



January 24, 2019

Christina Hernandez
Oil Conservation Division, District 1
1625 N. French Dr.
Hobbs, NM 88240

Ryan Mann
New Mexico State Land Office
1001 S. Atkinson
Roswell, NM 88230

Re: Closure Report
Bobwhite 12 State Com 2H (10/29/18)
API #: 30-025-43233
GPS: 32.50004, -103.52396
RP#: 1RP-5267
Unit Letter B, Section 12, Township 21 South, Range 33 East
Lea County, New Mexico

Ms. Hernandez/Mr. Mann,

COG Operating, LLC (COG) is pleased to submit the following closure report in response to a release that occurred at the Bobwhite 12 State Com 2H located in Unit Letter B, Section 12, Township 21 South, Range 33 East in Lea County, New Mexico.

BACKGROUND

The release was discovered on October 29, 2018 and a C-141 initial report was submitted and approved by the New Mexico Oil Conservation Division (NMOCD). The crude oil and produced water release was caused by sand washing out a Baird valve that created a hole. All of the fluids remained on the pad. Approximately five (5) barrels of crude oil and seven (7) barrel of produced water were released and recovered approximately three (3) oil and four (4) of water. The initial C-141 is shown in Appendix A.

GROUNDWATER AND REGULATORY FRAMEWORK

According to the New Mexico Office of the State Engineer (NMOSE), reported a water well located in Section 11 with ground water depth of 150 feet below surface. The Chevron trend map show an average depth to water of 50' to 100' below surface. The water well information is shown in Appendix B.

A risk based evaluation and site determinations were performed in accordance to the New Mexico Oil Conservation Division (NMOCD) Rule (Title 19 Chapter 15 Part 29) for releases on oil and gas development and production facilities in New Mexico (effective August 14, 2018). According to the site characterization evaluation, no other receptors (water wells, playas, karst, water course, lake beds or ordinance boundaries) were located within each specific boundaries or distance from the site. The delineation and closure criteria are listed below:

General Site Characterization and Groundwater:

Site Characterization	Average Groundwater Depth (ft.)
None Located	>50-100 feet

Delineation and Closure Criteria:

Remedial Action Levels (RALs)	
Chlorides	10,000 mg/kg
TPH (GRO and DRO and MRO)	2,500 mg/kg
TPH (GRO and DRO)	1,000 mg/kg
Benzene	10 mg/kg
Total BTEX	50 mg/kg

REMEDIATION PLAN

All samples were below the Table 1 closure criteria and thus no remediation will occur.

SITE RECLAMATION AND RESTORATION

The spill remained on the facility pad and no reclamation is required for the release.

CLOSURE REQUEST

Based on the information provided, COG requesting closure of the release. The signed C-141 Final is included in Appendix A. Should you have any questions or concerns on the closure report, please do not hesitate to contact me.

Sincerely,

Sincerely,

Concho Operating, LLC



Ike Tavarez, P. G.
Senior HSE Supervisor
itavarez@concho.com

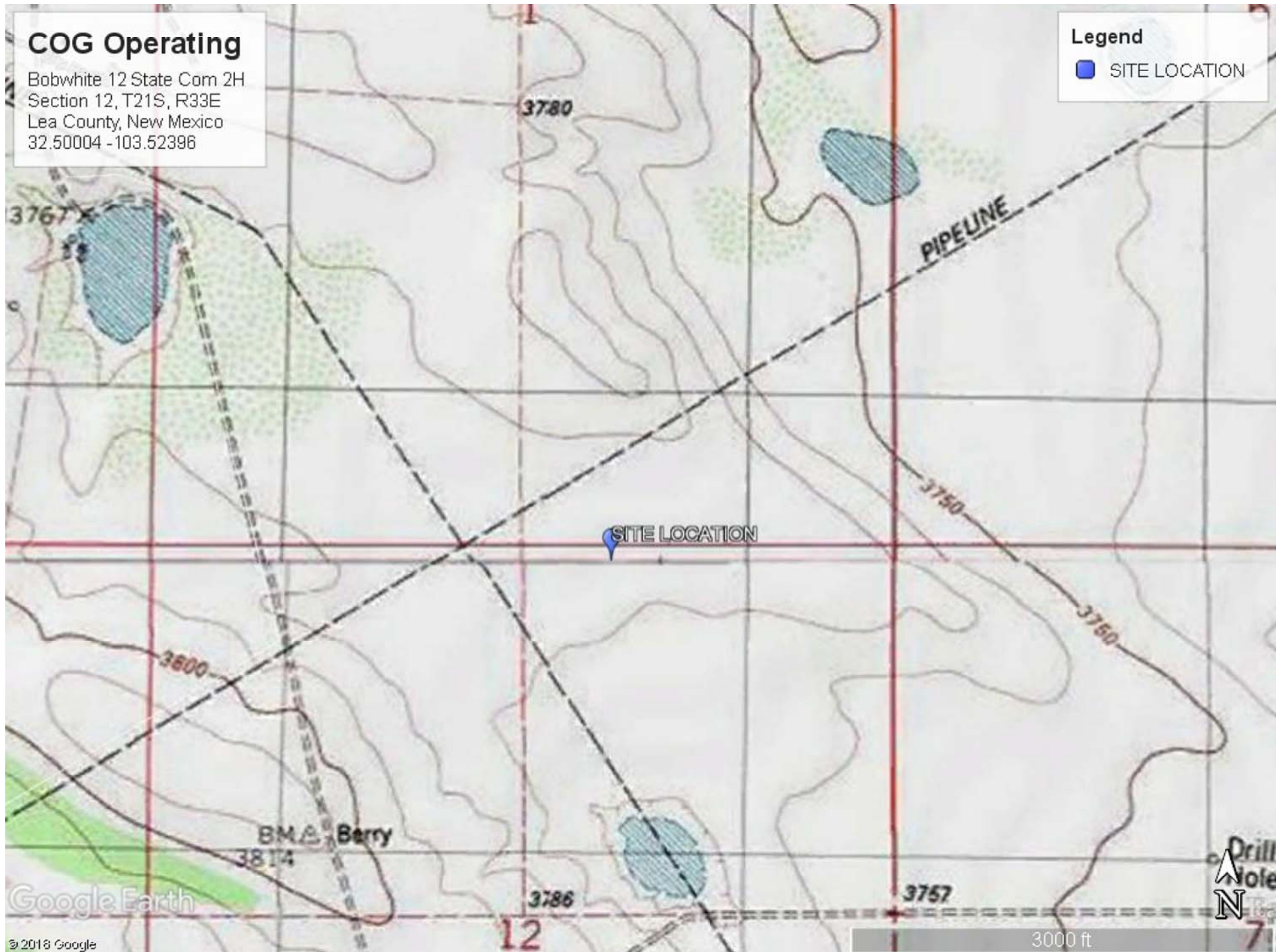
Figures

COG Operating

Bobwhite 12 State Com 2H
Section 12, T21S, R33E
Lea County, New Mexico
32.50004 -103.52396

Legend

 SITE LOCATION



COG Operating

Bobwhite 12 State Com 2H
Section 12, T21S, R33E
Lea County, New Mexico
32.50004 -103.52396

Legend

- Sample Location
- Spill Area

AH-1 ●

Google Earth



80 ft

Tables

Table 1
COG Operating LLC.
Bobwhite 12 State 2 H (10/29/19)
Lea County, New Mexico

Sample ID	Sample Date	Soil Status		TPH (mg/kg)							Benzene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
		In-Situ	Removed	GRO	DRO	MRO	Total	GRO	DRO	Total			
Average Depth to Groundwater (ft)		50 -100'											
NMOCD RAL Limits (mg/kg)				-	-	-	2,500	-	-	1,000	10	50	10,000
AH-1 (0-1)	01/14/19 00:00			<15.0	185	<15.0	185	<15.0	185	185	<0.00200	0.0293	640
AH-1 (1-1.5)	01/14/19 00:00			<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	102
North	01/14/19 00:00			22.4	190	16.3	229	22.4	190	212	<0.00199	<0.00199	1010
South	01/14/19 00:00			<15.0	281	<15.0	281	<15.0	281	281	<0.00201	<0.00201	529
East	01/14/19 00:00			<15.0	719	<15.0	719	<15.0	719	719	<0.00200	<0.00200	1130
West	01/14/19 00:00			<15.0	335	60.9	396	<15.0	335	335	<0.00202	<0.00202	242



Proposed Excavation Depth

(-)

Not Analyzed

Appendix A

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

State of New Mexico
Energy Minerals and Natural
Resources Department

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

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party	OGRID
Contact Name	Contact Telephone
Contact email	Incident # (assigned by OCD)
Contact mailing address	

Location of Release Source

Latitude _____ Longitude _____
(NAD 83 in decimal degrees to 5 decimal places)

Site Name	Site Type
Date Release Discovered	API# (if applicable)

Unit Letter	Section	Township	Range	County

Surface Owner: ☐ State ☐ Federal ☐ Tribal ☐ Private (Name: _____)

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

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

Cause of Release

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? ☐ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release?
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?	

Initial Response

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

☐ The source of the release has been stopped. ☐ The impacted area has been secured to protect human health and the environment. ☐ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. ☐ All free liquids and recoverable materials have been removed and managed appropriately.	
If all the actions described above have <u>not</u> been undertaken, explain why:	
Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.	
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.	
Printed Name: _____	Title: _____
Signature: <u>Delann Opreant</u>	Date: _____
email: _____	Telephone: _____
<u>OCD Only</u>	
Received by: _____	Date: _____

Incident ID	
District RP	1RP 5267
Facility ID	
Application ID	

Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	≥100 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
515	
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas not on an exploration, development, production, or storage site?	☒ Yes ☐ No

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

Characterization Report Checklist: Each of the following items must be included in the report. ☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.☐ Field data☒ Data table of soil contaminant concentration data☒ Depth to water determination☒ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release☐ Boring or excavation logs☐ Photographs including date and GIS information☒ Topographic/Aerial maps☒ Laboratory data including chain of custody
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If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

Incident ID	
District RP	1RP 5267
Facility ID	
Application ID	

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

Printed Name: Ike Tavaréz Title: Senior HSE Supervisor

Signature:  Date: 1/24/19

email: itavarez@concho.com Telephone: 432-683-7443

OCD Only

Received by: _____ Date: _____

Incident ID	
District RP	1RP 5267
Facility ID	
Application ID	

Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

Closure Report Attachment Checklist: *Each of the following items must be included in the closure report.*

- ☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC
- ☐ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)
- ☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)
- ☐ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: Ike Tavaréz Title: Senior HSE Supervisor

Signature:  Date: 1-29-19

email: itavarez@concho.com Telephone: 432-683-7443

OCD Only

Received by: _____ Date: _____

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: _____ Date: _____

Printed Name: _____ Title: _____

Appendix B



New Mexico Office of the State Engineer

Water Column/Average Depth to Water

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

(quarters are smallest to largest) (NAD83 UTM in meters)

No records found.

PLSS Search:

Section(s): 12

Township: 21S

Range: 33E

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

1/24/19 1:25 PM

WATER COLUMN/ AVERAGE
DEPTH TO WATER



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															
		Sub-	Q Q Q							Water					
POD Number	Code	basin	County	64	16	4	Sec	Tws	Rng	X	Y	DepthWell	DepthWater	Column	
CP 00578		CP	LE	4	3	11	21S	33E		636674	3595445*	☐	165	150	15
CP 00579		CP	LE	2	2	02	21S	33E		637438	3598269*	☐	125	100	25
CP 00600 POD1		CP	LE	2	4	25	21S	33E		639152	3591054*	☐	65		
CP 00601 POD1		CP	LE	2	1	28	21S	33E		633502	3591791*	☐	223		
CP 00765 POD1		CP	LE	3	2	13	21S	33E		638698	3594668*	☐	508		
CP 00766 POD1		CP	LE	3	2	13	21S	33E		638698	3594668*	☐	510		
CP 00794 POD1		CP	LE	4	1	1	18	21S	33E	629976	3594865*	☐	160		
CP 00795 POD1		CP	LE	4	1	1	18	21S	33E	629976	3594865*	☐	170		
CP 00796 POD1		CP	LE	2	2	4	02	21S	33E	637548	3597564*	☐	102		
CP 00797 POD1		CP	LE	1	2	4	02	21S	33E	637348	3597564*	☐	110		
CP 00801 POD1		CP	LE	3	2	1	11	21S	33E	636555	3596549*	☐	200		
CP 00802 POD1		CP	LE	3	3	2	02	21S	33E	637001	3598672	☐	1154		
CP 00803 POD1		CP	LE	3	2	2	02	21S	33E	637337	3598168*	☐	1100		
CP 00804 POD1		CP	LE	3	2	2	02	21S	33E	637337	3598168*	☐	170		
CP 00854 POD1		CP	LE	1	1	2	33	21S	33E	633879	3590223	☐	950	600	350
CP 01290 POD1		CP	LE	3	1	02	21S	33E		637114	3598855	☐	1250	725	525
CP 01316 POD1		CP	LE	3	2	4	02	21S	33E	637432	3597709	☐	1370		
CP 01317 POD1		CP	LE	1	3	2	02	21S	33E	636884	3598450	☐	1250	1025	225
CP 01349 POD1		CP	LE	2	3	1	27	21S	33E	635304	3591576	☐	1188	572	616
CP 01355 POD1		CP	LE	2	1	3	27	21S	33E	634773	3591061	☐	1192	582	610
CP 01356 POD1		CP	LE	4	2	2	33	21S	33E	634560	3590014	☐	1098	555	543
CP 01357 POD1		CP	LE	4	3	1	27	21S	33E	634782	3591347	☐	1286	578	708
CP 01411 POD1		CP	LE	2	2	34	21S	33E		635968	3590386	☐	1149		
CP 01411 POD2		CP	LE	1	2	34	21S	33E		635534	3590380	☐	1125		

Average Depth to Water:

543 feet

Minimum Depth:

100 feet

Maximum Depth:

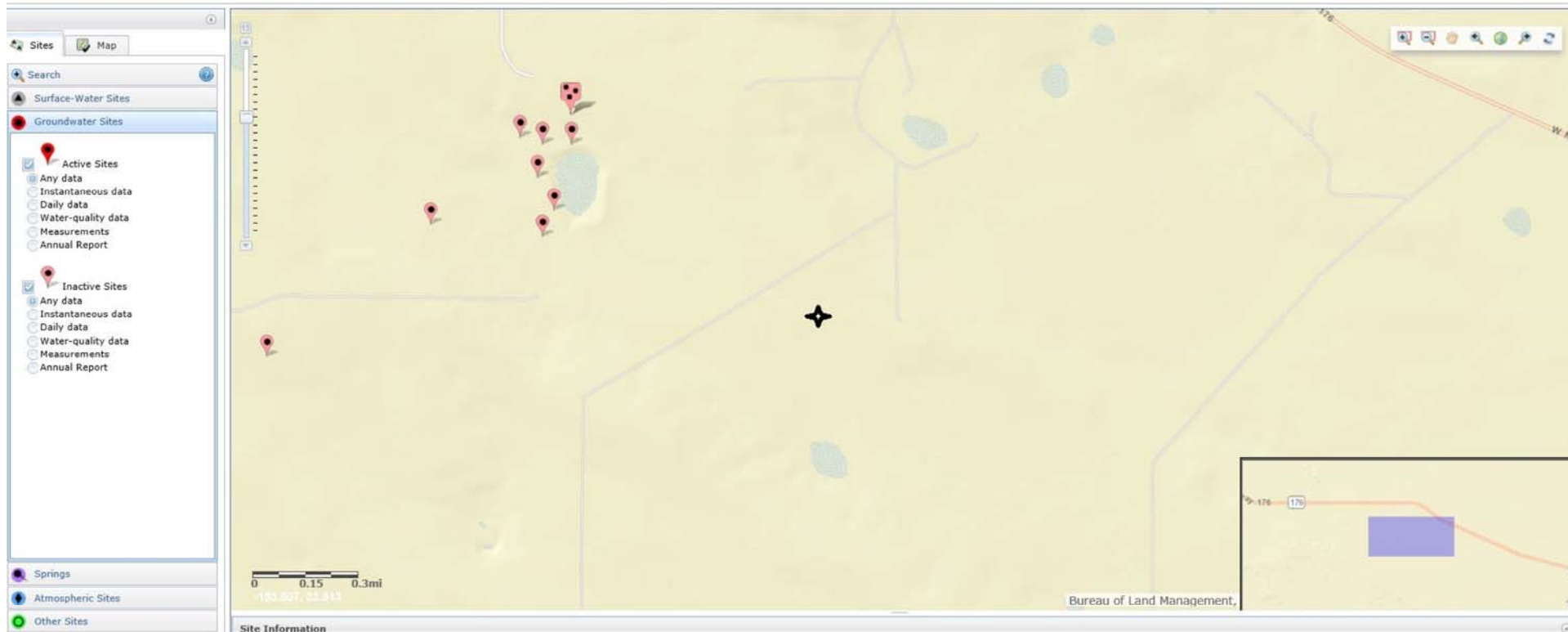
1025 feet

Record Count: 24

PLSS Search:

Township: 21S **Range:** 33E

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



COG Operating

Bobwhite 12 State Com 2H
Section 12, T21S, R33E
Lea County, New Mexico
32.50004 -103.52396

Legend

-  High
-  Low
-  Medium
-  SITE LOCATION

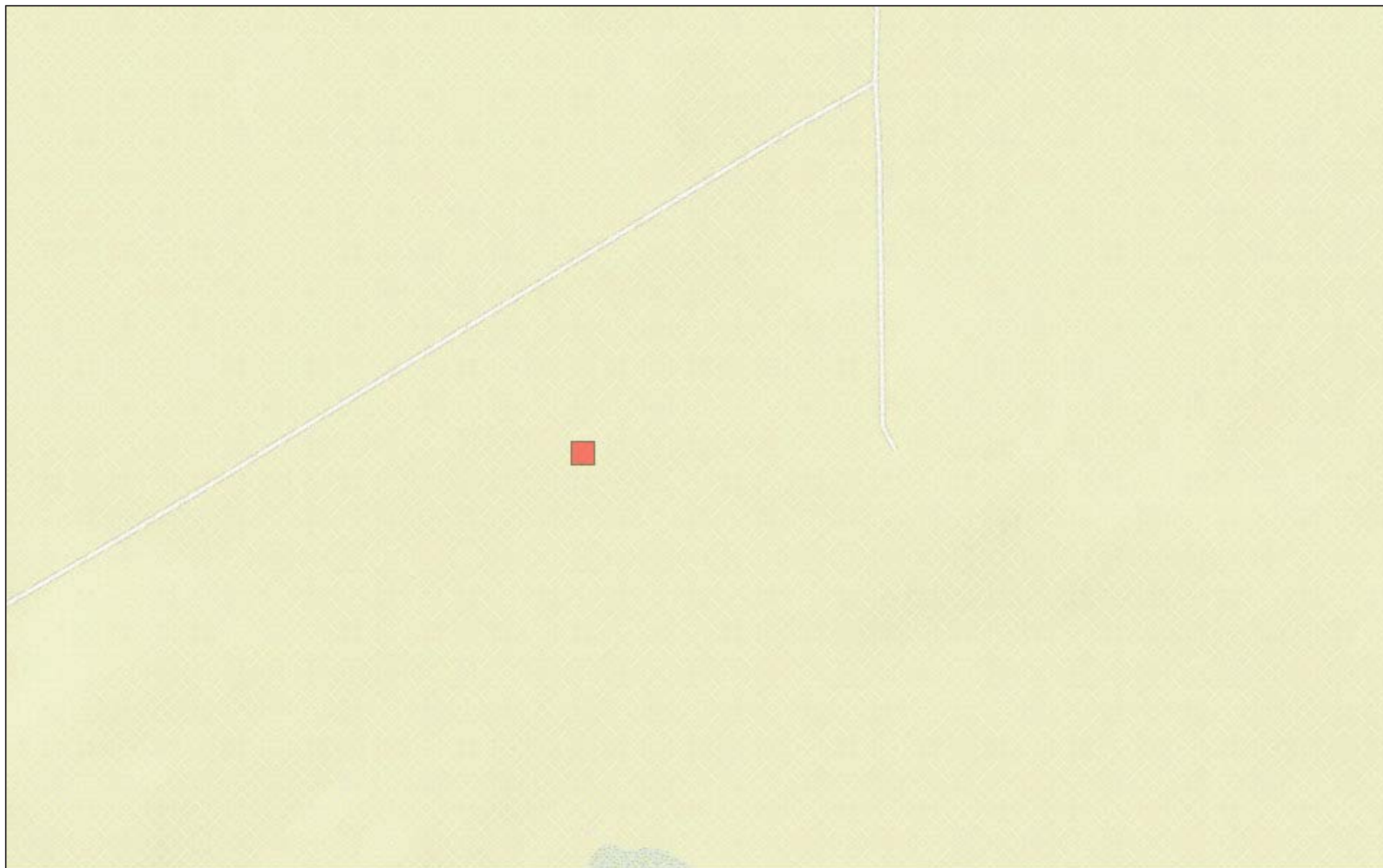
 SITE LOCATION

Google Earth

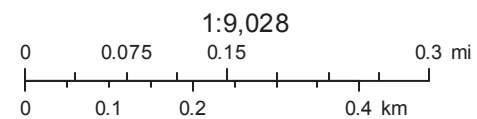


90 ft

New Mexico NFHL Data



January 24, 2019



FEMA
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan,

nmflood.org is made possible through a collaboration with NMDHSEM, EDAC, and FEMA
This is a non-regulatory product for informational use only. Please consult your local floodplain administrator for further information.

Appendix C



Certificate of Analysis Summary 611432

COG Operating LLC, Artesia, NM

Project Name: Bobwhite 12 State 2H (10-29-18)



Project Id:

Contact: Ike Tavaréz

Project Location: Lea Co.NM

Date Received in Lab: Wed Jan-16-19 09:56 am

Report Date: 22-JAN-19

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	611432-001	611432-002	611432-003	611432-004	611432-005	611432-006
	<i>Field Id:</i>	AH-1 (0-1)	AH-1 (1-1.5')	North	South	East	West
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Jan-14-19 00:00	Jan-14-19 00:00	Jan-14-19 00:00	Jan-14-19 00:00	Jan-14-19 00:00	Jan-14-19 00:00
BTEX by EPA 8021B	<i>Extracted:</i>	Jan-17-19 08:30	Jan-17-19 08:30	Jan-17-19 16:00	Jan-17-19 17:00	Jan-17-19 17:00	Jan-17-19 17:00
	<i>Analyzed:</i>	Jan-17-19 18:18	Jan-17-19 18:37	Jan-18-19 08:46	Jan-18-19 15:39	Jan-18-19 15:58	Jan-18-19 16:28
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199	<0.00201 0.00201	<0.00200 0.00200	<0.00202 0.00202
Toluene		0.00359 0.00200	<0.00200 0.00200	<0.00199 0.00199	<0.00201 0.00201	<0.00200 0.00200	<0.00202 0.00202
Ethylbenzene		0.00607 0.00200	<0.00200 0.00200	<0.00199 0.00199	<0.00201 0.00201	<0.00200 0.00200	<0.00202 0.00202
m,p-Xylenes		0.00520 0.00400	<0.00399 0.00399	<0.00398 0.00398	<0.00402 0.00402	<0.00400 0.00400	<0.00403 0.00403
o-Xylene		0.0144 0.00200	<0.00200 0.00200	<0.00199 0.00199	<0.00201 0.00201	<0.00200 0.00200	<0.00202 0.00202
Total Xylenes		0.0196 0.00200	<0.00200 0.00200	<0.00199 0.00199	<0.00201 0.00201	<0.00200 0.00200	<0.00202 0.00202
Total BTEX		0.0293 0.00200	<0.00200 0.00200	<0.00199 0.00199	<0.00201 0.00201	<0.00200 0.00200	<0.00202 0.00202
Chloride by EPA 300	<i>Extracted:</i>	Jan-17-19 11:00	Jan-17-19 11:00	Jan-17-19 14:30	Jan-17-19 14:30	Jan-17-19 14:30	Jan-17-19 14:30
	<i>Analyzed:</i>	Jan-17-19 16:39	Jan-17-19 16:50	Jan-17-19 19:58	Jan-17-19 20:16	Jan-17-19 20:22	Jan-17-19 20:28
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		640 5.00	102 5.00	1010 5.00	529 5.00	1130 4.98	242 4.97
TPH By SW8015 Mod	<i>Extracted:</i>	Jan-19-19 09:00	Jan-19-19 09:00	Jan-19-19 09:00	Jan-19-19 09:00	Jan-19-19 09:00	Jan-19-19 09:00
	<i>Analyzed:</i>	Jan-19-19 17:23	Jan-19-19 17:03	Jan-19-19 16:43	Jan-19-19 16:22	Jan-19-19 15:43	Jan-19-19 15:23
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons		<15.0 15.0	<15.0 15.0	22.4 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0
Diesel Range Organics		185 15.0	<15.0 15.0	190 15.0	281 15.0	719 15.0	335 15.0
Motor Oil Range Hydrocarbons (MRO)		<15.0 15.0	<15.0 15.0	16.3 15.0	<15.0 15.0	<15.0 15.0	60.9 15.0
Total TPH		185 15.0	<15.0 15.0	229 15.0	281 15.0	719 15.0	396 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 - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Jessica Kramer

Jessica Kramer
Project Assistant

Analytical Report 611432

for COG Operating LLC

Project Manager: Ike Tavaréz
Bobwhite 12 State 2H (10-29-18)

22-JAN-19

Collected By: Client



1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-18-28), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-18-17), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-18-18)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-18)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-18-4)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Phoenix Mobile (EPA Lab Code: AZ00901): Arizona (AZM757)
Xenco-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429)
Xenco-Lakeland: Florida (E84098)



22-JAN-19

Project Manager: **Ike Tavaréz**

COG Operating LLC

2407 Pecos Avenue

Artesia, NM 88210

Reference: XENCO Report No(s): **611432**

Bobwhite 12 State 2H (10-29-18)

Project Address: Lea Co.NM

Ike Tavaréz:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 611432. 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. 611432 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

Jessica Kramer

Project Assistant

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Sample Cross Reference 611432



COG Operating LLC, Artesia, NM

Bobwhite 12 State 2H (10-29-18)

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
AH-1 (0-1)	S	01-14-19 00:00		611432-001
AH-1 (1-1.5')	S	01-14-19 00:00		611432-002
North	S	01-14-19 00:00		611432-003
South	S	01-14-19 00:00		611432-004
East	S	01-14-19 00:00		611432-005
West	S	01-14-19 00:00		611432-006



CASE NARRATIVE

Client Name: COG Operating LLC

Project Name: Bobwhite 12 State 2H (10-29-18)

Project ID:
Work Order Number(s): 611432

Report Date: 22-JAN-19
Date Received: 01/16/2019

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3076188 BTEX by EPA 8021B

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

Batch: LBA-3076200 BTEX by EPA 8021B

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

Batch: LBA-3076351 BTEX by EPA 8021B

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

Batch: LBA-3076405 TPH By SW8015 Mod

Surrogate o-Terphenyl recovered above QC limits Data confirmed by re-analysis. Samples affected are: 7670058-1-BSD.



Certificate of Analytical Results 611432



COG Operating LLC, Artesia, NM

Bobwhite 12 State 2H (10-29-18)

Sample Id: **AH-1 (0-1)**

Matrix: Soil

Date Received: 01.16.19 09.56

Lab Sample Id: 611432-001

Date Collected: 01.14.19 00.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 01.17.19 11.00

Basis: Wet Weight

Seq Number: 3076271

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	640	5.00	mg/kg	01.17.19 16.39		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 01.19.19 09.00

Basis: Wet Weight

Seq Number: 3076405

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	01.19.19 17.23	U	1
Diesel Range Organics	C10C28DRO	185	15.0	mg/kg	01.19.19 17.23		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	01.19.19 17.23	U	1
Total TPH	PHC635	185	15.0	mg/kg	01.19.19 17.23		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	97	%	70-135	01.19.19 17.23		
o-Terphenyl	84-15-1	103	%	70-135	01.19.19 17.23		



Certificate of Analytical Results 611432



COG Operating LLC, Artesia, NM

Bobwhite 12 State 2H (10-29-18)

Sample Id: **AH-1 (0-1)**

Matrix: Soil

Date Received: 01.16.19 09.56

Lab Sample Id: 611432-001

Date Collected: 01.14.19 00.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 01.17.19 08.30

Basis: Wet Weight

Seq Number: 3076188

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.17.19 18.18	U	1
Toluene	108-88-3	0.00359	0.00200	mg/kg	01.17.19 18.18		1
Ethylbenzene	100-41-4	0.00607	0.00200	mg/kg	01.17.19 18.18		1
m,p-Xylenes	179601-23-1	0.00520	0.00400	mg/kg	01.17.19 18.18		1
o-Xylene	95-47-6	0.0144	0.00200	mg/kg	01.17.19 18.18		1
Total Xylenes	1330-20-7	0.0196	0.00200	mg/kg	01.17.19 18.18		1
Total BTEX		0.0293	0.00200	mg/kg	01.17.19 18.18		1
Surrogate	Cas Number	% Recovery		Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	124		%	70-130	01.17.19 18.18	
1,4-Difluorobenzene	540-36-3	108		%	70-130	01.17.19 18.18	



Certificate of Analytical Results 611432



COG Operating LLC, Artesia, NM

Bobwhite 12 State 2H (10-29-18)

Sample Id: AH-1 (1-1.5')

Matrix: Soil

Date Received: 01.16.19 09.56

Lab Sample Id: 611432-002

Date Collected: 01.14.19 00.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 01.17.19 11.00

Basis: Wet Weight

Seq Number: 3076271

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	102	5.00	mg/kg	01.17.19 16.50		1

Analytical Method: TPH By SW8015 Mod

Prep Method: TX1005P

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 01.19.19 09.00

Basis: Wet Weight

Seq Number: 3076405

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	01.19.19 17.03	U	1
Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	01.19.19 17.03	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	01.19.19 17.03	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	01.19.19 17.03	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	102	%	70-135	01.19.19 17.03		
o-Terphenyl	84-15-1	103	%	70-135	01.19.19 17.03		



Certificate of Analytical Results 611432



COG Operating LLC, Artesia, NM

Bobwhite 12 State 2H (10-29-18)

Sample Id: AH-1 (1-1.5')

Matrix: Soil

Date Received: 01.16.19 09.56

Lab Sample Id: 611432-002

Date Collected: 01.14.19 00.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 01.17.19 08.30

Basis: Wet Weight

Seq Number: 3076188

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.17.19 18.37	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	01.17.19 18.37	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	01.17.19 18.37	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	01.17.19 18.37	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	01.17.19 18.37	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	01.17.19 18.37	U	1
Total BTEX		<0.00200	0.00200	mg/kg	01.17.19 18.37	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	114	%	70-130	01.17.19 18.37		
4-Bromofluorobenzene	460-00-4	117	%	70-130	01.17.19 18.37		



Certificate of Analytical Results 611432



COG Operating LLC, Artesia, NM

Bobwhite 12 State 2H (10-29-18)

Sample Id: **North**
Lab Sample Id: 611432-003

Matrix: Soil
Date Collected: 01.14.19 00.00

Date Received: 01.16.19 09.56

Analytical Method: Chloride by EPA 300

Tech: CHE

Analyst: CHE

Seq Number: 3076277

Prep Method: E300P

% Moisture:

Date Prep: 01.17.19 14.30

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1010	5.00	mg/kg	01.17.19 19.58		1

Analytical Method: TPH By SW8015 Mod

Tech: ALJ

Analyst: ALJ

Seq Number: 3076405

Prep Method: TX1005P

% Moisture:

Date Prep: 01.19.19 09.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	22.4	15.0	mg/kg	01.19.19 16.43		1
Diesel Range Organics	C10C28DRO	190	15.0	mg/kg	01.19.19 16.43		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	16.3	15.0	mg/kg	01.19.19 16.43		1
Total TPH	PHC635	229	15.0	mg/kg	01.19.19 16.43		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	101	%	70-135	01.19.19 16.43	
o-Terphenyl	84-15-1	102	%	70-135	01.19.19 16.43	



Certificate of Analytical Results 611432



COG Operating LLC, Artesia, NM

Bobwhite 12 State 2H (10-29-18)

Sample Id: **North**
Lab Sample Id: 611432-003

Matrix: Soil
Date Collected: 01.14.19 00.00

Date Received: 01.16.19 09.56

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 01.17.19 16.00

Basis: Wet Weight

Seq Number: 3076200

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	01.18.19 08.46	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	01.18.19 08.46	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	01.18.19 08.46	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	01.18.19 08.46	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	01.18.19 08.46	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	01.18.19 08.46	U	1
Total BTEX		<0.00199	0.00199	mg/kg	01.18.19 08.46	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	118	%	70-130	01.18.19 08.46		
1,4-Difluorobenzene	540-36-3	116	%	70-130	01.18.19 08.46		



Certificate of Analytical Results 611432



COG Operating LLC, Artesia, NM

Bobwhite 12 State 2H (10-29-18)

Sample Id: **South**
Lab Sample Id: 611432-004

Matrix: Soil
Date Collected: 01.14.19 00.00

Date Received: 01.16.19 09.56

Analytical Method: Chloride by EPA 300

Tech: CHE

Analyst: CHE

Seq Number: 3076277

Prep Method: E300P

% Moisture:

Date Prep: 01.17.19 14.30

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	529	5.00	mg/kg	01.17.19 20.16		1

Analytical Method: TPH By SW8015 Mod

Tech: ALJ

Analyst: ALJ

Seq Number: 3076405

Prep Method: TX1005P

% Moisture:

Date Prep: 01.19.19 09.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	01.19.19 16.22	U	1
Diesel Range Organics	C10C28DRO	281	15.0	mg/kg	01.19.19 16.22		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	01.19.19 16.22	U	1
Total TPH	PHC635	281	15.0	mg/kg	01.19.19 16.22		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	101	%	70-135	01.19.19 16.22	
o-Terphenyl	84-15-1	106	%	70-135	01.19.19 16.22	



Certificate of Analytical Results 611432



COG Operating LLC, Artesia, NM

Bobwhite 12 State 2H (10-29-18)

Sample Id: **South**
Lab Sample Id: 611432-004

Matrix: Soil
Date Collected: 01.14.19 00.00

Date Received: 01.16.19 09.56

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 01.17.19 17.00

Basis: Wet Weight

Seq Number: 3076351

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	01.18.19 15.39	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	01.18.19 15.39	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	01.18.19 15.39	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	01.18.19 15.39	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	01.18.19 15.39	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	01.18.19 15.39	U	1
Total BTEX		<0.00201	0.00201	mg/kg	01.18.19 15.39	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	108	%	70-130	01.18.19 15.39		
1,4-Difluorobenzene	540-36-3	115	%	70-130	01.18.19 15.39		



Certificate of Analytical Results 611432



COG Operating LLC, Artesia, NM

Bobwhite 12 State 2H (10-29-18)

Sample Id: **East**
Lab Sample Id: 611432-005

Matrix: Soil
Date Collected: 01.14.19 00.00

Date Received: 01.16.19 09.56

Analytical Method: Chloride by EPA 300

Tech: CHE

Analyst: CHE

Seq Number: 3076277

Prep Method: E300P

% Moisture:

Date Prep: 01.17.19 14.30

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1130	4.98	mg/kg	01.17.19 20.22		1

Analytical Method: TPH By SW8015 Mod

Tech: ALJ

Analyst: ALJ

Seq Number: 3076405

Prep Method: TX1005P

% Moisture:

Date Prep: 01.19.19 09.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	01.19.19 15.43	U	1
Diesel Range Organics	C10C28DRO	719	15.0	mg/kg	01.19.19 15.43		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	01.19.19 15.43	U	1
Total TPH	PHC635	719	15.0	mg/kg	01.19.19 15.43		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	106	%	70-135	01.19.19 15.43		
o-Terphenyl	84-15-1	129	%	70-135	01.19.19 15.43		



Certificate of Analytical Results 611432



COG Operating LLC, Artesia, NM

Bobwhite 12 State 2H (10-29-18)

Sample Id: **East**
Lab Sample Id: 611432-005

Matrix: **Soil**
Date Collected: 01.14.19 00.00

Date Received: 01.16.19 09.56

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: **SCM**

% Moisture:

Analyst: **SCM**

Date Prep: 01.17.19 17.00

Basis: **Wet Weight**

Seq Number: 3076351

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.18.19 15.58	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	01.18.19 15.58	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	01.18.19 15.58	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	01.18.19 15.58	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	01.18.19 15.58	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	01.18.19 15.58	U	1
Total BTEX		<0.00200	0.00200	mg/kg	01.18.19 15.58	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	117	%	70-130	01.18.19 15.58		
1,4-Difluorobenzene	540-36-3	116	%	70-130	01.18.19 15.58		



Certificate of Analytical Results 611432



COG Operating LLC, Artesia, NM

Bobwhite 12 State 2H (10-29-18)

Sample Id: **West**
Lab Sample Id: 611432-006

Matrix: Soil
Date Collected: 01.14.19 00.00

Date Received: 01.16.19 09.56

Analytical Method: Chloride by EPA 300

Tech: CHE

Analyst: CHE

Seq Number: 3076277

Prep Method: E300P

% Moisture:

Date Prep: 01.17.19 14.30

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	242	4.97	mg/kg	01.17.19 20.28		1

Analytical Method: TPH By SW8015 Mod

Tech: ALJ

Analyst: ALJ

Seq Number: 3076405

Prep Method: TX1005P

% Moisture:

Date Prep: 01.19.19 09.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	01.19.19 15.23	U	1
Diesel Range Organics	C10C28DRO	335	15.0	mg/kg	01.19.19 15.23		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	60.9	15.0	mg/kg	01.19.19 15.23		1
Total TPH	PHC635	396	15.0	mg/kg	01.19.19 15.23		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	99	%	70-135	01.19.19 15.23	
o-Terphenyl	84-15-1	101	%	70-135	01.19.19 15.23	



Certificate of Analytical Results 611432



COG Operating LLC, Artesia, NM

Bobwhite 12 State 2H (10-29-18)

Sample Id: **West**
Lab Sample Id: 611432-006

Matrix: Soil
Date Collected: 01.14.19 00.00

Date Received: 01.16.19 09.56

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: SCM

% Moisture:

Analyst: SCM

Date Prep: 01.17.19 17.00

Basis: Wet Weight

Seq Number: 3076351

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	01.18.19 16.28	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	01.18.19 16.28	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	01.18.19 16.28	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	01.18.19 16.28	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	01.18.19 16.28	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	01.18.19 16.28	U	1
Total BTEX		<0.00202	0.00202	mg/kg	01.18.19 16.28	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	109	%	70-130	01.18.19 16.28		
4-Bromofluorobenzene	460-00-4	117	%	70-130	01.18.19 16.28		

- 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

MQL Method Quantitation Limit

LOQ Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample

BLK

Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample

BKSD/LCSD

Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate

MS

Matrix Spike

MSD: Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

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



QC Summary 611432

COG Operating LLC Bobwhite 12 State 2H (10-29-18)

Analytical Method: Chloride by EPA 300

Seq Number: 3076271

MB Sample Id: 7669894-1-BLK

Matrix: Solid

LCS Sample Id: 7669894-1-BKS

Prep Method: E300P

Date Prep: 01.17.19

LCSD Sample Id: 7669894-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	237	95	243	97	90-110	3	20	mg/kg	01.17.19 11:50	

Analytical Method: Chloride by EPA 300

Seq Number: 3076277

MB Sample Id: 7669954-1-BLK

Matrix: Solid

LCS Sample Id: 7669954-1-BKS

Prep Method: E300P

Date Prep: 01.17.19

LCSD Sample Id: 7669954-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	243	97	247	99	90-110	2	20	mg/kg	01.17.19 19:45	

Analytical Method: Chloride by EPA 300

Seq Number: 3076271

Parent Sample Id: 611434-001

Matrix: Soil

MS Sample Id: 611434-001 S

Prep Method: E300P

Date Prep: 01.17.19

MSD Sample Id: 611434-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	521	249	748	91	751	92	90-110	0	20	mg/kg	01.17.19 12:21	

Analytical Method: Chloride by EPA 300

Seq Number: 3076271

Parent Sample Id: 611434-004

Matrix: Soil

MS Sample Id: 611434-004 S

Prep Method: E300P

Date Prep: 01.17.19

MSD Sample Id: 611434-004 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	935	249	1150	86	1150	86	90-110	0	20	mg/kg	01.17.19 14:46	X

Analytical Method: Chloride by EPA 300

Seq Number: 3076277

Parent Sample Id: 611429-004

Matrix: Soil

MS Sample Id: 611429-004 S

Prep Method: E300P

Date Prep: 01.17.19

MSD Sample Id: 611429-004 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	74.7	250	313	95	320	98	90-110	2	20	mg/kg	01.17.19 21:33	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec



QC Summary 611432

COG Operating LLC Bobwhite 12 State 2H (10-29-18)

Analytical Method: Chloride by EPA 300

Seq Number: 3076277

Parent Sample Id: 611432-003

Matrix: Soil

MS Sample Id: 611432-003 S

Prep Method: E300P

Date Prep: 01.17.19

MSD Sample Id: 611432-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	1010	250	1270	104	1270	104	90-110	0	20	mg/kg	01.17.19 20:04	

Analytical Method: TPH By SW8015 Mod

Seq Number: 3076405

MB Sample Id: 7670058-1-BLK

Matrix: Solid

LCS Sample Id: 7670058-1-BKS

Prep Method: TX1005P

Date Prep: 01.19.19

LCSD Sample Id: 7670058-1-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	<8.00	1000	798	80	797	80	70-135	0	20	mg/kg	01.19.19 10:27	
Diesel Range Organics	<8.13	1000	878	88	863	86	70-135	2	20	mg/kg	01.19.19 10:27	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	88		123		122		70-135	%	01.19.19 10:27
o-Terphenyl	88		117		139	**	70-135	%	01.19.19 10:27

Analytical Method: TPH By SW8015 Mod

Seq Number: 3076405

Parent Sample Id: 611429-006

Matrix: Soil

MS Sample Id: 611429-006 S

Prep Method: TX1005P

Date Prep: 01.19.19

MSD Sample Id: 611429-006 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons	<8.00	1000	909	91	931	93	70-135	2	20	mg/kg	01.19.19 11:41	
Diesel Range Organics	8.74	1000	998	99	1040	103	70-135	4	20	mg/kg	01.19.19 11:41	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	135		132		70-135	%	01.19.19 11:41
o-Terphenyl	132		116		70-135	%	01.19.19 11:41

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec

COG Operating LLC
Bobwhite 12 State 2H (10-29-18)

Analytical Method: BTEX by EPA 8021B

Seq Number: 3076188

MB Sample Id: 7669967-1-BLK

Matrix: Solid

LCS Sample Id: 7669967-1-BKS

Prep Method: SW5030B

Date Prep: 01.17.19

LCSD Sample Id: 7669967-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.000386	0.100	0.0897	90	0.0943	94	70-130	5	35	mg/kg	01.17.19 12:52	
Toluene	<0.000457	0.100	0.0883	88	0.0915	92	70-130	4	35	mg/kg	01.17.19 12:52	
Ethylbenzene	<0.000566	0.100	0.0864	86	0.0892	89	70-130	3	35	mg/kg	01.17.19 12:52	
m,p-Xylenes	<0.00102	0.200	0.170	85	0.176	88	70-130	3	35	mg/kg	01.17.19 12:52	
o-Xylene	<0.000345	0.100	0.0857	86	0.0891	89	70-130	4	35	mg/kg	01.17.19 12:52	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits			Units	Analysis Date	
1,4-Difluorobenzene	99		101		102		70-130			%	01.17.19 12:52	
4-Bromofluorobenzene	92		102		102		70-130			%	01.17.19 12:52	

Analytical Method: BTEX by EPA 8021B

Seq Number: 3076200

MB Sample Id: 7669975-1-BLK

Matrix: Solid

LCS Sample Id: 7669975-1-BKS

Prep Method: SW5030B

Date Prep: 01.17.19

LCSD Sample Id: 7669975-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.000387	0.101	0.126	125	0.124	124	70-130	2	35	mg/kg	01.17.19 23:57	
Toluene	<0.000458	0.101	0.109	108	0.107	107	70-130	2	35	mg/kg	01.17.19 23:57	
Ethylbenzene	<0.000568	0.101	0.100	99	0.0978	98	70-130	2	35	mg/kg	01.17.19 23:57	
m,p-Xylenes	<0.00102	0.201	0.200	100	0.194	97	70-130	3	35	mg/kg	01.17.19 23:57	
o-Xylene	<0.000346	0.101	0.0994	98	0.0968	97	70-130	3	35	mg/kg	01.17.19 23:57	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits			Units	Analysis Date	
1,4-Difluorobenzene	107		108		109		70-130			%	01.17.19 23:57	
4-Bromofluorobenzene	94		108		109		70-130			%	01.17.19 23:57	

Analytical Method: BTEX by EPA 8021B

Seq Number: 3076351

MB Sample Id: 7670053-1-BLK

Matrix: Solid

LCS Sample Id: 7670053-1-BKS

Prep Method: SW5030B

Date Prep: 01.17.19

LCSD Sample Id: 7670053-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.000386	0.100	0.114	114	0.115	115	70-130	1	35	mg/kg	01.18.19 09:42	
Toluene	<0.000457	0.100	0.0992	99	0.0983	98	70-130	1	35	mg/kg	01.18.19 09:42	
Ethylbenzene	<0.000566	0.100	0.0903	90	0.0893	89	70-130	1	35	mg/kg	01.18.19 09:42	
m,p-Xylenes	<0.00102	0.200	0.180	90	0.177	89	70-130	2	35	mg/kg	01.18.19 09:42	
o-Xylene	<0.000345	0.100	0.0909	91	0.0899	90	70-130	1	35	mg/kg	01.18.19 09:42	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date			
1,4-Difluorobenzene	107		108		110		70-130	%	01.18.19 09:42			
4-Bromofluorobenzene	95		108		108		70-130	%	01.18.19 09:42			

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference $[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 $\text{Log Diff.} = \text{Log}(\text{Sample Duplicate}) - \text{Log}(\text{Original Sample})$ LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD ResultMS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec



QC Summary 611432

COG Operating LLC Bobwhite 12 State 2H (10-29-18)

Analytical Method: BTEX by EPA 8021B

Seq Number: 3076188

Parent Sample Id: 611429-002

Matrix: Soil

MS Sample Id: 611429-002 S

Prep Method: SW5030B

Date Prep: 01.17.19

MSD Sample Id: 611429-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	0.000538	0.0994	0.0814	81	0.0831	83	70-130	2	35	mg/kg	01.17.19 13:30	
Toluene	<0.000453	0.0994	0.0813	82	0.0816	82	70-130	0	35	mg/kg	01.17.19 13:30	
Ethylbenzene	<0.000561	0.0994	0.0783	79	0.0779	78	70-130	1	35	mg/kg	01.17.19 13:30	
m,p-Xylenes	0.00118	0.199	0.155	77	0.154	76	70-130	1	35	mg/kg	01.17.19 13:30	
o-Xylene	<0.000342	0.0994	0.0777	78	0.0768	77	70-130	1	35	mg/kg	01.17.19 13:30	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	102		102		70-130	%	01.17.19 13:30
4-Bromofluorobenzene	106		106		70-130	%	01.17.19 13:30

Analytical Method: BTEX by EPA 8021B

Seq Number: 3076200

Parent Sample Id: 611644-001

Matrix: Soil

MS Sample Id: 611644-001 S

Prep Method: SW5030B

Date Prep: 01.17.19

MSD Sample Id: 611644-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.000386	0.100	0.0962	96	0.102	102	70-130	6	35	mg/kg	01.18.19 00:35	
Toluene	<0.000457	0.100	0.0842	84	0.0899	90	70-130	7	35	mg/kg	01.18.19 00:35	
Ethylbenzene	<0.000566	0.100	0.0756	76	0.0816	82	70-130	8	35	mg/kg	01.18.19 00:35	
m,p-Xylenes	<0.00102	0.200	0.152	76	0.164	82	70-130	8	35	mg/kg	01.18.19 00:35	
o-Xylene	<0.000345	0.100	0.0756	76	0.0821	82	70-130	8	35	mg/kg	01.18.19 00:35	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	109		109		70-130	%	01.18.19 00:35
4-Bromofluorobenzene	110		109		70-130	%	01.18.19 00:35

Analytical Method: BTEX by EPA 8021B

Seq Number: 3076351

Parent Sample Id: 611433-005

Matrix: Soil

MS Sample Id: 611433-005 S

Prep Method: SW5030B

Date Prep: 01.17.19

MSD Sample Id: 611433-005 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	0.000719	0.101	0.104	102	0.101	101	70-130	3	35	mg/kg	01.18.19 10:20	
Toluene	0.00219	0.101	0.0909	88	0.0881	86	70-130	3	35	mg/kg	01.18.19 10:20	
Ethylbenzene	0.000579	0.101	0.0734	72	0.0727	73	70-130	1	35	mg/kg	01.18.19 10:20	
m,p-Xylenes	<0.00102	0.202	0.143	71	0.142	71	70-130	1	35	mg/kg	01.18.19 10:20	
o-Xylene	0.00110	0.101	0.0710	69	0.0707	70	70-130	0	35	mg/kg	01.18.19 10:20	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	112		110		70-130	%	01.18.19 10:20
4-Bromofluorobenzene	109		111		70-130	%	01.18.19 10:20

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

[D] = 100*(C-A) / B
RPD = 200 * |(C-E) / (C+E)|
[D] = 100 * (C) / [B]
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

Analysis Request of Custody Record



Client Name: COG Site Manager: Ike Tavaréz

Project Name: Robert 12 State 24 (10-23-18)

Project Location: Lee Co. NM. Project #:

Invoice to: COG - Ike Tavaréz

Receiving Laboratory: Xenco Sampler Signature: [Signature]

Comments:

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING		MATRIX		PRESERVATIVE METHOD		# CONTAINERS	FILTERED (Y/N)
		DATE	TIME	WATER	SOIL	HCL	HNO ₃		
	APL-1 (0-1)	1-14-18							
	APL-1 (1-1.5)								
	ROCK								
	SOIL								
	EST								
	WEST								

Relinquished by: [Signature]	Date: [Blank]	Time: [Blank]	Received by: [Signature]	Date: [Blank]	Time: [Blank]
Relinquished by: [Signature]	Date: [Blank]	Time: [Blank]	Received by: [Signature]	Date: [Blank]	Time: [Blank]
Relinquished by: [Blank]	Date: [Blank]	Time: [Blank]	Received by: [Blank]	Date: [Blank]	Time: [Blank]

ANALYSIS REQUEST (Circle or Specify Method No.)

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

Hold

REMARKS:

- ☒ RUSH: Same Day 24 hr 48 hr 72 hr
- ☐ Rush Charges Authorized
- ☐ Special Report Limits or TRRP Report

Sample Temperature

0.3/00

-0.1/18

(Circle) HAND DELIVERED FEDEX UPS Tracking #:

ORIGINAL COPY



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In



Client: COG Operating LLC

Date/ Time Received: 01/16/2019 09:56:00 AM

Work Order #: 611432

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

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

Analyst:

PH Device/Lot#:

Checklist completed by:

Brianna Teel

Brianna Teel

Date: 01/16/2019

Checklist reviewed by:

Jessica Kramer

Jessica Kramer

Date: 01/16/2019