

SITE INFORMATION

Report Type: Work Plan 2RP-4236

General Site Information:

Site:	Craig State #4H					
Company:	COG Operating LLC					
Section, Township and Range	Unit B	Sec. 36	T 25S	R 26E		
Lease Number:	API No. 30-015-41981					
County:	Eddy County					
GPS:	32.0930138° N			104.2440033° W		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	From the intersection of HWY 285 and Whites City Rd in rural Eddy County, travel west on Whites City Rd for approx 11.4 miles, turn north onto John D Forehand Rd and continue for approximately 1.85 miles, turn east onto lease road for 0.10 miles. Release location is 275' north of the lease road in the pasture.					

Release Data:

Date Released:	5/25/2017
Type Release:	Oil
Source of Contamination:	Day Tank
Fluid Released:	23 bbls
Fluids Recovered:	22.2 bbls

Official Communication:

Name:	Robert McNeil		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) 686-3023		(432) 687-8110
Fax:	(432) 684-7137		
Email:	rmcneil@conchoresources.com		Ike.Tavarez@tetrattech.com

Ranking Criteria

Depth to Groundwater:	Ranking Score	Site Data
<50 ft	20	<50'
50-99 ft	10	
>100 ft.	0	
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:		20

Acceptable Soil RRAL (mg/kg)		
Benzene	Total BTEX	TPH
10	50	100



TETRA TECH

September 21, 2017

Mike Bratcher
Environmental Engineer Specialist
Oil Conservation Division, District 2
811 S. First Street
Artesia, New Mexico 88210

Re: Work Plan for the COG Operating LLC., Craig State #4H, Unit B, Section 36, Township 25 South, Range 26 East, Eddy County, New Mexico. 2RP-4236.

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC., (COG) to prepare a work plan for a release that occurred at the Craig State #4H, Unit B, Section 36, Township 25 South, Range 26 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.093014°, W 104.244003°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on May 25, 2017, and released approximately twenty three (23) barrels of oil due to failed dump valves causing the day tanks to overflow. Approximately 22.2 barrels of oil was recovered. The release occurred on the pad and measured approximately 65' x 60'. The initial C-141 Form is included in Appendix A.

Groundwater

There are no water wells listed within Section 36 on 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 less than 50' 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

4000 North Big Spring, Suite 401, Midland, TX 79705

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 100 mg/kg.

Soil Assessment and Analytical Results

On June 22, 2017, COG personnel were onsite to evaluate and sample the release area. Using a backhoe, two (2) samples trenches (T-1 and T-2) were installed in the release area to total depths of 12.0' below surface. Additionally, four (4) horizontal trenches (North, South, East, and West) were installed in order to define the horizontal extents. 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.

TPH

Referring to Table 1, the samples collected at trenches (T-1 and T-2) showed total TPH concentrations that exceeded the RRAL in the shallow soils. The area of trench (T-1) showed a TPH high of 3,590 mg/kg at surface which then declined with depth to below the RRAL at 2.0' with a concentration of 45.0 mg/kg, and showed a bottom trench concentration of 43.5 mg/kg at 12.0' below surface. The area of trench (T-2) showed a TPH high of 513 mg/kg at 1.0', which then declined with depth to below the laboratory reporting limits at 2.0' and showed a bottom trench concentration of 18.0 mg/kg at 12.0' below surface. Additionally, none of the horizontal trenches (North, South, East, and West) showed TPH concentrations above the RRAL.

Benzene and BTEX

The area of trench (T-1) showed a total BTEX concentration of 67.3 mg/kg at surface, which declined with depth to 0.207 mg/kg at 1.0' below surface and showed a bottom trench concentration of 0.0129 mg/kg at 12.0' below surface. The areas of trenches (T-2, North, South, East, and West) did not show any BTEX concentrations above the 50 mg/kg threshold. Additionally, none of the samples analyzed showed benzene concentrations above the laboratory reporting limits.

Chloride

The chlorides detected do not appear to be a significant impact to the subsurface soils. All of the samples collected at trenches (T-1, North, and South) showed chloride concentrations below 250 mg/kg. However, the areas of trenches (T-2, East, and West) showed chloride concentrations of 422 mg/kg, 458 mg/kg, and 272 mg/kg at surface, respectively. The chloride concentrations then declined with depth to 53.1 mg/kg (T-2), 142 mg/kg (East), and 129 mg/kg (West).



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. To remove the impacted soil the areas of trenches (T-1 and T-2) will be excavated to a depth of 1.0' below surface to remove TPH and BTEX impacted soils. Once the areas is excavated to the appropriate depth, the excavation will be backfilled with clean material to surface grade. All of the excavated material 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

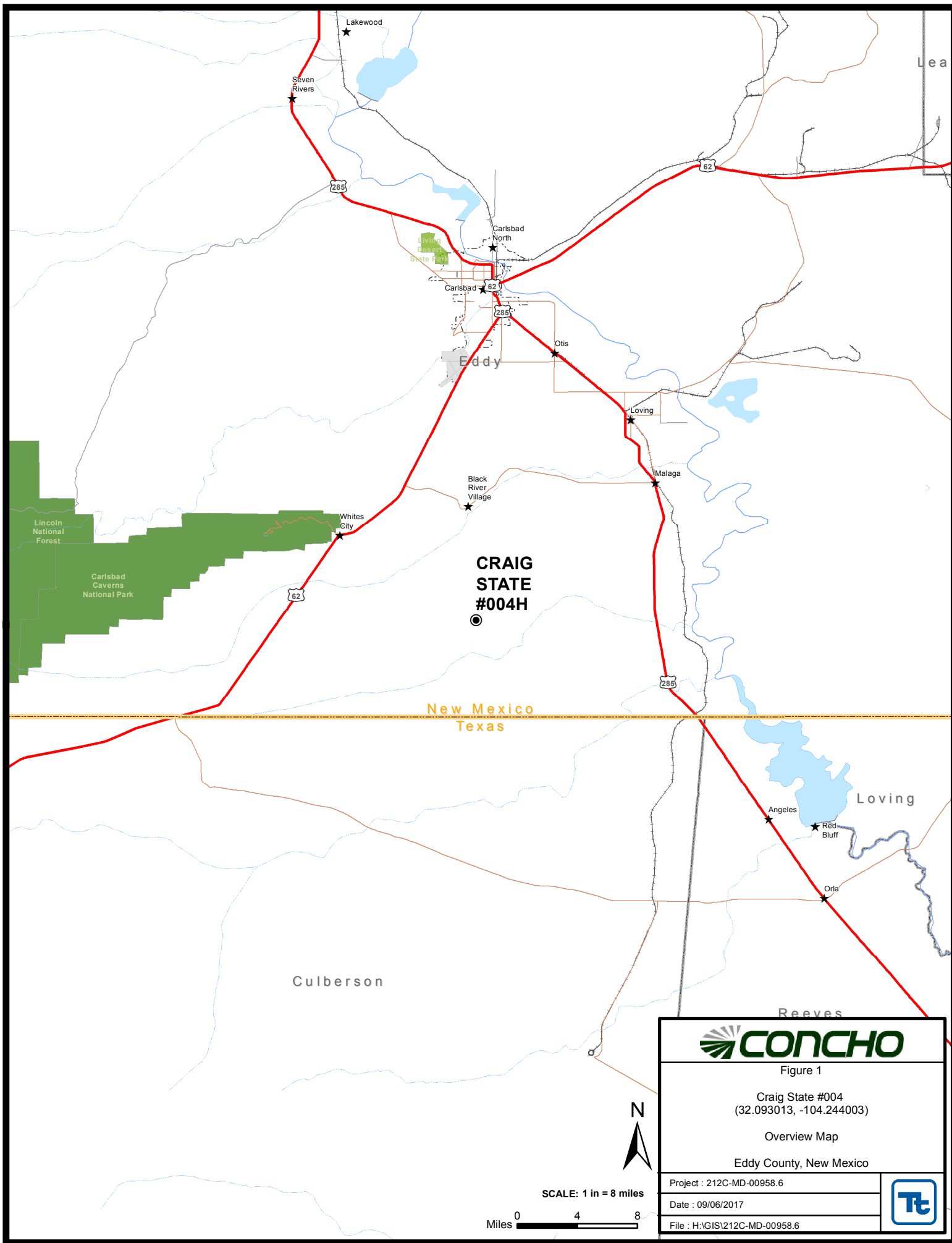


Figure 1

Craig State #004
(32.093013, -104.244003)

Overview Map

Eddy County, New Mexico

Project : 212C-MD-00958.6

Date : 09/06/2017

File : H:\GIS\212C-MD-00958.6





SPILL AREA
(60' x 80')

NORTH

WEST

EAST

SOUTH

T-2

T-1

EXPLANATION

- SAMPLE LOCATIONS
- TRENCH SAMPLE LOCATIONS
- ▨ SPILL AREA



Figure 3

Craig State #004 Tank Battery
(32.093013, -104.244003)

Spill Assessment Map

Eddy County, Texas

Project : 212C-MD-00958.6

Date : 09/06/2017

File : H:\GIS\212C-MD-00958.6



Esri, HERE, DeLorme, Mapmy
SCALE: 1 IN = 100 FEET
0 50 100
Feet



Tables

Table 1
COG Operating LLC.
Craig State #4H
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)				Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	C6-C10	C10-C28	C28-C35	Total						
T-1	6/22/2017	Surface	X		1410	1820	363	3590	<0.0990	6.91	8.15	52.2	67.3	138
	"	1	X		136	511	35.8	683	<0.00199	0.00619	0.00795	0.193	0.207	243
	"	2	X		<15.0	45.0	<15.0	45.0	<0.00198	<0.00198	<0.00198	<0.00198	<0.00198	159
	"	3	X		<15.0	<15.0	<15.0	<15.0	<0.00200	0.00241	0.00317	0.00608	0.0117	75.7
	"	4	X		<15.0	<15.0	<15.0	<15.0	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	71.4
	"	5	X		-	-	-	-	-	-	-	-	-	196
	"	6	X		-	-	-	-	-	-	-	-	-	261
	"	8	X		-	-	-	-	-	-	-	-	-	109
	"	10	X		-	-	-	-	-	-	-	-	-	57.2
	"	12	X		<14.9	43.5	<14.9	43.5	<0.00200	0.00340	<0.00200	0.00949	0.0129	106
T-2	6/22/2017	Surface	X		<15.0	34.9	<15.0	34.9	<0.00201	0.00270	0.0109	0.146	0.160	422
	"	1	X		171	303	39.3	513	<0.00199	0.170	0.223	0.743	1.14	53.1
	"	2	X		<14.9	<14.9	<14.9	<14.9	<0.00199	0.00322	<0.00199	0.00871	0.0119	15.4
	"	3	X		<15.0	<15.0	<15.0	<15.0	<0.00200	0.00212	<0.00200	0.00412	0.00624	7.55
	"	4	X		<15.0	<15.0	<15.0	<15.0	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	10.1
	"	5	X		-	-	-	-	-	-	-	-	-	14.9
	"	6	X		-	-	-	-	-	-	-	-	-	101
	"	8	X		-	-	-	-	-	-	-	-	-	114
	"	10	X		-	-	-	-	-	-	-	-	-	76.4
	"	12	X		<15.0	18.0	<15.0	18.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	65.4
North	8/8/2017	Surface	X		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	141
	"	1	X		<15.0	<15.0	<15.0	<15.0	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	15.2
South	8/8/2017	Surface	X		<14.9	53.6	<14.9	53.6	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	211
	"	1	X		<15.0	16.7	<15.0	16.7	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	125
East	8/8/2017	Surface	X		<15.0	<15.0	<15.0	<15.0	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	458
	"	1	X		<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	142
West	8/8/2017	Surface	X		<15.0	<15.0	<15.0	<15.0	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	272
	"	1	X		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	129

 Proposed Excavation Depth
 (-) Not Analyzed

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

NM OIL CONSERVATION
ARTESIA DISTRICT

MAY 30 2017

Form C-141
Revised August 8, 2011

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

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

Release Notification and Corrective Action

NAB1715655876

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: Craig State #004H	Facility Type: Well

Surface Owner: Federal	Mineral Owner: State	API No. 30-015-41981
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LOCATION OF RELEASE

Unit Letter B	Section 36	Township 25S	Range 26E	Feet from the 190	North/South Line North	Feet from the 1870	East/West Line East	County Eddy
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Latitude 32.0930138 Longitude -104.2440033

NATURE OF RELEASE

Type of Release: Oil	Volume of Release: 23 bbls	Volume Recovered: 22.2 bbls
Source of Release: Day Tank	Date and Hour of Occurrence: May 25, 2017 9:30 am	Date and Hour of Discovery: May 25, 2017 9:30 am
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.*

Describe Cause of Problem and Remedial Action Taken.*

The release was due to the dumps valves on the vertical separator failing which caused the separator to overrun into the gas lines. The compressor used for gas lift then sucked oil into the Craig State #4 location where the gas scrubber caught it and overran the 500 gallon day tanks.

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	Signed By: <i>[Signature]</i> Approved by Environmental Specialist:	
Title: Senior HSE Coordinator	Approval Date: 6/5/17	Expiration Date: N/A
E-mail Address: rhaskell@concho.com	Conditions of Approval: See Attached Attached ☒	
Date: May 26, 2017 Phone: 432-683-7443		

* Attach Additional Sheets If Necessary

New forms can be found in the
New Mexico State Website in forms:
[http://www.emnrd.state.nm.us/
OCD/forms.html](http://www.emnrd.state.nm.us/OCD/forms.html)

2RP-4236

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - Craig State #4H
Eddy County, New Mexico

24 South			25 East		
6	5 14	4 440	3	2	1
7	8	9 44	10	11	12
18	17	16	15	14	13 7
19	20	21	22	23	24 163
30	29	28	27	26	25 540
31	32	33	34	35	36
			150	500	

24 South			26 East		
6	5 63	4	3	2	1
7	8 250	9 450	10	11	12
18	17	16	15	14 30	13
19	20	21	22	23 38	24 28
30	29 46	28	27 30	26	25
31	32 111	33	34	35	36
	109				

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

25 South			25 East		
6	5 30	4 46	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

25 South			26 East		
6	5	4	3	2	1
7	8	9 45	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
					36 Site

25 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
		19			

26 South			25 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

26 South			26 East		
6	5	4	3	2	1
7	8 22	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

26 South			27 East		
6	5 12	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 01013		C	ED			4	25	25S	26E	571505	3551456*	245		
C 01089		C	ED	3	4	1	03	25S	26E	567505	3558398*	96	45	51
C 01368		C	ED		1	1	22	25S	26E	567261	3554059*	143	118	25
C 02220		CUB	ED	3	1	2	26	25S	26E	569598	3552352*	35		
C 02221		CUB	ED	4	3	2	25	25S	26E	571412	3551961*	35		
C 02675		C	ED	1	4	1	09	25S	26E	565907	3556978*	180	45	135
C 03285		C	ED	4	4	2	07	25S	26E	563713	3556658	84	60	24
C 03569 POD1		CUB	ED	2	1	1	14	25S	26E	568862	3555746	30	0	30
C 03654 POD1		CUB	ED	2	3	1	24	25S	26E	570654	3553773			
C 03654 POD2		CUB	ED	2	3	1	24	25S	26E	554766	3562304			
C 03655 POD1		CUB	ED			4	22	25S	26E	550692	3561324			
C 03655 POD2		CUB	ED			4	22	25S	26E	550732	3561337			
C 03655 POD3		CUB	ED	1	4	4	22	25S	26E	568458	3553019			
C 03655 POD4		CUB	ED			4	22	25S	26E	550684	3561362			
C 04036 POD1		C	ED	1	4	3	06	25S	26E	562745	3557733	160	125	35
C 04049 POD1		CUB	ED	3	2	3	06	25S	26E	562592	3557864	165	120	45
C 04050 POD1		CUB	ED	1	4	3	06	25S	26E	562695	3557776	165	125	40

Average Depth to Water: **79 feet**
Minimum Depth: **0 feet**
Maximum Depth: **125 feet**

Record Count: 17

PLSS Search:

Township: 25S **Range:** 26E

*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.

8/28/17 11:10 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER

Appendix C



Certificate of Analysis Summary 556358

COG Operating LLC, Artesia, NM

Project Name: Craig State #4H



Project Id:

Contact: Aaron Lieb

Project Location: NM

Date Received in Lab: Tue Jun-27-17 10:15 am

Report Date: 06-JUL-17

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	556358-001	556358-002	556358-003	556358-004	556358-005	556358-006
	Field Id:	TI - Surf	TI - 1'	TI - 2'	TI - 3'	TI - 4'	TI - 5'
	Depth:		1- ft	2- ft	3- ft	4- ft	5- ft
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Jun-22-17 10:00	Jun-22-17 10:00	Jun-22-17 10:00	Jun-22-17 10:00	Jun-22-17 10:00	Jun-22-17 10:00
BTEX by EPA 8021B	Extracted:	Jun-30-17 08:00	Jun-28-17 17:30	Jun-28-17 17:30	Jun-28-17 17:30	Jun-28-17 17:30	
	Analyzed:	Jun-30-17 15:50	Jun-29-17 03:29	Jun-29-17 09:59	Jun-29-17 07:29	Jun-29-17 10:16	
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	
Benzene		<0.0990 0.0990	<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200	<0.00202 0.00202	
Toluene		6.91 0.0990	0.00619 0.00199	<0.00198 0.00198	0.00241 0.00200	<0.00202 0.00202	
Ethylbenzene		8.15 0.0990	0.00795 0.00199	<0.00198 0.00198	0.00317 0.00200	<0.00202 0.00202	
m_p-Xylenes		36.8 0.198	0.132 0.00398	<0.00397 0.00397	0.00608 0.00399	<0.00403 0.00403	
o-Xylene		15.4 0.0990	0.0613 0.00199	<0.00198 0.00198	<0.00200 0.00200	<0.00202 0.00202	
Total Xylenes		52.2 0.0990	0.193 0.00199	<0.00198 0.00198	0.00608 0.00200	<0.00202 0.00202	
Total BTEX		67.3 0.0990	0.207 0.00199	<0.00198 0.00198	0.0117 0.00200	<0.00202 0.00202	
Chloride by EPA 300	Extracted:	Jul-05-17 16:15	Jul-05-17 16:15	Jul-05-17 16:15	Jul-05-17 16:15	Jul-05-17 16:15	Jul-05-17 16:15
	Analyzed:	Jul-05-17 19:07	Jul-05-17 19:30	Jul-05-17 19:37	Jul-05-17 19:45	Jul-05-17 19:53	Jul-05-17 20:15
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		138 4.97	243 4.95	159 5.00	75.7 4.96	71.4 5.03	196 4.99
TPH By SW8015 Mod	Extracted:	Jun-29-17 08:00	Jun-29-17 08:00	Jun-29-17 08:00	Jun-29-17 08:00	Jun-29-17 08:00	
	Analyzed:	Jun-29-17 11:27	Jun-29-17 12:28	Jun-29-17 12:51	Jun-29-17 13:15	Jun-29-17 13:39	
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	
Gasoline Range Hydrocarbons		1410 15.0	136 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	
Diesel Range Organics		1820 15.0	511 15.0	45.0 15.0	<15.0 15.0	<15.0 15.0	
Oil Range Hydrocarbons		363 15.0	35.8 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	
Total TPH		3590 15.0	683 15.0	45.0 15.0	<15.0 15.0	<15.0 15.0	

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Version: 1.9%

Kelsey Brooks
Project Manager



Certificate of Analysis Summary 556358

COG Operating LLC, Artesia, NM

Project Name: Craig State #4H



Project Id:

Contact: Aaron Lieb

Project Location: NM

Date Received in Lab: Tue Jun-27-17 10:15 am

Report Date: 06-JUL-17

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	556358-007	556358-008	556358-009	556358-010	556358-011	556358-012
	Field Id:	TI - 6'	TI - 8'	TI - 10'	TI - 12'	T2 - Surface	T2 - 1'
	Depth:	6- ft	8- ft	10- ft	12- ft		1- ft
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Jun-22-17 10:00	Jun-22-17 10:00	Jun-22-17 10:00	Jun-22-17 10:00	Jun-22-17 11:00	Jun-22-17 11:00
BTEX by EPA 8021B	Extracted:				Jun-28-17 17:30	Jun-28-17 17:30	Jun-30-17 17:30
	Analyzed:				Jun-29-17 10:32	Jun-29-17 09:11	Jul-01-17 14:06
	Units/RL:				mg/kg RL	mg/kg RL	mg/kg RL
Benzene					<0.00200 0.00200	<0.00201 0.00201	<0.00199 0.00199
Toluene					0.00340 0.00200	0.00270 0.00201	0.170 0.00199
Ethylbenzene					<0.00200 0.00200	0.0109 0.00201	0.223 0.00199
m_p-Xylenes					0.00601 0.00400	0.0954 0.00402	0.395 D 0.0402
o-Xylene					0.00348 0.00200	0.0505 0.00201	0.348 0.00199
Total Xylenes					0.00949 0.00200	0.146 0.00201	0.743 0.00199
Total BTEX					0.0129 0.00200	0.160 0.00201	1.14 0.00199
Chloride by EPA 300	Extracted:	Jul-05-17 16:15	Jul-05-17 16:15	Jul-05-17 16:15	Jul-05-17 16:15	Jul-05-17 16:15	Jul-05-17 16:15
	Analyzed:	Jul-05-17 20:23	Jul-05-17 20:31	Jul-05-17 20:38	Jul-05-17 20:46	Jul-05-17 20:53	Jul-05-17 21:16
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		261 4.96	109 4.97	57.2 4.97	106 4.96	422 4.98	53.1 4.96
TPH By SW8015 Mod	Extracted:				Jun-29-17 08:00	Jun-29-17 08:00	Jun-29-17 08:00
	Analyzed:				Jun-29-17 14:03	Jun-29-17 14:24	Jun-29-17 14:46
	Units/RL:				mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons					<14.9 14.9	<15.0 15.0	171 14.9
Diesel Range Organics					43.5 14.9	34.9 15.0	303 14.9
Oil Range Hydrocarbons					<14.9 14.9	<15.0 15.0	39.3 14.9
Total TPH					43.5 14.9	34.9 15.0	513 14.9

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Version: 1.0%

Kelsey Brooks
Project Manager



Certificate of Analysis Summary 556358

COG Operating LLC, Artesia, NM

Project Name: Craig State #4H



Project Id:

Contact: Aaron Lieb

Project Location: NM

Date Received in Lab: Tue Jun-27-17 10:15 am

Report Date: 06-JUL-17

Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	556358-013	556358-014	556358-015	556358-016	556358-017	556358-018
	<i>Field Id:</i>	T2 - 2'	T2 - 3'	T2 - 4'	T2 - 5'	T2 - 6'	T2 - 8'
	<i>Depth:</i>	2- ft	3- ft	4- ft	5- ft	6- ft	8- ft
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Jun-22-17 11:00	Jun-22-17 11:00	Jun-22-17 11:00	Jun-22-17 11:00	Jun-22-17 11:00	Jun-22-17 11:00
BTEX by EPA 8021B	<i>Extracted:</i>	Jun-28-17 17:30	Jun-28-17 17:30	Jun-29-17 17:15			
	<i>Analyzed:</i>	Jun-29-17 10:48	Jun-29-17 11:04	Jun-29-17 22:50			
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL			
Benzene		<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201			
Toluene		0.00322 0.00199	0.00212 0.00200	<0.00201 0.00201			
Ethylbenzene		<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201			
m_p-Xylenes		0.00871 0.00398	0.00412 0.00401	<0.00402 0.00402			
o-Xylene		<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201			
Total Xylenes		0.00871 0.00199	0.00412 0.00200	<0.00201 0.00201			
Total BTEX		0.0119 0.00199	0.00624 0.00200	<0.00201 0.00201			
Chloride by EPA 300	<i>Extracted:</i>	Jul-05-17 16:15	Jul-05-17 16:15	Jul-05-17 16:15	Jul-05-17 16:15	Jul-05-17 16:15	Jul-05-17 16:15
	<i>Analyzed:</i>	Jul-05-17 21:24	Jul-05-17 21:46	Jul-05-17 21:54	Jul-05-17 22:02	Jul-05-17 22:09	Jul-05-17 22:17
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		15.4 5.03	7.55 5.02	10.1 5.03	14.9 4.99	101 4.99	114 5.01
TPH By SW8015 Mod	<i>Extracted:</i>	Jun-29-17 08:00	Jun-29-17 08:00	Jun-29-17 08:00			
	<i>Analyzed:</i>	Jun-29-17 15:11	Jun-29-17 15:33	Jun-29-17 16:37			
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL			
Gasoline Range Hydrocarbons		<14.9 14.9	<15.0 15.0	<15.0 15.0			
Diesel Range Organics		<14.9 14.9	<15.0 15.0	<15.0 15.0			
Oil Range Hydrocarbons		<14.9 14.9	<15.0 15.0	<15.0 15.0			
Total TPH		<14.9 14.9	<15.0 15.0	<15.0 15.0			

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Version: 1.0%

Kelsey Brooks
Project Manager



Certificate of Analysis Summary 556358

COG Operating LLC, Artesia, NM

Project Name: Craig State #4H



Project Id:

Contact: Aaron Lieb

Project Location: NM

Date Received in Lab: Tue Jun-27-17 10:15 am

Report Date: 06-JUL-17

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	556358-019	556358-020				
	Field Id:	T2 - 10'	T2 - 11'				
	Depth:	10- ft	11- ft				
	Matrix:	SOIL	SOIL				
	Sampled:	Jun-22-17 11:00	Jun-22-17 11:00				
BTEX by EPA 8021B	Extracted:		Jun-30-17 08:00				
	Analyzed:		Jun-30-17 11:10				
	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-05-17 16:15	Jul-05-17 16:15				
	Analyzed:	Jul-05-17 22:24	Jul-05-17 22:32				
	Units/RL:	mg/kg RL	mg/kg RL				
	Chloride	76.4 5.03	65.4 4.97				
	Extracted:		Jun-29-17 08:00				
	Analyzed:		Jun-29-17 16:58				
	Units/RL:		mg/kg RL				
	Gasoline Range Hydrocarbons		<15.0 15.0				
TPH By SW8015 Mod	Diesel Range Organics		18.0 15.0				
	Oil Range Hydrocarbons		<15.0 15.0				
	Total TPH		18.0 15.0				

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Kelsey Brooks
Project Manager

Analytical Report 556358

for
COG Operating LLC

Project Manager: Aaron Lieb

Craig State #4H

06-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)



06-JUL-17

Project Manager: **Aaron Lieb**
COG Operating LLC
2407 Pecos Avenue
Artesia, NM 88210

Reference: XENCO Report No(s): **556358**
Craig State #4H
Project Address: NM

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) 556358. 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. 556358 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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COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
TI - Surf	S	06-22-17 10:00		556358-001
TI - 1'	S	06-22-17 10:00	1 ft	556358-002
TI - 2'	S	06-22-17 10:00	2 ft	556358-003
TI - 3'	S	06-22-17 10:00	3 ft	556358-004
TI - 4'	S	06-22-17 10:00	4 ft	556358-005
TI - 5'	S	06-22-17 10:00	5 ft	556358-006
TI - 6'	S	06-22-17 10:00	6 ft	556358-007
TI - 8'	S	06-22-17 10:00	8 ft	556358-008
TI - 10'	S	06-22-17 10:00	10 ft	556358-009
TI - 12'	S	06-22-17 10:00	12 ft	556358-010
T2 - Surface	S	06-22-17 11:00		556358-011
T2 - 1'	S	06-22-17 11:00	1 ft	556358-012
T2 - 2'	S	06-22-17 11:00	2 ft	556358-013
T2 - 3'	S	06-22-17 11:00	3 ft	556358-014
T2 - 4'	S	06-22-17 11:00	4 ft	556358-015
T2 - 5'	S	06-22-17 11:00	5 ft	556358-016
T2 - 6'	S	06-22-17 11:00	6 ft	556358-017
T2 - 8'	S	06-22-17 11:00	8 ft	556358-018
T2 - 10'	S	06-22-17 11:00	10 ft	556358-019
T2 - 11'	S	06-22-17 11:00	11 ft	556358-020



CASE NARRATIVE

Client Name: COG Operating LLC

Project Name: Craig State #4H

Project ID:
Work Order Number(s): 556358

Report Date: 06-JUL-17
Date Received: 06/27/2017

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3021122 BTEX by EPA 8021B

Lab Sample ID 556358-011 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). m_p-Xylenes , o-Xylene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Ethylbenzene recovered below QC limits in the Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 556358-002, -003, -004, -005, -010, -011, -013, -014.

The Laboratory Control Sample for Ethylbenzene, m_p-Xylenes , o-Xylene is within laboratory Control Limits, therefore the data was accepted.

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

Batch: LBA-3021191 BTEX by EPA 8021B

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

Batch: LBA-3021299 BTEX by EPA 8021B

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

Batch: LBA-3021359 TPH By SW8015 Mod

Lab Sample ID 556358-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Gasoline Range Hydrocarbons recovered above QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 556358-001, -002, -003, -004, -005, -010, -011, -012, -013, -014, -015, -020.

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

Batch: LBA-3021493 BTEX by EPA 8021B

Surrogate 4-Bromofluorobenzene recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 556358-012.

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



CASE NARRATIVE

Client Name: COG Operating LLC

Project Name: Craig State #4H

Project ID:

Work Order Number(s): 556358

Report Date: 06-JUL-17

Date Received: 06/27/2017



Certificate of Analytical Results 556358



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **TI - Surf**
Lab Sample Id: 556358-001

Matrix: Soil
Date Collected: 06.22.17 10.00

Date Received: 06.27.17 10.15

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3021566

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 07.05.17 16.15

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	138	4.97	mg/kg	07.05.17 19.07		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3021359

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Date Prep: 06.29.17 08.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	1410	15.0	mg/kg	06.29.17 11.27		1
Diesel Range Organics	C10C28DRO	1820	15.0	mg/kg	06.29.17 11.27		1
Oil Range Hydrocarbons	PHCG2835	363	15.0	mg/kg	06.29.17 11.27		1
Total TPH	PHC635	3590	15.0	mg/kg	06.29.17 11.27		1

Surrogate

1-Chlorooctane

o-Terphenyl

Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
111-85-3	103	%	70-135	06.29.17 11.27	
84-15-1	85	%	70-135	06.29.17 11.27	



Certificate of Analytical Results 556358



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **TI - Surf**
Lab Sample Id: 556358-001

Matrix: Soil
Date Collected: 06.22.17 10.00

Date Received: 06.27.17 10.15

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.30.17 08.00

Basis: Wet Weight

Seq Number: 3021299

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.0990	0.0990	mg/kg	06.30.17 15.50	U	50
Toluene	108-88-3	6.91	0.0990	mg/kg	06.30.17 15.50		50
Ethylbenzene	100-41-4	8.15	0.0990	mg/kg	06.30.17 15.50		50
m_p-Xylenes	179601-23-1	36.8	0.198	mg/kg	06.30.17 15.50		50
o-Xylene	95-47-6	15.4	0.0990	mg/kg	06.30.17 15.50		50
Total Xylenes	1330-20-7	52.2	0.0990	mg/kg	06.30.17 15.50		50
Total BTEX		67.3	0.0990	mg/kg	06.30.17 15.50		50
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	99	%	80-120	06.30.17 15.50		
4-Bromofluorobenzene	460-00-4	98	%	80-120	06.30.17 15.50		



Certificate of Analytical Results 556358



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **TI - 1'**
Lab Sample Id: 556358-002

Matrix: Soil
Date Collected: 06.22.17 10.00

Date Received: 06.27.17 10.15
Sample Depth: 1 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3021566

Date Prep: 07.05.17 16.15

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	243	4.95	mg/kg	07.05.17 19.30		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3021359

Date Prep: 06.29.17 08.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	136	15.0	mg/kg	06.29.17 12.28		1
Diesel Range Organics	C10C28DRO	511	15.0	mg/kg	06.29.17 12.28		1
Oil Range Hydrocarbons	PHCG2835	35.8	15.0	mg/kg	06.29.17 12.28		1
Total TPH	PHC635	683	15.0	mg/kg	06.29.17 12.28		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	109	%	70-135	06.29.17 12.28	
o-Terphenyl	84-15-1	108	%	70-135	06.29.17 12.28	



Certificate of Analytical Results 556358



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **TI - 1'**
Lab Sample Id: 556358-002

Matrix: Soil
Date Collected: 06.22.17 10.00

Date Received: 06.27.17 10.15
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3021122

Date Prep: 06.28.17 17.30

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	06.29.17 03.29	U	1
Toluene	108-88-3	0.00619	0.00199	mg/kg	06.29.17 03.29		1
Ethylbenzene	100-41-4	0.00795	0.00199	mg/kg	06.29.17 03.29		1
m_p-Xylenes	179601-23-1	0.132	0.00398	mg/kg	06.29.17 03.29		1
o-Xylene	95-47-6	0.0613	0.00199	mg/kg	06.29.17 03.29		1
Total Xylenes	1330-20-7	0.193	0.00199	mg/kg	06.29.17 03.29		1
Total BTEX		0.207	0.00199	mg/kg	06.29.17 03.29		1
Surrogate	Cas Number	% Recovery		Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	88		%	80-120	06.29.17 03.29	
4-Bromofluorobenzene	460-00-4	120		%	80-120	06.29.17 03.29	



Certificate of Analytical Results 556358



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **TI - 2'**
Lab Sample Id: 556358-003

Matrix: Soil
Date Collected: 06.22.17 10.00

Date Received: 06.27.17 10.15
Sample Depth: 2 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3021566

Date Prep: 07.05.17 16.15

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	159	5.00	mg/kg	07.05.17 19.37		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3021359

Date Prep: 06.29.17 08.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.29.17 12.51	U	1
Diesel Range Organics	C10C28DRO	45.0	15.0	mg/kg	06.29.17 12.51		1
Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	06.29.17 12.51	U	1
Total TPH	PHC635	45.0	15.0	mg/kg	06.29.17 12.51		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	104	%	70-135	06.29.17 12.51	
o-Terphenyl	84-15-1	108	%	70-135	06.29.17 12.51	



Certificate of Analytical Results 556358



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **TI - 2'**
Lab Sample Id: 556358-003

Matrix: Soil
Date Collected: 06.22.17 10.00

Date Received: 06.27.17 10.15
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.28.17 17.30

Basis: Wet Weight

Seq Number: 3021122

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	06.29.17 09.59	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	06.29.17 09.59	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	06.29.17 09.59	U	1
m_p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	06.29.17 09.59	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	06.29.17 09.59	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	06.29.17 09.59	U	1
Total BTEX		<0.00198	0.00198	mg/kg	06.29.17 09.59	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	84	%	80-120	06.29.17 09.59		
4-Bromofluorobenzene	460-00-4	96	%	80-120	06.29.17 09.59		



Certificate of Analytical Results 556358



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: TI - 3'
Lab Sample Id: 556358-004

Matrix: Soil
Date Collected: 06.22.17 10.00

Date Received: 06.27.17 10.15
Sample Depth: 3 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3021566

Date Prep: 07.05.17 16.15

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	75.7	4.96	mg/kg	07.05.17 19.45		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3021359

Date Prep: 06.29.17 08.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.29.17 13.15	U	1
Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	06.29.17 13.15	U	1
Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	06.29.17 13.15	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	06.29.17 13.15	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	123	%	70-135	06.29.17 13.15	
o-Terphenyl	84-15-1	127	%	70-135	06.29.17 13.15	



Certificate of Analytical Results 556358



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **TI - 3'**
Lab Sample Id: 556358-004

Matrix: Soil
Date Collected: 06.22.17 10.00

Date Received: 06.27.17 10.15
Sample Depth: 3 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3021122

Date Prep: 06.28.17 17.30

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	06.29.17 07.29	U	1
Toluene	108-88-3	0.00241	0.00200	mg/kg	06.29.17 07.29		1
Ethylbenzene	100-41-4	0.00317	0.00200	mg/kg	06.29.17 07.29		1
m_p-Xylenes	179601-23-1	0.00608	0.00399	mg/kg	06.29.17 07.29		1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	06.29.17 07.29	U	1
Total Xylenes	1330-20-7	0.00608	0.00200	mg/kg	06.29.17 07.29		1
Total BTEX		0.0117	0.00200	mg/kg	06.29.17 07.29		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	97	%	80-120	06.29.17 07.29		
1,4-Difluorobenzene	540-36-3	84	%	80-120	06.29.17 07.29		



Certificate of Analytical Results 556358



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **TI - 4'**
Lab Sample Id: 556358-005

Matrix: Soil
Date Collected: 06.22.17 10.00

Date Received: 06.27.17 10.15
Sample Depth: 4 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3021566

Date Prep: 07.05.17 16.15

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	71.4	5.03	mg/kg	07.05.17 19.53		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3021359

Date Prep: 06.29.17 08.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.29.17 13.39	U	1
Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	06.29.17 13.39	U	1
Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	06.29.17 13.39	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	06.29.17 13.39	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	103	%	70-135	06.29.17 13.39	
o-Terphenyl	84-15-1	106	%	70-135	06.29.17 13.39	



Certificate of Analytical Results 556358



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **TI - 4'**
Lab Sample Id: 556358-005

Matrix: Soil
Date Collected: 06.22.17 10.00

Date Received: 06.27.17 10.15
Sample Depth: 4 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3021122

Date Prep: 06.28.17 17.30

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	06.29.17 10.16	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	06.29.17 10.16	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	06.29.17 10.16	U	1
m_p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	06.29.17 10.16	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	06.29.17 10.16	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	06.29.17 10.16	U	1
Total BTEX		<0.00202	0.00202	mg/kg	06.29.17 10.16	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	88	%	80-120	06.29.17 10.16		
4-Bromofluorobenzene	460-00-4	99	%	80-120	06.29.17 10.16		



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COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **TI - 5'**
Lab Sample Id: 556358-006

Matrix: Soil
Date Collected: 06.22.17 10.00

Date Received: 06.27.17 10.15
Sample Depth: 5 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3021566

Date Prep: 07.05.17 16.15

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	196	4.99	mg/kg	07.05.17 20.15		1



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COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **TI - 6'**
Lab Sample Id: 556358-007

Matrix: Soil
Date Collected: 06.22.17 10.00

Date Received: 06.27.17 10.15
Sample Depth: 6 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3021566

Date Prep: 07.05.17 16.15

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	261	4.96	mg/kg	07.05.17 20.23		1



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COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **TI - 8'**
Lab Sample Id: 556358-008

Matrix: Soil
Date Collected: 06.22.17 10.00

Date Received: 06.27.17 10.15
Sample Depth: 8 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3021566

Date Prep: 07.05.17 16.15

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	109	4.97	mg/kg	07.05.17 20.31		1



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COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **TI - 10'**
Lab Sample Id: 556358-009

Matrix: Soil
Date Collected: 06.22.17 10.00

Date Received: 06.27.17 10.15
Sample Depth: 10 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MGO

% Moisture:

Analyst: MGO

Date Prep: 07.05.17 16.15

Basis: Wet Weight

Seq Number: 3021566

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	57.2	4.97	mg/kg	07.05.17 20.38		1



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COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **TI - 12'**
Lab Sample Id: 556358-010

Matrix: Soil
Date Collected: 06.22.17 10.00

Date Received: 06.27.17 10.15
Sample Depth: 12 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3021566

Date Prep: 07.05.17 16.15

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	106	4.96	mg/kg	07.05.17 20.46		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3021359

Date Prep: 06.29.17 08.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<14.9	14.9	mg/kg	06.29.17 14.03	U	1
Diesel Range Organics	C10C28DRO	43.5	14.9	mg/kg	06.29.17 14.03		1
Oil Range Hydrocarbons	PHCG2835	<14.9	14.9	mg/kg	06.29.17 14.03	U	1
Total TPH	PHC635	43.5	14.9	mg/kg	06.29.17 14.03		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	110	%	70-135	06.29.17 14.03	
o-Terphenyl	84-15-1	112	%	70-135	06.29.17 14.03	



Certificate of Analytical Results 556358



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **TI - 12'**
Lab Sample Id: 556358-010

Matrix: Soil
Date Collected: 06.22.17 10.00

Date Received: 06.27.17 10.15
Sample Depth: 12 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.28.17 17.30

Basis: Wet Weight

Seq Number: 3021122

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	06.29.17 10.32	U	1
Toluene	108-88-3	0.00340	0.00200	mg/kg	06.29.17 10.32		1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	06.29.17 10.32	U	1
m_p-Xylenes	179601-23-1	0.00601	0.00400	mg/kg	06.29.17 10.32		1
o-Xylene	95-47-6	0.00348	0.00200	mg/kg	06.29.17 10.32		1
Total Xylenes	1330-20-7	0.00949	0.00200	mg/kg	06.29.17 10.32		1
Total BTEX		0.0129	0.00200	mg/kg	06.29.17 10.32		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	106	%	80-120	06.29.17 10.32		
4-Bromofluorobenzene	460-00-4	101	%	80-120	06.29.17 10.32		



Certificate of Analytical Results 556358



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: T2 - Surface

Matrix: Soil

Date Received: 06.27.17 10.15

Lab Sample Id: 556358-011

Date Collected: 06.22.17 11.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MGO

% Moisture:

Analyst: MGO

Date Prep: 07.05.17 16.15

Basis: Wet Weight

Seq Number: 3021566

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	422	4.98	mg/kg	07.05.17 20.53		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 06.29.17 08.00

Basis: Wet Weight

Seq Number: 3021359

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.29.17 14.24	U	1
Diesel Range Organics	C10C28DRO	34.9	15.0	mg/kg	06.29.17 14.24		1
Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	06.29.17 14.24	U	1
Total TPH	PHC635	34.9	15.0	mg/kg	06.29.17 14.24		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	105	%	70-135	06.29.17 14.24	
o-Terphenyl	84-15-1	107	%	70-135	06.29.17 14.24	



Certificate of Analytical Results 556358



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: T2 - Surface

Matrix: Soil

Date Received: 06.27.17 10.15

Lab Sample Id: 556358-011

Date Collected: 06.22.17 11.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.28.17 17.30

Basis: Wet Weight

Seq Number: 3021122

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	06.29.17 09.11	U	1
Toluene	108-88-3	0.00270	0.00201	mg/kg	06.29.17 09.11		1
Ethylbenzene	100-41-4	0.0109	0.00201	mg/kg	06.29.17 09.11		1
m_p-Xylenes	179601-23-1	0.0954	0.00402	mg/kg	06.29.17 09.11		1
o-Xylene	95-47-6	0.0505	0.00201	mg/kg	06.29.17 09.11		1
Total Xylenes	1330-20-7	0.146	0.00201	mg/kg	06.29.17 09.11		1
Total BTEX		0.160	0.00201	mg/kg	06.29.17 09.11		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	104	%	80-120	06.29.17 09.11		
4-Bromofluorobenzene	460-00-4	115	%	80-120	06.29.17 09.11		



Certificate of Analytical Results 556358



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: T2 - 1'
Lab Sample Id: 556358-012

Matrix: Soil
Date Collected: 06.22.17 11.00

Date Received: 06.27.17 10.15
Sample Depth: 1 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3021566

Date Prep: 07.05.17 16.15

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	53.1	4.96	mg/kg	07.05.17 21.16		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3021359

Date Prep: 06.29.17 08.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	171	14.9	mg/kg	06.29.17 14.46		1
Diesel Range Organics	C10C28DRO	303	14.9	mg/kg	06.29.17 14.46		1
Oil Range Hydrocarbons	PHCG2835	39.3	14.9	mg/kg	06.29.17 14.46		1
Total TPH	PHC635	513	14.9	mg/kg	06.29.17 14.46		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	103	%	70-135	06.29.17 14.46		
o-Terphenyl	84-15-1	106	%	70-135	06.29.17 14.46		



Certificate of Analytical Results 556358



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: T2 - 1'
Lab Sample Id: 556358-012

Matrix: Soil
Date Collected: 06.22.17 11.00

Date Received: 06.27.17 10.15
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.30.17 17.30

Basis: Wet Weight

Seq Number: 3021493

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	07.01.17 14.06	U	1
Toluene	108-88-3	0.170	0.00199	mg/kg	07.01.17 14.06		1
Ethylbenzene	100-41-4	0.223	0.00199	mg/kg	07.01.17 14.06		1
m_p-Xylenes	179601-23-1	0.395	0.0402	mg/kg	07.03.17 16.36	D	10
o-Xylene	95-47-6	0.348	0.00199	mg/kg	07.01.17 14.06		1
Total Xylenes	1330-20-7	0.743	0.00199	mg/kg	07.03.17 16.36		10
Total BTEX		1.14	0.00199	mg/kg	07.03.17 16.36		10
Surrogate	Cas Number	% Recovery		Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	213		%	80-120	07.01.17 14.06	**
1,4-Difluorobenzene	540-36-3	85		%	80-120	07.01.17 14.06	



Certificate of Analytical Results 556358



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: T2 - 2'
Lab Sample Id: 556358-013

Matrix: Soil
Date Collected: 06.22.17 11.00

Date Received: 06.27.17 10.15
Sample Depth: 2 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3021566

Date Prep: 07.05.17 16.15

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	15.4	5.03	mg/kg	07.05.17 21.24		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3021359

Date Prep: 06.29.17 08.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<14.9	14.9	mg/kg	06.29.17 15.11	U	1
Diesel Range Organics	C10C28DRO	<14.9	14.9	mg/kg	06.29.17 15.11	U	1
Oil Range Hydrocarbons	PHCG2835	<14.9	14.9	mg/kg	06.29.17 15.11	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	06.29.17 15.11	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	101	%	70-135	06.29.17 15.11		
o-Terphenyl	84-15-1	105	%	70-135	06.29.17 15.11		



Certificate of Analytical Results 556358



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: T2 - 2'
Lab Sample Id: 556358-013

Matrix: Soil
Date Collected: 06.22.17 11.00

Date Received: 06.27.17 10.15
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.28.17 17.30

Basis: Wet Weight

Seq Number: 3021122

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	06.29.17 10.48	U	1
Toluene	108-88-3	0.00322	0.00199	mg/kg	06.29.17 10.48		1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	06.29.17 10.48	U	1
m_p-Xylenes	179601-23-1	0.00871	0.00398	mg/kg	06.29.17 10.48		1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	06.29.17 10.48	U	1
Total Xylenes	1330-20-7	0.00871	0.00199	mg/kg	06.29.17 10.48		1
Total BTEX		0.0119	0.00199	mg/kg	06.29.17 10.48		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	95	%	80-120	06.29.17 10.48		
1,4-Difluorobenzene	540-36-3	90	%	80-120	06.29.17 10.48		



Certificate of Analytical Results 556358



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: T2 - 3'
Lab Sample Id: 556358-014

Matrix: Soil
Date Collected: 06.22.17 11.00

Date Received: 06.27.17 10.15
Sample Depth: 3 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3021566

Date Prep: 07.05.17 16.15

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	7.55	5.02	mg/kg	07.05.17 21.46		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3021359

Date Prep: 06.29.17 08.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.29.17 15.33	U	1
Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	06.29.17 15.33	U	1
Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	06.29.17 15.33	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	06.29.17 15.33	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	103	%	70-135	06.29.17 15.33	
o-Terphenyl	84-15-1	106	%	70-135	06.29.17 15.33	



Certificate of Analytical Results 556358



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: T2 - 3'
Lab Sample Id: 556358-014

Matrix: Soil
Date Collected: 06.22.17 11.00

Date Received: 06.27.17 10.15
Sample Depth: 3 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.28.17 17.30

Basis: Wet Weight

Seq Number: 3021122

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	06.29.17 11.04	U	1
Toluene	108-88-3	0.00212	0.00200	mg/kg	06.29.17 11.04		1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	06.29.17 11.04	U	1
m_p-Xylenes	179601-23-1	0.00412	0.00401	mg/kg	06.29.17 11.04		1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	06.29.17 11.04	U	1
Total Xylenes	1330-20-7	0.00412	0.00200	mg/kg	06.29.17 11.04		1
Total BTEX		0.00624	0.00200	mg/kg	06.29.17 11.04		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	82	%	80-120	06.29.17 11.04		
1,4-Difluorobenzene	540-36-3	88	%	80-120	06.29.17 11.04		



Certificate of Analytical Results 556358



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: T2 - 4'
Lab Sample Id: 556358-015

Matrix: Soil
Date Collected: 06.22.17 11.00

Date Received: 06.27.17 10.15
Sample Depth: 4 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3021566

Date Prep: 07.05.17 16.15

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	10.1	5.03	mg/kg	07.05.17 21.54		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3021359

Date Prep: 06.29.17 08.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.29.17 16.37	U	1
Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	06.29.17 16.37	U	1
Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	06.29.17 16.37	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	06.29.17 16.37	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	108	%	70-135	06.29.17 16.37	
o-Terphenyl	84-15-1	112	%	70-135	06.29.17 16.37	



Certificate of Analytical Results 556358



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: T2 - 4'
Lab Sample Id: 556358-015

Matrix: Soil
Date Collected: 06.22.17 11.00

Date Received: 06.27.17 10.15
Sample Depth: 4 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.29.17 17.15

Basis: Wet Weight

Seq Number: 3021191

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	06.29.17 22.50	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	06.29.17 22.50	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	06.29.17 22.50	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	06.29.17 22.50	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	06.29.17 22.50	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	06.29.17 22.50	U	1
Total BTEX		<0.00201	0.00201	mg/kg	06.29.17 22.50	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	97	%	80-120	06.29.17 22.50		
4-Bromofluorobenzene	460-00-4	95	%	80-120	06.29.17 22.50		



Certificate of Analytical Results 556358



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: T2 - 5'
Lab Sample Id: 556358-016

Matrix: Soil
Date Collected: 06.22.17 11.00

Date Received: 06.27.17 10.15
Sample Depth: 5 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MGO

% Moisture:

Analyst: MGO

Date Prep: 07.05.17 16.15

Basis: Wet Weight

Seq Number: 3021566

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	14.9	4.99	mg/kg	07.05.17 22.02		1



Certificate of Analytical Results 556358



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: T2 - 6'
Lab Sample Id: 556358-017

Matrix: Soil
Date Collected: 06.22.17 11.00

Date Received: 06.27.17 10.15
Sample Depth: 6 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3021566

Date Prep: 07.05.17 16.15

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	101	4.99	mg/kg	07.05.17 22.09		1



Certificate of Analytical Results 556358



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: T2 -8'
Lab Sample Id: 556358-018

Matrix: Soil
Date Collected: 06.22.17 11.00

Date Received: 06.27.17 10.15
Sample Depth: 8 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MGO

% Moisture:

Analyst: MGO

Date Prep: 07.05.17 16.15

Basis: Wet Weight

Seq Number: 3021566

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	114	5.01	mg/kg	07.05.17 22.17		1



Certificate of Analytical Results 556358



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: T2 - 10'
Lab Sample Id: 556358-019

Matrix: Soil
Date Collected: 06.22.17 11.00

Date Received: 06.27.17 10.15
Sample Depth: 10 ft

Analytical Method: Chloride by EPA 300

Tech: MGO

Analyst: MGO

Seq Number: 3021566

Date Prep: 07.05.17 16.15

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	76.4	5.03	mg/kg	07.05.17 22.24		1



Certificate of Analytical Results 556358



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: T2 - 11'
Lab Sample Id: 556358-020

Matrix: Soil
Date Collected: 06.22.17 11.00

Date Received: 06.27.17 10.15
Sample Depth: 11 ft

Analytical Method: Chloride by EPA 300
Tech: MGO
Analyst: MGO
Seq Number: 3021566

Date Prep: 07.05.17 16.15

Prep Method: E300P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	65.4	4.97	mg/kg	07.05.17 22.32		1

Analytical Method: TPH By SW8015 Mod
Tech: ARM
Analyst: ARM
Seq Number: 3021359

Date Prep: 06.29.17 08.00

Prep Method: TX1005P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.29.17 16.58	U	1
Diesel Range Organics	C10C28DRO	18.0	15.0	mg/kg	06.29.17 16.58		1
Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	06.29.17 16.58	U	1
Total TPH	PHC635	18.0	15.0	mg/kg	06.29.17 16.58		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	103	%	70-135	06.29.17 16.58	
o-Terphenyl	84-15-1	106	%	70-135	06.29.17 16.58	



Certificate of Analytical Results 556358



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: T2 - 11'
Lab Sample Id: 556358-020

Matrix: Soil
Date Collected: 06.22.17 11.00

Date Received: 06.27.17 10.15
Sample Depth: 11 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.30.17 08.00

Basis: Wet Weight

Seq Number: 3021299

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	06.30.17 11.10	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	06.30.17 11.10	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	06.30.17 11.10	U	1
m_p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	06.30.17 11.10	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	06.30.17 11.10	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	06.30.17 11.10	U	1
Total BTEX		<0.00199	0.00199	mg/kg	06.30.17 11.10	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	101	%	80-120	06.30.17 11.10		
4-Bromofluorobenzene	460-00-4	105	%	80-120	06.30.17 11.10		

- 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 556358

COG Operating LLC

Craig State #4H

Analytical Method: Chloride by EPA 300

Seq Number: 3021566

MB Sample Id: 727152-1-BLK

Matrix: Solid

LCS Sample Id: 727152-1-BKS

Prep Method: E300P

Date Prep: 07.05.17

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Chloride	<5.00	250	233	93	90-110	mg/kg	07.05.17 18:52	

Analytical Method: Chloride by EPA 300

Seq Number: 3021566

Parent Sample Id: 556358-001

Matrix: Soil

MS Sample Id: 556358-001 S

Prep Method: E300P

Date Prep: 07.05.17

MSD Sample Id: 556358-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	138	249	382	98	382	98	90-110	0	20	mg/kg	07.05.17 19:15	

Analytical Method: Chloride by EPA 300

Seq Number: 3021566

Parent Sample Id: 556358-011

Matrix: Soil

MS Sample Id: 556358-011 S

Prep Method: E300P

Date Prep: 07.05.17

MSD Sample Id: 556358-011 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	422	249	667	98	647	90	90-110	3	20	mg/kg	07.05.17 21:01	

Analytical Method: TPH By SW8015 Mod

Seq Number: 3021359

MB Sample Id: 727082-1-BLK

Matrix: Solid

LCS Sample Id: 727082-1-BKS

Prep Method: TX1005P

Date Prep: 06.29.17

LCSD Sample Id: 727082-1-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	<15.0	1000	1030	103	1000	100	70-135	3	35	mg/kg	06.29.17 10:44	
Diesel Range Organics	<15.0	1000	1050	105	993	99	70-135	6	35	mg/kg	06.29.17 10:44	

Surrogate

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	104		108		106		70-135	%	06.29.17 10:44
o-Terphenyl	109		109		106		70-135	%	06.29.17 10:44



QC Summary 556358

COG Operating LLC

Craig State #4H

Analytical Method: TPH By SW8015 Mod

Seq Number: 3021359

Parent Sample Id: 556358-001

Matrix: Soil

MS Sample Id: 556358-001 S

Prep Method: TX1005P

Date Prep: 06.29.17

MSD Sample Id: 556358-001 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	1410	997	2820	141	2860	145	70-135	1	35	mg/kg	06.29.17 11:48	X
Diesel Range Organics	1820	997	2590	77	2780	96	70-135	7	35	mg/kg	06.29.17 11:48	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	107		121		70-135	%	06.29.17 11:48
o-Terphenyl	91		109		70-135	%	06.29.17 11:48

Analytical Method: BTEX by EPA 8021B

Seq Number: 3021122

MB Sample Id: 726962-1-BLK

Matrix: Solid

LCS Sample Id: 726962-1-BKS

Prep Method: SW5030B

Date Prep: 06.28.17

LCSD Sample Id: 726962-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00199	0.0994	0.0973	98	0.104	104	70-130	7	35	mg/kg	06.29.17 01:37	
Toluene	<0.00199	0.0994	0.0887	89	0.0951	95	70-130	7	35	mg/kg	06.29.17 01:37	
Ethylbenzene	<0.00199	0.0994	0.0946	95	0.104	104	71-129	9	35	mg/kg	06.29.17 01:37	
m_p-Xylenes	<0.00398	0.199	0.164	82	0.179	90	70-135	9	35	mg/kg	06.29.17 01:37	
o-Xylene	<0.00199	0.0994	0.0882	89	0.103	103	71-133	15	35	mg/kg	06.29.17 01:37	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	95		109		99		80-120	%	06.29.17 01:37
4-Bromofluorobenzene	90		103		99		80-120	%	06.29.17 01:37

Analytical Method: BTEX by EPA 8021B

Seq Number: 3021191

MB Sample Id: 727003-1-BLK

Matrix: Solid

LCS Sample Id: 727003-1-BKS

Prep Method: SW5030B

Date Prep: 06.29.17

LCSD Sample Id: 727003-1-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	0.100	0.104	104	0.0974	98	70-130	7	35	mg/kg	06.29.17 20:57	
Toluene	<0.00200	0.100	0.0925	93	0.0861	86	70-130	7	35	mg/kg	06.29.17 20:57	
Ethylbenzene	<0.00200	0.100	0.0991	99	0.0931	93	71-129	6	35	mg/kg	06.29.17 20:57	
m,p-Xylenes	<0.00401	0.200	0.180	90	0.167	84	70-135	7	35	mg/kg	06.29.17 20:57	
o-Xylene	<0.00200	0.100	0.106	106	0.0933	93	71-133	13	35	mg/kg	06.29.17 20:57	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	92		109		99		80-120	%	06.29.17 20:57
4-Bromofluorobenzene	98		102		100		80-120	%	06.29.17 20:57

COG Operating LLC
Craig State #4H

Analytical Method: BTEX by EPA 8021B

Seq Number: 3021299

MB Sample Id: 727062-1-BLK

Matrix: Solid

LCS Sample Id: 727062-1-BKS

Prep Method: SW5030B

Date Prep: 06.30.17

LCSD Sample Id: 727062-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00199	0.0996	0.0979	98	0.102	103	70-130	4	35	mg/kg	06.30.17 08:59	
Toluene	<0.00199	0.0996	0.0902	91	0.0932	94	70-130	3	35	mg/kg	06.30.17 08:59	
Ethylbenzene	<0.00199	0.0996	0.0958	96	0.104	105	71-129	8	35	mg/kg	06.30.17 08:59	
m_p-Xylenes	<0.00398	0.199	0.168	84	0.182	92	70-135	8	35	mg/kg	06.30.17 08:59	
o-Xylene	<0.00199	0.0996	0.0895	90	0.0941	95	71-133	5	35	mg/kg	06.30.17 08:59	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	97		92		97		80-120	%	06.30.17 08:59
4-Bromofluorobenzene	108		106		100		80-120	%	06.30.17 08:59

Analytical Method: BTEX by EPA 8021B

Seq Number: 3021493

MB Sample Id: 727173-1-BLK

Matrix: Solid

LCS Sample Id: 727173-1-BKS

Prep Method: SW5030B

Date Prep: 07.03.17

LCSD Sample Id: 727173-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00199	0.0996	0.0894	90	0.0867	87	70-130	3	35	mg/kg	07.03.17 12:29	
Toluene	<0.00199	0.0996	0.0815	82	0.0774	77	70-130	5	35	mg/kg	07.03.17 12:29	
Ethylbenzene	<0.00199	0.0996	0.0922	93	0.0873	87	71-129	5	35	mg/kg	07.03.17 12:29	
m_p-Xylenes	<0.00398	0.199	0.155	78	0.153	77	70-135	1	35	mg/kg	07.03.17 12:29	
o-Xylene	<0.00199	0.0996	0.0911	91	0.0821	82	71-133	10	35	mg/kg	07.03.17 12:29	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	89		99		114		80-120	%	07.03.17 12:29
4-Bromofluorobenzene	103		104		94		80-120	%	07.03.17 12:29

Analytical Method: BTEX by EPA 8021B

Seq Number: 3021122

Parent Sample Id: 556358-011

Matrix: Soil

MS Sample Id: 556358-011 S

Prep Method: SW5030B

Date Prep: 06.28.17

MSD Sample Id: 556358-011 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00201	0.100	0.0899	90	0.0866	86	70-130	4	35	mg/kg	06.29.17 02:08	
Toluene	0.00270	0.100	0.0777	75	0.0772	74	70-130	1	35	mg/kg	06.29.17 02:08	
Ethylbenzene	0.0109	0.100	0.0841	73	0.0781	67	71-129	7	35	mg/kg	06.29.17 02:08	X
m_p-Xylenes	0.0954	0.201	0.189	47	0.181	42	70-135	4	35	mg/kg	06.29.17 02:08	X
o-Xylene	0.0505	0.100	0.120	70	0.107	56	71-133	11	35	mg/kg	06.29.17 02:08	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	106		109		80-120	%	06.29.17 02:08
4-Bromofluorobenzene	120		120		80-120	%	06.29.17 02:08



QC Summary 556358

COG Operating LLC

Craig State #4H

Analytical Method: BTEX by EPA 8021B

Seq Number: 3021191

Parent Sample Id: 556360-001

Matrix: Soil

MS Sample Id: 556360-001 S

Prep Method: SW5030B

Date Prep: 06.29.17

MSD Sample Id: 556360-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00202	0.101	0.0915	91	0.0716	72	70-130	24	35	mg/kg	06.29.17 21:29	
Toluene	<0.00202	0.101	0.0791	78	0.0610	61	70-130	26	35	mg/kg	06.29.17 21:29	X
Ethylbenzene	<0.00202	0.101	0.0858	85	0.0741	74	71-129	15	35	mg/kg	06.29.17 21:29	
m,p-Xylenes	<0.00404	0.202	0.154	76	0.112	56	70-135	32	35	mg/kg	06.29.17 21:29	X
o-Xylene	<0.00202	0.101	0.0838	83	0.0638	64	71-133	27	35	mg/kg	06.29.17 21:29	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	108		104		80-120	%	06.29.17 21:29
4-Bromofluorobenzene	119		118		80-120	%	06.29.17 21:29

Analytical Method: BTEX by EPA 8021B

Seq Number: 3021299

Parent Sample Id: 556361-001

Matrix: Soil

MS Sample Id: 556361-001 S

Prep Method: SW5030B

Date Prep: 06.30.17

MSD Sample Id: 556361-001 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	0.0673	67	0.0370	37	70-130	58	35	mg/kg	06.30.17 09:31	XF
Toluene	<0.00200	0.0998	0.0572	57	0.0370	37	70-130	43	35	mg/kg	06.30.17 09:31	XF
Ethylbenzene	<0.00200	0.0998	0.0547	55	0.0287	29	71-129	62	35	mg/kg	06.30.17 09:31	XF
m_p-Xylenes	<0.00399	0.200	0.0938	47	0.0520	26	70-135	57	35	mg/kg	06.30.17 09:31	XF
o-Xylene	<0.00200	0.0998	0.0533	53	0.0325	33	71-133	48	35	mg/kg	06.30.17 09:31	XF

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	87		89		80-120	%	06.30.17 09:31
4-Bromofluorobenzene	90		87		80-120	%	06.30.17 09:31

Analytical Method: BTEX by EPA 8021B

Seq Number: 3021493

Parent Sample Id: 556711-008

Matrix: Soil

MS Sample Id: 556711-008 S

Prep Method: SW5030B

Date Prep: 07.03.17

MSD Sample Id: 556711-008 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00351	0.175	0.139	79	0.167	97	70-130	18	35	mg/kg	07.03.17 13:02	
Toluene	0.00770	0.175	0.122	65	0.168	93	70-130	32	35	mg/kg	07.03.17 13:02	X
Ethylbenzene	0.0188	0.175	0.151	76	0.189	99	71-129	22	35	mg/kg	07.03.17 13:02	
m_p-Xylenes	0.192	0.351	0.520	93	0.411	63	70-135	23	35	mg/kg	07.03.17 13:02	X
o-Xylene	0.0835	0.175	0.287	116	0.180	56	71-133	46	35	mg/kg	07.03.17 13:02	XF

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	109		111		80-120	%	07.03.17 13:02
4-Bromofluorobenzene	107		118		80-120	%	07.03.17 13:02



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Dallas Texas (214-902-0300)

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

Phoenix, Arizona (480-355-0900)

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CHAIN OF CUSTODY

Page 1 of 2

Xenco Quote # 556359

Xenco Job #

Client / Reporting Information		Project Information		Analytical Information		Matrix Codes	
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Company Name / Branch: COG Operating LLC		Project Name/Number: Craig State #4H		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 WM = Waste Water A = Air	
---	--	---	--	--	--

Company Address: 2407 PECOS Avenue Artesia NM 88210		Project Location: Craig State #4H			
--	--	--------------------------------------	--	--	--

Email: alieb@concho.com dneeal2@concho.com rkaskell@concho.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	Collection Date	Time	Matrix	# of bottles	HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	TPH	BTEX	Chloride	Field Comments
1	T1 - SURFACE	5-25'	6/26/17	10:00 AM	S	1									X	X	X	
2	T1 - 1'	1				1									X	X	X	
3	T1 - 2'	2				1									X	X	X	
4	T1 - 3'	3				1									X	X	X	
5	T1 - 4'	4				1									X	X	X	
6	T1 - 5'	5				1									X	X	X	
7	T1 - 6'	6				1									X	X	X	
8	T1 - 8'	8				1									X	X	X	
9	T1 - 10'	10				1									X	X	X	
10	T1 - 12'	12				1									X	X	X	

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)	Temp: 10.3 IR ID: R-8	
☐ Next Day EMERGENCY	☐ 7 Day TAT	☐ Level III Std QC+ Forms	☐ TRRP Level IV	CF: (0-6: -0.2°C)	
☐ 2 Day EMERGENCY	☐ Contract TAT	☐ Level 3 (CLP Forms)	☐ UST / RG -411	(6-23: +0.2°C)	
☐ 3 Day EMERGENCY		☐ TRRP Checklist		Corrected Temp: 10.0	

TAT Starts Day received by Lab, if received by 5:00 pm		FED-EX / UPS: Tracking #	
--	--	--------------------------	--

Relinquished by Sampler: [Signature]		SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY		Relinquished By: [Signature]		Date Time: 11:45	
--------------------------------------	--	---	--	------------------------------	--	------------------	--

Relinquished by: [Signature]		Date Time: 6/26/17		Relinquished By: [Signature]		Date Time: 6/26/17	
------------------------------	--	--------------------	--	------------------------------	--	--------------------	--

Relinquished by: [Signature]		Date Time: 6/26/17		Relinquished By: [Signature]		Date Time: 6/26/17	
------------------------------	--	--------------------	--	------------------------------	--	--------------------	--

Relinquished by: [Signature]		Date Time: 6/26/17		Relinquished By: [Signature]		Date Time: 6/26/17	
------------------------------	--	--------------------	--	------------------------------	--	--------------------	--



Page 2 Of 2

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

Phoenix, Arizona (480-355-0900)

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Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenoco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenoco will be liable only for the cost of samples and shall not assume any responsibility for losses or expenses incurred by the Client if such losses are due to circumstances beyond the control of Xenoco. A minimum charge of \$75 will be applied to the cost of samples. Any samples received by Xenoco 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: 06/27/2017 10:15:00 AM

Work Order #: 556358

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)?	1.1
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seal present on shipping container/ cooler?	N/A
#5 *Custody Seals intact on shipping container/ cooler?	N/A
#6 Custody Seals intact on sample bottles?	N/A
#7 *Custody Seals Signed and dated?	N/A
#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)?	N/A
#21 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: Jessica Kramer
Jessica Kramer

Date: 06/27/2017

Checklist reviewed by: Kelsey Brooks
Kelsey Brooks

Date: 06/27/2017



Certificate of Analysis Summary 556362

COG Operating LLC, Artesia, NM

Project Name: Craig State #4H



Project Id:

Contact: Aaron Lieb

Project Location:

Date Received in Lab: Tue Jun-27-17 10:15 am

Report Date: 06-JUL-17

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	556362-001	556362-002	556362-003	556362-004	556362-005	556362-006
	Field Id:	North - Surf	North - 1'	South - Surf	South - 1'	East - Surf	East - 1'
	Depth:		1 ft		1 ft		1 ft
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Jun-22-17 11:30	Jun-22-17 11:30	Jun-22-17 11:30	Jun-22-17 11:30	Jun-22-17 11:30	Jun-22-17 11:30
BTEX by EPA 8021B	Extracted:	Jun-30-17 17:30	Jun-30-17 17:30	Jun-30-17 17:30	Jun-30-17 17:30	Jun-30-17 17:30	Jun-30-17 17:30
	Analyzed:	Jul-01-17 08:22	Jul-01-17 12:45	Jul-01-17 08:38	Jul-01-17 08:55	Jul-01-17 09:15	Jul-01-17 09:31
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199
Toluene		<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199
Ethylbenzene		<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199
m_p-Xylenes		<0.00399 0.00399	<0.00402 0.00402	<0.00401 0.00401	<0.00404 0.00404	<0.00402 0.00402	<0.00398 0.00398
o-Xylene		<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199
Total Xylenes		<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199
Total BTEX		<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199
Chloride by EPA 300	Extracted:	Jul-05-17 14:30	Jul-05-17 14:30	Jul-05-17 14:30	Jul-05-17 14:30	Jul-05-17 14:30	Jul-05-17 14:30
	Analyzed:	Jul-06-17 01:50	Jul-06-17 01:57	Jul-06-17 02:05	Jul-05-17 16:20	Jul-05-17 16:27	Jul-05-17 16:35
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		141 4.99	15.2 4.98	211 5.00	125 5.00	458 4.98	142 5.00
TPH By SW8015 Mod	Extracted:	Jun-30-17 08:00	Jun-30-17 08:00	Jun-30-17 08:00	Jun-30-17 08:00	Jun-30-17 08:00	Jun-30-17 08:00
	Analyzed:	Jun-30-17 18:28	Jun-30-17 18:49	Jun-30-17 19:09	Jun-30-17 19:29	Jun-30-17 19:49	Jun-30-17 20:09
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
C6-C10 Gasoline Range Hydrocarbons		<15.0 15.0	<15.0 15.0	<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0
C10-C28 Diesel Range Organics		<15.0 15.0	<15.0 15.0	53.6 14.9	16.7 15.0	<15.0 15.0	<15.0 15.0
C28-C35 Oil Range Hydrocarbons		<15.0 15.0	<15.0 15.0	<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0
Total TPH		<15.0 15.0	<15.0 15.0	53.6 14.9	16.7 15.0	<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.

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

Kelsey Brooks
Project Manager



Certificate of Analysis Summary 556362

COG Operating LLC, Artesia, NM

Project Name: Craig State #4H



Project Id:

Contact: Aaron Lieb

Project Location:

Date Received in Lab: Tue Jun-27-17 10:15 am

Report Date: 06-JUL-17

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	556362-007	556362-008				
	Field Id:	West - Surf	West - 1'				
	Depth:		1 ft				
	Matrix:	SOIL	SOIL				
	Sampled:	Jun-22-17 11:30	Jun-22-17 11:30				
BTEX by EPA 8021B	Extracted:	Jun-30-17 17:30	Jun-30-17 17:30				
	Analyzed:	Jul-01-17 09:47	Jul-01-17 10:04				
	Units/RL:	mg/kg RL	mg/kg RL				
Benzene		<0.00201 0.00201	<0.00200 0.00200				
Toluene		<0.00201 0.00201	<0.00200 0.00200				
Ethylbenzene		<0.00201 0.00201	<0.00200 0.00200				
m_p-Xylenes		<0.00402 0.00402	<0.00399 0.00399				
o-Xylene		<0.00201 0.00201	<0.00200 0.00200				
Total Xylenes		<0.00201 0.00201	<0.00200 0.00200				
Total BTEX		<0.00201 0.00201	<0.00200 0.00200				
Chloride by EPA 300	Extracted:	Jul-05-17 14:30	Jul-05-17 14:30				
	Analyzed:	Jul-05-17 16:43	Jul-05-17 16:50				
	Units/RL:	mg/kg RL	mg/kg RL				
Chloride		272 5.00	129 5.00				
TPH By SW8015 Mod	Extracted:	Jun-30-17 08:00	Jun-30-17 08:00				
	Analyzed:	Jun-30-17 20:30	Jun-30-17 20:50				
	Units/RL:	mg/kg RL	mg/kg RL				
C6-C10 Gasoline Range Hydrocarbons		<15.0 15.0	<15.0 15.0				
C10-C28 Diesel Range Organics		<15.0 15.0	<15.0 15.0				
C28-C35 Oil Range Hydrocarbons		<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.

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

Kelsey Brooks
Project Manager

Analytical Report 556362

for
COG Operating LLC

Project Manager: Aaron Lieb

Craig State #4H

06-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)



06-JUL-17

Project Manager: **Aaron Lieb**
COG Operating LLC
2407 Pecos Avenue
Artesia, NM 88210

Reference: XENCO Report No(s): **556362**
Craig State #4H
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) 556362. 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. 556362 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 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
North - Surf	S	06-22-17 11:30		556362-001
North - 1'	S	06-22-17 11:30	- 1 ft	556362-002
South - Surf	S	06-22-17 11:30		556362-003
South - 1'	S	06-22-17 11:30	- 1 ft	556362-004
East - Surf	S	06-22-17 11:30		556362-005
East - 1'	S	06-22-17 11:30	- 1 ft	556362-006
West - Surf	S	06-22-17 11:30		556362-007
West - 1'	S	06-22-17 11:30	- 1 ft	556362-008



CASE NARRATIVE

Client Name: COG Operating LLC

Project Name: Craig State #4H

Project ID:
Work Order Number(s): 556362

Report Date: 06-JUL-17
Date Received: 06/27/2017

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3021391 BTEX by EPA 8021B

Lab Sample ID 556362-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Ethylbenzene, Toluene, m_p-Xylenes , o-Xylene recovered below QC limits in the Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 556362-001, -002, -003, -004, -005, -006, -007, -008.

The Laboratory Control Sample for Toluene, Ethylbenzene, m_p-Xylenes , o-Xylene is within laboratory Control Limits, therefore the data was accepted.

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



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **North - Surf**

Matrix: Soil

Date Received: 06.27.17 10.15

Lab Sample Id: 556362-001

Date Collected: 06.22.17 11.30

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MGO

% Moisture:

Analyst: MGO

Date Prep: 07.05.17 14.30

Basis: Wet Weight

Seq Number: 3021560

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	141	4.99	mg/kg	07.06.17 01.50		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 06.30.17 08.00

Basis: Wet Weight

Seq Number: 3021374

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.30.17 18.28	U	1
C10-C28 Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	06.30.17 18.28	U	1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	06.30.17 18.28	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	06.30.17 18.28	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	106	%	70-135	06.30.17 18.28		
o-Terphenyl	84-15-1	103	%	70-135	06.30.17 18.28		



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **North - Surf**

Matrix: Soil

Date Received: 06.27.17 10.15

Lab Sample Id: 556362-001

Date Collected: 06.22.17 11.30

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.30.17 17.30

Basis: Wet Weight

Seq Number: 3021391

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	07.01.17 08.22	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	07.01.17 08.22	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	07.01.17 08.22	U	1
m_p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	07.01.17 08.22	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	07.01.17 08.22	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	07.01.17 08.22	U	1
Total BTEX		<0.00200	0.00200	mg/kg	07.01.17 08.22	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	119	%	80-120	07.01.17 08.22		
1,4-Difluorobenzene	540-36-3	97	%	80-120	07.01.17 08.22		



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **North - 1'**

Matrix: Soil

Date Received: 06.27.17 10.15

Lab Sample Id: 556362-002

Date Collected: 06.22.17 11.30

Sample Depth: 1 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MGO

% Moisture:

Analyst: MGO

Date Prep: 07.05.17 14.30

Basis: Wet Weight

Seq Number: 3021560

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	15.2	4.98	mg/kg	07.06.17 01.57		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 06.30.17 08.00

Basis: Wet Weight

Seq Number: 3021374

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.30.17 18.49	U	1
C10-C28 Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	06.30.17 18.49	U	1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	06.30.17 18.49	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	06.30.17 18.49	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	104	%	70-135	06.30.17 18.49	
o-Terphenyl	84-15-1	106	%	70-135	06.30.17 18.49	



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **North - 1'**

Matrix: Soil

Date Received: 06.27.17 10.15

Lab Sample Id: 556362-002

Date Collected: 06.22.17 11.30

Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.30.17 17.30

Basis: Wet Weight

Seq Number: 3021391

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	07.01.17 12.45	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	07.01.17 12.45	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	07.01.17 12.45	U	1
m_p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	07.01.17 12.45	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	07.01.17 12.45	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	07.01.17 12.45	U	1
Total BTEX		<0.00201	0.00201	mg/kg	07.01.17 12.45	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	115	%	80-120	07.01.17 12.45		
1,4-Difluorobenzene	540-36-3	95	%	80-120	07.01.17 12.45		



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **South - Surf**

Matrix: Soil

Date Received: 06.27.17 10.15

Lab Sample Id: 556362-003

Date Collected: 06.22.17 11.30

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MGO

% Moisture:

Analyst: MGO

Date Prep: 07.05.17 14.30

Basis: Wet Weight

Seq Number: 3021560

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	211	5.00	mg/kg	07.06.17 02.05		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 06.30.17 08.00

Basis: Wet Weight

Seq Number: 3021374

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<14.9	14.9	mg/kg	06.30.17 19.09	U	1
C10-C28 Diesel Range Organics	C10C28DRO	53.6	14.9	mg/kg	06.30.17 19.09		1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<14.9	14.9	mg/kg	06.30.17 19.09	U	1
Total TPH	PHC635	53.6	14.9	mg/kg	06.30.17 19.09		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	107	%	70-135	06.30.17 19.09	
o-Terphenyl	84-15-1	107	%	70-135	06.30.17 19.09	



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **South - Surf**

Matrix: Soil

Date Received: 06.27.17 10.15

Lab Sample Id: 556362-003

Date Collected: 06.22.17 11.30

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.30.17 17.30

Basis: Wet Weight

Seq Number: 3021391

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	07.01.17 08.38	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	07.01.17 08.38	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	07.01.17 08.38	U	1
m_p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	07.01.17 08.38	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	07.01.17 08.38	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	07.01.17 08.38	U	1
Total BTEX		<0.00200	0.00200	mg/kg	07.01.17 08.38	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	114	%	80-120	07.01.17 08.38		
4-Bromofluorobenzene	460-00-4	101	%	80-120	07.01.17 08.38		



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **South - 1'**

Matrix: Soil

Date Received: 06.27.17 10.15

Lab Sample Id: 556362-004

Date Collected: 06.22.17 11.30

Sample Depth: 1 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MGO

% Moisture:

Analyst: MGO

Date Prep: 07.05.17 14.30

Basis: Wet Weight

Seq Number: 3021560

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	125	5.00	mg/kg	07.05.17 16.20		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 06.30.17 08.00

Basis: Wet Weight

Seq Number: 3021374

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.30.17 19.29	U	1
C10-C28 Diesel Range Organics	C10C28DRO	16.7	15.0	mg/kg	06.30.17 19.29		1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	06.30.17 19.29	U	1
Total TPH	PHC635	16.7	15.0	mg/kg	06.30.17 19.29		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	111	%	70-135	06.30.17 19.29	
o-Terphenyl	84-15-1	112	%	70-135	06.30.17 19.29	



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **South - 1'**

Matrix: **Soil**

Date Received: 06.27.17 10.15

Lab Sample Id: 556362-004

Date Collected: 06.22.17 11.30

Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: **ALJ**

% Moisture:

Analyst: **ALJ**

Date Prep: 06.30.17 17.30

Basis: **Wet Weight**

Seq Number: 3021391

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	07.01.17 08.55	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	07.01.17 08.55	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	07.01.17 08.55	U	1
m_p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	07.01.17 08.55	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	07.01.17 08.55	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	07.01.17 08.55	U	1
Total BTEX		<0.00202	0.00202	mg/kg	07.01.17 08.55	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	93	%	80-120	07.01.17 08.55		
4-Bromofluorobenzene	460-00-4	115	%	80-120	07.01.17 08.55		



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **East - Surf**

Matrix: Soil

Date Received: 06.27.17 10.15

Lab Sample Id: 556362-005

Date Collected: 06.22.17 11.30

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MGO

% Moisture:

Analyst: MGO

Date Prep: 07.05.17 14.30

Basis: Wet Weight

Seq Number: 3021560

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	458	4.98	mg/kg	07.05.17 16.27		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 06.30.17 08.00

Basis: Wet Weight

Seq Number: 3021374

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.30.17 19.49	U	1
C10-C28 Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	06.30.17 19.49	U	1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	06.30.17 19.49	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	06.30.17 19.49	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	106	%	70-135	06.30.17 19.49	
o-Terphenyl	84-15-1	106	%	70-135	06.30.17 19.49	



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **East - Surf**

Matrix: Soil

Date Received: 06.27.17 10.15

Lab Sample Id: 556362-005

Date Collected: 06.22.17 11.30

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.30.17 17.30

Basis: Wet Weight

Seq Number: 3021391

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	07.01.17 09.15	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	07.01.17 09.15	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	07.01.17 09.15	U	1
m_p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	07.01.17 09.15	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	07.01.17 09.15	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	07.01.17 09.15	U	1
Total BTEX		<0.00201	0.00201	mg/kg	07.01.17 09.15	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	107	%	80-120	07.01.17 09.15		
1,4-Difluorobenzene	540-36-3	92	%	80-120	07.01.17 09.15		



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: East - 1'
Lab Sample Id: 556362-006

Matrix: Soil
Date Collected: 06.22.17 11.30

Date Received: 06.27.17 10.15
Sample Depth: 1 ft

Analytical Method: Chloride by EPA 300
Tech: MGO
Analyst: MGO
Seq Number: 3021560

Date Prep: 07.05.17 14.30

Prep Method: E300P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	142	5.00	mg/kg	07.05.17 16.35		1

Analytical Method: TPH By SW8015 Mod
Tech: ARM
Analyst: ARM
Seq Number: 3021374

Date Prep: 06.30.17 08.00

Prep Method: TX1005P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.30.17 20.09	U	1
C10-C28 Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	06.30.17 20.09	U	1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	06.30.17 20.09	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	06.30.17 20.09	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	109	%	70-135	06.30.17 20.09		
o-Terphenyl	84-15-1	111	%	70-135	06.30.17 20.09		

COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **East - 1'**
Lab Sample Id: 556362-006

Matrix: Soil
Date Collected: 06.22.17 11.30

Date Received: 06.27.17 10.15
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3021391

Date Prep: 06.30.17 17.30

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	07.01.17 09.31	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	07.01.17 09.31	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	07.01.17 09.31	U	1
m_p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	07.01.17 09.31	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	07.01.17 09.31	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	07.01.17 09.31	U	1
Total BTEX		<0.00199	0.00199	mg/kg	07.01.17 09.31	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	89	%	80-120	07.01.17 09.31		
1,4-Difluorobenzene	540-36-3	97	%	80-120	07.01.17 09.31		



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **West - Surf**

Matrix: Soil

Date Received: 06.27.17 10.15

Lab Sample Id: 556362-007

Date Collected: 06.22.17 11.30

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MGO

% Moisture:

Analyst: MGO

Date Prep: 07.05.17 14.30

Basis: Wet Weight

Seq Number: 3021560

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	272	5.00	mg/kg	07.05.17 16.43		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 06.30.17 08.00

Basis: Wet Weight

Seq Number: 3021374

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.30.17 20.30	U	1
C10-C28 Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	06.30.17 20.30	U	1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	06.30.17 20.30	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	06.30.17 20.30	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	101	%	70-135	06.30.17 20.30	
o-Terphenyl	84-15-1	98	%	70-135	06.30.17 20.30	



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **West - Surf**

Matrix: Soil

Date Received: 06.27.17 10.15

Lab Sample Id: 556362-007

Date Collected: 06.22.17 11.30

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.30.17 17.30

Basis: Wet Weight

Seq Number: 3021391

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	07.01.17 09.47	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	07.01.17 09.47	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	07.01.17 09.47	U	1
m_p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	07.01.17 09.47	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	07.01.17 09.47	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	07.01.17 09.47	U	1
Total BTEX		<0.00201	0.00201	mg/kg	07.01.17 09.47	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	88	%	80-120	07.01.17 09.47		
4-Bromofluorobenzene	460-00-4	92	%	80-120	07.01.17 09.47		



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **West - 1'**
Lab Sample Id: 556362-008

Matrix: Soil
Date Collected: 06.22.17 11.30

Date Received: 06.27.17 10.15
Sample Depth: 1 ft

Analytical Method: Chloride by EPA 300
Tech: MGO
Analyst: MGO
Seq Number: 3021560

Date Prep: 07.05.17 14.30

Prep Method: E300P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	129	5.00	mg/kg	07.05.17 16.50		1

Analytical Method: TPH By SW8015 Mod
Tech: ARM
Analyst: ARM
Seq Number: 3021374

Date Prep: 06.30.17 08.00

Prep Method: TX1005P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.30.17 20.50	U	1
C10-C28 Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	06.30.17 20.50	U	1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	06.30.17 20.50	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	06.30.17 20.50	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	110	%	70-135	06.30.17 20.50		
o-Terphenyl	84-15-1	111	%	70-135	06.30.17 20.50		

COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **West - 1'**
Lab Sample Id: 556362-008

Matrix: Soil
Date Collected: 06.22.17 11.30

Date Received: 06.27.17 10.15
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.30.17 17.30

Basis: Wet Weight

Seq Number: 3021391

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	07.01.17 10.04	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	07.01.17 10.04	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	07.01.17 10.04	U	1
m_p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	07.01.17 10.04	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	07.01.17 10.04	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	07.01.17 10.04	U	1
Total BTEX		<0.00200	0.00200	mg/kg	07.01.17 10.04	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	104	%	80-120	07.01.17 10.04		
4-Bromofluorobenzene	460-00-4	101	%	80-120	07.01.17 10.04		

- 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 556362

COG Operating LLC

Craig State #4H

Analytical Method: Chloride by EPA 300

Seq Number: 3021560

MB Sample Id: 727151-1-BLK

Matrix: Solid

LCS Sample Id: 727151-1-BKS

Prep Method: E300P

Date Prep: 07.05.17

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Chloride	<5.00	250	238	95	90-110	mg/kg	07.05.17 14:33	

Analytical Method: Chloride by EPA 300

Seq Number: 3021560

Parent Sample Id: 556361-001

Matrix: Soil

MS Sample Id: 556361-001 S

Prep Method: E300P

Date Prep: 07.05.17

MSD Sample Id: 556361-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	12.4	250	244	93	248	94	90-110	2	20	mg/kg	07.05.17 14:56	

Analytical Method: Chloride by EPA 300

Seq Number: 3021560

Parent Sample Id: 556745-001

Matrix: Soil

MS Sample Id: 556745-001 S

Prep Method: E300P

Date Prep: 07.05.17

MSD Sample Id: 556745-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	6.72	249	252	99	255	100	90-110	1	20	mg/kg	07.05.17 17:05	

Analytical Method: TPH By SW8015 Mod

Seq Number: 3021374

MB Sample Id: 727083-1-BLK

Matrix: Solid

LCS Sample Id: 727083-1-BKS

Prep Method: TX1005P

Date Prep: 06.30.17

LCSD Sample Id: 727083-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
C6-C10 Gasoline Range Hydrocarbons	<15.0	1000	1100	110	1080	108	70-135	2	35	mg/kg	06.30.17 10:31	
C10-C28 Diesel Range Organics	<15.0	1000	1020	102	1010	101	70-135	1	35	mg/kg	06.30.17 10:31	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	109		117		117		70-135	%	06.30.17 10:31
o-Terphenyl	112		118		116		70-135	%	06.30.17 10:31



QC Summary 556362

COG Operating LLC

Craig State #4H

Analytical Method: TPH By SW8015 Mod

Seq Number: 3021374

Parent Sample Id: 556359-009

Matrix: Soil

MS Sample Id: 556359-009 S

Prep Method: TX1005P

Date Prep: 06.30.17

MSD Sample Id: 556359-009 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
C6-C10 Gasoline Range Hydrocarbons	<15.0	999	1030	103	1060	106	70-135	3	35	mg/kg	06.30.17 12:38	
C10-C28 Diesel Range Organics	<15.0	999	1040	104	1060	106	70-135	2	35	mg/kg	06.30.17 12:38	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	107		111		70-135	%	06.30.17 12:38
o-Terphenyl	109		109		70-135	%	06.30.17 12:38

Analytical Method: BTEX by EPA 8021B

Seq Number: 3021391

MB Sample Id: 727129-1-BLK

Matrix: Solid

LCS Sample Id: 727129-1-BKS

Prep Method: SW5030B

Date Prep: 06.30.17

LCSD Sample Id: 727129-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00199	0.0996	0.0852	86	0.0832	83	70-130	2	35	mg/kg	07.01.17 03:00	
Toluene	<0.00199	0.0996	0.0808	81	0.0808	81	70-130	0	35	mg/kg	07.01.17 03:00	
Ethylbenzene	<0.00199	0.0996	0.0873	88	0.0891	89	71-129	2	35	mg/kg	07.01.17 03:00	
m_p-Xylenes	<0.00398	0.199	0.166	83	0.162	81	70-135	2	35	mg/kg	07.01.17 03:00	
o-Xylene	<0.00199	0.0996	0.0825	83	0.0897	90	71-133	8	35	mg/kg	07.01.17 03:00	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	86		90		96		80-120	%	07.01.17 03:00
4-Bromofluorobenzene	81		85		89		80-120	%	07.01.17 03:00

Analytical Method: BTEX by EPA 8021B

Seq Number: 3021391

Parent Sample Id: 556362-001

Matrix: Soil

MS Sample Id: 556362-001 S

Prep Method: SW5030B

Date Prep: 06.30.17

MSD Sample Id: 556362-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00199	0.0996	0.0779	78	0.0706	70	70-130	10	35	mg/kg	07.01.17 03:32	
Toluene	<0.00199	0.0996	0.0789	79	0.0689	68	70-130	14	35	mg/kg	07.01.17 03:32	X
Ethylbenzene	<0.00199	0.0996	0.0784	79	0.0662	66	71-129	17	35	mg/kg	07.01.17 03:32	X
m_p-Xylenes	<0.00398	0.199	0.145	73	0.136	67	70-135	6	35	mg/kg	07.01.17 03:32	X
o-Xylene	<0.00199	0.0996	0.0809	81	0.0675	67	71-133	18	35	mg/kg	07.01.17 03:32	X

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	111		118		80-120	%	07.01.17 03:32
4-Bromofluorobenzene	120		120		80-120	%	07.01.17 03:32



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Dallas Texas (214-902-0300)

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Page 1 of 1

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

Phoenix, Arizona (480-355-0900)

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Client / Reporting Information		Project Information		Xenco Quote #		Xenco Job #		Matrix Codes											
Company Name / Branch: COG Operating LLC		Project Name/Number: Craig State #41						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											
Company Address: 2407 PECOS Avenue Arlisia NM 88210		Project Location: Craig State #41																	
Email: aaleb@concho.com dneal@concho.com raskell@concho.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	HCI	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	TPH	BTEX	Chloride	Field Comments	
1	North - Surf	Surf	6/26/17	11:30 AM	S	1									X	X	X		
2	North - 1'	1'													X	X	X		
3	South - Surf	Surf													X	X	X		
4	South - 1'	1'													X	X	X		
5	East - Surf	Surf													X	X	X		
6	East - 1'	1'													X	X	X		
7	West - Surf	Surf													X	X	X		
8	West - 1'	1'													X	X	X		
9																			
10																			
Turnaround Time (Business days)																			
Same Day TAT		☐ 5 Day TAT																	
Next Day EMERGENCY		☐ 7 Day TAT																	
2 Day EMERGENCY		☐ Contract TAT																	
3 Day EMERGENCY		☐ TRRP Checklist																	
TAT Starts Day received by Lab, if received by 5:00 pm																			
Relinquished by Sampler:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:	
1		6/26/17 10:00 AM		1. Aileen Boller		6-26-17 10:00 AM		2. Aileen Boller		6/26/17 11:45 AM		3. Aileen Boller		6/26/17 11:45 AM		4. Aileen Boller		6/26/17 11:45 AM	
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XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In



Client: COG Operating LLC

Date/ Time Received: 06/27/2017 10:15:00 AM

Work Order #: 556362

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)?	1.1
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seal present on shipping container/ cooler?	N/A
#5 *Custody Seals intact on shipping container/ cooler?	N/A
#6 Custody Seals intact on sample bottles?	N/A
#7 *Custody Seals Signed and dated?	N/A
#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)?	N/A
#21 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: Jessica Kramer
Jessica Kramer

Date: 06/27/2017

Checklist reviewed by: Kelsey Brooks
Kelsey Brooks

Date: 06/27/2017



Certificate of Analysis Summary 556362

COG Operating LLC, Artesia, NM

Project Name: Craig State #4H



Project Id:

Contact: Aaron Lieb

Project Location:

Date Received in Lab: Tue Jun-27-17 10:15 am

Report Date: 06-JUL-17

Project Manager: Kelsey Brooks

Draft

<i>Analysis Requested</i>	<i>Lab Id:</i>	556362-001	556362-002	556362-003	556362-004	556362-005	556362-006
	<i>Field Id:</i>	North - Surf	North - 1'	South - Surf	South - 1'	East - Surf	East - 1'
	<i>Depth:</i>		1 ft		1 ft		1 ft
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Jun-22-17 11:30	Jun-22-17 11:30	Jun-22-17 11:30	Jun-22-17 11:30	Jun-22-17 11:30	Jun-22-17 11:30
BTEX by EPA 8021B	<i>Extracted:</i>	Jun-30-17 17:30	Jun-30-17 17:30	Jun-30-17 17:30	Jun-30-17 17:30	Jun-30-17 17:30	Jun-30-17 17:30
	<i>Analyzed:</i>	Jul-01-17 08:22	Jul-01-17 12:45	Jul-01-17 08:38	Jul-01-17 08:55	Jul-01-17 09:15	Jul-01-17 09:31
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199
Toluene		<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199
Ethylbenzene		<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199
m_p-Xylenes		<0.00399 0.00399	<0.00402 0.00402	<0.00401 0.00401	<0.00404 0.00404	<0.00402 0.00402	<0.00398 0.00398
o-Xylene		<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199
Total Xylenes		<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199
Total BTEX		<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201	<0.00199 0.00199
Chloride by EPA 300	<i>Extracted:</i>	Jul-05-17 14:30	Jul-05-17 14:30	Jul-05-17 14:30	Jul-05-17 14:30	Jul-05-17 14:30	Jul-05-17 14:30
	<i>Analyzed:</i>	Jul-06-17 01:50	Jul-06-17 01:57	Jul-06-17 02:05	Jul-05-17 16:20	Jul-05-17 16:27	Jul-05-17 16:35
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		141 4.99	15.2 4.98	211 5.00	125 5.00	458 4.98	142 5.00
TPH By SW8015 Mod	<i>Extracted:</i>	Jun-30-17 08:00	Jun-30-17 08:00	Jun-30-17 08:00	Jun-30-17 08:00	Jun-30-17 08:00	Jun-30-17 08:00
	<i>Analyzed:</i>	Jun-30-17 18:28	Jun-30-17 18:49	Jun-30-17 19:09	Jun-30-17 19:29	Jun-30-17 19:49	Jun-30-17 20:09
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
C6-C10 Gasoline Range Hydrocarbons		<15.0 15.0	<15.0 15.0	<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0
C10-C28 Diesel Range Organics		<15.0 15.0	<15.0 15.0	53.6 14.9	16.7 15.0	<15.0 15.0	<15.0 15.0
C28-C35 Oil Range Hydrocarbons		<15.0 15.0	<15.0 15.0	<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0
Total TPH		<15.0 15.0	<15.0 15.0	53.6 14.9	16.7 15.0	<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.

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

Kelsey Brooks
Project Manager



Certificate of Analysis Summary 556362

COG Operating LLC, Artesia, NM

Project Name: Craig State #4H



Project Id:

Contact: Aaron Lieb

Project Location:

Date Received in Lab: Tue Jun-27-17 10:15 am

Report Date: 06-JUL-17

Project Manager: Kelsey Brooks

Draft

Analysis Requested	Lab Id:	556362-007	556362-008				
	Field Id:	West - Surf	West - 1'				
	Depth:		1 ft				
	Matrix:	SOIL	SOIL				
	Sampled:	Jun-22-17 11:30	Jun-22-17 11:30				
BTEX by EPA 8021B	Extracted:	Jun-30-17 17:30	Jun-30-17 17:30				
	Analyzed:	Jul-01-17 09:47	Jul-01-17 10:04				
	Units/RL:	mg/kg RL	mg/kg RL				
Benzene		<0.00201 0.00201	<0.00200 0.00200				
Toluene		<0.00201 0.00201	<0.00200 0.00200				
Ethylbenzene		<0.00201 0.00201	<0.00200 0.00200				
m_p-Xylenes		<0.00402 0.00402	<0.00399 0.00399				
o-Xylene		<0.00201 0.00201	<0.00200 0.00200				
Total Xylenes		<0.00201 0.00201	<0.00200 0.00200				
Total BTEX		<0.00201 0.00201	<0.00200 0.00200				
Chloride by EPA 300	Extracted:	Jul-05-17 14:30	Jul-05-17 14:30				
	Analyzed:	Jul-05-17 16:43	Jul-05-17 16:50				
	Units/RL:	mg/kg RL	mg/kg RL				
Chloride		272 5.00	129 5.00				
TPH By SW8015 Mod	Extracted:	Jun-30-17 08:00	Jun-30-17 08:00				
	Analyzed:	Jun-30-17 20:30	Jun-30-17 20:50				
	Units/RL:	mg/kg RL	mg/kg RL				
C6-C10 Gasoline Range Hydrocarbons		<15.0 15.0	<15.0 15.0				
C10-C28 Diesel Range Organics		<15.0 15.0	<15.0 15.0				
C28-C35 Oil Range Hydrocarbons		<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.

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

Kelsey Brooks
Project Manager

Analytical Report 556362

for
COG Operating LLC

Project Manager: Aaron Lieb

Craig State #4H

06-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)



06-JUL-17

Project Manager: **Aaron Lieb**
COG Operating LLC
2407 Pecos Avenue
Artesia, NM 88210

Reference: XENCO Report No(s): **556362**
Craig State #4H
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) 556362. 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. 556362 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.

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Sample Cross Reference 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
North - Surf	S	06-22-17 11:30		556362-001
North - 1'	S	06-22-17 11:30	- 1 ft	556362-002
South - Surf	S	06-22-17 11:30		556362-003
South - 1'	S	06-22-17 11:30	- 1 ft	556362-004
East - Surf	S	06-22-17 11:30		556362-005
East - 1'	S	06-22-17 11:30	- 1 ft	556362-006
West - Surf	S	06-22-17 11:30		556362-007
West - 1'	S	06-22-17 11:30	- 1 ft	556362-008



CASE NARRATIVE

Client Name: COG Operating LLC

Project Name: Craig State #4H

Project ID:

Work Order Number(s): 556362

Report Date: 06-JUL-17

Date Received: 06/27/2017

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3021391 BTEX by EPA 8021B

Lab Sample ID 556362-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Ethylbenzene, Toluene, m_p-Xylenes , o-Xylene recovered below QC limits in the Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 556362-001, -002, -003, -004, -005, -006, -007, -008.

The Laboratory Control Sample for Toluene, Ethylbenzene, m_p-Xylenes , o-Xylene is within laboratory Control Limits, therefore the data was accepted.

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



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: North - Surf

Matrix: Soil

Date Received: 06.27.17 10.15

Lab Sample Id: 556362-001

Date Collected: 06.22.17 11.30

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MGO

% Moisture:

Analyst: MGO

Date Prep: 07.05.17 14.30

Basis: Wet Weight

Seq Number: 3021560

Draft

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	141	4.99	mg/kg	07.06.17 01.50		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 06.30.17 08.00

Basis: Wet Weight

Seq Number: 3021374

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.30.17 18.28	U	1
C10-C28 Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	06.30.17 18.28	U	1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	06.30.17 18.28	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	06.30.17 18.28	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	106	%	70-135	06.30.17 18.28	
o-Terphenyl	84-15-1	103	%	70-135	06.30.17 18.28	



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **North - Surf**

Matrix: Soil

Date Received: 06.27.17 10.15

Lab Sample Id: 556362-001

Date Collected: 06.22.17 11.30

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.30.17 17.30

Basis: Wet Weight

Seq Number: 3021391

Draft

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	07.01.17 08.22	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	07.01.17 08.22	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	07.01.17 08.22	U	1
m_p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	07.01.17 08.22	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	07.01.17 08.22	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	07.01.17 08.22	U	1
Total BTEX		<0.00200	0.00200	mg/kg	07.01.17 08.22	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	119	%	80-120	07.01.17 08.22		
1,4-Difluorobenzene	540-36-3	97	%	80-120	07.01.17 08.22		



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **North - 1'**

Matrix: Soil

Date Received: 06.27.17 10.15

Lab Sample Id: 556362-002

Date Collected: 06.22.17 11.30

Sample Depth: 1 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MGO

% Moisture:

Analyst: MGO

Date Prep: 07.05.17 14.30

Basis: Wet Weight

Seq Number: 3021560

Draft

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	15.2	4.98	mg/kg	07.06.17 01.57		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 06.30.17 08.00

Basis: Wet Weight

Seq Number: 3021374

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.30.17 18.49	U	1
C10-C28 Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	06.30.17 18.49	U	1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	06.30.17 18.49	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	06.30.17 18.49	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	104	%	70-135	06.30.17 18.49	
o-Terphenyl	84-15-1	106	%	70-135	06.30.17 18.49	



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **North - 1'**

Matrix: Soil

Date Received: 06.27.17 10.15

Lab Sample Id: 556362-002

Date Collected: 06.22.17 11.30

Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.30.17 17.30

Basis: Wet Weight

Seq Number: 3021391

Draft

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	07.01.17 12.45	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	07.01.17 12.45	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	07.01.17 12.45	U	1
m_p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	07.01.17 12.45	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	07.01.17 12.45	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	07.01.17 12.45	U	1
Total BTEX		<0.00201	0.00201	mg/kg	07.01.17 12.45	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	115	%	80-120	07.01.17 12.45		
1,4-Difluorobenzene	540-36-3	95	%	80-120	07.01.17 12.45		



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM Craig State #4H

Sample Id: **South - Surf**

Matrix: Soil

Date Received: 06.27.17 10.15

Lab Sample Id: 556362-003

Date Collected: 06.22.17 11.30

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MGO

% Moisture:

Analyst: MGO

Date Prep: 07.05.17 14.30

Basis: Wet Weight

Seq Number: 3021560

Draft

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	211	5.00	mg/kg	07.06.17 02.05		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 06.30.17 08.00

Basis: Wet Weight

Seq Number: 3021374

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<14.9	14.9	mg/kg	06.30.17 19.09	U	1
C10-C28 Diesel Range Organics	C10C28DRO	53.6	14.9	mg/kg	06.30.17 19.09		1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<14.9	14.9	mg/kg	06.30.17 19.09	U	1
Total TPH	PHC635	53.6	14.9	mg/kg	06.30.17 19.09		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	107	%	70-135	06.30.17 19.09	
o-Terphenyl	84-15-1	107	%	70-135	06.30.17 19.09	



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **South - Surf**

Matrix: Soil

Date Received: 06.27.17 10.15

Lab Sample Id: 556362-003

Date Collected: 06.22.17 11.30

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.30.17 17.30

Basis: Wet Weight

Seq Number: 3021391

Draft

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	07.01.17 08.38	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	07.01.17 08.38	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	07.01.17 08.38	U	1
m_p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	07.01.17 08.38	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	07.01.17 08.38	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	07.01.17 08.38	U	1
Total BTEX		<0.00200	0.00200	mg/kg	07.01.17 08.38	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	114	%	80-120	07.01.17 08.38		
4-Bromofluorobenzene	460-00-4	101	%	80-120	07.01.17 08.38		



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **South - 1'**

Matrix: Soil

Date Received: 06.27.17 10.15

Lab Sample Id: 556362-004

Date Collected: 06.22.17 11.30

Sample Depth: 1 ft

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MGO

% Moisture:

Analyst: MGO

Date Prep: 07.05.17 14.30

Basis: Wet Weight

Seq Number: 3021560

Draft

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	125	5.00	mg/kg	07.05.17 16.20		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 06.30.17 08.00

Basis: Wet Weight

Seq Number: 3021374

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.30.17 19.29	U	1
C10-C28 Diesel Range Organics	C10C28DRO	16.7	15.0	mg/kg	06.30.17 19.29		1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	06.30.17 19.29	U	1
Total TPH	PHC635	16.7	15.0	mg/kg	06.30.17 19.29		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	111	%	70-135	06.30.17 19.29	
o-Terphenyl	84-15-1	112	%	70-135	06.30.17 19.29	



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **South - 1'**
Lab Sample Id: 556362-004

Matrix: Soil
Date Collected: 06.22.17 11.30

Date Received: 06.27.17 10.15
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3021391

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Draft

Date Prep: 06.30.17 17.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	07.01.17 08.55	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	07.01.17 08.55	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	07.01.17 08.55	U	1
m_p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	07.01.17 08.55	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	07.01.17 08.55	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	07.01.17 08.55	U	1
Total BTEX		<0.00202	0.00202	mg/kg	07.01.17 08.55	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	93	%	80-120	07.01.17 08.55		
4-Bromofluorobenzene	460-00-4	115	%	80-120	07.01.17 08.55		



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **East - Surf**

Matrix: Soil

Date Received: 06.27.17 10.15

Lab Sample Id: 556362-005

Date Collected: 06.22.17 11.30

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MGO

% Moisture:

Analyst: MGO

Date Prep: 07.05.17 14.30

Basis: Wet Weight

Seq Number: 3021560

Draft

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	458	4.98	mg/kg	07.05.17 16.27		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 06.30.17 08.00

Basis: Wet Weight

Seq Number: 3021374

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.30.17 19.49	U	1
C10-C28 Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	06.30.17 19.49	U	1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	06.30.17 19.49	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	06.30.17 19.49	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	106	%	70-135	06.30.17 19.49	
o-Terphenyl	84-15-1	106	%	70-135	06.30.17 19.49	



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **East - Surf**

Matrix: Soil

Date Received: 06.27.17 10.15

Lab Sample Id: 556362-005

Date Collected: 06.22.17 11.30

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.30.17 17.30

Basis: Wet Weight

Seq Number: 3021391

Draft

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	07.01.17 09.15	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	07.01.17 09.15	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	07.01.17 09.15	U	1
m_p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	07.01.17 09.15	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	07.01.17 09.15	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	07.01.17 09.15	U	1
Total BTEX		<0.00201	0.00201	mg/kg	07.01.17 09.15	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	107	%	80-120	07.01.17 09.15		
1,4-Difluorobenzene	540-36-3	92	%	80-120	07.01.17 09.15		



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **East - 1'**
Lab Sample Id: 556362-006

Matrix: Soil
Date Collected: 06.22.17 11.30

Date Received: 06.27.17 10.15
Sample Depth: 1 ft

Analytical Method: Chloride by EPA 300
Tech: MGO
Analyst: MGO
Seq Number: 3021560

Prep Method: E300P
% Moisture:
Basis: Wet Weight
Date Prep: 07.05.17 14.30

Draft

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	142	5.00	mg/kg	07.05.17 16.35		1

Analytical Method: TPH By SW8015 Mod
Tech: ARM
Analyst: ARM
Seq Number: 3021374

Prep Method: TX1005P
% Moisture:
Basis: Wet Weight
Date Prep: 06.30.17 08.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.30.17 20.09	U	1
C10-C28 Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	06.30.17 20.09	U	1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	06.30.17 20.09	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	06.30.17 20.09	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	109	%	70-135	06.30.17 20.09		
o-Terphenyl	84-15-1	111	%	70-135	06.30.17 20.09		



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **East - 1'**
Lab Sample Id: 556362-006

Matrix: Soil
Date Collected: 06.22.17 11.30

Date Received: 06.27.17 10.15
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3021391

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Draft

Date Prep: 06.30.17 17.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	07.01.17 09.31	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	07.01.17 09.31	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	07.01.17 09.31	U	1
m_p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	07.01.17 09.31	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	07.01.17 09.31	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	07.01.17 09.31	U	1
Total BTEX		<0.00199	0.00199	mg/kg	07.01.17 09.31	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	89	%	80-120	07.01.17 09.31		
1,4-Difluorobenzene	540-36-3	97	%	80-120	07.01.17 09.31		



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **West - Surf**

Matrix: Soil

Date Received: 06.27.17 10.15

Lab Sample Id: 556362-007

Date Collected: 06.22.17 11.30

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: MGO

% Moisture:

Analyst: MGO

Date Prep: 07.05.17 14.30

Basis: Wet Weight

Seq Number: 3021560

Draft

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	272	5.00	mg/kg	07.05.17 16.43		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 06.30.17 08.00

Basis: Wet Weight

Seq Number: 3021374

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.30.17 20.30	U	1
C10-C28 Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	06.30.17 20.30	U	1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	06.30.17 20.30	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	06.30.17 20.30	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	101	%	70-135	06.30.17 20.30	
o-Terphenyl	84-15-1	98	%	70-135	06.30.17 20.30	



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **West - Surf**

Matrix: Soil

Date Received: 06.27.17 10.15

Lab Sample Id: 556362-007

Date Collected: 06.22.17 11.30

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 06.30.17 17.30

Basis: Wet Weight

Seq Number: 3021391

Draft

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	07.01.17 09.47	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	07.01.17 09.47	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	07.01.17 09.47	U	1
m_p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	07.01.17 09.47	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	07.01.17 09.47	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	07.01.17 09.47	U	1
Total BTEX		<0.00201	0.00201	mg/kg	07.01.17 09.47	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	88	%	80-120	07.01.17 09.47		
4-Bromofluorobenzene	460-00-4	92	%	80-120	07.01.17 09.47		



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **West - 1'**
Lab Sample Id: 556362-008

Matrix: Soil
Date Collected: 06.22.17 11.30

Date Received: 06.27.17 10.15
Sample Depth: 1 ft

Analytical Method: Chloride by EPA 300
Tech: MGO
Analyst: MGO
Seq Number: 3021560

Prep Method: E300P
% Moisture:
Basis: Wet Weight
Date Prep: 07.05.17 14.30

Draft

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	129	5.00	mg/kg	07.05.17 16.50		1

Analytical Method: TPH By SW8015 Mod
Tech: ARM
Analyst: ARM
Seq Number: 3021374

Prep Method: TX1005P
% Moisture:
Basis: Wet Weight
Date Prep: 06.30.17 08.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	06.30.17 20.50	U	1
C10-C28 Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	06.30.17 20.50	U	1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	06.30.17 20.50	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	06.30.17 20.50	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	110	%	70-135	06.30.17 20.50		
o-Terphenyl	84-15-1	111	%	70-135	06.30.17 20.50		



Certificate of Analytical Results 556362



COG Operating LLC, Artesia, NM

Craig State #4H

Sample Id: **West - 1'**
Lab Sample Id: 556362-008

Matrix: Soil
Date Collected: 06.22.17 11.30

Date Received: 06.27.17 10.15
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3021391

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Draft

Date Prep: 06.30.17 17.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	07.01.17 10.04	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	07.01.17 10.04	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	07.01.17 10.04	U	1
m_p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	07.01.17 10.04	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	07.01.17 10.04	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	07.01.17 10.04	U	1
Total BTEX		<0.00200	0.00200	mg/kg	07.01.17 10.04	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	104	%	80-120	07.01.17 10.04		
4-Bromofluorobenzene	460-00-4	101	%	80-120	07.01.17 10.04		

- 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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QC Summary 556362

COG Operating LLC

Craig State #4H

Analytical Method: Chloride by EPA 300

Seq Number: 3021560

MB Sample Id: 727151-1-BLK

Matrix: Solid

LCS Sample Id: 727151-1-BKS

Prep Method: E300P

Date Prep: 07.05.17

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Chloride	<5.00	250	238	95	90-110	mg/kg	07.05.17 14:33	

Draft

Analytical Method: Chloride by EPA 300

Seq Number: 3021560

Parent Sample Id: 556361-001

Matrix: Soil

MS Sample Id: 556361-001 S

Prep Method: E300P

Date Prep: 07.05.17

MSD Sample Id: 556361-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	12.4	250	244	93	248	94	90-110	2	20	mg/kg	07.05.17 14:56	

Analytical Method: Chloride by EPA 300

Seq Number: 3021560

Parent Sample Id: 556745-001

Matrix: Soil

MS Sample Id: 556745-001 S

Prep Method: E300P

Date Prep: 07.05.17

MSD Sample Id: 556745-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	6.72	249	252	99	255	100	90-110	1	20	mg/kg	07.05.17 17:05	

Analytical Method: TPH By SW8015 Mod

Seq Number: 3021374

MB Sample Id: 727083-1-BLK

Matrix: Solid

LCS Sample Id: 727083-1-BKS

Prep Method: TX1005P

Date Prep: 06.30.17

LCSD Sample Id: 727083-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
C6-C10 Gasoline Range Hydrocarbons	<15.0	1000	1100	110	1080	108	70-135	2	35	mg/kg	06.30.17 10:31	
C10-C28 Diesel Range Organics	<15.0	1000	1020	102	1010	101	70-135	1	35	mg/kg	06.30.17 10:31	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	109		117		117		70-135	%	06.30.17 10:31
o-Terphenyl	112		118		116		70-135	%	06.30.17 10:31



QC Summary 556362

COG Operating LLC

Craig State #4H

Analytical Method: TPH By SW8015 Mod

Seq Number: 3021374

Parent Sample Id: 556359-009

Matrix: Soil

MS Sample Id: 556359-009 S

Prep Method: TX1005P

Date Prep: 06.30.17

MSD Sample Id: 556359-009 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
C6-C10 Gasoline Range Hydrocarbons	<15.0	999	1030	103	1060	106	70-135	3	35	mg/kg	06.30.17 12:38	
C10-C28 Diesel Range Organics	<15.0	999	1040	104	1060	106	70-135	2	35	mg/kg	06.30.17 12:38	
Surrogate			MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits			Units	Analysis Date	
1-Chlorooctane			107		111		70-135			%	06.30.17 12:38	
o-Terphenyl			109		109		70-135			%	06.30.17 12:38	

Analytical Method: BTEX by EPA 8021B

Seq Number: 3021391

MB Sample Id: 727129-1-BLK

Matrix: Solid

LCS Sample Id: 727129-1-BKS

Prep Method: SW5030B

Date Prep: 06.30.17

LCSD Sample Id: 727129-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00199	0.0996	0.0852	86	0.0832	83	70-130	2	35	mg/kg	07.01.17 03:00	
Toluene	<0.00199	0.0996	0.0808	81	0.0808	81	70-130	0	35	mg/kg	07.01.17 03:00	
Ethylbenzene	<0.00199	0.0996	0.0873	88	0.0891	89	71-129	2	35	mg/kg	07.01.17 03:00	
m_p-Xylenes	<0.00398	0.199	0.166	83	0.162	81	70-135	2	35	mg/kg	07.01.17 03:00	
o-Xylene	<0.00199	0.0996	0.0825	83	0.0897	90	71-133	8	35	mg/kg	07.01.17 03:00	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits			Units	Analysis Date	
1,4-Difluorobenzene	86		90		96		80-120			%	07.01.17 03:00	
4-Bromofluorobenzene	81		85		89		80-120			%	07.01.17 03:00	

Analytical Method: BTEX by EPA 8021B

Seq Number: 3021391

Parent Sample Id: 556362-001

Matrix: Soil

MS Sample Id: 556362-001 S

Prep Method: SW5030B

Date Prep: 06.30.17

MSD Sample Id: 556362-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00199	0.0996	0.0779	78	0.0706	70	70-130	10	35	mg/kg	07.01.17 03:32	
Toluene	<0.00199	0.0996	0.0789	79	0.0689	68	70-130	14	35	mg/kg	07.01.17 03:32	X
Ethylbenzene	<0.00199	0.0996	0.0784	79	0.0662	66	71-129	17	35	mg/kg	07.01.17 03:32	X
m_p-Xylenes	<0.00398	0.199	0.145	73	0.136	67	70-135	6	35	mg/kg	07.01.17 03:32	X
o-Xylene	<0.00199	0.0996	0.0809	81	0.0675	67	71-133	18	35	mg/kg	07.01.17 03:32	X
Surrogate			MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits			Units	Analysis Date	
1,4-Difluorobenzene			111		118		80-120			%	07.01.17 03:32	
4-Bromofluorobenzene			120		120		80-120			%	07.01.17 03:32	



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Page 1 of 1

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

Phoenix, Arizona (480-355-0900)

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Client / Reporting Information		Project Information		Xenco Quote #		Xenco Job #		Matrix Codes											
Company Name / Branch: COG Operating LLC		Project Name/Number: Craig State #4H																	
Company Address: 2407 PECOS Avenue Arlisia NM 88210		Project Location: Craig State #4H																	
Email: aaleb@concho.com dneal@concho.com raskell@concho.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	HCI	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	TPH	BTEX	Chloride	Field Comments	
1	Northern - Surf	Surf	6/26/17	11:30 AM	S	1									X	X	X		
2	Northern - 1'	1'													X	X	X		
3	South - Surf	Surf													X	X	X		
4	South - 1'	1'													X	X	X		
5	East - Surf	Surf													X	X	X		
6	East - 1'	1'													X	X	X		
7	West - Surf	Surf													X	X	X		
8	West - 1'	1'													X	X	X		
9																			
10																			
Turnaround Time (Business days)																			
Same Day TAT		☐ 5 Day TAT																	
Next Day EMERGENCY		☐ 7 Day TAT																	
2 Day EMERGENCY		☐ Contract TAT																	
3 Day EMERGENCY		☐ TRRP Checklist																	
TAT Starts Day received by Lab, if received by 5:00 pm																			
Relinquished by Sampler:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:	
1		6/26/17 10:00 AM		1. Aileen Balle		6-26-17 10:00 AM		2. Aileen Balle		6/26/17 11:45 AM		3. Aileen Balle		6/26/17 11:45 AM		4. Aileen Balle		6/26/17 11:45 AM	
Relinquished by:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:	
3				3				4				5				6			
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XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In



Client: COG Operating LLC

Date/ Time Received: 06/27/2017 10:15:00 AM

Work Order #: 556362

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)?	1.1
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seal present on shipping container/ cooler?	N/A
#5 *Custody Seals intact on shipping container/ cooler?	N/A
#6 Custody Seals intact on sample bottles?	N/A
#7 *Custody Seals Signed and dated?	N/A
#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)?	N/A
#21 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: Jessica Kramer
Jessica Kramer

Date: 06/27/2017

Checklist reviewed by: Kelsey Brooks
Kelsey Brooks

Date: 06/27/2017