

March 5, 2018

Olivia Yu
Oil Conservation Division, District 1
1625 N. French Dr.
Hobbs, NM 88240

Mark Naranjo
New Mexico State Land Office
1001 S. Atkinson
Roswell, NM 88230

APPROVED

By Olivia Yu at 9:31 am, Apr 03, 2018

NMOCD approves of the delineation completed and proposed remediation for 1RP-4942.

[Depth to groundwater is 50 -100 ft. bgs according to USGS wells within 1 mile radius].

Re: Work Plan
Bobwhite 12 State Com #004H
API #: 30-025-41092
RP#: 1RP-4942
Unit Letter D Section 12, Township 21S, Range 33E
Eddy County, NM

Ms. Yu/Mr. Naranjo,

COG Operating, LLC (COG) is pleased to submit for your consideration the following remediation work plan for the Bobwhite 12 State Com #004H. This plan is in response to a produced water release that occurred on January 15, 2018. Subsequent to the release a C-141 initial report was approved by the New Mexico Oil Conservation Division (NMOCD) on January 26, 2018.

BACKGROUND

The Bobwhite 12 State Com #004H release is located in Unit Letter D, Section 12, Township 21 South and Range 33 East in Lea County, New Mexico. More specifically the latitude and longitude for this release are 32.5000725 North and -103.5330048 West.

On January 15, 2018, a stuffing box leak on the Bobwhite 12 State Com #004H well resulted in the release of approximately one-hundred and forty-five (145) barrels (bbls) of produced water. All of the fluid remained on location. A vacuum truck was able to recover approximately one-hundred and forty (140) bbls of produced water.

On January 23, 2018, a site assessment and soil sampling were conducted in order to define the impacted area. A site diagram is included in Appendix I. The analytical results from the soil sampling activities are summarized in the table below.

GROUNDWATER AND SITE RANKING

According to the New Mexico Office of the State Engineer (NMOSE) groundwater in the project vicinity is approximately one-hundred (100) 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

Analytical Results

1/30/2018

Sample ID	Depth (feet)	Benzene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)	Total TPH (mg/kg)
T-1	0	<0.002	<0.002	364	21.9
T-1	1	<0.002	<0.002	--	<15.0
T-1	2	<0.002	<0.002	--	<15.0
T-2	0	<0.002	<0.002	546	236
T-2	1	<0.002	<0.002	--	<15.0
T-2	2	<0.002	<0.002	--	<15.0
T-3	0	<0.002	<0.002	176	<15.0
T-4	0	<0.002	<0.002	474	<15.0
T-4	1	<0.002	<0.002	--	<15.0
T-5	0	<0.002	<0.002	1790	<15.0
T-5	1	<0.002	<0.002	112	<15.0
NORTH	0	<0.002	<0.002	309	<15.0
SOUTH	0	<0.002	<0.002	<5.00	<15.0
EAST	0	<0.002	<0.002	86.7	<15.0
WEST	0	<0.002	<0.002	339	<15.0

(--) Analysis not requested

PROPOSED REMEDIAL ACTIONS

- The impacted area in the vicinity of sample location T-5 will be excavated to the depth of one (1) foot BGS.
- Sidewall samples will be taken in all four cardinal directions and analyzed for total chlorides to confirm that all of the impacted soil above the NMOCD Recommended Remedial Action Levels (RRAL's) has been removed. The impacted area is fully vertically delineated therefore confirmation samples will not be taken at the bottom of the excavation.
- The excavated material will be hauled to an NMOCD approved solid waste disposal facility.
- Upon receipt of acceptable analytical results from the sidewall confirmation sampling the excavation will be backfilled with caliche and contoured to match the surrounding location.

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

Sincerely,



Sheldon L. Hitchcock
HSE Coordinator
slhitchcock@concho.com

Enclosed:

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

APPENDIX I

January 15, 2018

Bobwhite 12 State Com #004H

Bobwhite 12 St Com 4H

32.49998 -103.53209

Legend

- Sample Points
- Spill area



APPENDIX II



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	POD Sub-Code	basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
CP 00796 POD1	CP	LE		2	2	4	02	21S	33E	637548	3597564*	951	102		
CP 00797 POD1	CP	LE		1	2	4	02	21S	33E	637348	3597564*	1035	110		
CP 01316 POD1	CP	LE		3	2	4	02	21S	33E	637432	3597709	1129	1370		
CP 00801 POD1	CP	LE		3	2	1	11	21S	33E	636555	3596549*	1313	200		
CP 00803 POD1	CP	LE		3	2	2	02	21S	33E	637337	3598168*	1591	1100		
CP 00804 POD1	CP	LE		3	2	2	02	21S	33E	637337	3598168*	1591	170		
CP 00579	CP	LE			2	2	02	21S	33E	637438	3598269*	1658	125	100	25
CP 00578	CP	LE			4	3	11	21S	33E	636674	3595445*	1704	165	150	15
CP 01317 POD1	CP	LE		1	3	2	02	21S	33E	636884	3598450	2035	1250	1025	225

Average Depth to Water: **425 feet**

Minimum Depth: **100 feet**

Maximum Depth: **1025 feet**

Record Count: 9

Basin/County Search:

County: Lea

UTMNAD83 Radius Search (in meters):

Easting (X): 637863

Northing (Y): 3596666

Radius: 2100

*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.

APPENDIX III

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: COG Operating, LLC OGRID #229137	Contact: Robert McNeill	
Address: 600 West Illinois Avenue, Midland, TX 79701	Telephone No. 432-683-7443	
Facility Name: Bobwhite 12 State Com #004H	Facility Type: Wellhead	
Surface Owner: State	Mineral Owner: State	API No. 30-025-41092

LOCATION OF RELEASE

Unit Letter D	Section 12	Township 21S	Range 33E	Feet from the 160	North/South Line North	Feet from the 496	East/West Line West	County Lea
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Latitude 32.5000725 Longitude -103.5330048 NAD83

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: 145 bbl.	Volume Recovered: 140 bbl.
Source of Release: Packing	Date and Hour of Occurrence: January 15, 2018 4:00 pm	Date and Hour of Discovery: January 15, 2018 4:00 pm
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Ms. Yu - NMOCD / Ms. Honea - SLO	
By Whom? Dakota Neel	Date and Hour: January 16, 2018 2:32 pm	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

RECEIVED

By Olivia Yu at 11:07 am, Jan 26, 2018

Describe Cause of Problem and Remedial Action Taken.*

The packing on the pumping well over-pressured and ruptured. The well was shut in and the packing was replaced.

Describe Area Affected and Cleanup Action Taken.*

The release was on location. 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: 		OIL CONSERVATION DIVISION	
Printed Name: Robert McNeill		Approved by Environmental Specialist: 	
Title: Environmental Manager	Approval Date: 1/26/2018	Expiration Date:	
E-mail Address: rmcneill@concho.com	Conditions of Approval: see attached directive	Attached ☒	
Date: January 22, 2018 Phone: 432-683-7443			

* Attach Additional Sheets If Necessary

1RP-4942

nOY1802640704

pOY1802640945

APPENDIX IV



Certificate of Analysis Summary 574886

COG Operating LLC, Artesia, NM

Project Name: Bobwhite 12 St Com #4 H



Project Id:

Contact: Dakota Neel

Project Location: Lea County

Date Received in Lab: Mon Jan-29-18 10:50 am

Report Date: 07-FEB-18

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	574886-001	574886-002	574886-003	574886-004	574886-005	574886-006
	Field Id:	T-1	T-1	T-1	T-2	T-2	T-2
	Depth:	0- ft	1- ft	2- ft	0- ft	1- ft	2- ft
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Jan-23-18 00:00	Jan-23-18 00:00	Jan-23-18 00:00	Jan-23-18 00:00	Jan-23-18 00:00	Jan-23-18 00:00
BTEX by EPA 8021B	Extracted:	Feb-01-18 17:00	Feb-01-18 17:00	Feb-01-18 16:15	Feb-01-18 16:15	Feb-01-18 16:15	Feb-01-18 16:15
	Analyzed:	Feb-02-18 07:05	Feb-02-18 07:41	Feb-01-18 20:34	Feb-01-18 20:53	Feb-01-18 21:12	Feb-01-18 21:31
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00198 0.00198	<0.00200 0.00200	<0.00202 0.00202	<0.00199 0.00199	<0.00198 0.00198	<0.00202 0.00202
Toluene		<0.00198 0.00198	<0.00200 0.00200	<0.00202 0.00202	<0.00199 0.00199	<0.00198 0.00198	<0.00202 0.00202
Ethylbenzene		<0.00198 0.00198	<0.00200 0.00200	<0.00202 0.00202	<0.00199 0.00199	<0.00198 0.00198	<0.00202 0.00202
m,p-Xylenes		<0.00396 0.00396	<0.00401 0.00401	<0.00403 0.00403	<0.00398 0.00398	<0.00397 0.00397	<0.00404 0.00404
o-Xylene		<0.00198 0.00198	<0.00200 0.00200	<0.00202 0.00202	<0.00199 0.00199	<0.00198 0.00198	<0.00202 0.00202
Total Xylenes		<0.00198 0.00198	<0.00200 0.00200	<0.00202 0.00202	<0.00199 0.00199	<0.00198 0.00198	<0.00202 0.00202
Total BTEX		<0.00198 0.00198	<0.00200 0.00200	<0.00202 0.00202	<0.00199 0.00199	<0.00198 0.00198	<0.00202 0.00202
Chloride by EPA 300	Extracted:	Feb-01-18 12:00			Feb-02-18 13:00		
	Analyzed:	Feb-01-18 16:53			Feb-02-18 14:43		
	Units/RL:	mg/kg RL			mg/kg RL		
Chloride		364 4.99			546 4.98		
TPH By SW8015 Mod	Extracted:	Jan-30-18 11:00	Jan-30-18 11:00	Jan-30-18 11:00	Jan-30-18 11:00	Jan-30-18 11:00	Jan-30-18 11:00
	Analyzed:	Jan-30-18 20:56	Jan-30-18 21:17	Jan-30-18 21:37	Jan-30-18 22:00	Jan-30-18 22:21	Jan-30-18 22:42
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0
Diesel Range Organics (DRO)		21.9 15.0	<15.0 15.0	<15.0 15.0	148 15.0	<15.0 15.0	<15.0 15.0
Oil Range Hydrocarbons (ORO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	88.4 15.0	<15.0 15.0	<15.0 15.0
Total TPH		21.9 15.0	<15.0 15.0	<15.0 15.0	236 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 574886

COG Operating LLC, Artesia, NM

Project Name: Bobwhite 12 St Com #4 H



Project Id:

Contact: Dakota Neel

Project Location: Lea County

Date Received in Lab: Mon Jan-29-18 10:50 am

Report Date: 07-FEB-18

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	574886-007	574886-008	574886-009	574886-010	574886-011	574886-012
	Field Id:	T-3	T-4	T-4	T-5	T-5	North
	Depth:	0- ft	0- ft	1- ft	0- ft	1- ft	0- ft
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Jan-23-18 00:00	Jan-23-18 00:00	Jan-23-18 00:00	Jan-23-18 00:00	Jan-23-18 00:00	Jan-23-18 00:00
BTEX by EPA 8021B	Extracted:	Feb-01-18 16:15	Feb-01-18 16:15	Feb-01-18 16:15	Feb-01-18 16:15	Feb-01-18 16:15	Feb-01-18 16:15
	Analyzed:	Feb-01-18 21:50	Feb-01-18 18:59	Feb-02-18 00:03	Feb-02-18 00:21	Feb-01-18 23:45	Feb-01-18 23:26
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201	<0.00201 0.00201	<0.00200 0.00200
Toluene		<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201	<0.00201 0.00201	<0.00200 0.00200
Ethylbenzene		<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201	<0.00201 0.00201	<0.00200 0.00200
m,p-Xylenes		<0.00401 0.00401	<0.00398 0.00398	<0.00399 0.00399	<0.00402 0.00402	<0.00402 0.00402	<0.00399 0.00399
o-Xylene		<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201	<0.00201 0.00201	<0.00200 0.00200
Total Xylenes		<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201	<0.00201 0.00201	<0.00200 0.00200
Total BTEX		<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201	<0.00201 0.00201	<0.00200 0.00200
Chloride by EPA 300	Extracted:	Feb-02-18 13:00	Feb-02-18 13:00		Feb-02-18 13:00	Feb-05-18 17:00	Feb-02-18 13:00
	Analyzed:	Feb-02-18 16:21	Feb-02-18 15:04		Feb-02-18 15:11	Feb-06-18 03:05	Feb-02-18 15:18
	Units/RL:	mg/kg RL	mg/kg RL		mg/kg RL	mg/kg RL	mg/kg RL
Chloride		176 4.95	474 4.98		1790 24.8	112 4.98	309 4.91
TPH By SW8015 Mod	Extracted:	Jan-30-18 11:00	Feb-01-18 09:00	Feb-01-18 09:00	Feb-01-18 09:00	Feb-01-18 09:00	Feb-01-18 09:00
	Analyzed:	Jan-30-18 23:04	Feb-01-18 13:14	Feb-01-18 13:34	Feb-01-18 13:55	Feb-01-18 14:15	Feb-01-18 14:35
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	<14.9 14.9	<14.9 14.9
Diesel Range Organics (DRO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	<14.9 14.9	<14.9 14.9
Oil Range Hydrocarbons (ORO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	<14.9 14.9	<14.9 14.9
Total TPH		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	<14.9 14.9	<14.9 14.9

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 574886

COG Operating LLC, Artesia, NM

Project Name: Bobwhite 12 St Com #4 H



Project Id:

Contact: Dakota Neel

Project Location: Lea County

Date Received in Lab: Mon Jan-29-18 10:50 am

Report Date: 07-FEB-18

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	574886-013	574886-014	574886-015			
	Field Id:	South	East	West			
	Depth:	0- ft	0- ft	0- ft			
	Matrix:	SOIL	SOIL	SOIL			
	Sampled:	Jan-23-18 00:00	Jan-23-18 00:00	Jan-23-18 00:00			
BTEX by EPA 8021B	Extracted:	Feb-01-18 16:15	Feb-01-18 16:15	Feb-01-18 17:00			
	Analyzed:	Feb-02-18 00:40	Feb-02-18 00:59	Feb-02-18 05:25			
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL			
Benzene		<0.00202 0.00202	<0.00199 0.00199	<0.00201 0.00201			
Toluene		<0.00202 0.00202	<0.00199 0.00199	<0.00201 0.00201			
Ethylbenzene		<0.00202 0.00202	<0.00199 0.00199	<0.00201 0.00201			
m,p-Xylenes		<0.00403 0.00403	<0.00398 0.00398	<0.00402 0.00402			
o-Xylene		<0.00202 0.00202	<0.00199 0.00199	<0.00201 0.00201			
Total Xylenes		<0.00202 0.00202	<0.00199 0.00199	<0.00201 0.00201			
Total BTEX		<0.00202 0.00202	<0.00199 0.00199	<0.00201 0.00201			
Chloride by EPA 300	Extracted:	Feb-02-18 13:00	Feb-02-18 13:00	Feb-02-18 13:00			
	Analyzed:	Feb-02-18 15:25	Feb-02-18 15:46	Feb-02-18 15:53			
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL			
Chloride		<5.00 5.00	86.7 4.91	339 4.97			
TPH By SW8015 Mod	Extracted:	Feb-01-18 09:00	Feb-01-18 09:00	Feb-01-18 09:00			
	Analyzed:	Feb-01-18 14:56	Feb-01-18 15:16	Feb-01-18 16:18			
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL			
Gasoline Range Hydrocarbons (GRO)		<15.0 15.0	<15.0 15.0	<15.0 15.0			
Diesel Range Organics (DRO)		<15.0 15.0	<15.0 15.0	<15.0 15.0			
Oil Range Hydrocarbons (ORO)		<15.0 15.0	<15.0 15.0	<15.0 15.0			
Total TPH		<15.0 15.0	<15.0 15.0	<15.0 15.0			

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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 574886

for COG Operating LLC

Project Manager: Dakota Neel

Bobwhite 12 St Com #4 H

07-FEB-18

Collected By: Client



1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):

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

Xenco-Dallas (EPA Lab code: TX01468):

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

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

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

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

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

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

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



07-FEB-18

Project Manager: **Dakota Neel**
COG Operating LLC
2407 Pecos Avenue
Artesia, NM 88210

Reference: XENCO Report No(s): **574886**
Bobwhite 12 St Com #4 H
Project Address: Lea County

Dakota Neel:

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) 574886. 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. 574886 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

COG Operating LLC, Artesia, NM

Bobwhite 12 St Com #4 H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
T-1	S	01-23-18 00:00	0 ft	574886-001
T-1	S	01-23-18 00:00	1 ft	574886-002
T-1	S	01-23-18 00:00	2 ft	574886-003
T-2	S	01-23-18 00:00	0 ft	574886-004
T-2	S	01-23-18 00:00	1 ft	574886-005
T-2	S	01-23-18 00:00	2 ft	574886-006
T-3	S	01-23-18 00:00	0 ft	574886-007
T-4	S	01-23-18 00:00	0 ft	574886-008
T-4	S	01-23-18 00:00	1 ft	574886-009
T-5	S	01-23-18 00:00	0 ft	574886-010
T-5	S	01-23-18 00:00	1 ft	574886-011
North	S	01-23-18 00:00	0 ft	574886-012
South	S	01-23-18 00:00	0 ft	574886-013
East	S	01-23-18 00:00	0 ft	574886-014
West	S	01-23-18 00:00	0 ft	574886-015



CASE NARRATIVE

Client Name: COG Operating LLC

Project Name: Bobwhite 12 St Com #4 H

Project ID:

Work Order Number(s): 574886

Report Date: 07-FEB-18

Date Received: 01/29/2018

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3039915 BTEX by EPA 8021B

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

Batch: LBA-3040007 BTEX by EPA 8021B

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

Batch: LBA-3040185 Inorganic Anions by EPA 300

Lab Sample ID 574886-007 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD).

Chloride recovered above QC limits in the Matrix Spike. Outlier/s are due to possible matrix interference.

Samples in the analytical batch are: 574886-004, -007, -008, -010, -012, -013, -014, -015.

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



Certificate of Analytical Results 574886



COG Operating LLC, Artesia, NM

Bobwhite 12 St Com #4 H

Sample Id: T-1
Lab Sample Id: 574886-001

Matrix: Soil
Date Collected: 01.23.18 00.00

Date Received: 01.29.18 10.50
Sample Depth: 0 ft

Analytical Method: Chloride by EPA 300
Tech: OJS
Analyst: OJS
Seq Number: 3040180

Date Prep: 02.01.18 12.00

Prep Method: E300P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	364	4.99	mg/kg	02.01.18 16.53		1

Analytical Method: TPH By SW8015 Mod
Tech: ARM
Analyst: ARM
Seq Number: 3039740

Date Prep: 01.30.18 11.00

Prep Method: TX1005P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	01.30.18 20.56	U	1
Diesel Range Organics (DRO)	C10C28DRO	21.9	15.0	mg/kg	01.30.18 20.56		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	01.30.18 20.56	U	1
Total TPH	PHC635	21.9	15.0	mg/kg	01.30.18 20.56		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	87	%	70-135	01.30.18 20.56	
o-Terphenyl	84-15-1	89	%	70-135	01.30.18 20.56	



Certificate of Analytical Results 574886



COG Operating LLC, Artesia, NM

Bobwhite 12 St Com #4 H

Sample Id: T-1
Lab Sample Id: 574886-001

Matrix: Soil
Date Collected: 01.23.18 00.00

Date Received: 01.29.18 10.50
Sample Depth: 0 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 02.01.18 17.00

Basis: Wet Weight

Seq Number: 3040007

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	02.02.18 07.05	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	02.02.18 07.05	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	02.02.18 07.05	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	02.02.18 07.05	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	02.02.18 07.05	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	02.02.18 07.05	U	1
Total BTEX		<0.00198	0.00198	mg/kg	02.02.18 07.05	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	86	%	80-120	02.02.18 07.05		
1,4-Difluorobenzene	540-36-3	84	%	80-120	02.02.18 07.05		

COG Operating LLC, Artesia, NM

Bobwhite 12 St Com #4 H

Sample Id: T-1
Lab Sample Id: 574886-002

Matrix: Soil
Date Collected: 01.23.18 00.00

Date Received: 01.29.18 10.50
Sample Depth: 1 ft

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3039740

Date Prep: 01.30.18 11.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	01.30.18 21.17	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	01.30.18 21.17	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	01.30.18 21.17	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	01.30.18 21.17	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	100	%	70-135	01.30.18 21.17	
o-Terphenyl	84-15-1	102	%	70-135	01.30.18 21.17	

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3040007

Date Prep: 02.01.18 17.00

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	02.02.18 07.41	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	02.02.18 07.41	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	02.02.18 07.41	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	02.02.18 07.41	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	02.02.18 07.41	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	02.02.18 07.41	U	1
Total BTEX		<0.00200	0.00200	mg/kg	02.02.18 07.41	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	99	%	80-120	02.02.18 07.41	
1,4-Difluorobenzene	540-36-3	87	%	80-120	02.02.18 07.41	



Certificate of Analytical Results 574886



COG Operating LLC, Artesia, NM

Bobwhite 12 St Com #4 H

Sample Id: T-1
Lab Sample Id: 574886-003

Matrix: Soil
Date Collected: 01.23.18 00.00

Date Received: 01.29.18 10.50
Sample Depth: 2 ft

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3039740

Date Prep: 01.30.18 11.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	01.30.18 21.37	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	01.30.18 21.37	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	01.30.18 21.37	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	01.30.18 21.37	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	96	%	70-135	01.30.18 21.37	
o-Terphenyl	84-15-1	98	%	70-135	01.30.18 21.37	

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3039915

Date Prep: 02.01.18 16.15

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	02.01.18 20.34	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	02.01.18 20.34	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	02.01.18 20.34	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	02.01.18 20.34	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	02.01.18 20.34	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	02.01.18 20.34	U	1
Total BTEX		<0.00202	0.00202	mg/kg	02.01.18 20.34	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	88	%	80-120	02.01.18 20.34	
4-Bromofluorobenzene	460-00-4	93	%	80-120	02.01.18 20.34	



Certificate of Analytical Results 574886



COG Operating LLC, Artesia, NM

Bobwhite 12 St Com #4 H

Sample Id: T-2
Lab Sample Id: 574886-004

Matrix: Soil
Date Collected: 01.23.18 00.00

Date Received: 01.29.18 10.50
Sample Depth: 0 ft

Analytical Method: Chloride by EPA 300
Tech: OJS
Analyst: OJS
Seq Number: 3040185

Date Prep: 02.02.18 13.00

Prep Method: E300P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	546	4.98	mg/kg	02.02.18 14.43		1

Analytical Method: TPH By SW8015 Mod
Tech: ARM
Analyst: ARM
Seq Number: 3039740

Date Prep: 01.30.18 11.00

Prep Method: TX1005P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	01.30.18 22.00	U	1
Diesel Range Organics (DRO)	C10C28DRO	148	15.0	mg/kg	01.30.18 22.00		1
Oil Range Hydrocarbons (ORO)	PHCG2835	88.4	15.0	mg/kg	01.30.18 22.00		1
Total TPH	PHC635	236	15.0	mg/kg	01.30.18 22.00		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	90	%	70-135	01.30.18 22.00	
o-Terphenyl	84-15-1	93	%	70-135	01.30.18 22.00	



Certificate of Analytical Results 574886



COG Operating LLC, Artesia, NM

Bobwhite 12 St Com #4 H

Sample Id: T-2
Lab Sample Id: 574886-004

Matrix: Soil
Date Collected: 01.23.18 00.00

Date Received: 01.29.18 10.50
Sample Depth: 0 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 02.01.18 16.15

Basis: Wet Weight

Seq Number: 3039915

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	02.01.18 20.53	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	02.01.18 20.53	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	02.01.18 20.53	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	02.01.18 20.53	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	02.01.18 20.53	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	02.01.18 20.53	U	1
Total BTEX		<0.00199	0.00199	mg/kg	02.01.18 20.53	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	86	%	80-120	02.01.18 20.53		
4-Bromofluorobenzene	460-00-4	88	%	80-120	02.01.18 20.53		



Certificate of Analytical Results 574886



COG Operating LLC, Artesia, NM

Bobwhite 12 St Com #4 H

Sample Id: T-2
Lab Sample Id: 574886-005

Matrix: Soil
Date Collected: 01.23.18 00.00

Date Received: 01.29.18 10.50
Sample Depth: 1 ft

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3039740

Date Prep: 01.30.18 11.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	01.30.18 22.21	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	01.30.18 22.21	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	01.30.18 22.21	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	01.30.18 22.21	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	95	%	70-135	01.30.18 22.21	
o-Terphenyl	84-15-1	97	%	70-135	01.30.18 22.21	

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3039915

Date Prep: 02.01.18 16.15

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	02.01.18 21.12	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	02.01.18 21.12	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	02.01.18 21.12	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	02.01.18 21.12	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	02.01.18 21.12	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	02.01.18 21.12	U	1
Total BTEX		<0.00198	0.00198	mg/kg	02.01.18 21.12	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	89	%	80-120	02.01.18 21.12	
1,4-Difluorobenzene	540-36-3	82	%	80-120	02.01.18 21.12	



Certificate of Analytical Results 574886



COG Operating LLC, Artesia, NM

Bobwhite 12 St Com #4 H

Sample Id: T-2
Lab Sample Id: 574886-006

Matrix: Soil
Date Collected: 01.23.18 00.00

Date Received: 01.29.18 10.50
Sample Depth: 2 ft

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3039740

Date Prep: 01.30.18 11.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	01.30.18 22.42	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	01.30.18 22.42	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	01.30.18 22.42	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	01.30.18 22.42	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	94	%	70-135	01.30.18 22.42	
o-Terphenyl	84-15-1	94	%	70-135	01.30.18 22.42	

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3039915

Date Prep: 02.01.18 16.15

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	02.01.18 21.31	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	02.01.18 21.31	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	02.01.18 21.31	U	1
m,p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	02.01.18 21.31	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	02.01.18 21.31	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	02.01.18 21.31	U	1
Total BTEX		<0.00202	0.00202	mg/kg	02.01.18 21.31	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	98	%	80-120	02.01.18 21.31	
4-Bromofluorobenzene	460-00-4	99	%	80-120	02.01.18 21.31	



Certificate of Analytical Results 574886



COG Operating LLC, Artesia, NM

Bobwhite 12 St Com #4 H

Sample Id: T-3
Lab Sample Id: 574886-007

Matrix: Soil
Date Collected: 01.23.18 00.00

Date Received: 01.29.18 10.50
Sample Depth: 0 ft

Analytical Method: Chloride by EPA 300
Tech: OJS
Analyst: OJS
Seq Number: 3040185

Prep Method: E300P
% Moisture:
Date Prep: 02.02.18 13.00
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	176	4.95	mg/kg	02.02.18 16.21		1

Analytical Method: TPH By SW8015 Mod
Tech: ARM
Analyst: ARM
Seq Number: 3039740

Prep Method: TX1005P
% Moisture:
Date Prep: 01.30.18 11.00
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	01.30.18 23.04	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	01.30.18 23.04	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	01.30.18 23.04	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	01.30.18 23.04	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	91	%	70-135	01.30.18 23.04	
o-Terphenyl	84-15-1	89	%	70-135	01.30.18 23.04	



Certificate of Analytical Results 574886



COG Operating LLC, Artesia, NM

Bobwhite 12 St Com #4 H

Sample Id: T-3
Lab Sample Id: 574886-007

Matrix: Soil
Date Collected: 01.23.18 00.00

Date Received: 01.29.18 10.50
Sample Depth: 0 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 02.01.18 16.15

Basis: Wet Weight

Seq Number: 3039915

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	02.01.18 21.50	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	02.01.18 21.50	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	02.01.18 21.50	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	02.01.18 21.50	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	02.01.18 21.50	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	02.01.18 21.50	U	1
Total BTEX		<0.00200	0.00200	mg/kg	02.01.18 21.50	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	98	%	80-120	02.01.18 21.50		
1,4-Difluorobenzene	540-36-3	89	%	80-120	02.01.18 21.50		



Certificate of Analytical Results 574886



COG Operating LLC, Artesia, NM

Bobwhite 12 St Com #4 H

Sample Id: T-4
Lab Sample Id: 574886-008

Matrix: Soil
Date Collected: 01.23.18 00.00

Date Received: 01.29.18 10.50
Sample Depth: 0 ft

Analytical Method: Chloride by EPA 300
Tech: OJS
Analyst: OJS
Seq Number: 3040185

Date Prep: 02.02.18 13.00

Prep Method: E300P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	474	4.98	mg/kg	02.02.18 15.04		1

Analytical Method: TPH By SW8015 Mod
Tech: ARM
Analyst: ARM
Seq Number: 3040013

Date Prep: 02.01.18 09.00

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	02.01.18 13.14	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	02.01.18 13.14	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.01.18 13.14	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	02.01.18 13.14	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	92	%	70-135	02.01.18 13.14		
o-Terphenyl	84-15-1	94	%	70-135	02.01.18 13.14		



Certificate of Analytical Results 574886



COG Operating LLC, Artesia, NM

Bobwhite 12 St Com #4 H

Sample Id: T-4
Lab Sample Id: 574886-008

Matrix: Soil
Date Collected: 01.23.18 00.00

Date Received: 01.29.18 10.50
Sample Depth: 0 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 02.01.18 16.15

Basis: Wet Weight

Seq Number: 3039915

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	02.01.18 18.59	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	02.01.18 18.59	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	02.01.18 18.59	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	02.01.18 18.59	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	02.01.18 18.59	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	02.01.18 18.59	U	1
Total BTEX		<0.00199	0.00199	mg/kg	02.01.18 18.59	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	86	%	80-120	02.01.18 18.59		
4-Bromofluorobenzene	460-00-4	96	%	80-120	02.01.18 18.59		

COG Operating LLC, Artesia, NM

Bobwhite 12 St Com #4 H

Sample Id: **T-4**
Lab Sample Id: 574886-009

Matrix: Soil
Date Collected: 01.23.18 00.00

Date Received: 01.29.18 10.50
Sample Depth: 1 ft

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3040013

Date Prep: 02.01.18 09.00

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	02.01.18 13.34	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	02.01.18 13.34	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.01.18 13.34	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	02.01.18 13.34	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	94	%	70-135	02.01.18 13.34	
o-Terphenyl	84-15-1	97	%	70-135	02.01.18 13.34	

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3039915

Date Prep: 02.01.18 16.15

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	02.02.18 00.03	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	02.02.18 00.03	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	02.02.18 00.03	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	02.02.18 00.03	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	02.02.18 00.03	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	02.02.18 00.03	U	1
Total BTEX		<0.00200	0.00200	mg/kg	02.02.18 00.03	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	93	%	80-120	02.02.18 00.03	
1,4-Difluorobenzene	540-36-3	87	%	80-120	02.02.18 00.03	



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COG Operating LLC, Artesia, NM

Bobwhite 12 St Com #4 H

Sample Id: T-5
Lab Sample Id: 574886-010

Matrix: Soil
Date Collected: 01.23.18 00.00

Date Received: 01.29.18 10.50
Sample Depth: 0 ft

Analytical Method: Chloride by EPA 300
Tech: OJS
Analyst: OJS
Seq Number: 3040185

Date Prep: 02.02.18 13.00

Prep Method: E300P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1790	24.8	mg/kg	02.02.18 15.11		5

Analytical Method: TPH By SW8015 Mod
Tech: ARM
Analyst: ARM
Seq Number: 3040013

Date Prep: 02.01.18 09.00

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	02.01.18 13.55	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	02.01.18 13.55	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.01.18 13.55	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	02.01.18 13.55	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	91	%	70-135	02.01.18 13.55		
o-Terphenyl	84-15-1	93	%	70-135	02.01.18 13.55		



Certificate of Analytical Results 574886



COG Operating LLC, Artesia, NM

Bobwhite 12 St Com #4 H

Sample Id: T-5
Lab Sample Id: 574886-010

Matrix: Soil
Date Collected: 01.23.18 00.00

Date Received: 01.29.18 10.50
Sample Depth: 0 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 02.01.18 16.15

Basis: Wet Weight

Seq Number: 3039915

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	02.02.18 00.21	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	02.02.18 00.21	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	02.02.18 00.21	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	02.02.18 00.21	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	02.02.18 00.21	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	02.02.18 00.21	U	1
Total BTEX		<0.00201	0.00201	mg/kg	02.02.18 00.21	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	100	%	80-120	02.02.18 00.21		
1,4-Difluorobenzene	540-36-3	89	%	80-120	02.02.18 00.21		



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COG Operating LLC, Artesia, NM

Bobwhite 12 St Com #4 H

Sample Id: T-5
Lab Sample Id: 574886-011

Matrix: Soil
Date Collected: 01.23.18 00.00

Date Received: 01.29.18 10.50
Sample Depth: 1 ft

Analytical Method: Chloride by EPA 300
Tech: OJS
Analyst: OJS
Seq Number: 3040264

Date Prep: 02.05.18 17.00

Prep Method: E300P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	112	4.98	mg/kg	02.06.18 03.05		1

Analytical Method: TPH By SW8015 Mod
Tech: ARM
Analyst: ARM
Seq Number: 3040013

Date Prep: 02.01.18 09.00

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	02.01.18 14.15	U	1
Diesel Range Organics (DRO)	C10C28DRO	<14.9	14.9	mg/kg	02.01.18 14.15	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<14.9	14.9	mg/kg	02.01.18 14.15	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	02.01.18 14.15	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	100	%	70-135	02.01.18 14.15		
o-Terphenyl	84-15-1	104	%	70-135	02.01.18 14.15		



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COG Operating LLC, Artesia, NM

Bobwhite 12 St Com #4 H

Sample Id: T-5
Lab Sample Id: 574886-011

Matrix: Soil
Date Collected: 01.23.18 00.00

Date Received: 01.29.18 10.50
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 02.01.18 16.15

Basis: Wet Weight

Seq Number: 3039915

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	02.01.18 23.45	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	02.01.18 23.45	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	02.01.18 23.45	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	02.01.18 23.45	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	02.01.18 23.45	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	02.01.18 23.45	U	1
Total BTEX		<0.00201	0.00201	mg/kg	02.01.18 23.45	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	95	%	80-120	02.01.18 23.45		
1,4-Difluorobenzene	540-36-3	90	%	80-120	02.01.18 23.45		



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COG Operating LLC, Artesia, NM

Bobwhite 12 St Com #4 H

Sample Id: **North**
Lab Sample Id: 574886-012

Matrix: Soil
Date Collected: 01.23.18 00.00

Date Received: 01.29.18 10.50
Sample Depth: 0 ft

Analytical Method: Chloride by EPA 300
Tech: OJS
Analyst: OJS
Seq Number: 3040185

Date Prep: 02.02.18 13.00

Prep Method: E300P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	309	4.91	mg/kg	02.02.18 15.18		1

Analytical Method: TPH By SW8015 Mod
Tech: ARM
Analyst: ARM
Seq Number: 3040013

Date Prep: 02.01.18 09.00

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	02.01.18 14.35	U	1
Diesel Range Organics (DRO)	C10C28DRO	<14.9	14.9	mg/kg	02.01.18 14.35	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<14.9	14.9	mg/kg	02.01.18 14.35	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	02.01.18 14.35	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	100	%	70-135	02.01.18 14.35		
o-Terphenyl	84-15-1	104	%	70-135	02.01.18 14.35		



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COG Operating LLC, Artesia, NM

Bobwhite 12 St Com #4 H

Sample Id: **North**
Lab Sample Id: 574886-012

Matrix: Soil
Date Collected: 01.23.18 00.00

Date Received: 01.29.18 10.50
Sample Depth: 0 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 02.01.18 16.15

Basis: Wet Weight

Seq Number: 3039915

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	02.01.18 23.26	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	02.01.18 23.26	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	02.01.18 23.26	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	02.01.18 23.26	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	02.01.18 23.26	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	02.01.18 23.26	U	1
Total BTEX		<0.00200	0.00200	mg/kg	02.01.18 23.26	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	90	%	80-120	02.01.18 23.26		
1,4-Difluorobenzene	540-36-3	86	%	80-120	02.01.18 23.26		



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COG Operating LLC, Artesia, NM

Bobwhite 12 St Com #4 H

Sample Id: **South**
Lab Sample Id: 574886-013

Matrix: Soil
Date Collected: 01.23.18 00.00

Date Received: 01.29.18 10.50
Sample Depth: 0 ft

Analytical Method: Chloride by EPA 300
Tech: OJS
Analyst: OJS
Seq Number: 3040185

Date Prep: 02.02.18 13.00

Prep Method: E300P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<5.00	5.00	mg/kg	02.02.18 15.25	U	1

Analytical Method: TPH By SW8015 Mod
Tech: ARM
Analyst: ARM
Seq Number: 3040013

Date Prep: 02.01.18 09.00

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	02.01.18 14.56	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	02.01.18 14.56	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.01.18 14.56	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	02.01.18 14.56	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	93	%	70-135	02.01.18 14.56	
o-Terphenyl	84-15-1	96	%	70-135	02.01.18 14.56	



Certificate of Analytical Results 574886



COG Operating LLC, Artesia, NM

Bobwhite 12 St Com #4 H

Sample Id: **South**
Lab Sample Id: 574886-013

Matrix: Soil
Date Collected: 01.23.18 00.00

Date Received: 01.29.18 10.50
Sample Depth: 0 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 02.01.18 16.15

Basis: Wet Weight

Seq Number: 3039915

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	02.02.18 00.40	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	02.02.18 00.40	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	02.02.18 00.40	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	02.02.18 00.40	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	02.02.18 00.40	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	02.02.18 00.40	U	1
Total BTEX		<0.00202	0.00202	mg/kg	02.02.18 00.40	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	85	%	80-120	02.02.18 00.40		
4-Bromofluorobenzene	460-00-4	89	%	80-120	02.02.18 00.40		



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COG Operating LLC, Artesia, NM

Bobwhite 12 St Com #4 H

Sample Id: **East**
Lab Sample Id: 574886-014

Matrix: Soil
Date Collected: 01.23.18 00.00

Date Received: 01.29.18 10.50
Sample Depth: 0 ft

Analytical Method: Chloride by EPA 300
Tech: OJS
Analyst: OJS
Seq Number: 3040185

Date Prep: 02.02.18 13.00

Prep Method: E300P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	86.7	4.91	mg/kg	02.02.18 15.46		1

Analytical Method: TPH By SW8015 Mod
Tech: ARM
Analyst: ARM
Seq Number: 3040013

Date Prep: 02.01.18 09.00

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	02.01.18 15.16	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	02.01.18 15.16	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.01.18 15.16	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	02.01.18 15.16	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	92	%	70-135	02.01.18 15.16	
o-Terphenyl	84-15-1	94	%	70-135	02.01.18 15.16	



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COG Operating LLC, Artesia, NM

Bobwhite 12 St Com #4 H

Sample Id: **East**
Lab Sample Id: 574886-014

Matrix: Soil
Date Collected: 01.23.18 00.00

Date Received: 01.29.18 10.50
Sample Depth: 0 ft

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3039915

Date Prep: 02.01.18 16.15

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	02.02.18 00.59	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	02.02.18 00.59	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	02.02.18 00.59	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	02.02.18 00.59	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	02.02.18 00.59	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	02.02.18 00.59	U	1
Total BTEX		<0.00199	0.00199	mg/kg	02.02.18 00.59	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	97	%	80-120	02.02.18 00.59		
1,4-Difluorobenzene	540-36-3	89	%	80-120	02.02.18 00.59		



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COG Operating LLC, Artesia, NM

Bobwhite 12 St Com #4 H

Sample Id: **West**
Lab Sample Id: 574886-015

Matrix: Soil
Date Collected: 01.23.18 00.00

Date Received: 01.29.18 10.50
Sample Depth: 0 ft

Analytical Method: Chloride by EPA 300
Tech: OJS
Analyst: OJS
Seq Number: 3040185

Date Prep: 02.02.18 13.00

Prep Method: E300P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	339	4.97	mg/kg	02.02.18 15.53		1

Analytical Method: TPH By SW8015 Mod
Tech: ARM
Analyst: ARM
Seq Number: 3040013

Date Prep: 02.01.18 09.00

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	02.01.18 16.18	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	02.01.18 16.18	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.01.18 16.18	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	02.01.18 16.18	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	97	%	70-135	02.01.18 16.18		
o-Terphenyl	84-15-1	99	%	70-135	02.01.18 16.18		



Certificate of Analytical Results 574886



COG Operating LLC, Artesia, NM

Bobwhite 12 St Com #4 H

Sample Id: **West**
Lab Sample Id: 574886-015

Matrix: Soil
Date Collected: 01.23.18 00.00

Date Received: 01.29.18 10.50
Sample Depth: 0 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 02.01.18 17.00

Basis: Wet Weight

Seq Number: 3040007

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	02.02.18 05.25	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	02.02.18 05.25	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	02.02.18 05.25	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	02.02.18 05.25	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	02.02.18 05.25	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	02.02.18 05.25	U	1
Total BTEX		<0.00201	0.00201	mg/kg	02.02.18 05.25	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	92	%	80-120	02.02.18 05.25		
1,4-Difluorobenzene	540-36-3	89	%	80-120	02.02.18 05.25		

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

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

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

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(602) 437-0330	

COG Operating LLC
Bobwhite 12 St Com #4 H

Analytical Method: Chloride by EPA 300

Seq Number: 3040180

MB Sample Id: 7638469-1-BLK

Matrix: Solid

LCS Sample Id: 7638469-1-BKS

Prep Method: E300P

Date Prep: 02.01.18

LCSD Sample Id: 7638469-1-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	249	100	254	102	90-110	2	20	mg/kg	02.01.18 13:38	

Analytical Method: Chloride by EPA 300

Seq Number: 3040185

MB Sample Id: 7638552-1-BLK

Matrix: Solid

LCS Sample Id: 7638552-1-BKS

Prep Method: E300P

Date Prep: 02.02.18

LCSD Sample Id: 7638552-1-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	272	109	271	108	90-110	0	20	mg/kg	02.02.18 14:29	

Analytical Method: Chloride by EPA 300

Seq Number: 3040264

MB Sample Id: 7638616-1-BLK

Matrix: Solid

LCS Sample Id: 7638616-1-BKS

Prep Method: E300P

Date Prep: 02.05.18

LCSD Sample Id: 7638616-1-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	248	99	247	99	90-110	0	20	mg/kg	02.05.18 23:43	

Analytical Method: Chloride by EPA 300

Seq Number: 3040180

Parent Sample Id: 574884-006

Matrix: Soil

MS Sample Id: 574884-006 S

Prep Method: E300P

Date Prep: 02.01.18

MSD Sample Id: 574884-006 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	151	247	393	98	386	95	90-110	2	20	mg/kg	02.01.18 13:59	

Analytical Method: Chloride by EPA 300

Seq Number: 3040185

Parent Sample Id: 574886-004

Matrix: Soil

MS Sample Id: 574886-004 S

Prep Method: E300P

Date Prep: 02.02.18

MSD Sample Id: 574886-004 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	546	249	829	114	806	104	90-110	3	20	mg/kg	02.02.18 14:50	X

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery $[D] = 100 * (C - A) / B$
 $RPD = 200 * | (C - E) / (C + E) |$
 $[D] = 100 * (C) / [B]$ 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 574886

COG Operating LLC Bobwhite 12 St Com #4 H

Analytical Method: Chloride by EPA 300

Seq Number: 3040185

Parent Sample Id: 574886-007

Matrix: Soil

MS Sample Id: 574886-007 S

Prep Method: E300P

Date Prep: 02.02.18

MSD Sample Id: 574886-007 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	176	248	412	95	431	103	90-110	5	20	mg/kg	02.02.18 16:28	

Analytical Method: Chloride by EPA 300

Seq Number: 3040264

Parent Sample Id: 575033-004

Matrix: Soil

MS Sample Id: 575033-004 S

Prep Method: E300P

Date Prep: 02.05.18

MSD Sample Id: 575033-004 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	300	250	535	94	538	95	90-110	1	20	mg/kg	02.06.18 01:41	

Analytical Method: Chloride by EPA 300

Seq Number: 3040264

Parent Sample Id: 575316-013

Matrix: Soil

MS Sample Id: 575316-013 S

Prep Method: E300P

Date Prep: 02.05.18

MSD Sample Id: 575316-013 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	5.04	250	260	102	260	102	90-110	0	20	mg/kg	02.06.18 00:04	

Analytical Method: TPH By SW8015 Mod

Seq Number: 3039740

MB Sample Id: 7638354-1-BLK

Matrix: Solid

LCS Sample Id: 7638354-1-BKS

Prep Method: TX1005P

Date Prep: 01.30.18

LCSD Sample Id: 7638354-1-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	844	84	849	85	70-135	1	35	mg/kg	01.30.18 14:06	
Diesel Range Organics (DRO)	<15.0	1000	928	93	883	88	70-135	5	35	mg/kg	01.30.18 14:06	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	97		114		93		70-135	%	01.30.18 14:06
o-Terphenyl	104		103		96		70-135	%	01.30.18 14:06

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

$[D] = 100 * (C - A) / B$
 $RPD = 200 * | (C - E) / (C + E) |$
 $[D] = 100 * (C) / [B]$

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 St Com #4 H

Analytical Method: TPH By SW8015 Mod

Seq Number: 3040013

MB Sample Id: 7638497-1-BLK

Matrix: Solid

LCS Sample Id: 7638497-1-BKS

Prep Method: TX1005P

Date Prep: 02.01.18

LCSD Sample Id: 7638497-1-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	858	86	841	84	70-135	2	35	mg/kg	02.01.18 10:47	
Diesel Range Organics (DRO)	<15.0	1000	925	93	925	93	70-135	0	35	mg/kg	02.01.18 10:47	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date			
1-Chlorooctane	88		115		114		70-135	%	02.01.18 10:47			
o-Terphenyl	93		118		100		70-135	%	02.01.18 10:47			

Analytical Method: TPH By SW8015 Mod

Seq Number: 3039740

Parent Sample Id: 574885-002

Matrix: Soil

MS Sample Id: 574885-002 S

Prep Method: TX1005P

Date Prep: 01.30.18

MSD Sample Id: 574885-002 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	999	891	89	941	94	70-135	5	35	mg/kg	01.30.18 15:35	
Diesel Range Organics (DRO)	<15.0	999	1030	103	1050	105	70-135	2	35	mg/kg	01.30.18 15:35	
Surrogate			MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date			
1-Chlorooctane			118		127		70-135	%	01.30.18 15:35			
o-Terphenyl			94		105		70-135	%	01.30.18 15:35			

Analytical Method: TPH By SW8015 Mod

Seq Number: 3040013

Parent Sample Id: 574884-007

Matrix: Soil

MS Sample Id: 574884-007 S

Prep Method: TX1005P

Date Prep: 02.01.18

MSD Sample Id: 574884-007 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	799	80	886	89	70-135	10	35	mg/kg	02.01.18 11:51	
Diesel Range Organics (DRO)	<15.0	997	884	89	970	97	70-135	9	35	mg/kg	02.01.18 11:51	
Surrogate			MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date			
1-Chlorooctane			105		103		70-135	%	02.01.18 11:51			
o-Terphenyl			93		102		70-135	%	02.01.18 11:51			

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

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$

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 St Com #4 H

Analytical Method: BTEX by EPA 8021B

Seq Number: 3039915

MB Sample Id: 7638449-1-BLK

Matrix: Solid

LCS Sample Id: 7638449-1-BKS

Prep Method: SW5030B

Date Prep: 02.01.18

LCSD Sample Id: 7638449-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00201	0.100	0.0907	91	0.0926	93	70-130	2	35	mg/kg	02.01.18 16:45	
Toluene	<0.00201	0.100	0.0960	96	0.0972	97	70-130	1	35	mg/kg	02.01.18 16:45	
Ethylbenzene	<0.00201	0.100	0.104	104	0.108	108	71-129	4	35	mg/kg	02.01.18 16:45	
m,p-Xylenes	<0.00402	0.201	0.205	102	0.212	106	70-135	3	35	mg/kg	02.01.18 16:45	
o-Xylene	<0.00201	0.100	0.101	101	0.104	104	71-133	3	35	mg/kg	02.01.18 16:45	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	86		88		90		80-120	%	02.01.18 16:45
4-Bromofluorobenzene	88		97		100		80-120	%	02.01.18 16:45

Analytical Method: BTEX by EPA 8021B

Seq Number: 3040007

MB Sample Id: 7638501-1-BLK

Matrix: Solid

LCS Sample Id: 7638501-1-BKS

Prep Method: SW5030B

Date Prep: 02.01.18

LCSD Sample Id: 7638501-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00199	0.0994	0.0895	90	0.0845	85	70-130	6	35	mg/kg	02.02.18 02:16	
Toluene	<0.00199	0.0994	0.0939	94	0.0892	89	70-130	5	35	mg/kg	02.02.18 02:16	
Ethylbenzene	<0.00199	0.0994	0.103	104	0.0964	97	71-129	7	35	mg/kg	02.02.18 02:16	
m,p-Xylenes	<0.00398	0.199	0.201	101	0.190	95	70-135	6	35	mg/kg	02.02.18 02:16	
o-Xylene	<0.00199	0.0994	0.101	102	0.0943	94	71-133	7	35	mg/kg	02.02.18 02:16	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	86		87		90		80-120	%	02.02.18 02:16
4-Bromofluorobenzene	87		99		99		80-120	%	02.02.18 02:16

Analytical Method: BTEX by EPA 8021B

Seq Number: 3039915

Parent Sample Id: 574886-008

Matrix: Soil

MS Sample Id: 574886-008 S

Prep Method: SW5030B

Date Prep: 02.01.18

MSD Sample Id: 574886-008 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00198	0.0992	0.0762	77	0.0792	80	70-130	4	35	mg/kg	02.01.18 17:23	
Toluene	<0.00198	0.0992	0.0785	79	0.0825	83	70-130	5	35	mg/kg	02.01.18 17:23	
Ethylbenzene	<0.00198	0.0992	0.0837	84	0.0879	88	71-129	5	35	mg/kg	02.01.18 17:23	
m,p-Xylenes	<0.00397	0.198	0.164	83	0.171	86	70-135	4	35	mg/kg	02.01.18 17:23	
o-Xylene	<0.00198	0.0992	0.0823	83	0.0853	86	71-133	4	35	mg/kg	02.01.18 17:23	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	91		92		80-120	%	02.01.18 17:23
4-Bromofluorobenzene	107		103		80-120	%	02.01.18 17:23

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

COG Operating LLC
Bobwhite 12 St Com #4 H

Analytical Method: BTEX by EPA 8021B

Seq Number: 3040007

Parent Sample Id: 574954-006

Matrix: Soil

MS Sample Id: 574954-006 S

Prep Method: SW5030B

Date Prep: 02.01.18

MSD Sample Id: 574954-006 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00199	0.0996	0.0515	52	0.0525	53	70-130	2	35	mg/kg	02.02.18 02:53	X
Toluene	<0.00199	0.0996	0.0517	52	0.0545	55	70-130	5	35	mg/kg	02.02.18 02:53	X
Ethylbenzene	<0.00199	0.0996	0.0512	51	0.0533	53	71-129	4	35	mg/kg	02.02.18 02:53	X
m,p-Xylenes	<0.00398	0.199	0.102	51	0.106	53	70-135	4	35	mg/kg	02.02.18 02:53	X
o-Xylene	<0.00199	0.0996	0.0533	54	0.0535	54	71-133	0	35	mg/kg	02.02.18 02:53	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	87		88		80-120	%	02.02.18 02:53
4-Bromofluorobenzene	105		101		80-120	%	02.02.18 02:53

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

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Phoenix, Arizona (480-355-0900)

Xenco Quote #

Xenco Job #

574886

Client / Reporting Information				Project Information				Analytical Information				Matrix Codes			
Company Name / Branch:		COG Operating LLC		Project Name/Number:		Bobbie 12 St Corn # 4 H									
Company Address:		2407 Pecos Ave, Artesia NM 88210		Project Location:		lea County									
Email: dheel2@concho.com silhichcock@concho.com cgray@concho.com, haskell@concho.com		Phone No: 575-746-2010		Invoice To:		COG Operating LLC Attn: Robert McNeill 600 W. Illinois Ave. Midland TX, 79701									
Project Contact:				PO Number:											
Samplers Name:		Christopher Gray													
No.	Field ID / Point of Collection	Sample Depth	Date	Time	Matrix	# of bottles	HCl	Number of preserved bottles							
							NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE		
1	T-1	0	1/23/18		S	1								X	TPH Extended
2	T-1	1												X	BTEX
3	T-1	2												X	CHLORIDES
4	T-2	0													
5	T-2	1													
6	T-2	2													
7	T-3	0													
8	T-4	0													
9	T-4	1													
10	T-5	0													
Turnaround Time (Business days)						Data Deliverable Information								Note.	
☐ Same Day TAT		☒ 5 Day TAT				☐ Level II Std QC		☐ Level IV (Full Data Pkg /raw data)						Stop running ic blue 600 chloride	
☐ Next Day EMERGENCY		☐ 7 Day TAT				☐ Level III Std QC+ Forms		☐ TRRP Level IV							
☐ 2 Day EMERGENCY		☐ Contract TAT				☐ Level 3 (CLP Forms)		☐ UST / RG -411							
☐ 3 Day EMERGENCY						☐ TRRP Checklist									
TAT Starts Day received by Lab, if received by 5:00 pm														FED-EX / UPS Tracking #	
Relinquished by Sampler:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:		Received By:			
1 Christopher Gray		1/23/18 10:00		1 David Butler 1:00p		1-27-18		2 David Butler		1-27-18 3:00p		2 Christopher Gray		1-30-18 10:50	
Relinquished by:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:		Received By:			
3				3		3		4		4		4			
Relinquished by:		Date Time:		Received By:		Date Time:		Relinquished By:		Date Time:		Received By:			
3				5		5									
On Ice		☒		Cooler Temp.		Thermo. Corr. Factor									

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Phoenix, Arizona (480-355-0900)

514886

Final 1.000



XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In



Client: COG Operating LLC

Date/ Time Received: 01/29/2018 10:50:00 AM

Work Order #: 574886

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)?	2.7
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	N/A
#5 Custody Seals intact on sample bottles?	N/A
#6 *Custody Seals Signed and dated?	N/A
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	No
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes
#13 Samples properly preserved?	Yes
#14 Sample container(s) intact?	Yes
#15 Sufficient sample amount for indicated test(s)?	Yes
#16 All samples received within hold time?	Yes
#17 Subcontract of sample(s)?	No
#18 Water VOC samples have zero headspace?	N/A

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

Analyst:

PH Device/Lot#:

Checklist completed by:

Shawnee Smith

Date: 01/30/2018

Checklist reviewed by:

Kelsey Brooks

Date: 01/30/2018