SITE INFORMATION

Report Type: Work Plan

General Site Information:						
Site:	**Graham Cracker 2 State**					
Company:	**COG Operating LLC**					
Section, Township and Range	**Unit P**	**Sec. 02**	**T 26S**	**R 28E**		
Lease Number:	**API No.**					
County:	**Eddy County**					
GPS:	**32.06556**			**-104.04986**		
Surface Owner:	**State**					
Directions:	From the intersection of Whites City Rd. and Hwy 285, head north on 285 for 0.44 miles, turn right (west) onto unnamed lease road and go 0.72 miles, keep to the right and follow the road southeast for 0.58 miles and arrive at location.					

Release Data:	**2RP-5063**	**2RP-5163**
Date Released:	11/15/2018	12/4/2018
Type Release:	Produced Water	Produced Water
Source of Contamination:	Illegal dump	Illegal dump
Fluid Released:	30 bbls water	20 bbls water
Fluids Recovered:	0 bbls water	0 bbls water

Official Communication:			
Name:	Ike Tavarez		Clair Gonzales
Company:	COG Operating, LLC		Tetra Tech
Address:	One Concho Center		901 West Wall Street
	600 W. Illinois Ave.		Suite 100
City:	Midland Texas, 79701		Midland, Texas
Phone number:	(432) 686-3023		(432) 687-8110
Fax:	(432) 684-7137		
Email:	itavarez@concho.com		Clair.Gonzales@tetratech.com

Site Characterization	
Depth to Groundwater:	*120' below surface*
Karst Potential:	*Medium*

Recommended Remedial Action Levels (RRALs)			
Benzene	***Total BTEX***	***TPH (GRO+DRO+MRO)***	***Chlorides***
10 mg/kg	*50 mg/kg*	*100 mg/kg*	*600 mg/kg*

TETRA TECH

February 13, 2019

Mr. Mike Bratcher
District Supervisor
Oil Conservation Division, District 2
811 S. First Street
Artesia, New Mexico 88210

Re: Work Plan for the COG Operating, LLC, Graham Cracker #2 State, Unit P, Section 02, Township 26 South, Range 28 East, Eddy County, New Mexico.
2RP-5063 and 2RP-5124

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating, LLC (COG) to assess two illegal dumps that occurred at the Graham Cracker #2 State, Unit P, Section 02, Township 26 South, Range 28 East, Eddy County, New Mexico (Site). The spill site coordinates are 32.06556°, -104.04986°. The site location is shown on Figures 1 and 2.

Background

Two releases occurred at the site and the release footprints overlapped. The releases impacted an area on the pad measuring approximately 125'x125'. The initial C-141 Forms are included in Appendix A.

- **2RP-5063:** According to the State of New Mexico C-141 Initial Report the release was discovered on November 15, 2018, and released approximately 30 barrels of potential produced water due to an illegal dump. No fluids were recovered.

- **2RP-5124:** According to the State of New Mexico C-141 Initial Report the release was discovered on December 4, 2018, and released approximately 20 barrels of potential produced water due to an illegal dump. No fluids were recovered.

Site Characterization

A site characterization was performed for the site and no watercourses, lakebeds, sinkholes, playa lakes, residences, schools, hospitals, institutions, churches, springs, private domestic water wells, springs, wetlands, incorporated municipal boundaries, subsurface mines, or floodplains are located within the specified distances and the site is in a medium karst potential area. The nearest well is listed on the New Mexico Office of the State Engineer website in Section 2, approximately 0.63 miles northwest of the site, and has a reported depth to groundwater of 120 feet below ground surface. According to the Chevron Texaco Groundwater Trend map, the average depth to groundwater in this area is approximately 50'-75' below surface. The groundwater data is shown in Appendix B.

Tetra Tech
4000 North Big Spring, Suite 401, Midland, TX 79705
Tel 432.682.4559 Fax 432.682.3946 www.tetratech.com

Regulatory

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, updated August 14, 2018. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. A site characterization was performed for the site and no watercourses, lakebeds, sinkholes, playa lakes, residences, schools, hospitals, institutions, churches, springs, private domestic water wells, springs, wetlands, incorporated municipal boundaries, subsurface mines, or floodplains are located within the specified distances. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the site characterization, the proposed RRAL for TPH is 100 mg/kg (GRO + DRO + MRO). Additionally, based on the site characterization, the proposed RRAL for chlorides is 600 mg/kg.

Soil Assessment and Analytical Results

On January 22, 2018, Tetra Tech personnel were onsite to install boreholes in the release area. A total of three (3) boreholes (BH-1, BH-2, and BH-3) were installed to total depths ranging from 10' to 20' below surface. Additionally, one (1) background borehole was installed to a total depth of 25' below ground surface in order to evaluate the native soils. Soil samples were collected and submitted to the laboratory for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B, and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The results of the sampling are summarized in Table 1. The sample locations are shown on Figure 3.

Background

Referring to Table 1, the background borehole (Background) showed chloride concentrations that increased with depth to a chloride high of 808 mg/kg at 14'-15' below surface.

Boreholes

Referring to Table 1, the area of boreholes (BH-1, BH-2, and BH-3) did not show any benzene or total BTEX above the RRALs. Additionally, the area of boreholes (BH-1 and BH-3) did not show any TPH concentrations above the RRALs. However, the area of borehole (BH-2) showed a TPH concentration of 1,590 mg/kg at 0-1', which declined with depth to below the RRAL with a concentration of 84.3 mg/kg at 4-5' below surface. Additionally, no chlorides above the background concentrations were detected at borehole (BH-2). The area of borehole (BH-3) showed one chloride concentration above the background of 1,240 mg/kg at 9-10' below surface, which declined with depth to 843 mg/kg (14-15') and 326 mg/kg (19-20').

TETRA TECH

Work Plan

Based on the laboratory data, COG proposes to excavate the area of borehole (BH-2) to approximately 2'-3' below surface to remove the TPH concentrations detected, as shown on Figure 4 and highlighted (green) on Table 1. Once excavated, composite and sidewall confirmation samples will be collected every 200 square feet in the excavated areas to ensure proper removal of the impacted soils. Once below the TPH RRAL, the area will be backfilled with clean material to surface grade. COG estimates approximately 600 cubic yards will be excavated, and the remediation to be implemented 90 days after the work plan is approved.

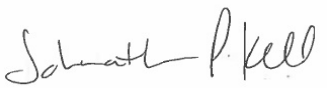
The proposed excavation depths may not be reached due to wall cave ins and safety concerns for onsite personnel. In addition, impacted soil around oil and gas equipment, structures or lines may not be feasible or practicable to be removed due to safely concerns for onsite personnel. As such, COG will excavate the impacted soils to the maximum extent practicable.

Conclusion

The background borehole data did show increasing chloride concentrations with depth at 6-7', 9-10', 14-15', and 19-20' with concentrations of 656 mg/kg, 649 mg/kg, 808 mg/kg, and 517 mg/kg, respectively. Based on the background concentrations, the chloride spike detected at borehole (BH-3) at 9-10' below surface may be due to a lab error or may be background concentration for the area. However, the chloride detected does not appear to be an environmental concern. The remaining areas did not show a significant chloride impact to the area; and may be due to the recent rains in the area. Additionally, due to the nature of the release as an illegal dump and inability to recover any fluids, the releases may not have been produced water.

Once the remediation activities are completed, a closure report will be prepared for NMOCD approval. If you have any questions or comments concerning the assessment or remediation activities for this site, please call at (432) 682-4559.

Respectfully submitted,
TETRA TECH

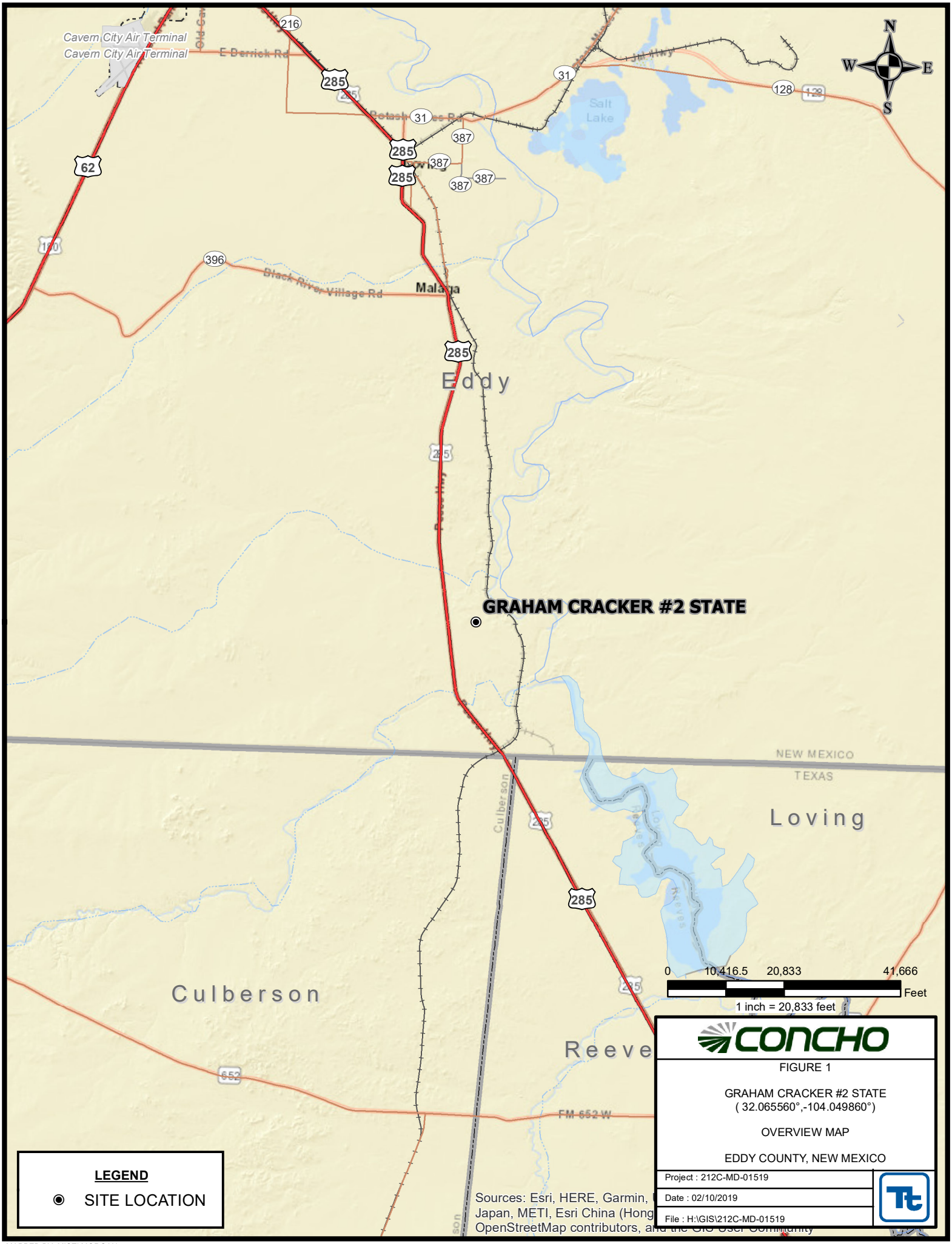


Clair Gonzales,
Project Manager

Johnathon Kell,
Geologist

cc: Ike Tavarez – COG
Dakota Neel - COG
Rebecca Haskell - COG
Sheldon Hitchcock - COG
DeAnn Grant - COG

Figures



CONCHO

FIGURE 1

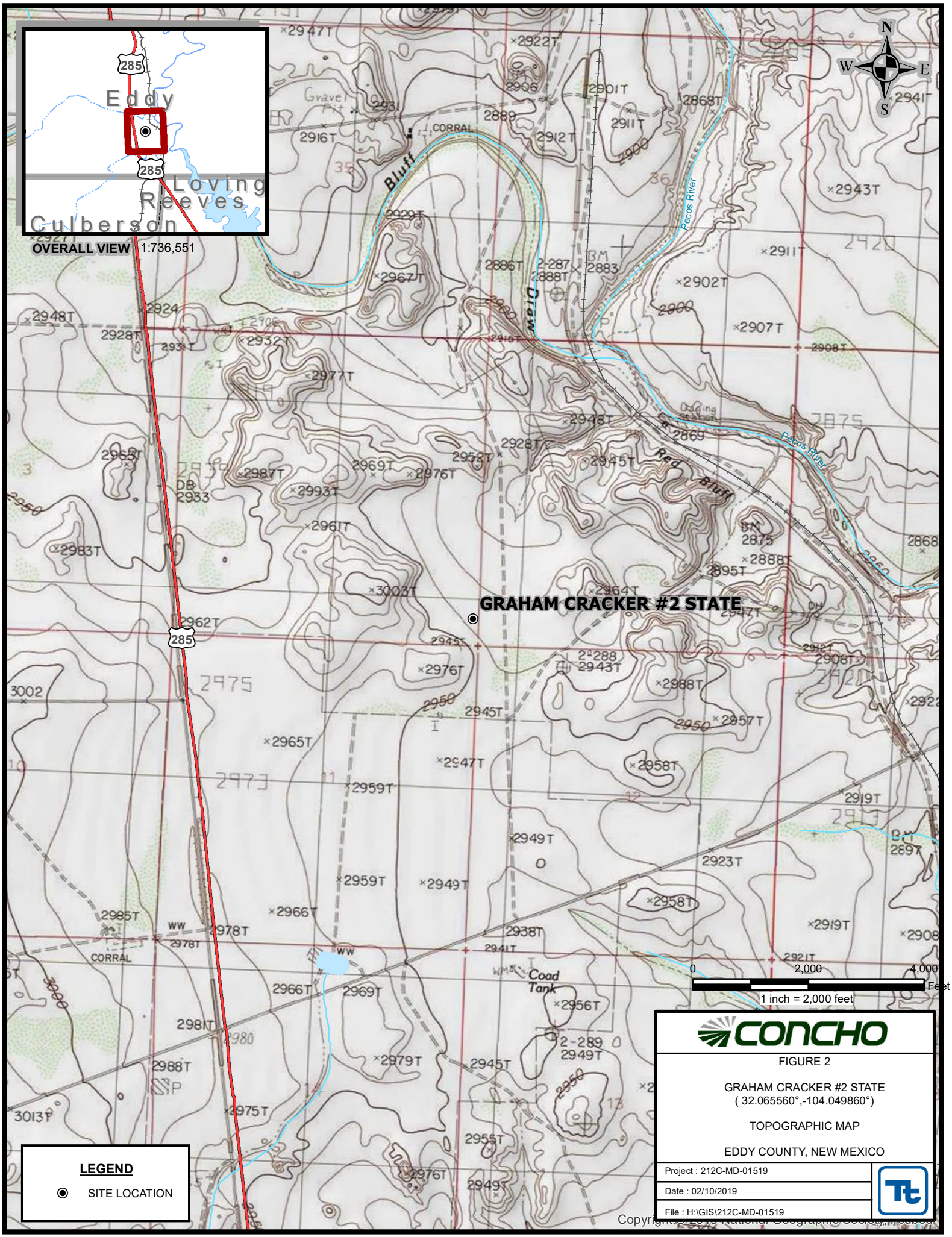
GRAHAM CRACKER #2 STATE
(32.065560°,-104.049860°)

OVERVIEW MAP

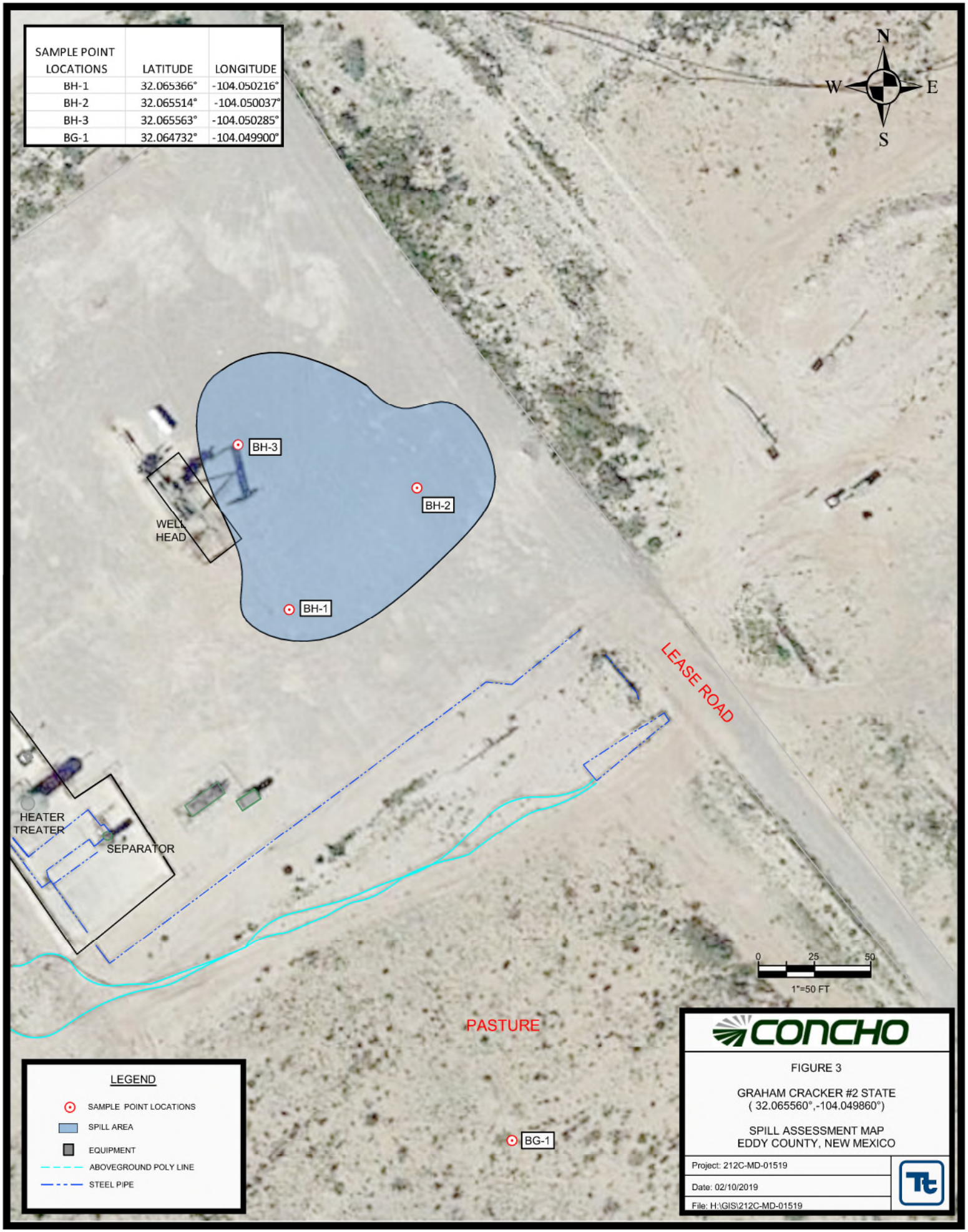
EDDY COUNTY, NEW MEXICO

Project : 212C-MD-01519	
Date : 02/10/2019	
File : H:\GIS\212C-MD-01519	

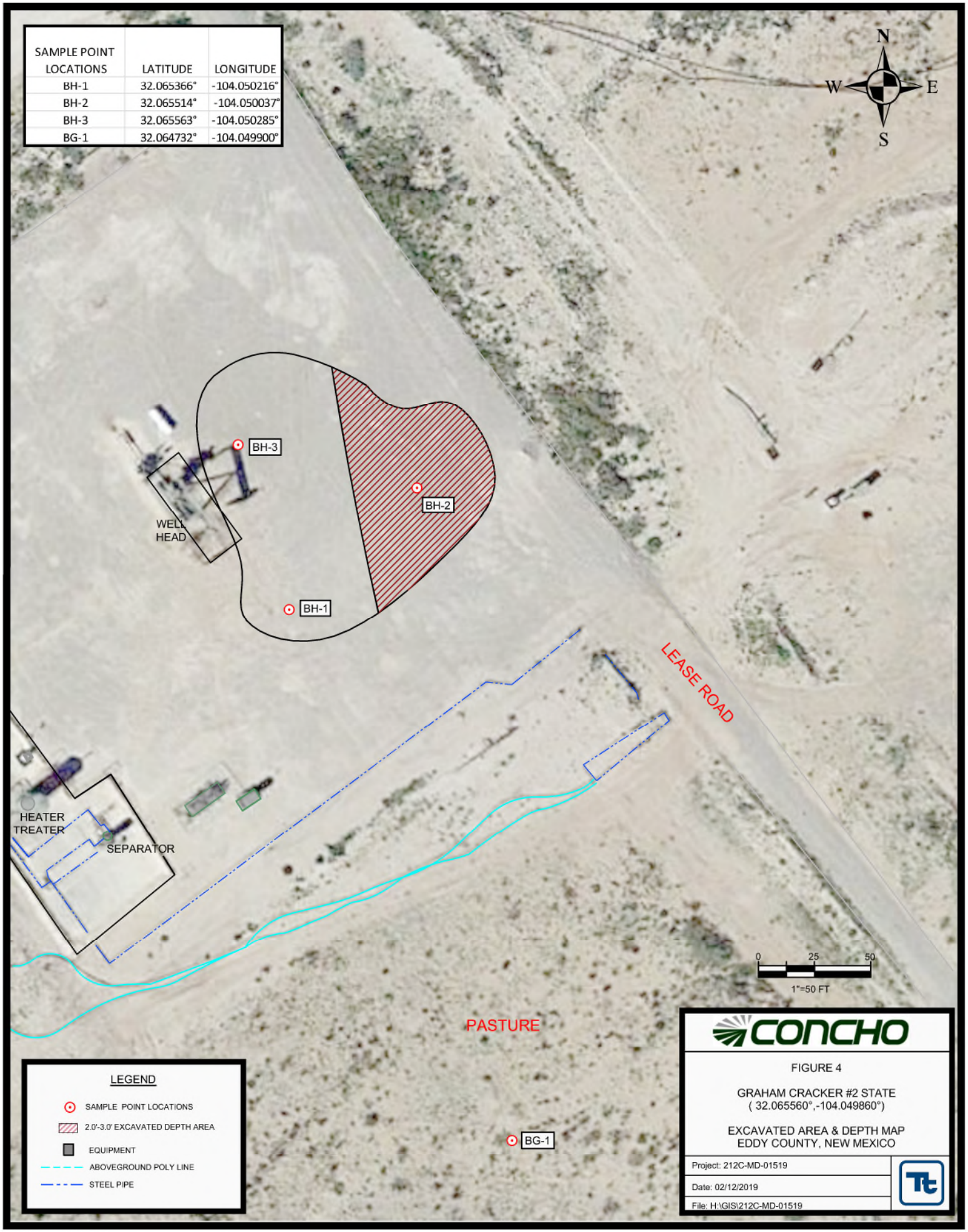
MAPPED BY: MISTI MORGAN



MAPPED BY: MISTI MORGAN



Drawn By: MISTI MORGAN


SAMPLE POINT LOCATIONS | LATITUDE | LONGITUDE
BH-1 | 32.065366° | -104.050216°
BH-2 | 32.065514° | -104.050037°
BH-3 | 32.065563° | -104.050285°
BG-1 | 32.064732° | -104.049900°
N
W
E
S
BH-3
BH-2
BH-1
WELL HEAD
LEASE ROAD
HEATER TREATER
SEPARATOR
PASTURE
BG-1
0
25
50
1"=50 FT
LEGEND
SAMPLE POINT LOCATIONS
2.0'-3.0' EXCAVATED DEPTH AREA
EQUIPMENT
ABOVEGROUND POLY LINE
STEEL PIPE
CONCHO
FIGURE 4
GRAHAM CRACKER #2 STATE
(32.065560°,-104.049860°)
EXCAVATED AREA & DEPTH MAP
EDDY COUNTY, NEW MEXICO
Project: 212C-MD-01519
Date: 02/12/2019
File: H:\GIS\212C-MD-01519
Drawn By: MISTI MORGAN

Photos

COG Operating LLC
Graham Cracker 2 State
Eddy County, New Mexico

Area of Background Drilling – View to Northwest

Drilling BH-1 – View to Northwest

COG Operating LLC
Graham Cracker 2 State
Eddy County, New Mexico

Drilling BH-2 – View to West

Drilling BH-3 – View to West

Tables

Table 1
COG
Graham Cracker 2 State #1H
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)				Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	ORO	Total						
BH-1	1/22/2019	0-1	X		<14.9	<14.9	<14.9	<14.9	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	73.8
	"	2-3	X		-	-	-	-	-	-	-	-	-	363
	"	4-5	X		-	-	-	-	-	-	-	-	-	152
	"	6-7	X		-	-	-	-	-	-	-	-	-	180
	"	9-10	X		-	-	-	-	-	-	-	-	-	460
	"	14-15	X		-	-	-	-	-	-	-	-	-	572
	"	19-20	X		-	-	-	-	-	-	-	-	-	714
BH-2	1/22/2019	0-1	X		<15.0	984	608	**1,590**	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	133
	"	2-3	X		<15.0	157	78.7	**236**	-	-	-	-	-	<5.00
	"	4-5	X		<15.0	58.1	26.2	84.3	-	-	-	-	-	187
	"	6-7	X		<15.0	<15.0	<15.0	<15.0	-	-	-	-	-	67.0
	"	9-10	X		-	-	-	-	-	-	-	-	-	627
BH-3	1/22/2019	0-1	X		<15.0	44.0	15.3	59.3	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	245
	"	2-3	X		-	-	-	-	-	-	-	-	-	245
	"	4-5	X		-	-	-	-	-	-	-	-	-	418
	"	6-7	X		-	-	-	-	-	-	-	-	-	466
	"	9-10	X		-	-	-	-	-	-	-	-	-	**1,240**
	"	14-15	X		-	-	-	-	-	-	-	-	-	843
	"	19-20	X		-	-	-	-	-	-	-	-	-	326
Background	1/22/2019	0-1	X		-	-	-	-	-	-	-	-	-	<5.00
	"	2-3	X		-	-	-	-	-	-	-	-	-	<4.97
	"	4-5	X		-	-	-	-	-	-	-	-	-	287
	"	6-7	X		-	-	-	-	-	-	-	-	-	656
	"	9-10	X		-	-	-	-	-	-	-	-	-	649
	"	14-15	X		-	-	-	-	-	-	-	-	-	808
	"	19-20	X		-	-	-	-	-	-	-	-	-	517
	"	24-25	X		-	-	-	-	-	-	-	-	-	278

(-) Not Analyzed

Proposed Excavation Depth

Appendix A

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

State of New Mexico
Energy Minerals and Natural Resources 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	NAB1832754183
District RP	2RP-5063
Facility ID	fAB1832753726
Application ID	pAB1832753892

Release Notification

Responsible Party

Responsible Party	COG Operating, LLC	OGRID	229137
Contact Name	Robert McNeill	Contact Telephone	(432) 683-7443
Contact email	RMcNeill@concho.com	Incident # *(assigned by OCD)*	NAB1832754183
Contact mailing address	600 West Illinois Avenue, Midland, Texas 79701		

Location of Release Source

Latitude 32.06556 Longitude -104.04986

(NAD 83 in decimal degrees to 5 decimal places)

Site Name	Graham Cracker 2 State (Illegal Dump)	Site Type	Central Tank Battery
Date Release Discovered	November 15, 2018	API# *(if applicable)*	

Unit Letter	Section	Township	Range	County
P	02	26S	28E	Eddy

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)

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
■ Produced Water	Volume Released (bbls) 30	Volume Recovered (bbls) 0
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	■ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

The release was an **illegal dump** on a COG location.
The release was on location. A vacuum truck was dispatched to remove all freestanding fluids. Concho will evaluate the site to determine if we may commence remediation immediately or delineate any possible impact from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation activities.

State of New Mexico
Oil Conservation Division

Incident ID	NAB1832754183
District RP	2RP-5063
Facility ID	fAB1832753726
Application ID	pAB1832753892

Was this a major release as defined by 19.15.29.7(A) NMAC? ☒ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release? The fluid released was illegally dumped.

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

Immediate notice was given by DeAnn Grant via e-mail November 15, 2018 at 3:31pm to Maria Pruett and Ryan Mann.

Initial Response

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

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

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

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

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

Printed Name: DeAnn Grant Title: HSE Administrative Assistant

Signature: DeAnn Grant Date: 11/15/2018

email: agrant@concho.com Telephone: (432) 253-4513

OCD Only

Received by: Amalia Portamante Date: 11/23/2018

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	2RP-5063
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?	120 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☑ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☑ 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)?	☐ Yes ☑ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☑ 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?	☐ Yes ☑ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☑ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☑ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☑ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☑ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☑ Yes ☐ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☑ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☑ No

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

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

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

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

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	2RP-5063
Facility ID	
Application ID	

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

Printed Name: Ike Tavarez Title: Senior HSE Supervisor

Signature:  Date: 2/13/19

email: itavarez@concho.com Telephone: 432-685-2573

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	2RP-5063
Facility ID	
Application ID	

Remediation Plan

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

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

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

☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.

☐ Extents of contamination must be fully delineated.

☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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

Printed Name: Ike Tavarez Title: Senior HSE Supervisor

Signature:  Date: 2/13/19

email: itavarez@concho.com Telephone: 432-685-2573

OCD Only

Received by: _____ Date: _____

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

Signature: _____ Date: _____

District I
1625 N. French Dr., Hobbs, NM 88240
District II
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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	NAB1835433825
District RP	2RP-5124
Facility ID	fAB1832753726
Application ID	pAB1835433931

Release Notification

Responsible Party

Responsible Party	COG Operating, LLC	OGRID	229137
Contact Name	Robert McNeill	Contact Telephone	(432) 683-7443
Contact email	RMcNeill@concho.com	Incident # *(assigned by OCD)*	NAB1835433825
Contact mailing address	600 West Illinois Avenue, Midland, Texas 79701		

Location of Release Source

Latitude 32.06551 Longitude -104.05041

(NAD 83 in decimal degrees to 5 decimal places)

Site Name	Graham Cracker 2 State (Illegal Dump)	Site Type	Central Tank Battery
Date Release Discovered	December 4, 2018	API# *(if applicable)*	

Unit Letter	Section	Township	Range	County
P	02	26S	28E	Eddy

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)

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☒ Produced Water	Volume Released (bbls) 20	Volume Recovered (bbls) 0
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☒ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

The release was an **illegal dump** on a COG location.
The release was on location. A vacuum truck was dispatched to remove all freestanding fluids. Concho will evaluate the site to determine if we may commence remediation immediately or delineate any possible impact from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation activities.

State of New Mexico
Oil Conservation Division

Incident ID	NAB1835433825
District RP	2RP-5124
Facility ID	fAB1832753726
Application ID	pAB1835433931

Was this a major release as defined by 19.15.29.7(A) NMAC? ☒ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release? The fluid released was illegally dumped.

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

Immediate notice was given by DeAnn Grant via e-mail December 5, 2018 at 2:58 pm to Mike Bratcher and Ryan Mann.

Initial Response

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

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

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

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

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

Printed Name: DeAnn Grant Title: HSE Administrative Assistant

Signature: DeAnn Grant Date: 12/5/2018

email: agrant@concho.com Telephone: (432) 253-4513

OCD Only

Received by: Amalia Portamante Date: 12/20/2018

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	2RP-5124
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?	120 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☑ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☑ 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)?	☐ Yes ☑ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☑ 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?	☐ Yes ☑ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☑ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☑ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☑ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☑ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☑ Yes ☐ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☑ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☑ No

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

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

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

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

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	2RP-5124
Facility ID	
Application ID	

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

Printed Name: Ike Tavarez Title: Senior HSE Supervisor

Signature: Date: 2/13/19

email: itavarez@concho.com Telephone: 432-685-2573

OCD Only

Received by: Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	2RP-5124
Facility ID	
Application ID	

Remediation Plan

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

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

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

☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.

☐ Extents of contamination must be fully delineated.

☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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

Printed Name: Ike Tavarez Title: Senior HSE Supervisor

Signature:  Date: 2/13/19

email: itavarez@concho.com Telephone: 432-685-2573

OCD Only

Received by: _____ Date: _____

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

Signature: _____ Date: _____

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - Graham Cracker 2 State
Eddy County, New Mexico

25 South 27 East

6	5	4	3	2 27	1
7	8	9	10	11	12 92
18	17	16	15	14	13
19	20 24	21	22 26	23	24 67
30	29	28	27 16	26	25 12
31	32	33 19	34	35	36

25 South 28 East

6	5 59	4 35	3 32	2	1 Site
7	8	9	10	11	12
18 67	17	16	15 48 49	14	13
19	20 96	21	22	23	24
30	29 15	28 90	27	26 40	25
31	32	33	34	35 55	36 40

25 South 29 East

6 40	5	4	3	2 98	1
7	8	9	10 40	11	12
18	17	16 165	15 60 140	14	13
19	20	21	22	23	24
30 30	29	28	27	26	25
31	32 115	33	34	35	36

26 South 27 East

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

26 South 28 East

6	5	4	3	2 120	1
7	8	9	10	11	12 100
18	17	16	15 175	14 93 120	13 56
19	20	21	22 120 22	23	24
30	29	28	27 145	26	25
31	32	33	34	35	36

26 South 29 East

6	5 78	4	3	2	1
7	8	9	10	11	12
18	17	16 125	15	14	13
19	20	21	22 57 69	23	24
30	29	28	27	26	25
31	32	33	34	35	36

88 New Mexico State Engineers Well Reports

105 USGS Well Reports

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

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

34 NMOCD - Groundwater Data

123 Tetra Tech installed temporary wells and field water level

143 NMOCD Groundwater map well location

New Mexico Office of the State Engineer

Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

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

(NAD83 UTM in meters)

(In feet)

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Twws	Rng	X	Y	Depth Well	Depth Water	Water Column
C 02160 S9		CUB	ED	3	3	2	02	26S	28E	589020	3548868*	300	120	180

Average Depth to Water: **120 feet**

Minimum Depth: **120 feet**

Maximum Depth: **120 feet**

Record Count: 1

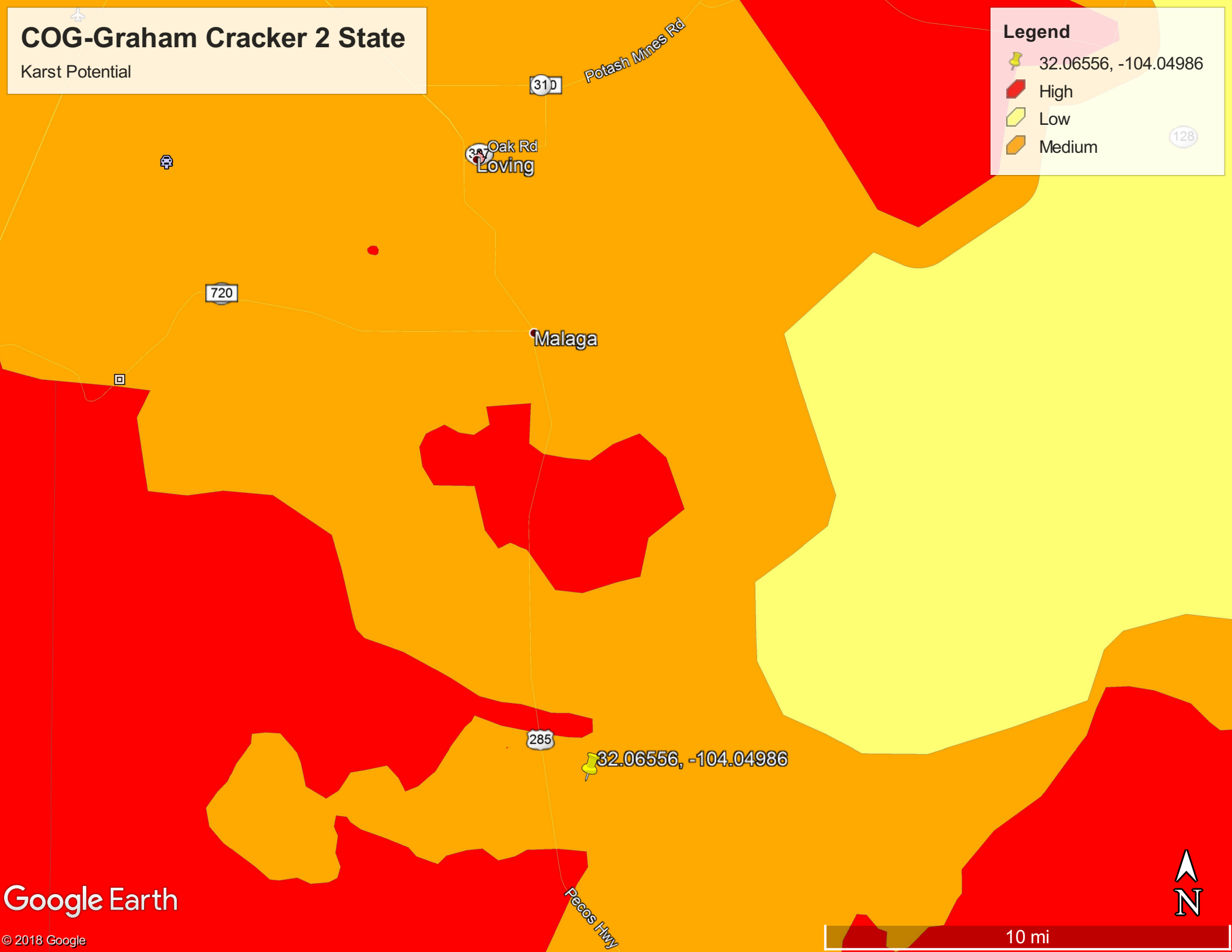
Basin/County Search:

County: Eddy

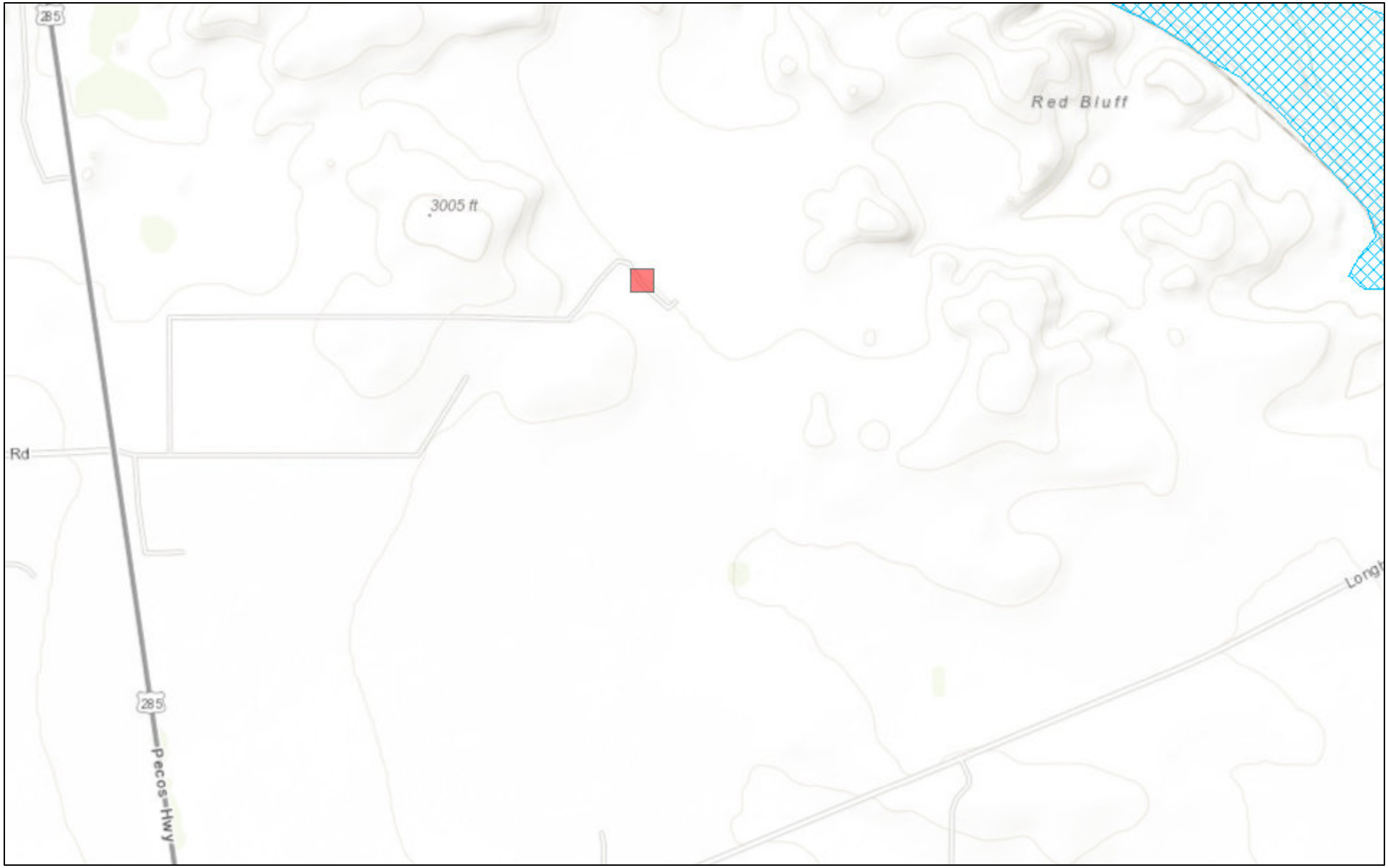
PLSS Search:

Section(s): 2 **Township:** 26S **Range:** 28E

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


COG-Graham Cracker 2 State
Karst Potential
Legend
32.06556, -104.04986
High
Low
Medium
Potash Mines Rd
310
Oak Rd
Loving
720
Malaga
285
32.06556, -104.04986
Pecos Hwy
Google Earth
© 2018 Google
N
10 mi

New Mexico NFHL Data



February 6, 2019

1:18,056

0 0.15 0.3 0.6 mi

0 0.25 0.5 1 km

FEMA
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS,

Appendix C

Analytical Report 612602

for

Tetra Tech- Midland

Project Manager: Clair Gonzales

Graham Cracker 2 State 1H (11/15/2018 & 12

212C-MD-01519

01-FEB-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)
Xenco-Lakeland: Florida (E84098)

01-FEB-19

Project Manager: **Clair Gonzales**
Tetra Tech- Midland
901 West Wall ST
Midland, TX 79701

Reference: XENCO Report No(s): **612602**
Graham Cracker 2 State 1H (11/15/2018 & 12
Project Address: Eddy County, New Mexico

Clair Gonzales:

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) 612602. 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. 612602 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

Jessica Kramer

Jessica Kramer
Project Assistant

Sample Cross Reference 612602

Tetra Tech- Midland, Midland, TX

Graham Cracker 2 State 1H (11/15/2018 & 12

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
BH-1 (0-1')	S	01-22-19 00:00		612602-001
BH-1 (2'-3')	S	01-22-19 00:00		612602-002
BH-1 (4'-5')	S	01-22-19 00:00		612602-003
BH-1 (6'-7')	S	01-22-19 00:00		612602-004
BH-1 (9'-10')	S	01-22-19 00:00		612602-005
BH-1 (14'-15')	S	01-22-19 00:00		612602-006
BH-1 (19-20')	S	01-22-19 00:00		612602-007
BH-2 (0-1')	S	01-22-19 00:00		612602-008
BH-2 (2'-3')	S	01-22-19 00:00		612602-009
BH-2 (4'-5')	S	01-22-19 00:00		612602-010
BH-2 (6'-7')	S	01-22-19 00:00		612602-011
BH-2 (9'-10')	S	01-22-19 00:00		612602-012
BH-3 (0-1')	S	01-22-19 00:00		612602-016
BH-3 (2'-3')	S	01-22-19 00:00		612602-017
BH-3 (4'-5')	S	01-22-19 00:00		612602-018
BH-3 (6'-7')	S	01-22-19 00:00		612602-019
BH-3 (9'-10')	S	01-22-19 00:00		612602-020
BH-3 (14'-51')	S	01-22-19 00:00		612602-021
BH-3 (19'-20')	S	01-22-19 00:00		612602-022
BH-2 (14'-15')	S	01-22-19 00:00		Not Analyzed
BH2 (19'-20')	S	01-22-19 00:00		Not Analyzed
BH-2 (24-25')	S	01-22-19 00:00		Not Analyzed
BH-3 (24'-25')	S	01-22-19 00:00		Not Analyzed

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3077529 BTEX by EPA 8021B

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

Certificate of Analysis Summary 612602

Tetra Tech- Midland, Midland, TX

Project Name: Graham Cracker 2 State 1H (11/15/2018 & 12

Project Id: 212C-MD-01519
Contact: Clair Gonzales
Project Location: Eddy County, New Mexico

Date Received in Lab: Fri Jan-25-19 02:23 pm
Report Date: 01-FEB-19
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	612602-001		612602-002		612602-003		612602-004		612602-005		612602-006	
	Field Id:	BH-1 (0-1')		BH-1 (2'-3')		BH-1 (4'-5')		BH-1 (6'-7')		BH-1 (9'-10')		BH-1 (14'-15')	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jan-22-19 00:00		Jan-22-19 00:00		Jan-22-19 00:00		Jan-22-19 00:00		Jan-22-19 00:00		Jan-22-19 00:00	
BTEX by EPA 8021B	***Extracted:***	Jan-29-19 17:15											
	Analyzed:	Jan-30-19 12:37											
	Units/RL:	mg/kg	RL										
Benzene		<0.00200	0.00200										
Toluene		<0.00200	0.00200										
Ethylbenzene		<0.00200	0.00200										
m,p-Xylenes		<0.00399	0.00399										
o-Xylene		<0.00200	0.00200										
Total Xylenes		<0.00200	0.00200										
Total BTEX		<0.00200	0.00200										
Chloride by EPA 300	***Extracted:***	Jan-31-19 17:00		Jan-31-19 17:00		Jan-31-19 17:00		Jan-31-19 17:00		Jan-31-19 17:00		Jan-31-19 17:00	
	Analyzed:	Feb-01-19 05:47		Feb-01-19 06:09		Feb-01-19 06:15		Feb-01-19 06:21		Feb-01-19 06:27		Feb-01-19 06:33	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		73.8	49.8	363	25.2	152	50.0	180	24.8	460	24.9	572	4.99
TPH by SW8015 Mod	***Extracted:***	Jan-30-19 15:00											
	Analyzed:	Jan-31-19 01:56											
	Units/RL:	mg/kg	RL										
Gasoline Range Hydrocarbons (GRO)		<14.9	14.9										
Diesel Range Organics (DRO)		<14.9	14.9										
Motor Oil Range Hydrocarbons (MRO)		<14.9	14.9										
Total TPH		<14.9	14.9										

Jessica Kramer
Project Assistant

Certificate of Analysis Summary 612602

Tetra Tech- Midland, Midland, TX

Project Name: Graham Cracker 2 State 1H (11/15/2018 & 12

Project Id: 212C-MD-01519
Contact: Clair Gonzales
Project Location: Eddy County, New Mexico

Date Received in Lab: Fri Jan-25-19 02:23 pm
Report Date: 01-FEB-19
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	612602-007		612602-008		612602-009		612602-010		612602-011		612602-012	
	Field Id:	BH-1 (19-20')		BH-2 (0-1')		BH-2 (2'-3')		BH-2 (4'-5')		BH-2 (6'-7')		BH-2 (9'-10')	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jan-22-19 00:00		Jan-22-19 00:00		Jan-22-19 00:00		Jan-22-19 00:00		Jan-22-19 00:00		Jan-22-19 00:00	
BTEX by EPA 8021B	***Extracted:***			Jan-29-19 17:15									
	Analyzed:			Jan-30-19 12:56									
	Units/RL:			mg/kg	RL								
Benzene				<0.00201	0.00201								
Toluene				<0.00201	0.00201								
Ethylbenzene				<0.00201	0.00201								
m,p-Xylenes				<0.00402	0.00402								
o-Xylene				<0.00201	0.00201								
Total Xylenes				<0.00201	0.00201								
Total BTEX				<0.00201	0.00201								
Chloride by EPA 300	***Extracted:***	Jan-31-19 17:00		Jan-31-19 17:00		Feb-01-19 08:00		Feb-01-19 08:00		Jan-30-19 11:00		Feb-01-19 08:00	
	Analyzed:	Feb-01-19 06:39		Feb-01-19 06:46		Feb-01-19 10:23		Feb-01-19 10:29		Jan-31-19 01:07		Feb-01-19 10:41	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		714	24.9	133	24.9	<5.00	5.00	187	25.0	67.0	4.95	627	24.9
TPH by SW8015 Mod	***Extracted:***			Jan-30-19 15:00									
	Analyzed:			Jan-31-19 02:16									
	Units/RL:			mg/kg	RL								
Gasoline Range Hydrocarbons (GRO)				<15.0	15.0								
Diesel Range Organics (DRO)				984	15.0								
Motor Oil Range Hydrocarbons (MRO)				608	15.0								
Total TPH				1590	15.0								

Jessica Kramer
Project Assistant

Certificate of Analysis Summary 612602

Tetra Tech- Midland, Midland, TX

Project Name: Graham Cracker 2 State 1H (11/15/2018 & 12

Project Id: 212C-MD-01519
Contact: Clair Gonzales
Project Location: Eddy County, New Mexico

Date Received in Lab: Fri Jan-25-19 02:23 pm
Report Date: 01-FEB-19
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	612602-016		612602-017		612602-018		612602-019		612602-020		612602-021	
	Field Id:	BH-3 (0-1')		BH-3 (2'-3')		BH-3 (4'-5')		BH-3 (6'-7')		BH-3 (9'-10')		BH-3 (14'-51')	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jan-22-19 00:00		Jan-22-19 00:00		Jan-22-19 00:00		Jan-22-19 00:00		Jan-22-19 00:00		Jan-22-19 00:00	
BTEX by EPA 8021B	***Extracted:***	Jan-29-19 17:15											
	Analyzed:	Jan-30-19 13:15											
	Units/RL:	mg/kg	RL										
Benzene		<0.00200	0.00200										
Toluene		<0.00200	0.00200										
Ethylbenzene		<0.00200	0.00200										
m,p-Xylenes		<0.00401	0.00401										
o-Xylene		<0.00200	0.00200										
Total Xylenes		<0.00200	0.00200										
Total BTEX		<0.00200	0.00200										
Chloride by EPA 300	***Extracted:***			Feb-01-19 08:00		Feb-01-19 08:00		Feb-01-19 08:00		Feb-01-19 08:00		Feb-01-19 08:00	
	Analyzed:			Feb-01-19 11:03		Feb-01-19 11:09		Feb-01-19 11:15		Feb-01-19 11:21		Feb-01-19 11:28	
	Units/RL:			mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride				245	24.9	418	24.9	466	49.8	1240	25.0	843	25.1
TPH by SW8015 Mod	***Extracted:***	Jan-30-19 15:00											
	Analyzed:	Jan-31-19 02:36											
	Units/RL:	mg/kg	RL										
Gasoline Range Hydrocarbons (GRO)		<15.0	15.0										
Diesel Range Organics (DRO)		44.0	15.0										
Motor Oil Range Hydrocarbons (MRO)		15.3	15.0										
Total TPH		59.3	15.0										

Jessica Kramer
Project Assistant

Certificate of Analysis Summary 612602

Tetra Tech- Midland, Midland, TX

Project Name: Graham Cracker 2 State 1H (11/15/2018 & 12

Project Id: 212C-MD-01519
Contact: Clair Gonzales
Project Location: Eddy County, New Mexico

Date Received in Lab: Fri Jan-25-19 02:23 pm
Report Date: 01-FEB-19
Project Manager: Jessica Kramer

Analysis Requested								
	Lab Id:	612602-022						
	Field Id:	BH-3 (19'-20')						
	Depth:							
	Matrix:	SOIL						
	Sampled:	Jan-22-19 00:00						
Chloride by EPA 300	***Extracted:***	Feb-01-19 08:00						
	Analyzed:	Feb-01-19 11:52						
	Units/RL:	mg/kg	RL					
Chloride		326	24.8					

Jessica Kramer
Project Assistant

Flagging Criteria

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

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

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

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

F RPD exceeded lab control limits.

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

U Analyte was not detected.

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

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

K Sample analyzed outside of recommended hold time.

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

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

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

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

+ NELAC certification not offered for this compound.

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

Form 2 - Surrogate Recoveries

Project Name: Graham Cracker 2 State 1H (11/15/2018 & 12

Work Orders : 612602, **Project ID:** 212C-MD-01519

Lab Batch #: 3077529 **Sample:** 612602-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 01/30/19 12:37

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0321	0.0300	107	70-130	
4-Bromofluorobenzene	0.0347	0.0300	116	70-130	

Lab Batch #: 3077529 **Sample:** 612602-008 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 01/30/19 12:56

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0335	0.0300	112	70-130	
4-Bromofluorobenzene	0.0335	0.0300	112	70-130	

Lab Batch #: 3077529 **Sample:** 612602-016 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 01/30/19 13:15

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0331	0.0300	110	70-130	
4-Bromofluorobenzene	0.0334	0.0300	111	70-130	

Lab Batch #: 3077562 **Sample:** 612602-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 01/31/19 01:56

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	96.1	99.6	96	70-135	
o-Terphenyl	45.7	49.8	92	70-135	

Lab Batch #: 3077562 **Sample:** 612602-008 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 01/31/19 02:16

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	99.1	100	99	70-135	
o-Terphenyl	49.4	50.0	99	70-135	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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

Form 2 - Surrogate Recoveries

Project Name: Graham Cracker 2 State 1H (11/15/2018 & 12

Work Orders : 612602,

Project ID: 212C-MD-01519

Lab Batch #: 3077562 **Sample:** 612602-016 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 01/31/19 02:36

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	97.6	99.8	98	70-135	
o-Terphenyl	47.9	49.9	96	70-135	

Lab Batch #: 3077529 **Sample:** 7670751-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 01/30/19 11:02

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0311	0.0300	104	70-130	
4-Bromofluorobenzene	0.0275	0.0300	92	70-130	

Lab Batch #: 3077562 **Sample:** 7670775-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 01/30/19 19:59

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	104	100	104	70-135	
o-Terphenyl	54.3	50.0	109	70-135	

Lab Batch #: 3077529 **Sample:** 7670751-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 01/30/19 09:29

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0323	0.0300	108	70-130	
4-Bromofluorobenzene	0.0308	0.0300	103	70-130	

Lab Batch #: 3077562 **Sample:** 7670775-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 01/30/19 20:19

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	130	100	130	70-135	
o-Terphenyl	62.2	50.0	124	70-135	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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

Form 2 - Surrogate Recoveries

Project Name: Graham Cracker 2 State 1H (11/15/2018 & 12

Work Orders : 612602,

Project ID: 212C-MD-01519

Lab Batch #: 3077529 **Sample:** 7670751-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 01/30/19 09:48

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0322	0.0300	107	70-130	
4-Bromofluorobenzene	0.0306	0.0300	102	70-130	

Lab Batch #: 3077562 **Sample:** 7670775-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 01/30/19 20:38

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	129	100	129	70-135	
o-Terphenyl	60.6	50.0	121	70-135	

Lab Batch #: 3077529 **Sample:** 612598-021 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 01/30/19 10:07

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0322	0.0300	107	70-130	
4-Bromofluorobenzene	0.0312	0.0300	104	70-130	

Lab Batch #: 3077562 **Sample:** 612644-021 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 01/30/19 21:18

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	116	100	116	70-135	
o-Terphenyl	52.6	50.0	105	70-135	

Lab Batch #: 3077529 **Sample:** 612598-021 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 01/30/19 10:26

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0322	0.0300	107	70-130	
4-Bromofluorobenzene	0.0308	0.0300	103	70-130	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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

Form 2 - Surrogate Recoveries

Project Name: Graham Cracker 2 State 1H (11/15/2018 & 12

Work Orders : 612602, **Project ID:** 212C-MD-01519

Lab Batch #: 3077562 **Sample:** 612644-021 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 01/30/19 21:38

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	119	99.9	119	70-135	
o-Terphenyl	54.5	50.0	109	70-135	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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

BS / BSD Recoveries

Project Name: Graham Cracker 2 State 1H (11/15/2018 & 12

Work Order #: 612602 **Project ID:** 212C-MD-01519

Analyst: SCM **Date Prepared:** 01/29/2019 **Date Analyzed:** 01/30/2019

Lab Batch ID: 3077529 **Sample:** 7670751-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.000386	0.100	0.109	109	0.0998	0.103	103	6	70-130	35	
Toluene	<0.000457	0.100	0.0963	96	0.0998	0.0916	92	5	70-130	35	
Ethylbenzene	<0.000566	0.100	0.0910	91	0.0998	0.0865	87	5	70-130	35	
m,p-Xylenes	<0.00102	0.200	0.177	89	0.200	0.168	84	5	70-130	35	
o-Xylene	<0.000345	0.100	0.0903	90	0.0998	0.0864	87	4	70-130	35	

Analyst: CHE **Date Prepared:** 01/30/2019 **Date Analyzed:** 01/30/2019

Lab Batch ID: 3077576 **Sample:** 7670788-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<0.858	250	258	103	250	254	102	2	90-110	20	

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

BS / BSD Recoveries

Project Name: Graham Cracker 2 State 1H (11/15/2018 & 12

Work Order #: 612602 **Project ID:** 212C-MD-01519

Analyst: SCM **Date Prepared:** 01/31/2019 **Date Analyzed:** 02/01/2019

Lab Batch ID: 3077815 **Sample:** 7670915-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<0.858	250	253	101	250	245	98	3	90-110	20	

Analyst: SCM **Date Prepared:** 02/01/2019 **Date Analyzed:** 02/01/2019

Lab Batch ID: 3077819 **Sample:** 7670916-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<0.858	250	231	92	250	233	93	1	90-110	20	

Analyst: ARM **Date Prepared:** 01/30/2019 **Date Analyzed:** 01/30/2019

Lab Batch ID: 3077562 **Sample:** 7670775-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<8.00	1000	946	95	1000	951	95	1	70-135	20	
Diesel Range Organics (DRO)	<8.13	1000	1080	108	1000	1080	108	0	70-135	20	

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

Form 3 - MS / MSD Recoveries

Project Name: Graham Cracker 2 State 1H (11/15/2018 & 12

Work Order # : 612602 **Project ID:** 212C-MD-01519

Lab Batch ID: 3077529 **QC- Sample ID:** 612598-021 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 01/30/2019 **Date Prepared:** 01/29/2019 **Analyst:** SCM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.000383	0.0996	0.0851	85	0.100	0.0876	88	3	70-130	35	
Toluene	<0.000454	0.0996	0.0760	76	0.100	0.0773	77	2	70-130	35	
Ethylbenzene	<0.000563	0.0996	0.0710	71	0.100	0.0722	72	2	70-130	35	
m,p-Xylenes	<0.00101	0.199	0.139	70	0.200	0.141	71	1	70-130	35	
o-Xylene	<0.000343	0.0996	0.0719	72	0.100	0.0723	72	1	70-130	35	

Lab Batch ID: 3077576 **QC- Sample ID:** 612806-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 01/30/2019 **Date Prepared:** 01/30/2019 **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	342	250	611	108	250	602	104	1	90-110	20	

Lab Batch ID: 3077576 **QC- Sample ID:** 612810-004 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 01/31/2019 **Date Prepared:** 01/30/2019 **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	8.52	249	286	111	249	268	104	6	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.

Form 3 - MS / MSD Recoveries

Project Name: Graham Cracker 2 State 1H (11/15/2018 & 12

Work Order # : 612602 **Project ID:** 212C-MD-01519

Lab Batch ID: 3077815 **QC- Sample ID:** 612598-010 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/01/2019 **Date Prepared:** 01/31/2019 **Analyst:** SCM

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	<0.855	249	264	106	249	270	108	2	90-110	20	

Lab Batch ID: 3077815 **QC- Sample ID:** 612598-020 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/01/2019 **Date Prepared:** 01/31/2019 **Analyst:** SCM

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	18.4	248	284	107	248	279	105	2	90-110	20	

Lab Batch ID: 3077819 **QC- Sample ID:** 612603-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/01/2019 **Date Prepared:** 02/01/2019 **Analyst:** SCM

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	0.953	250	265	106	250	250	100	6	90-110	20	

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

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

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

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

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

Form 3 - MS / MSD Recoveries

Project Name: Graham Cracker 2 State 1H (11/15/2018 & 12

Work Order # : 612602 **Project ID:** 212C-MD-01519

Lab Batch ID: 3077819 **QC- Sample ID:** 612603-002 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 02/01/2019 **Date Prepared:** 02/01/2019 **Analyst:** SCM

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	<0.853	249	242	97	249	244	98	1	90-110	20	

Lab Batch ID: 3077562 **QC- Sample ID:** 612644-021 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 01/30/2019 **Date Prepared:** 01/30/2019 **Analyst:** ARM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<8.00	1000	820	82	999	832	83	1	70-135	20	
Diesel Range Organics (DRO)	<8.13	1000	937	94	999	953	95	2	70-135	20	

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

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

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

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

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

Analysis Request of Chain of Custody Record

(012402

Tetra Tech, Inc.

901 West Wall, Suite 100
Midland,Texas 79701
Tel (432) 682-4559
Fax (432) 682-3946

Client Name: Concho	**Site Manager:** Clair Gonzales
Project Name: Graham Cracker 2 State 1H (11/15/2018 & 12/	
Project Location: (county, state) Eddy County, New Mexico	**Project #:** 212C-MD-01519
Invoice to: COG- Ike Tavarez	
Receiving Laboratory: Xenco Lab	**Sampler Signature:** Mike Carmona
Comments:	

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING DATE	SAMPLING TIME	MATRIX WATER	MATRIX SOIL	PRESERVATIVE METHOD HCL	PRESERVATIVE METHOD HNO_3	PRESERVATIVE METHOD ICE	PRESERVATIVE METHOD None	# CONTAINERS	FILTERED (Y/N)
	BH-1 (0-1')	1/22/2019			X			X		1	N
	BH-1 (2'-3')	1/22/2019			X			X		1	N
	BH-1 (4'-5')	1/22/2019			X			X		1	N
	BH-1 (6'-7')	1/22/2019			X			X		1	N
	BH-1 (9'-10')	1/22/2019			X			X		1	N
	BH-1 (14'-15')	1/22/2019			X			X		1	N
	BH-1 (19'-20')	1/22/2019			X			X		1	N
	BH-2 (0-1')	1/22/2019			X			X		1	N
	BH-2 (2'-3')	1/22/2019			X			X		1	N
	BH-2 (4'-5')	1/22/2019			X			X		1	N
	BH-2 (6'-7')	1/22/2019			X			X		1	N

ANALYSIS REQUEST
(Circle or Specify Method No.)

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

Final 1.000

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Relinquished by:	Date:	Time:	Received by:	Date:	Time:
	1-25-19	1420		1/25/19	1423
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

LAB USE ONLY

Sample Temperature
3.2|3.1
-0.1|RE

REMARKS:

- [X] STANDARD
- [ ] RUSH: Same Day 24 hr 48 hr 72 hr
- [ ] Rush Charges Authorized
- [ ] Special Report Limits or TRRP Report

(Circle) HAND DELIVERED FEDEX UPS Tracking #: _____

ORIGINAL COPY

Analysis Request of Chain of Custody Record

6/2002

Tetra Tech, Inc.

901 West Wall, Suite 100
Midland,Texas 79701
Tel (432) 682-4559
Fax (432) 682-3946

Client Name: Concho	**Site Manager:** Clair Gonzales
Project Name: Graham Cracker 2 State 1H (11/15/2018 & 12/4/2018)	
Project Location: (county, state) Eddy County, New Mexico	**Project #:** 212C-MD-01519
Invoice to: COG- Ike Tavarez	
Receiving Laboratory: Xenco Lab	**Sampler Signature:** Mike Carmona
Comments:	

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING YEAR: 2019 DATE	SAMPLING TIME	MATRIX WATER	MATRIX SOIL	MATRIX	PRESERVATIVE METHOD HCL	PRESERVATIVE METHOD HNO_3	PRESERVATIVE METHOD ICE	PRESERVATIVE METHOD None	PRESERVATIVE METHOD	# CONTAINERS	FILTERED (Y/N)	BTEX 8021B BTEX 8260B	TPH TX1005 (Ext to C35)	TPH 8015M (GRO - DRO - ORO - MRO)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8260B / 624	GC/MS Semi. Vol. 8270C/625	PCB's 8082 / 608	NORM	PLM (Asbestos)	Chloride	Chloride Sulfate TDS	General Water Chemistry (see attached list)	Anion/Cation Balance				Hold
	BH-2 (9'-10')	1/22/2019			X																							X							
	BH-2 (14'-15')	1/22/2019			X																														X
	BH-2 (19'-20')	1/22/2019			X																														X
	BH-2 (24'-25')	1/22/2019			X																														X
	BH-3 (0-1')	1/22/2019			X									X		X																			
	BH-3 (2'-3')	1/22/2019			X																							X							
	BH-3 (4'-5')	1/22/2019			X																							X							
	BH-3 (6'-7')	1/22/2019			X																							X							
	BH-3 (9'-10')	1/22/2019			X																							X							
	BH-3 (14'-15')	1/22/2019			X																							X							
	BH-3 (19'-20')	1/22/2019			X																							X							
	BH-3 (24'-25')	1/22/2019			X																														X

Relinquished by:	Date: 1-25-19	Time: 1422	Received by: Date: 1/25/19 Time: 1423
Relinquished by:	Date:	Time:	Received by: Date: Time:
Relinquished by:	Date:	Time:	Received by: Date: Time:

LAB USE ONLY

Sample Temperature 3.2 | 3.1 | 0.1 | NR

REMARKS:

- [X] STANDARD
- [ ] RUSH: Same Day 24 hr 48 hr 72 hr
- [ ] Rush Charges Authorized
- [ ] Special Report Limits or TRRP Report

(Circle) HAND DELIVERED FEDEX UPS Tracking #: _____

ORIGINAL COPY

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XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In

Client: Tetra Tech- Midland

Date/ Time Received: 01/25/2019 02:23:00 PM

Work Order #: 612602

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

Temperature Measuring device used : R8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	3.2
#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 Date: 01/25/2019
Brianna Teel

Checklist reviewed by: Jessica Kramer Date: 01/25/2019
Jessica Kramer