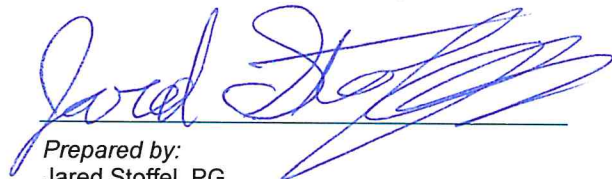




Q13EC-190730-C-1410

# Remediation Summary and Site Closure Request

July 25, 2019

  
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Willow 17 State SWD #001  
(2RP-5044)

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## 1.0 Introduction and Background Information

TRC Environmental Corporation (TRC), on behalf of COG Operating, LLC (COG), has prepared this *Remediation Summary and Site Closure Request* 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 N 32.12489°, W 104.10216°. A topographical map is provided as **Figure 1**. Photographs are provided in the photolog as **Appendix A**.

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 (12,000) 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 B**.

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. An aerial map of the site location is provided as **Figure 2**.

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 the BLM publicly available Karst Potential Map, provided as **Figure 3**. The NMOCD guidance on the regulation of releases in ‘medium karst’ areas is unclear. Subsequently, 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

## 2.0 Initial Delineation Investigation

January 3, 2019, an initial investigation was conducted at the Release Site. During the initial investigation activities, 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 4 – Site & Sample Location Map – Initial Investigation**.

On January 11, 2019, a second investigation was conducted at the Release Site. During the investigation, 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 5 – 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 above 600 mg/kg in each of the 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'. In addition, 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 soil sample W3-TT @ 0-1’.

### 3.0 NMOCD Approved Workplan

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. In addition, 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 was to be excavated to an approximate depth of at least seven (7) feet bgs.
- Impacted soil in the area represented by test trench W1-TT was to be excavated to an approximate depth of at least six (6) feet bgs.
- Impacted soil in the area represented by test trench TT-2 was to 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 was to be excavated to an approximate depth of at least three (3) feet bgs.
- Impacted soil in the area represented by test trench TT-3 was to 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 were to be collected to ensure the lateral extent of the impact had 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 had been removed.
- Impacted soil excavated during remediation activities was to 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 was to be backfilled with locally-sourced, non-impacted ‘like’ material and returned to grade.

On May 7, 2019, the proposed workplan was accepted as it was proposed by the NMOCD.

### 4.0 Summary of Soil Remediation Activities

On June 10, 2019, remediation activities commenced at the Release Site. The excavation began in the northwest corner of the impacted area, and excavation activities continued to the east, and to the south. Excavated soil was stockpiled on polyurethane liners pending final disposition at an

NMOCD approved disposal facility. On June 11, 2019, three (3) five-point composite floor confirmation samples (FL-1-3, FL-2-3, and FL-3-3) and one (1) five-point composite sidewall confirmation sample (SW-N1-1.5) were collected from the excavated area. On June 13, 2019, two (2) five-point composite sidewall confirmation samples (SW-W1-1 and SW-W2-0.25) were collected from the excavated area. On June 17, 2019, four (4) five-point composite floor confirmation samples (FL-5-7, FL-7-3, FL-8-1.5, and FL-9-3) and one (1) five-point composite sidewall confirmation soil sample (SW-E2-1.5) were collected from the excavated area. Soil samples collected between June 11 and June 17<sup>th</sup> were submitted to Cardinal Laboratories in Hobbs, NM, for chloride and/or TPH and BTEX analyses. All soil samples submitted for TPH and BTEX analyses were below the laboratory detection limits for each constituent. Each soil sample, with the exception of FL-5-7 and FL-8-1.5, was below NMOCD regulatory guidelines for chloride concentrations. The areas represented by soil samples FL-5-7 and FL-8-1.5 were advanced to greater depths in those areas, and excavation continued to the south and east.

On the second half of June 17, June 18, and June 19, 2019, three (3) five-point composite floor confirmation soil samples (FL-4-8.5, FL-5-8, and FL-6-6) and two (2) five-point composite sidewall confirmation soil samples (SW-E1-3.5 and SW-S1-0.75) were collected and submitted for chloride and/or TPH and BTEX analyses. Each soil sample submitted for TPH and BTEX analyses exhibited TPH and BTEX concentrations below the laboratory detection limits. Each soil sample submitted for chloride analysis exhibited chloride concentrations below NMOCD regulatory guidelines with the exception of FL-4-8.5, FL-5-8, and FL-6-6. The areas represented by soil samples FL-4-8.5, FL-5-8, and FL-6-6 were further excavated to greater depths, and the excavation continued to the south.

On June 20, 2019, four (4) five-point composite floor confirmation soil samples (FL-4-9, FL-5-8.5, FL-6-6.5, and FL-8-3.5) were collected and submitted for chloride analysis. Each soil sample exhibited chloride concentrations below NMOCD regulatory guidelines. Confirmation soil sample locations are depicted in **Figure 6**. A summary of analytical data is shown in **Table 1**. Laboratory analytical reports are provided in **Appendix C**.

## 5.0 Site Closure Request

Remediation activities were conducted in accordance with NMCOD guidelines and in adherence to the NMOCD approved workplan. Laboratory analytical results from excavation confirmation soil samples indicated TPH, BTEX, and/or chloride concentrations were below the NMOCD regulatory guidelines in the submitted confirmation soil samples. The impacted soil was transported to the R360 Red Bluff Facility, and the Site was returned to grade with locally sourced non-impacted backfill material. Based on laboratory analytical results and field activities conducted to date, TRC recommends COG provide copies of this Remediation Summary and Site Closure Request to the NMOCD and BLM and request closure status to the Willow 17 State SWD #001.

## 6.0 Limitation

TRC has prepared this Remediation Summary and Site Closure Request to the best of its ability. No other warranty, expressed or implied, is made or intended.

TRC has examined and relied upon documents referenced in the report and has relied on oral statements made by certain individuals. TRC has not conducted an independent examination of the facts contained in referenced materials and statements. We have presumed the genuineness of the documents and that the information provided in documents or statements is true and accurate. TRC has prepared this report, in a professional manner, using the degree of skill and care exercised by similar environmental consultants. TRC also notes that the facts and conditions referenced in this report may change over time and the conclusions and recommendations set forth herein are applicable only to the facts and conditions as described at the time of this report.

This report has been prepared for the benefit of COG Operating, LLC. The information contained in this report, including all exhibits and attachments, may not be used by any other party without the express consent of TRC and/or COG Operating, LLC.

## 7.0 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: Jim Amos  
U.S. Department of the Interior  
Carlsbad Field Office  
620 E Greene Street  
Carlsbad, New Mexico 88220
- 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

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 <sub>6</sub> -C <sub>10</sub> (mg/kg)	DRO C <sub>10</sub> -C <sub>28</sub> (mg/kg)	GRO + DRO C <sub>6</sub> -C <sub>28</sub> (mg/kg)	ORO C <sub>28</sub> C <sub>35</sub> (mg/kg)	TPH C <sub>6</sub> -C <sub>35</sub> (mg/kg)	Chloride (mg/kg)
SP-1 @ S	1/3/19	Surface	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	20,600
SP-1 @ 6"	1/11/19	6"	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	3,600
W1 @ S	1/3/19	Surface	Excavated	<0.050	<0.300	10.6	<10.0	10.6	<10.0	10.6	41,600
W1B @ S	1/3/19	Surface	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	15,600
E1 @ S	1/3/19	Surface	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	14,400
N1 @ S	1/3/19	Surface	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	2,440
S1 @ S	1/3/19	Surface	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	18,000
S1B @ S	1/3/19	Surface	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	40,400
SP-2 @ S	1/3/19	Surface	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	12,202
SP-2 @ 6"	1/11/19	Surface	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	1,970
S2 @ S	1/3/19	Surface	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	8,320
N2 @ S	1/3/19	Surface	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32,800
W2 @ S	1/11/19	Surface	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	736
E2 @ S	1/11/19	Surface	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	896
TT1 @ 0-6"	1/29/19	0-6"	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	3,600
TT1 @ 6"-1'	1/29/19	6"-1'	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	2,200
TT1 @ 3'	1/29/19	3'	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	1,440
TT1 @ 5'	1/29/19	5'	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	2,400
TT1 @ 6'	1/29/19	6'	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	832
TT-1 @ 7'	4/18/19	7'	Excavated	-	-	-	-	-	-	-	1,010
TT-1 @ 8'	4/18/19	8'	Excavated	-	-	-	-	-	-	-	400
TT2 @ 0-6"	1/29/19	0-6"	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	4,480
TT2 @ 6"-1'	1/29/19	6"-1'	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	3,360
TT2 @ 2'	1/29/19	2'	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	1,650
TT2 @ 3'	1/29/19	3'	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	880
NMOCD Closure Criteria				10	50	-	-	1,000	-	2,500	600

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 <sub>6</sub> -C <sub>10</sub> (mg/kg)	DRO C <sub>10</sub> -C <sub>28</sub> (mg/kg)	GRO + DRO C <sub>6</sub> -C <sub>28</sub> (mg/kg)	ORO C <sub>28</sub> C <sub>35</sub> (mg/kg)	TPH C <sub>6</sub> -C <sub>35</sub> (mg/kg)	Chloride (mg/kg)
TT-2 @ 4'	4/18/19	4'	Excavated	-	-	-	-	-	-	-	1,710
TT-2 @ 5'	4/18/19	5'	Excavated	-	-	-	-	-	-	-	129
TT3 @ 0-6"	1/29/19	0-6"	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	1,040
TT3 @ 6"-1'	1/29/19	6"-1'	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	1,120
TT-3 @ 2'	4/18/19	2'	Excavated	-	-	-	-	-	-	-	584
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'	Excavated	<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'	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	768
W1-TT @ 4'	4/18/19	4'	Excavated	-	-	-	-	-	-	-	1,360
W1-TT @ 5'	4/18/19	5'	Excavated	-	-	-	-	-	-	-	1,750
W1-TT @ 6'	4/18/19	6'	Excavated	-	-	-	-	-	-	-	935
W1-TT @ 7'	4/18/19	7'	Excavated	-	-	-	-	-	-	-	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'	Excavated	<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
NMOCD Closure Criteria				10	50	-	-	1,000	-	2,500	600

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 <sub>6</sub> -C <sub>10</sub> (mg/kg)	DRO C <sub>10</sub> -C <sub>28</sub> (mg/kg)	GRO + DRO C <sub>6</sub> -C <sub>28</sub> (mg/kg)	ORO C <sub>28</sub> C <sub>35</sub> (mg/kg)	TPH C <sub>6</sub> -C <sub>35</sub> (mg/kg)	Chloride (mg/kg)
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'	Excavated	-	-	-	-	-	-	-	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
SW-N1-1.5	6/11/19	1.5'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	224
FL-1-3	6/11/19	3'	In-Situ	-	-	-	-	-	-	-	224
FL-2-3	6/11/19	3'	In-Situ	-	-	-	-	-	-	-	160
FL-3-3	6/11/19	3'	In-Situ	-	-	-	-	-	-	-	208
SW-W1-1	6/13/19	1'	In-Situ	-	-	-	-	-	-	-	240
SW-W2-0.25	6/13/19	0.25'	In-Situ	-	-	-	-	-	-	-	400
SW-E2-1.5	6/17/19	1.5'	In-Situ	-	-	-	-	-	-	-	64.0
FL-5-7	6/17/19	7'	Excavated	-	-	-	-	-	-	-	624
FL-7-3	6/17/19	3'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	304
FL-8-1.5	6/17/19	1.5'	Excavated	-	-	-	-	-	-	-	880
FL-9-3	6/17/19	3'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	192
SW-E1-3.5	6/17/19	3.5'	In-Situ	-	-	-	-	-	-	-	576
SW-S1-0.75	6/18/19	0.75'	In-Situ	-	-	-	-	-	-	-	432
FL-4-8.5	6/19/19	8.5'	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	704
FL-5-8	6/19/19	8'	Excavated	-	-	-	-	-	-	-	640
FL-6-6	6/19/19	6'	Excavated	-	-	-	-	-	-	-	656
FL-8-3.5	6/20/19	3.5'	In-Situ	-	-	-	-	-	-	-	480
FL-4-9	6/20/19	9'	In-Situ	-	-	-	-	-	-	-	560
FL-5-8.5	6/20/19	8.5'	In-Situ	-	-	-	-	-	-	-	560
FL-6-6.5	6/20/19	6.5'	In-Situ	-	-	-	-	-	-	-	592
NMOCD Closure Criteria				10	50	-	-	1,000	-	2,500	600





**LEGEND:**

- |   |   |
|---|---|
| <span style="color: red;">●</span> Site Location  |  Non-Industrial Building |
| <span style="color: blue;">○</span> Fresh Water Well  |  Municipal Well Field    |
|  100-Year Floodplain |  Subsurface Mine         |
|  High/Critical Karst | <span style="color: red;">○</span> 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

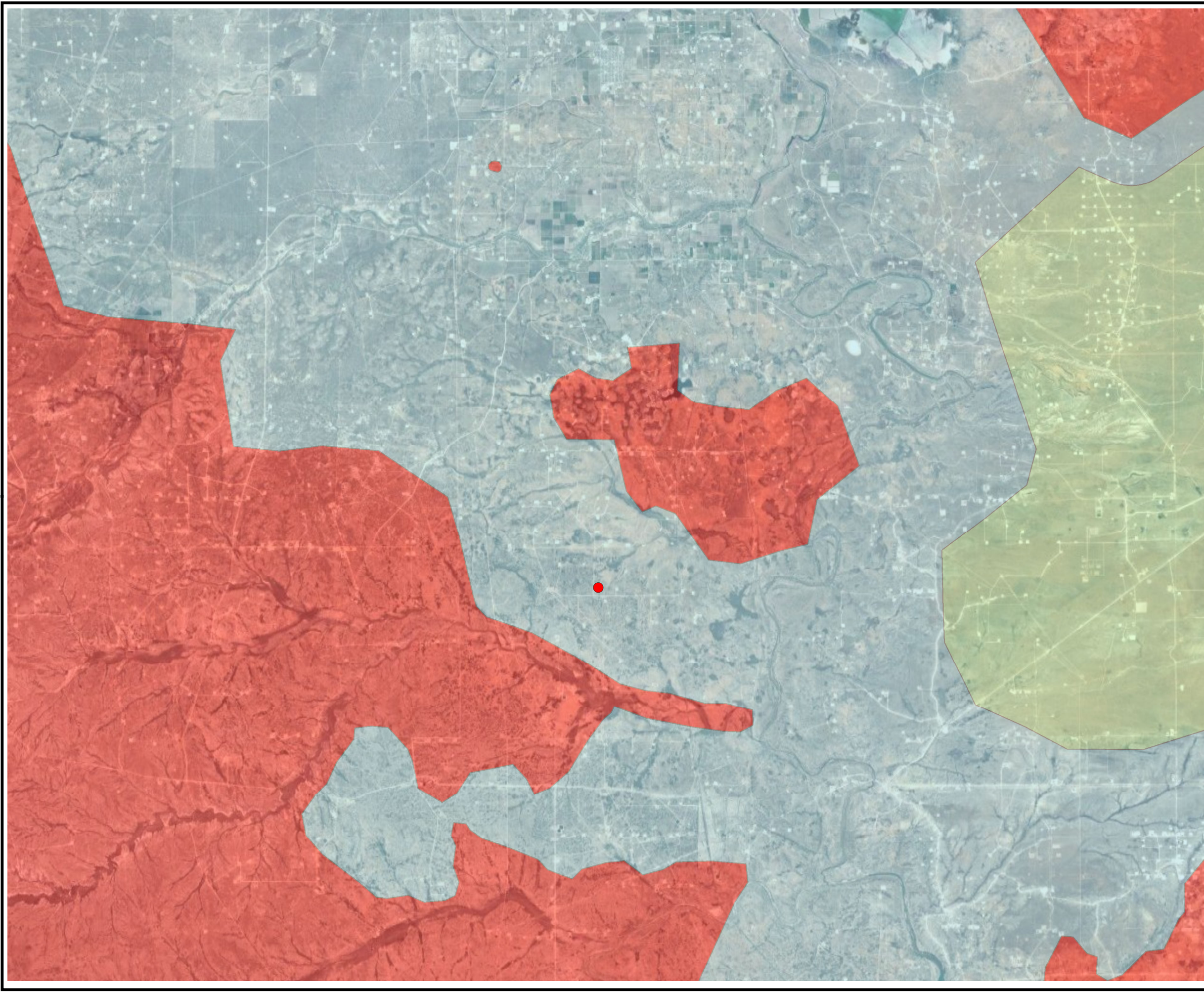
Draft: April 25, 2019

GPS: 32.12489 -104.10216

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

TRC Proj. No: 324488



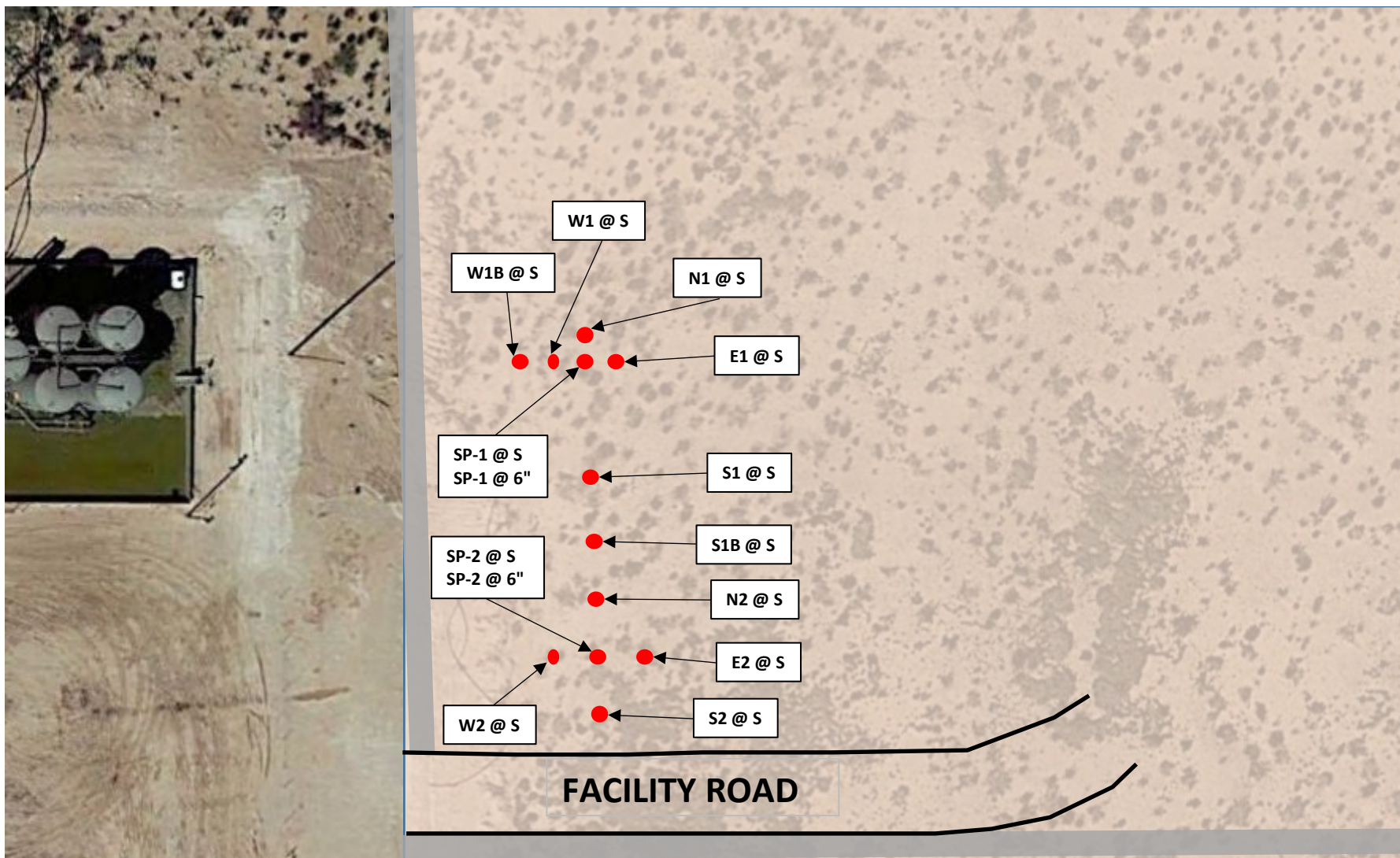


**LEGEND**

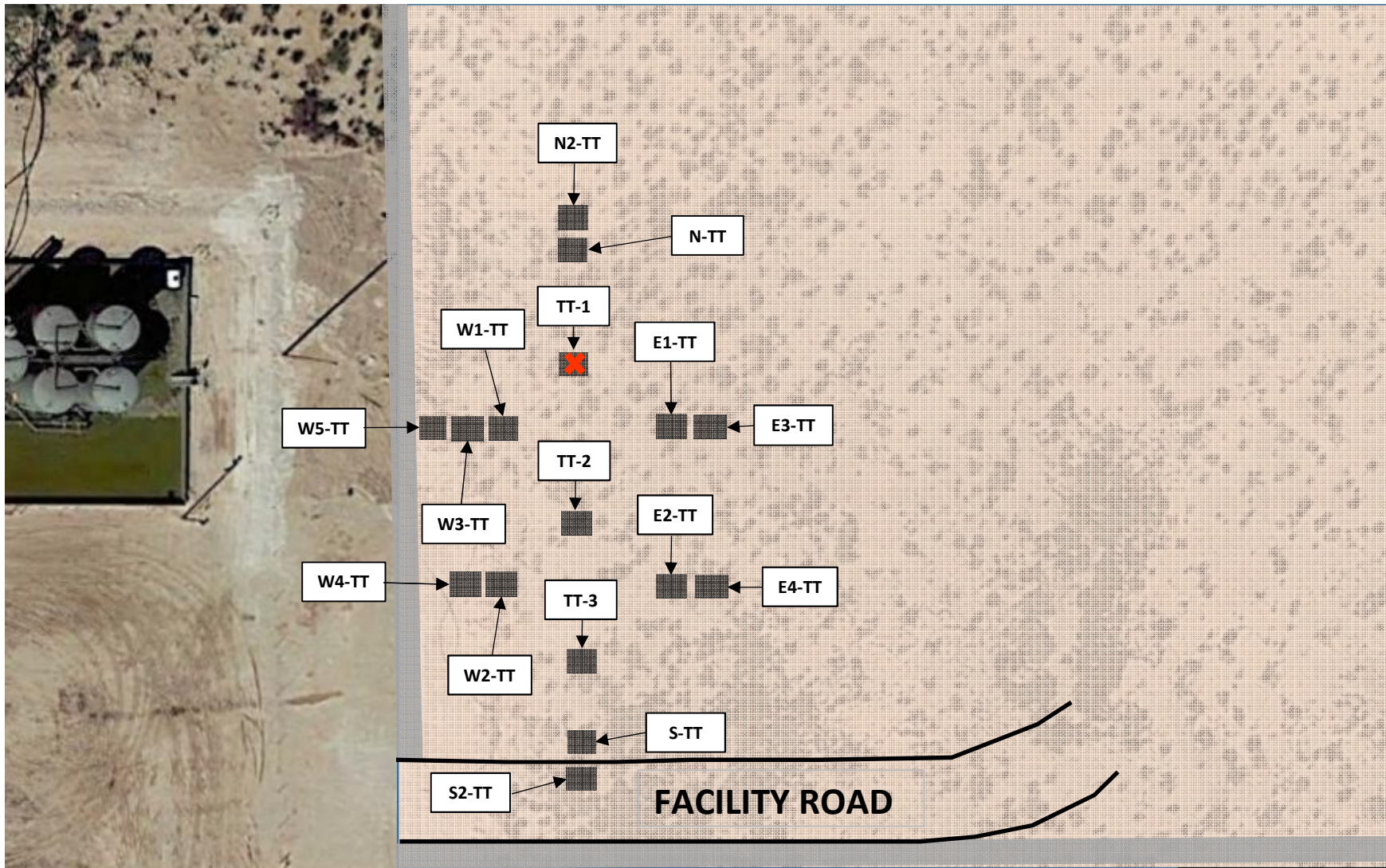
- Site Location
- Low Karst Potential
- Medium Karst Potential
- High Karst Potential






1" = 2 MILES  
1:126,720

PROJECT:		COG OPERATING, LLC WILLOW 17 STATE SWD #001 EDDY COUNTY, NM	
TITLE: <b>KARST POTENTIAL MAP</b>			
DRAWN BY: S. RAY		PROJ. NO.: FILE-->MDP HYPERLINK BASE	
CHECKED BY:		<b>FIGURE 3</b>	
APPROVED BY:			
DATE: JULY 2019			
		505 East Huntland Drive, Suite 250 Austin, TX 78752 Phone: 512.329.6080 www.trcsolutions.com	
FILE NO.:		324488_3.mxd	



<div>LEGEND:</div> <div><div><div></div></div>Caliche Pad</div> <div><div></div>Sample Location</div> <div><div></div>Berm</div>	<div>Figure 3A</div> <div>Site &amp; Sample Location Map -</div> <div>Initial Investigation</div> <div>COG Operating, LLC</div> <div>Willow 17 State SWD #001</div> <div>Eddy County, NM</div>	Scale: 1" = 50'		<div><div><div></div></div>TRC</div> <div>Results you can rely on</div>
		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	



<b>LEGEND:</b>  Caliche Pad  Sample Location  Berm  Trench Location	<b>Figure 3C</b>  Site & Sample Location Map 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	



**LEGEND**

- Sample Locations
- Excavation Area

02550  
Feet

1" = 25'  
1:300

PROJECT:		COG OPERATING, LLC WILLOW 17 STATE SWD #001 EDDY COUNTY, NM	
TITLE:		SITE AND CONFIRMATION SAMPLE LOCATION MAP	
DRAWN BY:	S. RAY	PROJ. NO.:	FILE-->MDP HYPERLINK BASE
CHECKED BY:		FIGURE 6	
APPROVED BY:			
DATE:	JULY 2019		
		505 East Huntland Drive, Suite 250 Austin, TX 78752 Phone: 512.329.6080 www.trcsolutions.com	
FILE NO.:		324488_6.mxd	

## **Appendix A: Laboratory Analytical Reports**

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](http://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  
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- 1 @ S (H900028-01)**

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	01/11/2019	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 BTX	<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

Cardinal Laboratories

\*=Accredited Analyte

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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

Cardinal Laboratories

\*=Accredited Analyte

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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	
<b>Total Xylenes*</b>	<b>0.226</b>	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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\*=Accredited Analyte

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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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\*=Accredited Analyte

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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)**

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) 99.6 % 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	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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\*=Accredited Analyte

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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 1 @ S (H900028-06)**

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) 96.2 % 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	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

Cardinal Laboratories

\*=Accredited Analyte

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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, SM4500CI-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

Cardinal Laboratories

\*=Accredited Analyte

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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)**

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) 91.2 % 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	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)**

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) 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, SM4500CI-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		<b>BILL TO</b>		ANALYSIS REQUEST	
Project Manager: <del>Jeffery</del> JARED STOFFEL		P.O. #:			
Address: 10 Desta Drive Suite 150E		Company: COBACH			
City: Midland State: TX Zip: 79705		Attn: BECKY HASKELL			
Phone #: 432-466-4450 Fax #: 432-466-4450		Address:			
Project #:		City:			
Project Name: WILLOW STATE SUB #001		State:			
Project Location: EDDY CO, NM		Phone #:			
Sample Name: BECKY HASKELL		Fax #:			

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX						DATE	TIME	BTEX	TPH	CHLORIDE
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :					
1 SP-105	1	G	1	X						1-3-19	9:00	X	X	X
2 SP-205	2			X						9:10	X	X	X	
3 W1005	3			X						9:20	X	X	X	
4 W1005	4			X						9:30	X	X	X	
5 E105	5			X						9:40	X	X	X	
6 W105	6			X						9:50	X	X	X	
7 W105	7			X						10:00	X	X	X	
8 W105	8			X						10:10	X	X	X	
9 W205	9			X						10:20	X	X	X	
10 W205	10			X						10:30	X	X	X	

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Relinquished By: Barbara Haskell Date: 1-3-19 Received By: Barbara Haskell

Relinquished By: Barbara Haskell Date: 1-3-20 Received By: Barbara Haskell

Delivered By: (Circle One) UPS - Bus - Other: 292 #99 Sample Condition: ☒ Cool ☐ Intact ☐ Yes ☐ No ☐ No ☐ No

CHECKED BY: TO (Initials)

REMARKS: COBACH TRC SOLUTIONS.COM  
COOPER TRC SOLUTIONS.COM  
BECKY HASKELL TRC SOLUTIONS.COM  
HASKELL COBACH.COM  
STOFFEL TRC SOLUTIONS.COM

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](http://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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\*=Accredited Analyte

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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

<b>Chloride</b>	<b>1970</b>		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	

Cardinal Laboratories

\*=Accredited Analyte

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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**Inorganic Compounds - Quality Control****Cardinal Laboratories**

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

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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 &amp; 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

ck  
1/23/19

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](http://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  
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

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 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

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 1 @ 3' (H900351-03)**

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) 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

Cardinal Laboratories

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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)**

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	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

Cardinal Laboratories

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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

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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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**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)**

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) 93.7 % 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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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, SM4500CI-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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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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**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: 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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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: 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)**

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) 88.5 % 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

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: 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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\*=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: 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, SM4500CI-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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\*=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 @ 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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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



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

[illegible]

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attestations of successors arising out of or related to the performance of services rendered by Carlson, regardless of whether such claim is based upon any of the above stated theories of coverage.			
Relinquished By:		Date:	Received By:
		1-30-11	
Relinquished By:		Time:	
		10:35	
		Date:	Received By:
			
		Time:	
Delivered By: (Circle One)		Sample Condition	
Sampler - UPS - Bus - Other:		Cool <input checked="" type="checkbox"/> Intact <input checked="" type="checkbox"/>	
-1.99c/ #97		Yes <input type="checkbox"/> Yes <input type="checkbox"/>	
		No <input type="checkbox"/> No <input type="checkbox"/>	
		CHECKED BY:	
		(Initials)	
			
		Phone Result: <input type="checkbox"/> Yes <input type="checkbox"/> No	
		Fax Result: <input type="checkbox"/> Yes <input type="checkbox"/> No	
		Add'l Phone #:	
		Add'l Fax #:	
		REMARKS:	
		bcooper@trcsolutions.com	
		kschward@trcsolutions.com	



## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: <b>TRC</b>		<b>BILL TO</b>		ANALYSIS REQUEST											
Project Manager: <b>Brian Cooper</b>		P.O. #: <b>CO6</b>													
Address: <b>10 Desh Dr Suite 105</b>		Company:													
City: <b>Midland</b>		Attn:													
State: <b>TX</b> Zip:		Address:													
Phone #:		City:													
Fax #:		State:													
Project #:		Zip:													
Project Name: <b>willow 17 SWP</b>		Phone #:													
Project Location:		Fax #:													
Sampler Name: <b>Kyle Schneider</b>															
FOR LAB USE ONLY															
Lab I.D.		(G)RAB OR (C)OMP.		MATRIX		PRESERV.		SAMPLING							
Sample I.D.		# CONTAINERS		GROUNDWATER		WASTEWATER		DATE							
H90D351		1		SOIL		OIL		TIME							
11 5TT @ 2.5'		X		SLUDGE		OTHER :		CI-							
12 4TT @ 3'		X		ACID/BASE:		ICE / COOL		TPH							
13 41TT @ 3'		X		OTHER :		OTHER :		BTEX							
14 42TT @ 3'		X		DATE		TIME									
15 41TT @ 3'		X		1-29-19											
16 42TT @ 3'		X													
17 TT 2 @ 0-6"		X													

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Relinquished By:	Date: <b>1-30-19</b>	Received By:	Date: <b>1-30-19</b>
Relinquished By: <i>[Signature]</i>	Time: <b>10:35</b>	Received By: <i>[Signature]</i>	Time: <b>10:35</b>
Delivered By: (Circle One)	Sample Condition	CHECKED BY: (Initials)	
Sampler - UPS - Bus - Other: <b>-1.99c / #97</b>	Cool <input checked="" type="checkbox"/> Intact <input checked="" type="checkbox"/>	<i>[Signature]</i>	
	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
	Yes <input type="checkbox"/> No <input type="checkbox"/>		

REMARKS: **Cooper @ trcsolutions.com**  
**KSchneider @ trcsolutions.com**

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

# 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

***Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.***

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

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

## 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
<b>Chloride by EPA 300</b>	<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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The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories.  
XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented.  
Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

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

**MQL** Method Quantitation Limit

**LOQ** Limit of Quantitation

**DL** Method Detection Limit

**NC** Non-Calculable

**SMP** Client Sample

**BLK**

Method Blank

**BKS/LCS** Blank Spike/Laboratory Control Sample

**BKSD/LCSD**

Blank Spike Duplicate/Laboratory Control Sample Duplicate

**MD/SD** Method Duplicate/Sample Duplicate

**MS**

Matrix Spike

**MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

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



# BS / BSD Recoveries



Project Name: 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  $[D] = 100 \times (C-A)/B$   
Relative Percent Difference  $RPD = 200 \times |(C-F)/(C+F)|$

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

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 Deste 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/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:	

[illegible][illegible][illegible]

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Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
		11/22/19			
		10/10			



# 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)

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Project Manager:	Jade Stoffel	Bill to: (if different)	Bucky Haskel
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:	jstoffer@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: <input type="checkbox"/>

Project Name:	William 17	Turn Around	
Project Number:		Routine <input type="checkbox"/>	
P.O. Number:		Rush: 24 hr.	
Sampler's Name:	S. Stoffel	Due Date: 4/23/11	

SAMPLE RECEIPT	Temp Blank: <input checked="" type="radio"/> Yes <input type="radio"/> No	Wet Ice: <input checked="" type="radio"/> Yes <input type="radio"/> No
Temperature (°C):	0.50.4	Thermometer: <u>AP</u>
Received Intact:	Yes <input checked="" type="radio"/> No <input type="radio"/>	Correction Factor: <u>-0.1</u>
Cooler Custody Seals:	Yes <input checked="" type="radio"/> No <input type="radio"/>	Total Containers:
Sample Custody Seals:	Yes <input checked="" type="radio"/> No <input type="radio"/>	

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number	Sample Comments													
N-TT @ 6'	Soil	4/13/19	11:15	6'	1	Ch	40												run if 5' > 600
N-TT @ 7'			11:20	7'		X	X												run if 6' > 600
N-TT @ 8'			11:25	8'		X	X	X											run if 7' > 600
TT-1 @ 7'			11:30	7'		X													
TT-1 @ 8'			11:35	8'		X													
TT-1 @ 4'			11:40	4'		X													
TT-2 @ 5'			11:45	5'		X													
TT-2 @ 6'			11:50	6'		X													
TT-2 @ 7'			11:55	7'		X	X												run if 6' > 600
TT-2 @ 8'			12:00	8'		X	X												run if 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 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
1 <u>[Signature]</u>	2 <u>[Signature]</u>	4/22/11	3 <u>[Signature]</u>	4 <u>[Signature]</u>	4/22/11
5 <u>[Signature]</u>			6 <u>[Signature]</u>		



# 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)

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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/11/17	Turn Around	
Project Number:		Routine <input type="checkbox"/>	
P.O. Number:		Rush: <input checked="" type="checkbox"/> 24 hr.	
Sampler's Name:	S. Stoffel	Due Date: 4/23/17	
<b>SAMPLE RECEIPT</b>			
Temp Blank:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Wet Ice:	Yes <input checked="" type="checkbox"/> No <input 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. 021915

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

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Project Manager:	Jade Stoffel	Bill to: (if different)	Bucky Haskell
Company Name:	IRE	Company Name:	COG
Address:	10 Destr Dr STE 150E	Address:	
City, State ZIP:	Midland, TX 79705	City, State ZIP:	
Phone:	(432) 238-3005	Email:	jstoffel@fresolutions.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: <input type="checkbox"/>

Project Name:	Willow 17	Turn Around		ANALYSIS REQUEST	Work Order Notes
Project Number:		Routine <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 checked="" type="checkbox"/> No <input type="checkbox"/>	Wet Ice: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Thermometer ID: <u>CS10.4</u>
Temperature (°C):	<u>CS10.4</u>	Received Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Correction Factor: <u>-0.1</u>
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	Number of Containers	Chloride (E300)	Hold
N2-TT @ D-1'	Soil	4/19/11	1430	D-1'	1	X	
S2-TT @ D-1'			1445			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	

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

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
<u>[Signature]</u>	<u>[Signature]</u>	4/19/11			
		1630			



# 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

June 18, 2019

JARED STOFFEL

TRC

10 DESTA DR. SUITE 150 E

MIDLAND, TX 79705

RE: WILLOW 17 STATE

Enclosed are the results of analyses for samples received by the laboratory on 06/17/19 15:30.

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](http://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  
JARED STOFFEL  
10 DESTA DR. SUITE 150 E  
MIDLAND TX, 79705  
Fax To:

Received: 06/17/2019  
Reported: 06/18/2019  
Project Name: WILLOW 17 STATE  
Project Number: NONE GIVEN  
Project Location: COG- MALAGA NM

Sampling Date: 06/13/2019  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: SW - W1 - 1 (H902082-01)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	240	16.0	06/18/2019	ND	400	100	400	18.2	

**Sample ID: SW - W2 - 0.25 (H902082-02)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	400	16.0	06/18/2019	ND	400	100	400	18.2	

**Sample ID: SW - E2 - 1.5 (H902082-03)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	06/18/2019	ND	400	100	400	18.2	

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received: 06/17/2019  
Reported: 06/18/2019  
Project Name: WILLOW 17 STATE  
Project Number: NONE GIVEN  
Project Location: COG- MALAGA NM

Sampling Date: 06/11/2019  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: SW - N1 - 1.5 (H902082-04)**

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	06/17/2019	ND	2.28	114	2.00	3.01	
Toluene*	<0.050	0.050	06/17/2019	ND	2.31	116	2.00	3.49	
Ethylbenzene*	<0.050	0.050	06/17/2019	ND	2.16	108	2.00	2.78	
Total Xylenes*	<0.150	0.150	06/17/2019	ND	6.59	110	6.00	3.15	
Total BTEX	<0.300	0.300	06/17/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 105 % 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	224	16.0	06/18/2019	ND	400	100	400	18.2	

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	06/17/2019	ND	235	117	200	0.757	
DRO >C10-C28*	<10.0	10.0	06/17/2019	ND	199	99.3	200	0.575	
EXT DRO >C28-C36	<10.0	10.0	06/17/2019	ND					

Surrogate: 1-Chlorooctane 88.7 % 41-142

Surrogate: 1-Chlorooctadecane 77.8 % 37.6-147

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

 Received: 06/17/2019  
 Reported: 06/18/2019  
 Project Name: WILLOW 17 STATE  
 Project Number: NONE GIVEN  
 Project Location: COG- MALAGA NM

 Sampling Date: 06/11/2019  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: FL - 1-3 (H902082-05)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	224	16.0	06/18/2019	ND	400	100	400	18.2		

**Sample ID: FL - 2-3 (H902082-06)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	160	16.0	06/18/2019	ND	400	100	400	18.2	

**Sample ID: FL - 3-3 (H902082-07)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	208	16.0	06/18/2019	ND	400	100	400	18.2		

**Sample ID: FL - 5-7 (H902082-08)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	624	16.0	06/18/2019	ND	400	100	400	18.2	

Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

 Received: 06/17/2019  
 Reported: 06/18/2019  
 Project Name: WILLOW 17 STATE  
 Project Number: NONE GIVEN  
 Project Location: COG- MALAGA NM

 Sampling Date: 06/17/2019  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: FL - 7-3 (H902082-09)**

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	06/17/2019	ND	2.28	114	2.00	3.01	
Toluene*	<0.050	0.050	06/17/2019	ND	2.31	116	2.00	3.49	
Ethylbenzene*	<0.050	0.050	06/17/2019	ND	2.16	108	2.00	2.78	
Total Xylenes*	<0.150	0.150	06/17/2019	ND	6.59	110	6.00	3.15	
Total BTEX	<0.300	0.300	06/17/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 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	304	16.0	06/18/2019	ND	400	100	400	18.2	

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	06/17/2019	ND	235	117	200	0.757	
DRO >C10-C28*	<10.0	10.0	06/17/2019	ND	199	99.3	200	0.575	
EXT DRO >C28-C36	<10.0	10.0	06/17/2019	ND					

Surrogate: 1-Chlorooctane 98.0 % 41-142

Surrogate: 1-Chlorooctadecane 84.1 % 37.6-147

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received: 06/17/2019  
Reported: 06/18/2019  
Project Name: WILLOW 17 STATE  
Project Number: NONE GIVEN  
Project Location: COG- MALAGA NM

Sampling Date: 06/17/2019  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: FL - 8-1.5 (H902082-10)**

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	06/18/2019	ND	400	100	400	18.2	

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received: 06/17/2019  
Reported: 06/18/2019  
Project Name: WILLOW 17 STATE  
Project Number: NONE GIVEN  
Project Location: COG- MALAGA NM

Sampling Date: 06/17/2019  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: FL - 9-3 (H902082-11)**

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	06/17/2019	ND	2.28	114	2.00	3.01	
Toluene*	<0.050	0.050	06/17/2019	ND	2.31	116	2.00	3.49	
Ethylbenzene*	<0.050	0.050	06/17/2019	ND	2.16	108	2.00	2.78	
Total Xylenes*	<0.150	0.150	06/17/2019	ND	6.59	110	6.00	3.15	
Total BTEX	<0.300	0.300	06/17/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 105 % 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	192	16.0	06/18/2019	ND	400	100	400	18.2	

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	06/17/2019	ND	235	117	200	0.757	
DRO >C10-C28*	<10.0	10.0	06/17/2019	ND	199	99.3	200	0.575	
EXT DRO >C28-C36	<10.0	10.0	06/17/2019	ND					

Surrogate: 1-Chlorooctane 101 % 41-142

Surrogate: 1-Chlorooctadecane 93.0 % 37.6-147

Cardinal Laboratories

\*=Accredited Analyte

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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

---

Cardinal Laboratories

\*=Accredited Analyte

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---

Celey D. Keene, Lab Director/Quality Manager

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

Verbal on chloride results by  
moon if possible

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

[illegible]



July 24, 2019

JARED STOFFEL

TRC

10 DESTA DR. SUITE 150 E

MIDLAND, TX 79705

RE: WILLOW 17 STATE

Enclosed are the results of analyses for samples received by the laboratory on 06/19/19 16:20.

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/ga/lab\\_accred\\_certif.html](http://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  
Project Number: NONE GIVEN  
Project Manager: JARED STOFFEL  
Fax To:Reported:  
24-Jul-19 15:51

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SW - E1 - 3.5	H902116-01	Soil	17-Jun-19 00:00	19-Jun-19 16:20
SW - S1 - 0.75'	H902116-02	Soil	18-Jun-19 00:00	19-Jun-19 16:20
FL - 4-8.5'	H902116-03	Soil	19-Jun-19 00:00	19-Jun-19 16:20
FL - 5-8'	H902116-04	Soil	19-Jun-19 00:00	19-Jun-19 16:20
FL - 6-6'	H902116-05	Soil	19-Jun-19 00:00	19-Jun-19 16:20

07/24/19- The client brought to our attention that the wrong COC was attached to the original report sent on 06/20/19. This is the revised report with the correct COC attached. This report will replace the one sent on 06/20/19.

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**TRC  
10 DESTA DR. SUITE 150 E  
MIDLAND TX, 79705Project: WILLOW 17 STATE  
Project Number: NONE GIVEN  
Project Manager: JARED STOFFEL  
Fax To:Reported:  
24-Jul-19 15:51**SW - E1 - 3.5**  
**H902116-01 (Soil)**

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

**Cardinal Laboratories****Inorganic Compounds**

Chloride	576		16.0	mg/kg	4	9062002	AC	20-Jun-19	4500-Cl-B	
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Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**TRC  
10 DESTA DR. SUITE 150 E  
MIDLAND TX, 79705Project: WILLOW 17 STATE  
Project Number: NONE GIVEN  
Project Manager: JARED STOFFEL  
Fax To:Reported:  
24-Jul-19 15:51**SW - S1 - 0.75'****H902116-02 (Soil)**

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

**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>432</b>		16.0	mg/kg	4	9062002	AC	20-Jun-19	4500-Cl-B	
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Cardinal Laboratories

\*=Accredited Analyte

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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  
Project Number: NONE GIVEN  
Project Manager: JARED STOFFEL  
Fax To:

Reported:  
24-Jul-19 15:51

### FL - 4-8.5' H902116-03 (Soil)

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

#### Inorganic Compounds

Chloride	704		16.0	mg/kg	4	9062002	AC	20-Jun-19	4500-Cl-B	
----------	-----	--	------	-------	---	---------	----	-----------	-----------	--

#### Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	9062003	BF	20-Jun-19	8021B	
Toluene*	<0.050		0.050	mg/kg	50	9062003	BF	20-Jun-19	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	9062003	BF	20-Jun-19	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	9062003	BF	20-Jun-19	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	9062003	BF	20-Jun-19	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 106 % 73.3-129 9062003 BF 20-Jun-19 8021B

#### Petroleum Hydrocarbons by GC FID

GRO C6-C10*	<10.0		10.0	mg/kg	1	9061915	MS	19-Jun-19	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	9061915	MS	19-Jun-19	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	9061915	MS	19-Jun-19	8015B	

Surrogate: 1-Chlorooctane 86.9 % 41-142 9061915 MS 19-Jun-19 8015B

Surrogate: 1-Chlorooctadecane 89.4 % 37.6-147 9061915 MS 19-Jun-19 8015B

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**TRC  
10 DESTA DR. SUITE 150 E  
MIDLAND TX, 79705Project: WILLOW 17 STATE  
Project Number: NONE GIVEN  
Project Manager: JARED STOFFEL  
Fax To:Reported:  
24-Jul-19 15:51**FL - 5-8'**  
**H902116-04 (Soil)**

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

<b>Chloride</b>	<b>640</b>		16.0	mg/kg	4	9062002	AC	20-Jun-19	4500-Cl-B	
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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**TRC  
10 DESTA DR. SUITE 150 E  
MIDLAND TX, 79705Project: WILLOW 17 STATE  
Project Number: NONE GIVEN  
Project Manager: JARED STOFFEL  
Fax To:Reported:  
24-Jul-19 15:51**FL - 6-6'**  
**H902116-05 (Soil)**

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

**Cardinal Laboratories****Inorganic Compounds**

Chloride	656		16.0	mg/kg	4	9062002	AC	20-Jun-19	4500-Cl-B	
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Cardinal Laboratories

\*=Accredited Analyte

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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  
 Project Number: NONE GIVEN  
 Project Manager: JARED STOFFEL  
 Fax To:

 Reported:  
 24-Jul-19 15:51

**Inorganic Compounds - Quality Control**
**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 9062002 - 1:4 DI Water</b>									
<b>Blank (9062002-BLK1)</b>				Prepared & Analyzed: 20-Jun-19					
Chloride	ND	16.0	mg/kg						
<b>LCS (9062002-BS1)</b>				Prepared & Analyzed: 20-Jun-19					
Chloride	400	16.0	mg/kg	400		100	80-120		
<b>LCS Dup (9062002-BSD1)</b>				Prepared & Analyzed: 20-Jun-19					
Chloride	400	16.0	mg/kg	400		100	80-120	0.00	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  
Project Number: NONE GIVEN  
Project Manager: JARED STOFFEL  
Fax To:

Reported:  
24-Jul-19 15:51

### 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 9062003 - Volatiles

##### Blank (9062003-BLK1)

Prepared &amp; Analyzed: 20-Jun-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)	0.105		mg/kg	0.100		105	73.3-129			

##### LCS (9062003-BS1)

Prepared &amp; Analyzed: 20-Jun-19

Benzene	1.53	0.050	mg/kg	2.00		76.7	72.2-131			
Toluene	1.82	0.050	mg/kg	2.00		90.8	71.7-126			
Ethylbenzene	1.75	0.050	mg/kg	2.00		87.7	68.9-126			
Total Xylenes	5.37	0.150	mg/kg	6.00		89.5	71.4-125			
Surrogate: 4-Bromofluorobenzene (PID)	0.103		mg/kg	0.100		103	73.3-129			

##### LCS Dup (9062003-BSD1)

Prepared &amp; Analyzed: 20-Jun-19

Benzene	1.78	0.050	mg/kg	2.00		88.8	72.2-131	14.6	6.91	QR-02
Toluene	1.75	0.050	mg/kg	2.00		87.7	71.7-126	3.49	7.12	
Ethylbenzene	1.71	0.050	mg/kg	2.00		85.4	68.9-126	2.61	7.88	
Total Xylenes	5.23	0.150	mg/kg	6.00		87.1	71.4-125	2.72	7.46	
Surrogate: 4-Bromofluorobenzene (PID)	0.102		mg/kg	0.100		102	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  
Project Number: NONE GIVEN  
Project Manager: JARED STOFFEL  
Fax To:

Reported:  
24-Jul-19 15:51

### Petroleum Hydrocarbons by GC FID - 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 9061915 - General Prep - Organics

##### Blank (9061915-BLK1)

Prepared &amp; Analyzed: 19-Jun-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							
Surrogate: 1-Chlorooctane	42.3		mg/kg	50.0		84.5	41-142			
Surrogate: 1-Chlorooctadecane	43.0		mg/kg	50.0		86.1	37.6-147			

##### LCS (9061915-BS1)

Prepared &amp; Analyzed: 19-Jun-19

GRO C6-C10	194	10.0	mg/kg	200		97.0	76.5-133			
DRO >C10-C28	183	10.0	mg/kg	200		91.4	72.9-138			
Total TPH C6-C28	377	10.0	mg/kg	400		94.2	78-132			
Surrogate: 1-Chlorooctane	45.2		mg/kg	50.0		90.4	41-142			
Surrogate: 1-Chlorooctadecane	45.1		mg/kg	50.0		90.1	37.6-147			

##### LCS Dup (9061915-BS1)

Prepared &amp; Analyzed: 19-Jun-19

GRO C6-C10	204	10.0	mg/kg	200		102	76.5-133	5.17	20.6	
DRO >C10-C28	189	10.0	mg/kg	200		94.6	72.9-138	3.53	20.6	
Total TPH C6-C28	394	10.0	mg/kg	400		98.4	78-132	4.38	18	
Surrogate: 1-Chlorooctane	48.0		mg/kg	50.0		95.9	41-142			
Surrogate: 1-Chlorooctadecane	46.2		mg/kg	50.0		92.3	37.6-147			

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Celey D. Keene, Lab Director/Quality Manager

### Notes and Definitions

QR-02	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
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

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

[illegible]



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

---

June 21, 2019

JARED STOFFEL

TRC

10 DESTA DR. SUITE 150 E

MIDLAND, TX 79705

RE: WILLOW 17 STATE

Enclosed are the results of analyses for samples received by the laboratory on 06/20/19 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](http://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  
 JARED STOFFEL  
 10 DESTA DR. SUITE 150 E  
 MIDLAND TX, 79705  
 Fax To:

 Received: 06/20/2019  
 Reported: 06/21/2019  
 Project Name: WILLOW 17 STATE  
 Project Number: NONE GIVEN  
 Project Location: COG- MALAGA NM

 Sampling Date: 06/20/2019  
 Sampling Type: Soil  
 Sampling Condition: \*\* (See Notes)  
 Sample Received By: Tamara Oldaker

**Sample ID: FL - 8-3.5 (H902135-01)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	480	16.0	06/21/2019	ND	416	104	400	3.92	

**Sample ID: FL - 4-9 (H902135-02)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	560	16.0	06/21/2019	ND	416	104	400	3.92	

**Sample ID: FL - 5-8.5 (H902135-03)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	560	16.0	06/21/2019	ND	416	104	400	0.00	

**Sample ID: FL - 6-6.5 (H902135-04)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	592	16.0	06/21/2019	ND	416	104	400	0.00	

Cardinal Laboratories

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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



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: <b>TRC</b>		<b>BILL TO</b>		<b>ANALYSIS REQUEST</b>											
Project Manager: <b>Derek Stoffel</b>		P.O. #:													
Address: <b>10 Rush Drive Suite 105</b>		Company: <b>COG</b>													
City: <b>Midland</b>		Attn:													
State: <b>TX</b> Zip:		Address:													
Phone #:		City:													
Fax #:		State:													
Project #:		Zip:													
Project Name:		Phone #:													
Project Location: <b>Willow 12 State</b>		Fax #:													
Sampler Name: <b>Kyle Schmitt</b>		PRESERV		SAMPLING											
FOR LAB USE ONLY															
Lab I.D.		Sample I.D.													
H902135		(G)RAB OR (C)OMP.													
		# CONTAINERS													
		GROUNDWATER													
		WASTEWATER													
		SOIL													
		OIL													
		SLUDGE													
		OTHER :													
		ACID/BASE:													
		ICE / COOL													
		OTHER :													
		DATE		TIME											
1		FL-8-3.5		6-20-19 11:23											
2		FL-4-9		1:45											
3		FL-5-8.5		1:50											
4		FL-6-6.5		1:55											

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Relinquished By:

Date: **6-20-19**

Received By:

Date: **6-20-19**

Relinquished By:

Date: **6-20-19**

Received By:

Date: **6-20-19**

Delivered By: (Circle One)

Sampler - UPS - Bus - Other:

**37.1° #97**

**#97**

Sample Condition  
Cool ☒ Intact ☒  
Yes ☒ No ☒

CHECKED BY:  
(Initials)

**TE**

REMARKS:

USA 1101@lresolutions.com  
Becker@lresolutions.com  
Kschmidt@lresolutions.com  
Rush verbal on CI-

## **Appendix B: Photographic Documentation**

COG- Willow 17 State SWD #001

Date: 7/25/19

## 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.



## Photographic Documentation

### Photograph No. 3

**Date:**

**6/11/2019**

**Direction:**

**Northwest**

**Description:**

**View of excavated area.**



### Photograph No. 4

**Date:**

**6/12/2018**

**Direction:**

**West**

**Description:**

**View of excavated area.**



## Photographic Documentation

### Photograph No. 5

**Date:**

**6/18/2019**

**Direction:**

**North**

**Description:**

**View of  
excavated area.**



### Photograph No. 6

**Date:**

**7/14/2019**

**Direction:**

**West**

**Description:**

**View of the  
remediated area.**



## **Appendix C: Release Notification and Corrective Action (Form C-141)**

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: _____
<b><u>OCD Only</u></b>	
Received by: _____	Date: _____

Incident ID	
District RP	
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?	_____ (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input 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 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 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 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 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 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 type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Did the release impact areas <b>not</b> on an exploration, development, production, or storage site?	<input type="checkbox"/> Yes <input type="checkbox"/> No

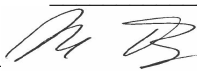
Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

<p><b>Characterization Report Checklist:</b> <i>Each of the following items must be included in the report.</i></p> <ul style="list-style-type: none"><li><input type="checkbox"/> Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.</li><li><input type="checkbox"/> Field data</li><li><input type="checkbox"/> Data table of soil contaminant concentration data</li><li><input type="checkbox"/> Depth to water determination</li><li><input type="checkbox"/> Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release</li><li><input type="checkbox"/> Boring or excavation logs</li><li><input type="checkbox"/> Photographs including date and GIS information</li><li><input type="checkbox"/> Topographic/Aerial maps</li><li><input type="checkbox"/> Laboratory data including chain of custody</li></ul>
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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.

Incident ID	
District RP	
Facility ID	
Application ID	

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Printed Name: \_\_\_\_\_ Title: \_\_\_\_\_  
Signature:  \_\_\_\_\_ Date: \_\_\_\_\_  
email: \_\_\_\_\_ Telephone: \_\_\_\_\_

**OCD Only**

Received by: \_\_\_\_\_ 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: \_\_\_\_\_

## **Appendix D: Depth to Groundwater Data**

