

SITE INFORMATION

Report Type: Work Plan 1RP-4712

General Site Information:

Site:	Federal 19 #1					
Company:	COG Operating LLC					
Section, Township and Range	Unit A	Sec. 19	T 23S	R 34E		
Lease Number:	API No. 30-025-24676					
County:	Lea County					
GPS:	32.2955856° N			103.5027542° W		
Surface Owner:	State					
Mineral Owner:						
Directions:	From intersection of HWY 128 and Delaware Basin Rd, travel north on Delaware Basin Rd for 5.10 mi, turn east onto lease rd for 0.10 mi, turn north for 0.90 mi to location on west side of lease road.					

Release Data:

Date Released:	5/31/2017
Type Release:	Produced Water
Source of Contamination:	Wellhead
Fluid Released:	20 bbls
Fluids Recovered:	19 bbls

Official Communication:

Name:	Becky Haskell		Ike Tavarez
Company:	COG Operating, LLC		Tetra Tech
Address:	One Concho Center		4000 N. Big Spring
	600 W. Illinois Ave.		Ste 401
City:	Midland Texas, 79701		Midland, Texas
Phone number:	(432) 683-7443		(432) 687-8110
Fax:	(432) 684-7137		
Email:	RHaskell@concho.com		Ike.Tavarez@tetrattech.com

Ranking Criteria

Depth to Groundwater:	Ranking Score	Site Data
<50 ft	20	
50-99 ft	10	
>100 ft.	0	275'-300'
WellHead Protection:	Ranking Score	Site Data
Water Source <1,000 ft., Private <200 ft.	20	
Water Source >1,000 ft., Private >200 ft.	0	0
Surface Body of Water:	Ranking Score	Site Data
<200 ft.	20	
200 ft - 1,000 ft.	10	
>1,000 ft.	0	0
Total Ranking Score:		0

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

APPROVED*By Olivia Yu at 2:08 pm, May 01, 2018*

April 5, 2018

NMOCD agrees that delineation is completed for 1RP-4712. See email correspondence about proposed remediation. Confirmation bottom and sidewall samples required.

Ms. Olivia Yu
Environmental Engineer Specialist
Oil Conservation Division, District 1
1625 North French Drive
Hobbs, New Mexico 88240

Re: Work Plan for the COG Operating LLC., Federal 19 #1, Unit A, Section 19, Township 23 South, Range 34 East, Lea County, New Mexico. 1RP-4712.

Ms. Yu:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC., (COG) to assess a release that occurred at the Federal 19 #1, Unit A, Section 19, Township 23 South, Range 34 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.2955856°, W 103.5027542°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the release was discovered on May 31, 2017, and released approximately twenty (20) barrels or produced water due to a damaged two-inch nipple at the wellhead. A vacuum truck was used to remove the freestanding fluids, recovering approximately nineteen (19) barrels of produced water. The release occurred on the pad area and measured approximately 70' x 100'. The initial C-141 form is included in Appendix A.

Groundwater

No water wells are listed within Section 19 in the New Mexico Office of the State Engineers database. According to the Chevron Texaco Groundwater Trend map, the average depth to groundwater in the area is between 275' and 300' below surface. The groundwater data is shown in Appendix B.

Regulatory

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene,

Tetra Tech

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Tel 432.682.4559 Fax 432.682.3946 www.tetrattech.com



ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 5,000 mg/kg.

Soil Assessment and Analytical Results

Trenches

On June 28, 2017, COG personnel were onsite to evaluate and sample the release area. Three (3) sample trenches (T-1, T-2, and T-3) were installed in the release area to total depths of 15.0', 12.0', and 10.0', respectively. Additionally, four (4) additional sample points (North, South, East, and West) were installed to a depth of 1.0' below surface in order to define the horizontal extents of the release. Selected samples were analyzed 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 sampling results are summarized in Table 1. The trench locations are shown on Figure 3.

Referring to Table 1, the areas of trenches (T-1, T-2, and T-3) showed benzene, total BTEX, and TPH concentrations below the RRALs. However, the area of trench (T-1) showed a chloride high of 14,900 mg/kg at surface, which declined with depth but showed a bottom trench concentration of 1,720 mg/kg at 15.0' below surface. The areas of trenches (T-2 and T-3) showed elevated chlorides in the shallow soils with concentrations of 6,610 mg/kg and 20,200 mg/kg at surface, respectively. The concentrations then declined with depth to 20.9 mg/kg (T-2) and 78.5 mg/kg (T-3) at 2.0' below surface.

The horizontal samples (North, South, East, and West) showed benzene, total BTEX, and TPH concentrations below the RRALs. Additionally, no significant chloride concentrations were detected in these areas.

Boreholes

Based on the laboratory data, Tetra Tech personnel returned to the site on October 28, 2017, in order to vertically delineate the chloride concentrations in the area of trench (T-1). One (1) borehole (BH-1) was installed in the vicinity of trench (T-1) to a total depth of 29-30' below surface. The samples were analyzed for chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The borehole location is shown on Figure 3.

Referring to Table 1, the area of borehole (BH-1) showed minimal chlorides in the shallow soils, with concentrations of 392 mg/kg at 0-1', 573 mg/kg at 2'-3', and 60.9 mg/kg at 4'-5' below surface. The chloride concentrations then increased with depth with a chloride high of 3,320 mg/kg at 14-15' before declining to 349 mg/kg at 19-20' below surface. The area of borehole (BH-1) showed a bottom hole chloride concentration of 412 mg/kg at 29-30' below surface.

Work Plan

Based on the laboratory results, COG proposes to remove the impacted material as highlighted (green) in Table 1 and shown on Figure 4. The areas of trenches (T-2 and T-3) will be excavated to approximately 1.0-2.0' below surface.

The area of BH-1/T-1 will be excavated to a depth of approximately 3.0-4.0' below surface and capped with a 20 mil liner to prevent vertical migration of the deeper impact. Based on the borehole data, there were no significant chlorides detected in the shallow soils from 0 to 5.0' below surface. The excavated material from the area will be stockpiled and segregated into 50 cubic yards stockpiles and sampled for chlorides. If the laboratory results show chloride concentrations below 600 mg/kg, the stockpiled material will be used to backfill the excavation. However, if the laboratory results show chloride concentrations in excess of 600 mg/kg, the stockpiled material will be hauled for proper disposal. Once excavated to the appropriate depth, the excavation will be backfilled to surface grade. All of the excavated material from the areas of trenches (T-2 and T-3) will be transported offsite for proper disposal.

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 safety concerns for onsite personnel. As such, COG will excavate the impacted soils to the maximum extent practicable.

Conclusion

Upon completion, a final report detailing the remediation activities will be submitted to the NMOCD. If you have any questions or comments concerning the assessment or the proposed remediation activities for this site, please call at (432) 682-4559.

Respectfully submitted,
TETRA TECH



Clair Gonzales,
Geologist I



Ike Tavarez,
Senior Project Manager, P.G.

cc: Robert McNeill – COG
Dakota Neel – COG
Rebecca Haskell – COG
Shelly Tucker - BLM

Figures

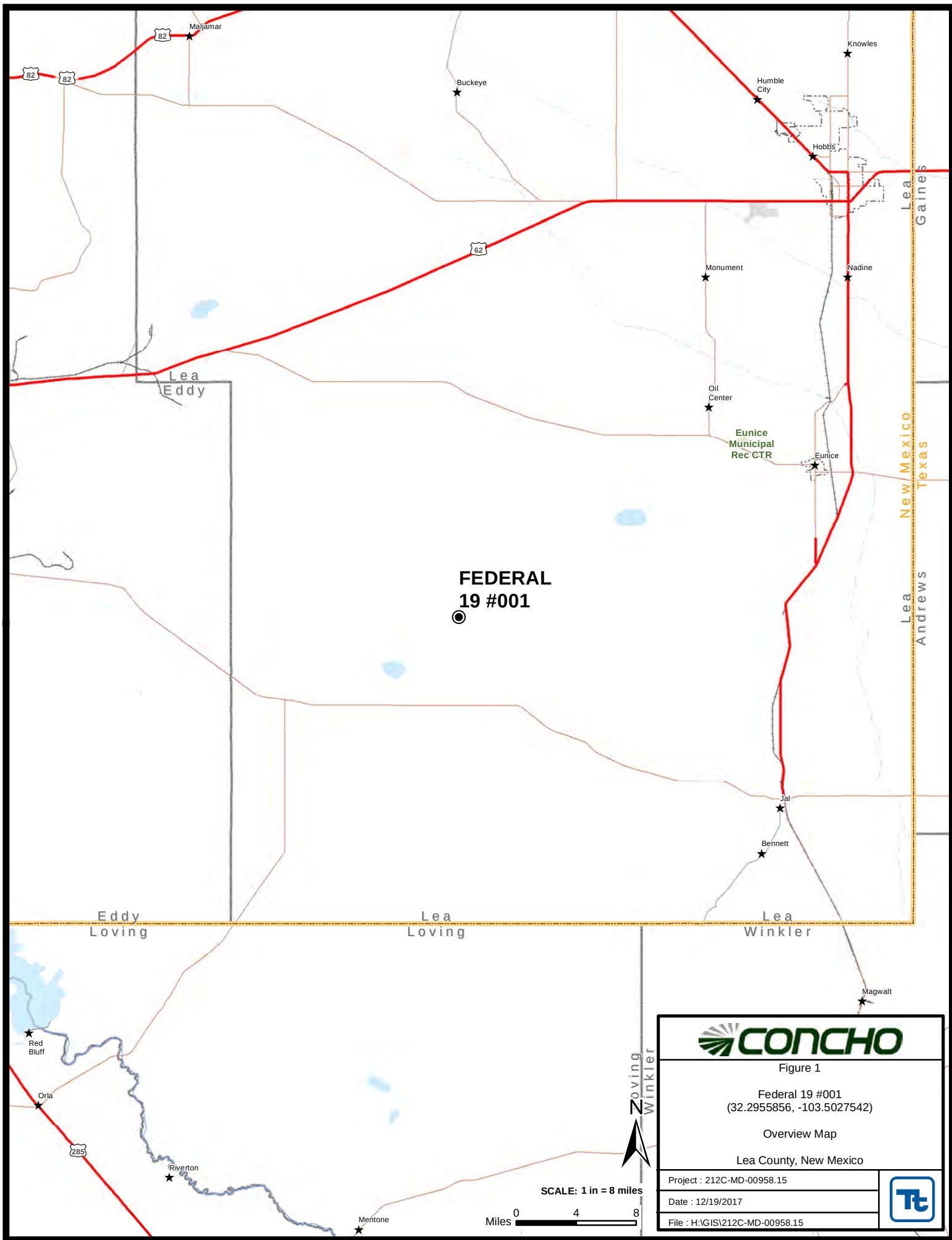




Figure 1

Federal 19 #001
(32.2955856, -103.5027542)

Overview Map

Lea County, New Mexico

Project : 212C-MD-00958.15
Date : 12/19/2017
File : H:\GIS\212C-MD-00958.15



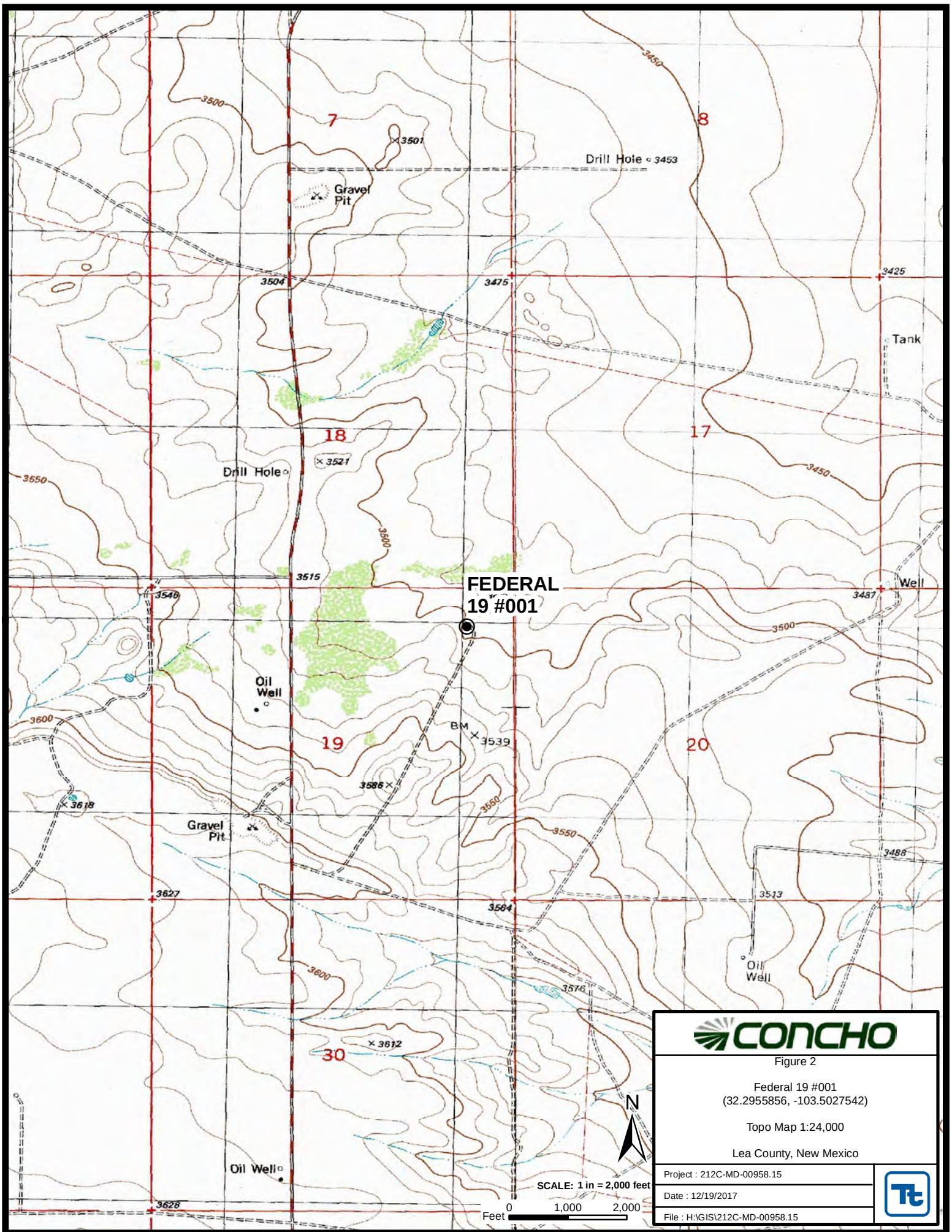


Figure 2

Federal 19 #001
(32.2955856, -103.5027542)

Topo Map 1:24,000

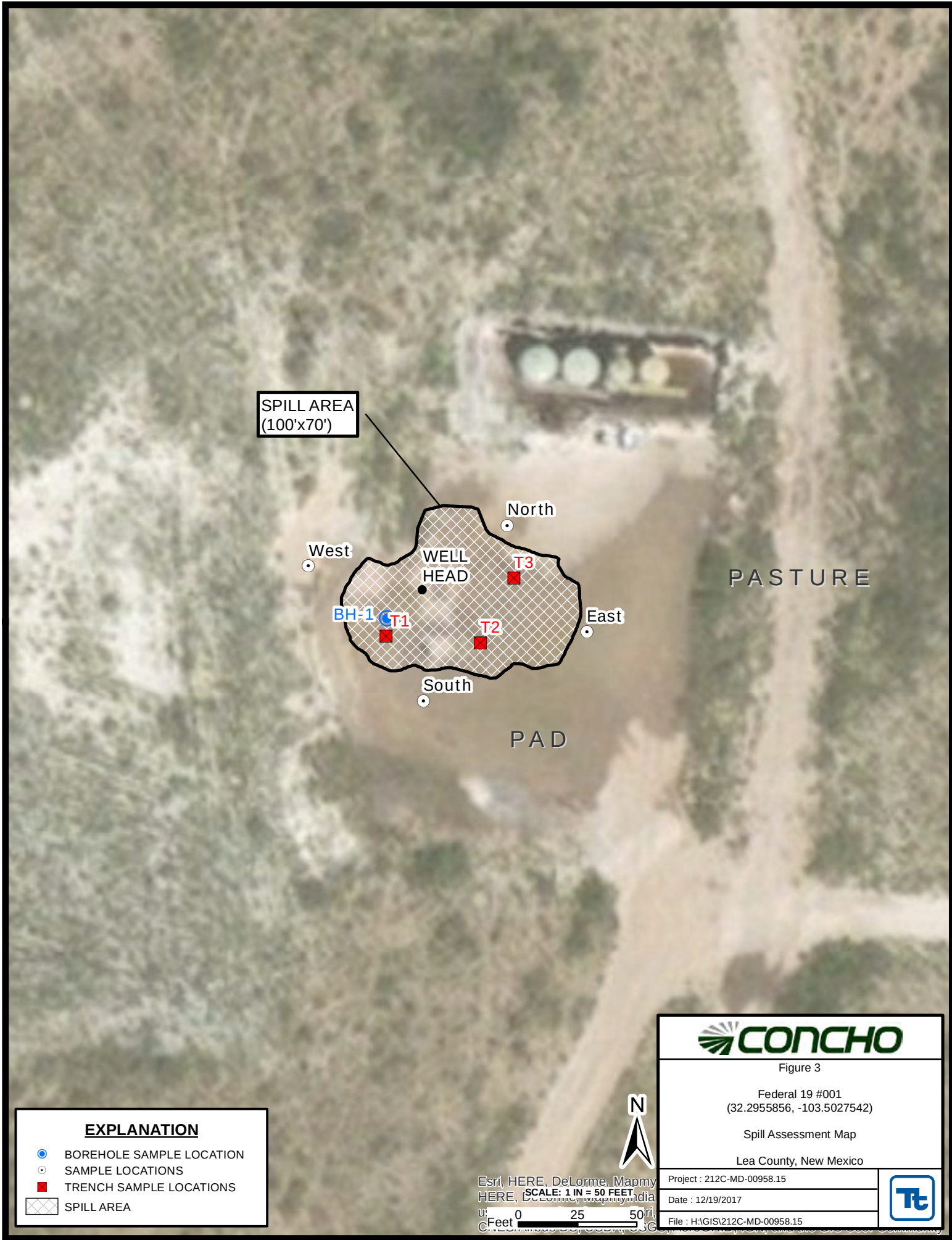
Lea County, New Mexico

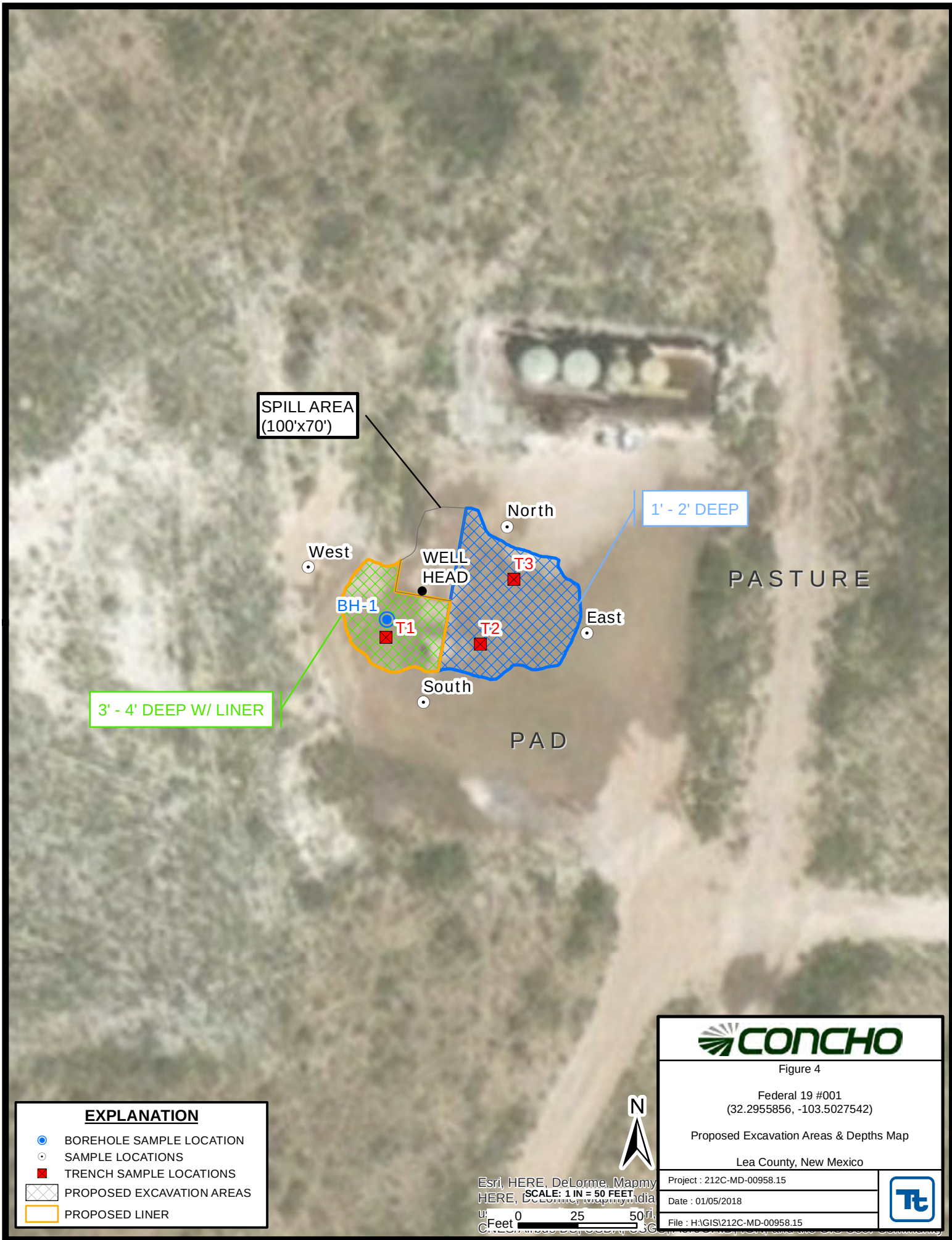
Project : 212C-MD-00958.15

Date : 12/19/2017

File : H:\GIS\212C-MD-00958.15







Tables

Table 1
COG Operating LLC.
Federal 19 #1
Lea County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)				Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	C6-C10	C10-C28	C28-C35	Total						
T-1	6/28/2017	Surface	X		<15.0	46.3	<15.0	46.3	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	14900
	"	1	X		<15.0	86.9	<15.0	86.9	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	5320
	"	2	X		<15.0	<15.0	<15.0	<15.0	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	3410
	"	3	X		<14.9	258	53.1	311	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	2660
	"	4	X		<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	2610
	"	5	X		-	-	-	-	-	-	-	-	-	1520
	"	6	X		-	-	-	-	-	-	-	-	-	4180
	"	8	X		-	-	-	-	-	-	-	-	-	4100
	"	10	X		-	-	-	-	-	-	-	-	-	4300
	"	12	X		-	-	-	-	-	-	-	-	-	5110
	"	14	X		-	-	-	-	-	-	-	-	-	4740
	"	15	X		<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	1720
BH-1	10/26/2017	0-1	X		-	-	-	-	-	-	-	-	-	392
	"	2-3	X		-	-	-	-	-	-	-	-	-	573
	"	4-5	X		-	-	-	-	-	-	-	-	-	60.9
	"	6-7	X		-	-	-	-	-	-	-	-	-	1,710
	"	9-10	X		-	-	-	-	-	-	-	-	-	2,220
	"	14-15	X		-	-	-	-	-	-	-	-	-	3,320
	"	19-20	X		-	-	-	-	-	-	-	-	-	349
	"	24-25	X		-	-	-	-	-	-	-	-	-	212
	"	29-30	X		-	-	-	-	-	-	-	-	-	412
T-2	6/28/2017	Surface	X		<15.0	56.1	<15.0	56.1	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	6610
	"	1	X		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	859
	"	2	X		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	20.9
	"	3	X		<15.0	<15.0	<15.0	<15.0	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	16.3
	"	5	X		-	-	-	-	-	-	-	-	-	9.34
	"	8	X		-	-	-	-	-	-	-	-	-	21.0
	"	12	X		<14.9	<14.9	<14.9	<14.9	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	391
T-3	6/28/2017	Surface	X		<15.0	182	<15.0	182	<0.00198	<0.00198	<0.00198	<0.00198	<0.00198	20200
	"	1	X		<14.9	<14.9	<14.9	<14.9	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	2850
	"	2	X		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	78.5
	"	3	X		<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	118
	"	4	X		-	-	-	-	-	-	-	-	-	145
	"	5	X		-	-	-	-	-	-	-	-	-	112
	"	10	X		<15.0	<15.0	<15.0	<15.0	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	329

Table 1
COG Operating LLC.
Federal 19 #1
Lea 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	C6-C10	C10-C28	C28-C35	Total						
North	6/28/2017	Surface	X		<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	136
	"	1	X		<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	56.0
South	6/28/2017	Surface	X		<15.0	<15.0	<15.0	<15.0	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	51.3
	"	1	X		<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	8.11
East	6/28/2017	Surface	X		111	931	92.5	1130	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	77.8
	"	1	X		<15.0	42.9	<15.0	42.9	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	175
West	6/28/2017	Surface	X		<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	92.3
	"	1	X		<15.0	<15.0	<15.0	<15.0	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	8.22

(-) Not Analyzed

 Proposed Excavation Depths

 Proposed Liner 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

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

Form C-141
Revised August 8, 2011

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: COG Operating LLC OGRID # 229137	Contact: Robert McNeill
Address: 600 West Illinois Avenue, Midland TX 79701	Telephone No. 432-683-7443
Facility Name: Federal 19 #001	Facility Type: Wellhead

Surface Owner: State	Mineral Owner: Federal	API No. 30-025-24676
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LOCATION OF RELEASE

Unit Letter A	Section 19	Township 23S	Range 34E	Feet from the 660	North/South Line North	Feet from the 660	East/West Line East	County Lea
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Latitude 32.2955856 Longitude -103.5027542

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: 20 bbls	Volume Recovered: 19 bbls
Source of Release: Wellhead	Date and Hour of Occurrence: May 31, 2017 5:00 pm	Date and Hour of Discovery: May 31, 2017 5:00 pm
Was Immediate Notice Given? ☐ Yes ☒ No ☒ Not Required	If YES, To Whom?	
By Whom?	Date and Hour:	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

RECEIVED

By Olivia Yu at 8:20 am, Jun 02, 2017

Describe Cause of Problem and Remedial Action Taken.*

During a wellhead change out a two-inch nipple broke. The wellhead was changed out.

Describe Area Affected and Cleanup Action Taken.*

The release occurred on the pad. A vacuum truck was dispatched to remove all freestanding fluids. Concho will have the spill area sampled to 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.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD 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 NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD 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.

Signature: <i>Rebecca Haskell</i>	OIL CONSERVATION DIVISION	
Printed Name: Rebecca Haskell	Approved by Environmental Specialist: <i>ay</i>	
Title: Senior HSE Coordinator	Approval Date: 6/2/2017	Expiration Date:
E-mail Address: rhaskell@concho.com	Conditions of Approval: see attached directive	Attached ☒
Date: June 1, 2017 Phone: 432-683-7443		

* Attach Additional Sheets If Necessary

1RP-4712

nOY1715329950

pOY1715330523

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - Federal 19 #1
Lea County, New Mexico

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

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

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

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

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

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

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

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

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

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	Tws	Rng	X	Y	DepthWell	DepthWater	Water Column
C 03620 POD1		C	LE	1	4	3	32	23S	34E	641790	3569941	480	130	350
CP 00556 POD1		CP	LE	4	4	3	08	23S	34E	641762	3576206	497	255	242
CP 00580		CP	LE	3	4	3	23	23S	34E	646524	3572948*	220		
CP 00606		CP	LE		4	1	23	23S	34E	646613	3573854*	650	265	385
CP 00618		CP	LE	1	2	4	22	23S	34E	645713	3573539*	428	295	133
CP 00637		CP	LE	3	3	4	15	23S	34E	645293	3574541*	430	430	0
CP 00872 POD1		CP	LE	1	1	1	08	23S	34E	641225	3577504*	494	305	189
CP 01075 POD1		CP	LE		1	1	08	23S	34E	641278	3577525	430	20	410
CP 01120 POD1		CP	LE			3	14	23S	34E	646366	3574753	397	318	79
CP 01130 POD1		CP	LE	2	1	2	07	23S	34E	640662	3577558	27		
CP 01130 POD2		CP	LE	2	1	2	07	23S	34E	640674	3577549	27		
CP 01258 POD1		CP	LE	1	4	3	22	23S	34E	645015	3573221	25		
CP 01258 POD2		CP	LE	1	4	3	22	23S	34E	644941	3572883	65		
CP 01258 POD3		CP	LE	1	4	3	22	23S	34E	644938	3573097	25		
CP 01502 POD1		CP	LE	4	3	3	05	23S	34E	641342	3577635	648	200	448

Average Depth to Water: **246 feet**

Minimum Depth: **20 feet**

Maximum Depth: **430 feet**

Record Count: 15

PLSS Search:

Township: 23S **Range:** 34E

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

1/3/18 9:37 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER

Appendix C



Certificate of Analysis Summary 556915

COG Operating LLC, Artesia, NM

Project Name: Federal 19 #001 SWD



Project Id:

Contact: Aaron Lieb

Project Location:

Date Received in Lab: Wed Jul-05-17 11:45 am

Report Date: 13-JUL-17

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	556915-001	556915-002	556915-003	556915-004	556915-005	556915-006
	Field Id:	North - Surf	North - 1'	South - Surf	South - 1'	East - Surf	East - 1'
	Depth:	1 ft	1 ft	1 ft	1 ft	1 ft	1 ft
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Jun-28-17 14:00	Jun-28-17 14:00	Jun-28-17 14:00	Jun-28-17 14:00	Jun-28-17 14:00	Jun-28-17 14:00
BTEX by EPA 8021B	Extracted:	Jul-07-17 16:45	Jul-10-17 15:00	Jul-07-17 16:45	Jul-07-17 16:45	Jul-07-17 16:45	Jul-10-17 08:00
	Analyzed:	Jul-09-17 04:05	Jul-10-17 18:53	Jul-09-17 08:16	Jul-09-17 08:32	Jul-09-17 08:48	Jul-10-17 15:38
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00199 0.00199	<0.00199 0.00199	<0.00201 0.00201	<0.00199 0.00199	<0.00200 0.00200	<0.00202 0.00202
Toluene		<0.00199 0.00199	<0.00199 0.00199	<0.00201 0.00201	<0.00199 0.00199	<0.00200 0.00200	<0.00202 0.00202
Ethylbenzene		<0.00199 0.00199	<0.00199 0.00199	<0.00201 0.00201	<0.00199 0.00199	<0.00200 0.00200	<0.00202 0.00202
m_p-Xylenes		<0.00398 0.00398	<0.00398 0.00398	<0.00402 0.00402	<0.00398 0.00398	<0.00399 0.00399	<0.00403 0.00403
o-Xylene		<0.00199 0.00199	<0.00199 0.00199	<0.00201 0.00201	<0.00199 0.00199	<0.00200 0.00200	<0.00202 0.00202
Total Xylenes		<0.00199 0.00199	<0.00199 0.00199	<0.00201 0.00201	<0.00199 0.00199	<0.00200 0.00200	<0.00202 0.00202
Total BTEX		<0.00199 0.00199	<0.00199 0.00199	<0.00201 0.00201	<0.00199 0.00199	<0.00200 0.00200	<0.00202 0.00202
Chloride by EPA 300	Extracted:	Jul-11-17 18:00	Jul-11-17 18:00	Jul-11-17 18:00	Jul-11-17 18:00	Jul-11-17 18:00	Jul-11-17 18:00
	Analyzed:	Jul-12-17 02:58	Jul-12-17 03:05	Jul-12-17 03:13	Jul-12-17 03:36	Jul-12-17 03:44	Jul-12-17 04:07
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		136 4.87	56.0 4.94	51.3 4.98	8.11 4.97	77.8 4.91	175 4.99
TPH By SW8015 Mod	Extracted:	Jul-06-17 11:00	Jul-06-17 11:00	Jul-06-17 11:00	Jul-06-17 11:00	Jul-06-17 11:00	Jul-06-17 11:00
	Analyzed:	Jul-06-17 19:56	Jul-06-17 20:16	Jul-06-17 20:36	Jul-06-17 20:56	Jul-06-17 21:17	Jul-06-17 21:37
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	111 15.0	<15.0 15.0
Diesel Range Organics (DRO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	931 15.0	42.9 15.0
Oil Range Hydrocarbons (ORO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	92.5 15.0	<15.0 15.0
Total TPH		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	1130 15.0	42.9 15.0

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

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Version: 1.9%

Kelsey Brooks
Project Manager



Certificate of Analysis Summary 556915

COG Operating LLC, Artesia, NM

Project Name: Federal 19 #001 SWD



Project Id:

Contact: Aaron Lieb

Project Location:

Date Received in Lab: Wed Jul-05-17 11:45 am

Report Date: 13-JUL-17

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	556915-007	556915-008				
	Field Id:	West - Surf	West - 1'				
	Depth:		1 ft				
	Matrix:	SOIL	SOIL				
	Sampled:	Jun-28-17 14:00	Jun-28-17 14:00				
BTEX by EPA 8021B	Extracted:	Jul-10-17 08:00	Jul-10-17 08:00				
	Analyzed:	Jul-10-17 15:54	Jul-10-17 15:14				
	Units/RL:	mg/kg RL	mg/kg RL				
	Benzene	<0.00199 0.00199	<0.00201 0.00201				
	Toluene	<0.00199 0.00199	<0.00201 0.00201				
Ethylbenzene		<0.00199 0.00199	<0.00201 0.00201				
m_p-Xylenes		<0.00398 0.00398	<0.00402 0.00402				
o-Xylene		<0.00199 0.00199	<0.00201 0.00201				
Total Xylenes		<0.00199 0.00199	<0.00201 0.00201				
Total BTEX		<0.00199 0.00199	<0.00201 0.00201				
Chloride by EPA 300	Extracted:	Jul-11-17 18:00	Jul-11-17 18:00				
	Analyzed:	Jul-12-17 04:14	Jul-12-17 04:22				
	Units/RL:	mg/kg RL	mg/kg RL				
	Chloride	92.3 5.00	8.22 4.95				
TPH By SW8015 Mod	Extracted:	Jul-06-17 11:00	Jul-06-17 11:00				
	Analyzed:	Jul-06-17 21:57	Jul-06-17 22:18				
	Units/RL:	mg/kg RL	mg/kg RL				
	Gasoline Range Hydrocarbons (GRO)	<15.0 15.0	<15.0 15.0				
	Diesel Range Organics (DRO)	<15.0 15.0	<15.0 15.0				
Oil Range Hydrocarbons (ORO)		<15.0 15.0	<15.0 15.0				
Total TPH		<15.0 15.0	<15.0 15.0				

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

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Version: 1.0%

Kelsey Brooks
Project Manager

Analytical Report 556915

**for
COG Operating LLC**

Project Manager: Aaron Lieb

Federal 19 #001 SWD

13-JUL-17

Collected By: Client



1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215), Arizona (AZ0765), Florida (E871002), Louisiana (03054)
Oklahoma (9218)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400)
Xenco-San Antonio: Texas (T104704534)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)



13-JUL-17

Project Manager: **Aaron Lieb**

COG Operating LLC

2407 Pecos Avenue

Artesia, NM 88210

Reference: XENCO Report No(s): **556915**

Federal 19 #001 SWD

Project Address:

Aaron Lieb:

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) 556915. 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. 556915 will be filed for 60 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,

Kelsey Brooks

Project Manager

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Sample Cross Reference 556915



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
North - Surf	S	06-28-17 14:00		556915-001
North - 1'	S	06-28-17 14:00	- 1 ft	556915-002
South - Surf	S	06-28-17 14:00		556915-003
South - 1'	S	06-28-17 14:00	- 1 ft	556915-004
East - Surf	S	06-28-17 14:00		556915-005
East - 1'	S	06-28-17 14:00	- 1 ft	556915-006
West - Surf	S	06-28-17 14:00		556915-007
West - 1'	S	06-28-17 14:00	- 1 ft	556915-008



CASE NARRATIVE

Client Name: COG Operating LLC

Project Name: Federal 19 #001 SWD

Project ID:
Work Order Number(s): 556915

Report Date: 13-JUL-17
Date Received: 07/05/2017

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3021840 BTEX by EPA 8021B

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

Batch: LBA-3021854 BTEX by EPA 8021B

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

Batch: LBA-3021934 BTEX by EPA 8021B

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



Certificate of Analytical Results 556915



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **North - Surf**

Matrix: Soil

Date Received: 07.05.17 11.45

Lab Sample Id: 556915-001

Date Collected: 06.28.17 14.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MGO

% Moisture:

Analyst: MGO

Date Prep: 07.11.17 18.00

Basis: Wet Weight

Seq Number: 3022034

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	136	4.87	mg/kg	07.12.17 02.58		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 07.06.17 11.00

Basis: Wet Weight

Seq Number: 3021792

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	07.06.17 19.56	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	07.06.17 19.56	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	07.06.17 19.56	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	07.06.17 19.56	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	130	%	70-135	07.06.17 19.56	
o-Terphenyl	84-15-1	131	%	70-135	07.06.17 19.56	



Certificate of Analytical Results 556915



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **North - Surf**

Matrix: Soil

Date Received: 07.05.17 11.45

Lab Sample Id: 556915-001

Date Collected: 06.28.17 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 07.07.17 16.45

Basis: Wet Weight

Seq Number: 3021840

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	07.09.17 04.05	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	07.09.17 04.05	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	07.09.17 04.05	U	1
m_p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	07.09.17 04.05	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	07.09.17 04.05	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	07.09.17 04.05	U	1
Total BTEX		<0.00199	0.00199	mg/kg	07.09.17 04.05	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	111	%	80-120	07.09.17 04.05		
1,4-Difluorobenzene	540-36-3	106	%	80-120	07.09.17 04.05		



Certificate of Analytical Results 556915



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **North - 1'**

Matrix: Soil

Date Received: 07.05.17 11.45

Lab Sample Id: 556915-002

Date Collected: 06.28.17 14.00

Sample Depth: 1 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MGO

% Moisture:

Analyst: MGO

Date Prep: 07.11.17 18.00

Basis: Wet Weight

Seq Number: 3022034

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	56.0	4.94	mg/kg	07.12.17 03.05		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 07.06.17 11.00

Basis: Wet Weight

Seq Number: 3021792

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	07.06.17 20.16	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	07.06.17 20.16	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	07.06.17 20.16	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	07.06.17 20.16	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	114	%	70-135	07.06.17 20.16	
o-Terphenyl	84-15-1	118	%	70-135	07.06.17 20.16	



Certificate of Analytical Results 556915



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **North - 1'**

Matrix: Soil

Date Received: 07.05.17 11.45

Lab Sample Id: 556915-002

Date Collected: 06.28.17 14.00

Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 07.10.17 15.00

Basis: Wet Weight

Seq Number: 3021934

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	07.10.17 18.53	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	07.10.17 18.53	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	07.10.17 18.53	U	1
m_p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	07.10.17 18.53	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	07.10.17 18.53	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	07.10.17 18.53	U	1
Total BTEX		<0.00199	0.00199	mg/kg	07.10.17 18.53	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	116	%	80-120	07.10.17 18.53		
1,4-Difluorobenzene	540-36-3	106	%	80-120	07.10.17 18.53		



Certificate of Analytical Results 556915



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **South - Surf**

Matrix: Soil

Date Received: 07.05.17 11.45

Lab Sample Id: 556915-003

Date Collected: 06.28.17 14.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MGO

% Moisture:

Analyst: MGO

Date Prep: 07.11.17 18.00

Basis: Wet Weight

Seq Number: 3022034

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	51.3	4.98	mg/kg	07.12.17 03.13		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 07.06.17 11.00

Basis: Wet Weight

Seq Number: 3021792

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	07.06.17 20.36	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	07.06.17 20.36	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	07.06.17 20.36	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	07.06.17 20.36	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	116	%	70-135	07.06.17 20.36	
o-Terphenyl	84-15-1	119	%	70-135	07.06.17 20.36	



Certificate of Analytical Results 556915



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **South - Surf**

Matrix: Soil

Date Received: 07.05.17 11.45

Lab Sample Id: 556915-003

Date Collected: 06.28.17 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 07.07.17 16.45

Basis: Wet Weight

Seq Number: 3021840

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	07.09.17 08.16	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	07.09.17 08.16	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	07.09.17 08.16	U	1
m_p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	07.09.17 08.16	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	07.09.17 08.16	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	07.09.17 08.16	U	1
Total BTEX		<0.00201	0.00201	mg/kg	07.09.17 08.16	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	96	%	80-120	07.09.17 08.16		
1,4-Difluorobenzene	540-36-3	97	%	80-120	07.09.17 08.16		



Certificate of Analytical Results 556915



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **South - 1'**

Matrix: Soil

Date Received: 07.05.17 11.45

Lab Sample Id: 556915-004

Date Collected: 06.28.17 14.00

Sample Depth: 1 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MGO

% Moisture:

Analyst: MGO

Date Prep: 07.11.17 18.00

Basis: Wet Weight

Seq Number: 3022034

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	8.11	4.97	mg/kg	07.12.17 03.36		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 07.06.17 11.00

Basis: Wet Weight

Seq Number: 3021792

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	07.06.17 20.56	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	07.06.17 20.56	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	07.06.17 20.56	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	07.06.17 20.56	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	120	%	70-135	07.06.17 20.56	
o-Terphenyl	84-15-1	126	%	70-135	07.06.17 20.56	



Certificate of Analytical Results 556915



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **South - 1'**

Matrix: Soil

Date Received: 07.05.17 11.45

Lab Sample Id: 556915-004

Date Collected: 06.28.17 14.00

Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 07.07.17 16.45

Basis: Wet Weight

Seq Number: 3021840

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	07.09.17 08.32	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	07.09.17 08.32	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	07.09.17 08.32	U	1
m_p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	07.09.17 08.32	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	07.09.17 08.32	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	07.09.17 08.32	U	1
Total BTEX		<0.00199	0.00199	mg/kg	07.09.17 08.32	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	100	%	80-120	07.09.17 08.32		
1,4-Difluorobenzene	540-36-3	98	%	80-120	07.09.17 08.32		



Certificate of Analytical Results 556915



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **East - Surf**

Matrix: Soil

Date Received: 07.05.17 11.45

Lab Sample Id: 556915-005

Date Collected: 06.28.17 14.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MGO

% Moisture:

Analyst: MGO

Date Prep: 07.11.17 18.00

Basis: Wet Weight

Seq Number: 3022034

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	77.8	4.91	mg/kg	07.12.17 03.44		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 07.06.17 11.00

Basis: Wet Weight

Seq Number: 3021792

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	111	15.0	mg/kg	07.06.17 21.17		1
Diesel Range Organics (DRO)	C10C28DRO	931	15.0	mg/kg	07.06.17 21.17		1
Oil Range Hydrocarbons (ORO)	PHCG2835	92.5	15.0	mg/kg	07.06.17 21.17		1
Total TPH	PHC635	1130	15.0	mg/kg	07.06.17 21.17		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	114	%	70-135	07.06.17 21.17	
o-Terphenyl	84-15-1	112	%	70-135	07.06.17 21.17	



Certificate of Analytical Results 556915



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **East - Surf**

Matrix: Soil

Date Received: 07.05.17 11.45

Lab Sample Id: 556915-005

Date Collected: 06.28.17 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 07.07.17 16.45

Basis: Wet Weight

Seq Number: 3021840

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	07.09.17 08.48	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	07.09.17 08.48	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	07.09.17 08.48	U	1
m_p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	07.09.17 08.48	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	07.09.17 08.48	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	07.09.17 08.48	U	1
Total BTEX		<0.00200	0.00200	mg/kg	07.09.17 08.48	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	114	%	80-120	07.09.17 08.48		
4-Bromofluorobenzene	460-00-4	89	%	80-120	07.09.17 08.48		



Certificate of Analytical Results 556915



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **East - 1'**
Lab Sample Id: 556915-006

Matrix: Soil
Date Collected: 06.28.17 14.00

Date Received: 07.05.17 11.45
Sample Depth: 1 ft

Analytical Method: Chloride by EPA 300
Tech: MGO
Analyst: MGO
Seq Number: 3022034

Date Prep: 07.11.17 18.00

Prep Method: E300P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	175	4.99	mg/kg	07.12.17 04.07		1

Analytical Method: TPH By SW8015 Mod
Tech: ARM
Analyst: ARM
Seq Number: 3021792

Date Prep: 07.06.17 11.00

Prep Method: TX1005P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	07.06.17 21.37	U	1
Diesel Range Organics (DRO)	C10C28DRO	42.9	15.0	mg/kg	07.06.17 21.37		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	07.06.17 21.37	U	1
Total TPH	PHC635	42.9	15.0	mg/kg	07.06.17 21.37		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	129	%	70-135	07.06.17 21.37		
o-Terphenyl	84-15-1	129	%	70-135	07.06.17 21.37		



Certificate of Analytical Results 556915



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **East - 1'**
Lab Sample Id: 556915-006

Matrix: Soil
Date Collected: 06.28.17 14.00

Date Received: 07.05.17 11.45
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3021854

Date Prep: 07.10.17 08.00

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	07.10.17 15.38	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	07.10.17 15.38	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	07.10.17 15.38	U	1
m_p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	07.10.17 15.38	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	07.10.17 15.38	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	07.10.17 15.38	U	1
Total BTEX		<0.00202	0.00202	mg/kg	07.10.17 15.38	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	103	%	80-120	07.10.17 15.38		
1,4-Difluorobenzene	540-36-3	88	%	80-120	07.10.17 15.38		



Certificate of Analytical Results 556915



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **West - Surf**

Matrix: Soil

Date Received: 07.05.17 11.45

Lab Sample Id: 556915-007

Date Collected: 06.28.17 14.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MGO

% Moisture:

Analyst: MGO

Date Prep: 07.11.17 18.00

Basis: Wet Weight

Seq Number: 3022034

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	92.3	5.00	mg/kg	07.12.17 04.14		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 07.06.17 11.00

Basis: Wet Weight

Seq Number: 3021792

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	07.06.17 21.57	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	07.06.17 21.57	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	07.06.17 21.57	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	07.06.17 21.57	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	117	%	70-135	07.06.17 21.57		
o-Terphenyl	84-15-1	120	%	70-135	07.06.17 21.57		



Certificate of Analytical Results 556915



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **West - Surf**

Matrix: Soil

Date Received: 07.05.17 11.45

Lab Sample Id: 556915-007

Date Collected: 06.28.17 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 07.10.17 08.00

Basis: Wet Weight

Seq Number: 3021854

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	07.10.17 15.54	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	07.10.17 15.54	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	07.10.17 15.54	U	1
m_p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	07.10.17 15.54	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	07.10.17 15.54	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	07.10.17 15.54	U	1
Total BTEX		<0.00199	0.00199	mg/kg	07.10.17 15.54	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	111	%	80-120	07.10.17 15.54		
1,4-Difluorobenzene	540-36-3	100	%	80-120	07.10.17 15.54		



Certificate of Analytical Results 556915



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **West - 1'**
Lab Sample Id: 556915-008

Matrix: Soil
Date Collected: 06.28.17 14.00

Date Received: 07.05.17 11.45
Sample Depth: 1 ft

Analytical Method: Chloride by EPA 300
Tech: MGO
Analyst: MGO
Seq Number: 3022034

Date Prep: 07.11.17 18.00

Prep Method: E300P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	8.22	4.95	mg/kg	07.12.17 04.22		1

Analytical Method: TPH By SW8015 Mod
Tech: ARM
Analyst: ARM
Seq Number: 3021792

Date Prep: 07.06.17 11.00

Prep Method: TX1005P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	07.06.17 22.18	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	07.06.17 22.18	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	07.06.17 22.18	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	07.06.17 22.18	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	108	%	70-135	07.06.17 22.18		
o-Terphenyl	84-15-1	110	%	70-135	07.06.17 22.18		



Certificate of Analytical Results 556915



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **West - 1'**
Lab Sample Id: 556915-008

Matrix: Soil
Date Collected: 06.28.17 14.00

Date Received: 07.05.17 11.45
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 07.10.17 08.00

Basis: Wet Weight

Seq Number: 3021854

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	07.10.17 15.14	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	07.10.17 15.14	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	07.10.17 15.14	U	1
m_p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	07.10.17 15.14	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	07.10.17 15.14	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	07.10.17 15.14	U	1
Total BTEX		<0.00201	0.00201	mg/kg	07.10.17 15.14	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	98	%	80-120	07.10.17 15.14		
1,4-Difluorobenzene	540-36-3	90	%	80-120	07.10.17 15.14		

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

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

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QC Summary 556915

COG Operating LLC

Federal 19 #001 SWD

Analytical Method: Chloride by EPA 300

Seq Number: 3022034

MB Sample Id: 727504-1-BLK

Matrix: Solid

LCS Sample Id: 727504-1-BKS

Prep Method: E300P

Date Prep: 07.11.17

LCSD Sample Id: 727504-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	269	108	268	107	90-110	0	20	mg/kg	07.12.17 01:10	

Analytical Method: Chloride by EPA 300

Seq Number: 3022034

Parent Sample Id: 556914-001

Matrix: Soil

MS Sample Id: 556914-001 S

Prep Method: E300P

Date Prep: 07.11.17

MSD Sample Id: 556914-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	124	246	389	108	383	105	90-110	2	20	mg/kg	07.12.17 01:33	

Analytical Method: Chloride by EPA 300

Seq Number: 3022034

Parent Sample Id: 556915-003

Matrix: Soil

MS Sample Id: 556915-003 S

Prep Method: E300P

Date Prep: 07.11.17

MSD Sample Id: 556915-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	51.3	249	321	108	317	107	90-110	1	20	mg/kg	07.12.17 03:21	

Analytical Method: TPH By SW8015 Mod

Seq Number: 3021792

MB Sample Id: 727359-1-BLK

Matrix: Solid

LCS Sample Id: 727359-1-BKS

Prep Method: TX1005P

Date Prep: 07.06.17

LCSD Sample Id: 727359-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	1030	103	1040	104	70-135	1	35	mg/kg	07.06.17 13:50	
Diesel Range Organics (DRO)	<15.0	1000	1030	103	1060	106	70-135	3	35	mg/kg	07.06.17 13:50	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	117		128		120		70-135	%	07.06.17 13:50
o-Terphenyl	124		128		119		70-135	%	07.06.17 13:50



QC Summary 556915

COG Operating LLC

Federal 19 #001 SWD

Analytical Method: TPH By SW8015 Mod

Seq Number: 3021792

Parent Sample Id: 556810-006

Matrix: Soil

MS Sample Id: 556810-006 S

Prep Method: TX1005P

Date Prep: 07.06.17

MSD Sample Id: 556810-006 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	44.3	997	1080	104	1080	104	70-135	0	35	mg/kg	07.06.17 14:50	
Diesel Range Organics (DRO)	323	997	1380	106	1350	103	70-135	2	35	mg/kg	07.06.17 14:50	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	110		110		70-135	%	07.06.17 14:50
o-Terphenyl	100		106		70-135	%	07.06.17 14:50

Analytical Method: BTEX by EPA 8021B

Seq Number: 3021840

MB Sample Id: 727364-1-BLK

Matrix: Solid

LCS Sample Id: 727364-1-BKS

Prep Method: SW5030B

Date Prep: 07.07.17

LCSD Sample Id: 727364-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00201	0.100	0.120	120	0.120	119	70-130	0	35	mg/kg	07.08.17 21:54	
Toluene	<0.00201	0.100	0.107	107	0.106	105	70-130	1	35	mg/kg	07.08.17 21:54	
Ethylbenzene	<0.00201	0.100	0.112	112	0.109	108	71-129	3	35	mg/kg	07.08.17 21:54	
m_p-Xylenes	<0.00402	0.201	0.200	100	0.196	97	70-135	2	35	mg/kg	07.08.17 21:54	
o-Xylene	<0.00201	0.100	0.105	105	0.109	108	71-133	4	35	mg/kg	07.08.17 21:54	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	99		93		85		80-120	%	07.08.17 21:54
4-Bromofluorobenzene	106		107		83		80-120	%	07.08.17 21:54

Analytical Method: BTEX by EPA 8021B

Seq Number: 3021854

MB Sample Id: 727410-1-BLK

Matrix: Solid

LCS Sample Id: 727410-1-BKS

Prep Method: SW5030B

Date Prep: 07.10.17

LCSD Sample Id: 727410-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00201	0.101	0.109	108	0.114	114	70-130	4	35	mg/kg	07.10.17 07:26	
Toluene	<0.00201	0.101	0.0959	95	0.105	105	70-130	9	35	mg/kg	07.10.17 07:26	
Ethylbenzene	<0.00201	0.101	0.103	102	0.103	103	71-129	0	35	mg/kg	07.10.17 07:26	
m_p-Xylenes	<0.00402	0.201	0.181	90	0.185	92	70-135	2	35	mg/kg	07.10.17 07:26	
o-Xylene	<0.00201	0.101	0.104	103	0.100	100	71-133	4	35	mg/kg	07.10.17 07:26	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	101		86		85		80-120	%	07.10.17 07:26
4-Bromofluorobenzene	96		101		87		80-120	%	07.10.17 07:26

COG Operating LLC
Federal 19 #001 SWD

Analytical Method: BTEX by EPA 8021B

Seq Number: 3021934

MB Sample Id: 727453-1-BLK

Matrix: Solid

LCS Sample Id: 727453-1-BKS

Prep Method: SW5030B

Date Prep: 07.10.17

LCSD Sample Id: 727453-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.0998	0.121	121	0.113	113	70-130	7	35	mg/kg	07.10.17 16:43	
Toluene	<0.00200	0.0998	0.117	117	0.105	105	70-130	11	35	mg/kg	07.10.17 16:43	
Ethylbenzene	<0.00200	0.0998	0.120	120	0.109	109	71-129	10	35	mg/kg	07.10.17 16:43	
m_p-Xylenes	<0.00399	0.200	0.210	105	0.191	95	70-135	9	35	mg/kg	07.10.17 16:43	
o-Xylene	<0.00200	0.0998	0.117	117	0.102	102	71-133	14	35	mg/kg	07.10.17 16:43	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	88		94		87		80-120	%	07.10.17 16:43
4-Bromofluorobenzene	85		89		90		80-120	%	07.10.17 16:43

Analytical Method: BTEX by EPA 8021B

Seq Number: 3021840

Parent Sample Id: 556913-005

Matrix: Soil

MS Sample Id: 556913-005 S

Prep Method: SW5030B

Date Prep: 07.07.17

MSD Sample Id: 556913-005 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00199	0.0996	0.105	105	0.101	101	70-130	4	35	mg/kg	07.08.17 22:27	
Toluene	<0.00199	0.0996	0.0955	96	0.0918	92	70-130	4	35	mg/kg	07.08.17 22:27	
Ethylbenzene	<0.00199	0.0996	0.0982	99	0.0937	94	71-129	5	35	mg/kg	07.08.17 22:27	
m_p-Xylenes	<0.00398	0.199	0.175	88	0.172	86	70-135	2	35	mg/kg	07.08.17 22:27	
o-Xylene	<0.00199	0.0996	0.103	103	0.0954	95	71-133	8	35	mg/kg	07.08.17 22:27	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	92		85		80-120	%	07.08.17 22:27
4-Bromofluorobenzene	104		86		80-120	%	07.08.17 22:27

Analytical Method: BTEX by EPA 8021B

Seq Number: 3021854

Parent Sample Id: 556914-001

Matrix: Soil

MS Sample Id: 556914-001 S

Prep Method: SW5030B

Date Prep: 07.10.17

MSD Sample Id: 556914-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.0998	0.106	106	0.102	102	70-130	4	35	mg/kg	07.10.17 08:04	
Toluene	<0.00200	0.0998	0.0863	86	0.0932	93	70-130	8	35	mg/kg	07.10.17 08:04	
Ethylbenzene	<0.00200	0.0998	0.0928	93	0.0971	97	71-129	5	35	mg/kg	07.10.17 08:04	
m_p-Xylenes	<0.00399	0.200	0.162	81	0.167	84	70-135	3	35	mg/kg	07.10.17 08:04	
o-Xylene	<0.00200	0.0998	0.0860	86	0.0965	97	71-133	12	35	mg/kg	07.10.17 08:04	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	112		98		80-120	%	07.10.17 08:04
4-Bromofluorobenzene	106		108		80-120	%	07.10.17 08:04



QC Summary 556915

COG Operating LLC

Federal 19 #001 SWD

Analytical Method: BTEX by EPA 8021B

Seq Number: 3021934

Parent Sample Id: 556932-002

Matrix: Soil

MS Sample Id: 556932-002 S

Prep Method: SW5030B

Date Prep: 07.10.17

MSD Sample Id: 556932-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00199	0.0996	0.0935	94	0.102	102	70-130	9	35	mg/kg	07.10.17 17:16	
Toluene	<0.00199	0.0996	0.0778	78	0.0893	89	70-130	14	35	mg/kg	07.10.17 17:16	
Ethylbenzene	<0.00199	0.0996	0.0848	85	0.0940	94	71-129	10	35	mg/kg	07.10.17 17:16	
m_p-Xylenes	<0.00398	0.199	0.142	71	0.162	81	70-135	13	35	mg/kg	07.10.17 17:16	
o-Xylene	<0.00199	0.0996	0.0823	83	0.0874	88	71-133	6	35	mg/kg	07.10.17 17:16	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	109		103		80-120	%	07.10.17 17:16
4-Bromofluorobenzene	119		111		80-120	%	07.10.17 17:16



Setting the Standard since 1990
Stafford, Texas (281-240-4200)
Dallas Texas (214-902-0300)

CHAIN OF CUSTODY

Page 1 of 1

San Antonio, Texas (210-509-3334)
Midland, Texas (432-704-5251)

www.xenco.com

Phoenix, Arizona (480-355-0900)

Xenco Quote #

Xenco Job #

504915

Client / Reporting Information				Project Information				Analytical Information				Matrix Codes						
Company Name / Branch: COG Operating LLC				Project Name/Number: Federal 19 #001 SWD														
Company Address: 2407 PECOS Avenue Artesia NM 82710				Project Location: Federal 19 #001 SW														
Email: alieb@concho.com Phone No: 575-748-1553				Invoice To: COG Operating LLC Attn: Robert McNeill 600 W. Illinois Midland TX 79701														
Project Contact: Aaron Lieb				PO Number:														
Sampler's Name- Aaron Lieb																		
No.	Field ID / Point of Collection	Sample Depth	Date	Time	Matrix	# of bottles	HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MeOH	NONE	TPH/ EXTENDED	BTEX	Chloride	Field Comments
1	North- Surf	1'	6/28/17	2:00pm	S	1									X	X	X	
2	North- 1'	1'													X	X	X	
3	South- Surf	1'													X	X	X	
4	South- 1'	1'													X	X	X	
5	East- Surf	1'													X	X	X	
6	East- 1'	1'													X	X	X	
7	West- Surf	1'													X	X	X	
8	West - 1'	1'													X	X	X	
9																		
10																		
Turnaround Time (Business days)																		
Data Deliverable Information																		
Notes																		
Temp: 3.8 IR ID: R-8																		
CF: (0-6: -0.2°C)																		
(6-23: +0.2°C)																		
Corrected Temp: 3.4																		
TAT Starts Day received by Lab, if received by 5:00 pm																		
SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY																		
FED-EX / UPS: Tracking #																		
Relinquished by Sampler: Date Time: 7/5/17 10:00 AM Received By: 1. Jeff Butler Date Time: 7-5-17 11:45 AM																		
Relinquished by: Date Time: 7/5/17 10:00 AM Received By: 2. Jeff Butler Date Time: 7-5-17 11:45 AM																		
Relinquished by: Date Time: 7/5/17 10:00 AM Received By: 3. Jeff Butler Date Time: 7-5-17 11:45 AM																		
Relinquished by: Date Time: 7/5/17 10:00 AM Received By: 4. Jeff Butler Date Time: 7-5-17 11:45 AM																		
On Ice Cooler Temp. Thermo. Corr. Factor																		
4.92																		

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



XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In



Client: COG Operating LLC

Date/ Time Received: 07/05/2017 11:45:00 AM

Work Order #: 556915

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)?	4.9
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seal present on shipping container/ cooler?	Yes
#5 *Custody Seals intact on shipping container/ cooler?	Yes
#6 Custody Seals intact on sample bottles?	Yes
#7 *Custody Seals Signed and dated?	Yes
#8 *Chain of Custody present?	Yes
#9 Sample instructions complete on Chain of Custody?	Yes
#10 Any missing/extra samples?	No
#11 Chain of Custody signed when relinquished/ received?	Yes
#12 Chain of Custody agrees with sample label(s)?	Yes
#13 Container label(s) legible and intact?	Yes
#14 Sample matrix/ properties agree with Chain of Custody?	Yes
#15 Samples in proper container/ bottle?	Yes
#16 Samples properly preserved?	Yes
#17 Sample container(s) intact?	Yes
#18 Sufficient sample amount for indicated test(s)?	Yes
#19 All samples received within hold time?	Yes
#20 Subcontract of sample(s)?	No
#21 VOC samples have zero headspace?	N/A

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

Analyst: ss

PH Device/Lot#:

Checklist completed by:

Shawnee Smith

Date: 07/06/2017

Checklist reviewed by:

Kelsey Brooks

Date: 07/06/2017



Certificate of Analysis Summary 556916

COG Operating LLC, Artesia, NM

Project Name: Federal 19 #001 SWD



Project Id:

Contact: Aaron Lieb

Project Location:

Date Received in Lab: Wed Jul-05-17 11:45 am

Report Date: 14-JUL-17

Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	556916-001	556916-002	556916-003	556916-004	556916-005	556916-006
	<i>Field Id:</i>	T-1- Surf	T1- 1'	T1- 2'	T1- 3'	T1- 4'	T1- 5'
	<i>Depth:</i>		1 ft	2	3 ft	4	5 ft
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Jun-28-17 10:00	Jun-28-17 10:00	Jun-28-17 10:00	Jun-28-17 10:00	Jun-28-17 10:00	Jun-28-17 10:00
BTEX by EPA 8021B	<i>Extracted:</i>	Jul-07-17 15:30	Jul-07-17 15:30	Jul-07-17 15:30	Jul-07-17 15:30	Jul-07-17 15:30	
	<i>Analyzed:</i>	Jul-08-17 03:40	Jul-08-17 03:56	Jul-08-17 03:24	Jul-08-17 08:10	Jul-08-17 08:26	
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	
Benzene		<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202	<0.00202 0.00202	<0.00199 0.00199	
Toluene		<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202	<0.00202 0.00202	<0.00199 0.00199	
Ethylbenzene		<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202	<0.00202 0.00202	<0.00199 0.00199	
m_p-Xylenes		<0.00401 0.00401	<0.00398 0.00398	<0.00403 0.00403	<0.00404 0.00404	<0.00398 0.00398	
o-Xylene		<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202	<0.00202 0.00202	<0.00199 0.00199	
Total Xylenes		<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202	<0.00202 0.00202	<0.00199 0.00199	
Total BTEX		<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202	<0.00202 0.00202	<0.00199 0.00199	
Chloride by EPA 300	<i>Extracted:</i>	Jul-12-17 09:20	Jul-12-17 09:20	Jul-12-17 09:20	Jul-12-17 09:20	Jul-12-17 09:20	Jul-12-17 09:20
	<i>Analyzed:</i>	Jul-12-17 10:52	Jul-12-17 10:59	Jul-12-17 11:07	Jul-12-17 11:30	Jul-12-17 11:38	Jul-12-17 11:46
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		14900 249	5320 99.4	3410 24.8	2660 24.8	2610 24.9	1520 24.7
TPH By SW8015 Mod	<i>Extracted:</i>	Jul-07-17 10:00	Jul-07-17 10:00	Jul-07-17 10:00	Jul-07-17 10:00	Jul-07-17 10:00	
	<i>Analyzed:</i>	Jul-07-17 12:14	Jul-07-17 13:14	Jul-07-17 13:34	Jul-07-17 13:54	Jul-07-17 14:15	
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	
Gasoline Range Hydrocarbons (GRO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	<14.9 14.9	<15.0 15.0	
Diesel Range Organics (DRO)		46.3 15.0	86.9 15.0	<15.0 15.0	258 14.9	<15.0 15.0	
Oil Range Hydrocarbons (ORO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	53.1 14.9	<15.0 15.0	
Total TPH		46.3 15.0	86.9 15.0	<15.0 15.0	311 14.9	<15.0 15.0	

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Kelsey Brooks
Project Manager



Certificate of Analysis Summary 556916

COG Operating LLC, Artesia, NM

Project Name: Federal 19 #001 SWD



Project Id:

Contact: Aaron Lieb

Project Location:

Date Received in Lab: Wed Jul-05-17 11:45 am

Report Date: 14-JUL-17

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	556916-007	556916-008	556916-009	556916-010	556916-011	556916-012
	Field Id:	T1- 6'	T1- 8'	T1- 10'	T1- 12'	T1- 14'	T1- 15'
	Depth:	6	8 ft	10 ft	12 ft	14 ft	15 ft
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Jun-28-17 10:00	Jun-28-17 10:00	Jun-28-17 10:30	Jun-28-17 10:30	Jun-28-17 10:30	Jun-28-17 10:30
BTEX by EPA 8021B	Extracted:						Jul-07-17 15:30
	Analyzed:						Jul-08-17 08:42
	Units/RL:						mg/kg RL
	Benzene						<0.00199 0.00199
	Toluene						<0.00199 0.00199
	Ethylbenzene						<0.00199 0.00199
	m_p-Xylenes						<0.00398 0.00398
	o-Xylene						<0.00199 0.00199
Chloride by EPA 300	Extracted:	Jul-12-17 09:20	Jul-12-17 09:20	Jul-12-17 09:20	Jul-12-17 09:20	Jul-12-17 09:20	Jul-12-17 09:20
	Analyzed:	Jul-12-17 11:53	Jul-12-17 12:01	Jul-12-17 12:32	Jul-12-17 12:39	Jul-12-17 13:02	Jul-12-17 13:10
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
	Chloride	4180 49.5	4100 49.4	4300 49.3	5110 49.4	4740 49.3	1720 24.6
	Extracted:						Jul-07-17 10:00
	Analyzed:						Jul-07-17 14:35
	Units/RL:						mg/kg RL
	Gasoline Range Hydrocarbons (GRO)						<15.0 15.0
TPH By SW8015 Mod	Extracted:						
	Analyzed:						
	Units/RL:						
	Diesel Range Organics (DRO)						<15.0 15.0
	Extracted:						
	Analyzed:						
	Units/RL:						
	Oil Range Hydrocarbons (ORO)						<15.0 15.0
	Extracted:						
	Analyzed:						
	Units/RL:						
	Total TPH						<15.0 15.0

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Kelsey Brooks
Project Manager



Certificate of Analysis Summary 556916

COG Operating LLC, Artesia, NM

Project Name: Federal 19 #001 SWD



Project Id:

Contact: Aaron Lieb

Project Location:

Date Received in Lab: Wed Jul-05-17 11:45 am

Report Date: 14-JUL-17

Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	556916-013	556916-014	556916-015	556916-016	556916-017	556916-018
	<i>Field Id:</i>	T2- Surf	T2- 1'	T2- 2'	T2- 3'	T2- 5'	T2- 8'
	<i>Depth:</i>		1 ft	2 ft	3 ft	5 ft	8 ft
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Jun-28-17 11:30	Jun-28-17 11:30	Jun-28-17 11:30	Jun-28-17 11:30	Jun-28-17 11:30	Jun-28-17 11:30
BTEX by EPA 8021B	<i>Extracted:</i>	Jul-07-17 15:30	Jul-07-17 15:30	Jul-07-17 15:30	Jul-07-17 15:30		
	<i>Analyzed:</i>	Jul-08-17 08:58	Jul-08-17 09:15	Jul-08-17 12:27	Jul-08-17 12:43		
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
Benzene		<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00202		
Toluene		<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200	<0.00202 0.00202		
Ethylbenzene		<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200	<0.00202 0.00202		
m_p-Xylenes		<0.00402 0.00402	<0.00399 0.00399	<0.00401 0.00401	<0.00403 0.00403		
o-Xylene		<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200	<0.00202 0.00202		
Total Xylenes		<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200	<0.00202 0.00202		
Total BTEX		<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200	<0.00202 0.00202		
Chloride by EPA 300	<i>Extracted:</i>	Jul-12-17 09:20	Jul-12-17 09:20	Jul-12-17 09:20	Jul-12-17 09:20	Jul-12-17 09:20	Jul-12-17 09:20
	<i>Analyzed:</i>	Jul-12-17 13:18	Jul-12-17 12:09	Jul-12-17 13:25	Jul-12-17 13:33	Jul-12-17 13:41	Jul-12-17 13:48
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		6610 49.5	859 4.98	20.9 4.98	16.3 4.99	9.34 4.93	21.0 4.96
TPH By SW8015 Mod	<i>Extracted:</i>	Jul-07-17 10:00	Jul-07-17 10:00	Jul-07-17 10:00	Jul-07-17 10:00		
	<i>Analyzed:</i>	Jul-07-17 14:55	Jul-07-17 15:15	Jul-07-17 15:36	Jul-07-17 15:56		
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
Gasoline Range Hydrocarbons (GRO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0		
Diesel Range Organics (DRO)		56.1 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0		
Oil Range Hydrocarbons (ORO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0		
Total TPH		56.1 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0		

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Kelsey Brooks
Project Manager



Certificate of Analysis Summary 556916

COG Operating LLC, Artesia, NM

Project Name: Federal 19 #001 SWD



Project Id:

Contact: Aaron Lieb

Project Location:

Date Received in Lab: Wed Jul-05-17 11:45 am

Report Date: 14-JUL-17

Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	556916-019	556916-020	556916-021	556916-022	556916-023	556916-024
	<i>Field Id:</i>	T2- 12'	T3- Surf	T3- 1'	T3- 2'	T3- 3'	T3- 4'
	<i>Depth:</i>	12 ft		1 ft	2 ft	3 ft	4 ft
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Jun-28-17 11:30	Jun-28-17 13:00	Jun-28-17 13:00	Jun-28-17 13:00	Jun-28-17 13:00	Jun-28-17 13:00
BTEX by EPA 8021B	<i>Extracted:</i>	Jul-07-17 15:30	Jul-07-17 15:30	Jul-07-17 15:30	Jul-07-17 15:30	Jul-07-17 15:30	
	<i>Analyzed:</i>	Jul-08-17 12:59	Jul-08-17 11:07	Jul-08-17 11:22	Jul-08-17 11:38	Jul-08-17 11:54	
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	
Benzene		<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199	
Toluene		<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199	
Ethylbenzene		<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199	
m_p-Xylenes		<0.00398 0.00398	<0.00396 0.00396	<0.00401 0.00401	<0.00399 0.00399	<0.00398 0.00398	
o-Xylene		<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199	
Total Xylenes		<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199	
Total BTEX		<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199	
Chloride by EPA 300	<i>Extracted:</i>	Jul-12-17 12:00	Jul-13-17 13:00	Jul-12-17 12:00	Jul-12-17 12:00	Jul-12-17 12:00	Jul-12-17 12:00
	<i>Analyzed:</i>	Jul-12-17 22:07	Jul-13-17 13:14	Jul-12-17 22:37	Jul-12-17 22:45	Jul-12-17 22:53	Jul-12-17 23:16
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		391 5.00	20200 249	2850 24.7	78.5 4.92	118 4.95	145 4.93
TPH By SW8015 Mod	<i>Extracted:</i>	Jul-07-17 10:00	Jul-07-17 10:00	Jul-07-17 10:00	Jul-07-17 10:00	Jul-07-17 10:00	
	<i>Analyzed:</i>	Jul-07-17 16:59	Jul-07-17 17:20	Jul-07-17 17:40	Jul-07-17 18:01	Jul-07-17 18:22	
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	
Gasoline Range Hydrocarbons (GRO)		<14.9 14.9	<15.0 15.0	<14.9 14.9	<15.0 15.0	<15.0 15.0	
Diesel Range Organics (DRO)		<14.9 14.9	182 15.0	<14.9 14.9	<15.0 15.0	<15.0 15.0	
Oil Range Hydrocarbons (ORO)		<14.9 14.9	<15.0 15.0	<14.9 14.9	<15.0 15.0	<15.0 15.0	
Total TPH		<14.9 14.9	182 15.0	<14.9 14.9	<15.0 15.0	<15.0 15.0	

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Kelsey Brooks
Project Manager



Certificate of Analysis Summary 556916

COG Operating LLC, Artesia, NM

Project Name: Federal 19 #001 SWD



Project Id:

Contact: Aaron Lieb

Project Location:

Date Received in Lab: Wed Jul-05-17 11:45 am

Report Date: 14-JUL-17

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	556916-025	556916-026				
	Field Id:	T3- 5'	T3- 10'				
	Depth:	5 ft	10 ft				
	Matrix:	SOIL	SOIL				
	Sampled:	Jun-28-17 13:00	Jun-28-17 13:00				
BTEX by EPA 8021B	Extracted:		Jul-07-17 15:30				
	Analyzed:		Jul-08-17 12:11				
	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:	Jul-12-17 12:00	Jul-12-17 12:00				
	Analyzed:	Jul-12-17 23:23	Jul-12-17 23:31				
	Units/RL:	mg/kg RL	mg/kg RL				
	Chloride	112 4.92	329 4.97				
TPH By SW8015 Mod	Extracted:		Jul-07-17 10:00				
	Analyzed:		Jul-07-17 18:42				
	Units/RL:		mg/kg RL				
	Gasoline Range Hydrocarbons (GRO)		<15.0 15.0				
	Diesel Range Organics (DRO)		<15.0 15.0				
Oil Range Hydrocarbons (ORO)			<15.0 15.0				
Total TPH			<15.0 15.0				

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

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

Kelsey Brooks
Project Manager

Analytical Report 556916

for
COG Operating LLC

Project Manager: Aaron Lieb

Federal 19 #001 SWD

14-JUL-17

Collected By: Client



1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215), Arizona (AZ0765), Florida (E871002), Louisiana (03054)
Oklahoma (9218)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400)
Xenco-San Antonio: Texas (T104704534)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)



14-JUL-17

Project Manager: **Aaron Lieb**

COG Operating LLC

2407 Pecos Avenue

Artesia, NM 88210

Reference: XENCO Report No(s): **556916**

Federal 19 #001 SWD

Project Address:

Aaron Lieb:

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) 556916. 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. 556916 will be filed for 60 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,

Kelsey Brooks

Project Manager

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

Certified and approved by numerous States and Agencies.

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

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



Sample Cross Reference 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
T-1- Surf	S	06-28-17 10:00		556916-001
T1- 1'	S	06-28-17 10:00	- 1 ft	556916-002
T1- 2'	S	06-28-17 10:00	- 2	556916-003
T1- 3'	S	06-28-17 10:00	- 3 ft	556916-004
T1- 4'	S	06-28-17 10:00	- 4	556916-005
T1- 5'	S	06-28-17 10:00	- 5 ft	556916-006
T1- 6'	S	06-28-17 10:00	- 6	556916-007
T1- 8'	S	06-28-17 10:00	- 8 ft	556916-008
T1- 10'	S	06-28-17 10:30	- 10 ft	556916-009
T1- 12'	S	06-28-17 10:30	- 12 ft	556916-010
T1- 14'	S	06-28-17 10:30	- 14 ft	556916-011
T1- 15'	S	06-28-17 10:30	- 15 ft	556916-012
T2- Surf	S	06-28-17 11:30	ft	556916-013
T2- 1'	S	06-28-17 11:30	- 1 ft	556916-014
T2- 2'	S	06-28-17 11:30	- 2 ft	556916-015
T2- 3'	S	06-28-17 11:30	- 3 ft	556916-016
T2- 5'	S	06-28-17 11:30	- 5 ft	556916-017
T2- 8'	S	06-28-17 11:30	- 8 ft	556916-018
T2- 12'	S	06-28-17 11:30	- 12 ft	556916-019
T3- Surf	S	06-28-17 13:00	ft	556916-020
T3- 1'	S	06-28-17 13:00	- 1 ft	556916-021
T3- 2'	S	06-28-17 13:00	- 2 ft	556916-022
T3- 3'	S	06-28-17 13:00	- 3 ft	556916-023
T3- 4'	S	06-28-17 13:00	- 4 ft	556916-024
T3- 5'	S	06-28-17 13:00	- 5 ft	556916-025
T3- 10'	S	06-28-17 13:00	- 10 ft	556916-026



CASE NARRATIVE

Client Name: COG Operating LLC

Project Name: Federal 19 #001 SWD

Project ID:

Work Order Number(s): 556916

Report Date: 14-JUL-17

Date Received: 07/05/2017

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3021835 BTEX by EPA 8021B

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



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **T-1- Surf**
Lab Sample Id: 556916-001

Matrix: Soil
Date Collected: 06.28.17 10.00

Date Received: 07.05.17 11.45

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3022122

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 07.12.17 09.20

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	14900	249	mg/kg	07.12.17 10.52		50

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3021794

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Date Prep: 07.07.17 10.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	07.07.17 12.14	U	1
Diesel Range Organics (DRO)	C10C28DRO	46.3	15.0	mg/kg	07.07.17 12.14		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	07.07.17 12.14	U	1
Total TPH	PHC635	46.3	15.0	mg/kg	07.07.17 12.14		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	105	%	70-135	07.07.17 12.14		
o-Terphenyl	84-15-1	109	%	70-135	07.07.17 12.14		



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **T-1- Surf**
Lab Sample Id: 556916-001

Matrix: Soil
Date Collected: 06.28.17 10.00

Date Received: 07.05.17 11.45

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 07.07.17 15.30

Basis: Wet Weight

Seq Number: 3021835

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	07.08.17 03.40	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	07.08.17 03.40	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	07.08.17 03.40	U	1
m_p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	07.08.17 03.40	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	07.08.17 03.40	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	07.08.17 03.40	U	1
Total BTEX		<0.00200	0.00200	mg/kg	07.08.17 03.40	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	84	%	80-120	07.08.17 03.40		
4-Bromofluorobenzene	460-00-4	89	%	80-120	07.08.17 03.40		



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T1- 1'
Lab Sample Id: 556916-002

Matrix: Soil
Date Collected: 06.28.17 10.00

Date Received: 07.05.17 11.45
Sample Depth: 1 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3022122

Date Prep: 07.12.17 09.20

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	5320	99.4	mg/kg	07.12.17 10.59		20

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3021794

Date Prep: 07.07.17 10.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	07.07.17 13.14	U	1
Diesel Range Organics (DRO)	C10C28DRO	86.9	15.0	mg/kg	07.07.17 13.14		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	07.07.17 13.14	U	1
Total TPH	PHC635	86.9	15.0	mg/kg	07.07.17 13.14		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	108	%	70-135	07.07.17 13.14	
o-Terphenyl	84-15-1	110	%	70-135	07.07.17 13.14	



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T1- 1'
Lab Sample Id: 556916-002

Matrix: Soil
Date Collected: 06.28.17 10.00

Date Received: 07.05.17 11.45
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 07.07.17 15.30

Basis: Wet Weight

Seq Number: 3021835

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	07.08.17 03.56	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	07.08.17 03.56	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	07.08.17 03.56	U	1
m_p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	07.08.17 03.56	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	07.08.17 03.56	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	07.08.17 03.56	U	1
Total BTEX		<0.00199	0.00199	mg/kg	07.08.17 03.56	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	118	%	80-120	07.08.17 03.56		
1,4-Difluorobenzene	540-36-3	112	%	80-120	07.08.17 03.56		



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T1- 2'
Lab Sample Id: 556916-003

Matrix: Soil
Date Collected: 06.28.17 10.00

Date Received: 07.05.17 11.45
Sample Depth: 2

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3022122

Date Prep: 07.12.17 09.20

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3410	24.8	mg/kg	07.12.17 11.07		5

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3021794

Date Prep: 07.07.17 10.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	07.07.17 13.34	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	07.07.17 13.34	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	07.07.17 13.34	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	07.07.17 13.34	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	110	%	70-135	07.07.17 13.34		
o-Terphenyl	84-15-1	114	%	70-135	07.07.17 13.34		



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T1- 2'
Lab Sample Id: 556916-003

Matrix: Soil
Date Collected: 06.28.17 10.00

Date Received: 07.05.17 11.45
Sample Depth: 2

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 07.07.17 15.30

Basis: Wet Weight

Seq Number: 3021835

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	07.08.17 03.24	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	07.08.17 03.24	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	07.08.17 03.24	U	1
m_p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	07.08.17 03.24	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	07.08.17 03.24	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	07.08.17 03.24	U	1
Total BTEX		<0.00202	0.00202	mg/kg	07.08.17 03.24	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	103	%	80-120	07.08.17 03.24		
1,4-Difluorobenzene	540-36-3	113	%	80-120	07.08.17 03.24		



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T1- 3'
Lab Sample Id: 556916-004

Matrix: Soil
Date Collected: 06.28.17 10.00

Date Received: 07.05.17 11.45
Sample Depth: 3 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3022122

Date Prep: 07.12.17 09.20

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2660	24.8	mg/kg	07.12.17 11.30		5

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3021794

Date Prep: 07.07.17 10.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	07.07.17 13.54	U	1
Diesel Range Organics (DRO)	C10C28DRO	258	14.9	mg/kg	07.07.17 13.54		1
Oil Range Hydrocarbons (ORO)	PHCG2835	53.1	14.9	mg/kg	07.07.17 13.54		1
Total TPH	PHC635	311	14.9	mg/kg	07.07.17 13.54		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	107	%	70-135	07.07.17 13.54	
o-Terphenyl	84-15-1	110	%	70-135	07.07.17 13.54	



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T1- 3'
Lab Sample Id: 556916-004

Matrix: Soil
Date Collected: 06.28.17 10.00

Date Received: 07.05.17 11.45
Sample Depth: 3 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 07.07.17 15.30

Basis: Wet Weight

Seq Number: 3021835

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	07.08.17 08.10	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	07.08.17 08.10	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	07.08.17 08.10	U	1
m_p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	07.08.17 08.10	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	07.08.17 08.10	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	07.08.17 08.10	U	1
Total BTEX		<0.00202	0.00202	mg/kg	07.08.17 08.10	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	86	%	80-120	07.08.17 08.10		
4-Bromofluorobenzene	460-00-4	101	%	80-120	07.08.17 08.10		



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T1- 4'
Lab Sample Id: 556916-005

Matrix: Soil
Date Collected: 06.28.17 10.00

Date Received: 07.05.17 11.45
Sample Depth: 4

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3022122

Date Prep: 07.12.17 09.20

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2610	24.9	mg/kg	07.12.17 11.38		5

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3021794

Date Prep: 07.07.17 10.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	07.07.17 14.15	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	07.07.17 14.15	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	07.07.17 14.15	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	07.07.17 14.15	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	109	%	70-135	07.07.17 14.15	
o-Terphenyl	84-15-1	113	%	70-135	07.07.17 14.15	



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T1- 4'
Lab Sample Id: 556916-005

Matrix: Soil
Date Collected: 06.28.17 10.00

Date Received: 07.05.17 11.45
Sample Depth: 4

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 07.07.17 15.30

Basis: Wet Weight

Seq Number: 3021835

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	07.08.17 08.26	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	07.08.17 08.26	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	07.08.17 08.26	U	1
m_p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	07.08.17 08.26	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	07.08.17 08.26	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	07.08.17 08.26	U	1
Total BTEX		<0.00199	0.00199	mg/kg	07.08.17 08.26	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	90	%	80-120	07.08.17 08.26		
1,4-Difluorobenzene	540-36-3	93	%	80-120	07.08.17 08.26		



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T1- 5'
Lab Sample Id: 556916-006

Matrix: Soil
Date Collected: 06.28.17 10.00

Date Received: 07.05.17 11.45
Sample Depth: 5 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3022122

Date Prep: 07.12.17 09.20

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1520	24.7	mg/kg	07.12.17 11.46		5



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **T1- 6'**
Lab Sample Id: 556916-007

Matrix: Soil
Date Collected: 06.28.17 10.00

Date Received: 07.05.17 11.45
Sample Depth: 6

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3022122

Date Prep: 07.12.17 09.20

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	4180	49.5	mg/kg	07.12.17 11.53		10



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **T1- 8'**
Lab Sample Id: 556916-008

Matrix: Soil
Date Collected: 06.28.17 10.00

Date Received: 07.05.17 11.45
Sample Depth: 8 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3022122

Date Prep: 07.12.17 09.20

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	4100	49.4	mg/kg	07.12.17 12.01		10



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **T1- 10'**
Lab Sample Id: 556916-009

Matrix: Soil
Date Collected: 06.28.17 10.30

Date Received: 07.05.17 11.45
Sample Depth: 10 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MGO

% Moisture:

Analyst: MGO

Date Prep: 07.12.17 09.20

Basis: Wet Weight

Seq Number: 3022122

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	4300	49.3	mg/kg	07.12.17 12.32		10



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **T1- 12'**
Lab Sample Id: 556916-010

Matrix: Soil
Date Collected: 06.28.17 10.30

Date Received: 07.05.17 11.45
Sample Depth: 12 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MGO

% Moisture:

Analyst: MGO

Date Prep: 07.12.17 09.20

Basis: Wet Weight

Seq Number: 3022122

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	5110	49.4	mg/kg	07.12.17 12.39		10



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **T1- 14'**
Lab Sample Id: 556916-011

Matrix: Soil
Date Collected: 06.28.17 10.30

Date Received: 07.05.17 11.45
Sample Depth: 14 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MGO

% Moisture:

Analyst: MGO

Date Prep: 07.12.17 09.20

Basis: Wet Weight

Seq Number: 3022122

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	4740	49.3	mg/kg	07.12.17 13.02		10



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T1- 15'
Lab Sample Id: 556916-012

Matrix: Soil
Date Collected: 06.28.17 10.30

Date Received: 07.05.17 11.45
Sample Depth: 15 ft

Analytical Method: Chloride by EPA 300
Tech: MGO
Analyst: MGO
Seq Number: 3022122

Date Prep: 07.12.17 09.20

Prep Method: E300P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1720	24.6	mg/kg	07.12.17 13.10		5

Analytical Method: TPH By SW8015 Mod
Tech: ARM
Analyst: ARM
Seq Number: 3021794

Date Prep: 07.07.17 10.00

Prep Method: TX1005P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	07.07.17 14.35	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	07.07.17 14.35	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	07.07.17 14.35	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	07.07.17 14.35	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	108	%	70-135	07.07.17 14.35		
o-Terphenyl	84-15-1	112	%	70-135	07.07.17 14.35		



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T1- 15'
Lab Sample Id: 556916-012

Matrix: Soil
Date Collected: 06.28.17 10.30

Date Received: 07.05.17 11.45
Sample Depth: 15 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 07.07.17 15.30

Basis: Wet Weight

Seq Number: 3021835

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	07.08.17 08.42	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	07.08.17 08.42	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	07.08.17 08.42	U	1
m_p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	07.08.17 08.42	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	07.08.17 08.42	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	07.08.17 08.42	U	1
Total BTEX		<0.00199	0.00199	mg/kg	07.08.17 08.42	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	85	%	80-120	07.08.17 08.42		
4-Bromofluorobenzene	460-00-4	101	%	80-120	07.08.17 08.42		



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **T2- Surf**
Lab Sample Id: 556916-013

Matrix: Soil
Date Collected: 06.28.17 11.30

Date Received: 07.05.17 11.45

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3022122

Prep Method: E300P

% Moisture:

Date Prep: 07.12.17 09.20

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	6610	49.5	mg/kg	07.12.17 13.18		10

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3021794

Prep Method: TX1005P

% Moisture:

Date Prep: 07.07.17 10.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	07.07.17 14.55	U	1
Diesel Range Organics (DRO)	C10C28DRO	56.1	15.0	mg/kg	07.07.17 14.55		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	07.07.17 14.55	U	1
Total TPH	PHC635	56.1	15.0	mg/kg	07.07.17 14.55		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	109	%	70-135	07.07.17 14.55	
o-Terphenyl	84-15-1	112	%	70-135	07.07.17 14.55	



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **T2- Surf**
Lab Sample Id: 556916-013

Matrix: Soil
Date Collected: 06.28.17 11.30

Date Received: 07.05.17 11.45

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 07.07.17 15.30

Basis: Wet Weight

Seq Number: 3021835

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	07.08.17 08.58	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	07.08.17 08.58	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	07.08.17 08.58	U	1
m_p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	07.08.17 08.58	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	07.08.17 08.58	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	07.08.17 08.58	U	1
Total BTEX		<0.00201	0.00201	mg/kg	07.08.17 08.58	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	106	%	80-120	07.08.17 08.58		
1,4-Difluorobenzene	540-36-3	107	%	80-120	07.08.17 08.58		



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T2- 1'
Lab Sample Id: 556916-014

Matrix: Soil
Date Collected: 06.28.17 11.30

Date Received: 07.05.17 11.45
Sample Depth: 1 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3022122

Date Prep: 07.12.17 09.20

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	859	4.98	mg/kg	07.12.17 12.09		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3021794

Date Prep: 07.07.17 10.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	07.07.17 15.15	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	07.07.17 15.15	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	07.07.17 15.15	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	07.07.17 15.15	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	113	%	70-135	07.07.17 15.15		
o-Terphenyl	84-15-1	118	%	70-135	07.07.17 15.15		



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T2- 1'
Lab Sample Id: 556916-014

Matrix: Soil
Date Collected: 06.28.17 11.30

Date Received: 07.05.17 11.45
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 07.07.17 15.30

Basis: Wet Weight

Seq Number: 3021835

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	07.08.17 09.15	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	07.08.17 09.15	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	07.08.17 09.15	U	1
m_p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	07.08.17 09.15	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	07.08.17 09.15	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	07.08.17 09.15	U	1
Total BTEX		<0.00200	0.00200	mg/kg	07.08.17 09.15	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	105	%	80-120	07.08.17 09.15		
1,4-Difluorobenzene	540-36-3	96	%	80-120	07.08.17 09.15		



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T2- 2'
Lab Sample Id: 556916-015

Matrix: Soil
Date Collected: 06.28.17 11.30

Date Received: 07.05.17 11.45
Sample Depth: 2 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3022122

Date Prep: 07.12.17 09.20

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	20.9	4.98	mg/kg	07.12.17 13.25		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3021794

Date Prep: 07.07.17 10.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	07.07.17 15.36	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	07.07.17 15.36	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	07.07.17 15.36	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	07.07.17 15.36	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	108	%	70-135	07.07.17 15.36	
o-Terphenyl	84-15-1	112	%	70-135	07.07.17 15.36	



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T2- 2'
Lab Sample Id: 556916-015

Matrix: Soil
Date Collected: 06.28.17 11.30

Date Received: 07.05.17 11.45
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 07.07.17 15.30

Basis: Wet Weight

Seq Number: 3021835

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	07.08.17 12.27	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	07.08.17 12.27	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	07.08.17 12.27	U	1
m_p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	07.08.17 12.27	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	07.08.17 12.27	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	07.08.17 12.27	U	1
Total BTEX		<0.00200	0.00200	mg/kg	07.08.17 12.27	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	100	%	80-120	07.08.17 12.27		
4-Bromofluorobenzene	460-00-4	90	%	80-120	07.08.17 12.27		



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T2- 3'
Lab Sample Id: 556916-016

Matrix: Soil
Date Collected: 06.28.17 11.30

Date Received: 07.05.17 11.45
Sample Depth: 3 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3022122

Date Prep: 07.12.17 09.20

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	16.3	4.99	mg/kg	07.12.17 13.33		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3021794

Date Prep: 07.07.17 10.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	07.07.17 15.56	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	07.07.17 15.56	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	07.07.17 15.56	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	07.07.17 15.56	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	109	%	70-135	07.07.17 15.56	
o-Terphenyl	84-15-1	112	%	70-135	07.07.17 15.56	



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T2- 3'
Lab Sample Id: 556916-016

Matrix: Soil
Date Collected: 06.28.17 11.30

Date Received: 07.05.17 11.45
Sample Depth: 3 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 07.07.17 15.30

Basis: Wet Weight

Seq Number: 3021835

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	07.08.17 12.43	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	07.08.17 12.43	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	07.08.17 12.43	U	1
m_p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	07.08.17 12.43	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	07.08.17 12.43	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	07.08.17 12.43	U	1
Total BTEX		<0.00202	0.00202	mg/kg	07.08.17 12.43	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	98	%	80-120	07.08.17 12.43		
1,4-Difluorobenzene	540-36-3	110	%	80-120	07.08.17 12.43		



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T2- 5'
Lab Sample Id: 556916-017

Matrix: Soil
Date Collected: 06.28.17 11.30

Date Received: 07.05.17 11.45
Sample Depth: 5 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3022122

Date Prep: 07.12.17 09.20

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	9.34	4.93	mg/kg	07.12.17 13.41		1



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **T2- 8'**
Lab Sample Id: 556916-018

Matrix: Soil
Date Collected: 06.28.17 11.30

Date Received: 07.05.17 11.45
Sample Depth: 8 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MGO

% Moisture:

Analyst: MGO

Date Prep: 07.12.17 09.20

Basis: Wet Weight

Seq Number: 3022122

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	21.0	4.96	mg/kg	07.12.17 13.48		1



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T2- 12'
Lab Sample Id: 556916-019

Matrix: Soil
Date Collected: 06.28.17 11.30

Date Received: 07.05.17 11.45
Sample Depth: 12 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3022150

Date Prep: 07.12.17 12.00

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	391	5.00	mg/kg	07.12.17 22.07		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3021794

Date Prep: 07.07.17 10.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	07.07.17 16.59	U	1
Diesel Range Organics (DRO)	C10C28DRO	<14.9	14.9	mg/kg	07.07.17 16.59	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<14.9	14.9	mg/kg	07.07.17 16.59	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	07.07.17 16.59	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	105	%	70-135	07.07.17 16.59		
o-Terphenyl	84-15-1	107	%	70-135	07.07.17 16.59		



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T2- 12'
Lab Sample Id: 556916-019

Matrix: Soil
Date Collected: 06.28.17 11.30

Date Received: 07.05.17 11.45
Sample Depth: 12 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 07.07.17 15.30

Basis: Wet Weight

Seq Number: 3021835

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	07.08.17 12.59	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	07.08.17 12.59	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	07.08.17 12.59	U	1
m_p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	07.08.17 12.59	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	07.08.17 12.59	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	07.08.17 12.59	U	1
Total BTEX		<0.00199	0.00199	mg/kg	07.08.17 12.59	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	119	%	80-120	07.08.17 12.59		
1,4-Difluorobenzene	540-36-3	100	%	80-120	07.08.17 12.59		



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **T3- Surf**
Lab Sample Id: 556916-020

Matrix: Soil
Date Collected: 06.28.17 13.00

Date Received: 07.05.17 11.45

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3022150

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 07.13.17 13.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	20200	249	mg/kg	07.13.17 13.14		50

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3021794

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Date Prep: 07.07.17 10.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	07.07.17 17.20	U	1
Diesel Range Organics (DRO)	C10C28DRO	182	15.0	mg/kg	07.07.17 17.20		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	07.07.17 17.20	U	1
Total TPH	PHC635	182	15.0	mg/kg	07.07.17 17.20		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	109	%	70-135	07.07.17 17.20		
o-Terphenyl	84-15-1	110	%	70-135	07.07.17 17.20		



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: **T3- Surf**
Lab Sample Id: 556916-020

Matrix: Soil
Date Collected: 06.28.17 13.00

Date Received: 07.05.17 11.45

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 07.07.17 15.30

Basis: Wet Weight

Seq Number: 3021835

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	07.08.17 11.07	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	07.08.17 11.07	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	07.08.17 11.07	U	1
m_p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	07.08.17 11.07	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	07.08.17 11.07	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	07.08.17 11.07	U	1
Total BTEX		<0.00198	0.00198	mg/kg	07.08.17 11.07	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	118	%	80-120	07.08.17 11.07		
1,4-Difluorobenzene	540-36-3	114	%	80-120	07.08.17 11.07		



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T3- 1'
Lab Sample Id: 556916-021

Matrix: Soil
Date Collected: 06.28.17 13.00

Date Received: 07.05.17 11.45
Sample Depth: 1 ft

Analytical Method: Chloride by EPA 300
Tech: MGO
Analyst: MGO
Seq Number: 3022150

Date Prep: 07.12.17 12.00

Prep Method: E300P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2850	24.7	mg/kg	07.12.17 22.37		5

Analytical Method: TPH By SW8015 Mod
Tech: ARM
Analyst: ARM
Seq Number: 3021794

Date Prep: 07.07.17 10.00

Prep Method: TX1005P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	07.07.17 17.40	U	1
Diesel Range Organics (DRO)	C10C28DRO	<14.9	14.9	mg/kg	07.07.17 17.40	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<14.9	14.9	mg/kg	07.07.17 17.40	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	07.07.17 17.40	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	104	%	70-135	07.07.17 17.40		
o-Terphenyl	84-15-1	108	%	70-135	07.07.17 17.40		



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T3- 1'
Lab Sample Id: 556916-021

Matrix: Soil
Date Collected: 06.28.17 13.00

Date Received: 07.05.17 11.45
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 07.07.17 15.30

Basis: Wet Weight

Seq Number: 3021835

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	07.08.17 11.22	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	07.08.17 11.22	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	07.08.17 11.22	U	1
m_p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	07.08.17 11.22	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	07.08.17 11.22	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	07.08.17 11.22	U	1
Total BTEX		<0.00200	0.00200	mg/kg	07.08.17 11.22	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	109	%	80-120	07.08.17 11.22		
4-Bromofluorobenzene	460-00-4	105	%	80-120	07.08.17 11.22		



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T3- 2'
Lab Sample Id: 556916-022

Matrix: Soil
Date Collected: 06.28.17 13.00

Date Received: 07.05.17 11.45
Sample Depth: 2 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3022150

Date Prep: 07.12.17 12.00

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	78.5	4.92	mg/kg	07.12.17 22.45		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3021794

Date Prep: 07.07.17 10.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	07.07.17 18.01	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	07.07.17 18.01	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	07.07.17 18.01	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	07.07.17 18.01	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	106	%	70-135	07.07.17 18.01	
o-Terphenyl	84-15-1	108	%	70-135	07.07.17 18.01	



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T3- 2'
Lab Sample Id: 556916-022

Matrix: Soil
Date Collected: 06.28.17 13.00

Date Received: 07.05.17 11.45
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 07.07.17 15.30

Basis: Wet Weight

Seq Number: 3021835

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	07.08.17 11.38	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	07.08.17 11.38	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	07.08.17 11.38	U	1
m_p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	07.08.17 11.38	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	07.08.17 11.38	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	07.08.17 11.38	U	1
Total BTEX		<0.00200	0.00200	mg/kg	07.08.17 11.38	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	91	%	80-120	07.08.17 11.38		
4-Bromofluorobenzene	460-00-4	106	%	80-120	07.08.17 11.38		



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T3- 3'
Lab Sample Id: 556916-023

Matrix: Soil
Date Collected: 06.28.17 13.00

Date Received: 07.05.17 11.45
Sample Depth: 3 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3022150

Date Prep: 07.12.17 12.00

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	118	4.95	mg/kg	07.12.17 22.53		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3021794

Date Prep: 07.07.17 10.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	07.07.17 18.22	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	07.07.17 18.22	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	07.07.17 18.22	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	07.07.17 18.22	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	108	%	70-135	07.07.17 18.22	
o-Terphenyl	84-15-1	112	%	70-135	07.07.17 18.22	



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T3- 3'
Lab Sample Id: 556916-023

Matrix: Soil
Date Collected: 06.28.17 13.00

Date Received: 07.05.17 11.45
Sample Depth: 3 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 07.07.17 15.30

Basis: Wet Weight

Seq Number: 3021835

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	07.08.17 11.54	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	07.08.17 11.54	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	07.08.17 11.54	U	1
m_p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	07.08.17 11.54	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	07.08.17 11.54	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	07.08.17 11.54	U	1
Total BTEX		<0.00199	0.00199	mg/kg	07.08.17 11.54	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	97	%	80-120	07.08.17 11.54		
4-Bromofluorobenzene	460-00-4	87	%	80-120	07.08.17 11.54		



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T3- 4'
Lab Sample Id: 556916-024

Matrix: Soil
Date Collected: 06.28.17 13.00

Date Received: 07.05.17 11.45
Sample Depth: 4 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3022150

Date Prep: 07.12.17 12.00

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	145	4.93	mg/kg	07.12.17 23.16		1



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T3- 5'
Lab Sample Id: 556916-025

Matrix: Soil
Date Collected: 06.28.17 13.00

Date Received: 07.05.17 11.45
Sample Depth: 5 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3022150

Date Prep: 07.12.17 12.00

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	112	4.92	mg/kg	07.12.17 23.23		1



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T3- 10'
Lab Sample Id: 556916-026

Matrix: Soil
Date Collected: 06.28.17 13.00

Date Received: 07.05.17 11.45
Sample Depth: 10 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3022150

Date Prep: 07.12.17 12.00

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	329	4.97	mg/kg	07.12.17 23.31		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3021794

Date Prep: 07.07.17 10.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	07.07.17 18.42	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	07.07.17 18.42	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	07.07.17 18.42	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	07.07.17 18.42	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	106	%	70-135	07.07.17 18.42	
o-Terphenyl	84-15-1	110	%	70-135	07.07.17 18.42	



Certificate of Analytical Results 556916



COG Operating LLC, Artesia, NM

Federal 19 #001 SWD

Sample Id: T3- 10'
Lab Sample Id: 556916-026

Matrix: Soil
Date Collected: 06.28.17 13.00

Date Received: 07.05.17 11.45
Sample Depth: 10 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 07.07.17 15.30

Basis: Wet Weight

Seq Number: 3021835

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	07.08.17 12.11	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	07.08.17 12.11	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	07.08.17 12.11	U	1
m_p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	07.08.17 12.11	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	07.08.17 12.11	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	07.08.17 12.11	U	1
Total BTEX		<0.00201	0.00201	mg/kg	07.08.17 12.11	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	95	%	80-120	07.08.17 12.11		
4-Bromofluorobenzene	460-00-4	93	%	80-120	07.08.17 12.11		

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

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

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(602) 437-0330	



QC Summary 556916

COG Operating LLC Federal 19 #001 SWD

Analytical Method: Chloride by EPA 300

Seq Number: 3022122

MB Sample Id: 727558-1-BLK

Matrix: Solid

LCS Sample Id: 727558-1-BKS

Prep Method: E300P

Date Prep: 07.12.17

LCSD Sample Id: 727558-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	260	104	259	104	90-110	0	20	mg/kg	07.12.17 10:06	

Analytical Method: Chloride by EPA 300

Seq Number: 3022150

MB Sample Id: 727573-1-BLK

Matrix: Solid

LCS Sample Id: 727573-1-BKS

Prep Method: E300P

Date Prep: 07.12.17

LCSD Sample Id: 727573-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	265	106	265	106	90-110	0	20	mg/kg	07.12.17 21:51	

Analytical Method: Chloride by EPA 300

Seq Number: 3022122

Parent Sample Id: 556916-014

Matrix: Soil

MS Sample Id: 556916-014 S

Prep Method: E300P

Date Prep: 07.12.17

MSD Sample Id: 556916-014 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	859	249	1100	97	1100	97	90-110	0	20	mg/kg	07.12.17 12:16	

Analytical Method: Chloride by EPA 300

Seq Number: 3022122

Parent Sample Id: 556917-005

Matrix: Soil

MS Sample Id: 556917-005 S

Prep Method: E300P

Date Prep: 07.12.17

MSD Sample Id: 556917-005 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	12.0	246	350	137	345	135	90-110	1	20	mg/kg	07.12.17 10:29	X

Analytical Method: Chloride by EPA 300

Seq Number: 3022150

Parent Sample Id: 556916-019

Matrix: Soil

MS Sample Id: 556916-019 S

Prep Method: E300P

Date Prep: 07.12.17

MSD Sample Id: 556916-019 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	391	250	641	100	658	107	90-110	3	20	mg/kg	07.12.17 22:14	

Analytical Method: Chloride by EPA 300

Seq Number: 3022150

Parent Sample Id: 556918-008

Matrix: Soil

MS Sample Id: 556918-008 S

Prep Method: E300P

Date Prep: 07.12.17

MSD Sample Id: 556918-008 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	203	249	493	116	484	113	90-110	2	20	mg/kg	07.13.17 00:02	X



QC Summary 556916

COG Operating LLC

Federal 19 #001 SWD

Analytical Method: TPH By SW8015 Mod

Seq Number: 3021794

MB Sample Id: 727361-1-BLK

Matrix: Solid

LCS Sample Id: 727361-1-BKS

Prep Method: TX1005P

Date Prep: 07.07.17

LCSD Sample Id: 727361-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	1080	108	1080	108	70-135	0	35	mg/kg	07.07.17 11:34	
Diesel Range Organics (DRO)	<15.0	1000	1110	111	1060	106	70-135	5	35	mg/kg	07.07.17 11:34	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date			
1-Chlorooctane	108		118		116		70-135	%	07.07.17 11:34			
o-Terphenyl	114		121		114		70-135	%	07.07.17 11:34			

Analytical Method: TPH By SW8015 Mod

Seq Number: 3021794

Parent Sample Id: 556916-001

Matrix: Soil

MS Sample Id: 556916-001 S

Prep Method: TX1005P

Date Prep: 07.07.17

MSD Sample Id: 556916-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	1060	106	1060	106	70-135	0	35	mg/kg	07.07.17 12:34	
Diesel Range Organics (DRO)	46.3	1000	1060	101	1080	103	70-135	2	35	mg/kg	07.07.17 12:34	
Surrogate				MS %Rec	MS Flag		MSD %Rec	MSD Flag	Limits	Units	Analysis Date	
1-Chlorooctane				112			106		70-135	%	07.07.17 12:34	
o-Terphenyl				109			99		70-135	%	07.07.17 12:34	

Analytical Method: BTEX by EPA 8021B

Seq Number: 3021835

MB Sample Id: 727358-1-BLK

Matrix: Solid

LCS Sample Id: 727358-1-BKS

Prep Method: SW5030B

Date Prep: 07.07.17

LCSD Sample Id: 727358-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00201	0.101	0.113	112	0.115	114	70-130	2	35	mg/kg	07.08.17 01:47	
Toluene	<0.00201	0.101	0.105	104	0.102	101	70-130	3	35	mg/kg	07.08.17 01:47	
Ethylbenzene	<0.00201	0.101	0.108	107	0.108	107	71-129	0	35	mg/kg	07.08.17 01:47	
m_p-Xylenes	<0.00402	0.201	0.187	93	0.190	94	70-135	2	35	mg/kg	07.08.17 01:47	
o-Xylene	<0.00201	0.101	0.106	105	0.106	105	71-133	0	35	mg/kg	07.08.17 01:47	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date	Flag		
1,4-Difluorobenzene	89		96		82		80-120	%	07.08.17 01:47			
4-Bromofluorobenzene	94		120		85		80-120	%	07.08.17 01:47			



QC Summary 556916

COG Operating LLC

Federal 19 #001 SWD

Analytical Method: BTEX by EPA 8021B

Seq Number: 3021835

Parent Sample Id: 556916-003

Matrix: Soil

MS Sample Id: 556916-003 S

Prep Method: SW5030B

Date Prep: 07.07.17

MSD Sample Id: 556916-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0947	95	0.0952	95	70-130	1	35	mg/kg	07.08.17 02:19	
Toluene	<0.00200	0.100	0.0871	87	0.0846	85	70-130	3	35	mg/kg	07.08.17 02:19	
Ethylbenzene	<0.00200	0.100	0.0925	93	0.0851	85	71-129	8	35	mg/kg	07.08.17 02:19	
m_p-Xylenes	<0.00401	0.200	0.161	81	0.160	80	70-135	1	35	mg/kg	07.08.17 02:19	
o-Xylene	<0.00200	0.100	0.0871	87	0.0866	87	71-133	1	35	mg/kg	07.08.17 02:19	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	104		88		80-120	%	07.08.17 02:19
4-Bromofluorobenzene	111		95		80-120	%	07.08.17 02:19



Setting the Standard since 1990
Stafford, Texas (281-240-4200)
Dallas Texas (214-902-0300)

CHAIN OF CUSTODY

Page 1 of 4

San Antonio, Texas (210-509-3334)
Midland, Texas (432-704-5251)

www.xenco.com

Phoenix, Arizona (480-355-0900)

Xenco Quote #

Xenco Job #

5506914

Analytical Information

Matrix Codes

Client / Reporting Information

Project Information

Company Name / Branch:

COG Operating LLC

Company Address:

2407 PECOS Avenue Artesia NM 88210

Email: alib@concho.com dine@concho.com rhaskel@concho.com

Phone No: 575-748-1553

Project Contact: Aaron Lieb

Sampler's Name: Aaron Lieb

Project Name/Number:

Federal 19 #001 SWD

Project Location:

Federal 19 #001 SW

Invoice To: COG Operating LLC

Attn: Robert McNeill

600 W. Illinois

Midland TX 79701

PO Number:

Field ID / Point of Collection

Sample Depth

Date

Time

Matrix

of bottles

HCl

NaOH/Zn Acetate

HNO3

H2SO4

NaOH

NaHSO4

MeOH

NONE

TPH/ EXTENDED

BTEX

Chloride

Field Comments

W = Water

S = Soil/Sed/Solid

GW = Ground Water

DW = Drinking Water

P = Product

SW = Surface water

SL = Sludge

OW = Ocean/Sea Water

WI = Wipe

O = Oil

WW = Waste Water

A = Air

Turnaround Time (Business days)

Same Day TAT

Next Day EMERGENCY

2 Day EMERGENCY

3 Day EMERGENCY

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

Relinquished by Sampler:

Relinquished by:

Relinquished by:

Relinquished by:

Relinquished by:

Relinquished by:

Relinquished by:

Relinquished by:

Relinquished by:

Relinquished by:

Relinquished by:

Relinquished by:

Relinquished by:

Relinquished by:

Date Time: 10:00

Date Time: 10:00

Date Time: 10:00

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Date Time: 10:00

Date Time: 10:00

Date Time: 10:00

Date Time: 10:00

Date Time: 10:00

Date Time: 10:00

Date Time: 10:00

Date Time: 10:00

Received By: 7-5-17

Received By: 7-5-17

Received By: 7-5-17

Received By: 7-5-17

Received By: 7-5-17

Received By: 7-5-17

Received By: 7-5-17

Received By: 7-5-17

Received By: 7-5-17

Received By: 7-5-17

Received By: 7-5-17

Received By: 7-5-17

Received By: 7-5-17

Received By: 7-5-17

Level II Std QC

Level III Std QC+ Forms

Level 3 (CLP Forms)

TRRP Checklist

Level IV (Full Data Pkg raw data)

TRRP Level IV

UST / RG-411

TRRP Checklist

TRRP Checklist

TRRP Checklist

TRRP Checklist

TRRP Checklist

TRRP Checklist

TRRP Checklist

Temp: 3.8

CF: (0-6: -0.2°C)

(6-23: +0.2°C)

Corrected Temp: 3.4

IR ID: R-8

IR ID: R-8

IR ID: R-8

IR ID: R-8

IR ID: R-8

IR ID: R-8

IR ID: R-8

IR ID: R-8

IR ID: R-8

IR ID: R-8

Temp: 4.9

CF: (0-6: -0.2°C)

(6-23: +0.2°C)

Corrected Temp: 4.5

IR ID: R-8

IR ID: R-8

IR ID: R-8

IR ID: R-8

IR ID: R-8

IR ID: R-8

IR ID: R-8

IR ID: R-8

IR ID: R-8

IR ID: R-8



Setting the Standard since 1990
Stafford, Texas (281-240-4200)
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CHAIN OF CUSTODY

Page 2 of 4

San Antonio, Texas (210-509-3334)
Midland, Texas (432-704-5251)

Phoenix, Arizona (480-355-0900)

www.xenco.com

Client / Reporting Information				Project Information				Analytical Information				Matrix Codes							
Company Name / Branch: COG Operating LLC				Project Name/Number: Federal 19 #001 SWD															
Company Address: 2407 PECOS Avenue Artesia NM 88210				Project Location: Federal 19 #001 SW															
Email: aileen@xenco.com dneel2@xenco.com rhaskell@xenco.com				Invoice To: COG Operating LLC Attn: Robert McNeill 600 W. Illinois Midland TX 79701															
Project Contact: Aaron Lieb				PO Number:															
Sampler's Name: Aaron Lieb																			
No.	Field ID / Point of Collection	Sample Depth	Date	Time	Matrix	# of bottles	HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	TPH/ EXTENDED	BTEX	Chloride	Field Comments	
1	T1-10'	10	7/5/17	10:30 AM	5	1									X				
2	T1-12'	12				1									X				
3	T1-14'	14				1									X				
4	T1-15'	15				1									X				
5																			
6																			
7																			
8																			
9																			
10																			
Turnaround Time (Business days)																			
Data Deliverable Information																			
Same Day TAT																			
Next Day EMERGENCY																			
2 Day EMERGENCY																			
3 Day EMERGENCY																			
TAT Starts Day received by Lab, if received by 5:00 pm																			
SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY																			
Relinquished by Sampler:																			
Relinquished by:																			
Date Time: 7/5/17 10:00 AM																			
Received By: Aileen																			
Date Time: 7-5-17																			
Received By: Aileen																			
Custody Seal #																			
Preserved where applicable																			
On Ice? ☒ Cooler Temp. 49°C Thermo. Corr. Factor																			

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 will be applied to each project. Xenco's liability will be limited to the cost of samples. Any samples received by Xenco before analyzed will be invoiced at \$5 per sample. These terms will be enforced unless previously negotiated under a fully executed client contract.



Setting the Standard since 1990
Stafford, Texas (281-240-4200)
Dallas Texas (214-902-0300)

CHAIN OF CUSTODY

Page 3 of 4

San Antonio, Texas (210-509-3334)
Midland, Texas (432-704-5251)

Phoenix, Arizona (480-355-0900)

www.xenco.com

Xenco Quote #

Xenco Job #

5506916

Matrix Codes

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

Client / Reporting Information

Company Name / Branch:

COG Operating LLC

Company Address:

2407 PECOS Avenue

Alesia NM 88210

Phone No. 575-748-1553

Project Contact: Aaron Lieb

Project Name: Name- Aaron Lieb

Field ID / Point of Collection

Sample Depth

Date

Time

Matrix

of bottles

HCl

NaOH/Zn Acetate

HNO3

H2SO4

NaOH

NaHSO4

MEOH

NONE

TPH/ EXTENDED

BTEX

Chloride

Field Comments

Turnaround Time (Business days)

Same Day TAT

Next Day EMERGENCY

2 Day EMERGENCY

3 Day EMERGENCY

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

Relinquished by Sampler:

Relinquished by:

Date Time:

Received By:

Date Time:

Received By:

Date Time:

Received By:

Date Time:

Received By:

Date Time:

Received By:

Date Time:

Received By:

Date Time:

Received By:

Date Time:

Received By:

Date Time:

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Date Time:

Received By:

Date Time:

Received By:

Date Time:

CHAIN OF CUSTODY

Page 4 of 4

Setting the Standard since 1990
Stafford, Texas (281-240-4200)
Dallas Texas (214-902-0300)

San Antonio, Texas (210-509-3334)
Midland, Texas (432-704-5251)

Phoenix, Arizona (480-355-0900)

www.xenco.com

Client / Reporting Information				Project Information				Xenoco Quote #		Xenoco Job #											
Company Name / Branch: COG Operating LLC				Project Name/Number: Federal 19 #001 SWD				55069110													
Company Address: 2407 PECOS Avenue Artesia NM 88210				Project Location:																	
Email: alleh@concho.com dneelz@concho.com rhaskell@concho.com				Federal 19 #001 SW																	
Phone No: 575-748-1553				Invoice To: COG Operating LLC Attn: Robert McNeill 600 W. Illinois Midland TX 79701																	
Project Contact: Aaron Lieb				PO Number:																	
Sampler's Name: Aaron Lieb																					
No.		Field ID / Point of Collection		Collection		Number of preserved bottles		Analytical Information		Matrix Codes											
		Sample Depth	Date	Time	Matrix	# of bottles	HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MeOH	NONE	TPH/ EXTENDED	BTEX	Chloride				
1	13-	Surf	6/24/17	1:00pm	S	1									X	X	X				
2	13-	1'				1									X	X	X				
3	13-	2'				1									X	X	X				
4	13-	3'				1									X	X	X				
5	13-	4'				1											X				
6	13-	5'				1											X				
7	13-	10'				1											X				
8																					
9																					
10																					
Turnaround Time (Business days)				Data Deliverable Information				Notes:													
☐ Same Day TAT				☐ 5 Day TAT				☐ Level II Std QC				☐ Level IV (Full Data Pkg / raw data)									
☐ Next Day EMERGENCY				☐ 7 Day TAT				☐ Level III Std QC+ Forms				☐ TRRP Level IV									
☐ 2 Day EMERGENCY				☐ Contract TAT				☐ Level 3 (CLP Forms)				☐ UST / RG -411									
☐ 3 Day EMERGENCY								☐ TRRP Checklist													
TAT Starts Day received by Lab, if received by 5:00 pm																					
Relinquished by Sampler:				SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY																	
1 <i>Alleh</i>				Date/Time: 7/5/17 10:00 AM				Received By: <i>Robert McNeill</i>				Date/Time: 7-5-17 11:45 AM									
Relinquished by:				Date/Time: 7/5/17 10:00 AM				Received By: <i>Robert McNeill</i>				Date/Time: 7-5-17 11:45 AM									
3				Date/Time:				Received By:				Date/Time:									
Relinquished by:				Date/Time:				Received By:				Date/Time:									
5				Date/Time:				Received By:				Date/Time:									
Relinquished by:				Date/Time:				Received By:				Date/Time:									
5				Date/Time:				Received By:				Date/Time:									
Relinquished by:				Date/Time:				Received By:				Date/Time:									
5				Date/Time:				Received By:				Date/Time:									
Relinquished by:				Date/Time:				Received By:				Date/Time:									
5				Date/Time:				Received By:				Date/Time:									
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5				Date/Time:				Received By:				Date/Time:									
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5				Date/Time:				Received By:				Date/Time:									
Relinquished by:				Date/Time:				Received By:				Date/Time:									
5				Date/Time:				Received By:				Date/Time:									
Relinquished by:				Date/Time:				Received By:				Date/Time:									
5				Date/Time:				Received By:				Date/Time:									
Relinquished by:				Date/Time:				Received By:				Date/Time:									
5				Date/Time:				Received By:				Date/Time:									
Relinquished by:				Date/Time:				Received By:				Date/Time:									
5				Date/Time:				Received By:				Date/									



XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In



Client: COG Operating LLC

Date/ Time Received: 07/05/2017 11:45:00 AM

Work Order #: 556916

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)?	4.9
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seal present on shipping container/ cooler?	Yes
#5 *Custody Seals intact on shipping container/ cooler?	Yes
#6 Custody Seals intact on sample bottles?	Yes
#7 *Custody Seals Signed and dated?	Yes
#8 *Chain of Custody present?	Yes
#9 Sample instructions complete on Chain of Custody?	Yes
#10 Any missing/extra samples?	No
#11 Chain of Custody signed when relinquished/ received?	Yes
#12 Chain of Custody agrees with sample label(s)?	Yes
#13 Container label(s) legible and intact?	Yes
#14 Sample matrix/ properties agree with Chain of Custody?	Yes
#15 Samples in proper container/ bottle?	Yes
#16 Samples properly preserved?	Yes
#17 Sample container(s) intact?	Yes
#18 Sufficient sample amount for indicated test(s)?	Yes
#19 All samples received within hold time?	Yes
#20 Subcontract of sample(s)?	No
#21 VOC samples have zero headspace?	N/A

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

Analyst: ss

PH Device/Lot#:

Checklist completed by:

Shawnee Smith

Date: 07/06/2017

Checklist reviewed by:

Kelsey Brooks

Date: 07/06/2017

Analytical Report 566954

for Tetra Tech- Midland

Project Manager: Ike Tavaréz

COG- Federal 19 #1

212c-MD-00958 Task #15

09-NOV-17

Collected By: Client



1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-17-23), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab code: TX01468):

Texas (T104704295-17-15), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab code: TX00127): Texas (T104704221-17-12)

Xenco-Lubbock (EPA Lab code: TX00139): Texas (T104704219-17-16)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-17-13)

Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)

Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)

Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)



09-NOV-17

Project Manager: **Ike Tavaréz**

Tetra Tech- Midland

4000 N. Big Spring Suite 401

Midland, TX 79705

Reference: XENCO Report No(s): **566954**

COG- Federal 19 #1

Project Address: Lea County, New Mexico

Ike Tavaréz:

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) 566954. 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. 566954 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,

Mike Kimmel

Client Services Manager

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

Certified and approved by numerous States and Agencies.

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

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



Sample Cross Reference 566954



Tetra Tech- Midland, Midland, TX

COG- Federal 19 #1

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
BH #1 (0-1')	S	10-26-17 00:00		566954-001
BH #1 (2-3')	S	10-26-17 00:00		566954-002
BH #1 (4-5')	S	10-26-17 00:00		566954-003
BH #1 (6-7')	S	10-26-17 00:00		566954-004
BH #1 (9-10')	S	10-26-17 00:00		566954-005
BH #1 (14-15')	S	10-26-17 00:00		566954-006
BH #1 (19-20')	S	10-26-17 00:00		566954-007
BH #1 (24-25')	S	10-26-17 00:00		566954-008
BH #1 (29-30')	S	10-26-17 00:00		566954-009
BH #1 (34-35')	S	10-26-17 00:00		Not Analyzed



CASE NARRATIVE

Client Name: Tetra Tech- Midland

Project Name: COG- Federal 19 #1

Project ID: 212c-MD-00958 Task #15
Work Order Number(s): 566954

Report Date: 09-NOV-17
Date Received: 10/30/2017

Sample receipt non conformances and comments:

Per Clair at Tetratch, BH-1 (34-35) should not be analyzed.

11/09/17: Revised report to remove data for sample 566954-010.

Sample receipt non conformances and comments per sample:

None



Certificate of Analysis Summary 566954

Tetra Tech- Midland, Midland, TX

Project Name: COG- Federal 19 #1



Project Id: 212c-MD-00958 Task #15

Contact: Ike Tavaréz

Project Location: Lea County, New Mexico

Date Received in Lab: Mon Oct-30-17 04:37 pm

Report Date: 09-NOV-17

Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	566954-001	566954-002	566954-003	566954-004	566954-005	566954-006
	<i>Field Id:</i>	BH #1 (0-1')	BH #1 (2-3')	BH #1 (4-5')	BH #1 (6-7')	BH #1 (9-10')	BH #1 (14-15')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Oct-26-17 00:00	Oct-26-17 00:00	Oct-26-17 00:00	Oct-26-17 00:00	Oct-26-17 00:00	Oct-26-17 00:00
Inorganic Anions by EPA 300/300.1	<i>Extracted:</i>	Nov-06-17 17:00	Nov-06-17 17:00	Nov-06-17 17:00	Nov-06-17 17:00	Nov-06-17 17:00	Nov-06-17 17:00
	<i>Analyzed:</i>	Nov-06-17 21:36	Nov-06-17 21:42	Nov-06-17 21:48	Nov-06-17 22:07	Nov-06-17 22:14	Nov-06-17 22:33
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		392 4.99	573 4.99	60.9 4.96	1710 24.6	2220 24.9	3320 24.7

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

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

Mike Kimmel
Client Services Manager



Certificate of Analysis Summary 566954

Tetra Tech- Midland, Midland, TX

Project Name: COG- Federal 19 #1



Project Id: 212c-MD-00958 Task #15

Contact: Ike Tavaréz

Project Location: Lea County, New Mexico

Date Received in Lab: Mon Oct-30-17 04:37 pm

Report Date: 09-NOV-17

Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	566954-007	566954-008	566954-009			
	<i>Field Id:</i>	BH #1 (19-20')	BH #1 (24-25')	BH #1 (29-30')			
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL			
	<i>Sampled:</i>	Oct-26-17 00:00	Oct-26-17 00:00	Oct-26-17 00:00			
Inorganic Anions by EPA 300/300.1	<i>Extracted:</i>	Nov-06-17 17:00	Nov-07-17 09:00	Nov-07-17 09:00			
	<i>Analyzed:</i>	Nov-06-17 22:39	Nov-07-17 09:52	Nov-07-17 10:11			
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL			
Chloride		349 4.97	212 4.91	412 4.91			

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

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Mike Kimmel
Client Services Manager

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

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

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(602) 437-0330	



BS / BSD Recoveries



Project Name: COG- Federal 19 #1

Work Order #: 566954, 566954

Project ID: 212c-MD-00958 Task #15

Analyst: MNV

Date Prepared: 11/06/2017

Date Analyzed: 11/06/2017

Lab Batch ID: 3032549

Sample: 7633899-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added [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	250	100	250	251	100	0	90-110	20	

Analyst: MNV

Date Prepared: 11/07/2017

Date Analyzed: 11/07/2017

Lab Batch ID: 3032684

Sample: 7633932-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added [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	249	100	250	257	103	3	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: COG- Federal 19 #1

Work Order # : 566954

Project ID: 212c-MD-00958 Task #15

Lab Batch ID: 3032549

QC- Sample ID: 566953-001 S

Batch #: 1 Matrix: Soil

Date Analyzed: 11/06/2017

Date Prepared: 11/06/2017

Analyst: MNV

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 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	<4.98	249	280	112	249	278	112	1	90-110	20	X

Lab Batch ID: 3032549

QC- Sample ID: 566954-003 S

Batch #: 1 Matrix: Soil

Date Analyzed: 11/06/2017

Date Prepared: 11/06/2017

Analyst: MNV

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 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	60.9	248	315	102	248	313	102	1	90-110	20	

Lab Batch ID: 3032684

QC- Sample ID: 566200-041 S

Batch #: 1 Matrix: Soil

Date Analyzed: 11/07/2017

Date Prepared: 11/07/2017

Analyst: MNV

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 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	114	246	368	103	246	370	104	1	90-110	20	

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: COG- Federal 19 #1

Work Order # : 566954

Project ID: 212c-MD-00958 Task #15

Lab Batch ID: 3032684

QC- Sample ID: 566954-008 S

Batch #: 1 Matrix: Soil

Date Analyzed: 11/07/2017

Date Prepared: 11/07/2017

Analyst: MNV

Reporting Units: mg/kg

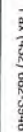
MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 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	212	246	454	98	246	454	98	0	90-110	20	

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.



5166954

(Circle or Specify Method No.)

(Circle) **HAND DEL**

Final 1.001



XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In



Client: Tetra Tech- Midland

Date/ Time Received: 10/30/2017 04:37:00 PM

Work Order #: 566954

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)?	10.7
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	N/A
#5 Custody Seals intact on sample bottles?	N/A
#6 *Custody Seals Signed and dated?	N/A
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	No
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes
#13 Samples properly preserved?	Yes
#14 Sample container(s) intact?	Yes
#15 Sufficient sample amount for indicated test(s)?	Yes
#16 All samples received within hold time?	Yes
#17 Subcontract of sample(s)?	No
#18 Water VOC samples have zero headspace?	N/A

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

Analyst:

PH Device/Lot#:

Checklist completed by:

Shawnee Smith

Date: 10/31/2017

Checklist reviewed by:

Kelsey Brooks

Date: 10/31/2017