-2'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-021	Date Collected:	06.12.19 16.28	Sample Depth:	0 - 2
Analytical Method:	BTEX by SW 8260C			Prep Method:	SW5035A
Tech:	HOP			% Moisture:	4.13
Analyst:	HOP	Date Prep:	06.18.19 16.10	Basis:	Dry Weight
Seq Number:	3092727			SUB:	T104704215-19-29

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00104	0.00104	mg/kg	06.19.19 05.27	U	1
Toluene	108-88-3	<0.00104	0.00104	mg/kg	06.19.19 05.27	U	1
Ethylbenzene	100-41-4	<0.00104	0.00104	mg/kg	06.19.19 05.27	U	1
m,p-Xylenes	179601-23-1	<0.00208	0.00208	mg/kg	06.19.19 05.27	U	1
o-Xylene	95-47-6	<0.00104	0.00104	mg/kg	06.19.19 05.27	U	1
Total Xylenes	1330-20-7	<0.00104	0.00104	mg/kg	06.19.19 05.27	U	1
Total BTEX		<0.00104	0.00104	mg/kg	06.19.19 05.27	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
Dibromofluoromethane	1868-53-7	116	%	74-126	06.19.19 05.27	
1,2-Dichloroethane-D4	17060-07-0	110	%	80-120	06.19.19 05.27	
Toluene-D8	2037-26-5	102	%	73-132	06.19.19 05.27	
4-Bromofluorobenzene	460-00-4	84	%	58-152	06.19.19 05.27	

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-04 2-4'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-022	Date Collected:	06.12.19 16.31	Sample Depth:	2 - 4
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	6.7
Analyst:	CHE	Date Prep:	06.14.19 15.35	Basis:	Dry Weight
Seq Number:	3092458				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<5.40	5.40	mg/kg	06.15.19 03.34	U	1

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-04 4-6'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-023	Date Collected:	06.12.19 16.34	Sample Depth:	4 - 6
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	5.32
Analyst:	CHE	Date Prep:	06.14.19 15.35	Basis:	Dry Weight
Seq Number:	3092458				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<5.30	5.30	mg/kg	06.15.19 03.42	U	1

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-04 6-8'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-024	Date Collected:	06.12.19 16.37	Sample Depth:	4 - 6
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	8.83
Analyst:	CHE	Date Prep:	06.14.19 15.35	Basis:	Dry Weight
Seq Number:	3092458				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**9.32**	5.51	mg/kg	06.15.19 03.49		1

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-04 8-10'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-025	Date Collected:	06.12.19 16.40	Sample Depth:	6 - 8
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	7.46
Analyst:	CHE	Date Prep:	06.14.19 15.35	Basis:	Dry Weight
Seq Number:	3092458				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**265**	5.40	mg/kg	06.15.19 03.56		1

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**SB-04 10-12'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-026	Date Collected:	06.12.19 16.44	Sample Depth:	10 - 12
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	7.48
Analyst:	CHE	Date Prep:	06.14.19 18.25	Basis:	Dry Weight
Seq Number:	3092461				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**29.3**	5.35	mg/kg	06.14.19 19.08		1

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**BG-01 0-2'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-027	Date Collected:	06.12.19 17.00	Sample Depth:	0 - 2

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	.58
Analyst:	CHE	Date Prep:	06.14.19 18.25	Basis:	Dry Weight
Seq Number:	3092461				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.98	4.98	mg/kg	06.14.19 19.25	U	1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	.58
Analyst:	ARM	Date Prep:	06.14.19 12.00	Basis:	Dry Weight
Seq Number:	3092435				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.1	15.1	mg/kg	06.15.19 07.48	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.1	15.1	mg/kg	06.15.19 07.48	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.1	15.1	mg/kg	06.15.19 07.48	U	1
Total TPH	PHC635	<15.1	15.1	mg/kg	06.15.19 07.48	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	81	%	70-135	06.15.19 07.48	
o-Terphenyl	84-15-1	66	%	70-135	06.15.19 07.48	**

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**BG-01 0-2'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-027	Date Collected:	06.12.19 17.00	Sample Depth:	0 - 2
Analytical Method:	BTEX by SW 8260C			Prep Method:	SW5035A
Tech:	HOP			% Moisture:	.58
Analyst:	HOP	Date Prep:	06.18.19 16.10	Basis:	Dry Weight
Seq Number:	3092727			SUB:	T104704215-19-29

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00101	0.00101	mg/kg	06.19.19 06.07	U	1
Toluene	108-88-3	<0.00101	0.00101	mg/kg	06.19.19 06.07	U	1
Ethylbenzene	100-41-4	<0.00101	0.00101	mg/kg	06.19.19 06.07	U	1
m,p-Xylenes	179601-23-1	<0.00201	0.00201	mg/kg	06.19.19 06.07	U	1
o-Xylene	95-47-6	<0.00101	0.00101	mg/kg	06.19.19 06.07	U	1
Total Xylenes	1330-20-7	<0.00101	0.00101	mg/kg	06.19.19 06.07	U	1
Total BTEX		<0.00101	0.00101	mg/kg	06.19.19 06.07	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
Dibromofluoromethane	1868-53-7	118	%	74-126	06.19.19 06.07	
1,2-Dichloroethane-D4	17060-07-0	115	%	80-120	06.19.19 06.07	
Toluene-D8	2037-26-5	102	%	73-132	06.19.19 06.07	
4-Bromofluorobenzene	460-00-4	85	%	58-152	06.19.19 06.07	

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**BG-01 2-4'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-028	Date Collected:	06.12.19 17.03	Sample Depth:	2 - 4
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	1.12
Analyst:	CHE	Date Prep:	06.14.19 18.25	Basis:	Dry Weight
Seq Number:	3092461				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<5.01	5.01	mg/kg	06.14.19 19.30	U	1

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**BG-01 4-6'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-029	Date Collected:	06.12.19 17.06	Sample Depth:	4 - 6
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	.8
Analyst:	CHE	Date Prep:	06.17.19 10.55	Basis:	Dry Weight
Seq Number:	3092611				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<5.03	5.03	mg/kg	06.17.19 11.37	U	1

Certificate of Analytical Results 627725

KJ Environmental & Civil Engineering, Aubrey, TX

Fulfer Well Pad 1R-5489

Sample Id:	**BG-01 6-8'**	Matrix:	Soil	Date Received:	06.13.19 18.33
Lab Sample Id:	627725-030	Date Collected:	06.12.19 17.09	Sample Depth:	6 - 8
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	1.13
Analyst:	CHE	Date Prep:	06.17.19 10.55	Basis:	Dry Weight
Seq Number:	3092611				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<5.09	5.09	mg/kg	06.17.19 11.51	U	1

Flagging Criteria

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

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

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

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

F RPD exceeded lab control limits.

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

U Analyte was not detected.

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

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

K Sample analyzed outside of recommended hold time.

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

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

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

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

+ NELAC certification not offered for this compound.

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

QC Summary 627725

KJ Environmental & Civil Engineering

Fulfer Well Pad 1R-5489

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3092454 Matrix: Solid Date Prep: 06.14.19
MB Sample Id: 7680027-1-BLK LCS Sample Id: 7680027-1-BKS LCSD Sample Id: 7680027-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.858	250	243	97	243	97	90-110	0	20	mg/kg	06.14.19 20:26	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3092458 Matrix: Solid Date Prep: 06.14.19
MB Sample Id: 7680028-1-BLK LCS Sample Id: 7680028-1-BKS LCSD Sample Id: 7680028-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.858	250	247	99	247	99	90-110	0	20	mg/kg	06.15.19 00:26	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3092461 Matrix: Solid Date Prep: 06.14.19
MB Sample Id: 7680031-1-BLK LCS Sample Id: 7680031-1-BKS LCSD Sample Id: 7680031-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	264	106	264	106	90-110	0	20	mg/kg	06.14.19 18:57	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3092611 Matrix: Solid Date Prep: 06.17.19
MB Sample Id: 7680064-1-BLK LCS Sample Id: 7680064-1-BKS LCSD Sample Id: 7680064-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	245	98	246	98	90-110	0	20	mg/kg	06.17.19 11:27	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3092454 Matrix: Soil Date Prep: 06.14.19
Parent Sample Id: 627704-004 MS Sample Id: 627704-004 S MSD Sample Id: 627704-004 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	8.75	248	265	103	265	103	90-110	0	20	mg/kg	06.14.19 20:48	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

[D] = 100*(C-A) / B
RPD = 200* | (C-E) / (C+E) |
[D] = 100 * (C) / [B]
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

QC Summary 627725

KJ Environmental & Civil Engineering

Fulfer Well Pad 1R-5489

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3092454 Matrix: Soil Date Prep: 06.14.19
Parent Sample Id: 627719-002 MS Sample Id: 627719-002 S MSD Sample Id: 627719-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	212	249	474	105	474	105	90-110	0	20	mg/kg	06.14.19 22:30	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3092458 Matrix: Soil Date Prep: 06.14.19
Parent Sample Id: 627725-006 MS Sample Id: 627725-006 S MSD Sample Id: 627725-006 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	13.0	276	301	104	301	104	90-110	0	20	mg/kg	06.15.19 00:48	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3092458 Matrix: Soil Date Prep: 06.14.19
Parent Sample Id: 627725-016 MS Sample Id: 627725-016 S MSD Sample Id: 627725-016 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	52.5	287	352	104	352	104	90-110	0	20	mg/kg	06.15.19 02:29	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3092461 Matrix: Soil Date Prep: 06.14.19
Parent Sample Id: 627725-026 MS Sample Id: 627725-026 S MSD Sample Id: 627725-026 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	29.3	268	288	97	290	97	90-110	1	20	mg/kg	06.14.19 19:14	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3092461 Matrix: Soil Date Prep: 06.14.19
Parent Sample Id: 627802-008 MS Sample Id: 627802-008 S MSD Sample Id: 627802-008 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	224	249	457	94	455	93	90-110	0	20	mg/kg	06.14.19 20:32	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

[D] = 100*(C-A) / B
RPD = 200* | (C-E) / (C+E) |
[D] = 100 * (C) / [B]
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

QC Summary 627725

KJ Environmental & Civil Engineering

Fulfer Well Pad 1R-5489

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3092611 Matrix: Soil Date Prep: 06.17.19
Parent Sample Id: 627724-005 MS Sample Id: 627724-005 S MSD Sample Id: 627724-005 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.33	266	264	99	264	99	90-110	0	20	mg/kg	06.17.19 12:49	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3092611 Matrix: Soil Date Prep: 06.17.19
Parent Sample Id: 627725-029 MS Sample Id: 627725-029 S MSD Sample Id: 627725-029 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.03	252	243	96	243	96	90-110	0	20	mg/kg	06.17.19 11:41	

Analytical Method: **Percent Moisture**
Seq Number: 3092419 Matrix: Solid
MB Sample Id: 3092419-1-BLK

Parameter	MB Result	Units	Analysis Date	Flag
Percent Moisture	<	%	06.14.19 17:35	

Analytical Method: **Percent Moisture**
Seq Number: 3092421 Matrix: Solid
MB Sample Id: 3092421-1-BLK

Parameter	MB Result	Units	Analysis Date	Flag
Percent Moisture	<	%	06.14.19 17:35	

Analytical Method: **Percent Moisture**
Seq Number: 3092422 Matrix: Solid
MB Sample Id: 3092422-1-BLK

Parameter	MB Result	Units	Analysis Date	Flag
Percent Moisture	<	%	06.14.19 17:35	

MS/MSD Percent Recovery [D] = 100*(C-A) / B LCS = Laboratory Control Sample MS = Matrix Spike
Relative Percent Difference RPD = 200* | (C-E) / (C+E) | A = Parent Result B = Spike Added
LCS/LCSD Recovery [D] = 100 * (C) / [B] C = MS/LCS Result D = MSD/LCSD % Rec
Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample) E = MSD/LCSD Result

KJ Environmental & Civil Engineering

Fulfer Well Pad 1R-5489

Analytical Method: **Percent Moisture**
Seq Number: 3092419 Matrix: Soil
Parent Sample Id: 627725-004 MD Sample Id: 627725-004 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Percent Moisture	6.11	5.74	6	20	%	06.14.19 17:35	

Analytical Method: **Percent Moisture**
Seq Number: 3092419 Matrix: Soil
Parent Sample Id: 627725-015 MD Sample Id: 627725-015 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Percent Moisture	10.2	10.3	1	20	%	06.14.19 17:35	

Analytical Method: **Percent Moisture**
Seq Number: 3092421 Matrix: Soil
Parent Sample Id: 627724-007 MD Sample Id: 627724-007 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Percent Moisture	0.530	0.590	11	20	%	06.14.19 17:35	

Analytical Method: **Percent Moisture**
Seq Number: 3092421 Matrix: Soil
Parent Sample Id: 627725-018 MD Sample Id: 627725-018 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Percent Moisture	5.34	5.19	3	20	%	06.14.19 17:35	

Analytical Method: **Percent Moisture**
Seq Number: 3092422 Matrix: Soil
Parent Sample Id: 627725-019 MD Sample Id: 627725-019 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Percent Moisture	7.72	7.40	4	20	%	06.14.19 17:35	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

[D] = 100*(C-A) / B
RPD = 200* | (C-E) / (C+E) |
[D] = 100 * (C) / [B]
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

QC Summary 627725

KJ Environmental & Civil Engineering

Fulfer Well Pad 1R-5489

Analytical Method: **Percent Moisture**

Seq Number: 3092422 Matrix: Soil

Parent Sample Id: 627725-029 MD Sample Id: 627725-029 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Percent Moisture	0.800	0.910	13	20	%	06.14.19 17:35	

Analytical Method: **TPH by SW8015 Mod** Prep Method: TX1005P

Seq Number: 3092435 Matrix: Solid Date Prep: 06.14.19

MB Sample Id: 7680003-1-BLK LCS Sample Id: 7680003-1-BKS LCSD Sample Id: 7680003-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	14.8	1000	862	86	841	84	70-135	2	20	mg/kg	06.15.19 01:41	
Diesel Range Organics (DRO)	<8.13	1000	899	90	876	88	70-135	3	20	mg/kg	06.15.19 01:41	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	93		86		83		70-135	%	06.15.19 01:41
o-Terphenyl	92		99		94		70-135	%	06.15.19 01:41

Analytical Method: **TPH by SW8015 Mod** Prep Method: TX1005P

Seq Number: 3092645 Matrix: Solid Date Prep: 06.15.19

MB Sample Id: 7680012-1-BLK LCS Sample Id: 7680012-1-BKS LCSD Sample Id: 7680012-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	10.1	1000	900	90	976	98	70-135	8	20	mg/kg	06.17.19 01:50	
Diesel Range Organics (DRO)	<8.13	1000	866	87	943	94	70-135	9	20	mg/kg	06.17.19 01:50	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	112		96		103		70-135	%	06.17.19 01:50
o-Terphenyl	97		84		91		70-135	%	06.17.19 01:50

Analytical Method: **TPH by SW8015 Mod** Prep Method: TX1005P

Seq Number: 3092643 Matrix: Solid Date Prep: 06.15.19

MB Sample Id: 7680011-1-BLK LCS Sample Id: 7680011-1-BKS LCSD Sample Id: 7680011-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<8.00	1000	973	97	883	88	70-135	10	20	mg/kg	06.16.19 14:56	
Diesel Range Organics (DRO)	<8.13	1000	987	99	869	87	70-135	13	20	mg/kg	06.16.19 14:56	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	115		110		98		70-135	%	06.16.19 14:56
o-Terphenyl	103		115		99		70-135	%	06.16.19 14:56

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

[D] = 100*(C-A) / B
RPD = 200* | (C-E) / (C+E) |
[D] = 100 * (C) / [B]
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

QC Summary 627725

KJ Environmental & Civil Engineering

Fulfer Well Pad 1R-5489

Analytical Method: **TPH by SW8015 Mod** Prep Method: TX1005P
Seq Number: 3092435 Matrix: Soil Date Prep: 06.14.19
Parent Sample Id: 627205-001 MS Sample Id: 627205-001 S MSD Sample Id: 627205-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	14.8	1000	789	77	800	79	70-135	1	20	mg/kg	06.15.19 02:54	
Diesel Range Organics (DRO)	8.75	1000	828	82	845	84	70-135	2	20	mg/kg	06.15.19 02:54	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	73		77		70-135	%	06.15.19 02:54
o-Terphenyl	90		86		70-135	%	06.15.19 02:54

Analytical Method: **TPH by SW8015 Mod** Prep Method: TX1005P
Seq Number: 3092645 Matrix: Soil Date Prep: 06.15.19
Parent Sample Id: 627724-001 MS Sample Id: 627724-001 S MSD Sample Id: 627724-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.3	1020	800	78	857	84	70-135	7	20	mg/kg	06.17.19 03:02	
Diesel Range Organics (DRO)	9.64	1020	786	76	834	81	70-135	6	20	mg/kg	06.17.19 03:02	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	88		94		70-135	%	06.17.19 03:02
o-Terphenyl	82		82		70-135	%	06.17.19 03:02

Analytical Method: **TPH by SW8015 Mod** Prep Method: TX1005P
Seq Number: 3092643 Matrix: Soil Date Prep: 06.15.19
Parent Sample Id: 627512-001 MS Sample Id: 627512-001 S MSD Sample Id: 627512-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<7.98	997	871	87	833	84	70-135	4	20	mg/kg	06.16.19 16:09	
Diesel Range Organics (DRO)	36.9	997	886	85	822	79	70-135	7	20	mg/kg	06.16.19 16:09	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	100		92		70-135	%	06.16.19 16:09
o-Terphenyl	96		89		70-135	%	06.16.19 16:09

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

[D] = 100*(C-A) / B
RPD = 200* | (C-E) / (C+E) |
[D] = 100 * (C) / [B]
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

QC Summary 627725

KJ Environmental & Civil Engineering

Fulfer Well Pad 1R-5489

Analytical Method: **BTEX by SW 8260C** Prep Method: SW5035A

Seq Number: 3092727 Matrix: Solid Date Prep: 06.18.19

MB Sample Id: 7680208-1-BLK LCS Sample Id: 7680208-1-BKS LCSD Sample Id: 7680208-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00100	0.0500	0.0468	94	0.0513	103	62-132	9	25	mg/kg	06.18.19 23:35	
Toluene	<0.00100	0.0500	0.0496	99	0.0525	105	66-124	6	25	mg/kg	06.18.19 23:35	
Ethylbenzene	<0.00100	0.0500	0.0511	102	0.0526	105	71-134	3	25	mg/kg	06.18.19 23:35	
m,p-Xylenes	<0.00200	0.100	0.0995	100	0.105	105	69-128	5	25	mg/kg	06.18.19 23:35	
o-Xylene	<0.00100	0.0500	0.0483	97	0.0509	102	72-131	5	25	mg/kg	06.18.19 23:35	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
Dibromofluoromethane	102		99		103		74-126	%	06.18.19 23:35
1,2-Dichloroethane-D4	105		99		97		80-120	%	06.18.19 23:35
Toluene-D8	101		99		96		73-132	%	06.18.19 23:35
4-Bromofluorobenzene	85		105		107		58-152	%	06.18.19 23:35

Analytical Method: **BTEX by SW 8260C** Prep Method: SW5035A

Seq Number: 3092809 Matrix: Solid Date Prep: 06.19.19

MB Sample Id: 7680260-1-BLK LCS Sample Id: 7680260-1-BKS LCSD Sample Id: 7680260-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00100	0.0500	0.0486	97	0.0539	108	62-132	10	25	mg/kg	06.19.19 11:34	
Toluene	<0.00100	0.0500	0.0498	100	0.0563	113	66-124	12	25	mg/kg	06.19.19 11:34	
Ethylbenzene	<0.00100	0.0500	0.0534	107	0.0590	118	71-134	10	25	mg/kg	06.19.19 11:34	
m,p-Xylenes	<0.00200	0.100	0.106	106	0.117	117	69-128	10	25	mg/kg	06.19.19 11:34	
o-Xylene	<0.00100	0.0500	0.0504	101	0.0565	113	72-131	11	25	mg/kg	06.19.19 11:34	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
Dibromofluoromethane	105		103		102		74-126	%	06.19.19 11:34
1,2-Dichloroethane-D4	107		100		102		80-120	%	06.19.19 11:34
Toluene-D8	103		98		98		73-132	%	06.19.19 11:34
4-Bromofluorobenzene	87		102		105		58-152	%	06.19.19 11:34

MS/MSD Percent Recovery [D] = 100*(C-A) / B LCS = Laboratory Control Sample MS = Matrix Spike

Relative Percent Difference RPD = 200* | (C-E) / (C+E) | A = Parent Result B = Spike Added

LCS/LCSD Recovery [D] = 100 * (C) / [B] C = MS/LCS Result D = MSD/LCSD % Rec

Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample) E = MSD/LCSD Result

QC Summary 627725

KJ Environmental & Civil Engineering

Fulfer Well Pad 1R-5489

Analytical Method: **BTEX by SW 8260C** Prep Method: SW5035A
Seq Number: 3092727 Matrix: Soil Date Prep: 06.18.19
Parent Sample Id: 627725-001 MS Sample Id: 627725-001 S MSD Sample Id: 627725-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00105	0.0523	0.0500	96	0.0504	97	62-132	1	25	mg/kg	06.19.19 00:15	
Toluene	<0.00105	0.0523	0.0522	100	0.0526	101	66-124	1	25	mg/kg	06.19.19 00:15	
Ethylbenzene	<0.00105	0.0523	0.0518	99	0.0529	101	71-134	2	25	mg/kg	06.19.19 00:15	
m,p-Xylenes	<0.00209	0.105	0.101	96	0.104	100	69-128	3	25	mg/kg	06.19.19 00:15	
o-Xylene	<0.00105	0.0523	0.0513	98	0.0530	102	72-131	3	25	mg/kg	06.19.19 00:15	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
Dibromofluoromethane	101		103		74-126	%	06.19.19 00:15
1,2-Dichloroethane-D4	96		102		80-120	%	06.19.19 00:15
Toluene-D8	102		104		73-132	%	06.19.19 00:15
4-Bromofluorobenzene	104		99		58-152	%	06.19.19 00:15

Analytical Method: **BTEX by SW 8260C** Prep Method: SW5035A
Seq Number: 3092809 Matrix: Soil Date Prep: 06.19.19
Parent Sample Id: 627877-001 MS Sample Id: 627877-001 S

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	Limits	Units	Analysis Date	Flag
Benzene	<0.000915	0.0458	0.0376	82	62-132	mg/kg	06.19.19 12:14	
Toluene	<0.000915	0.0458	0.0400	87	66-124	mg/kg	06.19.19 12:14	
Ethylbenzene	<0.000915	0.0458	0.0395	86	71-134	mg/kg	06.19.19 12:14	
m,p-Xylenes	<0.00183	0.0915	0.0777	85	69-128	mg/kg	06.19.19 12:14	
o-Xylene	<0.000915	0.0458	0.0369	81	72-131	mg/kg	06.19.19 12:14	

Surrogate	MS %Rec	MS Flag	Limits	Units	Analysis Date
Dibromofluoromethane	104		74-126	%	06.19.19 12:14
1,2-Dichloroethane-D4	102		80-120	%	06.19.19 12:14
Toluene-D8	97		73-132	%	06.19.19 12:14
4-Bromofluorobenzene	109		58-152	%	06.19.19 12:14

MS/MSD Percent Recovery [D] = 100*(C-A) / B LCS = Laboratory Control Sample MS = Matrix Spike
Relative Percent Difference RPD = 200* | (C-E) / (C+E) | A = Parent Result B = Spike Added
LCS/LCSD Recovery [D] = 100 * (C) / [B] C = MS/LCS Result D = MSD/LCSD % Rec
Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample) E = MSD/LCSD Result

CHAIN OF CUSTODY

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XENCO LABORATORIES

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Dallas Texas (214-902-0300) | Midland, Texas (432-704-5251)

www.xenco.com

Xenco Quote # | Xenco Job # 627728

Client / Reporting Information

Company Name / Branch: KJ Environmental & Civil Engineering

Company Address: 500 Moseley Rd Cross Road TX 76227

Email: Wsoderstrom@kje-US.com

Phone No: 940-387-0805

Project Contact: Will Sodderstrom

Samplers's Name

Project Information

Project Number: 0WL043019D-2

Project Name/Locat: Fulfer Well Pad 1R-5489

Invoice To:

PO Number:

Matrix Codes

W = Water
S = Soil/Sed/Solid
GW =Ground Water
DW = Drinking Water
P = Product
SW = Surface water
SL = Sludge
OW =Ocean/Sea Water
WI = Wipe
O = Oil
WW= Waste Water
A = Air

No.	Field ID / Point of Collection	Collection: Sample Depth	Date	Time	Matrix	# of bottles	Number of preserved bottles: HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	Analytical Information: TPH (GRO, DRO, MRO) by 8015M	BTEX by 8260C	Benzene by 8260C	E300 (Chloride)	Field Comments
1	SB-01 0-2'	0-2	6/12	1459	S	1								Y	X	X	X	X	
2	SB-01 2-4'	2-4		1502														X	
3	SB-01 4-6'	4-6		1505														X	
4	SB-01 6-8'	6-8		1508														X	
5	SB-01 8-10'	8-10		1511														X	
6	SB-01 10-12'	10-12		1514														X	
7	SB-01 12-14'	12-14		1517														X	
8	SB-01 14-16'	14-16		1520														X	
9	SB-02 0-2'	0-2		1530											X	X	X	X	
10	SB-02 2-4'	2-4		1533														X	

Turnaround Time (Business days)

- [ ] Same Day TAT
- [ ] 5 Day TAT
- [ ] Next Day EMERGENCY
- [x] 7 Day TAT
- [ ] 2 Day EMERGENCY
- [ ] Contract TAT
- [ ] 3 Day EMERGENCY

TAT Starts Day received by Lab, if received by 5:00 pm

Data Deliverable Information

- [ ] Level II Std QC
- [ ] Level IV (Full Data Pkg /raw data)
- [ ] Level III Std QC+ Forms
- [ ] TRRP Level IV
- [ ] Level 3 (CLP Forms)
- [ ] UST / RG -411
- [ ] TRRP Checklist

Notes: dry weight standard TAT

FED-EX / UPS: Tracking #

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

Relinquished by Sampler	Date Time: 6/13/19	Received By: 1 John Burns	Relinquished By: 2	Date Time:	Received By: 2
Relinquished by: 3	Date Time: 1833	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	Preserved where applicable	On Ice: Y	Cooler Temp. 0.5	Thermo. Corr. Factor 0.3

Notice: Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the Client if such loses are due to circumstances beyond the control of Xenco. A minimum charge of $75 will be applied to each project. Xenco's liability will be limited to the cost of samples. Any samples received by Xenco but not analyzed will be invoiced at $5 per sample. These terms will be enforced unless previously negotiated under a fully executed client contract.

CHAIN OF CUSTODY

Page 2 Of 4

XENCO LABORATORIES

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Xenco Quote #

Xenco Job # 627725

Client / Reporting Information

Company Name / Branch: KJ Environmental & Civil Engineering

Company Address: 500 Moseley Rd Cross Road TX 76227

Email: Wsoderstrom@kje-US.com

Phone No: 940 ~~646~~-387-0805

Project Contact: Will Sodderstrom

Samplers's Name

Project Information

Project Number: 0WL043019D-2

Project Name/Local: Fulfer Well Pad 1R-5489

Invoice To:

PO Number:

Analytical Information

No.	Field ID / Point of Collection	Collection: Sample Depth	Collection: Date	Collection: Time	Matrix	# of bottles	Number of preserved bottles: HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	TPH (GRO, DRO, MRO) by 8015M	BTEX by 8260C	Benzene by 8260C	E300 (Chloride)	Field Comments
1	SB-02 4-6'	4-6	6/12	1536	S	1								X				X	
2	SB-02 6-8'	6-8		1539														X	
3	SB-02 8-10'	8-10		1543														X	
4	SB-02 10-12'	10-12		1547														X	
~~WB 5~~	~~SB-02 12-14'~~	~~12-14~~																	
~~WB 6~~	~~SB-02 14-16'~~	~~14-16~~																	
7	SB-03 0-2'	0-2		1557															
8	SB-03 2-4'	2-4		1600											X	X	X	X	
9	SB-03 4-6'	4-6		1603														X	
10	SB-03 6-8'	6-8		1606														X	

Matrix Codes

W = Water
S = Soil/Sed/Solid
GW =Ground Water
DW = Drinking Water
P = Product
SW = Surface water
SL = Sludge
OW =Ocean/Sea Water
WI = Wipe
O = Oil
WW= Waste Water
A = Air

Turnaround Time (Business days)

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- [x] 7 Day TAT
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- [ ] Contract TAT
- [ ] 3 Day EMERGENCY

TAT Starts Day received by Lab, if received by 5:00 pm

Data Deliverable Information

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- [ ] Level III Std QC+ Forms
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- [ ] Level 3 (CLP Forms)
- [ ] UST / RG -411
- [ ] TRRP Checklist

Notes:

FED-EX / UPS: Tracking #

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

Relinquished by Sampler:	Date Time: 4/13/19	Received By: 1 John Burns	Relinquished By: 2	Date Time:	Received By: 2
Relinquished by: 3	Date Time: 1833	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	Preserved where applicable	On Ice ✓ Cooler Temp. 0.5 Thermo. Corr. Factor 0.3

CHAIN OF CUSTODY

Page 3 Of 4

XENCO LABORATORIES

Setting the Standard since 1990

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Midland, Texas (432-704-5251)
Phoenix, Arizona (480-355-0900)
www.xenco.com

Xenco Quote #
Xenco Job # 607725

Client / Reporting Information

Company Name / Branch: KJ Environmental & Civil Engineering
Company Address: 500 Moseley Rd Cross Road TX 76227
Email: Wsoderstrom@kje-US.com
Phone No: 940 ~~640~~-387-0805
Project Contact: Will Sodderstrom
Samplers's Name

Project Information

Project Number: 0WL043019D-2
Project Name/Local: Fulfer Well Pad 1R-5489
Invoice To:
PO Number:

Analytical Information

Matrix Codes

W = Water
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OW =Ocean/Sea Water
WI = Wipe
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WW= Waste Water
A = Air

No.	Field ID / Point of Collection	Collection: Sample Depth	Date	Time	Matrix	# of bottles	Number of preserved bottles: HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	TPH (GRO, DRO, MRO) by 8015M	BTEX by 8260C	Benzene by 8260C	E300 (Chloride)	Field Comments
1	SB-03 8-10'	8-10	6/12	1609	S	1								X				X	
2	SB-03 10-12'	10-12		1613														X	
3	SB-04 0-2'	0-2		1628											X	X	X	X	
4	SB-04 2-4'	2-4		1631														X	
5	SB-04 4-6'	4-6		1634														X	
6	SB-04 6-8'	6-8		1637														X	
7	SB-04 8-10'	8-10		1640														X	
8	SB-04 10-12'	10-12		1644														X	
9	BG-01 0-2	0-2		1700											X	X	X	X	
10	BG-01 2-4'	2-4		1703														X	

Turnaround Time (Business days)

- [ ] Same Day TAT
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- [X] 7 Day TAT
- [ ] 2 Day EMERGENCY
- [ ] Contract TAT
- [ ] 3 Day EMERGENCY

TAT Starts Day received by Lab, if received by 5:00 pm

Data Deliverable Information

- [ ] Level II Std QC
- [ ] Level IV (Full Data Pkg /raw data)
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- [ ] TRRP Checklist

Notes:

FED-EX / UPS: Tracking #

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
Relinquished by Sampler: Will Sodderstrom	6/13/19	1 John Burns	2		2
Relinquished by: 3	1833	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	Preserved where applicable	On Ice ✓ Cooler Temp. 0.5/0.3 Thermo. Corr. Factor

CHAIN OF CUSTODY

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Midland, Texas (432-704-5251)

Phoenix, Arizona (480-355-0900)

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Xenco Quote #

Xenco Job # 622725

Client / Reporting Information

Company Name / Branch: KJ Environmental & Civil Engineering

Company Address: 500 Moseley Rd Cross Road TX 76227

Email: Wsoderstrom@kje-US.com

Phone No: 940-387-0805

Project Contact: Will Sodderstrom

Samplers's Name

Project Information

Project Number: 0WL043019D-2

Project Name/Local: Fulfer Well Pad 1R-5489

Invoice To:

PO Number:

Analytical Information

No.	Field ID / Point of Collection	Collection: Sample Depth	Collection: Date	Collection: Time	Matrix	# of bottles	Number of preserved bottles: HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	TPH (GRO, DRO, MRO) by 8015M	BTEX by 8260C	Benzene by 8260C	E300 (Chloride)
1	BG-01 4-6'	4-6	6/12	1406	S	1								X				X
2	BG-01 6-8'	6-8	6/12	1409	S	1								X				X
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Matrix Codes

W = Water
S = Soil/Sed/Solid
GW =Ground Water
DW = Drinking Water
P = Product
SW = Surface water
SL = Sludge
OW =Ocean/Sea Water
WI = Wipe
O = Oil
WW= Waste Water
A = Air

Field Comments

Turnaround Time (Business days)

- [ ] Same Day TAT
- [ ] 5 Day TAT
- [ ] Next Day EMERGENCY
- [x] 7 Day TAT
- [ ] 2 Day EMERGENCY
- [ ] Contract TAT
- [ ] 3 Day EMERGENCY

TAT Starts Day received by Lab, if received by 5:00 pm

Data Deliverable Information

- [ ] Level II Std QC
- [ ] Level IV (Full Data Pkg /raw data)
- [ ] Level III Std QC+ Forms
- [ ] TRRP Level IV
- [ ] Level 3 (CLP Forms)
- [ ] UST / RG -411
- [ ] TRRP Checklist

Notes:

FED-EX / UPS: Tracking #

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

	Relinquished By Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	Will Sodderstrom	6/13/19	John Burns	2		2
3	Relinquished by:	Date Time: 1833	Received By:	Relinquished By: 4	Date Time:	Received By: 4
5	Relinquished by:	Date Time:	Received By:	Custody Seal #	Preserved where applicable	On Ice: ✓ Cooler Temp.: 0.5/0.3 Thermo. Corr. Factor

Notice: Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the Client if such loses are due to circumstances beyond the control of Xenco. A minimum charge of $75 will be applied to each project. Xenco's liability will be limited to the cost of samples. Any samples received by Xenco but not analyzed will be invoiced at $5 per sample. These terms will be enforced unless previously negotiated under a fully executed client contract.

Inter-Office Shipment

IOS Number : 41442

Date/Time:	06.14.2019 08:21	Created by:	Brianna Teel	Please send report to:	Jessica Kramer
Lab# From:	**Midland**	Delivery Priority:		Address:	1211 W. Florida Ave
Lab# To:	**Houston**	Air Bill No.:	775481660596	E-Mail:	jessica.kramer@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
627725-001	S	SB-01 0-2'	06.12.2019 14:59	SW8260CBTEX	BTEX by SW 8260C	06.19.2019	06.26.2019	JKR	BZ BZME EBZ XYLENE	
627725-009	S	SB-02 0-2'	06.12.2019 15:30	SW8260CBTEX	BTEX by SW 8260C	06.19.2019	06.26.2019	JKR	BZ BZME EBZ XYLENE	
627725-015	S	SB-03 0-2'	06.12.2019 15:57	SW8260CBTEX	BTEX by SW 8260C	06.19.2019	06.26.2019	JKR	BZ BZME EBZ XYLENE	
627725-021	S	SB-04 0-2'	06.12.2019 16:28	SW8260CBTEX	BTEX by SW 8260C	06.19.2019	06.26.2019	JKR	BZ BZME EBZ XYLENE	
627725-027	S	BG-01 0-2'	06.12.2019 17:00	SW8260CBTEX	BTEX by SW 8260C	06.19.2019	06.26.2019	JKR	BZ BZME EBZ XYLENE	

Inter Office Shipment or Sample Comments:

DUE TO QUANITITY OF SAMPLES, DID NOT SPLIT SAMPLES ON HOLD. WILL SHIP IF/WHEN TAKES OFF HOLD

Relinquished By: Jessica Kramer

Jessica Kramer

Date Relinquished: 06.14.2019

Received By: Ashly Kowalski

Date Received: 06.15.2019 10:00

Cooler Temperature: 0.2

XENCO Laboratories

Inter Office Report- Sample Receipt Checklist

Sent To: Houston

IOS #: 41442

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient
Temperature Measuring device used : HOU-068

Sent By: Brianna Teel **Date Sent:** 06.14.2019 08.21 AM

Received By: Ashly Kowalski **Date Received:** 06.15.2019 10.00 AM

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	.2	
#2 *Shipping container in good condition?	**Yes**	
#3 *Samples received with appropriate temperature?	**Yes**	
#4 *Custody Seals intact on shipping container/ cooler?	**Yes**	
#5 *Custody Seals Signed and dated for Containers/coolers	**Yes**	
#6 *IOS present?	**Yes**	
#7 Any missing/extra samples?	**No**	
#8 IOS agrees with sample label(s)/matrix?	**Yes**	
#9 Sample matrix/ properties agree with IOS?	**Yes**	
#10 Samples in proper container/ bottle?	**Yes**	
#11 Samples properly preserved?	**Yes**	
#12 Sample container(s) intact?	**Yes**	
#13 Sufficient sample amount for indicated test(s)?	**Yes**	
#14 All samples received within hold time?	**Yes**	

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

NonConformance:

DUE TO QUANITITY OF SAMPLES, DID NOT SPLIT SAMPLES ON HOLD. WILL SHIP IF/WHEN TAKES OFF HOLD

Corrective Action Taken:

Nonconformance Documentation

Contact: _____ **Contacted by :** _____ **Date:** _____

Checklist reviewed by: _____ Date: 06.15.2019

Ashly Kowalski

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: KJ Environmental & Civil Engineering

Date/ Time Received: 06/13/2019 06:33:00 PM

Work Order #: 627725

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

Temperature Measuring device used : R8

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	.3	
#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)?	**Yes**	Xenco Stafford-BTEX
#18 Water VOC samples have zero headspace?	**N/A**	

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

Analyst: PH Device/Lot#:

Checklist completed by: Brianna Teel Date: 06/14/2019
Brianna Teel

Checklist reviewed by: Jessica Kramer Date: 06/14/2019
Jessica Kramer

APPENDIX E

NMOCD Approved C-141 Form

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

State of New Mexico
Energy Minerals and Natural Resources Department

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

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	NDHR1913541694
District RP	1RP-5489
Facility ID	
Application ID	pDHR1913541145

Release Notification

Responsible Party

Responsible Party OWL SWD Operating, LLC	OGRID Fulfer Oil and Cattle, LLC
Contact Name Mr. Phillip Sanders	Contact Telephone 210-906-3551
Contact email psanders@oilfieldwaterlogistics.com	Incident # *(assigned by OCD)*
Contact mailing address 8201 Preston Road, Suite 520, Dallas, Texas 75225	

Location of Release Source

Latitude 32.103453 Longitude -103.219037
(NAD 83 in decimal degrees to 5 decimal places)

Site Name Fulfer well pad	Site Type SWD
Date Release Discovered 04/30/19 11:00 AM	API# *(if applicable)* 30-025-09804

Unit Letter	Section	Township	Range	County
F, G	25	25S	36E	Lea

Surface Owner: ☐ State ☒ Federal ☐ Tribal ☐ Private (*Name:* _____)
BLM

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☒ Produced Water	Volume Released (bbls) 60 BBLs	Volume Recovered (bbls) 0 BBLs
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☒ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

The hose from the pump on the discharge came off and caused the release.

State of New Mexico
Oil Conservation Division

Incident ID	NDHR1913541694
District RP	1RP-5489
Facility ID	
Application ID	pDHR1913541145

Was this a major release as defined by 19.15.29.7(A) NMAC?	If YES, for what reason(s) does the responsible party consider this a major release?
☒ Yes ☐ No	It was greater than 25 BBLs of produced water.

If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?

Yes, William Soderstrom, with KJ Environmental, notified Jim Griswold, wtih the OCD, and Jim Amos, with the BLM, via telephone and voicemail.

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

- ☒ The source of the release has been stopped.
- ☒ The impacted area has been secured to protect human health and the environment.
- ☒ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.
- ☒ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

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

Printed Name: Phillip Sanders Title: Safety Director

Signature: Date: 5/2/19

email: psanders@oilfieldwaterlogistics.com Telephone: 210-906-3551

OCD Only

Received by: Dylan Rose-Coss Date: 05/15/2019

APPENDIX F

New Mexico Well Logs

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	CP 01310 POD1	4	4	3	25	25S	36E	668570	3552439

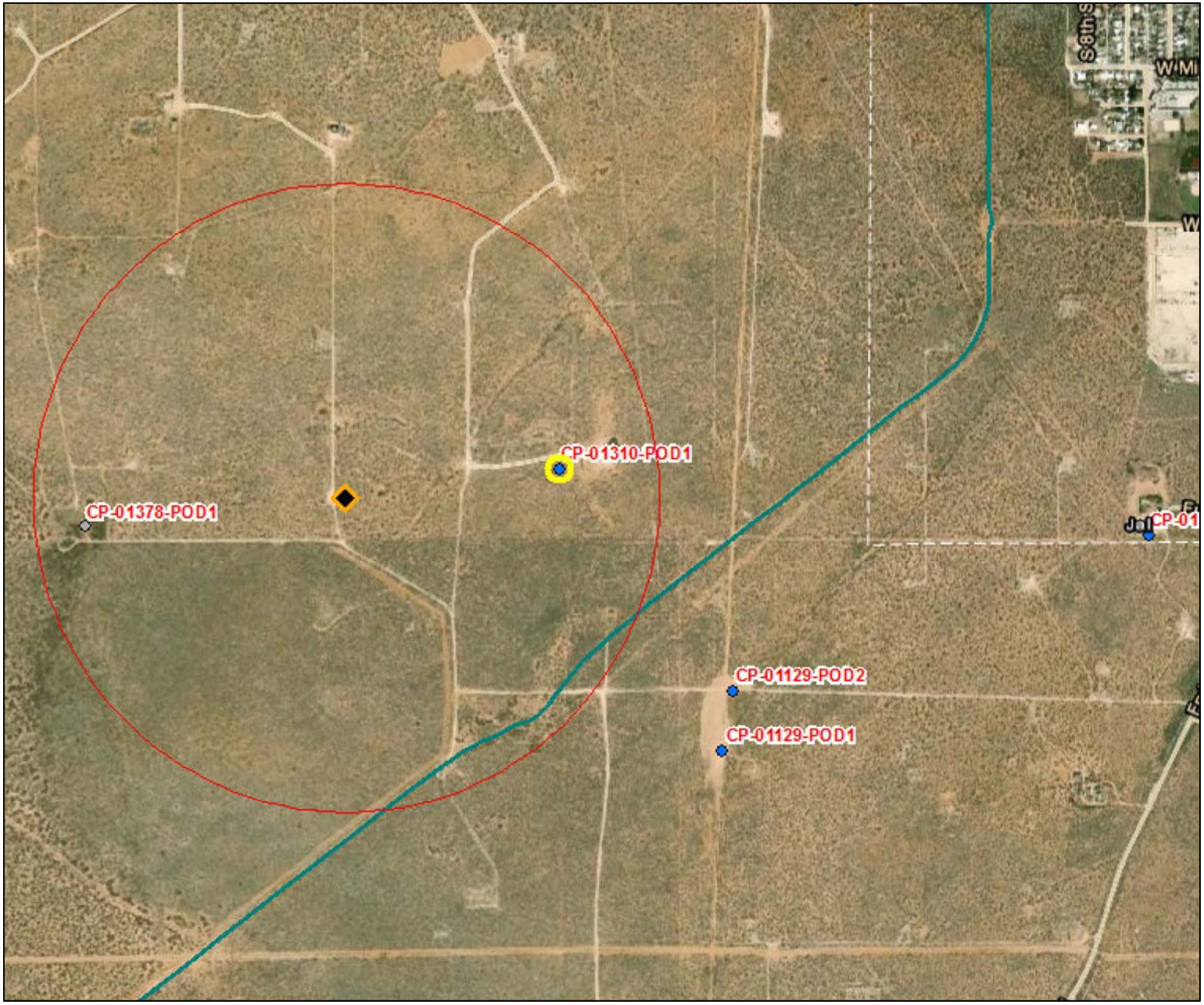
Driller License: 1706 **Driller Company:** ELITE DRILLERS CORPORATION

Driller Name: WALLACE, BRYCE J.

Drill Start Date:	05/15/2017	**Drill Finish Date:**	05/18/2017	**Plug Date:**	
Log File Date:	07/07/2017	**PCW Rcv Date:**		**Source:**	Artesian
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	50 GPM
Casing Size:	6.00	**Depth Well:**	420 feet	**Depth Water:**	340 feet

Water Bearing Stratifications:	Top	Bottom	Description
	370	380	Sandstone/Gravel/Conglomerate
	380	400	Sandstone/Gravel/Conglomerate

Casing Perforations:	Top	Bottom
	320	420



Coordinates

UTM - NAD 83 (m) - Zone 13

Easting 668023.438

Northing 3552356.631

State Plane - NAD 83 (f) - Zone E

Easting 886290.166

Northing 400090.527

Degrees Minutes Seconds

Latitude 32 : 5 : 42.128037

Longitude -103 : 13 : 9.945605

Location pulled from New Map Point

Spatial Information

OSE Administrative Area: District 2
County: Lea
Groundwater Basin: Capitan
Sub-Basin: Landreth-Monumnet Draws
Abstract Area: Capitan
Land Grant: Not in Land Grant
Restrictions:
NA

PLSS Description

NE SE SE SW Qtr of Sec 25 of 025S 036E

Derived from CADNSDI - Qtr Sec. locations are calculated and are only approximations

File Number: CP-01310-POD1
Owner: FULFER OIL & CATTLE COMPANY
Purpose: COM
Author:

NEW MEXICO OFFICE OF THE STATE ENGINEER

1:18,056

mi
0 0.05 0.1 0.2

N

7/17/2019

Image Information
Source: DigitalGlobe
Date: 1/30/2016
Resolution (m): 0.5
Accuracy (m): 10.16

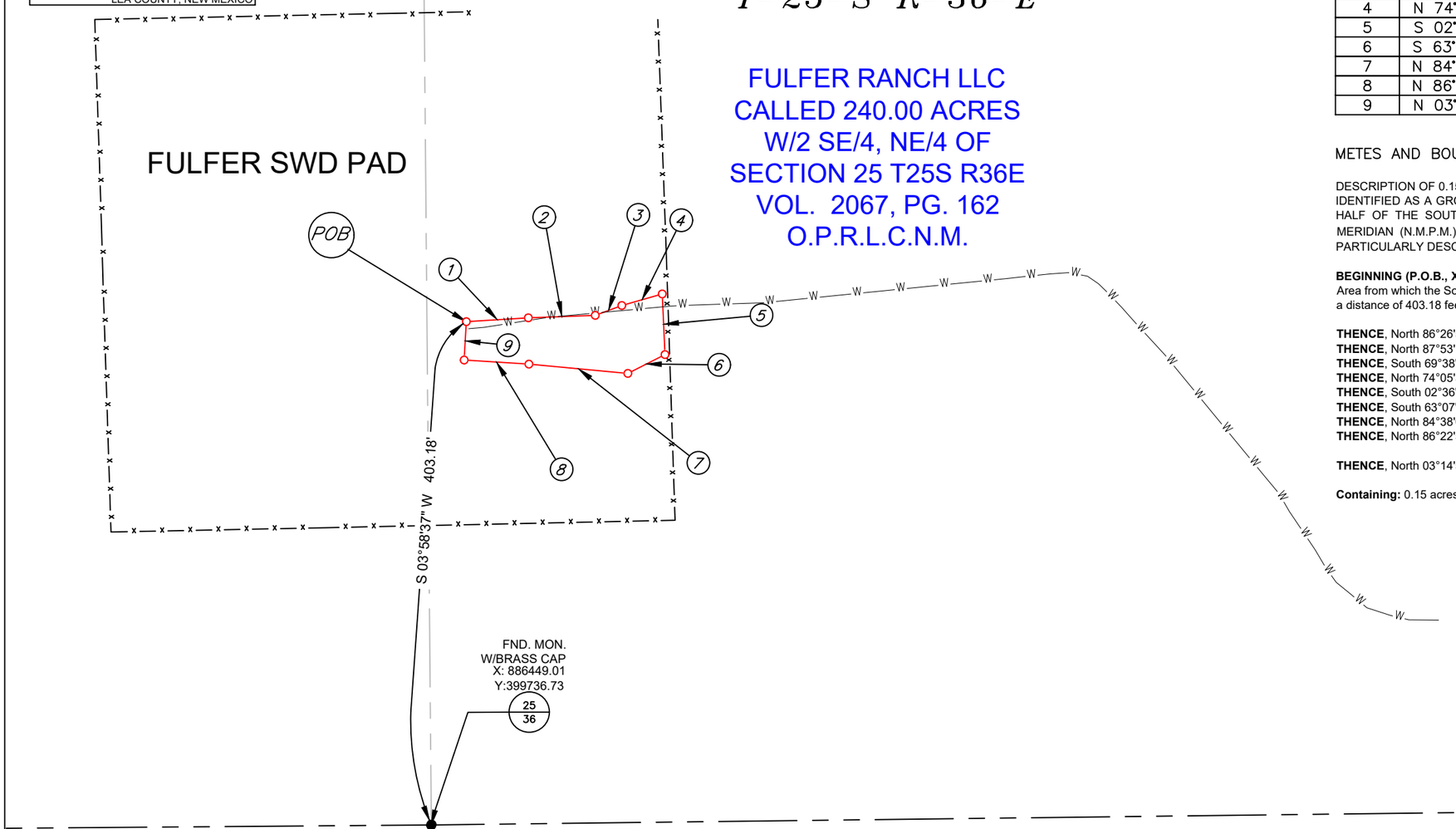
0.5 Miles Buffer
User Defined Point
Selected POD
Milepost - 1 Mile Intervals

APPENDIX G

Metes and Bounds Survey

FULFER SWD
GROUND CONTAMINATION AREA
LEA COUNTY, NM
SEC 25
T-25-S R-36-E

LEGEND	
	SPILL LIMITS
	EXISTING PIPELINE
	FENCE
FO	FIBER OPTIC
OHP	OVERHEAD POWERLINE
	ROAD WAY
	SURVEY LINE
	SUBJECT TRACT
UGE	UNDERGROUND ELECTRIC
W	WATER LINE
SWD	SALT WATER DISPOSAL
O.P.R.L.C.N.M.	OPEN PUBLIC RECORD LEA COUNTY, NEW MEXICO



0 100' 200' 300'

LINE	BEARING	DISTANCE
1	N 86°26'53" E	49.65'
2	N 87°53'13" E	53.54'
3	N 69°38'06" E	22.64'
4	N 74°05'35" E	33.61'
5	S 02°36'44" E	48.49'
6	S 63°07'35" W	33.29'
7	N 84°38'09" W	79.43'
8	N 86°22'57" W	51.87'
9	N 03°14'50" E	30.70'

METES AND BOUNDS DESCRIPTION

DESCRIPTION OF 0.15 ACRES (6673 SQUARE FEET),MORE OR LESS, BEING AN IRREGULAR SHAPED SURFACE SITE IDENTIFIED AS A GROUND CONTAMINATION AREA, BEING SITUATED IN LEA COUNTY, NEW MEXICO, IN THE WEST HALF OF THE SOUTHEAST QUARTER OF SECTION NO. 25, T-25-S, R-36-E OF THE NEW MEXICO PRINCIPAL MERIDIAN (N.M.P.M.), OWNERSHIP BEING VESTED IN FULFER RANCH, LLC, SAID SURFACE SITE BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING (P.O.B., X:886477.01, Y:400138.94) at a point in said Section 25, being the northwest corner of the Containment Area from which the South Quarter Corner of Section 25, being a brass monument w/cap bears South 03°58'37" West, a distance of 403.18 feet;

THENCE, North 86°26'53" East, a distance of 49.65 feet to a corner of said site **(X:886526.56, Y:400142.01);**
THENCE, North 87°53'13" East, a distance of 53.54 feet to a corner of said site **(X:886580.06, Y:400143.99);**
THENCE, South 69°38'06" East, a distance of 22.64 feet to a corner of said site **(X:886601.29, Y:400151.86);**
THENCE, North 74°05'35" East, a distance of 33.61 feet to a corner of said site **(X:886633.61, Y:400161.08);**
THENCE, South 02°36'44" East, a distance of 48.49 feet to a corner of said site **(X:886635.82, Y:400112.64);**
THENCE, South 63°07'35" West, a distance of 33.29 feet to a corner of said site **(X:886606.12, Y:400097.59);**
THENCE, North 84°38'09" West, a distance of 79.43 feet to a corner of said site **(X:886527.04 Y:400105.01);**
THENCE, North 86°22'57" West, a distance of 51.87 feet to a corner of said site **(X:886475.27, Y:400108.29);**

THENCE, North 03°14'50" East, a distance of 30.70 feet to the POINT OF BEGINNING.

Containing: 0.15 acres (6,673 square feet) of land, more or less.

W. ANDREW MCLAUGHLIN NEW MEXICO 23385 PROFESSIONAL SURVEYOR

05/16/2019
W. ANDREW MCLAUGHLIN, NEW MEXICO P.S. NO. 23385
SURVEYED ON GROUND: APRIL 11, 2019

1. I, ANDREW McLAUGHLIN, NEW MEXICO PROFESSIONAL SURVEYOR NO. 23385, DO HEREBY CERTIFY THAT THIS EASEMENT EXHIBIT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WAS PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. I FURTHER CERTIFY THAT THIS SURVEY IS NOT A LAND DIVISION OR SUBDIVISION AS DEFINED IN THE NEW MEXICO SUBDIVISION ACT. THIS CERTIFICATION IS LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS EXHIBIT, IN NON-TRANSFERABLE AND MADE FOR THIS TRANSACTION ONLY.
2. TITLE INFORMATION HAS BEEN PROVIDED BY THE CLIENT; AS SUCH, OPEN RANGE FIELD SERVICES DOES NOT WARRANT OR GUARANTEE THAT ALL CONFLICTS, EASEMENTS OR ENCUMBRANCES ARE SHOWN. ADJOINER INFORMATION SHOWN OR DESCRIBED IS FOR INFORMATIONAL PURPOSES ONLY.
3. ALL BEARINGS, DISTANCES AND COORDINATES DESCRIBED HEREIN ARE GRID BASED UPON A TRANSVERSE MERCATOR PROJECTION AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM ("NEW MEXICO EAST ZONE"), OF THE NORTH AMERICAN DATUM OF 1983 (NAD83) IN U.S. SURVEY FEET.
4. FIELD NOTES AND RELATED INFORMATION IS FILED IN THE OFFICE OF THIS SURVEYOR AND FURTHER DESCRIBES THE RECONSTRUCTION OF THE RESPECTIVE BOUNDARY.
5. LOCATION OF THE GROUND CONTAMINATION AREA WAS MARKED IN THE FIELD BY CLIENT WHICH WAS SUBSEQUENTLY SURVEYED BY OPEN RANGE FIELD SERVICES, LLC (ORFS). ORFS TAKES NO RESPONSIBILITY FOR THE METHOD USED IN DETERMINING THE LIMITS OF THE DESCRIBED AREA.
6. UNLESS OTHERWISE NOTED, MONUMENTS WITH BRASS CAPS ARE STAMPED "USGLO" WITH SECTION CORNER OR QUARTER CORNER INFORMATION ALSO STAMPED ON CAP.

PIPELINE, STATION, OR ACCOUNT NUMBER: FULFER SPILL	SCALE: 1" = 100'		CONST. YR.: N/A	
FILENUMBER: N/A	CADD FILENAME: FULFER_SPILL_WAM_05092019		DRAWN: JK	DATE: 5/19/19

REV. NO. – DESCRIPTION	BY	DATE	APP.
– –	–	–	–

OILFIELD WATER LOGISTICS

OPEN RANGE FIELD SERVICES, LLC.
5023 PRINCETON AVE., SUITE 17
MIDLAND, TX 79703
TBPLS No.: 10194343
OFFICE: 817-456-6587

PROJECT NO.
ORFS-300-15

AFE NO.
AFE_XXXX

DWG. NO.
FULFER_SPILL_051019
SHT. 01 OF 01

APPENDIX H

Environmental Professional's Credentials

William Soderstrom

500 Moseley Road
Cross Roads, Texas 76225
(405) 258-8623
WSoderstrom@kje-us.com

WORK EXPERIENCE

Remediation Project Manager –Environmental Department 07/2018 – Present
KJ Environmental Management, Inc. – Denton, TX

- Managed and reviewed Phase I Environmental Site Assessments (ESAs) and Limited Phase II ESAs for active and historical service stations, dry cleaners, commercial and retail properties, and vacant or undeveloped land throughout New Mexico, Oklahoma and Texas utilizing hand auger equipment, truck-mounted hollow-stem augers (HSA), and direct-push technologies (Geoprobe).
- Provided professional environmental consulting services to individual businesses, real estate developers (commercial, industrial, and multi- family residential), financial institutions, manufacturing facilities and corporate representatives to ensure compliance with the United States Environmental Protection Agency (USEPA), Oklahoma Corporation Commission (OCC), Oklahoma Department of Environmental Quality (ODEQ) and Texas Commission on Environmental Quality (TCEQ) rules and regulations.
- Supervised and coordinated the remediation of various produced water releases ranging from 95 barrels to 12,000 barrels in conjunction with state regulatory agencies including the Railroad Commission of Texas, TCEQ Emergency Response, New Mexico Oil Conservation Division, New Mexico Bureau of Land Management, New Mexico State Land Office, and the United States Army Corps of Engineers.
- Enrolled and managed chemical manufacturing and industrial facilities into the TCEQ Voluntary Cleanup Program (VCP), Corrective Action (CA) and Municipal Setting Designation (MSD) regulatory programs throughout north Texas.
- Managed the characterization and remediation of exploration and production (E&P) exempt waste for multiple oil and gas companies in south and west Texas.

Assistant Project Manager –Remediation Division 07/2015 – 07/2018
The VERTEX Companies, Inc. – Irving, TX

- Conducted Phase I ESAs and Limited Phase II ESAs for active and historical service stations, dry cleaners, commercial and retail properties, and vacant or undeveloped land throughout Alabama, Arizona, Arkansas, California, Georgia, Kansas, Louisiana, Mississippi, Missouri, New Mexico, Oklahoma, Oregon, Tennessee, and Texas utilizing hand auger equipment, truck-mounted HSAs, and direct push technologies (Geoprobe).
- Performed a Phase II ESA at an active bulk petroleum storage facility in Alabama to delineate impacted soils for a potential real estate transaction.
- Provided consulting services to individual businesses, real estate developers (commercial, industrial, and multi-family residential), financial institutions, and corporate representatives to ensure compliance with Alabama Department of Environmental Management (ADEM), Arkansas Department of Environmental Quality (ADEQ), Kansas Department of Health and Environment (KDHE), Missouri Department of Natural Resources (MDNR), OCC, ODEQ, Oregon Department of Environmental Quality (Oregon DEQ), and TCEQ rules and regulations.
- Screened impacted soils within Operable Unit 1 (OU-1) and coordinated the characterization, transportation, and disposal of approximately 7,500 cubic yards of soil to approved Class I and Class II landfill.
- Provided technical support for the VCP, MSD, and TCEQ Subchapter T: Use of Land Over Closed Municipal Solid Waste (MSW) Landfills throughout the Dallas-Fort Worth Metroplex.
- Installed and sampled soil vapor probes to adhere to TCEQ Subchapter T reporting limits for MSW Landfills in Dallas.
- Operated as team leader for the removal, disposal, characterization, and transportation of ghost storage tanks, aboveground storage tanks (ASTs), underground storage tanks (USTs) and stockpiled backfill at former and current gas stations, tank batteries, and manufacturing facilities throughout the Dallas-Fort Worth Metroplex and Oklahoma.
- Provided construction oversight for the installation and verification of a low-profile ventilation system and vapor mitigation system at various multi-family complexes for sub-grade areas and first floor living spaces.

Staff Scientist – Real Estate Division 09/2013 – 07/2015
W&M Environmental Group, LLC – Plano, TX

- Conducted Phase I ESAs and Limited Phase II Investigations for active and historical manufacturing facilities, active and historical service stations, commercial and retail properties, dry cleaners, and vacant or undeveloped land throughout Texas utilizing hand auger equipment, truck-mounted HSA, and direct push technologies (Geoprobe).
- Provided consulting services to real estate developers (commercial and multi-family residential), financial institutions, and corporate representatives to ensure compliance with the ODEQ, OCC, and TCEQ.
- Provided technical support for MSD, VCP, Affected Property Assessment Report (APAR), and Innocent Owner/Operator Program (IOP) applications for a former service station and auto repair shop.
- Provided emergency response to multiple pipeline and tank battery spills in Texas and Oklahoma and collected confirmation soil samples to delineate vertical and horizontal extent.

- Acted as field team leader for the removal, disposal, and transportation of underground storage tanks at various sites throughout the Dallas-Fort Worth Metroplex.
- Acted as field team leader for the collection of pond sediment samples to delineate heavy metals and polychlorinated biphenyls (PCBs) at a former Naval Air Station.
- Installed and sampled soil vapor probes at historical dry cleaners, leaking petroleum storage tank sites, auto body repair shops and commercial properties throughout Texas.
- Performed Stormwater Pollution Prevention Plan (SWPPP) site reconnaissance for various manufacturing facilities in the Dallas-Fort Worth Metroplex.

Staff Environmental Scientist –Environmental Department 06/2010 – 09/2013
Terracon Consultants, Inc – Oklahoma City, OK

- Conducted Limited Phase II Environmental Site Assessments for active manufacturing facilities, historical dry cleaners, service stations, and vacant or undeveloped land throughout Oklahoma utilizing hand auger equipment, air-rotary drilling, and truck-mounted HSA.
- Provided emergency response to brine water spill and screened approximately 2,000 cubic yards of soil for off-site disposal.
- Provided consulting services to real estate developers, financial institutions, and corporate representatives to ensure compliance with the ODEQ and OCC.
- Acted as field team leader for screening impacted soils and coordinating the management, transportation, and disposal of approximately 28,000 cubic yards of impacted soil to land-farm for treatment.
- Served as field team professional on the investigation and plume delineation of two dry-cleaner sites within the ODEQ VCP and Brownfields program.
- Provided support for state environmental regulatory activities regarding Concentrated Animal Feeding Operation (CAFO) permits of numerous swine facilities in Oklahoma and Texas.
- Completed due diligence services for Oklahoma based oil/gas company to assess the potential impact to threatened or endangered species, wetlands, and potential locations of archeological or cultural significance throughout Oklahoma.

PROFESSIONAL DEVELOPMENT

• 40-Hour HAZWOPER	05/2010
• 10-Hour OSHA Outreach Training Program – Construction	08/2015
• Geo-Seal Vapor Intrusion Barrier - Certified Inspector	03/2018
• First AID CPR – AED – American Heart Association	04/2018
• 8-Hour WAZWOPER Refresher Training	08/2018

EDUCATIONAL BACKGROUND

Bachelor of Science, Environmental Sciences May 2010
Option: Natural Resources
Minor: Soil Science
Oklahoma State University, Stillwater, OK

Dena Marie Vandenberg, REM, LEED AP
ENVIRONMENTAL PROFESSIONAL

WORK HISTORY

Director of Environmental Services
KJ Environmental Management, Inc.
June 2011 – Present (8 years)

I am currently working as the Director of Environmental Services at KJ Environmental. I have fifteen years of experience as an environmental professional in consulting. I lead a team of Engineers and Scientists to complete projects for a variety of industries, while ensuring the delivery of the highest quality work product, customer service, and professionalism.

Project Manager
KJ Environmental Management, Inc.
April 2010 – June 2011 (1 year 3 months)

When I began working at KJ Environmental in Denton, Texas as a Project Manager, I provided regulatory compliance services for various industries including oil and gas storage and trucking facilities, sand and cement handling facilities, manufacturing facilities, and municipal agencies. My areas of expertise included project management, construction and industrial storm water pollution prevention plans (SWPPP), NPDES/TPDES permit applications, management of PST tank pulls, oil pollution prevention compliance (SPCC), Permit-By-Rule (PBR) Applications, New Source Review (NSR) Applications, Barnett Shale Phase I & Phase II Special Emissions Inventories, Saltwater Disposal Well Permitting, Underground Injection Control Permitting, TCEQ Public Water System compliance, drinking water, storm water, ground water, and waste sampling, asbestos sampling, mold assessments, radon testing, lead-based paint sampling, lead in drinking water sampling, Phase I Environmental Site Assessments, Limited Phase II Environmental Site Assessments, noise monitoring, and brownfield redevelopment. I have also served as the Environmental Professional on record and designated expert for oil & gas production and commercial saltwater disposal clients in handling multiple produced water spill investigations and remediation activities completed under the jurisdiction of the Railroad Commission of Texas.

Environmental Scientist
Terracon
Privately Held; 1001-5000 employees; Civil Engineering industry
April 2006 – February 2010 (3 years 11 months)

At Terracon, I conducted hundreds of Phase I ESAs for various types of properties from vacant land to industrial/manufacturing facilities and gas stations. I also did regulatory compliance consulting for oil & gas clients, industrial/manufacturing facilities, and municipalities. I completed SWPPPs and SPCCs, conducted storm water sampling, and operated a public water system on behalf of a municipality. I became a licensed Asbestos Inspector, Mold Assessment Technician, and LEED Accredited Professional.

Environmental Geologist
Cirrus Associates
March 2006 – March 2006 (1 month)

At Cirrus Associates, I acted as a contract employee on a VCP project for a client in Odessa, Texas. I conducted sampling of groundwater monitoring wells using low-flow sampling techniques.

Environmental Scientist
Delta Environmental
August 2004 – December 2005 (1 year 5 months)

At Delta Environmental, I performed public drinking water sampling under the TCEQ contract. I collected over 3,000 drinking water samples. I was recognized as one of the top 5 samplers in the state for productivity and was trusted with the responsibility of training other samplers associated with the project. In addition, I conducted several ESAs to obtain more experience, when time would allow.

EDUCATION

University of North Texas
Bachelor of Science in Geography with a focus in Earth Science, Geology Minor
1999 – 2004

Activities and Societies:
Vice Chairman of the Planning & Zoning Commission for the Town of Providence Village, Texas
Delta Zeta Sorority

ADDITIONAL INFORMATION

Professional Education & Certifications:

National Registry of Environmental Professionals (NREP) Registered Environmental Manager (REM) No. 832509140161111
OSHA 29 CFR 1910.120 HAZWOPER 40 HR Certification
EPA Accredited Asbestos Inspector
TDSHS License Asbestos Inspector (License No. 602837)
TDSHS Licensed Mold Assessment Technician (License No. MAT1011)
TCEQ Class C Water Distribution Operator (License No. WD0007445)
Leadership in Energy and Environmental Design (LEED) Accredited Professional
Texas Commission on Environmental Quality (TCEQ) Certified Water Sampler under the Safe Drinking Water Act and State Regulations (ID No. 2005-006)
ORIS-Enviromod University- AERMOD Modeling For Permits Certification
Certified NORM Surveyor

Affiliations:

The North Texas Association of Environmental Professionals
Society of Texas Environmental Professionals
Association of American Geographers
U.S. Green Building Council

CONTACT INFORMATION

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