



10 Desta Dr., Suite 150E
Midland, TX 79705

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SITE ASSESSMENT SUMMARY
&
PROPOSED REMEDIATION WORK PLAN

COG Operating, LLC
Willow 17 State SWD #001
Eddy County, New Mexico
Unit Letter "P", Section 17, Township 25 South, Range 28 East
Latitude 32.12489° North, Longitude 104.10216° West
NMOCD Reference No. 2RP-5044

Prepared For:

COG Operating, LLC
600 W Illinois Avenue
Midland, Texas 79701

Prepared By:

TRC Environmental Corporation
10 Desta Drive, Suite 150E
Midland, Texas 79705

April 2019


Jared E. Stoffel, PG
Staff Geologist

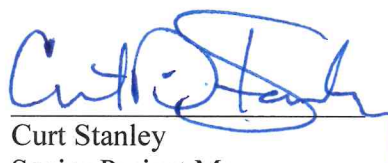

Curt Stanley
Senior Project Manager

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INTRODUCTION & BACKGROUND INFORMATION

TRC Environmental Corporation (TRC), on behalf of COG Operating, LLC (COG), has prepared this *Site Assessment Summary and Proposed Remediation Work Plan* for the Release at the Site known as the Willow 17 State SWD #001 (the Site). The legal description of the Site is Unit Letter “P”, Section 17, Township 25 South, Range 28 East, in Eddy County, New Mexico. The subject property is owned by the State of New Mexico and administered by New Mexico State Land Office (NMSLO). The GPS coordinates for the Site are 32.12489° N, 104.10216° W. A topographical map is provided as **Figure 1**. Photographs are provided in the photolog as **Appendix C**.

On October 29, 2018, COG discovered a crude oil and produced water release had occurred at the Site. The Release was attributed to a crimped fitting failure, which impacted a caliche pad. On the discovery date, COG notified the New Mexico Oil and Conservation Division (NMOCD) and New Mexico State Land Office (NMSLO) of the Release and the Release was assigned an NMOCD Reference number of 2RP-5044. During initial response activities, a vacuum truck was dispatched to recover all freestanding fluids. On October 31, 2018, the initial Release Notification and Corrective Action (Form C-141) was submitted to the NMOCD. The Form C-141 indicated one half (0.5) barrel (bbl) of crude oil and sixty and one half (60.5) barrels (bbls) of produced water was released. Approximately thirty (30) bbls of produced water was recovered during initial response activities. The release affected an area measuring approximately twelve thousand square feet (sq. ft.). The C-141 indicated the impacted area was pastureland, however, the photos from the release date and subsequent visits by TRC personnel indicate a caliche pad was impacted. A copy of the submitted Form C-141 for the Release is provided in **Appendix D**.

A groundwater database maintained by The New Mexico Office of the State Engineer (NMOSE) did not identify any registered water wells in Section 17, Township 25 South, Range 28 East. A reference map utilized by the NMOCD indicates groundwater should be encountered at approximately fifty (50) to seventy-five (75) feet below ground surface (bgs). No water wells were observed within one-thousand (1,000) feet of the Site. No surface water was observed within one-thousand (1,000) feet of the release.

Based on the depth to groundwater at the Willow 17 State SWD #001 Release Site, the NMOCD *Closure Criteria for Soils Impacted by a Release* are not the most stringent closure criteria listed. However, the Willow 17 State SWD #001 is located in the ‘medium karst’ area as outlined in BLM publicly available Karst Potential Map. The NMOCD stance on the regulation of releases in ‘medium karst’ areas is unclear, so COG will utilize the most stringent NMOCD Closure Criteria for Soils Impacted by a Release for the Willow 17 State SWD #001 as follows:

- Benzene – 10 mg/kg
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) – 50 mg/kg
- Total Petroleum Hydrocarbons (TPH) – 100 mg/kg
- Chloride – 600 mg/kg

SOIL INVESTIGATION SUMMARY

January 3, 2019, an initial investigation was conducted at the Release Site. During the initial investigation, ten (10) surface samples (SP1 @ S, SP2 @ S, W1 @ S, W1b @ S, E1 @ S, N1 @ S, S1 @ S, S1b @ S, S2 @ S, and N2 @ S) were collected at the Release Site in an effort to characterize the horizontal extent of soil impact based on regulatory guidelines listed in Table 1 of NMAC 19.15.29.12. Collected soil samples were submitted to the laboratory for TPH, BTEX, and chloride analyses. A review of laboratory analytical results indicated TPH and BTEX concentrations were below NMOCD regulatory guidelines in the submitted samples. Chloride concentrations were above ten thousand (10,000) mg/kg in each of the submitted soil sample with the exception of N1 @ S and S2 @ S. Please reference **Figure 3A – Site & Sample Location Map – Initial Investigation**.

On January 11, 2019, a second investigation was conducted at the Release Site. Four (4) soil samples (SP-1 @ 6", SP-2 @ 6", W2 @ S, and E2 @ S) were collected at the Release Site in a further effort to characterize the extent of soil impact. Collected soil samples were submitted to the laboratory for TPH, BTEX, and chloride analyses. A review of laboratory analytical results indicated TPH and BTEX concentrations were below the laboratory method detection limit (MDL) in each submitted soil sample. Chloride concentrations were below ten thousand (10,000) mg/kg in each submitted soil sample.

Following discussion with COG personnel, the interpretation of the NMOCD regulatory guidelines for chloride concentration changed to reflect an NMOCD regulatory guideline limit of 600 mg/kg for the Release Site.

On January 29, 2019, further delineation (both horizontal and vertical) was attempted utilizing backhoe trenching. Seventeen (17) soil samples (TT1 @ 0-6", TT1 @ 6"-1', TT1 @ 3', TT1 @ 5', TT1 @ 6', TT2 @ 0-6", TT2 @ 6"-1', TT2 @ 2', TT2 @ 3', TT3 @ 0-6", TT3 @ 6"-1', S TT @ 2.5', N TT @ 3', W1 TT @ 3', W2 TT @ 3', E1 TT @ 3', and E2 TT @ 3') were collected from nine (9) trench locations and were submitted to the laboratory for TPH, BTEX, and chloride analyses. A review of analytical results indicated BTEX and TPH concentrations were below laboratory MDL in the submitted soil samples. Chloride concentrations were above 600 mg/kg in each submitted soil samples, with the exception of S TT @ 2.5', W2 TT @ 3', and E1 TT @ 3'. Please reference **Figure 3B – Site & Sample Location Map – Secondary Investigation**.

On April 18, 2019, the trenches utilized for the January 29, 2019 delineation event were further vertically advanced. Eleven (11) soil samples (TT-1 @ 7', TT-1 @ 8', TT-2 @ 4', TT-2 @ 5', TT-3 @ 2', N-TT @ 4', W1-TT @ 4', W1-TT @ 5', W1-TT @ 6', W1-TT @ 7', and E2-TT @ 4') were collected from the previous trench locations and were submitted to the laboratory for chloride analyses. A review of analytical results indicated soil samples exhibited chloride concentrations were above 600 mg/kg in each submitted soil sample, with the exception of TT-1 @ 8', TT-2 @ 5', TT-3 @ 2', N-TT @ 4', W1-TT @ 7', and E2-TT @ 4'. Additionally, seven (7) soil samples (N2-TT @ 0-1', S2-TT @ 0-1', E3-TT @ 0-1', E4-TT @ 0-1', W3-TT @ 0-1', W4-TT @ 0-1', and W5-TT @ 0-1') were collected from the surface to one (1) foot bgs interval immediately outside the apparent release margins and were submitted to the laboratory for chloride analysis. A review of analytical results indicated soil samples exhibited chloride concentrations below 600 mg/kg in each submitted soil sample, with the exception of W3-TT @ 0-1'.

PROPOSED REMEDIATION PLAN

Based on the laboratory analytical results from the soil samples collected in January 2019, the Release Site was not impacted above NMOCD regulatory guidelines by TPH or BTEX constituents. Additionally, based on laboratory analytical results of soil samples collected in January and April 2019, vertical and horizontal delineation of chloride concentrations to six hundred (600) mg/kg has been achieved. COG proposes the following field activities designed to advance the Willow 17 State SWD #001 Release Site toward an NMOCD-approved closure:

- Impacted soil in the area represented by test trench TT-1 will be excavated to an approximate depth of at least seven (7) feet bgs.
- Impacted soil in the area represented by test trench W1-TT will be excavated to an approximate depth of at least six (6) feet bgs.
- Impacted soil in the area represented by test trench TT-2 will be excavated to an approximate depth of at least four (4) feet bgs.
- Impacted soil in the area represented by test trenches N-TT and E2-TT will be excavated to an approximate depth of at least three (3) feet bgs.
- Impacted soil in the area represented by test trench TT-3 will be excavated to an approximate depth of at least one (1) foot bgs.
- Six (6) five point composite sidewall confirmation soil samples, one (1) soil sample to represent the north side wall, two (2) soil samples to represent the west side wall, two (2) soil samples to represent the east side wall, and one (1) soil sample to represent the south side wall will be collected to ensure the lateral extent of the impact has been removed.
- Collect one (1) five point composite floor confirmation soil sample for every one thousand (1,000) square feet of excavation floor to ensure the vertical extent of impact has been removed.
- Impacted soil excavated during remediation activities will be staged on a polyurethane liner pending final disposition at a NMOCD-approved disposal facility.
- After review of analytical results from the excavation confirmation soil samples, the excavated area will be backfilled with locally-sourced, non-impacted 'like' material and returned to grade.

COG is prepared to begin the activities outlined in this *Site Assessment Summary and Proposed Remediation Work Plan* after receiving NMOCD approval. On completion of remediation activities, a Remediation Summary and Closure Report will be prepared detailing field activities and laboratory analytical results from confirmation soil samples.

If you have any questions, or need any additional information, please feel free to contact myself, Rebecca Haskell, or Ike Tavarez by phone or email.

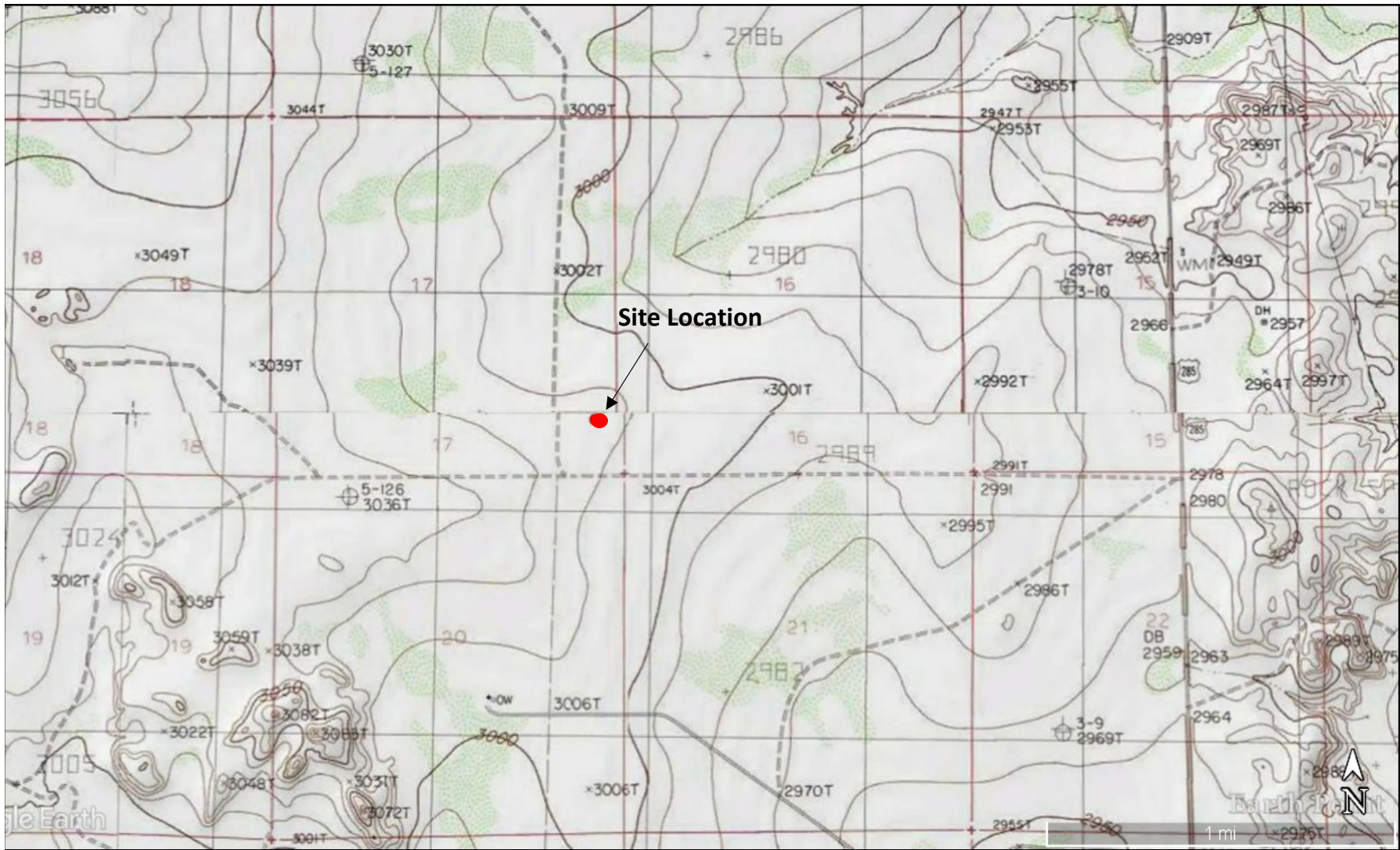



10 Desta Dr., Suite 150E
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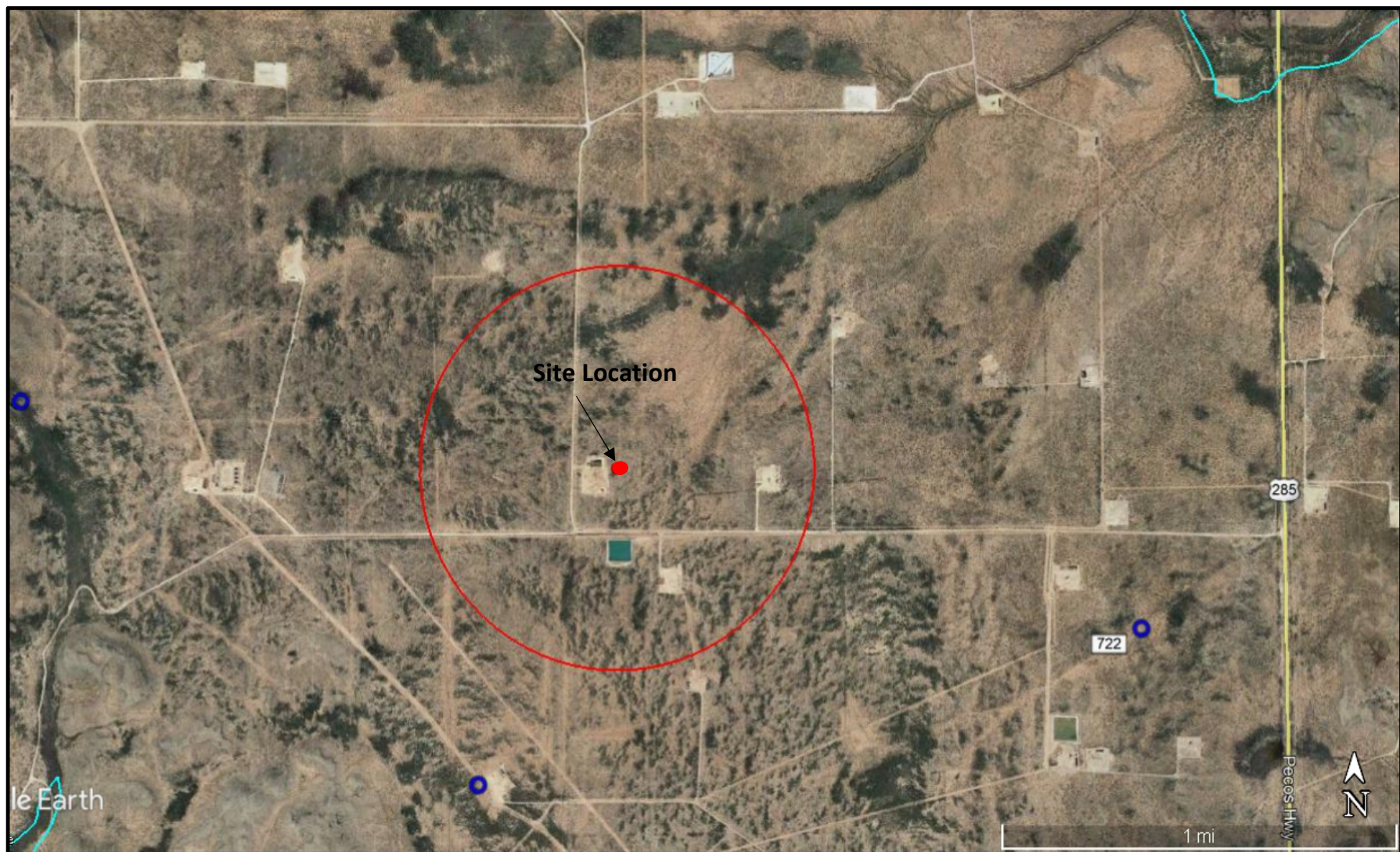
T 432.520.7720
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DISTRIBUTION

- Copy 1: Mike Bratcher
New Mexico Energy, Minerals and Natural Resources Department
Oil Conservation Division, District 2
811 S. First Street
Artesia, NM 88210
- Copy 2: Ryan Mann
Hobbs Field Office
New Mexico State Land Office
2827 North Dal Paso St., Suite 117
Hobbs, New Mexico 88240
- Copy 3: Rebecca Haskell
COG Operating, LLC
600 W. Illinois Avenue
Midland, Texas 79701
- Copy4: TRC Environmental Corporation
10 Desta Dr STE 150E
Midland, TX 79705



LEGEND: <div style="display: flex; align-items: center;"> <div style="width: 10px; height: 10px; background-color: red; border-radius: 50%; margin-right: 5px;"></div> Site Location </div>	<p style="text-align: center;">Figure 1</p> <p style="text-align: center;">Topographical Map COG Operating, LLC Willow 17 State SWD #001 Eddy County, NM</p>		
		Drafted by: BC Checked by: JS	
		Draft: April 25, 2019	
		GPS: 32.12489 -104.10216	
		UL "P", Sec. 17, T25S, R28E	
		TRC Proj. No: 324488	



LEGEND:

- | | | | |
|---|---------------------|---|-------------------------|
|  | Site Location |  | Non-Industrial Building |
|  | Fresh Water Well |  | Municipal Well Field |
|  | 100-Year Floodplain |  | Subsurface Mine |
|  | High/Critical Karst |  | 1/2 Mile Radius |

Figure 2

Aerial Map
 COG Operating, LLC
 Willow 17 State SWD #001
 Eddy County, NM

Drafted by: BC | Checked by: JS

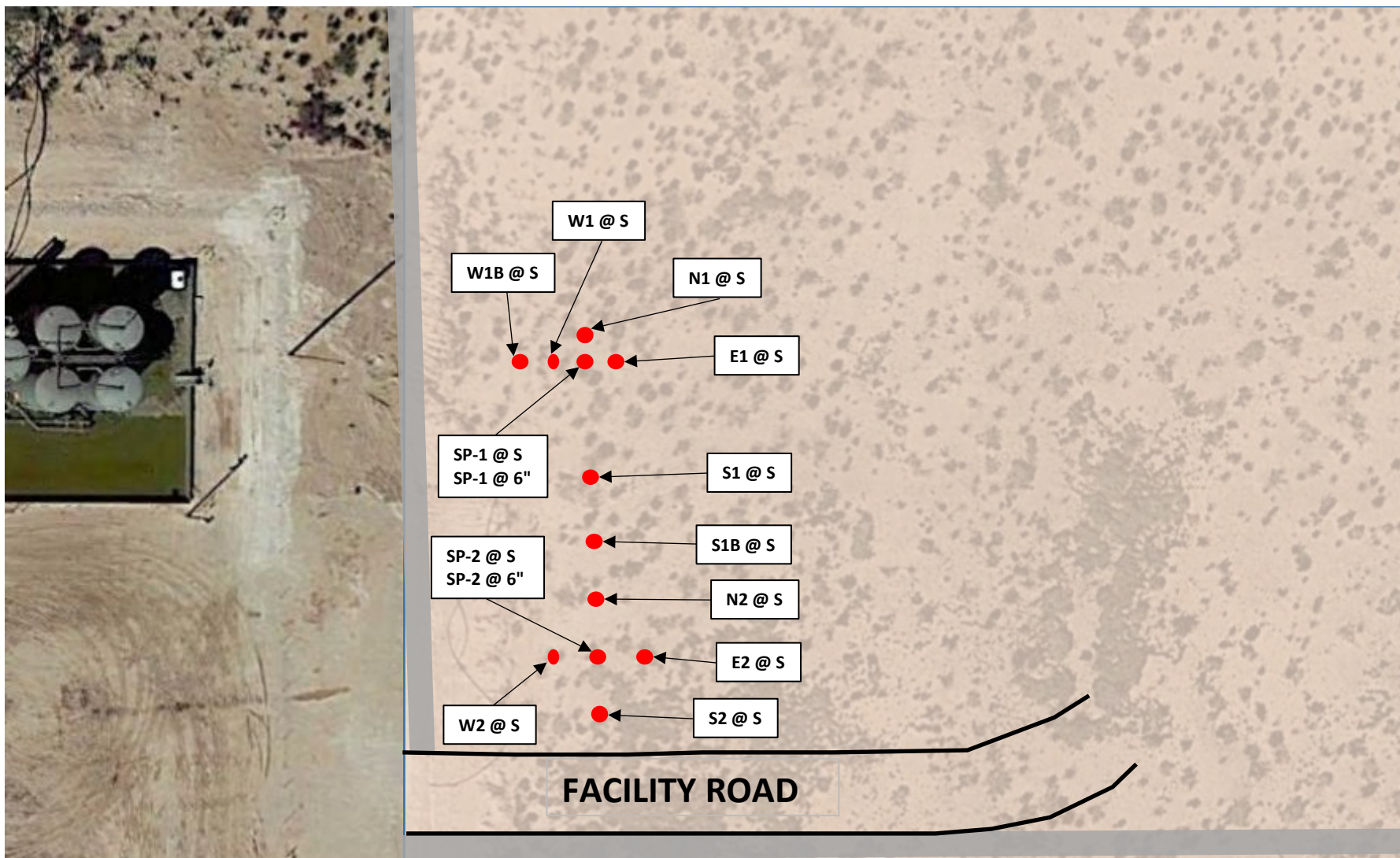
Draft: April 25, 2019





GPS: 32.12489 -104.10216

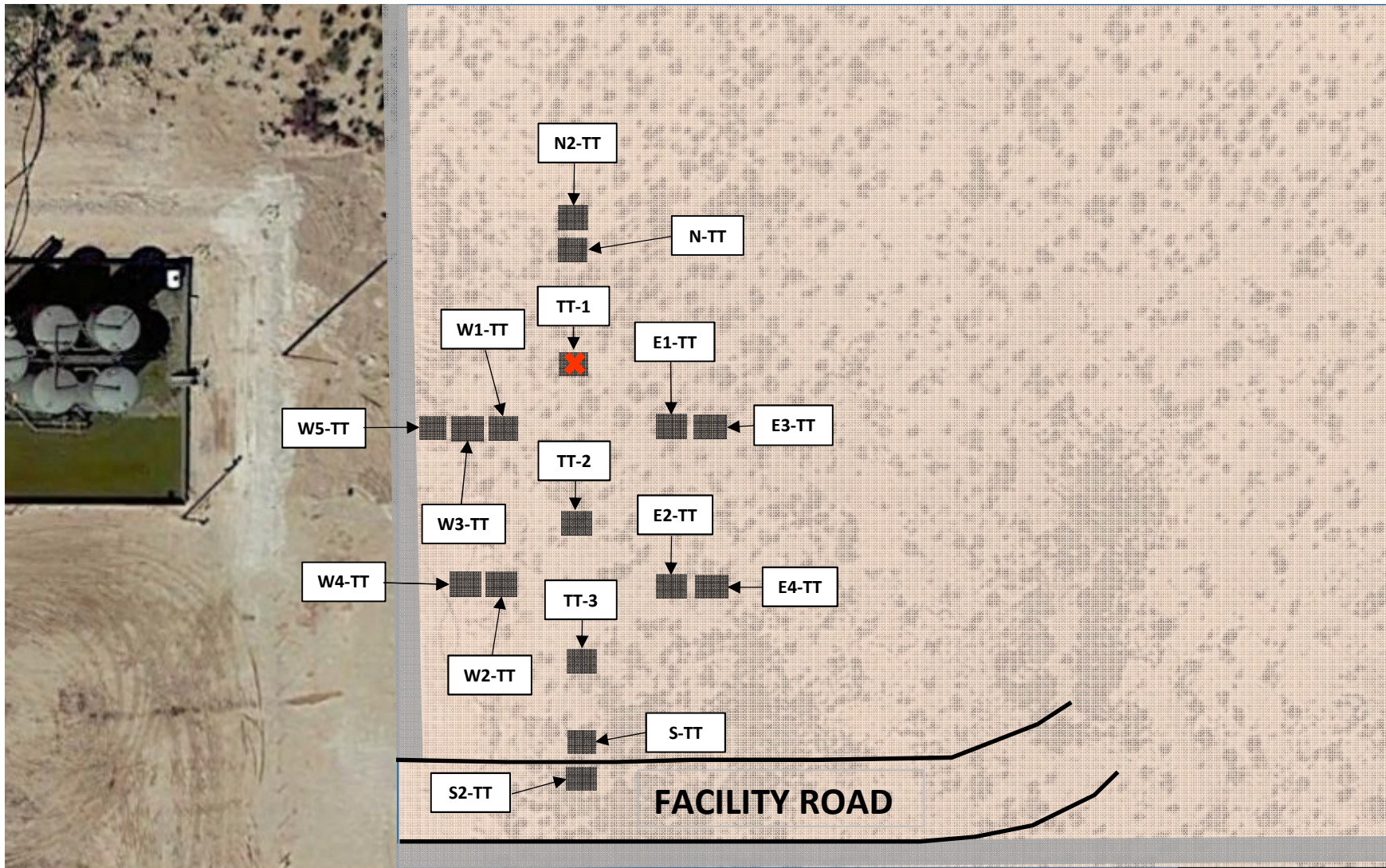
UL "P", Sec. 17, T25S, R28E

TRC Proj. No: 324488





LEGEND:  Caliche Pad  Sample Location  Berm	Figure 3A Site & Sample Location Map - Initial Investigation COG Operating, LLC Willow 17 State SWD #001 Eddy County, NM	Scale: 1" = 50'	 Results you can rely on
		Drafted by: BC Checked by: CS	
		Draft: January 23, 2019	
		GPS: 32.12489 -104.10216	
		UL "P", Sec. 17, T25S, R28E	
		TRC Proj. No: 324488	




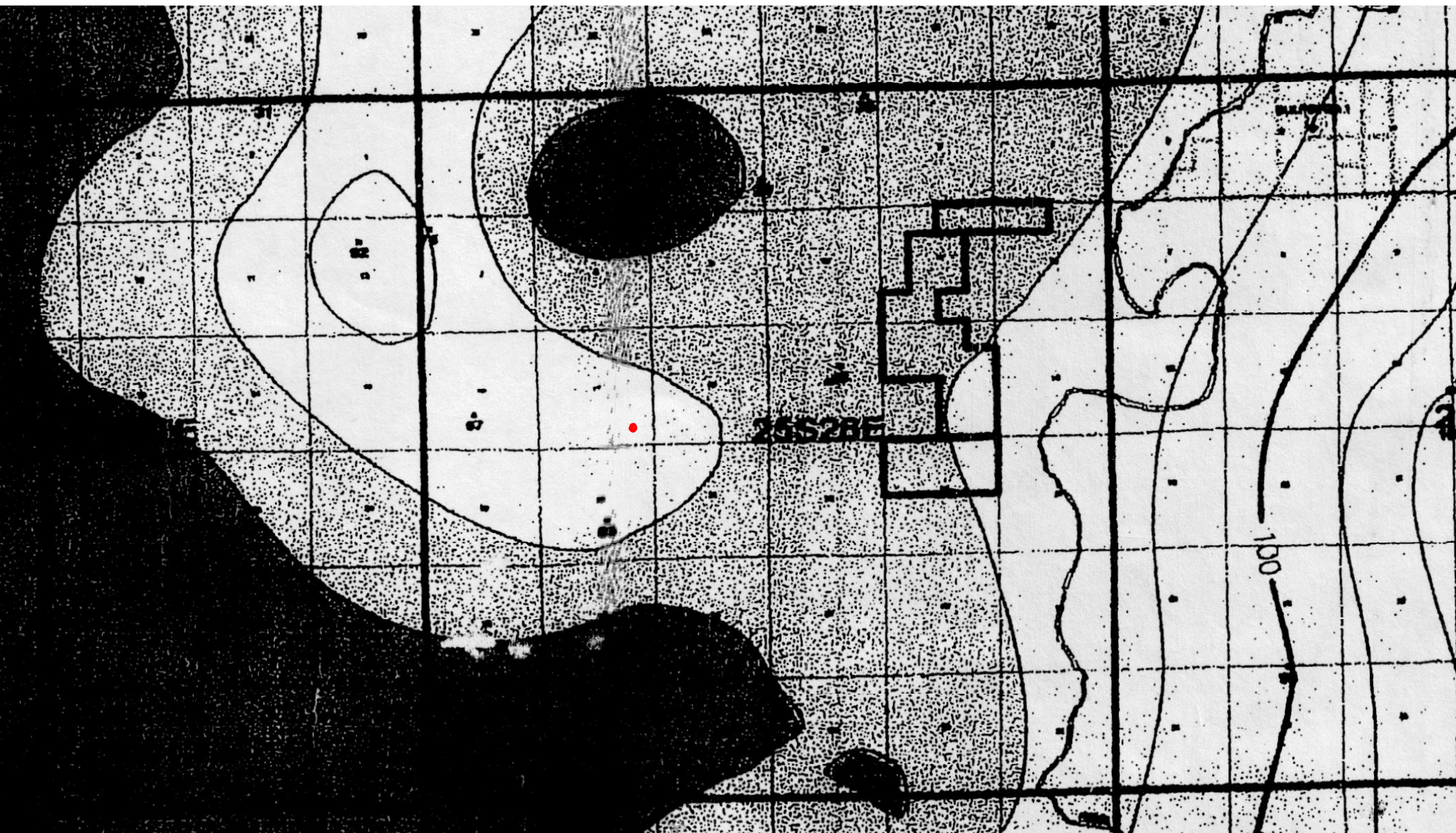
LEGEND: <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="width: 20px; height: 10px; border: 1px solid black; background-color: #f0f0f0; margin-right: 5px;"></div> <div>Caliche Pad</div> </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="color: red; font-size: 20px; margin-right: 5px;">✕</div> <div>Sample Location</div> </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="width: 20px; height: 10px; background-color: #cccccc; margin-right: 5px;"></div> <div>Berm</div> </div> <div style="display: flex; align-items: center;"> <div style="width: 20px; height: 10px; background-image: linear-gradient(to right, black 1px, transparent 1px); background-size: 4px 4px; margin-right: 5px;"></div> <div>Trench Location</div> </div>	Figure 3B Site & Sample Location Map - Secondary Investigation COG Operating, LLC Willow 17 State SWD #001 Eddy County, NM	Scale: 1" = 50'	 <i>Results you can rely on</i>
		Drafted by: BC Checked by: CS	
		Draft: April 23, 2019	
		GPS: 32.12489 -104.10216	
		UL "P", Sec. 17, T25S, R28E	
		TRC Proj. No: 324488	

Table 1											
Summary of Sampling Analytical Results											
Concentrations of BTEX, TPH, and/or Chloride in Soil											
Sample ID	Date	Depth	Soil Status	SW 846 8021B		SW 846 8015M Ext.					E 300
				Benzene (mg/kg)	BTEX (mg/kg)	GRO C ₆ -C ₁₀ (mg/kg)	DRO C ₁₀ -C ₂₈ (mg/kg)	GRO + DRO C ₆ -C ₂₈ (mg/kg)	ORO C ₂₈ -C ₃₅ (mg/kg)	TPH C ₆ -C ₃₅ (mg/kg)	Chloride (mg/kg)
SP-1 @ S	1/3/19	Surface	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	20,600
SP-1 @ 6"	1/11/19	6"	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	3,600
W1 @ S	1/3/19	Surface	In-Situ	<0.050	<0.300	10.6	<10.0	10.6	<10.0	10.6	41,600
W1B @ S	1/3/19	Surface	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	15,600
E1 @ S	1/3/19	Surface	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	14,400
N1 @ S	1/3/19	Surface	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	2,440
S1 @ S	1/3/19	Surface	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	18,000
S1B @ S	1/3/19	Surface	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	40,400
SP-2 @ S	1/3/19	Surface	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	12,200
SP-2 @ 6"	1/11/19	6"	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	1,970
S2 @ S	1/3/19	Surface	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	8,320
N2 @ S	1/3/19	Surface	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32,800
W2 @ S	1/11/19	Surface	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	736
E2 @ S	1/11/19	Surface	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	896
TT1 @ 0-6"	1/29/19	0-6"	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	3,600
TT1 @ 6"-1'	1/29/19	6"-1'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	2,200
TT1 @ 3'	1/29/19	3'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	1,440
TT1 @ 5'	1/29/19	5'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	2,400
TT1 @ 6'	1/29/19	6'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	832
TT-1 @ 7'	4/18/19	7'	In-Situ	-	-	-	-	-	-	-	1,010
TT-1 @ 8'	4/18/19	8'	In-Situ	-	-	-	-	-	-	-	400
TT2 @ 0-6"	1/29/19	0-6"	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	4,480
TT2 @ 6"-1'	1/29/19	6"-1'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	3,360
TT2 @ 2'	1/29/19	2'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	1,650
TT2 @ 3'	1/29/19	3'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	880
TT-2 @ 4'	4/18/19	4'	In-Situ	-	-	-	-	-	-	-	1,710
TT-2 @ 5'	4/18/19	5'	In-Situ	-	-	-	-	-	-	-	129
TT3 @ 0-6"	1/29/19	0-6"	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	1,040
TT3 @ 6"-1'	1/29/19	6"-1'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	1,120
TT-3 @ 2'	4/18/19	2'	In-Situ	-	-	-	-	-	-	-	584

Table 1											
Summary of Sampling Analytical Results											
Concentrations of BTEX, TPH, and/or Chloride in Soil											
Sample ID	Date	Depth	Soil Status	SW 846 8021B		SW 846 8015M Ext.					E 300
				Benzene (mg/kg)	BTEX (mg/kg)	GRO C ₆ -C ₁₀ (mg/kg)	DRO C ₁₀ -C ₂₈ (mg/kg)	GRO + DRO C ₆ -C ₂₈ (mg/kg)	ORO C ₂₈ -C ₃₅ (mg/kg)	TPH C ₆ -C ₃₅ (mg/kg)	Chloride (mg/kg)
S TT @ 2.5'	1/29/19	2.5'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	80.0
N TT @ 3'	1/29/19	3'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	784
N-TT @ 4'	4/18/19	4'	In-Situ	-	-	-	-	-	-	-	581
W1 TT @ 3'	1/29/19	3'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	768
W1-TT @ 4'	4/18/19	4'	In-Situ	-	-	-	-	-	-	-	1,360
W1-TT @ 5'	4/18/19	5'	In-Situ	-	-	-	-	-	-	-	1,750
W1-TT @ 6'	4/18/19	6'	In-Situ	-	-	-	-	-	-	-	935
W1-TT @ 7'	4/18/19	7'	In-Situ	-	-	-	-	-	-	-	488
W2 TT @ 3'	1/29/19	3'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	208
E1 TT @ 3'	1/29/19	3'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	208
E2 TT @ 3'	1/29/19	3'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	688
E2-TT @ 4'	4/18/19	4'	In-Situ	-	-	-	-	-	-	-	69.0
N2-TT @ 0-1'	4/18/19	0-1'	In-Situ	-	-	-	-	-	-	-	98.2
S2-TT @ 0-1'	4/18/19	0-1'	In-Situ	-	-	-	-	-	-	-	413
E3-TT @ 0-1'	4/18/19	0-1'	In-Situ	-	-	-	-	-	-	-	167
E4-TT @ 0-1'	4/18/19	0-1'	In-Situ	-	-	-	-	-	-	-	220
W3-TT @ 0-1'	4/18/19	0-1'	In-Situ	-	-	-	-	-	-	-	714
W4-TT @ 0-1'	4/18/19	0-1'	In-Situ	-	-	-	-	-	-	-	142
W5-TT @ 0-1'	4/18/19	0-1'	In-Situ	-	-	-	-	-	-	-	137
NMOCD Closure Criteria				10	50	-	-	1,000	-	2,500	600



January 14, 2019

JAROD STOFFEL

TRC

10 DESTA DR. SUITE 150 E

MIDLAND, TX 79705

RE: WILLOW 17 STATE SWD #001

Enclosed are the results of analyses for samples received by the laboratory on 01/07/19 15:20.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,



Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

TRC
JAROD STOFFEL
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705
Fax To:

Received:	01/07/2019	Sampling Date:	01/03/2019
Reported:	01/14/2019	Sampling Type:	Soil
Project Name:	WILLOW 17 STATE SWD #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	CONCHO-EDDY CO., NM		

Sample ID: SP- 1 @ S (H900028-01)

BTEX 8021B			mg/kg		Analyzed By: ms				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	01/11/2019	ND	1.79	89.5	2.00	2.57	
Toluene*	<0.050	0.050	01/11/2019	ND	1.86	92.8	2.00	1.46	
Ethylbenzene*	<0.050	0.050	01/11/2019	ND	1.91	95.3	2.00	2.60	
Total Xylenes*	<0.150	0.150	01/11/2019	ND	5.79	96.6	6.00	2.25	
Total BTEX	<0.300	0.300	01/11/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 94.8 % 73.3-129

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	20600	16.0	01/09/2019	ND	416	104	400	0.00	

TPH 8015M			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	01/09/2019	ND	215	107	200	8.05	
DRO >C10-C28*	<10.0	10.0	01/09/2019	ND	197	98.7	200	8.81	
EXT DRO >C28-C36	<10.0	10.0	01/09/2019	ND					

Surrogate: 1-Chlorooctane 83.2 % 41-142

Surrogate: 1-Chlorooctadecane 80.2 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TRC
JAROD STOFFEL
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705
Fax To:

Received: 01/07/2019
Reported: 01/14/2019
Project Name: WILLOW 17 STATE SWD #001
Project Number: NONE GIVEN
Project Location: CONCHO-EDDY CO., NM

Sampling Date: 01/03/2019
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker

Sample ID: SP- 2 @ S (H900028-02)

BTEx 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	01/11/2019	ND	1.79	89.5	2.00	2.57	
Toluene*	<0.050	0.050	01/11/2019	ND	1.86	92.8	2.00	1.46	
Ethylbenzene*	<0.050	0.050	01/11/2019	ND	1.91	95.3	2.00	2.60	
Total Xylenes*	<0.150	0.150	01/11/2019	ND	5.79	96.6	6.00	2.25	
Total BTEX	<0.300	0.300	01/11/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 96.1 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	12200	16.0	01/09/2019	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	01/09/2019	ND	215	107	200	8.05	
DRO >C10-C28*	<10.0	10.0	01/09/2019	ND	197	98.7	200	8.81	
EXT DRO >C28-C36	<10.0	10.0	01/09/2019	ND					

Surrogate: 1-Chlorooctane 80.0 % 41-142

Surrogate: 1-Chlorooctadecane 75.0 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 TRC
 JAROD STOFFEL
 10 DESTA DR. SUITE 150 E
 MIDLAND TX, 79705
 Fax To:

 Received: 01/07/2019
 Reported: 01/14/2019
 Project Name: WILLOW 17 STATE SWD #001
 Project Number: NONE GIVEN
 Project Location: CONCHO-EDDY CO., NM

 Sampling Date: 01/03/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: W 1 @ S (H900028-03)

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	01/10/2019	ND	2.05	103	2.00	3.60	
Toluene*	<0.050	0.050	01/10/2019	ND	2.12	106	2.00	3.35	
Ethylbenzene*	<0.050	0.050	01/10/2019	ND	2.16	108	2.00	2.14	
Total Xylenes*	0.226	0.150	01/10/2019	ND	6.42	107	6.00	6.86	
Total BTEX	<0.300	0.300	01/10/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 92.7 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	41600	16.0	01/09/2019	ND	416	104	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	10.6	10.0	01/09/2019	ND	215	107	200	8.05	
DRO >C10-C28*	<10.0	10.0	01/09/2019	ND	197	98.7	200	8.81	
EXT DRO >C28-C36	<10.0	10.0	01/09/2019	ND					

Surrogate: 1-Chlorooctane 87.9 % 41-142

Surrogate: 1-Chlorooctadecane 83.3 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 TRC
 JAROD STOFFEL
 10 DESTA DR. SUITE 150 E
 MIDLAND TX, 79705
 Fax To:

 Received: 01/07/2019
 Reported: 01/14/2019
 Project Name: WILLOW 17 STATE SWD #001
 Project Number: NONE GIVEN
 Project Location: CONCHO-EDDY CO., NM

 Sampling Date: 01/03/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: W 1B @ S (H900028-04)

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	01/10/2019	ND	2.05	103	2.00	3.60		
Toluene*	<0.050	0.050	01/10/2019	ND	2.12	106	2.00	3.35		
Ethylbenzene*	<0.050	0.050	01/10/2019	ND	2.16	108	2.00	2.14		
Total Xylenes*	<0.150	0.150	01/10/2019	ND	6.42	107	6.00	6.86		
Total BTEX	<0.300	0.300	01/10/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 90.7 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	15600	16.0	01/09/2019	ND	416	104	400	3.77	QM-07	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	01/09/2019	ND	215	107	200	8.05	
DRO >C10-C28*	<10.0	10.0	01/09/2019	ND	197	98.7	200	8.81	
EXT DRO >C28-C36	<10.0	10.0	01/09/2019	ND					

Surrogate: 1-Chlorooctane 89.2 % 41-142

Surrogate: 1-Chlorooctadecane 86.4 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TRC
JAROD STOFFEL
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705
Fax To:

Received: 01/07/2019
Reported: 01/14/2019
Project Name: WILLOW 17 STATE SWD #001
Project Number: NONE GIVEN
Project Location: CONCHO-EDDY CO., NM

Sampling Date: 01/03/2019
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker

Sample ID: E 1 @ S (H900028-05)

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	01/10/2019	ND	2.05	103	2.00	3.60	
Toluene*	<0.050	0.050	01/10/2019	ND	2.12	106	2.00	3.35	
Ethylbenzene*	<0.050	0.050	01/10/2019	ND	2.16	108	2.00	2.14	
Total Xylenes*	<0.150	0.150	01/10/2019	ND	6.42	107	6.00	6.86	
Total BTX	<0.300	0.300	01/10/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.6 % 73.3-129

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	14400	16.0	01/09/2019	ND	416	104	400	3.77	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	01/09/2019	ND	215	107	200	8.05	
DRO >C10-C28*	<10.0	10.0	01/09/2019	ND	197	98.7	200	8.81	
EXT DRO >C28-C36	<10.0	10.0	01/09/2019	ND					

Surrogate: 1-Chlorooctane 79.5 % 41-142

Surrogate: 1-Chlorooctadecane 74.9 % 37.6-147

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Analytical Results For:

TRC
JAROD STOFFEL
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705
Fax To:

Received: 01/07/2019
Reported: 01/14/2019
Project Name: WILLOW 17 STATE SWD #001
Project Number: NONE GIVEN
Project Location: CONCHO-EDDY CO., NM

Sampling Date: 01/03/2019
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker

Sample ID: N 1 @ S (H900028-06)

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	01/10/2019	ND	2.05	103	2.00	3.60	
Toluene*	<0.050	0.050	01/10/2019	ND	2.12	106	2.00	3.35	
Ethylbenzene*	<0.050	0.050	01/10/2019	ND	2.16	108	2.00	2.14	
Total Xylenes*	<0.150	0.150	01/10/2019	ND	6.42	107	6.00	6.86	
Total BTEX	<0.300	0.300	01/10/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 96.2 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2440	16.0	01/09/2019	ND	416	104	400	3.77	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	01/09/2019	ND	215	107	200	8.05	
DRO >C10-C28*	<10.0	10.0	01/09/2019	ND	197	98.7	200	8.81	
EXT DRO >C28-C36	<10.0	10.0	01/09/2019	ND					

Surrogate: 1-Chlorooctane 70.0 % 41-142

Surrogate: 1-Chlorooctadecane 70.2 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TRC
JAROD STOFFEL
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705
Fax To:

Received: 01/07/2019
Reported: 01/14/2019
Project Name: WILLOW 17 STATE SWD #001
Project Number: NONE GIVEN
Project Location: CONCHO-EDDY CO., NM

Sampling Date: 01/03/2019
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker

Sample ID: S 1 @ S (H900028-07)

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	01/10/2019	ND	2.05	103	2.00	3.60	
Toluene*	<0.050	0.050	01/10/2019	ND	2.12	106	2.00	3.35	
Ethylbenzene*	<0.050	0.050	01/10/2019	ND	2.16	108	2.00	2.14	
Total Xylenes*	<0.150	0.150	01/10/2019	ND	6.42	107	6.00	6.86	
Total BTX	<0.300	0.300	01/10/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 90.7 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	18000	16.0	01/09/2019	ND	416	104	400	3.77	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	01/09/2019	ND	215	107	200	8.05	
DRO >C10-C28*	<10.0	10.0	01/09/2019	ND	197	98.7	200	8.81	
EXT DRO >C28-C36	<10.0	10.0	01/09/2019	ND					

Surrogate: 1-Chlorooctane 85.4 % 41-142

Surrogate: 1-Chlorooctadecane 82.3 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TRC
JAROD STOFFEL
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705
Fax To:

Received: 01/07/2019
Reported: 01/14/2019
Project Name: WILLOW 17 STATE SWD #001
Project Number: NONE GIVEN
Project Location: CONCHO-EDDY CO., NM

Sampling Date: 01/03/2019
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker

Sample ID: S 1B @ S (H900028-08)

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	01/10/2019	ND	2.05	103	2.00	3.60	
Toluene*	<0.050	0.050	01/10/2019	ND	2.12	106	2.00	3.35	
Ethylbenzene*	<0.050	0.050	01/10/2019	ND	2.16	108	2.00	2.14	
Total Xylenes*	<0.150	0.150	01/10/2019	ND	6.42	107	6.00	6.86	
Total BTX	<0.300	0.300	01/10/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 91.2 % 73.3-129

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	40400	16.0	01/09/2019	ND	416	104	400	3.77	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	01/09/2019	ND	215	107	200	8.05	
DRO >C10-C28*	<10.0	10.0	01/09/2019	ND	197	98.7	200	8.81	
EXT DRO >C28-C36	<10.0	10.0	01/09/2019	ND					

Surrogate: 1-Chlorooctane 89.7 % 41-142

Surrogate: 1-Chlorooctadecane 87.0 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TRC
JAROD STOFFEL
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705
Fax To:

Received: 01/07/2019
Reported: 01/14/2019
Project Name: WILLOW 17 STATE SWD #001
Project Number: NONE GIVEN
Project Location: CONCHO-EDDY CO., NM

Sampling Date: 01/03/2019
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker

Sample ID: S 2 @ S (H900028-09)

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	01/10/2019	ND	2.05	103	2.00	3.60	
Toluene*	<0.050	0.050	01/10/2019	ND	2.12	106	2.00	3.35	
Ethylbenzene*	<0.050	0.050	01/10/2019	ND	2.16	108	2.00	2.14	
Total Xylenes*	<0.150	0.150	01/10/2019	ND	6.42	107	6.00	6.86	
Total BTX	<0.300	0.300	01/10/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 91.0 % 73.3-129

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	8320	16.0	01/09/2019	ND	416	104	400	3.77	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	01/09/2019	ND	215	107	200	8.05	
DRO >C10-C28*	<10.0	10.0	01/09/2019	ND	197	98.7	200	8.81	
EXT DRO >C28-C36	<10.0	10.0	01/09/2019	ND					

Surrogate: 1-Chlorooctane 74.9 % 41-142

Surrogate: 1-Chlorooctadecane 68.2 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TRC
JAROD STOFFEL
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705
Fax To:

Received: 01/07/2019
Reported: 01/14/2019
Project Name: WILLOW 17 STATE SWD #001
Project Number: NONE GIVEN
Project Location: CONCHO-EDDY CO., NM

Sampling Date: 01/03/2019
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker

Sample ID: N 2 @ S (H900028-10)

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	01/10/2019	ND	2.05	103	2.00	3.60	
Toluene*	<0.050	0.050	01/10/2019	ND	2.12	106	2.00	3.35	
Ethylbenzene*	<0.050	0.050	01/10/2019	ND	2.16	108	2.00	2.14	
Total Xylenes*	<0.150	0.150	01/10/2019	ND	6.42	107	6.00	6.86	
Total BTX	<0.300	0.300	01/10/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 92.6 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32800	16.0	01/09/2019	ND	416	104	400	3.77	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	01/09/2019	ND	215	107	200	8.05	
DRO >C10-C28*	<10.0	10.0	01/09/2019	ND	197	98.7	200	8.81	
EXT DRO >C28-C36	<10.0	10.0	01/09/2019	ND					

Surrogate: 1-Chlorooctane 75.6 % 41-142

Surrogate: 1-Chlorooctadecane 72.1 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene, Lab Director/Quality Manager



CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: TRC Solutions		BILL TO		ANALYSIS REQUEST																													
Project Manager: JARED STOFFEL		P.O. #:																															
Address: 10 Desta Drive Suite 150E		Company: COBACH																															
City: Midland		Attn: BECKY HASKELL																															
State: TX Zip: 79705		Address:																															
Phone #: 432-466-4450 Fax #:		City:																															
Project #:		State:																															
Project Name: WILLOW STATE SUB #001		Zip:																															
Project Location: EDDY CO, NM		Phone #:																															
Sample Name: BECKY HASKELL		Fax #:																															
FOR LAB USE ONLY																																	
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.		# CONTAINERS		GROUNDWATER		WASTEWATER		SOIL		OIL		SLUDGE		OTHER :		ACID/BASE:		ICE / COOL		OTHER :		DATE		TIME		BTEX		TPH		CHLORIDE	
1 SP-105	1																																
2 SP-205	2																																
3 W105	3																																
4 W105	4																																
5 E105	5																																
6 W105	6																																
7 W105	7																																
8 W105	8																																
9 W105	9																																
10 W105	10																																

January 23, 2019

BRIAN COOPER

TRC

10 DESTA DR. SUITE 150 E

MIDLAND, TX 79705

RE: WILLOW 17 STATE SWD #001

Enclosed are the results of analyses for samples received by the laboratory on 01/14/19 15:10.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/ga/lab_accred_certif.html.

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

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

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

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

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

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

Sincerely,



Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:TRC
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705Project: WILLOW 17 STATE SWD #001
Project Number: NONE GIVEN
Project Manager: BRIAN COOPER
Fax To:Reported:
23-Jan-19 10:51

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SP- 1 @ 6"	H900110-01	Soil	11-Jan-19 12:00	14-Jan-19 15:10
SP- 2 @ 6"	H900110-02	Soil	11-Jan-19 12:05	14-Jan-19 15:10
W2 @ S	H900110-03	Soil	11-Jan-19 12:10	14-Jan-19 15:10
E2 @ S	H900110-04	Soil	11-Jan-19 12:15	14-Jan-19 15:10

Project name and sample IDs were changed as per Brian Cooper 01/23/19 via email. This is the revised report as per those instructions. This report will replace the one sent on 01/15/19.

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TRC
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705

Project: WILLOW 17 STATE SWD #001
Project Number: NONE GIVEN
Project Manager: BRIAN COOPER
Fax To:

Reported:
23-Jan-19 10:51

SP- 1 @ 6"
H900110-01 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

Chloride	3600		16.0	mg/kg	4	9011509	AC	15-Jan-19	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Toluene*	<0.050		0.050	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	9011109	ms	14-Jan-19	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 97.5 % 73.3-129 9011109 ms 14-Jan-19 8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10*	<10.0		10.0	mg/kg	1	9011409	MS	15-Jan-19	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	9011409	MS	15-Jan-19	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	9011409	MS	15-Jan-19	8015B	

Surrogate: 1-Chlorooctane 85.0 % 41-142 9011409 MS 15-Jan-19 8015B

Surrogate: 1-Chlorooctadecane 79.5 % 37.6-147 9011409 MS 15-Jan-19 8015B

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TRC
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705

Project: WILLOW 17 STATE SWD #001
Project Number: NONE GIVEN
Project Manager: BRIAN COOPER
Fax To:

Reported:
23-Jan-19 10:51

SP- 2 @ 6"
H900110-02 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	1970		16.0	mg/kg	4	9011509	AC	15-Jan-19	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Toluene*	<0.050		0.050	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	9011109	ms	14-Jan-19	8021B	

<i>Surrogate: 4-Bromofluorobenzene (PID)</i>			97.9 %		73.3-129	9011109	ms	14-Jan-19	8021B	
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Petroleum Hydrocarbons by GC FID

GRO C6-C10*	<10.0		10.0	mg/kg	1	9011409	MS	15-Jan-19	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	9011409	MS	15-Jan-19	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	9011409	MS	15-Jan-19	8015B	

<i>Surrogate: 1-Chlorooctane</i>			88.4 %		41-142	9011409	MS	15-Jan-19	8015B	
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<i>Surrogate: 1-Chlorooctadecane</i>			84.3 %		37.6-147	9011409	MS	15-Jan-19	8015B	
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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TRC
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705

Project: WILLOW 17 STATE SWD #001
Project Number: NONE GIVEN
Project Manager: BRIAN COOPER
Fax To:

Reported:
23-Jan-19 10:51

W2 @ S H900110-03 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

Chloride	736		16.0	mg/kg	4	9011509	AC	15-Jan-19	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Toluene*	<0.050		0.050	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	9011109	ms	14-Jan-19	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 97.7 % 73.3-129 9011109 ms 14-Jan-19 8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10*	<10.0		10.0	mg/kg	1	9011409	MS	15-Jan-19	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	9011409	MS	15-Jan-19	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	9011409	MS	15-Jan-19	8015B	

Surrogate: 1-Chlorooctane 74.5 % 41-142 9011409 MS 15-Jan-19 8015B

Surrogate: 1-Chlorooctadecane 67.1 % 37.6-147 9011409 MS 15-Jan-19 8015B

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TRC
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705

Project: WILLOW 17 STATE SWD #001
Project Number: NONE GIVEN
Project Manager: BRIAN COOPER
Fax To:

Reported:
23-Jan-19 10:51

E2 @ S H900110-04 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

Chloride	896		16.0	mg/kg	4	9011509	AC	15-Jan-19	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Toluene*	<0.050		0.050	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	9011109	ms	14-Jan-19	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	9011109	ms	14-Jan-19	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 97.7 % 73.3-129 9011109 ms 14-Jan-19 8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10*	<10.0		10.0	mg/kg	1	9011409	MS	15-Jan-19	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	9011409	MS	15-Jan-19	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	9011409	MS	15-Jan-19	8015B	

Surrogate: 1-Chlorooctane 68.7 % 41-142 9011409 MS 15-Jan-19 8015B

Surrogate: 1-Chlorooctadecane 63.0 % 37.6-147 9011409 MS 15-Jan-19 8015B

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TRC
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705

Project: WILLOW 17 STATE SWD #001
Project Number: NONE GIVEN
Project Manager: BRIAN COOPER
Fax To:

Reported:
23-Jan-19 10:51

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
Batch 9011509 - General Prep - Wet Chem									
Blank (9011509-BLK1)					Prepared & Analyzed: 15-Jan-19				
Chloride	ND	16.0	mg/kg						
LCS (9011509-BS1)					Prepared & Analyzed: 15-Jan-19				
Chloride	432	16.0	mg/kg	400		108	80-120		
LCS Dup (9011509-BSD1)					Prepared & Analyzed: 15-Jan-19				
Chloride	400	16.0	mg/kg	400		100	80-120	7.69	20

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TRC
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705

Project: WILLOW 17 STATE SWD #001
Project Number: NONE GIVEN
Project Manager: BRIAN COOPER
Fax To:

Reported:
23-Jan-19 10:51

Volatile Organic Compounds by EPA Method 8021 - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 9011109 - Volatiles

Blank (9011109-BLK1)

Prepared: 11-Jan-19 Analyzed: 14-Jan-19

Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (PID)	0.0977		mg/kg	0.100		97.7	73.3-129			

LCS (9011109-BS1)

Prepared: 11-Jan-19 Analyzed: 14-Jan-19

Benzene	2.11	0.050	mg/kg	2.00		106	72.2-131			
Toluene	2.03	0.050	mg/kg	2.00		102	71.7-126			
Ethylbenzene	2.00	0.050	mg/kg	2.00		100	68.9-126			
Total Xylenes	6.09	0.150	mg/kg	6.00		102	71.4-125			
Surrogate: 4-Bromofluorobenzene (PID)	0.0967		mg/kg	0.100		96.7	73.3-129			

LCS Dup (9011109-BSD1)

Prepared: 11-Jan-19 Analyzed: 14-Jan-19

Benzene	2.09	0.050	mg/kg	2.00		104	72.2-131	1.22	6.91	
Toluene	2.01	0.050	mg/kg	2.00		101	71.7-126	0.860	7.12	
Ethylbenzene	1.98	0.050	mg/kg	2.00		99.1	68.9-126	1.07	7.88	
Total Xylenes	6.04	0.150	mg/kg	6.00		101	71.4-125	0.840	7.46	
Surrogate: 4-Bromofluorobenzene (PID)	0.0950		mg/kg	0.100		95.0	73.3-129			

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TRC
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705

Project: WILLOW 17 STATE SWD #001
Project Number: NONE GIVEN
Project Manager: BRIAN COOPER
Fax To:

Reported:
23-Jan-19 10:51

Petroleum Hydrocarbons by GC FID - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
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Batch 9011409 - General Prep - Organics

Blank (9011409-BLK1)

Prepared: 14-Jan-19 Analyzed: 15-Jan-19

GRO C6-C10	ND	10.0	mg/kg						
DRO >C10-C28	ND	10.0	mg/kg						
EXT DRO >C28-C36	ND	10.0	mg/kg						
Total TPH C6-C28	ND	10.0	mg/kg						
Surrogate: 1-Chlorooctane	46.5		mg/kg	50.0		93.1	41-142		
Surrogate: 1-Chlorooctadecane	43.1		mg/kg	50.0		86.2	37.6-147		

LCS (9011409-BS1)

Prepared & Analyzed: 14-Jan-19

GRO C6-C10	209	10.0	mg/kg	200		105	76.5-133		
DRO >C10-C28	210	10.0	mg/kg	200		105	72.9-138		
Total TPH C6-C28	419	10.0	mg/kg	400		105	78-132		
Surrogate: 1-Chlorooctane	49.9		mg/kg	50.0		99.8	41-142		
Surrogate: 1-Chlorooctadecane	46.5		mg/kg	50.0		93.0	37.6-147		

LCS Dup (9011409-BSD1)

Prepared: 14-Jan-19 Analyzed: 15-Jan-19

GRO C6-C10	219	10.0	mg/kg	200		110	76.5-133	4.61	20.6
DRO >C10-C28	207	10.0	mg/kg	200		103	72.9-138	1.44	20.6
Total TPH C6-C28	426	10.0	mg/kg	400		107	78-132	1.63	18
Surrogate: 1-Chlorooctane	47.9		mg/kg	50.0		95.8	41-142		
Surrogate: 1-Chlorooctadecane	44.8		mg/kg	50.0		89.6	37.6-147		

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

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

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Celey D. Keene, Lab Director/Quality Manager



Page 11 of 11

(575) 393-2326 FAX (575) 393-2476

(575) 393-2326 FAX (575) 393-2476

BILL TO

ANALYSIS REQUEST

Company Name: BBB-KC

Project Manager: Brian Cooper

Address: 10 Park Dr Suite 105

City: Midland TX State: TX zip:

Phone #: Fax #:

Project #: Project Owner:

Project Name: *Kithen 10 SWD 10.11.00 17 State SWD#001

Project Location: State: Zip: Phone #: Fax #:

Sampler Name: Kyle Schwaide

FOR LAB USE ONLY

Lab I.D. Sample I.D. *

H900110

#1 SP-19 6"
#2 SP-20 6"
#3 SP-21 6"
#4 SP-22 6"
#5 SP-23 6"
EAGS

(G)RAB OR (C)OMP.

CONTAINERS

GROUNDWATER

WASTEWATER

SOIL

OIL

SLUDGE

OTHER :

ACID/BASE:

ICE / COOL

OTHER :

DATE

TIME

CI-

TPH

BTEx

MATRIX

PRESERV

SAMPLING

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Relinquished By:

Date: 1-14-19

Received By:

Relinquished By:

Time: 15:10

Received By:

REMARKS:

Phone Result: ☐ Yes ☐ No

Add'l Phone #:

Fax Result: ☐ Yes ☐ No

Add'l Fax #:

Sample Condition

Cool Intact

Yes Yes

No No

CHECKED BY:

(Initials)

Delivered By: (Circle One)

Sampler - UPS - Bus - Other:

S.9c #47

Project name & sample ID changed as per Brian.



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

February 06, 2019

BRIAN COOPER

TRC

10 DESTA DR. SUITE 150 E

MIDLAND, TX 79705

RE: WILLOW 17 SWD

Enclosed are the results of analyses for samples received by the laboratory on 01/30/19 16:35.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive, flowing style.

Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

TRC
BRIAN COOPER
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705
Fax To:

Received: 01/30/2019
Reported: 02/06/2019
Project Name: WILLOW 17 SWD
Project Number: NONE GIVEN
Project Location: NOT GIVEN

Sampling Date: 01/29/2019
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: TT 1 @ 0-6" (H900351-01)

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTEX	<0.300	0.300	02/01/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 89.5 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3600	16.0	02/04/2019	ND	416	104	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/02/2019	ND	167	83.5	200	0.387	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	179	89.3	200	4.23	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					

Surrogate: 1-Chlorooctane 89.1 % 41-142

Surrogate: 1-Chlorooctadecane 88.5 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TRC
BRIAN COOPER
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705
Fax To:

Received: 01/30/2019
Reported: 02/06/2019
Project Name: WILLOW 17 SWD
Project Number: NONE GIVEN
Project Location: NOT GIVEN

Sampling Date: 01/29/2019
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: TT 1 @ 6''-1' (H900351-02)

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTEX	<0.300	0.300	02/01/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 96.2 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2200	16.0	02/04/2019	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/02/2019	ND	167	83.5	200	0.387	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	179	89.3	200	4.23	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					

Surrogate: 1-Chlorooctane 85.9 % 41-142

Surrogate: 1-Chlorooctadecane 84.3 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 TRC
 BRIAN COOPER
 10 DESTA DR. SUITE 150 E
 MIDLAND TX, 79705
 Fax To:

 Received: 01/30/2019
 Reported: 02/06/2019
 Project Name: WILLOW 17 SWD
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

 Sampling Date: 01/29/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Jodi Henson

Sample ID: TT 1 @ 3' (H900351-03)

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTEX	<0.300	0.300	02/01/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 91.3 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1440	16.0	02/04/2019	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/02/2019	ND	167	83.5	200	0.387	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	179	89.3	200	4.23	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					

Surrogate: 1-Chlorooctane 89.1 % 41-142

Surrogate: 1-Chlorooctadecane 88.4 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 TRC
 BRIAN COOPER
 10 DESTA DR. SUITE 150 E
 MIDLAND TX, 79705
 Fax To:

 Received: 01/30/2019
 Reported: 02/06/2019
 Project Name: WILLOW 17 SWD
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

 Sampling Date: 01/29/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Jodi Henson

Sample ID: TT 1 @ 5' (H900351-04)

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTX	<0.300	0.300	02/01/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 94.1 % 73.3-129

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2400	16.0	02/04/2019	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/02/2019	ND	167	83.5	200	0.387	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	179	89.3	200	4.23	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					

Surrogate: 1-Chlorooctane 86.5 % 41-142

Surrogate: 1-Chlorooctadecane 86.5 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TRC
BRIAN COOPER
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705
Fax To:

Received: 01/30/2019
Reported: 02/06/2019
Project Name: WILLOW 17 SWD
Project Number: NONE GIVEN
Project Location: NOT GIVEN

Sampling Date: 01/29/2019
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: TT 1 @ 6' (H900351-05)

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTEX	<0.300	0.300	02/01/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 93.3 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	832	16.0	02/04/2019	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/02/2019	ND	167	83.5	200	0.387	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	179	89.3	200	4.23	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					

Surrogate: 1-Chlorooctane 94.3 % 41-142

Surrogate: 1-Chlorooctadecane 93.0 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 TRC
 BRIAN COOPER
 10 DESTA DR. SUITE 150 E
 MIDLAND TX, 79705
 Fax To:

 Received: 01/30/2019
 Reported: 02/06/2019
 Project Name: WILLOW 17 SWD
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

 Sampling Date: 01/29/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Jodi Henson

Sample ID: TT 2 @ 6''-1' (H900351-06)

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTEX	<0.300	0.300	02/01/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 98.3 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3360	16.0	02/04/2019	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/02/2019	ND	167	83.5	200	0.387	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	179	89.3	200	4.23	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					

Surrogate: 1-Chlorooctane 87.2 % 41-142

Surrogate: 1-Chlorooctadecane 86.0 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TRC
BRIAN COOPER
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705
Fax To:

Received: 01/30/2019
Reported: 02/06/2019
Project Name: WILLOW 17 SWD
Project Number: NONE GIVEN
Project Location: NOT GIVEN

Sampling Date: 01/29/2019
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: TT 2 @ 2' (H900351-07)

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTX	<0.300	0.300	02/01/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 94.2 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1650	16.0	02/04/2019	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/02/2019	ND	167	83.5	200	0.387	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	179	89.3	200	4.23	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					

Surrogate: 1-Chlorooctane 88.5 % 41-142

Surrogate: 1-Chlorooctadecane 88.2 % 37.6-147

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TRC
BRIAN COOPER
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705
Fax To:

Received: 01/30/2019
Reported: 02/06/2019
Project Name: WILLOW 17 SWD
Project Number: NONE GIVEN
Project Location: NOT GIVEN

Sampling Date: 01/29/2019
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: TT 2 @ 3' (H900351-08)

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTX	<0.300	0.300	02/01/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 89.6 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	880	16.0	02/04/2019	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/02/2019	ND	167	83.5	200	0.387	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	179	89.3	200	4.23	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					

Surrogate: 1-Chlorooctane 87.1 % 41-142

Surrogate: 1-Chlorooctadecane 86.2 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

TRC
BRIAN COOPER
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705
Fax To:

Received: 01/30/2019
Reported: 02/06/2019
Project Name: WILLOW 17 SWD
Project Number: NONE GIVEN
Project Location: NOT GIVEN

Sampling Date: 01/29/2019
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: TT 3 @ 0-6" (H900351-09)

BTX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	02/01/2019	ND	1.89	94.7	2.00	1.52		
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91		
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955		
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800		
Total BTX	<0.300	0.300	02/01/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 93.7 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	1040	16.0	02/04/2019	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/02/2019	ND	167	83.5	200	0.387	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	179	89.3	200	4.23	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					

Surrogate: 1-Chlorooctane 89.4 % 41-142

Surrogate: 1-Chlorooctadecane 87.7 % 37.6-147

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Analytical Results For:

TRC
BRIAN COOPER
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705
Fax To:

Received: 01/30/2019
Reported: 02/06/2019
Project Name: WILLOW 17 SWD
Project Number: NONE GIVEN
Project Location: NOT GIVEN

Sampling Date: 01/29/2019
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: TT 3 @ 6''-1' (H900351-10)

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTEx	<0.300	0.300	02/01/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 87.5 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1120	16.0	02/04/2019	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/02/2019	ND	213	107	200	2.00	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	210	105	200	0.208	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					

Surrogate: 1-Chlorooctane 92.0 % 41-142

Surrogate: 1-Chlorooctadecane 93.7 % 37.6-147

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Analytical Results For:

 TRC
 BRIAN COOPER
 10 DESTA DR. SUITE 150 E
 MIDLAND TX, 79705
 Fax To:

 Received: 01/30/2019
 Reported: 02/06/2019
 Project Name: WILLOW 17 SWD
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

 Sampling Date: 01/29/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Jodi Henson

Sample ID: S TT @ 2.5' (H900351-11)

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	02/01/2019	ND	1.89	94.7	2.00	1.52		
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91		
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955		
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800		
Total BTEX	<0.300	0.300	02/01/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 90.4 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	80.0	16.0	02/04/2019	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/02/2019	ND	213	107	200	2.00	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	210	105	200	0.208	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					

Surrogate: 1-Chlorooctane 81.4 % 41-142

Surrogate: 1-Chlorooctadecane 83.2 % 37.6-147

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TRC
BRIAN COOPER
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705
Fax To:

Received: 01/30/2019
Reported: 02/06/2019
Project Name: WILLOW 17 SWD
Project Number: NONE GIVEN
Project Location: NOT GIVEN

Sampling Date: 01/29/2019
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: N TT @ 3' (H900351-12)

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTEX	<0.300	0.300	02/01/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 95.3 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	784	16.0	02/04/2019	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/02/2019	ND	213	107	200	2.00	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	210	105	200	0.208	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					

Surrogate: 1-Chlorooctane 95.5 % 41-142

Surrogate: 1-Chlorooctadecane 95.2 % 37.6-147

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Analytical Results For:

 TRC
 BRIAN COOPER
 10 DESTA DR. SUITE 150 E
 MIDLAND TX, 79705
 Fax To:

 Received: 01/30/2019
 Reported: 02/06/2019
 Project Name: WILLOW 17 SWD
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

 Sampling Date: 01/29/2019
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Jodi Henson

Sample ID: W1 TT @ 3' (H900351-13)

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTEX	<0.300	0.300	02/01/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 89.1 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	768	16.0	02/04/2019	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/02/2019	ND	213	107	200	2.00	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	210	105	200	0.208	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					

Surrogate: 1-Chlorooctane 93.9 % 41-142

Surrogate: 1-Chlorooctadecane 95.7 % 37.6-147

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Analytical Results For:

TRC
BRIAN COOPER
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705
Fax To:

Received: 01/30/2019
Reported: 02/06/2019
Project Name: WILLOW 17 SWD
Project Number: NONE GIVEN
Project Location: NOT GIVEN

Sampling Date: 01/29/2019
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: W2 TT @ 3' (H900351-14)

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTEX	<0.300	0.300	02/01/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 88.5 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	208	16.0	02/04/2019	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/02/2019	ND	213	107	200	2.00	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	210	105	200	0.208	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					

Surrogate: 1-Chlorooctane 91.0 % 41-142

Surrogate: 1-Chlorooctadecane 91.4 % 37.6-147

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Analytical Results For:

TRC
BRIAN COOPER
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705
Fax To:

Received: 01/30/2019
Reported: 02/06/2019
Project Name: WILLOW 17 SWD
Project Number: NONE GIVEN
Project Location: NOT GIVEN

Sampling Date: 01/29/2019
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: E1 TT @ 3' (H900351-15)

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTX	<0.300	0.300	02/01/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 88.4 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	208	16.0	02/04/2019	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/02/2019	ND	213	107	200	2.00	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	210	105	200	0.208	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					

Surrogate: 1-Chlorooctane 94.5 % 41-142

Surrogate: 1-Chlorooctadecane 95.5 % 37.6-147

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Analytical Results For:

TRC
BRIAN COOPER
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705
Fax To:

Received: 01/30/2019
Reported: 02/06/2019
Project Name: WILLOW 17 SWD
Project Number: NONE GIVEN
Project Location: NOT GIVEN

Sampling Date: 01/29/2019
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: E2 TT @ 3' (H900351-16)

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTX	<0.300	0.300	02/01/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 93.7 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	688	16.0	02/04/2019	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/02/2019	ND	213	107	200	2.00	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	210	105	200	0.208	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					

Surrogate: 1-Chlorooctane 92.0 % 41-142

Surrogate: 1-Chlorooctadecane 92.5 % 37.6-147

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Analytical Results For:

TRC
BRIAN COOPER
10 DESTA DR. SUITE 150 E
MIDLAND TX, 79705
Fax To:

Received: 01/30/2019
Reported: 02/06/2019
Project Name: WILLOW 17 SWD
Project Number: NONE GIVEN
Project Location: NOT GIVEN

Sampling Date: 01/29/2019
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: TT 2 @ 0-6" (H900351-17)

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/01/2019	ND	1.89	94.7	2.00	1.52	
Toluene*	<0.050	0.050	02/01/2019	ND	1.92	96.2	2.00	1.91	
Ethylbenzene*	<0.050	0.050	02/01/2019	ND	1.82	90.9	2.00	0.955	
Total Xylenes*	<0.150	0.150	02/01/2019	ND	5.32	88.6	6.00	0.800	
Total BTEx	<0.300	0.300	02/01/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 94.1 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	4480	16.0	02/04/2019	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/02/2019	ND	213	107	200	2.00	
DRO >C10-C28*	<10.0	10.0	02/02/2019	ND	210	105	200	0.208	
EXT DRO >C28-C36	<10.0	10.0	02/02/2019	ND					

Surrogate: 1-Chlorooctane 93.5 % 41-142

Surrogate: 1-Chlorooctadecane 96.0 % 37.6-147

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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

QR-03	The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

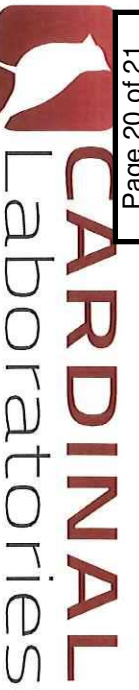
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Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

BILL TO

ANALYSIS REQUEST

Company Name: <u>TRC</u>		P.O. #: <u>606</u>	
Project Manager: <u>Brian Cooper</u>		Company: <u>TRC</u>	
Address: <u>10 Peeta Dr Suite 105</u>		Attn: <u>TRC</u>	
City: <u>Midland</u> State: <u>TX</u> Zip: <u></u>		Address: <u></u>	
Phone #: <u></u> Fax #: <u></u>		City: <u></u>	
Project #: <u></u> Project Owner: <u></u>		State: <u></u> Zip: <u></u>	
Project Location: <u>Willow 17 SWD</u>		Phone #: <u></u>	
Sampler Name: <u>Kyle Schmidt</u>		Fax #: <u></u>	

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX						DATE	TIME	CI-	TPH	BTEX
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :					
H900351														
1	TTT @ 0-6"		1											
2	TTT @ 6"-1'													
3	TTT @ 3'													
4	TTT @ 5'													
5	TTT @ 6'													
6	TTT @ 6"-1'													
7	TTT @ 2'													
8	TTT @ 3'													
9	TTT @ 0-6"													
10	TTT @ 6"-1'													

Reinquinquished By: <u>[Signature]</u>	Date: <u>1-30-19</u>	Received By: <u>[Signature]</u>	Date: <u>1-30-19</u>
Relinquished By: <u>[Signature]</u>	Date: <u>1-30-19</u>	Received By: <u>[Signature]</u>	Date: <u>1-30-19</u>

Delivered By: (Circle One)	Sample Condition	CHECKED BY: (Initials)
UPS - <u>-1.90c/ #97</u>	Cool <input checked="" type="checkbox"/> Intact <input checked="" type="checkbox"/>	<u>[Signature]</u>
Sampler - UPS - Bus - Other:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

REMARKS:
<u>6 cooper @ the solutions.com</u>
<u>Kschmidt @ the solutions.com</u>



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

BILL TO

ANALYSIS REQUEST

Company Name: TRC		P.O. #: CO6
Project Manager: Brian Cooper		Company:
Address: 10 Desh Dr Suite 105		Attn:
City: Midland	State: TX Zip:	Address:
Phone #:	Fax #:	City:
Project #:	Project Owner:	State:
Project Name: willow 17 SWP		Zip:
Project Location:		Phone #:
Sampler Name: Kyle Schneider		Fax #:

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX						ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME	CI-	TPH	BTEX
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :								
H90D351																	
11	5TT @ 2.5'																
12	4TT @ 3'																
13	41TT @ 3'																
14	42TT @ 3'																
15	41TT @ 3'																
16	42TT @ 3'																
17	TT 2 @ 0-6"																

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Relinquished By:

Date:

Received By:

Phone Result: ☐ Yes ☐ No Add'l Phone #:Fax Result: ☐ Yes ☐ No Add'l Fax #:

REMARKS:

Cooper @ trcsolutions.com
KSchneider @ trcsolutions.com

Relinquished By:

Date:

Received By:

REMARKS:

Delivered By: (Circle One)

Sampler - UPS - Bus - Other:

-1.99c / #97

Sample Condition

CHECKED BY:

Cool ☒ Intact ☒Yes ☒ No ☐

Analytical Report 621815

for
TRC Solutions, Inc

Project Manager: Jared Stoffel

Willow 17

24-APR-19

Collected By: Client



**1211 W. Florida Ave
Midland TX 79701**

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-18-28), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-18-17), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-18-18)
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-Phoenix Mobile (EPA Lab Code: AZ00901): Arizona (AZM757)
Xenco-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429), North Carolina (483)
Xenco-Lakeland: Florida (E84098)



24-APR-19

Project Manager: **Jared Stoffel**
TRC Solutions, Inc
2057 Commerce
Midland, TX 79703

Reference: XENCO Report No(s): **621815**
Willow 17
Project Address: ---

Jared Stoffel:

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) 621815. 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. 621815 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,

Kalei Stout

Midland Laboratory Director

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

TRC Solutions, Inc, Midland, TX

Willow 17

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
W1-TT @ 4'	S	04-18-19 10:25	4 ft	621815-001
W1-TT @ 5'	S	04-18-19 10:30	5 ft	621815-002
W1-TT @ 6'	S	04-18-19 10:35	6 ft	621815-003
W1-TT @ 7'	S	04-18-19 10:40	7 ft	621815-004
N-TT @ 4'	S	04-18-19 11:05	4 ft	621815-009
TT-1 @ 7'	S	04-18-19 11:30	7 ft	621815-014
TT-1 @ 8'	S	04-18-19 11:35	8 ft	621815-015
TT-2 @ 4'	S	04-18-19 11:40	4 ft	621815-016
TT-2 @ 5'	S	04-18-19 11:45	5 ft	621815-017
TT-3 @ 2'	S	04-18-19 12:10	2 ft	621815-022
E2-TT @ 4'	S	04-18-19 12:45	4 ft	621815-029
N2-TT @ 0-1'	S	04-18-19 14:30	0 - 1 ft	621815-031
S2-TT @ 0-1'	S	04-18-19 14:40	0 - 1 ft	621815-032
E3-TT @ 0-1'	S	04-18-19 14:50	0 - 1 ft	621815-033
E4-TT @ 0-1'	S	04-18-19 15:00	0 - 1 ft	621815-034
W3-TT @ 0-1'	S	04-18-19 15:10	0 - 1 ft	621815-035
W4-TT @ 0-1'	S	04-18-19 15:20	0 - 1 ft	621815-036
W5-TT @ 0-1'	S	04-18-19 15:30	0 - 1 ft	621815-037
W1-TT @ 8'	S	04-18-19 10:45	8 ft	Not Analyzed
W1-TT @ 9'	S	04-18-19 10:50	9 ft	Not Analyzed
W1-TT @ 10'	S	04-18-19 10:55	10 ft	Not Analyzed
W1-TT @ 11'	S	04-18-19 11:00	11 ft	Not Analyzed
N-TT @ 5'	S	04-18-19 11:10	5 ft	Not Analyzed
N-TT @ 6'	S	04-18-19 11:15	6 ft	Not Analyzed
N-TT @ 7'	S	04-18-19 11:20	7 ft	Not Analyzed
N-TT @ 8'	S	04-18-19 11:25	8 ft	Not Analyzed
TT-2 @ 6'	S	04-18-19 11:50	6 ft	Not Analyzed
TT-2 @ 7'	S	04-18-19 11:55	7 ft	Not Analyzed
TT-2 @ 8'	S	04-18-19 12:00	8 ft	Not Analyzed
TT-2 @ 9'	S	04-18-19 12:05	9 ft	Not Analyzed
TT-3 @ 3'	S	04-18-19 12:15	3 ft	Not Analyzed
TT-3 @ 4'	S	04-18-19 12:20	4 ft	Not Analyzed
TT-3 @ 5'	S	04-18-19 12:25	5 ft	Not Analyzed
TT-3 @ 6'	S	04-18-19 12:30	6 ft	Not Analyzed
TT-3 @ 7'	S	04-18-19 12:35	7 ft	Not Analyzed
TT-3 @ 8'	S	04-18-19 12:40	8 ft	Not Analyzed
E2-TT @ 5'	S	04-18-19 14:50	5 ft	Not Analyzed



CASE NARRATIVE

Client Name: TRC Solutions, Inc

Project Name: Willow 17

Project ID: ---
Work Order Number(s): 621815

Report Date: 24-APR-19
Date Received: 04/22/2019

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3086557 Chloride by EPA 300

Lab Sample ID 621815-036 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered below QC limits in the Matrix Spike. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 621815-002, -003, -004, -005, -009, -014, -015, -016, -017, -018, -022, -029, -031, -032, -033, -034, -035, -036.

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



Certificate of Analysis Summary 621815

TRC Solutions, Inc, Midland, TX

Project Name: Willow 17



Project Id: ---
Contact: Jared Stoffel
Project Location: ---

Date Received in Lab: Mon Apr-22-19 10:26 am
Report Date: 24-APR-19
Project Manager: Kalei Stout

<i>Analysis Requested</i>	<i>Lab Id:</i>	621815-001	621815-002	621815-003	621815-004	621815-009	621815-014
	<i>Field Id:</i>	W1-TT @ 4'	W1-TT @ 5'	W1-TT @ 6'	W1-TT @ 7'	N-TT @ 4'	TT-1 @ 7'
	<i>Depth:</i>	4- ft	5- ft	6- ft	7- ft	4- ft	7- ft
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Apr-18-19 10:25	Apr-18-19 10:30	Apr-18-19 10:35	Apr-18-19 10:40	Apr-18-19 11:05	Apr-18-19 11:30
Chloride by EPA 300	<i>Extracted:</i>	Apr-22-19 14:00	Apr-22-19 16:00	Apr-22-19 16:00	Apr-22-19 16:00	Apr-22-19 16:00	Apr-22-19 16:00
	<i>Analyzed:</i>	Apr-22-19 19:49	Apr-22-19 20:45	Apr-22-19 20:51	Apr-22-19 20:57	Apr-22-19 21:22	Apr-22-19 21:28
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		1360 99.0	1750 50.3	935 49.8	488 50.0	581 50.0	1010 50.0

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Kalei Stout
Midland Laboratory Director



Certificate of Analysis Summary 621815

TRC Solutions, Inc, Midland, TX

Project Name: Willow 17



Project Id: ---
Contact: Jared Stoffel
Project Location: ---

Date Received in Lab: Mon Apr-22-19 10:26 am
Report Date: 24-APR-19
Project Manager: Kalei Stout

<i>Analysis Requested</i>	<i>Lab Id:</i>	621815-015	621815-016	621815-017	621815-022	621815-029	621815-031
	<i>Field Id:</i>	TT-1 @ 8'	TT-2 @ 4'	TT-2 @ 5'	TT-3 @ 2'	E2-TT @ 4'	N2-TT @ 0-1'
	<i>Depth:</i>	8- ft	4- ft	5- ft	2- ft	4- ft	0-1 ft
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Apr-18-19 11:35	Apr-18-19 11:40	Apr-18-19 11:45	Apr-18-19 12:10	Apr-18-19 12:45	Apr-18-19 14:30
Chloride by EPA 300	<i>Extracted:</i>	Apr-22-19 16:00	Apr-22-19 16:00	Apr-22-19 16:00	Apr-22-19 16:00	Apr-22-19 16:00	Apr-22-19 16:00
	<i>Analyzed:</i>	Apr-22-19 21:34	Apr-22-19 21:40	Apr-22-19 21:46	Apr-22-19 22:17	Apr-23-19 08:48	Apr-23-19 08:53
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		400 50.0	1710 99.6	129 49.8	584 25.1	69.0 24.9	98.2 25.0

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Kalei Stout
Midland Laboratory Director



Certificate of Analysis Summary 621815

TRC Solutions, Inc, Midland, TX

Project Name: Willow 17



Project Id: ---
Contact: Jared Stoffel
Project Location: ---

Date Received in Lab: Mon Apr-22-19 10:26 am
Report Date: 24-APR-19
Project Manager: Kalei Stout

<i>Analysis Requested</i>	<i>Lab Id:</i>	621815-032	621815-033	621815-034	621815-035	621815-036	621815-037
	<i>Field Id:</i>	S2-TT @ 0-1'	E3-TT @ 0-1'	E4-TT @ 0-1'	W3-TT @ 0-1'	W4-TT @ 0-1'	W5-TT @ 0-1'
	<i>Depth:</i>	0-1 ft	0-1 ft	0-1 ft	0-1 ft	0-1 ft	0-1 ft
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Apr-18-19 14:40	Apr-18-19 14:50	Apr-18-19 15:00	Apr-18-19 15:10	Apr-18-19 15:20	Apr-18-19 15:30
Chloride by EPA 300	<i>Extracted:</i>	Apr-22-19 16:00	Apr-22-19 16:00	Apr-22-19 16:00	Apr-22-19 16:00	Apr-22-19 16:00	Apr-23-19 16:00
	<i>Analyzed:</i>	Apr-23-19 08:59	Apr-23-19 09:04	Apr-23-19 09:09	Apr-23-19 09:14	Apr-22-19 21:52	Apr-23-19 22:10
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		413 50.0	167 25.2	220 50.2	714 24.9	142 5.03	137 4.96

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Kalei Stout
Midland Laboratory Director

- 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

SQL Method Quantitation Limit

LOQ Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample

BLK

Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample

BKSD/LCSD

Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate

MS

Matrix Spike

MSD: Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

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



BS / BSD Recoveries



Project Name: Willow 17

Work Order #: 621815, 621815

Project ID: ---

Analyst: CHE

Date Prepared: 04/22/2019

Date Analyzed: 04/22/2019

Lab Batch ID: 3086555

Sample: 7676296-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Chloride	<5.00	250	251	100	250	248	99	1	90-110	20	

Analyst: CHE

Date Prepared: 04/22/2019

Date Analyzed: 04/22/2019

Lab Batch ID: 3086557

Sample: 7676298-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Chloride	<0.858	250	252	101	250	254	102	1	90-110	20	

Analyst: CHE

Date Prepared: 04/23/2019

Date Analyzed: 04/23/2019

Lab Batch ID: 3086701

Sample: 7676388-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Chloride	<5.00	250	246	98	250	249	100	1	90-110	20	

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

Blank Spike Recovery [D] = $100 * (C)/[B]$

Blank Spike Duplicate Recovery [G] = $100 * (F)/[E]$

All results are based on MDL and Validated for QC Purposes



Form 3 - MS / MSD Recoveries



Project Name: Willow 17

Work Order #: 621815

Project ID: ---

Lab Batch ID: 3086555

QC- Sample ID: 621249-004 S

Batch #: 1 Matrix: Soil

Date Analyzed: 04/22/2019

Date Prepared: 04/22/2019

Analyst: CHE

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	791	250	1020	92	250	1010	88	1	90-110	20	X

Lab Batch ID: 3086555

QC- Sample ID: 621249-008 S

Batch #: 1 Matrix: Soil

Date Analyzed: 04/22/2019

Date Prepared: 04/22/2019

Analyst: CHE

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	457	250	713	102	250	697	96	2	90-110	20	

Lab Batch ID: 3086557

QC- Sample ID: 621156-014 S

Batch #: 1 Matrix: Soil

Date Analyzed: 04/22/2019

Date Prepared: 04/22/2019

Analyst: CHE

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	9.98	248	176	67	248	244	94	32	90-110	20	XF

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

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

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



Form 3 - MS / MSD Recoveries



Project Name: Willow 17

Work Order #: 621815

Project ID: ---

Lab Batch ID: 3086557

QC- Sample ID: 621815-036 S

Batch #: 1 Matrix: Soil

Date Analyzed: 04/22/2019

Date Prepared: 04/22/2019

Analyst: CHE

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	142	252	320	71	252	381	95	17	90-110	20	X

Lab Batch ID: 3086701

QC- Sample ID: 619598-024 S

Batch #: 1 Matrix: Soil

Date Analyzed: 04/24/2019

Date Prepared: 04/23/2019

Analyst: CHE

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	338	250	578	96	250	565	91	2	90-110	20	

Lab Batch ID: 3086701

QC- Sample ID: 620657-024 S

Batch #: 1 Matrix: Soil

Date Analyzed: 04/24/2019

Date Prepared: 04/23/2019

Analyst: CHE

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	7800	248	10100	NC	248	10100	NC	0	90-110	20	X

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

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

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

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

Chain of Custody

Work Order No.

5/28/20

Project Manager:	Jade Stoffel	Bill to: (if different)	Becky Haskell
Company Name:	TRE	Company Name:	COG
Address:	10 Dextra Dr STE 150E	Address:	
City, State ZIP:	Middletown, TX 74705	City, State ZIP:	
Phone:	(432) 238-3005	Email:	jstoffel@treco.com

Work Order Comments	
Program: UST/ST <input type="checkbox"/> PRP <input type="checkbox"/> Brownfields <input type="checkbox"/> RRC <input type="checkbox"/> Superfund <input type="checkbox"/>	
State of Project:	
Reporting Level II <input type="checkbox"/> Level III <input type="checkbox"/> PST/UST <input type="checkbox"/> TRRP <input type="checkbox"/> Level IV <input type="checkbox"/>	
Deliverables: EDD <input type="checkbox"/> ADaPT <input type="checkbox"/> Other:	



Project Name:	William 17	Turn Around
Project Number:	1	Routine <input type="checkbox"/>
P.O. Number:	1	Rush: 24 hr.
Sampler's Name:	S. Stoppel	Due Date: 4/23/91

SAMPLE RECEIPT		Temp Blank:	Yes	No	Wet Ice:	Yes	No
Temperature (°C):	0.50.9				Thermometer ID		
Received Inact:	Yes No				VB		
Cooler Custody Seals:	Yes No N/A				Correction Factor:	-0.1	
Sample Custody Seals:	Yes No N/A				Total Containers:		

[illegible][illegible]

Circle Method(s) and Metal(s) to be analyzed	200.8 / 6020:	200.7 / 6010
8RCRA	13PPM	Texas 11
TCLP / SPLP 6010: 8RCRA	Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Ti U	Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr H Sn U V Zn
	1631 / 245.1 / 7470 / 7471 : Hg	

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 losses are due to circumstances beyond the control of Xenco. A minimum charge of \$75.00 will be applied to each project and a charge of \$5 for each sample submitted to Xenco, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
		11-22-19			
		4			
		6			



Chain of Custody

Work Order No: 621615

Houston, TX (281) 240-4200 Dallas, TX (214) 902-0300 San Antonio, TX (210) 509-3334
Midland, TX (432-704-5440) El Paso, TX (915) 585-3443 Lubbock, TX (806) 794-1296
Hobbs, NM (575-392-7550) Phoenix, AZ (480-355-0900) Atlanta, GA (770-449-8800) Tampa, FL (813-620-2000)

www.xenco.com Page 2 of 4

Project Manager:	Jade Stoffel	Bill to: (if different)	Bucky Haskell
Company Name:	TRC	Company Name:	COG
Address:	10 Deste Dr STE 150E	Address:	
City, State ZIP:	Midland, TX 79705	City, State ZIP:	
Phone:	(432) 238-3003	Email:	jstoffel@freesolutions.com

Program: <input type="checkbox"/> PST <input type="checkbox"/> PRP <input type="checkbox"/> Brownfields <input type="checkbox"/> RRC <input type="checkbox"/> Superfund <input type="checkbox"/>	
State of Project:	
Reporting Level II <input type="checkbox"/> Level III <input type="checkbox"/> PST/UST <input type="checkbox"/> TRRP <input type="checkbox"/> Level IV <input type="checkbox"/>	
Deliverables: EDD <input type="checkbox"/> ADAPT <input type="checkbox"/> Other:	

Project Name:	William 17	Turn Around		ANALYSIS REQUEST																Work Order Notes					
Project Number:		Route	<input type="checkbox"/>																						
P.O. Number:		Rush:	24 hr.																						
Sampler's Name:	S. Stoffel	Due Date:	4/23/11																						
SAMPLE RECEIPT				Temp Blank:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Wet Ice:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																		
Temperature (°C):				0.50.4	Thermometer:																				
Received Intact:				Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Correction Factor:																				
Cooler Custody Seals:				Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Total Containers:																				
Sample Custody Seals:				Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																					
Sample Identification				Matrix	Date Sampled	Time Sampled	Depth	Number of Containers																	
N-TT @ 6'				S-1	4/13/11	11:15	6'	Chloride (E300)																	
N-TT @ 7'						11:20	7'	Hold																	
N-TT @ 8'						11:25	8'																		
TT-1 @ 7'						11:30	7'																		
TT-1 @ 8'						11:35	8'																		
TT-1 @ 9'						11:40	4'																		
TT-2 @ 4'						11:45	5'																		
TT-2 @ 5'						11:50	6'																		
TT-2 @ 6'						11:55	7'																		
TT-2 @ 7'						12:00	8'																		
TT-2 @ 8'																									

Total 200.7 / 6010	200.8 / 6020:	8RCRA 13PPM Texas 11	Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Ti Sn U V Zn
Circle Method(s) and Metal(s) to be analyzed		TCLP / SPLP 6010:	8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Ti U

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Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1		4/22/11	2		
3		10:10	4		
5			6		



Chain of Custody

Work Order No: 1021815

Houston, TX (281) 240-4200 Dallas, TX (214) 902-0300 San Antonio, TX (210) 509-3334
Midland, TX (432-704-5440) El Paso, TX (915) 585-3443 Lubbock, TX (806) 794-1296
Hobbs, NM (575-392-7550) Phoenix, AZ (480-355-0900) Atlanta, GA (770-449-8800) Tampa, FL (813-620-2000)

www.xenco.com Page 3 of 4

Project Manager:	Jade Stoffel	Bill to: (if different)	Bucky Haskell
Company Name:	IRE	Company Name:	COG
Address:	10 Deste Dr STE 150E	Address:	
City, State ZIP:	Midland, TX 79705	City, State ZIP:	
Phone:	(432) 238-3003	Email:	jstoffel@fresolutions.com

Work Order Comments	
Program: <input type="checkbox"/> PST <input type="checkbox"/> PRP <input type="checkbox"/> Brownfields <input type="checkbox"/> RRC <input type="checkbox"/> Superfund <input type="checkbox"/>	
State of Project:	
Reporting Level II <input type="checkbox"/> Level III <input type="checkbox"/> PST/UST <input type="checkbox"/> TRRP <input type="checkbox"/> Level IV <input type="checkbox"/>	
Deliverables: EDD <input type="checkbox"/> ADAPT <input type="checkbox"/> Other: <input type="checkbox"/>	

Project Name:	W/11/12/17	Turn Around	<input type="checkbox"/> Routine <input type="checkbox"/> Rush: 24 hr.
Project Number:	1		
P.O. Number:			
Sampler's Name:	S. Stoffel	Due Date:	4/23/17
SAMPLE RECEIPT			
Temp Blank:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Wet Ice:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Temperature (°C):	0.50, 0.9	Thermometer:	0.1
Received intact:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Correction Factor:	0.1
Cooler Custody Seals:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Total Containers:	
Sample Custody Seals:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	ANALYSIS REQUEST													Work Order Notes
TT-2 @ 9'	Soil	4/18/17	1205	9'	1	Chloride (E300)												
TT-3 @ 2'			1210	2'		X												Con. if 2' > 600
TT-3 @ 3'			1215	3'		X												Con. if 3' > 600
TT-3 @ 4'			1220	4'		X												Con. if 4' > 600
TT-3 @ 5'			1225	5'		X												Con. if 5' > 600
TT-3 @ 6'			1230	6'		X												Con. if 6' > 600
TT-3 @ 7'			1235	7'		X												Con. if 7' > 600
TT-3 @ 8'			1240	8'		X												Con. if 8' > 600
TT-3 @ 9'			1245	9'		X												Con. if 9' > 600
TT-3 @ 10'			1250	10'		X												Con. if 10' > 600

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Ti Sn U V Zn
Circle Method(s) and Metal(s) to be analyzed TCLP / SPLP 6010: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Ti U 1631 / 245.1 / 7470 / 7471 : Hg

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Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
<u>[Signature]</u>	<u>[Signature]</u>	4/18/17	<u>[Signature]</u>	<u>[Signature]</u>	4/18/17

Chain of Custody



Work Order No: 77915

Project Manager:	Sara Stoffel	Bill to: (if different)	Betsy Haskell
Company Name:	TRC	Company Name:	COG
Address:	10 Destr Dr STE 150E	Address:	
City, State ZIP:	Mckinney, TX 74705	City, State ZIP:	
Phone:	(432) 238-3005	Email:	sstoffel@trcsolutions.com

Work Order Comments	
Program: UST/PST <input type="checkbox"/> PRP <input type="checkbox"/> Brownfields <input type="checkbox"/> RRC <input type="checkbox"/> Superfund <input type="checkbox"/>	
State of Project:	
Reporting Level I <input type="checkbox"/> Level II <input type="checkbox"/> Level III <input type="checkbox"/> PST/UST <input type="checkbox"/> TRRP <input type="checkbox"/> Level IV <input type="checkbox"/>	
Deliverables: EDD <input type="checkbox"/> ADAPT <input type="checkbox"/> Other:	

Project Name:				Turn Around				ANALYSIS REQUEST												Work Order Notes					
Project Number:				Routine <input type="checkbox"/>																					
P.O. Number:				Rush: 24 hr.																					
Sampler's Name:				Due Date: 4/23/11																					
SAMPLE RECEIPT				Temp Blank:		Yes <input checked="" type="radio"/> No <input type="radio"/>		Wet Ice:		Yes <input checked="" type="radio"/> No <input type="radio"/>														TAT starts the day received by the lab, if received by 4:30pm	
Temperature (°C):				ESD-1		Thermometer ID																			
Received In tact:				Yes <input checked="" type="radio"/> No <input type="radio"/>		Correction Factor:		-0.1																	
Cooler Custody Seals:				Yes <input checked="" type="radio"/> No <input type="radio"/> N/A		Total Containers:																			
Sample Custody Seals:				Yes <input checked="" type="radio"/> No <input type="radio"/>																					
Sample Identification				Matrix		Date Sampled		Time Sampled		Depth		Number of Containers												Sample Comments	
N2-TT @ D-1'				Soil		4/19/11		1430		D-1'		1													
S2-TT @ D-1'								1440				X													
E3-TT @ D-1'								1450				X													
E4-TT @ D-1'								1500				X													
W3-TT @ D-1'								1510				X													
W4-TT @ D-1'								1520				X													
W5-TT @ D-1'								1530				X													
																Can of W3-TT @ D-1' 7.600									

Total	200.7 / 6010	200.8 / 6020:	8RCRA	13PPM	Texas	11	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Mg	Mn	Mo	Ni	K	Se	Ag	SiO2	Na	Sr	Tl	Sn	U	V	Zn
<i>Circle Method(s) and Metal(s) to be analyzed</i>			TCLP	/SPLP	6010:	8RCRA	Sb	As	Ba	Be	Cd	Cr	Co	Cu	Pb	Mn	Mo	Ni	Se	Ag	Tl	U												
<p>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 losses are due to circumstances beyond the control of Xenco. A minimum charge of \$75.00 will be applied to each project and a charge of \$5 for each sample submitted to Xenco, but not analyzed. These terms will be enforced unless previously negotiated.</p>																																		
<p>1631 / 245.1 / 7470 / 7471 : Hg</p>																																		

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
		9/22/19			
		10:20			

Revised Date 05/18/18 Rev. 2018



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In



Client: TRC Solutions, Inc

Date/ Time Received: 04/22/2019 10:26:00 AM

Work Order #: 621815

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)?	.4
#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?	Yes
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	No
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes
#13 Samples properly preserved?	Yes
#14 Sample container(s) intact?	Yes
#15 Sufficient sample amount for indicated test(s)?	Yes
#16 All samples received within hold time?	Yes
#17 Subcontract of sample(s)?	N/A
#18 Water VOC samples have zero headspace?	N/A

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

Analyst:

PH Device/Lot#:

Checklist completed by:

Brianna Teel

Brianna Teel

Date: 04/22/2019

Checklist reviewed by:

Kalei Stout

Kalei Stout

Date: 04/22/2019

Photographic Documentation

Photograph No. 1

Date:

10/31/2018

Direction:

West

Description:

**View of the initial
response to the
Release.**



Photograph No. 2

Date:

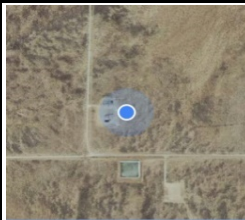
1/3/2019

Direction:

West

Description:

**View of the
impacted area.**



Jan 3, 2019 at 11:44:41 AM
N 32.124516°, W 104.102106°
Carlsbad, NM 88220



Photographic Documentation

Photograph No.

3

Date:

11/21/2018

Direction:

West

Description:

View of TT-2



Photograph No.

4

Date:

11/21/2018

Direction:

West

Description:

View of the impacted area.



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	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party	OGRID
Contact Name	Contact Telephone
Contact email	Incident # (assigned by OCD)
Contact mailing address	

Location of Release Source

Latitude _____ Longitude _____
(NAD 83 in decimal degrees to 5 decimal places)

Site Name	Site Type
Date Release Discovered	API# (if applicable)

Unit Letter	Section	Township	Range	County

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

Nature and Volume of Release

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

<input type="checkbox"/> Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? <input type="checkbox"/> Yes <input type="checkbox"/> No	If YES, for what reason(s) does the responsible party consider this a major release?
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?	

Initial Response

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

<input type="checkbox"/> The source of the release has been stopped. <input type="checkbox"/> The impacted area has been secured to protect human health and the environment. <input type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. <input type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.	
If all the actions described above have <u>not</u> 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: _____	Title: _____
Signature: <u>Delann Opreant</u>	Date: _____
email: _____	Telephone: _____
<u>OCD Only</u>	
Received by: _____	Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	2RP-5044
Facility ID	
Application ID	

Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	50-75 (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did the release impact areas not on an exploration, development, production, or storage site?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

Characterization Report Checklist: *Each of the following items must be included in the report.*

- ☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- ☐ Field data
- ☒ Data table of soil contaminant concentration data
- ☒ Depth to water determination
- ☒ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
- ☐ Boring or excavation logs
- ☒ Photographs including date and GIS information
- ☒ Topographic/Aerial maps
- ☒ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	2RP-5044
Facility ID	
Application ID	

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: Rebecca HaskellTitle: Senior HSE CoordinatorSignature: Rebecca HaskellDate: 4/26/19email: rhaskell@concho.comTelephone: 432-818-2372**OCD Only**

Received by: _____

Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
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Remediation Plan

Remediation Plan Checklist: *Each of the following items must be included in the plan.*

- ☒ Detailed description of proposed remediation technique
- ☒ Scaled sitemap with GPS coordinates showing delineation points
- ☒ Estimated volume of material to be remediated
- ☒ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- ☒ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: *Each of the following items must be confirmed as part of any request for deferral of remediation.*

- ☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.
- ☐ Extents of contamination must be fully delineated.
- ☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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: Rebecca HaskellTitle: Senior HSE CoordinatorSignature: Rebecca HaskellDate: 4/26/19email: rhaskell@concho.comTelephone: 432-818-2372**OCD Only**

Received by: _____ Date: _____

☐ Approved ☐ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature: _____

Date: _____

Incident ID	
District RP	
Facility ID	
Application ID	

Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

Closure Report Attachment Checklist: *Each of the following items must be included in the closure report.*

- ☐ A scaled site and sampling diagram as described in 19.15.29.11 NMAC
- ☐ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)
- ☐ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)
- ☐ Description of remediation activities

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. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: _____ Title: _____

Signature: _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: _____ Date: _____

Printed Name: _____ Title: _____