

October 17, 2018

Mike Bratcher  
Oil Conservation Division, District 2  
811 S First St.  
Artesia, NM 88210

Shelly Tucker  
Bureau of Land Management, CFO  
620 E. Green Street  
Carlsbad, NM 88220

**Re: Closure Letter  
Patron 23 Federal #004H  
API #: 30-015-42451  
RP#: 2RP-4286  
Unit Letter A Section 23, Township 25S, Range 29E  
Eddy County, NM**

Mr. Bratcher/Ms. Tucker,

COG Production, LLC (COG) is pleased to submit for your consideration the following closure report for the Patron 23 Federal #004H. This release occurred on July 1, 2017. Following the release an assessment of impacted soils was conducted. A remediation work plan was submitted to and subsequently approved by the New Mexico Oil Conservation Division (NMOCD) and Bureau of Land Management (BLM). A copy of the approved work plan is attached in Appendix V.

## **BACKGROUND**

The Patron 23 Federal #004H release is located in Unit Letter A, Section 23, Township 25 South and Range 29 East in Eddy County, New Mexico. More specifically the latitude and longitude for this release are 32.127620 North and -103.956767 West.

On July 1, 2017, a poly flowline approximately 0.6 miles northwest of the Patron 23 Federal #004H location failed resulting in the release of approximately eight (8) barrels (bbls) of produced water into the pasture and lease road. A vacuum truck was able to recover approximately five (5) bbls of produced water.

Remediation activities were conducted in accordance with the approved work plan and NMOCD/BLM stipulations. The analytical results from the NMOCD and BLM stipulated confirmation soil sampling activities are summarized in the table below. A site diagram of the excavated area is presented in Appendix I.

## GROUNDWATER AND SITE RANKING

According to the United States Geological Survey (USGS) groundwater in the project vicinity is approximately one-hundred and forty (140) feet below ground surface (BGS) (Appendix II). No water well or surface water was observed within one-thousand (1,000) feet of the release site. Therefore the site ranking for this release is zero (0) based on the following:

Depth to groundwater	>100-feet
Distance to surface water body	>1000-feet
Wellhead Protection Area	>1000-feet

## Confirmation Soil Sampling Results

8/2/2018

Sample ID	Depth (feet)	Chloride (mg/kg)
T-1	10	9330
T-1	12	5440
T-1	14	2280
T-1	16	272
T-3	0	9330
T-3	1	1680
T-3	2	240
N.SIDEWALL	N/A	240
S.SIDEWALL	N/A	192
E.SIDEWALL	N/A	96
W.SIDEWALL	N/A	32

## REMEDIAL ACTIONS


- The areas of T-1 and T-3 were vertically delineated per NMOCD and BLM stipulations.
- The impacted area in the vicinity of sample locations T-1 and T-2 was excavated to a depth of four (4) feet BGS. A 20-mil liner was installed at the bottom of this excavation in order to encapsulate the remaining chloride impacts.
- The impacted area in the vicinity of sample location T-3 was excavated to a depth of two (2) feet BGS.
- All of the excavated material was hauled to an NMOCD approved solid waste disposal facility.
- The excavation was backfilled with clean “like” material, contoured to match the surrounding terrain and seeded with BLM #2 seed mixture.

## CLOSURE REQUEST

COG Production, LLC respectfully requests that the New Mexico Oil Conservation Division and the Bureau of Land Management grant closure approval for the Patron 23 Federal #004H incident that occurred on July 1, 2018.

Should you have any questions or concerns please do not hesitate to contact me.

Sincerely,



Sheldon L. Hitchcock  
HSE Coordinator  
[slhitchcock@concho.com](mailto:slhitchcock@concho.com)

Enclosed:

- Appendix I: Site Diagram
- Appendix II: Groundwater Data
- Appendix III: Initial C-141 (Copy)
- Appendix IV: Final C-141
- Appendix V: Work Plan (Copy)
- Appendix VI: Analytical Reports and Chain-of-Custody Forms



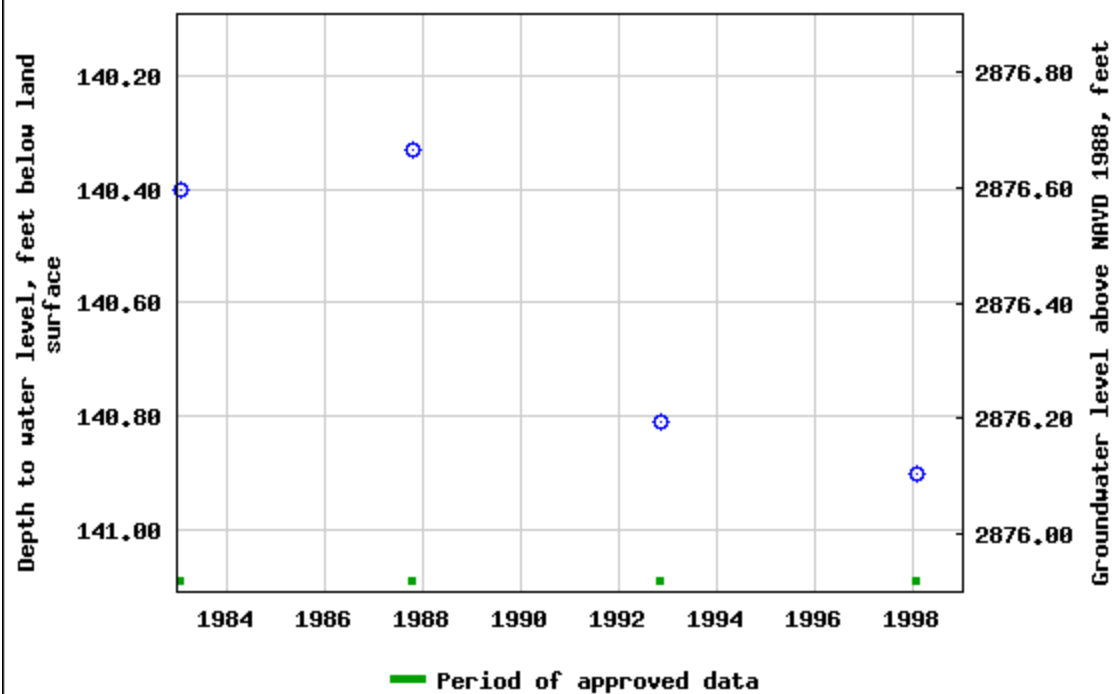
# APPENDIX I



# APPENDIX II



USGS 320739103584201 25S.29E.15.31134



# APPENDIX III

# NM OIL CONSERVATION

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

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## State of New Mexico NM OIL CONSERVATION

Energy Minerals and Natural Resources

Oil Conservation Division

1220 South St. Francis Dr.

Santa Fe, NM 87505

JUL 03 2017

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Form C-141  
Revised August 8, 2011

Copy to appropriate District Office in accordance with 19.15.29 NMAC.

### Release Notification and Corrective Action

NAB1719134-376

217955 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: Patron 23 Federal #004H	Facility Type: Flowline
Surface Owner: Federal	Mineral Owner: Federal
API No. 30-015-42451	

### LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
A	23	25S	29E	190	North	660	East	Eddy

Latitude 32.127620 Longitude -103.956767

### NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: 8 bbl.	Volume Recovered: 5 bbl.
Source of Release: Flowline	Date and Hour of Occurrence: July 1, 2017 10:00 am	Date and Hour of Discovery: July 1, 2017 10:00 am
Was Immediate Notice Given? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> Not Required	If YES, To Whom?	
By Whom?	Date and Hour:	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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 corrosion of a four-inch ball valve at a junction of three SWD lines. The ball valve was replaced.

Describe Area Affected and Cleanup Action Taken.\*

The release was within the pasture. A vacuum truck was dispatched to remove all freestanding fluids. Concho will have the spill area sampled to delineate any possible impact from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation activities.

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

Signature: <i>Rebecca Haskell</i>	OIL CONSERVATION DIVISION	
Printed Name: Rebecca Haskell	Approved by Environmental Specialist: <i>CM/BA W</i>	
Title: Senior HSE Coordinator	Approval Date: 7/10/17	Expiration Date: N/A
E-mail Address: rhaskell@concho.com	Conditions of Approval: <i>see attached</i>	Attached <input checked="" type="checkbox"/>
Date: July 3, 2017 Phone: 432-683-7443		

\* Attach Additional Sheets If Necessary

2RP-4286

# APPENDIX IV

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

State of New Mexico  
Energy Minerals and Natural Resources

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

Form C-141  
Revised April 3, 2017

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

## Release Notification and Corrective Action

### OPERATOR

☐ Initial Report ☒ Final Report

Name of Company: <b>COG Operating, LLC</b> (OGRID# 229137)	Contact: <b>Robert McNeill</b>	
Address: <b>600 West Illinois Avenue, Midland TX 79701</b>	Telephone No.: <b>432-683-7443</b>	
Facility Name: <b>Patron 23 Federal #004H</b>	Facility Type: <b>Flowline</b>	
Surface Owner: Federal	Mineral Owner: Federal	API No.: 30-015-42451

### LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
A	23	25S	29E	190	North	660	East	Eddy

Latitude: 32.127620 Longitude: -103.956767 NAD83

### NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: 8bbls	Volume Recovered: 5bbls
Source of Release: Flowline	Date and Hour of Occurrence: 7/1/2017 10:00am	Date and Hour of Discovery: 7/1/2017 10:00am
Was Immediate Notice Given? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> Not Required	If YES, To Whom?	
By Whom?	Date and Hour:	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	
If a Watercourse was Impacted, Describe Fully.*		
Describe Cause of Problem and Remedial Action Taken.* A four-inch ball valve failed due to corrosion. The valve was replaced.		
Describe Area Affected and Cleanup Action Taken.* The release affected the pasture and adjacent lease road. COG had the site evaluated and submitted a remediation work plan that was subsequently approved by NMOCD and BLM. The remediation was carried out in accordance with the approved work plan and stipulations.		
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.		

### OIL CONSERVATION DIVISION

Signature: <i>Sheldon Hitchcock</i>	Approved by Environmental Specialist:	
Printed Name: Sheldon L. Hitchcock		
Title: HSE Coordinator	Approval Date:	Expiration Date:
E-mail Address: slhitchcock@concho.com	Conditions of Approval:	Attached <input type="checkbox"/>
Date: 10/17/2018 Phone: 575-746-2010		

\* Attach Additional Sheets If Necessary



# APPENDIX V

# SITE INFORMATION

**Report Type: Work Plan      2RP-4286**

## General Site Information:

Site:	Patron 23 Federal #4H					
Company:	COG Operating LLC					
Section, Township and Range	Unit A	Sec. 23	T 25S	R 29E		
Lease Number:	API No. 30-015-42451					
County:	Eddy County					
GPS:	32.127620° N			103.956767° W		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	From intersection of HWY 285 & Longhorn Rd travel east on Longhorn Rd for 4.25 mi, turn northeast onto Pipeline Rd #1 and continue for 1.80 mi, turn north onto lease rd for 2.20 mi, turn east onto lease rd for 0.70 mi, turn east onto lease rd for 1.10 mi to location.					

## Release Data:

<b>Date Released:</b>	7/1/2017
<b>Type Release:</b>	Produced Water
<b>Source of Contamination:</b>	Flowline
<b>Fluid Released:</b>	8 bbls
<b>Fluids Recovered:</b>	5 bbls

## Official Communication:

<b>Name:</b>	Robert McNeil		Ike Tavarez
<b>Company:</b>	COG Operating, LLC		Tetra Tech
<b>Address:</b>	One Concho Center		4000 N. Big Spring
	600 W. Illinois Ave.		Ste 401
<b>City:</b>	Midland Texas, 79701		Midland, Texas
<b>Phone number:</b>	(432) 686-3023		(432) 687-8110
<b>Fax:</b>	(432) 684-7137		
<b>Email:</b>	<a href="mailto:rmcneil@conchoresources.com">rmcneil@conchoresources.com</a>		<a href="mailto:Ike.Tavarez@tetrattech.com">Ike.Tavarez@tetrattech.com</a>

## Ranking Criteria

<b>Depth to Groundwater:</b>	<b>Ranking Score</b>	<b>Site Data</b>
<50 ft	20	
50-99 ft	10	
>100 ft.	0	200' -225'
<b>WellHead Protection:</b>	<b>Ranking Score</b>	<b>Site Data</b>
Water Source <1,000 ft., Private <200 ft.	20	
Water Source >1,000 ft., Private >200 ft.	0	0
<b>Surface Body of Water:</b>	<b>Ranking Score</b>	<b>Site Data</b>
<200 ft.	20	
200 ft - 1,000 ft.	10	
>1,000 ft.	0	0
<b>Total Ranking Score:</b>		0

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



**TETRA TECH**

December 27, 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., Patron 23 Federal #4H, Unit A, Section 23, Township 25 South, Range 29 East, Eddy County, New Mexico. 2RP-4286.**

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 Patron 23 Federal #4H, Unit A, Section 23, Township 25 South, Range 29 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.127620°, W 103.956767°. 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 July 1, 2017, and released approximately eight (8) barrels of produced water due to a corroded ball valve on a flowline. A vacuum truck was used to remove all freestanding fluids and recovered approximately five (5) barrels of produced water. The release occurred in the pasture and migrated on the lease road, impacting an area measuring approximately 20' x 130'. The initial C-141 Form is included in Appendix A.

## **Groundwater**

No wells are listed within Section 23 in the New Mexico Office of the State Engineers database. According to the Chevron Texaco Groundwater Trend map, the average depth to groundwater in the area is between 200' and 225' 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, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed

**Tetra Tech**

4000 North Big Spring, Suite 401, Midland, TX 79705  
Tel 432.682.4559 Fax 432.682.3946 [www.tetrattech.com](http://www.tetrattech.com)



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

### **Soil Assessment and Analytical Results**

On August 8, 2017, COG personnel were onsite to evaluate and sample the release area. Three (3) trenches (T-1, T-2, and T-3) were installed to total depths of 9.0', 9.0', and 7.0', respectively. Trench (T-1) was installed in the pasture and T-2 was along the edge of the pasture and lease road. Trenches (T-3) was installed along the lease road. Additionally, four (4) sample points (North, South, East, and West) were installed to 1.0' below surface outside of the release footprint for 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.

Referring to Table 1, none of the samples in the areas of trenches (T-1, T-2, and T-3) showed TPH, benzene or total BTEX concentrations above the laboratory reporting limit or above the RRALs.

However, elevated chloride concentrations were detected in the shallow soils. The area of trench (T-1) showed chloride concentrations that increased with depth to 10,300 mg/kg at 3.0', before declining to 615 mg/kg at 8.0' below surface. The bottom trench sample collected at 9.0' showed a chloride spike of 1,050 mg/kg, possibly due to cross contamination of sloughing of the upper soils. The areas of trenches (T-2 and T-3) also showed chloride concentrations that increased with depth with chloride highs of 4,100 mg/kg at 2.0' and 8,220 mg/kg at 1.0' below surface, respectively. The chlorides then declined with depth and showed bottom trench concentrations of 340 mg/kg (T-2) and 214 mg/kg (T-3).

The areas of trenches (North, South, East, and West) showed benzene, total BTEX, and TPH concentrations below the RRALs. Additionally, no significant chloride concentrations were detected with chlorides ranging from <4.93 mg/kg (North) to 14.7 mg/kg (West) at 1.0' below surface.

### **Work Plan**

Based on the laboratory results, COG proposes to remove the chloride impacted soils as shown on Figure 4 and highlighted (green) on Table 1. The area of trench (T-1) in the pasture, and a portion of the area of trench (T-2), which was along the lease road, will be excavated to approximately 3.0'-4.0' below surface. During the excavation activities, a trench will be installed in the area of trench (T-1) to collect a sample at 9.0' below surface to confirm the chloride concentrations, if needed. Once the area of trench (T-1) is excavated to the appropriate depth, a 20 mil liner will be installed to prevent further vertical migration of the remaining chlorides.

Due to the heavy traffic in the area and the corresponding safety concerns, the area on the lease road will not be excavated. The chloride spike detected in the area of trench (T-3) will be resampled to confirm. However, the chloride spike detected does not appear to an environmental concern. The excavated areas will be backfilled with clean material to surface grade. All of the excavated material will be transported offsite for proper disposal.



**TETRA TECH**

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 Tavaréz,  
Senior Project Manager, P.G.

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

## Figures

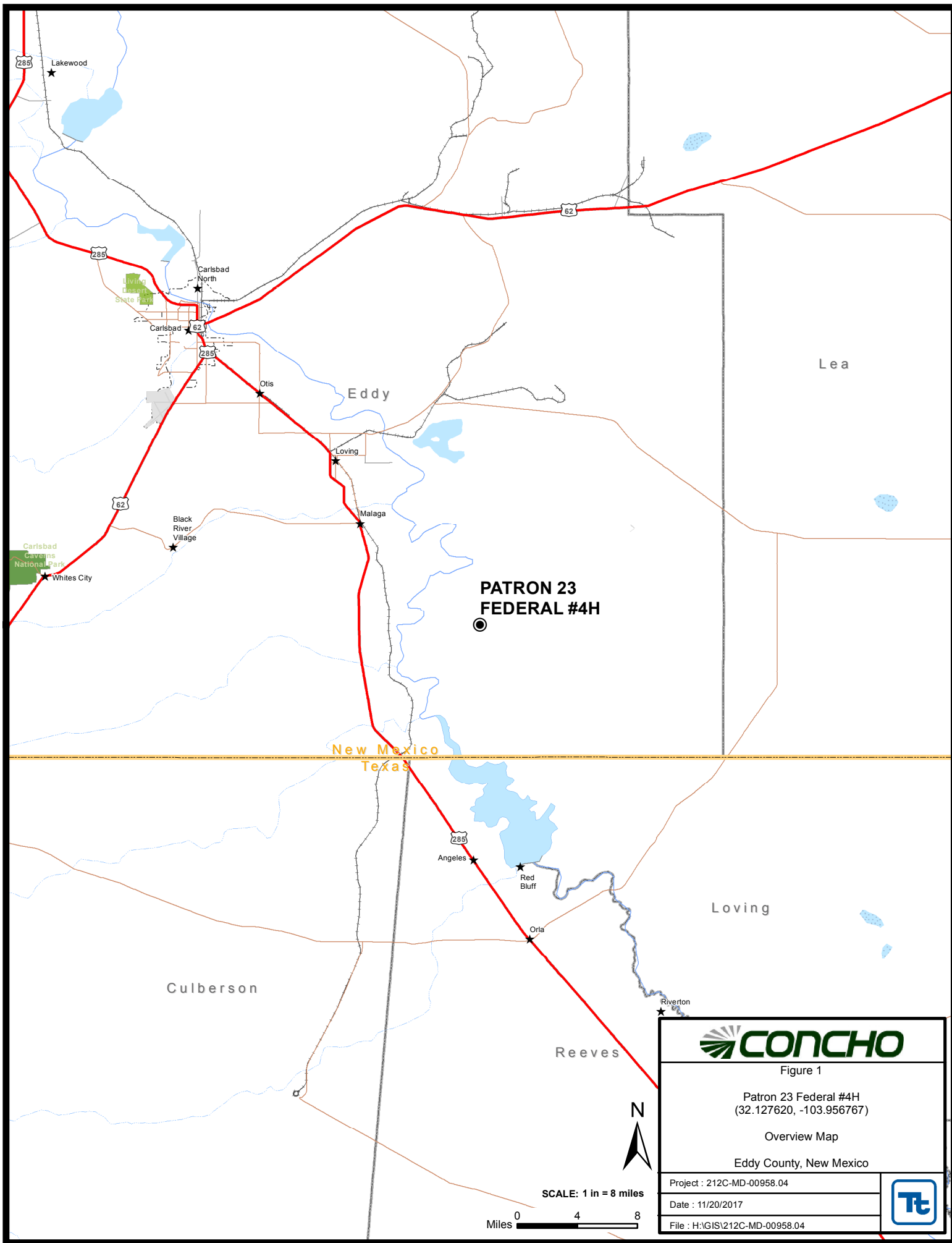


Figure 1

Patron 23 Federal #4H  
(32.127620, -103.956767)

Overview Map

Eddy County, New Mexico

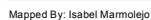
Project : 212C-MD-00958.04

Date : 11/20/2017

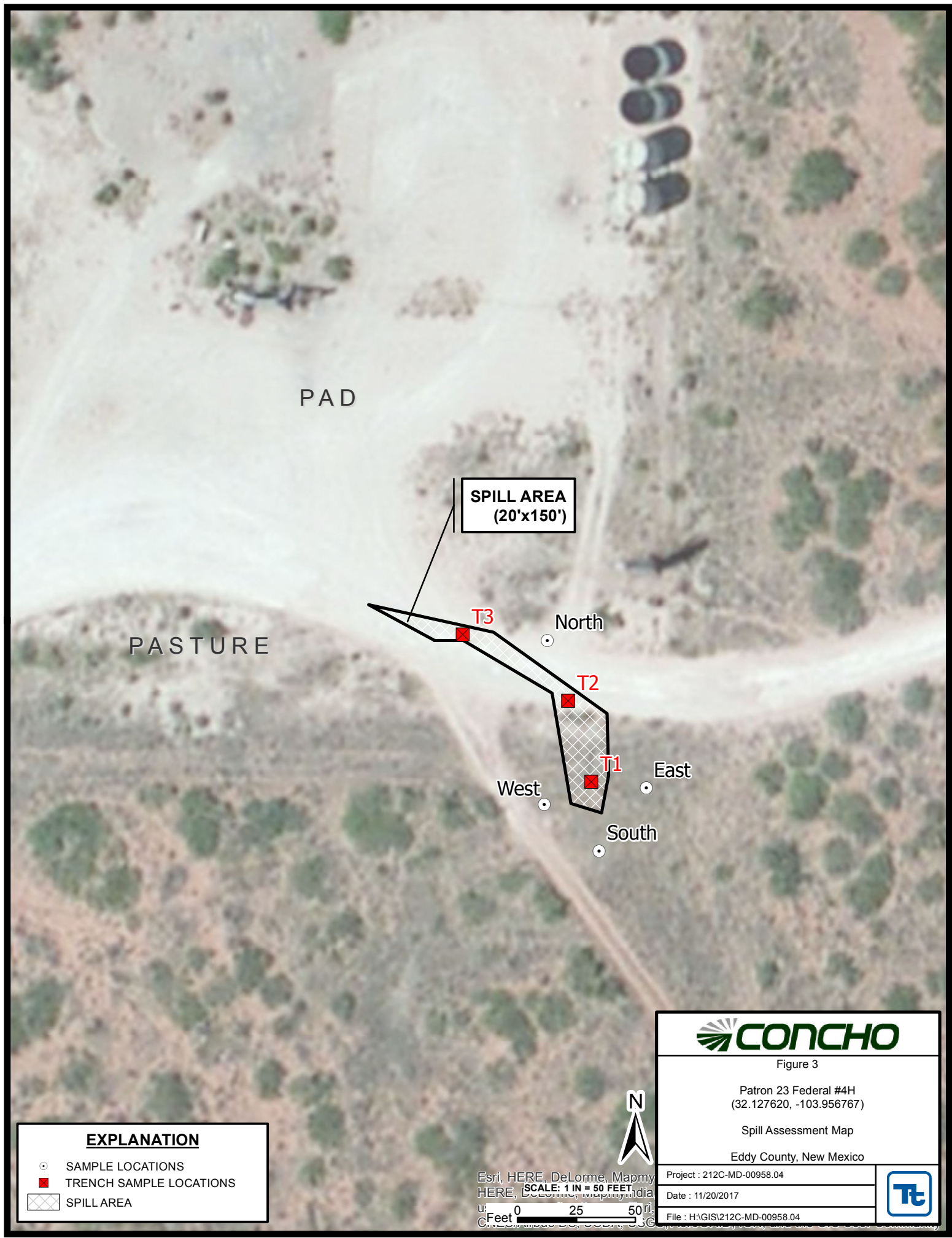
File : H:\GIS\212C-MD-00958.04













## Tables



**Table 1**  
**COG Operating LLC.**  
**Patron 23 Fed #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	8/8/2017	Surface	X		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	555
	"	1	X		<14.9	<14.9	<14.9	<14.9	<0.00198	<0.00198	<0.00198	<0.00198	<0.00198	3320
	"	2	X		<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	4650
	"	3	X		<15.0	<15.0	<15.0	<15.0	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	10300
	"	4	X		<15.0	<15.0	<15.0	<15.0	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	6210
	"	6	X		-	-	-	-	-	-	-	-	-	6290
	"	8	X		-	-	-	-	-	-	-	-	-	615
	"	9	X		<15.0	<15.0	<15.0	<15.0	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	1050
T-2	8/8/2017	Surface	X		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	697
	"	1	X		<14.9	<14.9	<14.9	<14.9	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	2,130
	"	2	X		<15.0	<15.0	<15.0	<15.0	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	4,100
	"	3	X		<15.0	<15.0	<15.0	<15.0	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	846
	"	4	X		<15.0	<15.0	<15.0	<15.0	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	664
	"	6	X		-	-	-	-	-	-	-	-	-	95.7
	"	9	X		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	340
T-3	8/8/2017	Surface	X		<15.0	<15.0	<15.0	<15.0	<0.00198	<0.00198	<0.00198	<0.00198	<0.00198	893
	"	1	X		<15.0	39.6	<15.0	39.6	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	8,220
	"	2	X		<14.9	<14.9	<14.9	<14.9	<0.00198	<0.00198	<0.00198	<0.00198	<0.00198	7.51
	"	3	X		<15.0	<15.0	<15.0	<15.0	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	14.2
	"	7	X		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	214
North	8/8/2017	Surface	X		<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	<4.95
	"	1	X		<15.0	<15.0	<15.0	<15.0	<0.00333	<0.00333	<0.00333	<0.00333	<0.00333	<4.93
South	8/8/2017	Surface	X		<14.9	<14.9	<14.9	<14.9	<0.00356	<0.00356	<0.00356	<0.00356	<0.00356	<4.94
	"	1	X		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	5.99
East	8/8/2017	Surface	X		<15.0	<15.0	<15.0	<15.0	<0.00364	<0.00364	<0.00364	<0.00364	<0.00364	<4.95
	"	1	X		<15.0	<15.0	<15.0	<15.0	<0.00353	<0.00353	<0.00353	<0.00353	<0.00353	<4.98
West	8/8/2017	Surface	X		<15.0	<15.0	<15.0	<15.0	<0.00347	<0.00347	<0.00347	0.00438	0.00438	<5.00
	"	1	X		<15.0	<15.0	<15.0	<15.0	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	14.7

(-) Not Analyzed

 Proposed Excavation Depths

 Proposed Liner Depths

## Appendix A

**NM OIL CONSERVATION**

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  
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ARTESIA DISTRICT

JUL 03 2017

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**State of New Mexico NM OIL CONSERVATION**

Energy Minerals and Natural Resources ARTESIA DISTRICT

Oil Conservation Division

1220 South St. Francis Dr.

Santa Fe, NM 87505

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Form C-141  
Revised August 8, 2011Copy to appropriate District Office in  
accordance with 19.15.29 NMAC.**Release Notification and Corrective Action**

NAB1719134-376

217955 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: Patron 23 Federal #004H	Facility Type: Flowline
Surface Owner: Federal	Mineral Owner: Federal
API No. 30-015-42451	

**LOCATION OF RELEASE**

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
A	23	25S	29E	190	North	660	East	Eddy

Latitude 32.127620 Longitude -103.956767

**NATURE OF RELEASE**

Type of Release: Produced Water	Volume of Release: 8 bbl.	Volume Recovered: 5 bbl.
Source of Release: Flowline	Date and Hour of Occurrence: July 1, 2017 10:00 am	Date and Hour of Discovery: July 1, 2017 10:00 am
Was Immediate Notice Given? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> Not Required	If YES, To Whom?	
By Whom?	Date and Hour:	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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 corrosion of a four-inch ball valve at a junction of three SWD lines. The ball valve was replaced.

Describe Area Affected and Cleanup Action Taken.\*

The release was within the pasture. 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>	<b>OIL CONSERVATION DIVISION</b>	
Printed Name: Rebecca Haskell	Approved by Environmental Specialist: <i>CM/BA W</i>	
Title: Senior HSE Coordinator	Approval Date: 7/10/17	Expiration Date: N/A
E-mail Address: rhaskell@concho.com	Conditions of Approval: <i>see attached</i>	Attached <input checked="" type="checkbox"/>
Date: July 3, 2017 Phone: 432-683-7443		

\* Attach Additional Sheets If Necessary

2RP-4286

## Appendix B

**Water Well Data**  
**Average Depth to Groundwater (ft)**  
**COG - Patron 23 Federal #4H**  
**Eddy County, New Mexico**

24 South			28 East		
6	70	5	30	4	30
3		2	55	1	60
7	8	50	9	10	11
12			17	20	73
18	17	16	15	14	13
42	29	18	52	34	
19	20	21	22	23	24
48					
30	29	28	27	26	25
31	32	33	34	35	36

24 South			29 East		
6		5	4	3	2
1					
7	8	9	10	11	12
160	17	4	16	15	14
18			18		
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

24 South			30 East		
6		5	4	3	2
1					
7	8	9	10	11	12
186					
18	17	16	15	14	13
19	231	20	21	22	23
150				400	
30	29	28	27	26	25
31	32	33	34	35	36

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

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

25 South			30 East		
6	5	4	3	2	295
7	264	8	9	295	10
					390
18	17	16	15	14	13
19	20	21	265	22	23
		268			24
30	29	28	27	26	25
31	32	33	34	35	36

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

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

26 South			30 East		
6	5	179	4	3	2
		180			1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
					180
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
<a href="#">C 01337</a>	C	ED		2	1	30	25S	29E		591926	3552642*	180	30	150
<a href="#">C 01880</a>	C	ED		3	3	2	06	25S	29E	592161	3558605*	85	40	45
<a href="#">C 02371</a>	C	ED		2	3	15	25S	29E		596741	3555106*	200	60	140
<a href="#">C 02459</a>	C	ED		4	4	1	02	25S	29E	598422	3558663*	150		
<a href="#">C 02518</a>	C	ED		3	4	08	25S	29E		593895	3556300*	462		
<a href="#">C 02680</a>	C	ED		2	3	15	25S	29E		596741	3555106*	200		
<a href="#">RA 07162 EXP2</a>		ED		1	3	1	10	25S	29E	596214	3557222*	55	40	15

Average Depth to Water: **42 feet**

Minimum Depth: **30 feet**

Maximum Depth: **60 feet**

**Record Count:** 7

**PLSS Search:**

**Township:** 25S **Range:** 29E

\*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 12:06 PM

WATER COLUMN/ AVERAGE DEPTH TO WATER

## Appendix C



# Certificate of Analysis Summary 560037

COG Operating LLC, Artesia, NM

Project Name: Patron 23 Fed #4H



Project Id:

Contact: Aaron Lieb

Project Location: Patron 23 Fed #4H

Date Received in Lab: Fri Aug-11-17 11:45 am

Report Date: 22-AUG-17

Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	560037-001	560037-002	560037-003	560037-004	560037-005	560037-006
	<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>	Aug-08-17 10:00	Aug-08-17 10:00	Aug-08-17 10:00	Aug-08-17 10:00	Aug-08-17 10:00	Aug-08-17 10:00
<b>BTEX by EPA 8021B</b>	<i>Extracted:</i>	Aug-15-17 08:00	Aug-16-17 09:20	Aug-16-17 09:20	Aug-15-17 08:00	Aug-16-17 09:20	Aug-16-17 09:20
	<i>Analyzed:</i>	Aug-16-17 15:01	Aug-17-17 01:12	Aug-17-17 01:31	Aug-16-17 15:01	Aug-17-17 01:50	Aug-17-17 02:08
	<i>Units/RL:</i>	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		RL	RL	RL	RL	RL	RL
Benzene		<0.00199 0.00199	<0.00333 0.00333	<0.00356 0.00356	<0.00200 0.00200	<0.00364 0.00364	<0.00353 0.00353
Toluene		<0.00199 0.00199	<0.00333 0.00333	<0.00356 0.00356	<0.00200 0.00200	<0.00364 0.00364	<0.00353 0.00353
Ethylbenzene		<0.00199 0.00199	<0.00333 0.00333	<0.00356 0.00356	<0.00200 0.00200	<0.00364 0.00364	<0.00353 0.00353
m,p-Xylenes		<0.00398 0.00398	<0.00667 0.00667	<0.00712 0.00712	<0.00399 0.00399	<0.00727 0.00727	<0.00707 0.00707
o-Xylene		<0.00199 0.00199	<0.00333 0.00333	<0.00356 0.00356	<0.00200 0.00200	<0.00364 0.00364	<0.00353 0.00353
Total Xylenes		<0.00199 0.00199	<0.00333 0.00333	<0.00356 0.00356	<0.00200 0.00200	<0.00364 0.00364	<0.00353 0.00353
Total BTEX		<0.00199 0.00199	<0.00333 0.00333	<0.00356 0.00356	<0.00200 0.00200	<0.00364 0.00364	<0.00353 0.00353
<b>Inorganic Anions by EPA 300/300.1</b>	<i>Extracted:</i>	Aug-21-17 11:00	Aug-21-17 11:00	Aug-21-17 11:00	Aug-21-17 11:00	Aug-21-17 11:00	Aug-21-17 11:00
	<i>Analyzed:</i>	Aug-21-17 19:33	Aug-21-17 19:56	Aug-21-17 20:04	Aug-21-17 20:11	Aug-21-17 20:19	Aug-21-17 20:42
	<i>Units/RL:</i>	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		RL	RL	RL	RL	RL	RL
Chloride		<4.95 4.95	<4.93 4.93	<4.94 4.94	5.99 4.95	<4.95 4.95	<4.98 4.98
<b>TPH By SW8015 Mod</b>	<i>Extracted:</i>	Aug-15-17 08:00	Aug-15-17 08:00	Aug-15-17 08:00	Aug-15-17 08:00	Aug-15-17 08:00	Aug-15-17 08:00
	<i>Analyzed:</i>	Aug-15-17 13:36	Aug-15-17 13:57	Aug-15-17 14:57	Aug-15-17 15:17	Aug-15-17 15:38	Aug-15-17 15:59
	<i>Units/RL:</i>	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		RL	RL	RL	RL	RL	RL
Gasoline Range Hydrocarbons (GRO)		<15.0 15.0	<15.0 15.0	<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0
Diesel Range Organics (DRO)		<15.0 15.0	<15.0 15.0	<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0
Oil Range Hydrocarbons (ORO)		<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	<14.9 14.9	<15.0 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 560037

COG Operating LLC, Artesia, NM

Project Name: Patron 23 Fed #4H



Project Id:

Contact: Aaron Lieb

Project Location: Patron 23 Fed #4H

Date Received in Lab: Fri Aug-11-17 11:45 am

Report Date: 22-AUG-17

Project Manager: Kelsey Brooks

<b>Analysis Requested</b>	<b>Lab Id:</b>	560037-007	560037-008				
	<b>Field Id:</b>	West- Surf	West- 1'				
	<b>Depth:</b>		1- ft				
	<b>Matrix:</b>	SOIL	SOIL				
	<b>Sampled:</b>	Aug-08-17 10:00	Aug-08-17 10:00				
<b>BTEX by EPA 8021B</b>	<b>Extracted:</b>	Aug-16-17 09:20	Aug-15-17 08:00				
	<b>Analyzed:</b>	Aug-17-17 02:27	Aug-16-17 15:01				
	<b>Units/RL:</b>	mg/kg RL	mg/kg RL				
Benzene		<0.00347 0.00347	<0.00202 0.00202				
Toluene		<0.00347 0.00347	<0.00202 0.00202				
Ethylbenzene		<0.00347 0.00347	<0.00202 0.00202				
m,p-Xylenes		<0.00694 0.00694	<0.00403 0.00403				
o-Xylene		0.00438 0.00347	<0.00202 0.00202				
Total Xylenes		0.00438 0.00347	<0.00202 0.00202				
Total BTEX		0.00438 0.00347	<0.00202 0.00202				
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Aug-21-17 11:00	Aug-21-17 11:00				
	<b>Analyzed:</b>	Aug-21-17 20:50	Aug-21-17 20:57				
	<b>Units/RL:</b>	mg/kg RL	mg/kg RL				
Chloride		<5.00 5.00	14.7 4.92				
<b>TPH By SW8015 Mod</b>	<b>Extracted:</b>	Aug-15-17 08:00	Aug-15-17 08:00				
	<b>Analyzed:</b>	Aug-15-17 16:19	Aug-15-17 16:39				
	<b>Units/RL:</b>	mg/kg RL	mg/kg RL				
Gasoline Range Hydrocarbons (GRO)		<15.0 15.0	<15.0 15.0				
Diesel Range Organics (DRO)		<15.0 15.0	<15.0 15.0				
Oil Range Hydrocarbons (ORO)		<15.0 15.0	<15.0 15.0				
Total TPH		<15.0 15.0	<15.0 15.0				

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

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

Kelsey Brooks  
Project Manager

# **Analytical Report 560037**

**for  
COG Operating LLC**

**Project Manager: Aaron Lieb**

**Patron 23 Fed #4H**

**22-AUG-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)



22-AUG-17

Project Manager: **Aaron Lieb**

**COG Operating LLC**

2407 Pecos Avenue

Artesia, NM 88210

Reference: XENCO Report No(s): **560037**

**Patron 23 Fed #4H**

Project Address: Patron 23 Fed #4H

**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) 560037. 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. 560037 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

**Kelsey Brooks**

Project Manager

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

*Certified and approved by numerous States and Agencies.*

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

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



## Sample Cross Reference 560037



COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
North- Surf	S	08-08-17 10:00		560037-001
North- 1'	S	08-08-17 10:00	1 ft	560037-002
South- Surf	S	08-08-17 10:00		560037-003
South- 1'	S	08-08-17 10:00	1 ft	560037-004
East-Surf	S	08-08-17 10:00		560037-005
East- 1'	S	08-08-17 10:00	1 ft	560037-006
West- Surf	S	08-08-17 10:00		560037-007
West- 1'	S	08-08-17 10:00	1 ft	560037-008



## CASE NARRATIVE

*Client Name: COG Operating LLC*

*Project Name: Patron 23 Fed #4H*

Project ID:

Work Order Number(s): 560037

Report Date: 22-AUG-17

Date Received: 08/11/2017

---

### **Sample receipt non conformances and comments:**

---

### **Sample receipt non conformances and comments per sample:**

None

#### **Analytical non conformances and comments:**

Batch: LBA-3025079 BTEX by EPA 8021B

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

Batch: LBA-3025345 BTEX by EPA 8021B

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

Samples affected are: 560037-007.

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





# Certificate of Analytical Results 560037



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **North- Surf**

Matrix: Soil

Date Received: 08.11.17 11.45

Lab Sample Id: 560037-001

Date Collected: 08.08.17 10.00

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: MNV

% Moisture:

Analyst: MGO

Date Prep: 08.21.17 11.00

Basis: Wet Weight

Seq Number: 3025634

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.95	4.95	mg/kg	08.21.17 19.33	U	1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 08.15.17 08.00

Basis: Wet Weight

Seq Number: 3025055

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.15.17 13.36	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.15.17 13.36	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.15.17 13.36	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.15.17 13.36	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	99	%	70-135	08.15.17 13.36	
o-Terphenyl	84-15-1	97	%	70-135	08.15.17 13.36	



# Certificate of Analytical Results 560037



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **North- Surf**

Matrix: Soil

Date Received: 08.11.17 11.45

Lab Sample Id: 560037-001

Date Collected: 08.08.17 10.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.15.17 08.00

Basis: Wet Weight

Seq Number: 3025079

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	08.16.17 15.01	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	08.16.17 15.01	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	08.16.17 15.01	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	08.16.17 15.01	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	08.16.17 15.01	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	08.16.17 15.01	U	1
Total BTEX		<0.00199	0.00199	mg/kg	08.16.17 15.01	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	105	%	80-120	08.16.17 15.01		
1,4-Difluorobenzene	540-36-3	90	%	80-120	08.16.17 15.01		



# Certificate of Analytical Results 560037



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **North- 1'**  
Lab Sample Id: 560037-002

Matrix: Soil  
Date Collected: 08.08.17 10.00

Date Received: 08.11.17 11.45  
Sample Depth: 1 ft

Analytical Method: Inorganic Anions by EPA 300/300.1

Tech: MNV

Analyst: MGO

Seq Number: 3025634

Date Prep: 08.21.17 11.00

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.93	4.93	mg/kg	08.21.17 19.56	U	1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3025055

Date Prep: 08.15.17 08.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.15.17 13.57	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.15.17 13.57	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.15.17 13.57	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.15.17 13.57	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	99	%	70-135	08.15.17 13.57	
o-Terphenyl	84-15-1	96	%	70-135	08.15.17 13.57	



# Certificate of Analytical Results 560037



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **North- 1'**  
Lab Sample Id: 560037-002

Matrix: Soil  
Date Collected: 08.08.17 10.00

Date Received: 08.11.17 11.45  
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.16.17 09.20

Basis: Wet Weight

Seq Number: 3025345

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00333	0.00333	mg/kg	08.17.17 01.12	U	1
Toluene	108-88-3	<0.00333	0.00333	mg/kg	08.17.17 01.12	U	1
Ethylbenzene	100-41-4	<0.00333	0.00333	mg/kg	08.17.17 01.12	U	1
m,p-Xylenes	179601-23-1	<0.00667	0.00667	mg/kg	08.17.17 01.12	U	1
o-Xylene	95-47-6	<0.00333	0.00333	mg/kg	08.17.17 01.12	U	1
Total Xylenes	1330-20-7	<0.00333	0.00333	mg/kg	08.17.17 01.12	U	1
Total BTEX		<0.00333	0.00333	mg/kg	08.17.17 01.12	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	83	%	80-120	08.17.17 01.12		
1,4-Difluorobenzene	540-36-3	97	%	80-120	08.17.17 01.12		



# Certificate of Analytical Results 560037



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **South- Surf**

Matrix: Soil

Date Received: 08.11.17 11.45

Lab Sample Id: 560037-003

Date Collected: 08.08.17 10.00

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: MNV

% Moisture:

Analyst: MGO

Date Prep: 08.21.17 11.00

Basis: Wet Weight

Seq Number: 3025634

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.94	4.94	mg/kg	08.21.17 20.04	U	1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 08.15.17 08.00

Basis: Wet Weight

Seq Number: 3025055

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	08.15.17 14.57	U	1
Diesel Range Organics (DRO)	C10C28DRO	<14.9	14.9	mg/kg	08.15.17 14.57	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<14.9	14.9	mg/kg	08.15.17 14.57	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	08.15.17 14.57	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	99	%	70-135	08.15.17 14.57	
o-Terphenyl	84-15-1	97	%	70-135	08.15.17 14.57	



# Certificate of Analytical Results 560037



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **South- Surf**

Matrix: Soil

Date Received: 08.11.17 11.45

Lab Sample Id: 560037-003

Date Collected: 08.08.17 10.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.16.17 09.20

Basis: Wet Weight

Seq Number: 3025345

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00356	0.00356	mg/kg	08.17.17 01.31	U	1
Toluene	108-88-3	<0.00356	0.00356	mg/kg	08.17.17 01.31	U	1
Ethylbenzene	100-41-4	<0.00356	0.00356	mg/kg	08.17.17 01.31	U	1
m,p-Xylenes	179601-23-1	<0.00712	0.00712	mg/kg	08.17.17 01.31	U	1
o-Xylene	95-47-6	<0.00356	0.00356	mg/kg	08.17.17 01.31	U	1
Total Xylenes	1330-20-7	<0.00356	0.00356	mg/kg	08.17.17 01.31	U	1
Total BTEX		<0.00356	0.00356	mg/kg	08.17.17 01.31	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1,4-Difluorobenzene	540-36-3	96	%	80-120	08.17.17 01.31		
4-Bromofluorobenzene	460-00-4	82	%	80-120	08.17.17 01.31		

## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: <b>South- 1'</b>	Matrix: Soil	Date Received: 08.11.17 11.45
Lab Sample Id: 560037-004	Date Collected: 08.08.17 10.00	Sample Depth: 1 ft
Analytical Method: Inorganic Anions by EPA 300/300.1		Prep Method: E300P
Tech: MNV		% Moisture:
Analyst: MGO	Date Prep: 08.21.17 11.00	Basis: Wet Weight
Seq Number: 3025634		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	5.99	4.95	mg/kg	08.21.17 20.11		1

Analytical Method: TPH By SW8015 Mod	Prep Method: TX1005P
Tech: ARM	% Moisture:
Analyst: ARM	Date Prep: 08.15.17 08.00
Seq Number: 3025055	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.15.17 15.17	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.15.17 15.17	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.15.17 15.17	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.15.17 15.17	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	99	%	70-135	08.15.17 15.17	
o-Terphenyl	84-15-1	93	%	70-135	08.15.17 15.17	



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **South- 1'**  
Lab Sample Id: 560037-004

Matrix: Soil  
Date Collected: 08.08.17 10.00

Date Received: 08.11.17 11.45  
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.15.17 08.00

Basis: Wet Weight

Seq Number: 3025079

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	08.16.17 15.01	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	08.16.17 15.01	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	08.16.17 15.01	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	08.16.17 15.01	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	08.16.17 15.01	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	08.16.17 15.01	U	1
Total BTEX		<0.00200	0.00200	mg/kg	08.16.17 15.01	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	106	%	80-120	08.16.17 15.01		
1,4-Difluorobenzene	540-36-3	93	%	80-120	08.16.17 15.01		



# Certificate of Analytical Results 560037



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **East-Surf**  
Lab Sample Id: 560037-005

Matrix: Soil  
Date Collected: 08.08.17 10.00

Date Received: 08.11.17 11.45

Analytical Method: Inorganic Anions by EPA 300/300.1

Tech: MNV

Analyst: MGO

Seq Number: 3025634

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 08.21.17 11.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.95	4.95	mg/kg	08.21.17 20.19	U	1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3025055

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Date Prep: 08.15.17 08.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.15.17 15.38	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.15.17 15.38	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.15.17 15.38	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.15.17 15.38	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	105	%	70-135	08.15.17 15.38	
o-Terphenyl	84-15-1	103	%	70-135	08.15.17 15.38	



# Certificate of Analytical Results 560037



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **East-Surf**  
Lab Sample Id: 560037-005

Matrix: Soil  
Date Collected: 08.08.17 10.00

Date Received: 08.11.17 11.45

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.16.17 09.20

Basis: Wet Weight

Seq Number: 3025345

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00364	0.00364	mg/kg	08.17.17 01.50	U	1
Toluene	108-88-3	<0.00364	0.00364	mg/kg	08.17.17 01.50	U	1
Ethylbenzene	100-41-4	<0.00364	0.00364	mg/kg	08.17.17 01.50	U	1
m,p-Xylenes	179601-23-1	<0.00727	0.00727	mg/kg	08.17.17 01.50	U	1
o-Xylene	95-47-6	<0.00364	0.00364	mg/kg	08.17.17 01.50	U	1
Total Xylenes	1330-20-7	<0.00364	0.00364	mg/kg	08.17.17 01.50	U	1
Total BTEX		<0.00364	0.00364	mg/kg	08.17.17 01.50	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	80	%	80-120	08.17.17 01.50		
1,4-Difluorobenzene	540-36-3	96	%	80-120	08.17.17 01.50		



# Certificate of Analytical Results 560037



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **East- 1'**  
Lab Sample Id: 560037-006

Matrix: Soil  
Date Collected: 08.08.17 10.00

Date Received: 08.11.17 11.45  
Sample Depth: 1 ft

Analytical Method: Inorganic Anions by EPA 300/300.1

Tech: MNV

Analyst: MGO

Seq Number: 3025634

Date Prep: 08.21.17 11.00

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.98	4.98	mg/kg	08.21.17 20.42	U	1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3025055

Date Prep: 08.15.17 08.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.15.17 15.59	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.15.17 15.59	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.15.17 15.59	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.15.17 15.59	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	98	%	70-135	08.15.17 15.59	
o-Terphenyl	84-15-1	93	%	70-135	08.15.17 15.59	



# Certificate of Analytical Results 560037



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **East- 1'**  
Lab Sample Id: 560037-006

Matrix: Soil  
Date Collected: 08.08.17 10.00

Date Received: 08.11.17 11.45  
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3025345

Date Prep: 08.16.17 09.20

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00353	0.00353	mg/kg	08.17.17 02.08	U	1
Toluene	108-88-3	<0.00353	0.00353	mg/kg	08.17.17 02.08	U	1
Ethylbenzene	100-41-4	<0.00353	0.00353	mg/kg	08.17.17 02.08	U	1
m,p-Xylenes	179601-23-1	<0.00707	0.00707	mg/kg	08.17.17 02.08	U	1
o-Xylene	95-47-6	<0.00353	0.00353	mg/kg	08.17.17 02.08	U	1
Total Xylenes	1330-20-7	<0.00353	0.00353	mg/kg	08.17.17 02.08	U	1
Total BTEX		<0.00353	0.00353	mg/kg	08.17.17 02.08	U	1
<b>Surrogate</b>		<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>
4-Bromofluorobenzene		460-00-4	81	%	80-120	08.17.17 02.08	
1,4-Difluorobenzene		540-36-3	96	%	80-120	08.17.17 02.08	



# Certificate of Analytical Results 560037



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **West- Surf**

Matrix: Soil

Date Received: 08.11.17 11.45

Lab Sample Id: 560037-007

Date Collected: 08.08.17 10.00

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: MNV

% Moisture:

Analyst: MGO

Date Prep: 08.21.17 11.00

Basis: Wet Weight

Seq Number: 3025634

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<5.00	5.00	mg/kg	08.21.17 20.50	U	1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 08.15.17 08.00

Basis: Wet Weight

Seq Number: 3025055

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.15.17 16.19	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.15.17 16.19	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.15.17 16.19	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.15.17 16.19	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	98	%	70-135	08.15.17 16.19	
o-Terphenyl	84-15-1	95	%	70-135	08.15.17 16.19	



# Certificate of Analytical Results 560037



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **West- Surf**

Matrix: Soil

Date Received: 08.11.17 11.45

Lab Sample Id: 560037-007

Date Collected: 08.08.17 10.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.16.17 09.20

Basis: Wet Weight

Seq Number: 3025345

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00347	0.00347	mg/kg	08.17.17 02.27	U	1
Toluene	108-88-3	<0.00347	0.00347	mg/kg	08.17.17 02.27	U	1
Ethylbenzene	100-41-4	<0.00347	0.00347	mg/kg	08.17.17 02.27	U	1
m,p-Xylenes	179601-23-1	<0.00694	0.00694	mg/kg	08.17.17 02.27	U	1
<b>o-Xylene</b>	95-47-6	<b>0.00438</b>	0.00347	mg/kg	08.17.17 02.27		1
<b>Total Xylenes</b>	1330-20-7	<b>0.00438</b>	0.00347	mg/kg	08.17.17 02.27		1
<b>Total BTEX</b>		<b>0.00438</b>	0.00347	mg/kg	08.17.17 02.27		1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1,4-Difluorobenzene	540-36-3	109	%	80-120	08.17.17 02.27		
4-Bromofluorobenzene	460-00-4	55	%	80-120	08.17.17 02.27	**	



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: <b>West- 1'</b>	Matrix: Soil	Date Received: 08.11.17 11.45
Lab Sample Id: 560037-008	Date Collected: 08.08.17 10.00	Sample Depth: 1 ft
Analytical Method: Inorganic Anions by EPA 300/300.1		Prep Method: E300P
Tech: MNV		% Moisture:
Analyst: MGO	Date Prep: 08.21.17 11.00	Basis: Wet Weight
Seq Number: 3025634		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	14.7	4.92	mg/kg	08.21.17 20.57		1

Analytical Method: TPH By SW8015 Mod		Prep Method: TX1005P
Tech: ARM		% Moisture:
Analyst: ARM	Date Prep: 08.15.17 08.00	Basis: Wet Weight
Seq Number: 3025055		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.15.17 16.39	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.15.17 16.39	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.15.17 16.39	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.15.17 16.39	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	98	%	70-135	08.15.17 16.39	
o-Terphenyl	84-15-1	94	%	70-135	08.15.17 16.39	

## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **West- 1'**  
Lab Sample Id: 560037-008

Matrix: Soil  
Date Collected: 08.08.17 10.00

Date Received: 08.11.17 11.45  
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.15.17 08.00

Basis: Wet Weight

Seq Number: 3025079

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	08.16.17 15.01	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	08.16.17 15.01	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	08.16.17 15.01	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	08.16.17 15.01	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	08.16.17 15.01	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	08.16.17 15.01	U	1
Total BTEX		<0.00202	0.00202	mg/kg	08.16.17 15.01	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	107	%	80-120	08.16.17 15.01		
1,4-Difluorobenzene	540-36-3	94	%	80-120	08.16.17 15.01		

- 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 560037

### COG Operating LLC

Patron 23 Fed #4H

**Analytical Method: Inorganic Anions by EPA 300/300.1**

Seq Number: 3025634

Matrix: Solid

Prep Method: E300P

MB Sample Id: 729569-1-BLK

LCS Sample Id: 729569-1-BKS

Date Prep: 08.21.17

LCSD Sample Id: 729569-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<4.98	249	257	103	252	101	90-110	2	20	mg/kg	08.21.17 19:18	

**Analytical Method: Inorganic Anions by EPA 300/300.1**

Seq Number: 3025634

Matrix: Soil

Prep Method: E300P

Parent Sample Id: 560037-001

MS Sample Id: 560037-001 S

Date Prep: 08.21.17

MSD Sample Id: 560037-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<4.95	248	267	108	265	107	90-110	1	20	mg/kg	08.21.17 19:41	

**Analytical Method: Inorganic Anions by EPA 300/300.1**

Seq Number: 3025634

Matrix: Soil

Prep Method: E300P

Parent Sample Id: 560038-007

MS Sample Id: 560038-007 S

Date Prep: 08.21.17

MSD Sample Id: 560038-007 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	615	248	811	79	833	88	90-110	3	20	mg/kg	08.21.17 21:28	X

**Analytical Method: TPH By SW8015 Mod**

Seq Number: 3025055

Matrix: Solid

Prep Method: TX1005P

MB Sample Id: 729383-1-BLK

LCS Sample Id: 729383-1-BKS

Date Prep: 08.15.17

LCSD Sample Id: 729383-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	874	87	849	85	70-135	3	35	mg/kg	08.15.17 09:30	
Diesel Range Organics (DRO)	<15.0	1000	1050	105	1050	105	70-135	0	35	mg/kg	08.15.17 09:30	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	98		108		105		70-135	%	08.15.17 09:30
o-Terphenyl	95		122		117		70-135	%	08.15.17 09:30



## QC Summary 560037

### COG Operating LLC

Patron 23 Fed #4H

Analytical Method: TPH By SW8015 Mod

Seq Number: 3025055

Parent Sample Id: 560035-001

Matrix: Soil

MS Sample Id: 560035-001 S

Prep Method: TX1005P

Date Prep: 08.15.17

MSD Sample Id: 560035-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	997	850	85	905	91	70-135	6	35	mg/kg	08.15.17 10:31	
Diesel Range Organics (DRO)	<15.0	997	1090	109	1050	105	70-135	4	35	mg/kg	08.15.17 10:31	

#### Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	118		103		70-135	%	08.15.17 10:31
o-Terphenyl	118		114		70-135	%	08.15.17 10:31

Analytical Method: BTEX by EPA 8021B

Seq Number: 3025079

MB Sample Id: 729398-1-BLK

Matrix: Solid

LCS Sample Id: 729398-1-BKS

Prep Method: SW5030B

Date Prep: 08.15.17

LCSD Sample Id: 729398-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.0998	0.122	122	0.121	120	70-130	1	35	mg/kg	08.16.17 15:01	
Toluene	<0.00200	0.0998	0.123	123	0.120	119	70-130	2	35	mg/kg	08.16.17 15:01	
Ethylbenzene	<0.00200	0.0998	0.116	116	0.113	112	71-129	3	35	mg/kg	08.16.17 15:01	
m,p-Xylenes	<0.00399	0.200	0.237	119	0.233	116	70-135	2	35	mg/kg	08.16.17 15:01	
o-Xylene	<0.00200	0.0998	0.118	118	0.116	115	71-133	2	35	mg/kg	08.16.17 15:01	

#### Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	96		116		106		80-120	%	08.16.17 15:01
4-Bromofluorobenzene	109		104		102		80-120	%	08.16.17 15:01

Analytical Method: BTEX by EPA 8021B

Seq Number: 3025345

MB Sample Id: 729520-1-BLK

Matrix: Solid

LCS Sample Id: 729520-1-BKS

Prep Method: SW5030B

Date Prep: 08.16.17

LCSD Sample Id: 729520-1-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	0.124	124	0.124	124	70-130	0	35	mg/kg	08.17.17 11:56	
Toluene	<0.00199	0.0996	0.122	122	0.123	123	70-130	1	35	mg/kg	08.17.17 11:56	
Ethylbenzene	<0.00199	0.0996	0.121	121	0.121	121	71-129	0	35	mg/kg	08.17.17 11:56	
m,p-Xylenes	<0.00398	0.199	0.237	119	0.237	119	70-135	0	35	mg/kg	08.17.17 11:56	
o-Xylene	<0.00199	0.0996	0.115	115	0.116	116	71-133	1	35	mg/kg	08.17.17 11:56	

#### Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	94		98		95		80-120	%	08.17.17 11:56
4-Bromofluorobenzene	82		86		85		80-120	%	08.17.17 11:56



## QC Summary 560037

### COG Operating LLC

Patron 23 Fed #4H

**Analytical Method:** BTEX by EPA 8021B

Seq Number: 3025079

Parent Sample Id: 559928-001

Matrix: Soil

MS Sample Id: 559928-001 S

Prep Method: SW5030B

Date Prep: 08.15.17

MSD Sample Id: 559928-001 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	0.0750	75	0.0588	59	70-130	24	35	mg/kg	08.16.17 15:01	X
Toluene	<0.00200	0.0998	0.0516	52	0.0386	39	70-130	29	35	mg/kg	08.16.17 15:01	X
Ethylbenzene	<0.00200	0.0998	0.0345	35	0.0242	24	71-129	35	35	mg/kg	08.16.17 15:01	X
m,p-Xylenes	<0.00399	0.200	0.0673	34	0.0472	24	70-135	35	35	mg/kg	08.16.17 15:01	X
o-Xylene	<0.00200	0.0998	0.0304	30	0.0241	24	71-133	23	35	mg/kg	08.16.17 15:01	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	108		110		80-120	%	08.16.17 15:01
4-Bromofluorobenzene	102		98		80-120	%	08.16.17 15:01

**Analytical Method:** BTEX by EPA 8021B

Seq Number: 3025345

Parent Sample Id: 560035-001

Matrix: Soil

MS Sample Id: 560035-001 S

Prep Method: SW5030B

Date Prep: 08.16.17

MSD Sample Id: 560035-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00348	0.174	0.186	107	0.176	101	70-130	6	35	mg/kg	08.17.17 12:32	
Toluene	<0.00348	0.174	0.176	101	0.165	94	70-130	6	35	mg/kg	08.17.17 12:32	
Ethylbenzene	<0.00348	0.174	0.162	93	0.151	86	71-129	7	35	mg/kg	08.17.17 12:32	
m,p-Xylenes	<0.00697	0.348	0.313	90	0.291	83	70-135	7	35	mg/kg	08.17.17 12:32	
o-Xylene	<0.00348	0.174	0.154	89	0.145	83	71-133	6	35	mg/kg	08.17.17 12:32	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	95		98		80-120	%	08.17.17 12:32
4-Bromofluorobenzene	83		87		80-120	%	08.17.17 12:32





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Xenco Job #

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Client / Reporting Information				Project Information				Analytical Information				Matrix Codes						
Company Name / Branch: COG Operating LLC				Project Name/Number: Patron 23 Fed #4H														
Company Address: 2407 PECOS Avenue Artesia NM 88210				Project Location:														
Email: alleb@concho.com dnel2@concho.com naskell@concho.com Phone No: 575-748-1553				Patron 23 Fed #4H 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	HCI	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	TPH/ EXTENDED	BTEX	Chloride	Field Comments
1	North - Surface	1'	8-17	10:00 AM	S	1									X	X	X	
2	South - Surface	1'				1									X	X	X	
3	South - Surface	1'				1									X	X	X	
4	East - Surface	1'				1									X	X	X	
5	East - Surface	1'				1									X	X	X	
6	West - Surface	1'				1									X	X	X	
7	West - Surface	1'				1									X	X	X	
8	West - Surface	1'				1									X	X	X	
9																		
10																		
Turnaround Time (Business days)																		
Data Deliverable Information																		
Notes:																		
Same Day TAT <input type="checkbox"/> 5 Day TAT <input type="checkbox"/> Level II Std QC <input type="checkbox"/> Level IV (Full Data Pkg /raw data) <input type="checkbox"/>																		
Next Day EMERGENCY <input type="checkbox"/> 7 Day TAT <input type="checkbox"/> Level III Std QC+ Forms <input type="checkbox"/> TRRP Level IV <input type="checkbox"/>																		
2 Day EMERGENCY <input type="checkbox"/> Contract TAT <input type="checkbox"/> Level 3 (CLP Forms) <input type="checkbox"/> UST / RG -411 <input type="checkbox"/>																		
3 Day EMERGENCY <input type="checkbox"/> TRRP Checklist <input type="checkbox"/>																		
TAT Starts Day received by Lab, if received by 5:00 pm																		
SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY																		
FED-EX / UPS: Tracking #																		
Relinquished by Sampler: Date Time: 8-17 10:00 AM Received By: 2nd Auditor 8-17 10:45 AM Relinquished By: 2nd Auditor 8-17 11:45 AM																		
Relinquished by: Date Time: 8-17 14:20 Received By: 4 Cusody Seal # 4 Preserved where applicable																		
Relinquished by: Date Time: 8-17 14:20 Received By: 4																		

Notice: Notice of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco. Its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable for any losses or expenses incurred by the Client if such losses are due to circumstances beyond the control of Xenco. A minimum charge of \$75 will be applied to each project. Xenco's liability will be limited to the cost of samples. Any samples received will be enforced unless previously negotiated under a fully executed client contract.

Temp: 3.8 IR ID: R-8  
CF: (0-6: -0.2°C)  
Corrected Temp: 3.6





# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In



Client: COG Operating LLC

Date/ Time Received: 08/11/2017 11:45:00 AM

Work Order #: 560037

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

### Sample Receipt Checklist

### Comments

#1 *Temperature of cooler(s)?	3.6
#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: 08/14/2017

Checklist reviewed by: Kelsey Brooks  
Kelsey Brooks

Date: 08/14/2017



# Certificate of Analysis Summary 560038

COG Operating LLC, Artesia, NM

Project Name: Patron 23 Fed #4H



Project Id:

Contact: Aaron Lieb

Project Location: Patron 23 Fed #4H

Date Received in Lab: Fri Aug-11-17 11:45 am

Report Date: 22-AUG-17

Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	560038-001	560038-002	560038-003	560038-004	560038-005	560038-006
	<i>Field Id:</i>	T1-Surface	T1-1'	T1-2'	T1-3'	T1-4'	T1-6'
	<i>Depth:</i>		1- ft	2- ft	3- ft	4- ft	6- ft
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Aug-08-17 10:30	Aug-08-17 10:30	Aug-08-17 10:30	Aug-08-17 10:30	Aug-08-17 10:30	Aug-08-17 10:30
<b>BTEX by EPA 8021B</b>	<i>Extracted:</i>	Aug-16-17 08:00	Aug-16-17 08:00	Aug-16-17 08:00	Aug-16-17 08:00	Aug-16-17 08:00	
	<i>Analyzed:</i>	Aug-16-17 10:28	Aug-16-17 10:47	Aug-16-17 11:06	Aug-16-17 11:25	Aug-16-17 11:44	
	<i>Units/RL:</i>	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
		RL	RL	RL	RL	RL	
Benzene		<0.00200 0.00200	<0.00198 0.00198	<0.00199 0.00199	<0.00201 0.00201	<0.00201 0.00201	
Toluene		<0.00200 0.00200	<0.00198 0.00198	<0.00199 0.00199	<0.00201 0.00201	<0.00201 0.00201	
Ethylbenzene		<0.00200 0.00200	<0.00198 0.00198	<0.00199 0.00199	<0.00201 0.00201	<0.00201 0.00201	
m,p-Xylenes		<0.00399 0.00399	<0.00397 0.00397	<0.00398 0.00398	<0.00402 0.00402	<0.00402 0.00402	
o-Xylene		<0.00200 0.00200	<0.00198 0.00198	<0.00199 0.00199	<0.00201 0.00201	<0.00201 0.00201	
Total Xylenes		<0.00200 0.00200	<0.00198 0.00198	<0.00199 0.00199	<0.00201 0.00201	<0.00201 0.00201	
Total BTEX		<0.00200 0.00200	<0.00198 0.00198	<0.00199 0.00199	<0.00201 0.00201	<0.00201 0.00201	
<b>Inorganic Anions by EPA 300/300.1</b>	<i>Extracted:</i>	Aug-21-17 11:00	Aug-21-17 11:00	Aug-21-17 11:00	Aug-21-17 11:00	Aug-21-17 11:00	Aug-21-17 11:00
	<i>Analyzed:</i>	Aug-21-17 21:05	Aug-21-17 21:13	Aug-21-17 21:43	Aug-21-17 21:51	Aug-21-17 22:14	Aug-21-17 22:22
	<i>Units/RL:</i>	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		RL	RL	RL	RL	RL	RL
Chloride		555 4.96	3320 24.8	4650 49.7	10300 98.4	6210 49.2	6290 49.0
<b>TPH By SW8015 Mod</b>	<i>Extracted:</i>	Aug-15-17 08:00	Aug-15-17 08:00	Aug-15-17 08:00	Aug-15-17 08:00	Aug-15-17 16:00	
	<i>Analyzed:</i>	Aug-15-17 16:59	Aug-15-17 17:19	Aug-15-17 17:40	Aug-15-17 18:00	Aug-16-17 02:51	
	<i>Units/RL:</i>	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
		RL	RL	RL	RL	RL	
Gasoline Range Hydrocarbons (GRO)		<15.0 15.0	<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0	
Diesel Range Organics (DRO)		<15.0 15.0	<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0	
Oil Range Hydrocarbons (ORO)		<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	<14.9 14.9	<15.0 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.

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Kelsey Brooks  
Project Manager



# Certificate of Analysis Summary 560038

COG Operating LLC, Artesia, NM

Project Name: Patron 23 Fed #4H



Project Id:

Contact: Aaron Lieb

Project Location: Patron 23 Fed #4H

Date Received in Lab: Fri Aug-11-17 11:45 am

Report Date: 22-AUG-17

Project Manager: Kelsey Brooks

<b>Analysis Requested</b>	<b>Lab Id:</b>	560038-007	560038-008				
	<b>Field Id:</b>	T1-8'	T1-9'				
	<b>Depth:</b>	8- ft	9- ft				
	<b>Matrix:</b>	SOIL	SOIL				
	<b>Sampled:</b>	Aug-08-17 10:30	Aug-08-17 10:30				
<b>BTEX by EPA 8021B</b>	<b>Extracted:</b>		Aug-16-17 08:00				
	<b>Analyzed:</b>		Aug-16-17 12:02				
	<b>Units/RL:</b>		mg/kg RL				
	Benzene		<0.00202 0.00202				
	Toluene		<0.00202 0.00202				
Ethylbenzene			<0.00202 0.00202				
m,p-Xylenes			<0.00404 0.00404				
o-Xylene			<0.00202 0.00202				
Total Xylenes			<0.00202 0.00202				
Total BTEX			<0.00202 0.00202				
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Aug-21-17 11:00	Aug-21-17 11:00				
	<b>Analyzed:</b>	Aug-21-17 21:20	Aug-21-17 22:30				
	<b>Units/RL:</b>	mg/kg RL	mg/kg RL				
	Chloride	615 4.96	1050 4.93				
<b>TPH By SW8015 Mod</b>	<b>Extracted:</b>		Aug-15-17 16:00				
	<b>Analyzed:</b>		Aug-16-17 03:11				
	<b>Units/RL:</b>		mg/kg RL				
	Gasoline Range Hydrocarbons (GRO)		<15.0 15.0				
	Diesel Range Organics (DRO)		<15.0 15.0				
Oil Range Hydrocarbons (ORO)			<15.0 15.0				
Total TPH			<15.0 15.0				

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

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Kelsey Brooks  
Project Manager

# **Analytical Report 560038**

**for  
COG Operating LLC**

**Project Manager: Aaron Lieb**

**Patron 23 Fed #4H**

**22-AUG-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)



22-AUG-17

Project Manager: **Aaron Lieb**

**COG Operating LLC**

2407 Pecos Avenue

Artesia, NM 88210

Reference: XENCO Report No(s): **560038**

**Patron 23 Fed #4H**

Project Address: Patron 23 Fed #4H

**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) 560038. 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. 560038 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

**Kelsey Brooks**

Project Manager

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

*Certified and approved by numerous States and Agencies.*

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## Sample Cross Reference 560038



**COG Operating LLC, Artesia, NM**

Patron 23 Fed #4H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
T1-Surface	S	08-08-17 10:30		560038-001
T1-1'	S	08-08-17 10:30	1 ft	560038-002
T1-2'	S	08-08-17 10:30	2 ft	560038-003
T1-3'	S	08-08-17 10:30	3 ft	560038-004
T1-4'	S	08-08-17 10:30	4 ft	560038-005
T1-6'	S	08-08-17 10:30	6 ft	560038-006
T1-8'	S	08-08-17 10:30	8 ft	560038-007
T1-9'	S	08-08-17 10:30	9 ft	560038-008



## CASE NARRATIVE

*Client Name: COG Operating LLC*

*Project Name: Patron 23 Fed #4H*

Project ID:  
Work Order Number(s): 560038

Report Date: 22-AUG-17  
Date Received: 08/11/2017

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### **Sample receipt non conformances and comments:**

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#### **Sample receipt non conformances and comments per sample:**

None

#### **Analytical non conformances and comments:**

Batch: LBA-3025343 BTEX by EPA 8021B

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

Batch: LBA-3025634 Inorganic Anions by EPA 300/300.1

Lab Sample ID 560038-007 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 560038-001, -002, -003, -004, -005, -006, -007, -008.

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





# Certificate of Analytical Results 560038



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **T1-Surface**

Matrix: Soil

Date Received: 08.11.17 11.45

Lab Sample Id: 560038-001

Date Collected: 08.08.17 10.30

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: MNV

% Moisture:

Analyst: MGO

Date Prep: 08.21.17 11.00

Basis: Wet Weight

Seq Number: 3025634

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	555	4.96	mg/kg	08.21.17 21.05		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 08.15.17 08.00

Basis: Wet Weight

Seq Number: 3025055

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.15.17 16.59	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.15.17 16.59	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.15.17 16.59	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.15.17 16.59	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	89	%	70-135	08.15.17 16.59	
o-Terphenyl	84-15-1	87	%	70-135	08.15.17 16.59	



# Certificate of Analytical Results 560038



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **T1-Surface**

Matrix: Soil

Date Received: 08.11.17 11.45

Lab Sample Id: 560038-001

Date Collected: 08.08.17 10.30

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.16.17 08.00

Basis: Wet Weight

Seq Number: 3025343

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	08.16.17 10.28	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	08.16.17 10.28	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	08.16.17 10.28	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	08.16.17 10.28	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	08.16.17 10.28	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	08.16.17 10.28	U	1
Total BTEX		<0.00200	0.00200	mg/kg	08.16.17 10.28	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1,4-Difluorobenzene	540-36-3	96	%	80-120	08.16.17 10.28		
4-Bromofluorobenzene	460-00-4	83	%	80-120	08.16.17 10.28		



# Certificate of Analytical Results 560038



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **T1-1'** Matrix: Soil Date Received: 08.11.17 11.45  
Lab Sample Id: 560038-002 Date Collected: 08.08.17 10.30 Sample Depth: 1 ft  
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P  
Tech: MNV % Moisture:  
Analyst: MGO Date Prep: 08.21.17 11.00 Basis: Wet Weight  
Seq Number: 3025634

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3320	24.8	mg/kg	08.21.17 21.13		5

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P  
Tech: ARM % Moisture:  
Analyst: ARM Date Prep: 08.15.17 08.00 Basis: Wet Weight  
Seq Number: 3025055

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	08.15.17 17.19	U	1
Diesel Range Organics (DRO)	C10C28DRO	<14.9	14.9	mg/kg	08.15.17 17.19	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<14.9	14.9	mg/kg	08.15.17 17.19	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	08.15.17 17.19	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	98	%	70-135	08.15.17 17.19	
o-Terphenyl	84-15-1	96	%	70-135	08.15.17 17.19	



# Certificate of Analytical Results 560038



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: T1-1'  
Lab Sample Id: 560038-002

Matrix: Soil  
Date Collected: 08.08.17 10.30

Date Received: 08.11.17 11.45  
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.16.17 08.00

Basis: Wet Weight

Seq Number: 3025343

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	08.16.17 10.47	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	08.16.17 10.47	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	08.16.17 10.47	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	08.16.17 10.47	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	08.16.17 10.47	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	08.16.17 10.47	U	1
Total BTEX		<0.00198	0.00198	mg/kg	08.16.17 10.47	U	1
Surrogate	Cas Number	% Recovery		Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	86		%	80-120	08.16.17 10.47	
1,4-Difluorobenzene	540-36-3	97		%	80-120	08.16.17 10.47	



# Certificate of Analytical Results 560038



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **T1-2'**  
Lab Sample Id: 560038-003

Matrix: Soil  
Date Collected: 08.08.17 10.30

Date Received: 08.11.17 11.45  
Sample Depth: 2 ft

Analytical Method: Inorganic Anions by EPA 300/300.1

Tech: MNV

Analyst: MGO

Seq Number: 3025634

Date Prep: 08.21.17 11.00

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	4650	49.7	mg/kg	08.21.17 21.43		10

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3025055

Date Prep: 08.15.17 08.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.15.17 17.40	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.15.17 17.40	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.15.17 17.40	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.15.17 17.40	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	101	%	70-135	08.15.17 17.40	
o-Terphenyl	84-15-1	98	%	70-135	08.15.17 17.40	

## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **T1-2'**  
Lab Sample Id: 560038-003

Matrix: Soil  
Date Collected: 08.08.17 10.30

Date Received: 08.11.17 11.45  
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.16.17 08.00

Basis: Wet Weight

Seq Number: 3025343

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	08.16.17 11.06	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	08.16.17 11.06	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	08.16.17 11.06	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	08.16.17 11.06	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	08.16.17 11.06	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	08.16.17 11.06	U	1
Total BTEX		<0.00199	0.00199	mg/kg	08.16.17 11.06	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1,4-Difluorobenzene	540-36-3	96	%	80-120	08.16.17 11.06		
4-Bromofluorobenzene	460-00-4	86	%	80-120	08.16.17 11.06		



# Certificate of Analytical Results 560038



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **T1-3'**  
Lab Sample Id: 560038-004

Matrix: Soil  
Date Collected: 08.08.17 10.30

Date Received: 08.11.17 11.45  
Sample Depth: 3 ft

Analytical Method: Inorganic Anions by EPA 300/300.1

Tech: MNV

Analyst: MGO

Seq Number: 3025634

Date Prep: 08.21.17 11.00

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	10300	98.4	mg/kg	08.21.17 21.51		20

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3025055

Date Prep: 08.15.17 08.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.15.17 18.00	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.15.17 18.00	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.15.17 18.00	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.15.17 18.00	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	99	%	70-135	08.15.17 18.00	
o-Terphenyl	84-15-1	97	%	70-135	08.15.17 18.00	



# Certificate of Analytical Results 560038



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: T1-3'  
Lab Sample Id: 560038-004

Matrix: Soil  
Date Collected: 08.08.17 10.30

Date Received: 08.11.17 11.45  
Sample Depth: 3 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.16.17 08.00

Basis: Wet Weight

Seq Number: 3025343

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	08.16.17 11.25	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	08.16.17 11.25	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	08.16.17 11.25	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	08.16.17 11.25	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	08.16.17 11.25	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	08.16.17 11.25	U	1
Total BTEX		<0.00201	0.00201	mg/kg	08.16.17 11.25	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	101	%	80-120	08.16.17 11.25		
4-Bromofluorobenzene	460-00-4	85	%	80-120	08.16.17 11.25		





# Certificate of Analytical Results 560038



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **T1-4'** Matrix: Soil Date Received: 08.11.17 11.45  
Lab Sample Id: 560038-005 Date Collected: 08.08.17 10.30 Sample Depth: 4 ft  
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P  
Tech: MNV % Moisture:  
Analyst: MGO Date Prep: 08.21.17 11.00 Basis: Wet Weight  
Seq Number: 3025634

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	6210	49.2	mg/kg	08.21.17 22.14		10

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P  
Tech: ARM % Moisture:  
Analyst: ARM Date Prep: 08.15.17 16.00 Basis: Wet Weight  
Seq Number: 3025057

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.16.17 02.51	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.16.17 02.51	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.16.17 02.51	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.16.17 02.51	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	114	%	70-135	08.16.17 02.51	
o-Terphenyl	84-15-1	113	%	70-135	08.16.17 02.51	



# Certificate of Analytical Results 560038



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: T1-4'  
Lab Sample Id: 560038-005

Matrix: Soil  
Date Collected: 08.08.17 10.30

Date Received: 08.11.17 11.45  
Sample Depth: 4 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.16.17 08.00

Basis: Wet Weight

Seq Number: 3025343

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	08.16.17 11.44	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	08.16.17 11.44	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	08.16.17 11.44	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	08.16.17 11.44	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	08.16.17 11.44	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	08.16.17 11.44	U	1
Total BTEX		<0.00201	0.00201	mg/kg	08.16.17 11.44	U	1
Surrogate	Cas Number	% Recovery		Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	94		%	80-120	08.16.17 11.44	
4-Bromofluorobenzene	460-00-4	87		%	80-120	08.16.17 11.44	



# Certificate of Analytical Results 560038



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **T1-6'**  
Lab Sample Id: 560038-006

Matrix: Soil  
Date Collected: 08.08.17 10.30

Date Received: 08.11.17 11.45  
Sample Depth: 6 ft

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: MNV

% Moisture:

Analyst: MGO

Date Prep: 08.21.17 11.00

Basis: Wet Weight

Seq Number: 3025634

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	6290	49.0	mg/kg	08.21.17 22.22		10



# Certificate of Analytical Results 560038



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **T1-8'**  
Lab Sample Id: 560038-007

Matrix: Soil  
Date Collected: 08.08.17 10.30

Date Received: 08.11.17 11.45  
Sample Depth: 8 ft

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: MNV

% Moisture:

Analyst: MGO

Date Prep: 08.21.17 11.00

Basis: Wet Weight

Seq Number: 3025634

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	615	4.96	mg/kg	08.21.17 21.20		1



# Certificate of Analytical Results 560038



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **T1-9'** Matrix: Soil Date Received: 08.11.17 11.45  
Lab Sample Id: 560038-008 Date Collected: 08.08.17 10.30 Sample Depth: 9 ft  
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P  
Tech: MNV % Moisture:  
Analyst: MGO Date Prep: 08.21.17 11.00 Basis: Wet Weight  
Seq Number: 3025634

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1050	4.93	mg/kg	08.21.17 22.30		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P  
Tech: ARM % Moisture:  
Analyst: ARM Date Prep: 08.15.17 16.00 Basis: Wet Weight  
Seq Number: 3025057

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.16.17 03.11	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.16.17 03.11	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.16.17 03.11	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.16.17 03.11	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	98	%	70-135	08.16.17 03.11	
o-Terphenyl	84-15-1	97	%	70-135	08.16.17 03.11	

## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **T1-9'**  
Lab Sample Id: 560038-008

Matrix: Soil  
Date Collected: 08.08.17 10.30

Date Received: 08.11.17 11.45  
Sample Depth: 9 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.16.17 08.00

Basis: Wet Weight

Seq Number: 3025343

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	08.16.17 12.02	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	08.16.17 12.02	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	08.16.17 12.02	U	1
m,p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	08.16.17 12.02	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	08.16.17 12.02	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	08.16.17 12.02	U	1
Total BTEX		<0.00202	0.00202	mg/kg	08.16.17 12.02	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1,4-Difluorobenzene	540-36-3	95	%	80-120	08.16.17 12.02		
4-Bromofluorobenzene	460-00-4	86	%	80-120	08.16.17 12.02		

- 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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(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(432) 563-1800	(432) 563-1713
(602) 437-0330	



## QC Summary 560038

### COG Operating LLC

Patron 23 Fed #4H

**Analytical Method: Inorganic Anions by EPA 300/300.1**

Seq Number: 3025634

Matrix: Solid

Prep Method: E300P

MB Sample Id: 729569-1-BLK

LCS Sample Id: 729569-1-BKS

Date Prep: 08.21.17

LCSD Sample Id: 729569-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<4.98	249	257	103	252	101	90-110	2	20	mg/kg	08.21.17 19:18	

**Analytical Method: Inorganic Anions by EPA 300/300.1**

Seq Number: 3025634

Matrix: Soil

Prep Method: E300P

Parent Sample Id: 560037-001

MS Sample Id: 560037-001 S

Date Prep: 08.21.17

MSD Sample Id: 560037-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<4.95	248	267	108	265	107	90-110	1	20	mg/kg	08.21.17 19:41	

**Analytical Method: Inorganic Anions by EPA 300/300.1**

Seq Number: 3025634

Matrix: Soil

Prep Method: E300P

Parent Sample Id: 560038-007

MS Sample Id: 560038-007 S

Date Prep: 08.21.17

MSD Sample Id: 560038-007 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	615	248	811	79	833	88	90-110	3	20	mg/kg	08.21.17 21:28	X

**Analytical Method: TPH By SW8015 Mod**

Seq Number: 3025055

Matrix: Solid

Prep Method: TX1005P

MB Sample Id: 729383-1-BLK

LCS Sample Id: 729383-1-BKS

Date Prep: 08.15.17

LCSD Sample Id: 729383-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	874	87	849	85	70-135	3	35	mg/kg	08.15.17 09:30	
Diesel Range Organics (DRO)	<15.0	1000	1050	105	1050	105	70-135	0	35	mg/kg	08.15.17 09:30	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	98		108		105		70-135	%	08.15.17 09:30
o-Terphenyl	95		122		117		70-135	%	08.15.17 09:30





## QC Summary 560038

### COG Operating LLC

Patron 23 Fed #4H

**Analytical Method: TPH By SW8015 Mod**

Seq Number: 3025057

MB Sample Id: 729385-1-BLK

Matrix: Solid

LCS Sample Id: 729385-1-BKS

Prep Method: TX1005P

Date Prep: 08.15.17

LCSD Sample Id: 729385-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	843	84	836	84	70-135	1	35	mg/kg	08.15.17 19:01	
Diesel Range Organics (DRO)	<15.0	1000	1060	106	1040	104	70-135	2	35	mg/kg	08.15.17 19:01	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date			
1-Chlorooctane	109		106		104		70-135	%	08.15.17 19:01			
o-Terphenyl	107		101		110		70-135	%	08.15.17 19:01			

**Analytical Method: TPH By SW8015 Mod**

Seq Number: 3025055

Parent Sample Id: 560035-001

Matrix: Soil

MS Sample Id: 560035-001 S

Prep Method: TX1005P

Date Prep: 08.15.17

MSD Sample Id: 560035-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	997	850	85	905	91	70-135	6	35	mg/kg	08.15.17 10:31	
Diesel Range Organics (DRO)	<15.0	997	1090	109	1050	105	70-135	4	35	mg/kg	08.15.17 10:31	
Surrogate			MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date			
1-Chlorooctane			118		103		70-135	%	08.15.17 10:31			
o-Terphenyl			118		114		70-135	%	08.15.17 10:31			

**Analytical Method: TPH By SW8015 Mod**

Seq Number: 3025057

Parent Sample Id: 560039-002

Matrix: Soil

MS Sample Id: 560039-002 S

Prep Method: TX1005P

Date Prep: 08.15.17

MSD Sample Id: 560039-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	997	908	91	859	86	70-135	6	35	mg/kg	08.15.17 20:21	
Diesel Range Organics (DRO)	<15.0	997	1040	104	1050	105	70-135	1	35	mg/kg	08.15.17 20:21	
Surrogate			MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date			
1-Chlorooctane			104		103		70-135	%	08.15.17 20:21			
o-Terphenyl			119		116		70-135	%	08.15.17 20:21			



## QC Summary 560038

### COG Operating LLC

Patron 23 Fed #4H

Analytical Method: BTEX by EPA 8021B

Seq Number: 3025343

MB Sample Id: 729489-1-BLK

Matrix: Solid

LCS Sample Id: 729489-1-BKS

Prep Method: SW5030B

Date Prep: 08.16.17

LCSD Sample Id: 729489-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.0998	0.119	119	0.121	122	70-130	2	35	mg/kg	08.16.17 08:17	
Toluene	<0.00200	0.0998	0.115	115	0.111	112	70-130	4	35	mg/kg	08.16.17 08:17	
Ethylbenzene	<0.00200	0.0998	0.113	113	0.108	109	71-129	5	35	mg/kg	08.16.17 08:17	
m,p-Xylenes	<0.00399	0.200	0.219	110	0.211	107	70-135	4	35	mg/kg	08.16.17 08:17	
o-Xylene	<0.00200	0.0998	0.106	106	0.101	102	71-133	5	35	mg/kg	08.16.17 08:17	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	95		94		112		80-120	%	08.16.17 08:17
4-Bromofluorobenzene	84		81		81		80-120	%	08.16.17 08:17

Analytical Method: BTEX by EPA 8021B

Seq Number: 3025343

Parent Sample Id: 560049-002

Matrix: Soil

MS Sample Id: 560049-002 S

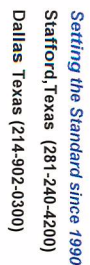
Prep Method: SW5030B

Date Prep: 08.16.17

MSD Sample Id: 560049-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00199	0.0994	0.0938	94	0.0855	86	70-130	9	35	mg/kg	08.16.17 08:55	
Toluene	<0.00199	0.0994	0.0858	86	0.0785	79	70-130	9	35	mg/kg	08.16.17 08:55	
Ethylbenzene	<0.00199	0.0994	0.0755	76	0.0735	74	71-129	3	35	mg/kg	08.16.17 08:55	
m,p-Xylenes	<0.00398	0.199	0.145	73	0.140	71	70-135	4	35	mg/kg	08.16.17 08:55	
o-Xylene	<0.00199	0.0994	0.0725	73	0.0732	74	71-133	1	35	mg/kg	08.16.17 08:55	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	98		99		80-120	%	08.16.17 08:55
4-Bromofluorobenzene	87		88		80-120	%	08.16.17 08:55



## Page 1 Of 8

Phoenix, Arizona (480-355-0900)

560038

**Notice:** Signature in this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco. Its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be responsible for the collection, analysis, and delivery of samples. Client company agrees to pay for all expenses incurred by the Client if such losses are due to circumstances beyond the control of Xenco. A minimum charge of \$75 will be applied to each project. Xenco's liability will be limited to the cost of samples. Any samples terms will be enforced unless previously negotiated under a fully executed client contract.

Temp: 3.8 IR ID: R-8  
CF: (0-6: -0.2°C)  
(6-23: +0.2°C)  
Corrected Temp: 3.4



# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In



Client: COG Operating LLC

Date/ Time Received: 08/11/2017 11:45:00 AM

Work Order #: 560038

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

### Sample Receipt Checklist

### Comments

#1 *Temperature of cooler(s)?	3.6
#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: 08/14/2017

Checklist reviewed by: Kelsey Brooks  
Kelsey Brooks

Date: 08/14/2017



# Certificate of Analysis Summary 560112

COG Operating LLC, Artesia, NM

Project Name: Patron 23 Fed #4H



Project Id:

Contact: Aaron Lieb

Project Location: Patron 23 Fed #4H

Date Received in Lab: Fri Aug-11-17 11:45 am

Report Date: 23-AUG-17

Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	560112-001	560112-002	560112-003	560112-004	560112-005	560112-006
	<i>Field Id:</i>	T2-Surface	T2-1'	T2-2'	T2-3'	T2-4'	T2-6'
	<i>Depth:</i>		1- ft	2- ft	3- ft	4- ft	6- ft
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Aug-08-17 10:45	Aug-08-17 10:45	Aug-08-17 10:45	Aug-08-17 10:45	Aug-08-17 10:45	Aug-08-17 10:45
<b>BTEX by EPA 8021B</b>	<i>Extracted:</i>	Aug-16-17 08:00	Aug-16-17 08:00	Aug-16-17 08:00	Aug-16-17 08:00	Aug-16-17 08:00	
	<i>Analyzed:</i>	Aug-16-17 12:40	Aug-16-17 12:21	Aug-16-17 14:32	Aug-16-17 14:51	Aug-16-17 15:09	
	<i>Units/RL:</i>	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
		RL	RL	RL	RL	RL	
Benzene		<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202	<0.00201 0.00201	<0.00202 0.00202	
Toluene		<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202	<0.00201 0.00201	<0.00202 0.00202	
Ethylbenzene		<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202	<0.00201 0.00201	<0.00202 0.00202	
m,p-Xylenes		<0.00399 0.00399	<0.00398 0.00398	<0.00403 0.00403	<0.00402 0.00402	<0.00404 0.00404	
o-Xylene		<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202	<0.00201 0.00201	<0.00202 0.00202	
Total Xylenes		<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202	<0.00201 0.00201	<0.00202 0.00202	
Total BTEX		<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202	<0.00201 0.00201	<0.00202 0.00202	
<b>Inorganic Anions by EPA 300/300.1</b>	<i>Extracted:</i>	Aug-22-17 10:30	Aug-22-17 10:30	Aug-22-17 10:30	Aug-22-17 10:30	Aug-22-17 10:30	Aug-22-17 10:30
	<i>Analyzed:</i>	Aug-22-17 16:06	Aug-22-17 16:29	Aug-22-17 16:37	Aug-22-17 16:44	Aug-22-17 16:52	Aug-22-17 17:15
	<i>Units/RL:</i>	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		RL	RL	RL	RL	RL	RL
Chloride		697 4.91	2130 24.6	4100 24.7	846 4.97	664 4.97	95.7 5.00
<b>TPH By SW8015 Mod</b>	<i>Extracted:</i>	Aug-15-17 16:00	Aug-15-17 16:00	Aug-15-17 16:00	Aug-15-17 16:00	Aug-15-17 16:00	
	<i>Analyzed:</i>	Aug-16-17 04:59	Aug-16-17 06:00	Aug-16-17 06:21	Aug-16-17 06:41	Aug-16-17 07:02	
	<i>Units/RL:</i>	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
		RL	RL	RL	RL	RL	
Gasoline Range Hydrocarbons (GRO)		<15.0 15.0	<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0	
Diesel Range Organics (DRO)		<15.0 15.0	<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0	
Oil Range Hydrocarbons (ORO)		<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	<14.9 14.9	<15.0 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.

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Kelsey Brooks  
Project Manager



# Certificate of Analysis Summary 560112

COG Operating LLC, Artesia, NM

Project Name: Patron 23 Fed #4H



Project Id:

Contact: Aaron Lieb

Project Location: Patron 23 Fed #4H

Date Received in Lab: Fri Aug-11-17 11:45 am

Report Date: 23-AUG-17

Project Manager: Kelsey Brooks

<b>Analysis Requested</b>	<b>Lab Id:</b>	560112-007					
	<b>Field Id:</b>	T2-9'					
	<b>Depth:</b>	9- ft					
	<b>Matrix:</b>	SOIL					
	<b>Sampled:</b>	Aug-08-17 10:45					
<b>BTEX by EPA 8021B</b>	<b>Extracted:</b>	Aug-16-17 08:00					
	<b>Analyzed:</b>	Aug-16-17 15:28					
	<b>Units/RL:</b>	mg/kg RL					
Benzene		<0.00200 0.00200					
Toluene		<0.00200 0.00200					
Ethylbenzene		<0.00200 0.00200					
m,p-Xylenes		<0.00401 0.00401					
o-Xylene		<0.00200 0.00200					
Total Xylenes		<0.00200 0.00200					
Total BTEX		<0.00200 0.00200					
<b>Inorganic Anions by EPA 300/300.1</b>	<b>Extracted:</b>	Aug-22-17 10:30					
	<b>Analyzed:</b>	Aug-22-17 17:23					
	<b>Units/RL:</b>	mg/kg RL					
Chloride		340 4.99					
<b>TPH By SW8015 Mod</b>	<b>Extracted:</b>	Aug-15-17 16:00					
	<b>Analyzed:</b>	Aug-16-17 07:22					
	<b>Units/RL:</b>	mg/kg RL					
Gasoline Range Hydrocarbons (GRO)		<15.0 15.0					
Diesel Range Organics (DRO)		<15.0 15.0					
Oil Range Hydrocarbons (ORO)		<15.0 15.0					
Total TPH		<15.0 15.0					

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

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Kelsey Brooks  
Project Manager



# **Analytical Report 560112**

**for  
COG Operating LLC**

**Project Manager: Aaron Lieb**

**Patron 23 Fed #4H**

**23-AUG-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)



23-AUG-17

Project Manager: **Aaron Lieb**

**COG Operating LLC**

2407 Pecos Avenue

Artesia, NM 88210

Reference: XENCO Report No(s): **560112**

**Patron 23 Fed #4H**

Project Address: Patron 23 Fed #4H

**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) 560112. 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. 560112 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

**Kelsey Brooks**

Project Manager

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

*Certified and approved by numerous States and Agencies.*

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

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## Sample Cross Reference 560112



**COG Operating LLC, Artesia, NM**

Patron 23 Fed #4H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
T2-Surface	S	08-08-17 10:45		560112-001
T2-1'	S	08-08-17 10:45	1 ft	560112-002
T2-2'	S	08-08-17 10:45	2 ft	560112-003
T2-3'	S	08-08-17 10:45	3 ft	560112-004
T2-4'	S	08-08-17 10:45	4 ft	560112-005
T2-6'	S	08-08-17 10:45	6 ft	560112-006
T2-9'	S	08-08-17 10:45	9 ft	560112-007



## CASE NARRATIVE

*Client Name: COG Operating LLC*

*Project Name: Patron 23 Fed #4H*

Project ID:

Work Order Number(s): 560112

Report Date: 23-AUG-17

Date Received: 08/11/2017

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### **Sample receipt non conformances and comments:**

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### **Sample receipt non conformances and comments per sample:**

None

### **Analytical non conformances and comments:**

Batch: LBA-3025343 BTEX by EPA 8021B

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

Batch: LBA-3025725 Inorganic Anions by EPA 300/300.1

Lab Sample ID 560113-004 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD).

Chloride recovered below QC limits in the Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 560112-001, -002, -003, -004, -005, -006, -007.

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



# Certificate of Analytical Results 560112



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **T2-Surface**

Matrix: Soil

Date Received: 08.11.17 11.45

Lab Sample Id: 560112-001

Date Collected: 08.08.17 10.45

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: MNV

% Moisture:

Analyst: MGO

Date Prep: 08.22.17 10.30

Basis: Wet Weight

Seq Number: 3025725

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	697	4.91	mg/kg	08.22.17 16.06		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 08.15.17 16.00

Basis: Wet Weight

Seq Number: 3025058

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.16.17 04.59	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.16.17 04.59	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.16.17 04.59	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.16.17 04.59	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	93	%	70-135	08.16.17 04.59	
o-Terphenyl	84-15-1	90	%	70-135	08.16.17 04.59	



# Certificate of Analytical Results 560112



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **T2-Surface**

Matrix: Soil

Date Received: 08.11.17 11.45

Lab Sample Id: 560112-001

Date Collected: 08.08.17 10.45

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.16.17 08.00

Basis: Wet Weight

Seq Number: 3025343

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	08.16.17 12.40	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	08.16.17 12.40	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	08.16.17 12.40	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	08.16.17 12.40	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	08.16.17 12.40	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	08.16.17 12.40	U	1
Total BTEX		<0.00200	0.00200	mg/kg	08.16.17 12.40	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	84	%	80-120	08.16.17 12.40		
1,4-Difluorobenzene	540-36-3	95	%	80-120	08.16.17 12.40		



# Certificate of Analytical Results 560112



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: T2-1' Matrix: Soil Date Received: 08.11.17 11.45  
Lab Sample Id: 560112-002 Date Collected: 08.08.17 10.45 Sample Depth: 1 ft  
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P  
Tech: MNV % Moisture:  
Analyst: MGO Date Prep: 08.22.17 10.30 Basis: Wet Weight  
Seq Number: 3025725

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2130	24.6	mg/kg	08.22.17 16.29		5

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P  
Tech: ARM % Moisture:  
Analyst: ARM Date Prep: 08.15.17 16.00 Basis: Wet Weight  
Seq Number: 3025058

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	08.16.17 06.00	U	1
Diesel Range Organics (DRO)	C10C28DRO	<14.9	14.9	mg/kg	08.16.17 06.00	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<14.9	14.9	mg/kg	08.16.17 06.00	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	08.16.17 06.00	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	98	%	70-135	08.16.17 06.00	
o-Terphenyl	84-15-1	95	%	70-135	08.16.17 06.00	



# Certificate of Analytical Results 560112



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: T2-1'  
Lab Sample Id: 560112-002

Matrix: Soil  
Date Collected: 08.08.17 10.45

Date Received: 08.11.17 11.45  
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.16.17 08.00

Basis: Wet Weight

Seq Number: 3025343

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	08.16.17 12.21	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	08.16.17 12.21	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	08.16.17 12.21	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	08.16.17 12.21	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	08.16.17 12.21	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	08.16.17 12.21	U	1
Total BTEX		<0.00199	0.00199	mg/kg	08.16.17 12.21	U	1
Surrogate	Cas Number	% Recovery		Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	83		%	80-120	08.16.17 12.21	
1,4-Difluorobenzene	540-36-3	94		%	80-120	08.16.17 12.21	

## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **T2-2'** Matrix: Soil Date Received: 08.11.17 11.45  
 Lab Sample Id: 560112-003 Date Collected: 08.08.17 10.45 Sample Depth: 2 ft  
 Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P  
 Tech: MNV % Moisture:  
 Analyst: MGO Date Prep: 08.22.17 10.30 Basis: Wet Weight  
 Seq Number: 3025725

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<b>4100</b>	24.7	mg/kg	08.22.17 16.37		5

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P  
 Tech: ARM % Moisture:  
 Analyst: ARM Date Prep: 08.15.17 16.00 Basis: Wet Weight  
 Seq Number: 3025058

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.16.17 06.21	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.16.17 06.21	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.16.17 06.21	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.16.17 06.21	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	97	%	70-135	08.16.17 06.21	
o-Terphenyl	84-15-1	94	%	70-135	08.16.17 06.21	



# Certificate of Analytical Results 560112



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: T2-2'  
Lab Sample Id: 560112-003

Matrix: Soil  
Date Collected: 08.08.17 10.45

Date Received: 08.11.17 11.45  
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.16.17 08.00

Basis: Wet Weight

Seq Number: 3025343

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	08.16.17 14.32	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	08.16.17 14.32	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	08.16.17 14.32	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	08.16.17 14.32	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	08.16.17 14.32	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	08.16.17 14.32	U	1
Total BTEX		<0.00202	0.00202	mg/kg	08.16.17 14.32	U	1
Surrogate	Cas Number	% Recovery		Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	91		%	80-120	08.16.17 14.32	
1,4-Difluorobenzene	540-36-3	97		%	80-120	08.16.17 14.32	





# Certificate of Analytical Results 560112



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: T2-3'  
Lab Sample Id: 560112-004

Matrix: Soil  
Date Collected: 08.08.17 10.45

Date Received: 08.11.17 11.45  
Sample Depth: 3 ft

Analytical Method: Inorganic Anions by EPA 300/300.1

Tech: MNV

Analyst: MGO

Seq Number: 3025725

Date Prep: 08.22.17 10.30

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	846	4.97	mg/kg	08.22.17 16.44		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3025058

Date Prep: 08.15.17 16.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.16.17 06.41	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.16.17 06.41	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.16.17 06.41	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.16.17 06.41	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	116	%	70-135	08.16.17 06.41	
o-Terphenyl	84-15-1	113	%	70-135	08.16.17 06.41	



# Certificate of Analytical Results 560112



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: T2-3'  
Lab Sample Id: 560112-004

Matrix: Soil  
Date Collected: 08.08.17 10.45

Date Received: 08.11.17 11.45  
Sample Depth: 3 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.16.17 08.00

Basis: Wet Weight

Seq Number: 3025343

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	08.16.17 14.51	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	08.16.17 14.51	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	08.16.17 14.51	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	08.16.17 14.51	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	08.16.17 14.51	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	08.16.17 14.51	U	1
Total BTEX		<0.00201	0.00201	mg/kg	08.16.17 14.51	U	1
Surrogate	Cas Number	% Recovery		Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	87		%	80-120	08.16.17 14.51	
1,4-Difluorobenzene	540-36-3	94		%	80-120	08.16.17 14.51	

## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **T2-4'** Matrix: Soil Date Received: 08.11.17 11.45  
 Lab Sample Id: 560112-005 Date Collected: 08.08.17 10.45 Sample Depth: 4 ft  
 Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P  
 Tech: MNV % Moisture:  
 Analyst: MGO Date Prep: 08.22.17 10.30 Basis: Wet Weight  
 Seq Number: 3025725

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	664	4.97	mg/kg	08.22.17 16.52		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P  
 Tech: ARM % Moisture:  
 Analyst: ARM Date Prep: 08.15.17 16.00 Basis: Wet Weight  
 Seq Number: 3025058

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.16.17 07.02	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.16.17 07.02	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.16.17 07.02	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.16.17 07.02	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	99	%	70-135	08.16.17 07.02	
o-Terphenyl	84-15-1	97	%	70-135	08.16.17 07.02	



# Certificate of Analytical Results 560112



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: T2-4'  
Lab Sample Id: 560112-005

Matrix: Soil  
Date Collected: 08.08.17 10.45

Date Received: 08.11.17 11.45  
Sample Depth: 4 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.16.17 08.00

Basis: Wet Weight

Seq Number: 3025343

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	08.16.17 15.09	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	08.16.17 15.09	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	08.16.17 15.09	U	1
m,p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	08.16.17 15.09	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	08.16.17 15.09	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	08.16.17 15.09	U	1
Total BTEX		<0.00202	0.00202	mg/kg	08.16.17 15.09	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	87	%	80-120	08.16.17 15.09		
1,4-Difluorobenzene	540-36-3	94	%	80-120	08.16.17 15.09		



# Certificate of Analytical Results 560112



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: T2-6'  
Lab Sample Id: 560112-006

Matrix: Soil  
Date Collected: 08.08.17 10.45

Date Received: 08.11.17 11.45  
Sample Depth: 6 ft

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: MNV

% Moisture:

Analyst: MGO

Date Prep: 08.22.17 10.30

Basis: Wet Weight

Seq Number: 3025725

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	95.7	5.00	mg/kg	08.22.17 17.15		1



# Certificate of Analytical Results 560112



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **T2-9'** Matrix: Soil Date Received: 08.11.17 11.45  
Lab Sample Id: 560112-007 Date Collected: 08.08.17 10.45 Sample Depth: 9 ft  
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P  
Tech: MNV % Moisture:  
Analyst: MGO Date Prep: 08.22.17 10.30 Basis: Wet Weight  
Seq Number: 3025725

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	340	4.99	mg/kg	08.22.17 17.23		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P  
Tech: ARM % Moisture:  
Analyst: ARM Date Prep: 08.15.17 16.00 Basis: Wet Weight  
Seq Number: 3025058

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.16.17 07.22	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.16.17 07.22	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.16.17 07.22	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.16.17 07.22	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	98	%	70-135	08.16.17 07.22	
o-Terphenyl	84-15-1	95	%	70-135	08.16.17 07.22	



# Certificate of Analytical Results 560112



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: T2-9'  
Lab Sample Id: 560112-007

Matrix: Soil  
Date Collected: 08.08.17 10.45

Date Received: 08.11.17 11.45  
Sample Depth: 9 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.16.17 08.00

Basis: Wet Weight

Seq Number: 3025343

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	08.16.17 15.28	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	08.16.17 15.28	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	08.16.17 15.28	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	08.16.17 15.28	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	08.16.17 15.28	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	08.16.17 15.28	U	1
Total BTEX		<0.00200	0.00200	mg/kg	08.16.17 15.28	U	1
Surrogate	Cas Number	% Recovery		Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	89		%	80-120	08.16.17 15.28	
1,4-Difluorobenzene	540-36-3	94		%	80-120	08.16.17 15.28	

- 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 560112

### COG Operating LLC

Patron 23 Fed #4H

**Analytical Method: Inorganic Anions by EPA 300/300.1**

Seq Number: 3025725

Matrix: Solid

Prep Method: E300P

MB Sample Id: 729750-1-BLK

LCS Sample Id: 729750-1-BKS

Date Prep: 08.22.17

LCSD Sample Id: 729750-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<4.90	245	228	93	236	95	90-110	3	20	mg/kg	08.22.17 15:51	

**Analytical Method: Inorganic Anions by EPA 300/300.1**

Seq Number: 3025725

Matrix: Soil

Prep Method: E300P

Parent Sample Id: 560112-001

MS Sample Id: 560112-001 S

Date Prep: 08.22.17

MSD Sample Id: 560112-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	697	246	924	92	917	89	90-110	1	20	mg/kg	08.22.17 16:14	X

**Analytical Method: Inorganic Anions by EPA 300/300.1**

Seq Number: 3025725

Matrix: Soil

Prep Method: E300P

Parent Sample Id: 560113-004

MS Sample Id: 560113-004 S

Date Prep: 08.22.17

MSD Sample Id: 560113-004 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	14.2	246	279	108	277	107	90-110	1	20	mg/kg	08.22.17 18:01	

**Analytical Method: TPH By SW8015 Mod**

Seq Number: 3025058

Matrix: Solid

Prep Method: TX1005P

MB Sample Id: 729389-1-BLK

LCS Sample Id: 729389-1-BKS

Date Prep: 08.15.17

LCSD Sample Id: 729389-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	837	84	840	84	70-135	0	35	mg/kg	08.16.17 04:15	
Diesel Range Organics (DRO)	<15.0	1000	1010	101	1020	102	70-135	1	35	mg/kg	08.16.17 04:15	

**Surrogate**

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	99		102		104		70-135	%	08.16.17 04:15
o-Terphenyl	96		102		99		70-135	%	08.16.17 04:15



## QC Summary 560112

### COG Operating LLC

Patron 23 Fed #4H

Analytical Method: TPH By SW8015 Mod

Seq Number: 3025058

Parent Sample Id: 560112-001

Matrix: Soil

MS Sample Id: 560112-001 S

Prep Method: TX1005P

Date Prep: 08.15.17

MSD Sample Id: 560112-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	997	933	94	837	84	70-135	11	35	mg/kg	08.16.17 05:20	
Diesel Range Organics (DRO)	<15.0	997	1100	110	1020	102	70-135	8	35	mg/kg	08.16.17 05:20	

#### Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	116		99		70-135	%	08.16.17 05:20
o-Terphenyl	111		94		70-135	%	08.16.17 05:20

Analytical Method: BTEX by EPA 8021B

Seq Number: 3025343

MB Sample Id: 729489-1-BLK

Matrix: Solid

LCS Sample Id: 729489-1-BKS

Prep Method: SW5030B

Date Prep: 08.16.17

LCSD Sample Id: 729489-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.0998	0.119	119	0.121	122	70-130	2	35	mg/kg	08.16.17 08:17	
Toluene	<0.00200	0.0998	0.115	115	0.111	112	70-130	4	35	mg/kg	08.16.17 08:17	
Ethylbenzene	<0.00200	0.0998	0.113	113	0.108	109	71-129	5	35	mg/kg	08.16.17 08:17	
m,p-Xylenes	<0.00399	0.200	0.219	110	0.211	107	70-135	4	35	mg/kg	08.16.17 08:17	
o-Xylene	<0.00200	0.0998	0.106	106	0.101	102	71-133	5	35	mg/kg	08.16.17 08:17	

#### Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	95		94		112		80-120	%	08.16.17 08:17
4-Bromofluorobenzene	84		81		81		80-120	%	08.16.17 08:17

Analytical Method: BTEX by EPA 8021B

Seq Number: 3025343

Parent Sample Id: 560049-002

Matrix: Soil

MS Sample Id: 560049-002 S

Prep Method: SW5030B

Date Prep: 08.16.17

MSD Sample Id: 560049-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00199	0.0994	0.0938	94	0.0855	86	70-130	9	35	mg/kg	08.16.17 08:55	
Toluene	<0.00199	0.0994	0.0858	86	0.0785	79	70-130	9	35	mg/kg	08.16.17 08:55	
Ethylbenzene	<0.00199	0.0994	0.0755	76	0.0735	74	71-129	3	35	mg/kg	08.16.17 08:55	
m,p-Xylenes	<0.00398	0.199	0.145	73	0.140	71	70-135	4	35	mg/kg	08.16.17 08:55	
o-Xylene	<0.00199	0.0994	0.0725	73	0.0732	74	71-133	1	35	mg/kg	08.16.17 08:55	

#### Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	98		99		80-120	%	08.16.17 08:55
4-Bromofluorobenzene	87		88		80-120	%	08.16.17 08:55

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

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Midland, Texas (432-704-5251)

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Xenco Quote #

Xenco Job #

560112  
560020

[illegible]

**Notice:** Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable for any losses or expenses incurred by the Client if such losses are due to circumstances beyond the control of Xenco. A minimum charge of \$75 will be applied to each project. Xenco's liability will be limited to the cost of samples. Any samples will be enforced unless previously negotiated under a fully executed client contract.

Temp: 3.8  
CF: (0.6: -0.2°C)  
(6-23: +0.2°C)  
Corrected Temp: 3.6  
IR ID: R-8



# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In



Client: COG Operating LLC

Date/ Time Received: 08/11/2017 11:45:00 AM

Work Order #: 560112

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

### Sample Receipt Checklist

### Comments

#1 *Temperature of cooler(s)?	3.6
#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: 08/14/2017

Checklist reviewed by: Kelsey Brooks  
Kelsey Brooks

Date: 08/14/2017



# Certificate of Analysis Summary 560113

COG Operating LLC, Artesia, NM

Project Name: Patron 23 Fed #4H



Project Id:

Contact: Aaron Lieb

Project Location: Patron 23 Fed #4H

Date Received in Lab: Fri Aug-11-17 11:45 am

Report Date: 23-AUG-17

Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	560113-001	560113-002	560113-003	560113-004	560113-005	
	<i>Field Id:</i>	T3-Surface	T3-1'	T3-2'	T3-3'	T3-7'	
	<i>Depth:</i>		1- ft	2- ft	3- ft	7- ft	
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	
	<i>Sampled:</i>	Aug-08-17 11:00	Aug-08-17 11:00	Aug-08-17 11:00	Aug-08-17 11:00	Aug-08-17 11:00	
<b>BTEX by EPA 8021B</b>	<i>Extracted:</i>	Aug-16-17 08:00	Aug-16-17 08:00	Aug-16-17 08:00	Aug-16-17 08:00	Aug-16-17 08:00	
	<i>Analyzed:</i>	Aug-16-17 15:45	Aug-16-17 16:04	Aug-16-17 16:35	Aug-16-17 17:03	Aug-16-17 17:22	
	<i>Units/RL:</i>	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
		RL	RL	RL	RL	RL	
Benzene		<0.00198 0.00198	<0.00200 0.00200	<0.00198 0.00198	<0.00201 0.00201	<0.00200 0.00200	
Toluene		<0.00198 0.00198	<0.00200 0.00200	<0.00198 0.00198	<0.00201 0.00201	<0.00200 0.00200	
Ethylbenzene		<0.00198 0.00198	<0.00200 0.00200	<0.00198 0.00198	<0.00201 0.00201	<0.00200 0.00200	
m,p-Xylenes		<0.00397 0.00397	<0.00399 0.00399	<0.00396 0.00396	<0.00402 0.00402	<0.00399 0.00399	
o-Xylene		<0.00198 0.00198	<0.00200 0.00200	<0.00198 0.00198	<0.00201 0.00201	<0.00200 0.00200	
Total Xylenes		<0.00198 0.00198	<0.00200 0.00200	<0.00198 0.00198	<0.00201 0.00201	<0.00200 0.00200	
Total BTEX		<0.00198 0.00198	<0.00200 0.00200	<0.00198 0.00198	<0.00201 0.00201	<0.00200 0.00200	
<b>Inorganic Anions by EPA 300/300.1</b>	<i>Extracted:</i>	Aug-22-17 10:30	Aug-22-17 10:30	Aug-22-17 10:30	Aug-22-17 10:30	Aug-22-17 10:30	
	<i>Analyzed:</i>	Aug-22-17 17:31	Aug-22-17 17:38	Aug-22-17 17:46	Aug-22-17 17:54	Aug-22-17 18:17	
	<i>Units/RL:</i>	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
		RL	RL	RL	RL	RL	
Chloride		893 4.92	8220 49.0	7.51 4.99	14.2 4.92	214 4.93	
<b>TPH By SW8015 Mod</b>	<i>Extracted:</i>	Aug-15-17 16:00	Aug-15-17 16:00	Aug-15-17 16:00	Aug-15-17 16:00	Aug-15-17 16:00	
	<i>Analyzed:</i>	Aug-16-17 07:41	Aug-16-17 08:01	Aug-16-17 08:22	Aug-16-17 08:42	Aug-16-17 09:02	
	<i>Units/RL:</i>	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
		RL	RL	RL	RL	RL	
Gasoline Range Hydrocarbons (GRO)		<15.0 15.0	<15.0 15.0	<14.9 14.9	<15.0 15.0	<15.0 15.0	
Diesel Range Organics (DRO)		<15.0 15.0	39.6 15.0	<14.9 14.9	<15.0 15.0	<15.0 15.0	
Oil Range Hydrocarbons (ORO)		<15.0 15.0	<15.0 15.0	<14.9 14.9	<15.0 15.0	<15.0 15.0	
Total TPH		<15.0 15.0	39.6 15.0	<14.9 14.9	<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 560113**

**for  
COG Operating LLC**

**Project Manager: Aaron Lieb**

**Patron 23 Fed #4H**

**23-AUG-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)





23-AUG-17

Project Manager: **Aaron Lieb**

**COG Operating LLC**

2407 Pecos Avenue

Artesia, NM 88210

Reference: XENCO Report No(s): **560113**

**Patron 23 Fed #4H**

Project Address: Patron 23 Fed #4H

**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) 560113. 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. 560113 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

**Kelsey Brooks**

Project Manager

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## Sample Cross Reference 560113



**COG Operating LLC, Artesia, NM**

Patron 23 Fed #4H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
T3-Surface	S	08-08-17 11:00		560113-001
T3-1'	S	08-08-17 11:00	1 ft	560113-002
T3-2'	S	08-08-17 11:00	2 ft	560113-003
T3-3'	S	08-08-17 11:00	3 ft	560113-004
T3-7'	S	08-08-17 11:00	7 ft	560113-005





## CASE NARRATIVE

*Client Name: COG Operating LLC*

*Project Name: Patron 23 Fed #4H*

Project ID:

Work Order Number(s): 560113

Report Date: 23-AUG-17

Date Received: 08/11/2017

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### **Sample receipt non conformances and comments:**

---

### **Sample receipt non conformances and comments per sample:**

None

### **Analytical non conformances and comments:**

Batch: LBA-3025343 BTEX by EPA 8021B

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



# Certificate of Analytical Results 560113



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **T3-Surface**

Matrix: Soil

Date Received: 08.11.17 11.45

Lab Sample Id: 560113-001

Date Collected: 08.08.17 11.00

Analytical Method: Inorganic Anions by EPA 300/300.1

Prep Method: E300P

Tech: MNV

% Moisture:

Analyst: MGO

Date Prep: 08.22.17 10.30

Basis: Wet Weight

Seq Number: 3025725

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	893	4.92	mg/kg	08.22.17 17.31		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ARM

% Moisture:

Analyst: ARM

Date Prep: 08.15.17 16.00

Basis: Wet Weight

Seq Number: 3025058

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.16.17 07.41	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.16.17 07.41	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.16.17 07.41	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.16.17 07.41	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	99	%	70-135	08.16.17 07.41	
o-Terphenyl	84-15-1	96	%	70-135	08.16.17 07.41	



# Certificate of Analytical Results 560113



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **T3-Surface**

Matrix: Soil

Date Received: 08.11.17 11.45

Lab Sample Id: 560113-001

Date Collected: 08.08.17 11.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.16.17 08.00

Basis: Wet Weight

Seq Number: 3025343

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	08.16.17 15.45	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	08.16.17 15.45	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	08.16.17 15.45	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	08.16.17 15.45	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	08.16.17 15.45	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	08.16.17 15.45	U	1
Total BTEX		<0.00198	0.00198	mg/kg	08.16.17 15.45	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	86	%	80-120	08.16.17 15.45		
1,4-Difluorobenzene	540-36-3	94	%	80-120	08.16.17 15.45		



# Certificate of Analytical Results 560113



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **T3-1'**  
Lab Sample Id: 560113-002

Matrix: Soil  
Date Collected: 08.08.17 11.00

Date Received: 08.11.17 11.45  
Sample Depth: 1 ft

Analytical Method: Inorganic Anions by EPA 300/300.1

Tech: MNV

Analyst: MGO

Seq Number: 3025725

Date Prep: 08.22.17 10.30

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	8220	49.0	mg/kg	08.22.17 17.38		10

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3025058

Date Prep: 08.15.17 16.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.16.17 08.01	U	1
Diesel Range Organics (DRO)	C10C28DRO	39.6	15.0	mg/kg	08.16.17 08.01		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.16.17 08.01	U	1
Total TPH	PHC635	39.6	15.0	mg/kg	08.16.17 08.01		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	99	%	70-135	08.16.17 08.01	
o-Terphenyl	84-15-1	97	%	70-135	08.16.17 08.01	



# Certificate of Analytical Results 560113



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: T3-1'  
Lab Sample Id: 560113-002

Matrix: Soil  
Date Collected: 08.08.17 11.00

Date Received: 08.11.17 11.45  
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.16.17 08.00

Basis: Wet Weight

Seq Number: 3025343

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	08.16.17 16.04	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	08.16.17 16.04	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	08.16.17 16.04	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	08.16.17 16.04	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	08.16.17 16.04	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	08.16.17 16.04	U	1
Total BTEX		<0.00200	0.00200	mg/kg	08.16.17 16.04	U	1
Surrogate	Cas Number	% Recovery		Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	92		%	80-120	08.16.17 16.04	
1,4-Difluorobenzene	540-36-3	96		%	80-120	08.16.17 16.04	



# Certificate of Analytical Results 560113



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: T3-2'  
Lab Sample Id: 560113-003

Matrix: Soil  
Date Collected: 08.08.17 11.00

Date Received: 08.11.17 11.45  
Sample Depth: 2 ft

Analytical Method: Inorganic Anions by EPA 300/300.1

Tech: MNV

Analyst: MGO

Seq Number: 3025725

Date Prep: 08.22.17 10.30

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	7.51	4.99	mg/kg	08.22.17 17.46		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3025058

Date Prep: 08.15.17 16.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	08.16.17 08.22	U	1
Diesel Range Organics (DRO)	C10C28DRO	<14.9	14.9	mg/kg	08.16.17 08.22	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<14.9	14.9	mg/kg	08.16.17 08.22	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	08.16.17 08.22	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	98	%	70-135	08.16.17 08.22	
o-Terphenyl	84-15-1	97	%	70-135	08.16.17 08.22	



# Certificate of Analytical Results 560113



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: T3-2'  
Lab Sample Id: 560113-003

Matrix: Soil  
Date Collected: 08.08.17 11.00

Date Received: 08.11.17 11.45  
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.16.17 08.00

Basis: Wet Weight

Seq Number: 3025343

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	08.16.17 16.35	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	08.16.17 16.35	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	08.16.17 16.35	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	08.16.17 16.35	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	08.16.17 16.35	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	08.16.17 16.35	U	1
Total BTEX		<0.00198	0.00198	mg/kg	08.16.17 16.35	U	1
Surrogate	Cas Number	% Recovery		Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	84		%	80-120	08.16.17 16.35	
1,4-Difluorobenzene	540-36-3	97		%	80-120	08.16.17 16.35	



# Certificate of Analytical Results 560113



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **T3-3'** Matrix: Soil Date Received: 08.11.17 11.45  
Lab Sample Id: 560113-004 Date Collected: 08.08.17 11.00 Sample Depth: 3 ft  
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P  
Tech: MNV % Moisture:  
Analyst: MGO Date Prep: 08.22.17 10.30 Basis: Wet Weight  
Seq Number: 3025725

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	14.2	4.92	mg/kg	08.22.17 17.54		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P  
Tech: ARM % Moisture:  
Analyst: ARM Date Prep: 08.15.17 16.00 Basis: Wet Weight  
Seq Number: 3025058

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.16.17 08.42	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.16.17 08.42	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.16.17 08.42	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.16.17 08.42	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	101	%	70-135	08.16.17 08.42	
o-Terphenyl	84-15-1	99	%	70-135	08.16.17 08.42	





# Certificate of Analytical Results 560113



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: T3-3'  
Lab Sample Id: 560113-004

Matrix: Soil  
Date Collected: 08.08.17 11.00

Date Received: 08.11.17 11.45  
Sample Depth: 3 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.16.17 08.00

Basis: Wet Weight

Seq Number: 3025343

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	08.16.17 17.03	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	08.16.17 17.03	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	08.16.17 17.03	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	08.16.17 17.03	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	08.16.17 17.03	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	08.16.17 17.03	U	1
Total BTEX		<0.00201	0.00201	mg/kg	08.16.17 17.03	U	1
Surrogate	Cas Number	% Recovery		Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	87		%	80-120	08.16.17 17.03	
1,4-Difluorobenzene	540-36-3	97		%	80-120	08.16.17 17.03	



# Certificate of Analytical Results 560113



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **T3-7'** Matrix: Soil Date Received: 08.11.17 11.45  
Lab Sample Id: 560113-005 Date Collected: 08.08.17 11.00 Sample Depth: 7 ft  
Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P  
Tech: MNV % Moisture:  
Analyst: MGO Date Prep: 08.22.17 10.30 Basis: Wet Weight  
Seq Number: 3025725

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	214	4.93	mg/kg	08.22.17 18.17		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P  
Tech: ARM % Moisture:  
Analyst: ARM Date Prep: 08.15.17 16.00 Basis: Wet Weight  
Seq Number: 3025058

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.16.17 09.02	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.16.17 09.02	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	08.16.17 09.02	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.16.17 09.02	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	99	%	70-135	08.16.17 09.02	
o-Terphenyl	84-15-1	97	%	70-135	08.16.17 09.02	



# Certificate of Analytical Results 560113



## COG Operating LLC, Artesia, NM

Patron 23 Fed #4H

Sample Id: **T3-7'**  
Lab Sample Id: 560113-005

Matrix: Soil  
Date Collected: 08.08.17 11.00

Date Received: 08.11.17 11.45  
Sample Depth: 7 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 08.16.17 08.00

Basis: Wet Weight

Seq Number: 3025343

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	08.16.17 17.22	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	08.16.17 17.22	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	08.16.17 17.22	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	08.16.17 17.22	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	08.16.17 17.22	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	08.16.17 17.22	U	1
Total BTEX		<0.00200	0.00200	mg/kg	08.16.17 17.22	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1,4-Difluorobenzene	540-36-3	96	%	80-120	08.16.17 17.22		
4-Bromofluorobenzene	460-00-4	86	%	80-120	08.16.17 17.22		

- 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 560113

### COG Operating LLC

Patron 23 Fed #4H

**Analytical Method: Inorganic Anions by EPA 300/300.1**

Seq Number: 3025725

Matrix: Solid

Prep Method: E300P

MB Sample Id: 729750-1-BLK

LCS Sample Id: 729750-1-BKS

Date Prep: 08.22.17

LCSD Sample Id: 729750-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<4.90	245	228	93	236	95	90-110	3	20	mg/kg	08.22.17 15:51	

**Analytical Method: Inorganic Anions by EPA 300/300.1**

Seq Number: 3025725

Matrix: Soil

Prep Method: E300P

Parent Sample Id: 560112-001

MS Sample Id: 560112-001 S

Date Prep: 08.22.17

MSD Sample Id: 560112-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	697	246	924	92	917	89	90-110	1	20	mg/kg	08.22.17 16:14	X

**Analytical Method: Inorganic Anions by EPA 300/300.1**

Seq Number: 3025725

Matrix: Soil

Prep Method: E300P

Parent Sample Id: 560113-004

MS Sample Id: 560113-004 S

Date Prep: 08.22.17

MSD Sample Id: 560113-004 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	14.2	246	279	108	277	107	90-110	1	20	mg/kg	08.22.17 18:01	

**Analytical Method: TPH By SW8015 Mod**

Seq Number: 3025058

Matrix: Solid

Prep Method: TX1005P

MB Sample Id: 729389-1-BLK

LCS Sample Id: 729389-1-BKS

Date Prep: 08.15.17

LCSD Sample Id: 729389-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	837	84	840	84	70-135	0	35	mg/kg	08.16.17 04:15	
Diesel Range Organics (DRO)	<15.0	1000	1010	101	1020	102	70-135	1	35	mg/kg	08.16.17 04:15	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	99		102		104		70-135	%	08.16.17 04:15
o-Terphenyl	96		102		99		70-135	%	08.16.17 04:15



## QC Summary 560113

### COG Operating LLC

Patron 23 Fed #4H

Analytical Method: TPH By SW8015 Mod

Seq Number: 3025058

Parent Sample Id: 560112-001

Matrix: Soil

MS Sample Id: 560112-001 S

Prep Method: TX1005P

Date Prep: 08.15.17

MSD Sample Id: 560112-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	997	933	94	837	84	70-135	11	35	mg/kg	08.16.17 05:20	
Diesel Range Organics (DRO)	<15.0	997	1100	110	1020	102	70-135	8	35	mg/kg	08.16.17 05:20	

#### Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	116		99		70-135	%	08.16.17 05:20
o-Terphenyl	111		94		70-135	%	08.16.17 05:20

Analytical Method: BTEX by EPA 8021B

Seq Number: 3025343

MB Sample Id: 729489-1-BLK

Matrix: Solid

LCS Sample Id: 729489-1-BKS

Prep Method: SW5030B

Date Prep: 08.16.17

LCSD Sample Id: 729489-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.0998	0.119	119	0.121	122	70-130	2	35	mg/kg	08.16.17 08:17	
Toluene	<0.00200	0.0998	0.115	115	0.111	112	70-130	4	35	mg/kg	08.16.17 08:17	
Ethylbenzene	<0.00200	0.0998	0.113	113	0.108	109	71-129	5	35	mg/kg	08.16.17 08:17	
m,p-Xylenes	<0.00399	0.200	0.219	110	0.211	107	70-135	4	35	mg/kg	08.16.17 08:17	
o-Xylene	<0.00200	0.0998	0.106	106	0.101	102	71-133	5	35	mg/kg	08.16.17 08:17	

#### Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	95		94		112		80-120	%	08.16.17 08:17
4-Bromofluorobenzene	84		81		81		80-120	%	08.16.17 08:17

Analytical Method: BTEX by EPA 8021B

Seq Number: 3025343

Parent Sample Id: 560049-002

Matrix: Soil

MS Sample Id: 560049-002 S

Prep Method: SW5030B

Date Prep: 08.16.17

MSD Sample Id: 560049-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00199	0.0994	0.0938	94	0.0855	86	70-130	9	35	mg/kg	08.16.17 08:55	
Toluene	<0.00199	0.0994	0.0858	86	0.0785	79	70-130	9	35	mg/kg	08.16.17 08:55	
Ethylbenzene	<0.00199	0.0994	0.0755	76	0.0735	74	71-129	3	35	mg/kg	08.16.17 08:55	
m,p-Xylenes	<0.00398	0.199	0.145	73	0.140	71	70-135	4	35	mg/kg	08.16.17 08:55	
o-Xylene	<0.00199	0.0994	0.0725	73	0.0732	74	71-133	1	35	mg/kg	08.16.17 08:55	

#### Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	98		99		80-120	%	08.16.17 08:55
4-Bromofluorobenzene	87		88		80-120	%	08.16.17 08:55



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51600113

Xenco Quote #

Xenco Job #

Matrix Codes

Client / Reporting Information		Project Information		Analytical Information		Xenco Job #															
Company Name / Branch: COG Operating LLC		Project Name/Number: Patron 23 Fed #4H																			
Company Address: 2407 PECOS Avenue Artesia NM 88210		Project Location: Patron 23 Fed #4H																			
Email: alieb@concho.com daniel@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:																			
Sample's Name: Aaron Lieb																					
No.	Field ID / Point of Collection	Collection	Sample Depth	Date	Time	Matrix	# of bottles	HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	TPH/ EXTENDED	BTEX	Chloride	Notes:	Field Comments	
1	T3 - Surf Ace		1	8-28-17	11:00am	S	1										X	X	X		
2	T3 - 2'		1				1										X	X	X		
3	T3 - 3'		1				1										X	X	X		
4	T3 - 3'		1				1										X	X	X		
5	T3 - 7'		1				1										X	X	X		
6																					
7																					
8																					
9																					
10																					
Turnaround Time (Business days)		Data Deliverable Information																			
<input type="checkbox"/> Same Day TAT		<input type="checkbox"/> 5 Day TAT																			
<input type="checkbox"/> Next Day EMERGENCY		<input type="checkbox"/> 7 Day TAT																			
<input type="checkbox"/> 2 Day EMERGENCY		<input type="checkbox"/> Contract TAT																			
<input type="checkbox"/> 3 Day EMERGENCY		<input type="checkbox"/> TRRP Checklist																			
TAT Starts Day received by Lab, if received by 5:00 pm																					
Relinquished by Sampler:		SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY																			
1 Relinquished by: <i>Amesio Montoya</i>		Date Time: 8-11-17		Received By: <i>Amesio Montoya</i>		Date Time: 8-11-17		Relinquished By: <i>Amesio Montoya</i>		Date Time: 8-11-17		Received By: <i>Amesio Montoya</i>		Date Time: 8-11-17		Relinquished By: <i>Amesio Montoya</i>		Date Time: 8-11-17			
3 Relinquished by: <i>Amesio Montoya</i>		Date Time: 8-12-17		Received By: <i>Amesio Montoya</i>		Date Time: 8-12-17		Relinquished By: <i>Amesio Montoya</i>		Date Time: 8-12-17		Received By: <i>Amesio Montoya</i>		Date Time: 8-12-17		Relinquished By: <i>Amesio Montoya</i>		Date Time: 8-12-17			
5 Relinquished by: <i>Amesio Montoya</i>		Date Time: 8-12-17		Received By: <i>Amesio Montoya</i>		Date Time: 8-12-17		Relinquished By: <i>Amesio Montoya</i>		Date Time: 8-12-17		Received By: <i>Amesio Montoya</i>		Date Time: 8-12-17		Relinquished By: <i>Amesio Montoya</i>		Date Time: 8-12-17			
Custody Seal #		Preserved where applicable																			
FED-EX / UPS: Tracking #																					

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco. Its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will any losses or expenses incurred by the Client if such losses are due to circumstances beyond the control of Xenco. A minimum charge of \$75 will be applied to each project. Xenco's liability will be limited to the cost of samples. Any sample terms will be enforced unless previously negotiated under a fully executed client contract.

Temp: 3.8  
CF: (0-6; -0.2°C)  
Corrected Temp: 3.6  
IR ID: R-8





# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In



Client: COG Operating LLC

Date/ Time Received: 08/11/2017 11:45:00 AM

Work Order #: 560113

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

### Sample Receipt Checklist

### Comments

#1 *Temperature of cooler(s)?	3.6
#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: 08/14/2017

Checklist reviewed by: Kelsey Brooks  
Kelsey Brooks

Date: 08/14/2017



# APPENDIX VI



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

---

August 03, 2018

SHELDON HITCHCOCK

COG OPERATING

P. O. BOX 1630

ARTESIA, NM 88210

RE: PATRON 23 FED #4 H

Enclosed are the results of analyses for samples received by the laboratory on 08/02/18 13:45.

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

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

Mike Snyder For Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

COG OPERATING  
SHELDON HITCHCOCK  
P. O. BOX 1630  
ARTESIA NM, 88210  
Fax To: NONE

Received: 08/02/2018  
Reported: 08/03/2018  
Project Name: PATRON 23 FED #4 H  
Project Number: NONE GIVEN  
Project Location: EDDY COUNTY, NM

Sampling Date: 08/02/2018  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: T-1 10' (H802107-01)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	9330	16.0	08/03/2018	ND	432	108	400	3.77	

**Sample ID: T-1 12' (H802107-02)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	5440	16.0	08/03/2018	ND	432	108	400	3.77	

**Sample ID: T-1 14' (H802107-03)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	2280	16.0	08/03/2018	ND	432	108	400	3.77		

**Sample ID: T-1 16' (H802107-04)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	272	16.0	08/03/2018	ND	432	108	400	3.77	

Cardinal Laboratories

\*=Accredited Analyte

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

### Notes and Definitions

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

---

Cardinal Laboratories

\*=Accredited Analyte

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---

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager



**(5/5) 393-2326 FAX (575) 393-2476**

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

<b>Company Name:</b> Concho Resources <b>Project Manager:</b> Sheldon Hitchcock <b>Address:</b> 2407 Pecos Avenue <b>City:</b> Artesia <b>Phone #:</b> 575-703-6475 <b>Fax #:</b> <b>Project #:</b> <b>Project Name:</b> Patron 23 Ed #4 (7/1/17) <b>Project Location:</b> Eddy Co, NM <b>Sampler Name:</b> S. Hitchcock		<b>P.O. #:</b> <b>Company:</b> COG <b>Attn:</b> Robert McNeill <b>Address:</b> <b>City:</b> <b>State:</b> <b>Zip:</b> <b>Phone #:</b> <b>Fax #:</b>	
<b>BILL TO</b>			
<b>ANALYSIS REQUEST</b>			

Lab I.D.		Sample I.D.		(G)RAB OR (C)OMP.		# CONTAINERS		MATRIX						PRESERV.		SAMPLING		DATE	TIME	ANALYSIS
								GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :				
H002107		1		10'		1											8/2/18	9:00	Chlorides	
		2		12'		1											9:05	1		
		3		14'		1											9:10	1		
		4		16'		1											4:15	1		

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<b>Relinquished By:</b> [Signature] <b>Date:</b> 8/2/18 <b>Time:</b> 1:45	<b>Received By:</b> [Signature] <b>Date:</b> <b>Time:</b>
<b>Relinquished By:</b> [Signature] <b>Date:</b> <b>Time:</b>	<b>Received By:</b> [Signature] <b>Date:</b> <b>Time:</b>

<b>Delivered By: (Circle One)</b> #75 <b>Sampler - UPS - Bus - Other:</b> 5/40/5.350	<b>Sample Condition</b> Cool <input checked="" type="checkbox"/> Intact <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<b>CHECKED BY:</b> [Signature]
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REMARKS: Stop Cl if ≤ 600 mg/l N<sub>3</sub>



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

---

August 03, 2018

SHELDON HITCHCOCK

COG OPERATING

P. O. BOX 1630

ARTESIA, NM 88210

RE: PATRON 23 FED #4 H

Enclosed are the results of analyses for samples received by the laboratory on 08/02/18 13:45.

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Method EPA 524.2	Total Trihalomethanes (TTHM)
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Sincerely,

Mike Snyder For Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

 COG OPERATING  
 SHELDON HITCHCOCK  
 P. O. BOX 1630  
 ARTESIA NM, 88210  
 Fax To: NONE

 Received: 08/02/2018  
 Reported: 08/03/2018  
 Project Name: PATRON 23 FED #4 H  
 Project Number: NONE GIVEN  
 Project Location: EDDY COUNTY, NM

 Sampling Date: 08/02/2018  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: N. SIDEWALL (H802108-01)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	240	16.0	08/03/2018	ND	416	104	400	3.92	

**Sample ID: S. SIDEWALL (H802108-02)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	192	16.0	08/03/2018	ND	416	104	400	3.92	

**Sample ID: E. SIDEWALL (H802108-03)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	96.0	16.0	08/03/2018	ND	416	104	400	3.92	

**Sample ID: W. SIDEWALL (H802108-04)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	08/03/2018	ND	416	104	400	3.92	

Cardinal Laboratories

\*=Accredited Analyte

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

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

---

Cardinal Laboratories

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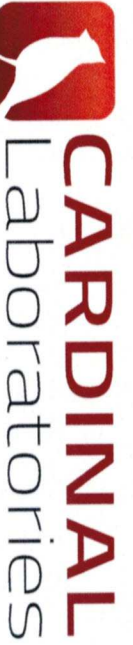
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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager





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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

P6-1071

Company Name: Concho Resources		<b>BILL TO</b>		ANALYSIS REQUEST											
Project Manager: Sheldon Hitchcock		P.O. #:													
Address: 2407 Pecos Avenue		Company: COG													
City: Artesia		Attn: Robert McNeill													
Phone #: 575-703-6475		Address:													
Fax #: State: NM Zip: 88210		City:													
Project #:		State:													
Project Name: Paton 23 Fed #4 (71117)		Zip:													
Project Location: Eddy Co, NM		Phone #:													
Sample Name: S. Hitchcock		Fax #:													
FOR LAB USE ONLY															
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX				PRESERV	SAMPLING						
		GROUNDWATER													
		WASTEWATER													
		SOIL													
		OIL													
		SLUDGE													
		OTHER :													
		ACID/BASE:													
		ICE / COOL													
		OTHER :													
		DATE	TIME												
H802108															
1	N. Side Wall	G	1	8/21/18	9:20	/									
2	S. Side Wall	G	1		9:25	/									
3	E. Side Wall	G	1		9:30	/									
4	W. Side Wall	G	1		9:35	/									
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Relinquished By: <i>Sheldon Hitchcock</i>		Date: 8/21/18		Received By: <i>Robert McNeill</i>		REMARKS: <i>Rush</i>									
Refiniquished By:		Time: 1:45		Received By:											
Date:		Time:													
Delivered By: (Circle One) <i>#75</i>		Sample Condition		CHECKED BY: <i>[Signature]</i>											
Cool <input checked="" type="checkbox"/> Intact <input checked="" type="checkbox"/>		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>													
Sampler - UPS - Bus - Other: <i>5.40/5.35</i>		Yes <input type="checkbox"/> No <input type="checkbox"/>													

\* Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326



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

---

August 03, 2018

SHELDON HITCHCOCK

COG OPERATING

P. O. BOX 1630

ARTESIA, NM 88210

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Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

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Sincerely,

Mike Snyder For Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

 COG OPERATING  
 SHELDON HITCHCOCK  
 P. O. BOX 1630  
 ARTESIA NM, 88210  
 Fax To: NONE

 Received: 08/02/2018  
 Reported: 08/03/2018  
 Project Name: PATRON 23 FED #4 H  
 Project Number: NONE GIVEN  
 Project Location: EDDY COUNTY, NM

 Sampling Date: 08/02/2018  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: T-3 0' (H802109-01)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	9330	16.0	08/03/2018	ND	416	104	400	3.92	

**Sample ID: T-3 1' (H802109-02)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1680	16.0	08/03/2018	ND	416	104	400	3.92	

**Sample ID: T-3 2' (H802109-03)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	240	16.0	08/03/2018	ND	416	104	400	3.92	

Cardinal Laboratories

\*=Accredited Analyte

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

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

---

Cardinal Laboratories

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---

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager





CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

BILL TO

ANALYSIS REQUEST

Company Name: Concho Resources

Project Manager: Sheldon Hitchcock

Address: 2407 Pecos Avenue

City: Artesia State: NM zip: 88210

Phone #: 575-703-6475

Project #: Project Owner: Concho

Project Name: Patron 23 Fed #4 (2/1/12)

Project Location: Edley Co, NM

Sampler Name: S. Hitchcock

P.O. #:

Company: COG

Attn: Robert McNeill

Address:

City:

State: Zip:

Phone #:

Fax #:

FOR LAB USE ONLY

Lab I.D.

Sample I.D.

H8E2109

1 T-3 0'  
2 T-3 1'  
3 T-3 2'

(G)RAB OR (C)OMP.

# CONTAINERS

GROUNDWATER

WASTEWATER

SOIL

OIL

SLUDGE

OTHER :

ACID/BASE:

ICE / COOL

OTHER :

DATE

TIME

11:00

11:05

11:10

1

1

1

1

1

1

1

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1

1

1

1

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Relinquished By:

Date: 8/2/18

Received By:

8/2/18

8/2/18

8/2/18

8/2/18

8/2/18

8/2/18

8/2/18

8/2/18

8/2/18

8/2/18

Relinquished By:

Date: 8/2/18

Received By:

8/2/18

8/2/18

8/2/18

8/2/18

8/2/18

8/2/18

8/2/18

8/2/18

8/2/18

8/2/18

Delivered By: (Circle One)

Date: 8/2/18

Received By:

8/2/18

8/2/18

8/2/18

8/2/18

8/2/18

8/2/18

8/2/18

8/2/18

8/2/18

8/2/18

Sampler - UPS - Bus - Other: 5:40 / 5:35

Sample Condition

Cool Intact

Yes Yes

No No

Checked By:

8/2/18

8/2/18

8/2/18

8/2/18

8/2/18

8/2/18

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326