



October 15, 2019

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

Closure Report

Boone 16 State Com #002H

API#: 30-025-41049

RP#: 1RP-5653

DOR: July 17, 2019

GPS: 32.47233 -103.57512

Unit Letter O, Section 16, Township 21 South, Range 33 East

Lea County, New Mexico

To Whom It May Concern,

COG Operating, LLC (COG) is pleased to submit the following closure report in response to a release that occurred at the Boone 16 State Com #002H. The release was located in Unit Letter O, Section 16, Township 21 South and Range 33 East in Lea County, New Mexico. More specifically the latitude and longitude for the release are 32.47233 North and -103.57512 West.

BACKGROUND

The release was discovered on July 17, 2019 and a C-141 initial report was submitted to the New Mexico Oil Conservation Division (NMOCD) and the New Mexico State Land Office (NMSLO). The release occurred on private surface however the mineral owner is the State of New Mexico. A ball valve failed resulting in a release of approximately two (2) barrels (bbls) of oil and twenty-eight (28) bbls of produced water. The majority of the fluid remained inside of the lined containment however there was some overspray onto the adjacent well pad. A vacuum truck was utilized to recover all freestanding fluids.

GROUNDWATER AND REGULATORY FRAMEWORK

According to the New Mexico Office of the State Engineer (NMOSE) groundwater in the project vicinity is approximately five-hundred and seventy-two (572) feet below ground surface (BGS). 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 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 groundwater data and the site characterization evaluation data is summarized in Appendix B. The delineation and closure criteria are listed below:

General Site Characterization and Groundwater:

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

Delineation and Closure Criteria:

Recommended Remedial Action Levels (RRALs)	
Chlorides	20,000 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

REMEDIAL ACTIONS

- The impacted area was excavated to depths from two (2) to four (4) feet BGS.
- All of the excavated material was hauled to an NMOCD approved solid waste disposal facility.
- Confirmation soil samples were taken from the excavation per NMAC 19.15.29.
- The site was backfilled with caliche and contoured to match the surrounding location.

SITE RECLAMATION AND RESTORATION

All of the fluid remained on the well pad. No reclamation activities will be required at this site.

CLOSURE REQUEST

COG Operating, LLC respectfully requests that the New Mexico Oil Conservation Division and the New Mexico State Land Office grant closure approval for the Boone 16 State Com #002H incident that occurred on July 17, 2019.

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

Sincerely,

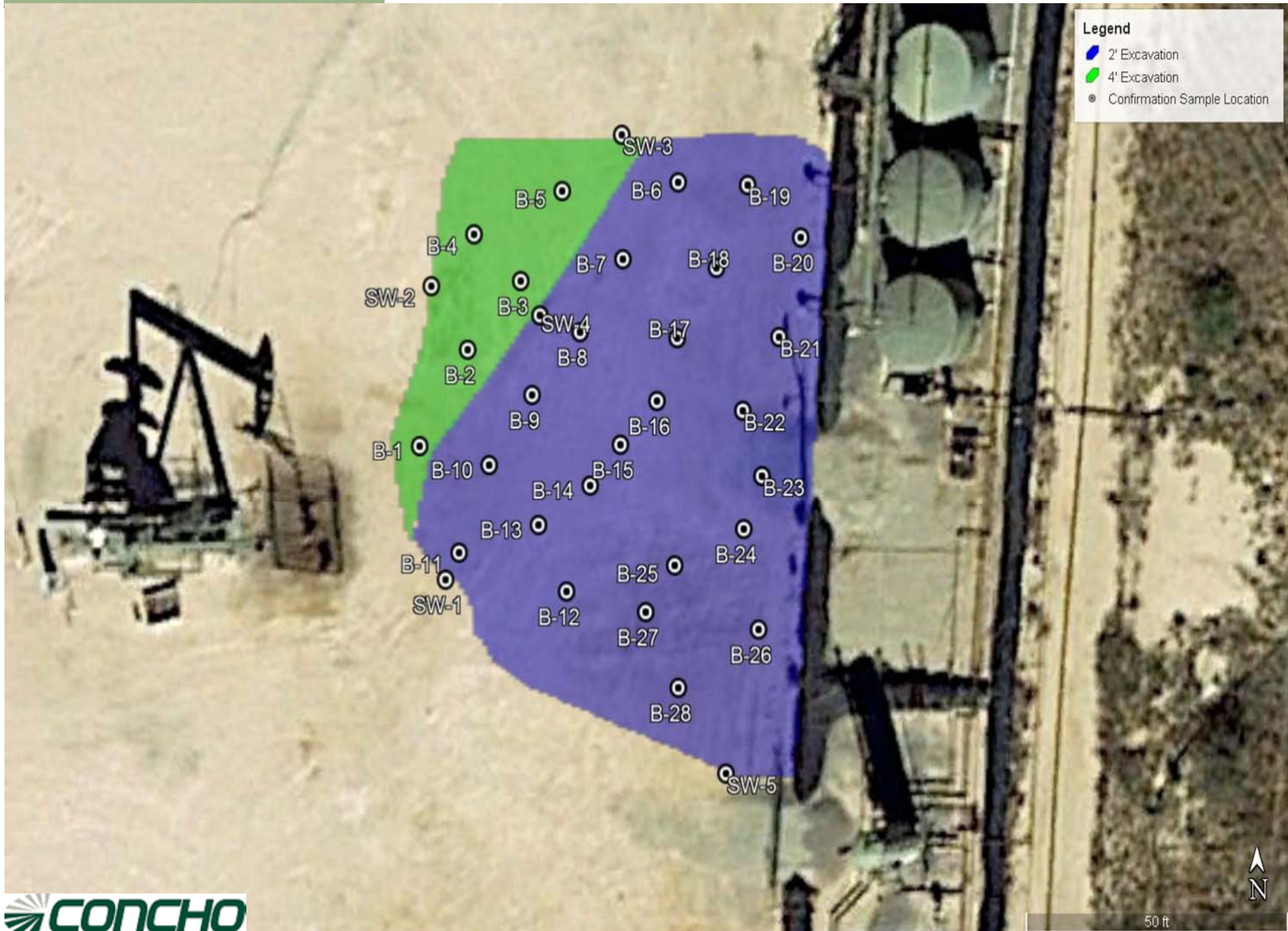


Sheldon L. Hitchcock
HSE Coordinator
slhitchcock@concho.com

FIGURES

July 17, 2019

Boone 16 State Com #002H



TABLES

Table 1
COG Operating LLC.
Boone 16 State Com #002H
Lea County, New Mexico

Sample ID	Sample Depth (ft)	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
NMOCD RRAL Limits (mg/kg)					-	-	-	2,500	-	-	1,000	10	50	20,000
B-1	4	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	579.0
B-2	4	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	586.0
B-3	4	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	603.0
B-4	4	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	596.0
B-5	4	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	619.0
B-6	2	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	172.0
B-7	2	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	204.0
B-8	2	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	162.0
B-9	2	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	213.0
B-10	2	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	173.0
B-11	2	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	24.7
B-12	2	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	22.4
B-13	2	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	24.3
B-14	2	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	26.0
B-15	2	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	20.1
B-16	2	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	15.9
B-17	2	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	20.6
B-18	2	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	30.7
B-19	2	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	38.9
B-20	2	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	33.5
B-21	2	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	29.8
B-22	2	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	27.5
B-23	2	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	28.1
B-24	2	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	32.5
B-25	2	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	35.1
B-26	2	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	33.6
B-27	2	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	32.5
B-28	2	9/5/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	32.4
SW-1	N/A	9/4/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	192.0
SW-2	N/A	9/4/2019		X	<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	890.0
SW-3	N/A	9/4/2019		X	<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	953.0
SW-4	N/A	9/4/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	46.4
SW-5	N/A	9/4/2019	X		<25.1	<25.1	<25.1	0.0	<25.1	<25.1	0.0	<0.002	<0.002	99.1
SW-2	N/A	9/18/2019	X		#	#	#	#	#	#	#	#	#	240.0
SW-3	N/A	9/18/2019	X		#	#	#	#	#	#	#	#	#	64.0

 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>Sheldon Nitan</u>	Date: _____
email: _____	Telephone: _____
<u>OCD Only</u>	
Received by: _____	Date: _____

Incident ID	
District RP	
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?	_____ (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
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: <i>Each of the following items must be included in the report.</i> ☐ 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
--

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	
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: _____ Title: _____

Signature: Sheldon Nitan Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

Incident ID	
District RP	
Facility ID	
Application ID	

Remediation Plan

Remediation Plan Checklist: *Each of the following items must be included in the plan.*

- ☐ Detailed description of proposed remediation technique
- ☐ Scaled sitemap with GPS coordinates showing delineation points
- ☐ Estimated volume of material to be remediated
- ☐ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- ☐ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: *Each of the following items must be confirmed as part of any request for deferral of remediation.*

- ☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.
- ☐ Extents of contamination must be fully delineated.
- ☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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: Sheldon Nitan Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

☐ Approved ☐ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature: _____ Date: _____

Incident ID	
District RP	
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: _____ Title: _____

Signature: Sheldon Hittman Date: _____

email: _____ Telephone: _____

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

Legend

OSE PODs

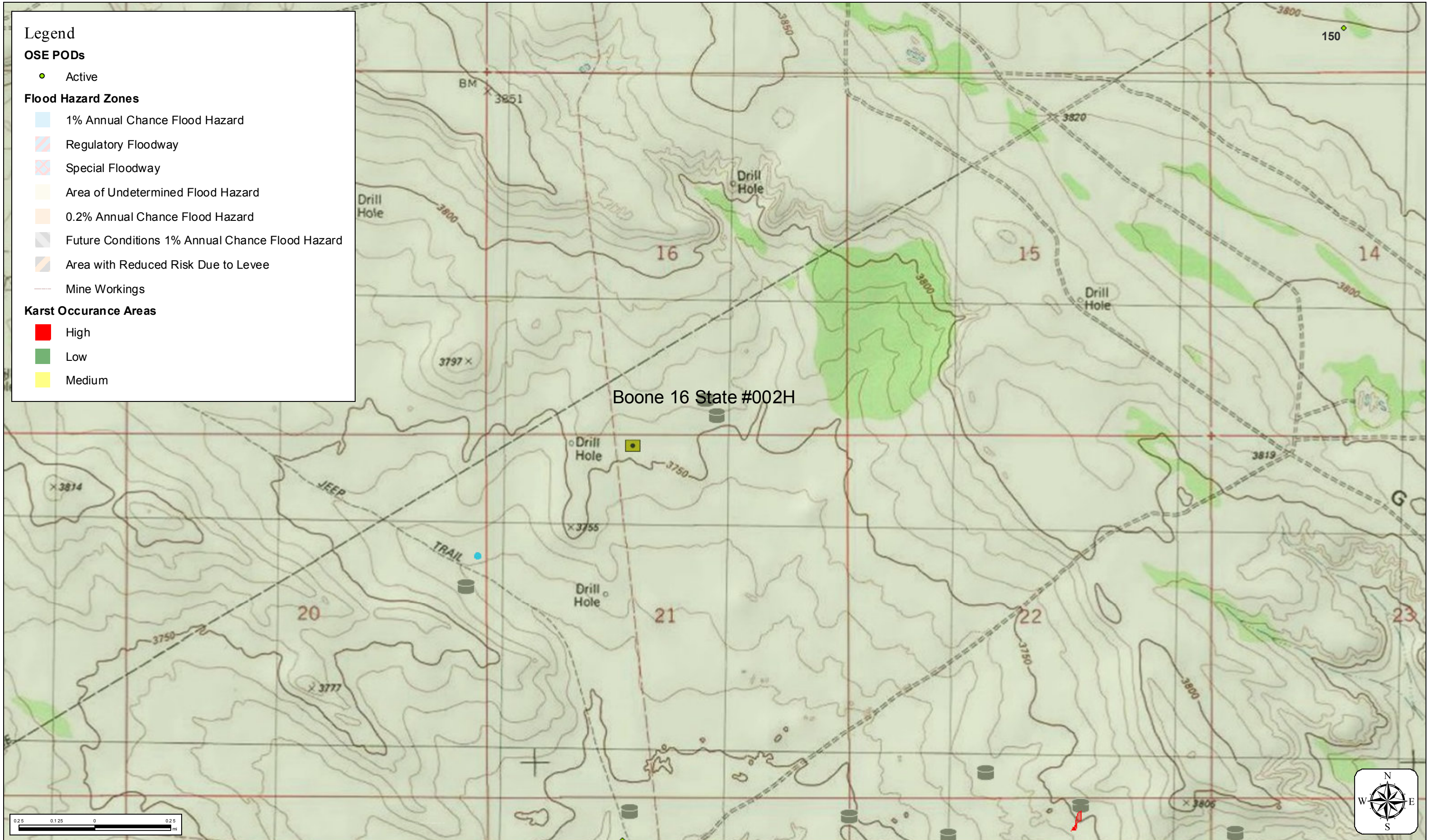
- Active

Flood Hazard Zones

- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- Special Floodway
- Area of Undetermined Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Future Conditions 1% Annual Chance Flood Hazard
- Area with Reduced Risk Due to Levee
- Mine Workings

Karst Occurance Areas

- High
- Low
- Medium





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 00601 POD1	CP	LE		2	1	28	21S	33E		633502	3591791*	2049	223		
CP 01349 POD1	CP	LE		2	3	1	27	21S	33E	634782	3591569	2413	1188	572	616
CP 01357 POD1	CP	LE		4	3	1	27	21S	33E	634782	3591347	2620	1286	578	708
CP 01355 POD1	CP	LE		2	1	3	27	21S	33E	634773	3591061	2887	1192	582	610

Average Depth to Water: **577 feet**

Minimum Depth: **572 feet**

Maximum Depth: **582 feet**

Record Count: 4

Basin/County Search:

County: Lea

UTMNAD83 Radius Search (in meters):

Easting (X): 633875

Northing (Y): 3593806

Radius: 3000

*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 C



Certificate of Analysis Summary 635988

COG Operating LLC, Artesia, NM

Project Name: Boone 16 St. Com #2H

Project Id:

Contact: Sheldon Hitchcock

Project Location: Lea County

Date Received in Lab: Wed Sep-04-19 04:03 pm

Report Date: 06-SEP-19

Project Manager: Jessica Kramer

Analysis Requested	Lab Id:	635988-001	635988-002	635988-003	635988-004	635988-005	635988-006
	Field Id:	B-1	B-2	B-3	B-4	B-5	B-6
	Depth:						
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Sep-04-19 13:00	Sep-04-19 13:02	Sep-04-19 13:04	Sep-04-19 13:06	Sep-04-19 13:08	Sep-04-19 13:10
BTX by EPA 8021B SUB: T104704400-18-16	Extracted:	Sep-05-19 13:00	Sep-05-19 13:00	Sep-05-19 13:00	Sep-05-19 13:00	Sep-05-19 13:00	Sep-05-19 13:00
	Analyzed:	Sep-05-19 20:43	Sep-05-19 21:03	Sep-05-19 21:23	Sep-05-19 21:43	Sep-05-19 22:03	Sep-05-19 22:23
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00201 0.00201	<0.00202 0.00202	<0.00202 0.00202	<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201
Toluene		<0.00201 0.00201	<0.00202 0.00202	<0.00202 0.00202	<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201
Ethylbenzene		<0.00201 0.00201	<0.00202 0.00202	<0.00202 0.00202	<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201
m,p-Xylenes		<0.00402 0.00402	<0.00404 0.00404	<0.00404 0.00404	<0.00398 0.00398	<0.00399 0.00399	<0.00402 0.00402
o-Xylene		<0.00201 0.00201	<0.00202 0.00202	<0.00202 0.00202	<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201
Total Xylenes		<0.00201 0.00201	<0.00202 0.00202	<0.00202 0.00202	<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201
Total BTX		<0.00201 0.00201	<0.00202 0.00202	<0.00202 0.00202	<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201
Chloride by EPA 300	Extracted:	Sep-04-19 17:09	Sep-04-19 17:09	Sep-04-19 17:09	Sep-04-19 17:09	Sep-04-19 17:09	Sep-04-19 17:09
	Analyzed:	Sep-04-19 21:55	Sep-04-19 22:00	Sep-04-19 22:06	Sep-04-19 22:12	Sep-04-19 22:18	Sep-04-19 22:23
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		579 19.9	586 19.9	603 19.9	596 19.8	619 19.6	172 9.80
TPH By SW8015 Mod	Extracted:	Sep-04-19 16:30	Sep-04-19 16:30	Sep-04-19 16:30	Sep-04-19 16:30	Sep-04-19 16:30	Sep-04-19 16:30
	Analyzed:	Sep-04-19 19:17	Sep-04-19 19:37	Sep-04-19 19:57	Sep-04-19 20:17	Sep-04-19 20:37	Sep-04-19 20:57
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons		<25.1 25.1	<25.1 25.1	<25.1 25.1	<25.0 25.0	<25.1 25.1	<24.9 24.9
Diesel Range Organics		<25.1 25.1	<25.1 25.1	<25.1 25.1	<25.0 25.0	<25.1 25.1	<24.9 24.9
Motor Oil Range Hydrocarbons (MRO)		<25.1 25.1	<25.1 25.1	<25.1 25.1	<25.0 25.0	<25.1 25.1	<24.9 24.9
Total TPH		<25.1 25.1	<25.1 25.1	<25.1 25.1	<25.0 25.0	<25.1 25.1	<24.9 24.9

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Jessica Kramer
Project Assistant



Certificate of Analysis Summary 635988

COG Operating LLC, Artesia, NM

Project Name: Boone 16 St. Com #2H

Project Id:

Contact: Sheldon Hitchcock

Project Location: Lea County

Date Received in Lab: Wed Sep-04-19 04:03 pm

Report Date: 06-SEP-19

Project Manager: Jessica Kramer

Analysis Requested	Lab Id:	635988-007	635988-008	635988-009	635988-010	635988-011	635988-012
	Field Id:	B-7	B-8	B-9	B-10	B-11	B-12
	Depth:						
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Sep-04-19 13:12	Sep-04-19 13:14	Sep-04-19 13:16	Sep-04-19 13:18	Sep-04-19 13:20	Sep-04-19 13:22
BTEx by EPA 8021B SUB: T104704400-18-16	Extracted:	Sep-05-19 13:00	Sep-05-19 13:00	Sep-05-19 13:00	Sep-05-19 13:00	Sep-05-19 13:15	Sep-05-19 13:15
	Analyzed:	Sep-05-19 22:44	Sep-05-19 23:04	Sep-05-19 23:24	Sep-05-19 23:44	*** ** **	*** ** **
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00202 0.00202	<0.00202 0.00202	<0.00202 0.00202	<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200
Toluene		<0.00202 0.00202	<0.00202 0.00202	<0.00202 0.00202	<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200
Ethylbenzene		<0.00202 0.00202	<0.00202 0.00202	<0.00202 0.00202	<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200
m,p-Xylenes		<0.00404 0.00404	<0.00404 0.00404	<0.00403 0.00403	<0.00402 0.00402	<0.00401 0.00401	<0.00401 0.00401
o-Xylene		<0.00202 0.00202	<0.00202 0.00202	<0.00202 0.00202	<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200
Total Xylenes		<0.00202 0.00202	<0.00202 0.00202	<0.00202 0.00202	<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200
Total BTEx		<0.00202 0.00202	<0.00202 0.00202	<0.00202 0.00202	<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200
Chloride by EPA 300	Extracted:	Sep-04-19 17:09	Sep-04-19 17:09	Sep-04-19 17:09	Sep-04-19 17:09	Sep-04-19 17:09	Sep-04-19 17:09
	Analyzed:	Sep-04-19 22:29	Sep-04-19 22:35	Sep-04-19 22:41	Sep-04-19 22:46	Sep-04-19 23:11	Sep-04-19 23:16
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		204 9.98	162 9.82	213 10.0	173 9.98	24.7 10.0	22.4 9.98
TPH By SW8015 Mod	Extracted:	Sep-04-19 16:30	Sep-04-19 16:30	Sep-04-19 16:30	Sep-04-19 16:30	Sep-04-19 17:30	Sep-04-19 17:30
	Analyzed:	Sep-04-19 21:16	Sep-04-19 21:36	Sep-04-19 21:56	Sep-04-19 22:16	Sep-04-19 23:55	Sep-05-19 00:56
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons		<24.9 24.9	<24.9 24.9	<25.0 25.0	<25.0 25.0	<25.0 25.0	<25.1 25.1
Diesel Range Organics		<24.9 24.9	<24.9 24.9	<25.0 25.0	<25.0 25.0	<25.0 25.0	<25.1 25.1
Motor Oil Range Hydrocarbons (MRO)		<24.9 24.9	<24.9 24.9	<25.0 25.0	<25.0 25.0	<25.0 25.0	<25.1 25.1
Total TPH		<24.9 24.9	<24.9 24.9	<25.0 25.0	<25.0 25.0	<25.0 25.0	<25.1 25.1

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Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Jessica Kramer
Project Assistant



Certificate of Analysis Summary 635988

COG Operating LLC, Artesia, NM

Project Name: Boone 16 St. Com #2H

Project Id:

Contact: Sheldon Hitchcock

Project Location: Lea County

Date Received in Lab: Wed Sep-04-19 04:03 pm

Report Date: 06-SEP-19

Project Manager: Jessica Kramer

Analysis Requested	Lab Id:	635988-013	635988-014	635988-015	635988-016	635988-017	635988-018
	Field Id:	B-13	B-14	B-15	B-16	B-17	B-18
	Depth:						
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Sep-04-19 13:24	Sep-04-19 13:26	Sep-04-19 13:28	Sep-04-19 13:30	Sep-04-19 13:32	Sep-04-19 13:34
BTX by EPA 8021B SUB: T104704400-18-16	Extracted:	Sep-05-19 13:15	Sep-05-19 13:15	Sep-05-19 13:15	Sep-05-19 13:15	Sep-05-19 13:15	Sep-05-19 13:15
	Analyzed:	*** ** *	*** ** *	*** ** *	*** ** *	*** ** *	*** ** *
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00199 0.00199	<0.00198 0.00198	<0.00202 0.00202	<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200
Toluene		<0.00199 0.00199	<0.00198 0.00198	<0.00202 0.00202	<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200
Ethylbenzene		<0.00199 0.00199	<0.00198 0.00198	<0.00202 0.00202	<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200
m,p-Xylenes		<0.00398 0.00398	<0.00396 0.00396	<0.00403 0.00403	<0.00401 0.00401	<0.00398 0.00398	<0.00400 0.00400
o-Xylene		<0.00199 0.00199	<0.00198 0.00198	<0.00202 0.00202	<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200
Total Xylenes		<0.00199 0.00199	<0.00198 0.00198	<0.00202 0.00202	<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200
Total BTX		<0.00199 0.00199	<0.00198 0.00198	<0.00202 0.00202	<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200
Chloride by EPA 300	Extracted:	Sep-04-19 17:09	Sep-04-19 17:09	Sep-04-19 17:09	Sep-05-19 14:09	Sep-05-19 14:09	Sep-05-19 14:09
	Analyzed:	Sep-04-19 23:22	Sep-04-19 23:28	Sep-04-19 23:34	Sep-05-19 14:45	Sep-05-19 15:02	Sep-05-19 15:08
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		24.3 9.96	26.0 9.86	20.1 9.88	15.9 9.92	20.6 9.84	30.7 9.78
TPH By SW8015 Mod	Extracted:	Sep-04-19 17:30	Sep-04-19 17:30	Sep-04-19 17:30	Sep-04-19 17:30	Sep-04-19 17:30	Sep-04-19 17:30
	Analyzed:	Sep-05-19 01:16	Sep-05-19 10:47	Sep-05-19 01:56	Sep-05-19 02:16	Sep-05-19 02:36	Sep-05-19 02:56
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons		<25.1 25.1	<25.1 25.1	<24.9 24.9	<25.1 25.1	<24.8 24.8	<24.8 24.8
Diesel Range Organics		<25.1 25.1	<25.1 25.1	<24.9 24.9	<25.1 25.1	<24.8 24.8	<24.8 24.8
Motor Oil Range Hydrocarbons (MRO)		<25.1 25.1	<25.1 25.1	<24.9 24.9	<25.1 25.1	<24.8 24.8	<24.8 24.8
Total TPH		<25.1 25.1	<25.1 25.1	<24.9 24.9	<25.1 25.1	<24.8 24.8	<24.8 24.8

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Jessica Kramer
Project Assistant



Certificate of Analysis Summary 635988

COG Operating LLC, Artesia, NM

Project Name: Boone 16 St. Com #2H

Project Id:

Contact: Sheldon Hitchcock

Project Location: Lea County

Date Received in Lab: Wed Sep-04-19 04:03 pm

Report Date: 06-SEP-19

Project Manager: Jessica Kramer

Analysis Requested	Lab Id:	635988-019	635988-020	635988-021	635988-022	635988-023	635988-024
	Field Id:	B-19	B-20	B-21	B-22	B-23	B-24
	Depth:						
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Sep-04-19 13:36	Sep-04-19 13:38	Sep-04-19 13:40	Sep-04-19 13:42	Sep-04-19 13:44	Sep-04-19 13:46
BTX by EPA 8021B SUB: T104704400-18-16	Extracted:	Sep-05-19 13:15	Sep-05-19 13:15	Sep-05-19 13:15	Sep-05-19 13:15	Sep-05-19 13:15	Sep-05-19 13:15
	Analyzed:	*** ** *	*** ** *	*** ** *	*** ** *	*** ** *	*** ** *
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00202 0.00202	<0.00200 0.00200	<0.00202 0.00202	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200
Toluene		<0.00202 0.00202	<0.00200 0.00200	<0.00202 0.00202	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200
Ethylbenzene		<0.00202 0.00202	<0.00200 0.00200	<0.00202 0.00202	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200
m,p-Xylenes		<0.00403 0.00403	<0.00400 0.00400	<0.00404 0.00404	<0.00399 0.00399	<0.00402 0.00402	<0.00399 0.00399
o-Xylene		<0.00202 0.00202	<0.00200 0.00200	<0.00202 0.00202	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200
Total Xylenes		<0.00202 0.00202	<0.00200 0.00200	<0.00202 0.00202	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200
Total BTX		<0.00202 0.00202	<0.00200 0.00200	<0.00202 0.00202	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200
Chloride by EPA 300	Extracted:	Sep-05-19 14:09	Sep-05-19 14:09	Sep-05-19 14:09	Sep-05-19 14:09	Sep-05-19 14:09	Sep-05-19 14:09
	Analyzed:	Sep-05-19 15:14	Sep-05-19 15:20	Sep-05-19 15:37	Sep-05-19 15:43	Sep-05-19 15:48	Sep-05-19 15:54
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		38.9 9.98	33.5 9.96	29.8 10.1	27.5 10.1	28.1 10.1	32.5 9.88
TPH By SW8015 Mod	Extracted:	Sep-04-19 17:30	Sep-04-19 17:30	Sep-04-19 17:30	Sep-04-19 17:30	Sep-04-19 17:30	Sep-04-19 17:30
	Analyzed:	Sep-05-19 03:16	Sep-05-19 03:36	Sep-05-19 04:17	Sep-05-19 04:36	Sep-05-19 04:57	Sep-05-19 05:17
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons		<24.9 24.9	<24.9 24.9	<24.9 24.9	<25.0 25.0	<25.0 25.0	<24.8 24.8
Diesel Range Organics		<24.9 24.9	<24.9 24.9	<24.9 24.9	<25.0 25.0	<25.0 25.0	<24.8 24.8
Motor Oil Range Hydrocarbons (MRO)		<24.9 24.9	<24.9 24.9	<24.9 24.9	<25.0 25.0	<25.0 25.0	<24.8 24.8
Total TPH		<24.9 24.9	<24.9 24.9	<24.9 24.9	<25.0 25.0	<25.0 25.0	<24.8 24.8

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Jessica Kramer
Project Assistant



Certificate of Analysis Summary 635988

COG Operating LLC, Artesia, NM

Project Name: Boone 16 St. Com #2H

Project Id:

Contact: Sheldon Hitchcock

Project Location: Lea County

Date Received in Lab: Wed Sep-04-19 04:03 pm

Report Date: 06-SEP-19

Project Manager: Jessica Kramer

Analysis Requested	Lab Id:	635988-025	635988-026	635988-027	635988-028		
	Field Id:	B-25	B-26	B-27	B-28		
	Depth:						
	Matrix:	SOIL	SOIL	SOIL	SOIL		
	Sampled:	Sep-04-19 13:48	Sep-04-19 13:50	Sep-04-19 13:52	Sep-04-19 13:54		
BTX by EPA 8021B SUB: T104704400-18-16	Extracted:	Sep-05-19 13:15	Sep-05-19 13:15	Sep-05-19 13:15	Sep-05-19 13:15		
	Analyzed:	*** ** *	*** ** *	*** ** *	*** ** *		
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
	Benzene	<0.00201 0.00201	<0.00200 0.00200	<0.00201 0.00201	<0.00202 0.00202		
	Toluene	<0.00201 0.00201	<0.00200 0.00200	<0.00201 0.00201	<0.00202 0.00202		
Ethylbenzene		<0.00201 0.00201	<0.00200 0.00200	<0.00201 0.00201	<0.00202 0.00202		
m,p-Xylenes		<0.00402 0.00402	<0.00399 0.00399	<0.00402 0.00402	<0.00403 0.00403		
o-Xylene		<0.00201 0.00201	<0.00200 0.00200	<0.00201 0.00201	<0.00202 0.00202		
Total Xylenes		<0.00201 0.00201	<0.00200 0.00200	<0.00201 0.00201	<0.00202 0.00202		
Total BTX		<0.00201 0.00201	<0.00200 0.00200	<0.00201 0.00201	<0.00202 0.00202		
Chloride by EPA 300	Extracted:	Sep-05-19 14:09	Sep-05-19 14:09	Sep-05-19 14:09	Sep-05-19 14:09		
	Analyzed:	Sep-05-19 16:00	Sep-05-19 16:06	Sep-05-19 16:11	Sep-05-19 16:17		
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
	Chloride	35.1 9.92	33.6 9.92	32.5 10.1	32.4 9.90		
TPH By SW8015 Mod	Extracted:	Sep-04-19 17:30	Sep-04-19 17:30	Sep-04-19 17:30	Sep-04-19 17:30		
	Analyzed:	Sep-05-19 05:37	Sep-05-19 05:57	Sep-05-19 06:17	Sep-05-19 06:37		
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL		
	Gasoline Range Hydrocarbons	<25.2 25.2	<25.1 25.1	<24.8 24.8	<25.1 25.1		
	Diesel Range Organics	<25.2 25.2	<25.1 25.1	<24.8 24.8	<25.1 25.1		
Motor Oil Range Hydrocarbons (MRO)		<25.2 25.2	<25.1 25.1	<24.8 24.8	<25.1 25.1		
Total TPH		<25.2 25.2	<25.1 25.1	<24.8 24.8	<25.1 25.1		

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Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Jessica Kramer

Jessica Kramer
Project Assistant

Analytical Report 635988

for COG Operating LLC

Project Manager: Sheldon Hitchcock

Boone 16 St. Com #2H

06-SEP-19

Collected By: Client



**1089 N Canal Street
Carlsbad, NM 88220**

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-19-29), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142), North Carolina (681)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-19-19), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-20)
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-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429), North Carolina (483)



06-SEP-19

Project Manager: **Sheldon Hitchcock**
COG Operating LLC
2407 Pecos Avenue
Artesia, NM 88210

Reference: XENCO Report No(s): **635988**
Boone 16 St. Com #2H
Project Address: Lea County

Sheldon Hitchcock:

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) 635988. 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. 635988 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,

A handwritten signature in black ink that reads 'Jessica Kramer'. The signature is written in a cursive, flowing style.

Jessica Kramer
Project Assistant

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Sample Cross Reference 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
B-1	S	09-04-19 13:00		635988-001
B-2	S	09-04-19 13:02		635988-002
B-3	S	09-04-19 13:04		635988-003
B-4	S	09-04-19 13:06		635988-004
B-5	S	09-04-19 13:08		635988-005
B-6	S	09-04-19 13:10		635988-006
B-7	S	09-04-19 13:12		635988-007
B-8	S	09-04-19 13:14		635988-008
B-9	S	09-04-19 13:16		635988-009
B-10	S	09-04-19 13:18		635988-010
B-11	S	09-04-19 13:20		635988-011
B-12	S	09-04-19 13:22		635988-012
B-13	S	09-04-19 13:24		635988-013
B-14	S	09-04-19 13:26		635988-014
B-15	S	09-04-19 13:28		635988-015
B-16	S	09-04-19 13:30		635988-016
B-17	S	09-04-19 13:32		635988-017
B-18	S	09-04-19 13:34		635988-018
B-19	S	09-04-19 13:36		635988-019
B-20	S	09-04-19 13:38		635988-020
B-21	S	09-04-19 13:40		635988-021
B-22	S	09-04-19 13:42		635988-022
B-23	S	09-04-19 13:44		635988-023
B-24	S	09-04-19 13:46		635988-024
B-25	S	09-04-19 13:48		635988-025
B-26	S	09-04-19 13:50		635988-026
B-27	S	09-04-19 13:52		635988-027
B-28	S	09-04-19 13:54		635988-028



CASE NARRATIVE

Client Name: COG Operating LLC

Project Name: Boone 16 St. Com #2H

Project ID:
Work Order Number(s): 635988

Report Date: 06-SEP-19
Date Received: 09/04/2019

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3100586 TPH By SW8015 Mod

Surrogate 1-Chlorooctane recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 635951-001 S.

Batch: LBA-3100588 TPH By SW8015 Mod

Surrogate 1-Chlorooctane recovered above QC limits Data confirmed by re-analysis. Samples affected are: 7685634-1-BKS, 7685634-1-BLK, 635988-022.

Batch: LBA-3100671 BTEX by EPA 8021B

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

Batch: LBA-3100674 BTEX by EPA 8021B

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



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-1**
Lab Sample Id: 635988-001

Matrix: Soil
Date Collected: 09.04.19 13.00

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100631

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.09

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	579	19.9	mg/kg	09.04.19 21.55		2

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100586

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 16.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<25.1	25.1	mg/kg	09.04.19 19.17	U	1
Diesel Range Organics	C10C28DRO	<25.1	25.1	mg/kg	09.04.19 19.17	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<25.1	25.1	mg/kg	09.04.19 19.17	U	1
Total TPH	PHC635	<25.1	25.1	mg/kg	09.04.19 19.17	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	129	%	70-135	09.04.19 19.17		
o-Terphenyl	84-15-1	91	%	70-135	09.04.19 19.17		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-1**
Lab Sample Id: 635988-001

Matrix: Soil
Date Collected: 09.04.19 13.00

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.05.19 13.00

Basis: Wet Weight

Seq Number: 3100671

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	09.05.19 20.43	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	09.05.19 20.43	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	09.05.19 20.43	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	09.05.19 20.43	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	09.05.19 20.43	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	09.05.19 20.43	U	1
Total BTEX		<0.00201	0.00201	mg/kg	09.05.19 20.43	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	93	%	70-130	09.05.19 20.43		
4-Bromofluorobenzene	460-00-4	104	%	70-130	09.05.19 20.43		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: B-2
Lab Sample Id: 635988-002

Matrix: Soil
Date Collected: 09.04.19 13.02

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100631

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.09

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	586	19.9	mg/kg	09.04.19 22.00		2

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100586

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 16.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<25.1	25.1	mg/kg	09.04.19 19.37	U	1
Diesel Range Organics	C10C28DRO	<25.1	25.1	mg/kg	09.04.19 19.37	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<25.1	25.1	mg/kg	09.04.19 19.37	U	1
Total TPH	PHC635	<25.1	25.1	mg/kg	09.04.19 19.37	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	129	%	70-135	09.04.19 19.37		
o-Terphenyl	84-15-1	100	%	70-135	09.04.19 19.37		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: B-2
Lab Sample Id: 635988-002

Matrix: Soil
Date Collected: 09.04.19 13.02

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.05.19 13.00

Basis: Wet Weight

Seq Number: 3100671

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	09.05.19 21.03	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	09.05.19 21.03	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	09.05.19 21.03	U	1
m,p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	09.05.19 21.03	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	09.05.19 21.03	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	09.05.19 21.03	U	1
Total BTEX		<0.00202	0.00202	mg/kg	09.05.19 21.03	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	110	%	70-130	09.05.19 21.03		
1,4-Difluorobenzene	540-36-3	94	%	70-130	09.05.19 21.03		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-3**
Lab Sample Id: 635988-003

Matrix: Soil
Date Collected: 09.04.19 13.04

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100631

Prep Method: E300P

% Moisture:

Date Prep: 09.04.19 17.09

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	603	19.9	mg/kg	09.04.19 22.06		2

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100586

Prep Method: SW8015P

% Moisture:

Date Prep: 09.04.19 16.30

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<25.1	25.1	mg/kg	09.04.19 19.57	U	1
Diesel Range Organics	C10C28DRO	<25.1	25.1	mg/kg	09.04.19 19.57	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<25.1	25.1	mg/kg	09.04.19 19.57	U	1
Total TPH	PHC635	<25.1	25.1	mg/kg	09.04.19 19.57	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	125	%	70-135	09.04.19 19.57	
o-Terphenyl	84-15-1	92	%	70-135	09.04.19 19.57	



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-3**
Lab Sample Id: 635988-003

Matrix: Soil
Date Collected: 09.04.19 13.04

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.05.19 13.00

Basis: Wet Weight

Seq Number: 3100671

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	09.05.19 21.23	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	09.05.19 21.23	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	09.05.19 21.23	U	1
m,p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	09.05.19 21.23	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	09.05.19 21.23	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	09.05.19 21.23	U	1
Total BTEX		<0.00202	0.00202	mg/kg	09.05.19 21.23	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	112	%	70-130	09.05.19 21.23		
1,4-Difluorobenzene	540-36-3	95	%	70-130	09.05.19 21.23		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-4**
Lab Sample Id: 635988-004

Matrix: Soil
Date Collected: 09.04.19 13.06

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100631

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.09

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	596	19.8	mg/kg	09.04.19 22.12		2

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100586

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 16.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<25.0	25.0	mg/kg	09.04.19 20.17	U	1
Diesel Range Organics	C10C28DRO	<25.0	25.0	mg/kg	09.04.19 20.17	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<25.0	25.0	mg/kg	09.04.19 20.17	U	1
Total TPH	PHC635	<25.0	25.0	mg/kg	09.04.19 20.17	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	128	%	70-135	09.04.19 20.17		
o-Terphenyl	84-15-1	97	%	70-135	09.04.19 20.17		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-4**
Lab Sample Id: 635988-004

Matrix: Soil
Date Collected: 09.04.19 13.06

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.05.19 13.00

Basis: Wet Weight

Seq Number: 3100671

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	09.05.19 21.43	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	09.05.19 21.43	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	09.05.19 21.43	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	09.05.19 21.43	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	09.05.19 21.43	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	09.05.19 21.43	U	1
Total BTEX		<0.00199	0.00199	mg/kg	09.05.19 21.43	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	117	%	70-130	09.05.19 21.43		
1,4-Difluorobenzene	540-36-3	95	%	70-130	09.05.19 21.43		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: B-5
Lab Sample Id: 635988-005

Matrix: Soil
Date Collected: 09.04.19 13.08

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100631

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.09

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	619	19.6	mg/kg	09.04.19 22.18		2

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100586

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 16.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<25.1	25.1	mg/kg	09.04.19 20.37	U	1
Diesel Range Organics	C10C28DRO	<25.1	25.1	mg/kg	09.04.19 20.37	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<25.1	25.1	mg/kg	09.04.19 20.37	U	1
Total TPH	PHC635	<25.1	25.1	mg/kg	09.04.19 20.37	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	129	%	70-135	09.04.19 20.37		
o-Terphenyl	84-15-1	102	%	70-135	09.04.19 20.37		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-5**
Lab Sample Id: 635988-005

Matrix: Soil
Date Collected: 09.04.19 13.08

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Tech: KTL

Analyst: KTL

Seq Number: 3100671

Prep Method: SW5030B

% Moisture:

Date Prep: 09.05.19 13.00

Basis: Wet Weight

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.05.19 22.03	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.05.19 22.03	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.05.19 22.03	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	09.05.19 22.03	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.05.19 22.03	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.05.19 22.03	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.05.19 22.03	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	114	%	70-130	09.05.19 22.03		
1,4-Difluorobenzene	540-36-3	96	%	70-130	09.05.19 22.03		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-6**
Lab Sample Id: 635988-006

Matrix: Soil
Date Collected: 09.04.19 13.10

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100631

Prep Method: E300P

% Moisture:

Date Prep: 09.04.19 17.09

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	172	9.80	mg/kg	09.04.19 22.23		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100586

Prep Method: SW8015P

% Moisture:

Date Prep: 09.04.19 16.30

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<24.9	24.9	mg/kg	09.04.19 20.57	U	1
Diesel Range Organics	C10C28DRO	<24.9	24.9	mg/kg	09.04.19 20.57	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<24.9	24.9	mg/kg	09.04.19 20.57	U	1
Total TPH	PHC635	<24.9	24.9	mg/kg	09.04.19 20.57	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	124	%	70-135	09.04.19 20.57		
o-Terphenyl	84-15-1	85	%	70-135	09.04.19 20.57		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-6**
Lab Sample Id: 635988-006

Matrix: Soil
Date Collected: 09.04.19 13.10

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.05.19 13.00

Basis: Wet Weight

Seq Number: 3100671

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	09.05.19 22.23	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	09.05.19 22.23	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	09.05.19 22.23	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	09.05.19 22.23	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	09.05.19 22.23	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	09.05.19 22.23	U	1
Total BTEX		<0.00201	0.00201	mg/kg	09.05.19 22.23	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	120	%	70-130	09.05.19 22.23		
1,4-Difluorobenzene	540-36-3	97	%	70-130	09.05.19 22.23		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: B-7
Lab Sample Id: 635988-007

Matrix: Soil
Date Collected: 09.04.19 13.12

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100631

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.09

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	204	9.98	mg/kg	09.04.19 22.29		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100586

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 16.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<24.9	24.9	mg/kg	09.04.19 21.16	U	1
Diesel Range Organics	C10C28DRO	<24.9	24.9	mg/kg	09.04.19 21.16	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<24.9	24.9	mg/kg	09.04.19 21.16	U	1
Total TPH	PHC635	<24.9	24.9	mg/kg	09.04.19 21.16	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	123	%	70-135	09.04.19 21.16		
o-Terphenyl	84-15-1	86	%	70-135	09.04.19 21.16		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-7**
Lab Sample Id: 635988-007

Matrix: Soil
Date Collected: 09.04.19 13.12

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Tech: KTL

Analyst: KTL

Seq Number: 3100671

Prep Method: SW5030B

% Moisture:

Date Prep: 09.05.19 13.00

Basis: Wet Weight

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	09.05.19 22.44	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	09.05.19 22.44	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	09.05.19 22.44	U	1
m,p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	09.05.19 22.44	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	09.05.19 22.44	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	09.05.19 22.44	U	1
Total BTEX		<0.00202	0.00202	mg/kg	09.05.19 22.44	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	96	%	70-130	09.05.19 22.44		
4-Bromofluorobenzene	460-00-4	119	%	70-130	09.05.19 22.44		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-8**
Lab Sample Id: 635988-008

Matrix: Soil
Date Collected: 09.04.19 13.14

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100631

Prep Method: E300P

% Moisture:

Date Prep: 09.04.19 17.09

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	162	9.82	mg/kg	09.04.19 22.35		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100586

Prep Method: SW8015P

% Moisture:

Date Prep: 09.04.19 16.30

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<24.9	24.9	mg/kg	09.04.19 21.36	U	1
Diesel Range Organics	C10C28DRO	<24.9	24.9	mg/kg	09.04.19 21.36	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<24.9	24.9	mg/kg	09.04.19 21.36	U	1
Total TPH	PHC635	<24.9	24.9	mg/kg	09.04.19 21.36	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	119	%	70-135	09.04.19 21.36		
o-Terphenyl	84-15-1	81	%	70-135	09.04.19 21.36		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-8**
Lab Sample Id: 635988-008

Matrix: Soil
Date Collected: 09.04.19 13.14

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.05.19 13.00

Basis: Wet Weight

Seq Number: 3100671

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	09.05.19 23.04	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	09.05.19 23.04	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	09.05.19 23.04	U	1
m,p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	09.05.19 23.04	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	09.05.19 23.04	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	09.05.19 23.04	U	1
Total BTEX		<0.00202	0.00202	mg/kg	09.05.19 23.04	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	94	%	70-130	09.05.19 23.04		
4-Bromofluorobenzene	460-00-4	114	%	70-130	09.05.19 23.04		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-9**
Lab Sample Id: 635988-009

Matrix: Soil
Date Collected: 09.04.19 13.16

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100631

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.09

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	213	10.0	mg/kg	09.04.19 22.41		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100586

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 16.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<25.0	25.0	mg/kg	09.04.19 21.56	U	1
Diesel Range Organics	C10C28DRO	<25.0	25.0	mg/kg	09.04.19 21.56	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<25.0	25.0	mg/kg	09.04.19 21.56	U	1
Total TPH	PHC635	<25.0	25.0	mg/kg	09.04.19 21.56	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	128	%	70-135	09.04.19 21.56		
o-Terphenyl	84-15-1	90	%	70-135	09.04.19 21.56		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-9**
Lab Sample Id: 635988-009

Matrix: Soil
Date Collected: 09.04.19 13.16

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.05.19 13.00

Basis: Wet Weight

Seq Number: 3100671

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	09.05.19 23.24	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	09.05.19 23.24	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	09.05.19 23.24	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	09.05.19 23.24	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	09.05.19 23.24	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	09.05.19 23.24	U	1
Total BTEX		<0.00202	0.00202	mg/kg	09.05.19 23.24	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	106	%	70-130	09.05.19 23.24		
1,4-Difluorobenzene	540-36-3	92	%	70-130	09.05.19 23.24		



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COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-10**
Lab Sample Id: 635988-010

Matrix: Soil
Date Collected: 09.04.19 13.18

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100631

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.09

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	173	9.98	mg/kg	09.04.19 22.46		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100586

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 16.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<25.0	25.0	mg/kg	09.04.19 22.16	U	1
Diesel Range Organics	C10C28DRO	<25.0	25.0	mg/kg	09.04.19 22.16	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<25.0	25.0	mg/kg	09.04.19 22.16	U	1
Total TPH	PHC635	<25.0	25.0	mg/kg	09.04.19 22.16	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	121	%	70-135	09.04.19 22.16		
o-Terphenyl	84-15-1	82	%	70-135	09.04.19 22.16		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-10**
Lab Sample Id: 635988-010

Matrix: Soil
Date Collected: 09.04.19 13.18

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Tech: KTL

Analyst: KTL

Seq Number: 3100671

Prep Method: SW5030B

% Moisture:

Date Prep: 09.05.19 13.00

Basis: Wet Weight

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	09.05.19 23.44	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	09.05.19 23.44	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	09.05.19 23.44	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	09.05.19 23.44	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	09.05.19 23.44	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	09.05.19 23.44	U	1
Total BTEX		<0.00201	0.00201	mg/kg	09.05.19 23.44	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	113	%	70-130	09.05.19 23.44		
1,4-Difluorobenzene	540-36-3	95	%	70-130	09.05.19 23.44		



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COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-11**
Lab Sample Id: 635988-011

Matrix: Soil
Date Collected: 09.04.19 13.20

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100631

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.09

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	24.7	10.0	mg/kg	09.04.19 23.11		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100588

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<25.0	25.0	mg/kg	09.04.19 23.55	U	1
Diesel Range Organics	C10C28DRO	<25.0	25.0	mg/kg	09.04.19 23.55	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<25.0	25.0	mg/kg	09.04.19 23.55	U	1
Total TPH	PHC635	<25.0	25.0	mg/kg	09.04.19 23.55	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	128	%	70-135	09.04.19 23.55		
o-Terphenyl	84-15-1	86	%	70-135	09.04.19 23.55		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-11**
Lab Sample Id: 635988-011

Matrix: Soil
Date Collected: 09.04.19 13.20

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.05.19 13.15

Basis: Wet Weight

Seq Number: 3100674

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.05.19 04.39	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.05.19 04.39	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.05.19 04.39	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	09.05.19 04.39	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.05.19 04.39	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.05.19 04.39	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.05.19 04.39	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	118	%	70-130	09.05.19 04.39		
1,4-Difluorobenzene	540-36-3	102	%	70-130	09.05.19 04.39		



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COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-12**
Lab Sample Id: 635988-012

Matrix: Soil
Date Collected: 09.04.19 13.22

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100631

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.09

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	22.4	9.98	mg/kg	09.04.19 23.16		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100588

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<25.1	25.1	mg/kg	09.05.19 00.56	U	1
Diesel Range Organics	C10C28DRO	<25.1	25.1	mg/kg	09.05.19 00.56	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<25.1	25.1	mg/kg	09.05.19 00.56	U	1
Total TPH	PHC635	<25.1	25.1	mg/kg	09.05.19 00.56	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	123	%	70-135	09.05.19 00.56		
o-Terphenyl	84-15-1	86	%	70-135	09.05.19 00.56		



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COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-12**
Lab Sample Id: 635988-012

Matrix: Soil
Date Collected: 09.04.19 13.22

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.05.19 13.15

Basis: Wet Weight

Seq Number: 3100674

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.05.19 04.59	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.05.19 04.59	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.05.19 04.59	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	09.05.19 04.59	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.05.19 04.59	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.05.19 04.59	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.05.19 04.59	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	115	%	70-130	09.05.19 04.59		
1,4-Difluorobenzene	540-36-3	100	%	70-130	09.05.19 04.59		



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COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-13**
Lab Sample Id: 635988-013

Matrix: Soil
Date Collected: 09.04.19 13.24

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100631

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.09

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	24.3	9.96	mg/kg	09.04.19 23.22		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100588

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<25.1	25.1	mg/kg	09.05.19 01.16	U	1
Diesel Range Organics	C10C28DRO	<25.1	25.1	mg/kg	09.05.19 01.16	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<25.1	25.1	mg/kg	09.05.19 01.16	U	1
Total TPH	PHC635	<25.1	25.1	mg/kg	09.05.19 01.16	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	127	%	70-135	09.05.19 01.16		
o-Terphenyl	84-15-1	85	%	70-135	09.05.19 01.16		



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COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-13**
Lab Sample Id: 635988-013

Matrix: Soil
Date Collected: 09.04.19 13.24

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.05.19 13.15

Basis: Wet Weight

Seq Number: 3100674

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	09.05.19 05.19	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	09.05.19 05.19	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	09.05.19 05.19	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	09.05.19 05.19	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	09.05.19 05.19	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	09.05.19 05.19	U	1
Total BTEX		<0.00199	0.00199	mg/kg	09.05.19 05.19	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	120	%	70-130	09.05.19 05.19		
1,4-Difluorobenzene	540-36-3	101	%	70-130	09.05.19 05.19		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-14**
Lab Sample Id: 635988-014

Matrix: Soil
Date Collected: 09.04.19 13.26

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100631

Prep Method: E300P

% Moisture:

Date Prep: 09.04.19 17.09

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	26.0	9.86	mg/kg	09.04.19 23.28		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100588

Prep Method: SW8015P

% Moisture:

Date Prep: 09.04.19 17.30

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<25.1	25.1	mg/kg	09.05.19 10.47	U	1
Diesel Range Organics	C10C28DRO	<25.1	25.1	mg/kg	09.05.19 10.47	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<25.1	25.1	mg/kg	09.05.19 10.47	U	1
Total TPH	PHC635	<25.1	25.1	mg/kg	09.05.19 10.47	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	135	%	70-135	09.05.19 10.47	
o-Terphenyl	84-15-1	103	%	70-135	09.05.19 10.47	



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-14**
Lab Sample Id: 635988-014

Matrix: Soil
Date Collected: 09.04.19 13.26

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.05.19 13.15

Basis: Wet Weight

Seq Number: 3100674

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	09.05.19 05.39	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	09.05.19 05.39	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	09.05.19 05.39	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	09.05.19 05.39	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	09.05.19 05.39	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	09.05.19 05.39	U	1
Total BTEX		<0.00198	0.00198	mg/kg	09.05.19 05.39	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	113	%	70-130	09.05.19 05.39		
1,4-Difluorobenzene	540-36-3	101	%	70-130	09.05.19 05.39		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-15**
Lab Sample Id: 635988-015

Matrix: Soil
Date Collected: 09.04.19 13.28

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100631

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.09

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	20.1	9.88	mg/kg	09.04.19 23.34		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100588

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<24.9	24.9	mg/kg	09.05.19 01.56	U	1
Diesel Range Organics	C10C28DRO	<24.9	24.9	mg/kg	09.05.19 01.56	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<24.9	24.9	mg/kg	09.05.19 01.56	U	1
Total TPH	PHC635	<24.9	24.9	mg/kg	09.05.19 01.56	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	130	%	70-135	09.05.19 01.56		
o-Terphenyl	84-15-1	84	%	70-135	09.05.19 01.56		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-15**
Lab Sample Id: 635988-015

Matrix: Soil
Date Collected: 09.04.19 13.28

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Tech: KTL

Analyst: KTL

Seq Number: 3100674

Prep Method: SW5030B

% Moisture:

Date Prep: 09.05.19 13.15

Basis: Wet Weight

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	09.05.19 06.00	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	09.05.19 06.00	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	09.05.19 06.00	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	09.05.19 06.00	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	09.05.19 06.00	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	09.05.19 06.00	U	1
Total BTEX		<0.00202	0.00202	mg/kg	09.05.19 06.00	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	114	%	70-130	09.05.19 06.00		
1,4-Difluorobenzene	540-36-3	106	%	70-130	09.05.19 06.00		



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COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-16**
Lab Sample Id: 635988-016

Matrix: Soil
Date Collected: 09.04.19 13.30

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100664

Prep Method: E300P

% Moisture:

Date Prep: 09.05.19 14.09

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	15.9	9.92	mg/kg	09.05.19 14.45		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100588

Prep Method: SW8015P

% Moisture:

Date Prep: 09.04.19 17.30

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<25.1	25.1	mg/kg	09.05.19 02.16	U	1
Diesel Range Organics	C10C28DRO	<25.1	25.1	mg/kg	09.05.19 02.16	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<25.1	25.1	mg/kg	09.05.19 02.16	U	1
Total TPH	PHC635	<25.1	25.1	mg/kg	09.05.19 02.16	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	121	%	70-135	09.05.19 02.16		
o-Terphenyl	84-15-1	78	%	70-135	09.05.19 02.16		



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COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-16**
Lab Sample Id: 635988-016

Matrix: Soil
Date Collected: 09.04.19 13.30

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Tech: KTL

Analyst: KTL

Seq Number: 3100674

Prep Method: SW5030B

% Moisture:

Date Prep: 09.05.19 13.15

Basis: Wet Weight

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.05.19 06.20	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.05.19 06.20	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.05.19 06.20	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	09.05.19 06.20	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.05.19 06.20	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.05.19 06.20	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.05.19 06.20	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	101	%	70-130	09.05.19 06.20		
4-Bromofluorobenzene	460-00-4	107	%	70-130	09.05.19 06.20		



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COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-17**
Lab Sample Id: 635988-017

Matrix: Soil
Date Collected: 09.04.19 13.32

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100664

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.05.19 14.09

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	20.6	9.84	mg/kg	09.05.19 15.02		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100588

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<24.8	24.8	mg/kg	09.05.19 02.36	U	1
Diesel Range Organics	C10C28DRO	<24.8	24.8	mg/kg	09.05.19 02.36	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<24.8	24.8	mg/kg	09.05.19 02.36	U	1
Total TPH	PHC635	<24.8	24.8	mg/kg	09.05.19 02.36	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	134	%	70-135	09.05.19 02.36		
o-Terphenyl	84-15-1	95	%	70-135	09.05.19 02.36		



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COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-17**
Lab Sample Id: 635988-017

Matrix: Soil
Date Collected: 09.04.19 13.32

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.05.19 13.15

Basis: Wet Weight

Seq Number: 3100674

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	09.05.19 06.40	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	09.05.19 06.40	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	09.05.19 06.40	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	09.05.19 06.40	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	09.05.19 06.40	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	09.05.19 06.40	U	1
Total BTEX		<0.00199	0.00199	mg/kg	09.05.19 06.40	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	103	%	70-130	09.05.19 06.40		
4-Bromofluorobenzene	460-00-4	111	%	70-130	09.05.19 06.40		



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COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-18**
Lab Sample Id: 635988-018

Matrix: Soil
Date Collected: 09.04.19 13.34

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100664

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.05.19 14.09

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	30.7	9.78	mg/kg	09.05.19 15.08		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100588

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<24.8	24.8	mg/kg	09.05.19 02.56	U	1
Diesel Range Organics	C10C28DRO	<24.8	24.8	mg/kg	09.05.19 02.56	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<24.8	24.8	mg/kg	09.05.19 02.56	U	1
Total TPH	PHC635	<24.8	24.8	mg/kg	09.05.19 02.56	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	124	%	70-135	09.05.19 02.56		
o-Terphenyl	84-15-1	85	%	70-135	09.05.19 02.56		



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COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-18**
Lab Sample Id: 635988-018

Matrix: Soil
Date Collected: 09.04.19 13.34

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Tech: KTL

Analyst: KTL

Seq Number: 3100674

Prep Method: SW5030B

% Moisture:

Date Prep: 09.05.19 13.15

Basis: Wet Weight

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.05.19 07.00	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.05.19 07.00	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.05.19 07.00	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	09.05.19 07.00	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.05.19 07.00	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.05.19 07.00	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.05.19 07.00	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	105	%	70-130	09.05.19 07.00		
1,4-Difluorobenzene	540-36-3	99	%	70-130	09.05.19 07.00		



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COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-19**
Lab Sample Id: 635988-019

Matrix: Soil
Date Collected: 09.04.19 13.36

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100664

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.05.19 14.09

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	38.9	9.98	mg/kg	09.05.19 15.14		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100588

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<24.9	24.9	mg/kg	09.05.19 03.16	U	1
Diesel Range Organics	C10C28DRO	<24.9	24.9	mg/kg	09.05.19 03.16	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<24.9	24.9	mg/kg	09.05.19 03.16	U	1
Total TPH	PHC635	<24.9	24.9	mg/kg	09.05.19 03.16	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	124	%	70-135	09.05.19 03.16		
o-Terphenyl	84-15-1	90	%	70-135	09.05.19 03.16		



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COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-19**
Lab Sample Id: 635988-019

Matrix: Soil
Date Collected: 09.04.19 13.36

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.05.19 13.15

Basis: Wet Weight

Seq Number: 3100674

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	09.05.19 07.20	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	09.05.19 07.20	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	09.05.19 07.20	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	09.05.19 07.20	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	09.05.19 07.20	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	09.05.19 07.20	U	1
Total BTEX		<0.00202	0.00202	mg/kg	09.05.19 07.20	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	110	%	70-130	09.05.19 07.20		
1,4-Difluorobenzene	540-36-3	101	%	70-130	09.05.19 07.20		



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COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-20**
Lab Sample Id: 635988-020

Matrix: Soil
Date Collected: 09.04.19 13.38

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100664

Prep Method: E300P

% Moisture:

Date Prep: 09.05.19 14.09

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	33.5	9.96	mg/kg	09.05.19 15.20		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100588

Prep Method: SW8015P

% Moisture:

Date Prep: 09.04.19 17.30

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<24.9	24.9	mg/kg	09.05.19 03.36	U	1
Diesel Range Organics	C10C28DRO	<24.9	24.9	mg/kg	09.05.19 03.36	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<24.9	24.9	mg/kg	09.05.19 03.36	U	1
Total TPH	PHC635	<24.9	24.9	mg/kg	09.05.19 03.36	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	128	%	70-135	09.05.19 03.36	
o-Terphenyl	84-15-1	94	%	70-135	09.05.19 03.36	



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COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-20**
Lab Sample Id: 635988-020

Matrix: Soil
Date Collected: 09.04.19 13.38

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Tech: KTL

Analyst: KTL

Seq Number: 3100674

Prep Method: SW5030B

% Moisture:

Date Prep: 09.05.19 13.15

Basis: Wet Weight

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.05.19 07.40	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.05.19 07.40	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.05.19 07.40	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	09.05.19 07.40	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.05.19 07.40	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.05.19 07.40	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.05.19 07.40	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	108	%	70-130	09.05.19 07.40		
1,4-Difluorobenzene	540-36-3	101	%	70-130	09.05.19 07.40		



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COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-21**
Lab Sample Id: 635988-021

Matrix: Soil
Date Collected: 09.04.19 13.40

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100664

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.05.19 14.09

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	29.8	10.1	mg/kg	09.05.19 15.37		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100588

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<24.9	24.9	mg/kg	09.05.19 04.17	U	1
Diesel Range Organics	C10C28DRO	<24.9	24.9	mg/kg	09.05.19 04.17	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<24.9	24.9	mg/kg	09.05.19 04.17	U	1
Total TPH	PHC635	<24.9	24.9	mg/kg	09.05.19 04.17	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	134	%	70-135	09.05.19 04.17		
o-Terphenyl	84-15-1	97	%	70-135	09.05.19 04.17		



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COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-21**
Lab Sample Id: 635988-021

Matrix: Soil
Date Collected: 09.04.19 13.40

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.05.19 13.15

Basis: Wet Weight

Seq Number: 3100674

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	09.05.19 09.01	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	09.05.19 09.01	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	09.05.19 09.01	U	1
m,p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	09.05.19 09.01	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	09.05.19 09.01	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	09.05.19 09.01	U	1
Total BTEX		<0.00202	0.00202	mg/kg	09.05.19 09.01	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	103	%	70-130	09.05.19 09.01		
1,4-Difluorobenzene	540-36-3	96	%	70-130	09.05.19 09.01		



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COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-22**
Lab Sample Id: 635988-022

Matrix: Soil
Date Collected: 09.04.19 13.42

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100664

Prep Method: E300P

% Moisture:

Date Prep: 09.05.19 14.09

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	27.5	10.1	mg/kg	09.05.19 15.43		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100588

Prep Method: SW8015P

% Moisture:

Date Prep: 09.04.19 17.30

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<25.0	25.0	mg/kg	09.05.19 04.36	U	1
Diesel Range Organics	C10C28DRO	<25.0	25.0	mg/kg	09.05.19 04.36	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<25.0	25.0	mg/kg	09.05.19 04.36	U	1
Total TPH	PHC635	<25.0	25.0	mg/kg	09.05.19 04.36	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	139	%	70-135	09.05.19 04.36	**
o-Terphenyl	84-15-1	103	%	70-135	09.05.19 04.36	



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-22**
Lab Sample Id: 635988-022

Matrix: Soil
Date Collected: 09.04.19 13.42

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.05.19 13.15

Basis: Wet Weight

Seq Number: 3100674

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.05.19 09.21	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.05.19 09.21	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.05.19 09.21	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	09.05.19 09.21	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.05.19 09.21	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.05.19 09.21	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.05.19 09.21	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	99	%	70-130	09.05.19 09.21		
4-Bromofluorobenzene	460-00-4	105	%	70-130	09.05.19 09.21		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-23**
Lab Sample Id: 635988-023

Matrix: Soil
Date Collected: 09.04.19 13.44

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100664

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.05.19 14.09

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	28.1	10.1	mg/kg	09.05.19 15.48		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100588

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<25.0	25.0	mg/kg	09.05.19 04.57	U	1
Diesel Range Organics	C10C28DRO	<25.0	25.0	mg/kg	09.05.19 04.57	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<25.0	25.0	mg/kg	09.05.19 04.57	U	1
Total TPH	PHC635	<25.0	25.0	mg/kg	09.05.19 04.57	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	133	%	70-135	09.05.19 04.57		
o-Terphenyl	84-15-1	99	%	70-135	09.05.19 04.57		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-23**
Lab Sample Id: 635988-023

Matrix: Soil
Date Collected: 09.04.19 13.44

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.05.19 13.15

Basis: Wet Weight

Seq Number: 3100674

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	09.05.19 09.41	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	09.05.19 09.41	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	09.05.19 09.41	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	09.05.19 09.41	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	09.05.19 09.41	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	09.05.19 09.41	U	1
Total BTEX		<0.00201	0.00201	mg/kg	09.05.19 09.41	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	102	%	70-130	09.05.19 09.41		
4-Bromofluorobenzene	460-00-4	114	%	70-130	09.05.19 09.41		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-24**
Lab Sample Id: 635988-024

Matrix: Soil
Date Collected: 09.04.19 13.46

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100664

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.05.19 14.09

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	32.5	9.88	mg/kg	09.05.19 15.54		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100588

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<24.8	24.8	mg/kg	09.05.19 05.17	U	1
Diesel Range Organics	C10C28DRO	<24.8	24.8	mg/kg	09.05.19 05.17	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<24.8	24.8	mg/kg	09.05.19 05.17	U	1
Total TPH	PHC635	<24.8	24.8	mg/kg	09.05.19 05.17	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	129	%	70-135	09.05.19 05.17		
o-Terphenyl	84-15-1	98	%	70-135	09.05.19 05.17		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-24**
Lab Sample Id: 635988-024

Matrix: Soil
Date Collected: 09.04.19 13.46

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.05.19 13.15

Basis: Wet Weight

Seq Number: 3100674

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.05.19 10.01	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.05.19 10.01	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.05.19 10.01	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	09.05.19 10.01	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.05.19 10.01	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.05.19 10.01	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.05.19 10.01	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	104	%	70-130	09.05.19 10.01		
4-Bromofluorobenzene	460-00-4	116	%	70-130	09.05.19 10.01		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-25**
Lab Sample Id: 635988-025

Matrix: Soil
Date Collected: 09.04.19 13.48

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100664

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.05.19 14.09

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	35.1	9.92	mg/kg	09.05.19 16.00		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100588

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<25.2	25.2	mg/kg	09.05.19 05.37	U	1
Diesel Range Organics	C10C28DRO	<25.2	25.2	mg/kg	09.05.19 05.37	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<25.2	25.2	mg/kg	09.05.19 05.37	U	1
Total TPH	PHC635	<25.2	25.2	mg/kg	09.05.19 05.37	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	126	%	70-135	09.05.19 05.37		
o-Terphenyl	84-15-1	97	%	70-135	09.05.19 05.37		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-25**
Lab Sample Id: 635988-025

Matrix: Soil
Date Collected: 09.04.19 13.48

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.05.19 13.15

Basis: Wet Weight

Seq Number: 3100674

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	09.05.19 10.21	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	09.05.19 10.21	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	09.05.19 10.21	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	09.05.19 10.21	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	09.05.19 10.21	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	09.05.19 10.21	U	1
Total BTEX		<0.00201	0.00201	mg/kg	09.05.19 10.21	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	109	%	70-130	09.05.19 10.21		
1,4-Difluorobenzene	540-36-3	102	%	70-130	09.05.19 10.21		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-26**
Lab Sample Id: 635988-026

Matrix: Soil
Date Collected: 09.04.19 13.50

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100664

Prep Method: E300P

% Moisture:

Date Prep: 09.05.19 14.09

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	33.6	9.92	mg/kg	09.05.19 16.06		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100588

Prep Method: SW8015P

% Moisture:

Date Prep: 09.04.19 17.30

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<25.1	25.1	mg/kg	09.05.19 05.57	U	1
Diesel Range Organics	C10C28DRO	<25.1	25.1	mg/kg	09.05.19 05.57	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<25.1	25.1	mg/kg	09.05.19 05.57	U	1
Total TPH	PHC635	<25.1	25.1	mg/kg	09.05.19 05.57	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	126	%	70-135	09.05.19 05.57	
o-Terphenyl	84-15-1	98	%	70-135	09.05.19 05.57	



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-26**
Lab Sample Id: 635988-026

Matrix: Soil
Date Collected: 09.04.19 13.50

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.05.19 13.15

Basis: Wet Weight

Seq Number: 3100674

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.05.19 10.41	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.05.19 10.41	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.05.19 10.41	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	09.05.19 10.41	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.05.19 10.41	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.05.19 10.41	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.05.19 10.41	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	110	%	70-130	09.05.19 10.41		
1,4-Difluorobenzene	540-36-3	102	%	70-130	09.05.19 10.41		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-27**
Lab Sample Id: 635988-027

Matrix: Soil
Date Collected: 09.04.19 13.52

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100664

Prep Method: E300P

% Moisture:

Date Prep: 09.05.19 14.09

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	32.5	10.1	mg/kg	09.05.19 16.11		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100588

Prep Method: SW8015P

% Moisture:

Date Prep: 09.04.19 17.30

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<24.8	24.8	mg/kg	09.05.19 06.17	U	1
Diesel Range Organics	C10C28DRO	<24.8	24.8	mg/kg	09.05.19 06.17	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<24.8	24.8	mg/kg	09.05.19 06.17	U	1
Total TPH	PHC635	<24.8	24.8	mg/kg	09.05.19 06.17	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	126	%	70-135	09.05.19 06.17	
o-Terphenyl	84-15-1	91	%	70-135	09.05.19 06.17	



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-27**
Lab Sample Id: 635988-027

Matrix: Soil
Date Collected: 09.04.19 13.52

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.05.19 13.15

Basis: Wet Weight

Seq Number: 3100674

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	09.05.19 11.01	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	09.05.19 11.01	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	09.05.19 11.01	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	09.05.19 11.01	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	09.05.19 11.01	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	09.05.19 11.01	U	1
Total BTEX		<0.00201	0.00201	mg/kg	09.05.19 11.01	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	106	%	70-130	09.05.19 11.01		
1,4-Difluorobenzene	540-36-3	99	%	70-130	09.05.19 11.01		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-28**
Lab Sample Id: 635988-028

Matrix: Soil
Date Collected: 09.04.19 13.54

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100664

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.05.19 14.09

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	32.4	9.90	mg/kg	09.05.19 16.17		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100588

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<25.1	25.1	mg/kg	09.05.19 06.37	U	1
Diesel Range Organics	C10C28DRO	<25.1	25.1	mg/kg	09.05.19 06.37	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<25.1	25.1	mg/kg	09.05.19 06.37	U	1
Total TPH	PHC635	<25.1	25.1	mg/kg	09.05.19 06.37	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	129	%	70-135	09.05.19 06.37		
o-Terphenyl	84-15-1	95	%	70-135	09.05.19 06.37		



Certificate of Analytical Results 635988

COG Operating LLC, Artesia, NM

Boone 16 St. Com #2H

Sample Id: **B-28**
Lab Sample Id: 635988-028

Matrix: Soil
Date Collected: 09.04.19 13.54

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.05.19 13.15

Basis: Wet Weight

Seq Number: 3100674

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	09.05.19 11.22	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	09.05.19 11.22	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	09.05.19 11.22	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	09.05.19 11.22	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	09.05.19 11.22	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	09.05.19 11.22	U	1
Total BTEX		<0.00202	0.00202	mg/kg	09.05.19 11.22	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	105	%	70-130	09.05.19 11.22		
4-Bromofluorobenzene	460-00-4	112	%	70-130	09.05.19 11.22		

Flagging Criteria

- 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



COG Operating LLC

Boone 16 St. Com #2H

Analytical Method: Chloride by EPA 300

Seq Number: 3100631

MB Sample Id: 7685585-1-BLK

Matrix: Solid

LCS Sample Id: 7685585-1-BKS

Prep Method: E300P

Date Prep: 09.04.19

LCSD Sample Id: 7685585-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<10.0	250	245	98	253	101	80-120	3	20	mg/kg	09.04.19 20:51	

Analytical Method: Chloride by EPA 300

Seq Number: 3100664

MB Sample Id: 7685653-1-BLK

Matrix: Solid

LCS Sample Id: 7685653-1-BKS

Prep Method: E300P

Date Prep: 09.05.19

LCSD Sample Id: 7685653-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<10.0	250	260	104	260	104	80-120	0	20	mg/kg	09.05.19 14:34	

Analytical Method: Chloride by EPA 300

Seq Number: 3100631

Parent Sample Id: 635986-001

Matrix: Soil

MS Sample Id: 635986-001 S

Prep Method: E300P

Date Prep: 09.04.19

MSD Sample Id: 635986-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	192	200	426	117	421	115	80-120	1	20	mg/kg	09.04.19 21:08	

Analytical Method: Chloride by EPA 300

Seq Number: 3100631

Parent Sample Id: 635988-015

Matrix: Soil

MS Sample Id: 635988-015 S

Prep Method: E300P

Date Prep: 09.04.19

MSD Sample Id: 635988-015 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	20.1	199	232	106	232	106	80-120	0	20	mg/kg	09.04.19 23:39	

Analytical Method: Chloride by EPA 300

Seq Number: 3100664

Parent Sample Id: 635988-016

Matrix: Soil

MS Sample Id: 635988-016 S

Prep Method: E300P

Date Prep: 09.05.19

MSD Sample Id: 635988-016 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	15.9	199	232	109	227	106	80-120	2	20	mg/kg	09.05.19 14:51	

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

Boone 16 St. Com #2H

Analytical Method: Chloride by EPA 300

Seq Number: 3100664

Parent Sample Id: 635988-028

Matrix: Solid

MS Sample Id: 635988-028 S

Prep Method: E300P

Date Prep: 09.05.19

MSD Sample Id: 635988-028 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	32.4	199	246	107	246	107	80-120	0	20	mg/kg	09.05.19 16:23	

Analytical Method: TPH By SW8015 Mod

Seq Number: 3100586

MB Sample Id: 7685627-1-BLK

Matrix: Solid

LCS Sample Id: 7685627-1-BKS

Prep Method: SW8015P

Date Prep: 09.04.19

LCSD Sample Id: 7685627-1-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	<9.88	1000	962	96	960	96	70-135	0	35	mg/kg	09.04.19 12:08	
Diesel Range Organics	<9.88	1000	901	90	890	89	70-135	1	35	mg/kg	09.04.19 12:08	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	121		133		127		70-135	%	09.04.19 12:08
o-Terphenyl	101		118		109		70-135	%	09.04.19 12:08

Analytical Method: TPH By SW8015 Mod

Seq Number: 3100588

MB Sample Id: 7685634-1-BLK

Matrix: Solid

LCS Sample Id: 7685634-1-BKS

Prep Method: SW8015P

Date Prep: 09.04.19

LCSD Sample Id: 7685634-1-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	<9.88	1000	982	98	1030	103	70-135	5	35	mg/kg	09.04.19 23:15	
Diesel Range Organics	<9.88	1000	822	82	886	89	70-135	7	35	mg/kg	09.04.19 23:15	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	136	**	136	**	127		70-135	%	09.04.19 23:15
o-Terphenyl	105		103		98		70-135	%	09.04.19 23:15

Analytical Method: TPH By SW8015 Mod

Seq Number: 3100586

Parent Sample Id: 635951-001

Matrix: Soil

MS Sample Id: 635951-001 S

Prep Method: SW8015P

Date Prep: 09.04.19

MSD Sample Id: 635951-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons	<9.93	1010	1090	108	946	95	70-135	14	35	mg/kg	09.04.19 15:19	
Diesel Range Organics	178	1010	1040	85	962	79	70-135	8	35	mg/kg	09.04.19 15:19	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	143	**	129		70-135	%	09.04.19 15:19
o-Terphenyl	107		99		70-135	%	09.04.19 15:19

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 Result

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



QC Summary 635988

COG Operating LLC

Boone 16 St. Com #2H

Analytical Method: TPH By SW8015 Mod

Seq Number: 3100588

Parent Sample Id: 635988-011

Matrix: Soil

MS Sample Id: 635988-011 S

Prep Method: SW8015P

Date Prep: 09.04.19

MSD Sample Id: 635988-011 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	<9.90	1000	999	100	985	99	70-135	1	35	mg/kg	09.05.19 00:15	
Diesel Range Organics	<9.90	1000	824	82	843	85	70-135	2	35	mg/kg	09.05.19 00:15	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	128		127		70-135	%	09.05.19 00:15
o-Terphenyl	93		97		70-135	%	09.05.19 00:15

Analytical Method: BTEX by EPA 8021B

Seq Number: 3100671

MB Sample Id: 7685635-1-BLK

Matrix: Solid

LCS Sample Id: 7685635-1-BKS

Prep Method: SW5030B

Date Prep: 09.05.19

LCSD Sample Id: 7685635-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0918	92	0.102	102	70-130	11	35	mg/kg	09.05.19 14:24	
Toluene	<0.00200	0.100	0.0944	94	0.103	103	70-130	9	35	mg/kg	09.05.19 14:24	
Ethylbenzene	<0.00200	0.100	0.104	104	0.112	112	70-130	7	35	mg/kg	09.05.19 14:24	
m,p-Xylenes	<0.00400	0.200	0.202	101	0.222	111	70-130	9	35	mg/kg	09.05.19 14:24	
o-Xylene	<0.00200	0.100	0.103	103	0.113	113	70-130	9	35	mg/kg	09.05.19 14:24	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	96		93		97		70-130	%	09.05.19 14:24
4-Bromofluorobenzene	99		105		113		70-130	%	09.05.19 14:24

Analytical Method: BTEX by EPA 8021B

Seq Number: 3100674

MB Sample Id: 7685637-1-BLK

Matrix: Solid

LCS Sample Id: 7685637-1-BKS

Prep Method: SW5030B

Date Prep: 09.05.19

LCSD Sample Id: 7685637-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0986	99	0.0963	96	70-130	2	35	mg/kg	09.05.19 02:37	
Toluene	<0.00200	0.100	0.0994	99	0.0974	97	70-130	2	35	mg/kg	09.05.19 02:37	
Ethylbenzene	<0.00200	0.100	0.115	115	0.113	113	70-130	2	35	mg/kg	09.05.19 02:37	
m,p-Xylenes	<0.00400	0.200	0.233	117	0.229	115	70-130	2	35	mg/kg	09.05.19 02:37	
o-Xylene	<0.00200	0.100	0.109	109	0.110	110	70-130	1	35	mg/kg	09.05.19 02:37	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	96		95		95		70-130	%	09.05.19 02:37
4-Bromofluorobenzene	97		111		110		70-130	%	09.05.19 02:37

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 Result

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



COG Operating LLC

Boone 16 St. Com #2H

Analytical Method: BTEX by EPA 8021B

Seq Number: 3100671

Parent Sample Id: 635951-001

Matrix: Soil

MS Sample Id: 635951-001 S

Prep Method: SW5030B

Date Prep: 09.05.19

MSD Sample Id: 635951-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00199	0.0994	0.0610	61	0.0728	73	70-130	18	35	mg/kg	09.05.19 15:04	X
Toluene	<0.00199	0.0994	0.0737	74	0.0550	55	70-130	29	35	mg/kg	09.05.19 15:04	X
Ethylbenzene	<0.00199	0.0994	0.0697	70	0.0380	38	70-130	59	35	mg/kg	09.05.19 15:04	XF
m,p-Xylenes	<0.00398	0.199	0.135	68	0.0716	36	70-130	61	35	mg/kg	09.05.19 15:04	XF
o-Xylene	<0.00199	0.0994	0.0690	69	0.0382	38	70-130	57	35	mg/kg	09.05.19 15:04	XF

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	84		101		70-130	%	09.05.19 15:04
4-Bromofluorobenzene	125		112		70-130	%	09.05.19 15:04

Analytical Method: BTEX by EPA 8021B

Seq Number: 3100674

Parent Sample Id: 635988-011

Matrix: Soil

MS Sample Id: 635988-011 S

Prep Method: SW5030B

Date Prep: 09.05.19

MSD Sample Id: 635988-011 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0894	89	0.0907	91	70-130	1	35	mg/kg	09.05.19 03:17	
Toluene	<0.00200	0.100	0.0887	89	0.0901	90	70-130	2	35	mg/kg	09.05.19 03:17	
Ethylbenzene	<0.00200	0.100	0.100	100	0.100	100	70-130	0	35	mg/kg	09.05.19 03:17	
m,p-Xylenes	<0.00400	0.200	0.208	104	0.207	104	70-130	0	35	mg/kg	09.05.19 03:17	
o-Xylene	<0.00200	0.100	0.102	102	0.103	103	70-130	1	35	mg/kg	09.05.19 03:17	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	101		98		70-130	%	09.05.19 03:17
4-Bromofluorobenzene	121		119		70-130	%	09.05.19 03:17

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 Chain of Custody Record



One Concho Center/600 Illinois Avenue/Midland, Texas Tel (432) 683-7443

Client Name: COG-Artesia		Site Manager: Sheldon Hitchcock	
Project Name: Boone 16 St. core #24			
Project Location: (county, state) Lea, NM		Project #:	
Invoice to: Sheldon Hitchcock			
Receiving Laboratory: Xenco		Sampler Name: Sheldon Hitchcock	
Comments: Rushy			

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING		MATRIX		PRESERVATIVE METHOD		# CONTAINERS	(C)omposite/(G)rab	TPH 8015M (GRO - DRO - MRO)	BTEX 8021B	Chloride	Hold		
		YEAR: 2014	DATE	TIME	WATER	SOIL	HCL							HNO ₃	ICE
B-11		9/14	1:20		X				1		X				
B-12			1:22						1						
B-13			1:24						1						
B-14			1:26						1						
B-15			1:28						1						
B-16			1:30						1						
B-17			1:32						1						
B-18			1:34						1						
B-19			1:36						1						
B-20			1:38						1						

Relinquished by: 8/14/14 1603	Date: 8/14/14	Time: 1603	Received by: [Signature]	Date: 8-14-14	Time: 16:03
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
------------------	-------	-------	--------------	-------	-------

LAB USE ONLY	Sample Temperature	REMARKS:
	☒ RUSH: Same Day 24 hr 48 hr 72 hr ☐ Rush Charges Authorized ☐ Special Report Limits or TRRP Report	

ORIGINAL COPY

035988

33



LAB USE ONLY

Sample Temperature



ORIGINAL COPY



Inter-Office Shipment

Page 1 of 2

IOS Number **47476**

Date/Time: 09/05/19 09:36

Created by: Elizabeth McClellan

Please send report to: Jessica Kramer

Lab# From: **Carlsbad**

Delivery Priority:

Address: 1089 N Canal Street

Lab# To: **Midland**

Air Bill No.:

E-Mail: jessica.kramer@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
635988-001	S	B-1	09/04/19 13:00	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635988-002	S	B-2	09/04/19 13:02	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635988-003	S	B-3	09/04/19 13:04	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635988-004	S	B-4	09/04/19 13:06	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635988-005	S	B-5	09/04/19 13:08	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635988-006	S	B-6	09/04/19 13:10	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635988-007	S	B-7	09/04/19 13:12	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635988-008	S	B-8	09/04/19 13:14	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635988-009	S	B-9	09/04/19 13:16	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635988-010	S	B-10	09/04/19 13:18	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635988-011	S	B-11	09/04/19 13:20	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635988-012	S	B-12	09/04/19 13:22	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635988-013	S	B-13	09/04/19 13:24	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635988-014	S	B-14	09/04/19 13:26	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635988-015	S	B-15	09/04/19 13:28	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635988-016	S	B-16	09/04/19 13:30	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635988-017	S	B-17	09/04/19 13:32	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635988-018	S	B-18	09/04/19 13:34	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635988-019	S	B-19	09/04/19 13:36	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635988-020	S	B-20	09/04/19 13:38	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635988-021	S	B-21	09/04/19 13:40	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635988-022	S	B-22	09/04/19 13:42	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635988-023	S	B-23	09/04/19 13:44	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635988-024	S	B-24	09/04/19 13:46	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635988-025	S	B-25	09/04/19 13:48	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	



Inter-Office Shipment

Page 2 of 2

IOS Number **47476**

Date/Time: 09/05/19 09:36

Created by: Elizabeth McClellan

Please send report to: Jessica Kramer

Lab# From: **Carlsbad**

Delivery Priority:

Address: 1089 N Canal Street

Lab# To: **Midland**

Air Bill No.:

E-Mail: jessica.kramer@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
635988-026	S	B-26	09/04/19 13:50	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635988-027	S	B-27	09/04/19 13:52	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635988-028	S	B-28	09/04/19 13:54	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	

Inter Office Shipment or Sample Comments:

Relinquished By: Jessica Kramer
Jessica Kramer

Date Relinquished: 09/05/2019

Received By: Brianna Teel
Brianna Teel

Date Received: 09/05/2019 12:34

Cooler Temperature: 0.4



XENCO Laboratories

Inter Office Report- Sample Receipt Checklist

Sent To: Midland

IOS #: 47476

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sent By: Elizabeth McClellan

Date Sent: 09/05/2019 09:36 AM

Received By: Brianna Teel

Date Received: 09/05/2019 12:34 PM

Sample Receipt Checklist

Comments

#1 *Temperature of cooler(s)?	.4
#2 *Shipping container in good condition?	Yes
#3 *Samples received with appropriate temperature?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	Yes
#5 *Custody Seals Signed and dated for Containers/coolers	Yes
#6 *IOS present?	Yes
#7 Any missing/extra samples?	No
#8 IOS agrees with sample label(s)/matrix?	Yes
#9 Sample matrix/ properties agree with IOS?	Yes
#10 Samples in proper container/ bottle?	Yes
#11 Samples properly preserved?	Yes
#12 Sample container(s) intact?	Yes
#13 Sufficient sample amount for indicated test(s)?	Yes
#14 All samples received within hold time?	Yes

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

NonConformance:

Corrective Action Taken:

Nonconformance Documentation

Contact: _____ Contacted by : _____ Date: _____

Checklist reviewed by:

Brianna Teel

Brianna Teel

Date: 09/05/2019



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In



Client: COG Operating LLC

Date/ Time Received: 09/04/2019 04:03:00 PM

Work Order #: 635988

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : T-NM-007

Sample Receipt Checklist

Comments

#1 *Temperature of cooler(s)?	.8	
#2 *Shipping container in good condition?	Yes	
#3 *Samples received on ice?	Yes	
#4 *Custody Seals intact on shipping container/ cooler?	No	
#5 Custody Seals intact on sample bottles?	No	
#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)?	Yes	subbed BTEX to Xenco Midland.
#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:

Elizabeth McClellan

Date: 09/05/2019

Checklist reviewed by:

Jessica Kramer

Date: 09/05/2019



Certificate of Analysis Summary 635986

COG Operating LLC, Artesia, NM

Project Name: Boone 16 St Com 2h

Project Id:

Contact: Sheldon Hitchcock

Project Location: Lea, NM

Date Received in Lab: Wed Sep-04-19 04:03 pm

Report Date: 06-SEP-19

Project Manager: Jessica Kramer

Analysis Requested	Lab Id:	635986-001	635986-002	635986-003	635986-004	635986-005	
	Field Id:	SW-1	SW-2	SW-3	SW-4	SW-5	
	Depth:						
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	
	Sampled:	Sep-04-19 13:56	Sep-04-19 13:58	Sep-04-19 14:00	Sep-04-19 14:02	Sep-04-19 14:04	
BTEX by EPA 8021B SUB: T104704400-18-16	Extracted:	Sep-05-19 13:00	Sep-05-19 13:00	Sep-05-19 13:00	Sep-05-19 13:00	Sep-05-19 13:00	
	Analyzed:	Sep-05-19 18:04	Sep-05-19 18:24	Sep-05-19 18:44	Sep-05-19 19:04	Sep-05-19 19:25	
	Units/RL:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
		RL	RL	RL	RL	RL	
Benzene		<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200	
Toluene		<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200	
Ethylbenzene		<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200	
m,p-Xylenes		<0.00398 0.00398	<0.00399 0.00399	<0.00402 0.00402	<0.00401 0.00401	<0.00399 0.00399	
o-Xylene		<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200	
Total Xylenes		<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200	
Total BTEX		<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200	
Chloride by EPA 300	Extracted:	Sep-04-19 17:09	Sep-04-19 17:09	Sep-04-19 17:09	Sep-04-19 17:09	Sep-04-19 17:09	
	Analyzed:	Sep-04-19 21:03	Sep-04-19 21:20	Sep-04-19 21:26	Sep-04-19 21:32	Sep-04-19 21:37	
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	
Chloride		192 10.0	890 49.1	953 49.5	46.4 9.98	99.1 10.1	
TPH By SW8015 Mod	Extracted:	Sep-04-19 16:30	Sep-04-19 16:30	Sep-04-19 16:30	Sep-04-19 16:30	Sep-04-19 16:30	
	Analyzed:	Sep-04-19 17:18	Sep-04-19 17:38	Sep-04-19 17:58	Sep-04-19 18:18	Sep-04-19 18:38	
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	
Gasoline Range Hydrocarbons		<24.8 24.8	<24.9 24.9	<25.0 25.0	<25.0 25.0	<25.0 25.0	
Diesel Range Organics		<24.8 24.8	<24.9 24.9	<25.0 25.0	<25.0 25.0	<25.0 25.0	
Motor Oil Range Hydrocarbons (MRO)		<24.8 24.8	<24.9 24.9	<25.0 25.0	<25.0 25.0	<25.0 25.0	
Total TPH		<24.8 24.8	<24.9 24.9	<25.0 25.0	<25.0 25.0	<25.0 25.0	

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

Version: 1.9%

Jessica Kramer
Project Assistant

Analytical Report 635986

for COG Operating LLC

Project Manager: Sheldon Hitchcock

Boone 16 St Com 2h

06-SEP-19

Collected By: Client



**1089 N Canal Street
Carlsbad, NM 88220**

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-19-29), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142), North Carolina (681)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-19-19), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-20)
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-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429), North Carolina (483)



06-SEP-19

Project Manager: **Sheldon Hitchcock**
COG Operating LLC
2407 Pecos Avenue
Artesia, NM 88210

Reference: XENCO Report No(s): **635986**
Boone 16 St Com 2h
Project Address: Lea, NM

Sheldon Hitchcock:

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) 635986. 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. 635986 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,

A handwritten signature in black ink that reads 'Jessica Kramer'. The signature is written in a cursive, flowing style.

Jessica Kramer
Project Assistant

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

Certified and approved by numerous States and Agencies.

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

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Sample Cross Reference 635986

COG Operating LLC, Artesia, NM

Boone 16 St Com 2h

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SW-1	S	09-04-19 13:56		635986-001
SW-2	S	09-04-19 13:58		635986-002
SW-3	S	09-04-19 14:00		635986-003
SW-4	S	09-04-19 14:02		635986-004
SW-5	S	09-04-19 14:04		635986-005



CASE NARRATIVE

Client Name: COG Operating LLC

Project Name: Boone 16 St Com 2h

Project ID:
Work Order Number(s): 635986

Report Date: 06-SEP-19
Date Received: 09/04/2019

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3100586 TPH By SW8015 Mod

Surrogate 1-Chlorooctane recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 635951-001 S.

Batch: LBA-3100671 BTEX by EPA 8021B

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



Certificate of Analytical Results 635986

COG Operating LLC, Artesia, NM

Boone 16 St Com 2h

Sample Id: **SW-1**
Lab Sample Id: 635986-001

Matrix: Soil
Date Collected: 09.04.19 13.56

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100631

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.09

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	192	10.0	mg/kg	09.04.19 21.03		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100586

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 16.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<24.8	24.8	mg/kg	09.04.19 17.18	U	1
Diesel Range Organics	C10C28DRO	<24.8	24.8	mg/kg	09.04.19 17.18	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<24.8	24.8	mg/kg	09.04.19 17.18	U	1
Total TPH	PHC635	<24.8	24.8	mg/kg	09.04.19 17.18	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	115	%	70-135	09.04.19 17.18		
o-Terphenyl	84-15-1	92	%	70-135	09.04.19 17.18		



Certificate of Analytical Results 635986

COG Operating LLC, Artesia, NM

Boone 16 St Com 2h

Sample Id: **SW-1**
Lab Sample Id: 635986-001

Matrix: Soil
Date Collected: 09.04.19 13.56

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.05.19 13.00

Basis: Wet Weight

Seq Number: 3100671

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	09.05.19 18.04	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	09.05.19 18.04	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	09.05.19 18.04	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	09.05.19 18.04	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	09.05.19 18.04	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	09.05.19 18.04	U	1
Total BTEX		<0.00199	0.00199	mg/kg	09.05.19 18.04	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	108	%	70-130	09.05.19 18.04		
1,4-Difluorobenzene	540-36-3	99	%	70-130	09.05.19 18.04		



Certificate of Analytical Results 635986

COG Operating LLC, Artesia, NM

Boone 16 St Com 2h

Sample Id: SW-2
Lab Sample Id: 635986-002

Matrix: Soil
Date Collected: 09.04.19 13.58

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100631

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.09

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	890	49.1	mg/kg	09.04.19 21.20		5

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100586

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 16.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<24.9	24.9	mg/kg	09.04.19 17.38	U	1
Diesel Range Organics	C10C28DRO	<24.9	24.9	mg/kg	09.04.19 17.38	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<24.9	24.9	mg/kg	09.04.19 17.38	U	1
Total TPH	PHC635	<24.9	24.9	mg/kg	09.04.19 17.38	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	115	%	70-135	09.04.19 17.38		
o-Terphenyl	84-15-1	82	%	70-135	09.04.19 17.38		



Certificate of Analytical Results 635986

COG Operating LLC, Artesia, NM

Boone 16 St Com 2h

Sample Id: SW-2
Lab Sample Id: 635986-002

Matrix: Soil
Date Collected: 09.04.19 13.58

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.05.19 13.00

Basis: Wet Weight

Seq Number: 3100671

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.05.19 18.24	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.05.19 18.24	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.05.19 18.24	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	09.05.19 18.24	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.05.19 18.24	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.05.19 18.24	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.05.19 18.24	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	81	%	70-130	09.05.19 18.24		
4-Bromofluorobenzene	460-00-4	112	%	70-130	09.05.19 18.24		



Certificate of Analytical Results 635986

COG Operating LLC, Artesia, NM

Boone 16 St Com 2h

Sample Id: **SW-3**
Lab Sample Id: 635986-003

Matrix: Soil
Date Collected: 09.04.19 14.00

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100631

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.09

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	953	49.5	mg/kg	09.04.19 21.26		5

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100586

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 16.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<25.0	25.0	mg/kg	09.04.19 17.58	U	1
Diesel Range Organics	C10C28DRO	<25.0	25.0	mg/kg	09.04.19 17.58	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<25.0	25.0	mg/kg	09.04.19 17.58	U	1
Total TPH	PHC635	<25.0	25.0	mg/kg	09.04.19 17.58	U	1

Surrogate

1-Chlorooctane

o-Terphenyl

Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
111-85-3	115	%	70-135	09.04.19 17.58	
84-15-1	81	%	70-135	09.04.19 17.58	



Certificate of Analytical Results 635986

COG Operating LLC, Artesia, NM

Boone 16 St Com 2h

Sample Id: SW-3
Lab Sample Id: 635986-003

Matrix: Soil
Date Collected: 09.04.19 14.00

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.05.19 13.00

Basis: Wet Weight

Seq Number: 3100671

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	09.05.19 18.44	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	09.05.19 18.44	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	09.05.19 18.44	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	09.05.19 18.44	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	09.05.19 18.44	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	09.05.19 18.44	U	1
Total BTEX		<0.00201	0.00201	mg/kg	09.05.19 18.44	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	121	%	70-130	09.05.19 18.44		
1,4-Difluorobenzene	540-36-3	71	%	70-130	09.05.19 18.44		



Certificate of Analytical Results 635986

COG Operating LLC, Artesia, NM

Boone 16 St Com 2h

Sample Id: **SW-4**
Lab Sample Id: 635986-004

Matrix: Soil
Date Collected: 09.04.19 14.02

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100631

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.09

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	46.4	9.98	mg/kg	09.04.19 21.32		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100586

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 16.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<25.0	25.0	mg/kg	09.04.19 18.18	U	1
Diesel Range Organics	C10C28DRO	<25.0	25.0	mg/kg	09.04.19 18.18	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<25.0	25.0	mg/kg	09.04.19 18.18	U	1
Total TPH	PHC635	<25.0	25.0	mg/kg	09.04.19 18.18	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	124	%	70-135	09.04.19 18.18		
o-Terphenyl	84-15-1	90	%	70-135	09.04.19 18.18		



Certificate of Analytical Results 635986

COG Operating LLC, Artesia, NM

Boone 16 St Com 2h

Sample Id: **SW-4**
Lab Sample Id: 635986-004

Matrix: Soil
Date Collected: 09.04.19 14.02

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.05.19 13.00

Basis: Wet Weight

Seq Number: 3100671

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.05.19 19.04	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.05.19 19.04	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.05.19 19.04	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	09.05.19 19.04	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.05.19 19.04	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.05.19 19.04	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.05.19 19.04	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	74	%	70-130	09.05.19 19.04		
4-Bromofluorobenzene	460-00-4	119	%	70-130	09.05.19 19.04		



Certificate of Analytical Results 635986

COG Operating LLC, Artesia, NM

Boone 16 St Com 2h

Sample Id: SW-5
Lab Sample Id: 635986-005

Matrix: Soil
Date Collected: 09.04.19 14.04

Date Received: 09.04.19 16.03

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3100631

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 17.09

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	99.1	10.1	mg/kg	09.04.19 21.37		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3100586

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 09.04.19 16.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<25.0	25.0	mg/kg	09.04.19 18.38	U	1
Diesel Range Organics	C10C28DRO	<25.0	25.0	mg/kg	09.04.19 18.38	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<25.0	25.0	mg/kg	09.04.19 18.38	U	1
Total TPH	PHC635	<25.0	25.0	mg/kg	09.04.19 18.38	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	123	%	70-135	09.04.19 18.38		
o-Terphenyl	84-15-1	92	%	70-135	09.04.19 18.38		



Certificate of Analytical Results 635986

COG Operating LLC, Artesia, NM

Boone 16 St Com 2h

Sample Id: SW-5
Lab Sample Id: 635986-005

Matrix: Soil
Date Collected: 09.04.19 14.04

Date Received: 09.04.19 16.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.05.19 13.00

Basis: Wet Weight

Seq Number: 3100671

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.05.19 19.25	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.05.19 19.25	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.05.19 19.25	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	09.05.19 19.25	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.05.19 19.25	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.05.19 19.25	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.05.19 19.25	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	109	%	70-130	09.05.19 19.25		
1,4-Difluorobenzene	540-36-3	96	%	70-130	09.05.19 19.25		

Flagging Criteria

- 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 635986

COG Operating LLC

Boone 16 St Com 2h

Analytical Method: Chloride by EPA 300

Seq Number: 3100631

MB Sample Id: 7685585-1-BLK

Matrix: Solid

LCS Sample Id: 7685585-1-BKS

Prep Method: E300P

Date Prep: 09.04.19

LCSD Sample Id: 7685585-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<10.0	250	245	98	253	101	80-120	3	20	mg/kg	09.04.19 20:51	

Analytical Method: Chloride by EPA 300

Seq Number: 3100631

Parent Sample Id: 635986-001

Matrix: Soil

MS Sample Id: 635986-001 S

Prep Method: E300P

Date Prep: 09.04.19

MSD Sample Id: 635986-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	192	200	426	117	421	115	80-120	1	20	mg/kg	09.04.19 21:08	

Analytical Method: Chloride by EPA 300

Seq Number: 3100631

Parent Sample Id: 635988-015

Matrix: Soil

MS Sample Id: 635988-015 S

Prep Method: E300P

Date Prep: 09.04.19

MSD Sample Id: 635988-015 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	20.1	199	232	106	232	106	80-120	0	20	mg/kg	09.04.19 23:39	

Analytical Method: TPH By SW8015 Mod

Seq Number: 3100586

MB Sample Id: 7685627-1-BLK

Matrix: Solid

LCS Sample Id: 7685627-1-BKS

Prep Method: SW8015P

Date Prep: 09.04.19

LCSD Sample Id: 7685627-1-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	<9.88	1000	962	96	960	96	70-135	0	35	mg/kg	09.04.19 12:08	
Diesel Range Organics	<9.88	1000	901	90	890	89	70-135	1	35	mg/kg	09.04.19 12:08	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	121		133		127		70-135	%	09.04.19 12:08
o-Terphenyl	101		118		109		70-135	%	09.04.19 12:08

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 Result

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



QC Summary 635986

COG Operating LLC

Boone 16 St Com 2h

Analytical Method: TPH By SW8015 Mod

Seq Number: 3100586

Parent Sample Id: 635951-001

Matrix: Soil

MS Sample Id: 635951-001 S

Prep Method: SW8015P

Date Prep: 09.04.19

MSD Sample Id: 635951-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons	<9.93	1010	1090	108	946	95	70-135	14	35	mg/kg	09.04.19 15:19	
Diesel Range Organics	178	1010	1040	85	962	79	70-135	8	35	mg/kg	09.04.19 15:19	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	143	**	129		70-135	%	09.04.19 15:19
o-Terphenyl	107		99		70-135	%	09.04.19 15:19

Analytical Method: BTEX by EPA 8021B

Seq Number: 3100671

MB Sample Id: 7685635-1-BLK

Matrix: Solid

LCS Sample Id: 7685635-1-BKS

Prep Method: SW5030B

Date Prep: 09.05.19

LCSD Sample Id: 7685635-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0918	92	0.102	102	70-130	11	35	mg/kg	09.05.19 14:24	
Toluene	<0.00200	0.100	0.0944	94	0.103	103	70-130	9	35	mg/kg	09.05.19 14:24	
Ethylbenzene	<0.00200	0.100	0.104	104	0.112	112	70-130	7	35	mg/kg	09.05.19 14:24	
m,p-Xylenes	<0.00400	0.200	0.202	101	0.222	111	70-130	9	35	mg/kg	09.05.19 14:24	
o-Xylene	<0.00200	0.100	0.103	103	0.113	113	70-130	9	35	mg/kg	09.05.19 14:24	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	96		93		97		70-130	%	09.05.19 14:24
4-Bromofluorobenzene	99		105		113		70-130	%	09.05.19 14:24

Analytical Method: BTEX by EPA 8021B

Seq Number: 3100671

Parent Sample Id: 635951-001

Matrix: Soil

MS Sample Id: 635951-001 S

Prep Method: SW5030B

Date Prep: 09.05.19

MSD Sample Id: 635951-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00199	0.0994	0.0610	61	0.0728	73	70-130	18	35	mg/kg	09.05.19 15:04	X
Toluene	<0.00199	0.0994	0.0737	74	0.0550	55	70-130	29	35	mg/kg	09.05.19 15:04	X
Ethylbenzene	<0.00199	0.0994	0.0697	70	0.0380	38	70-130	59	35	mg/kg	09.05.19 15:04	XF
m,p-Xylenes	<0.00398	0.199	0.135	68	0.0716	36	70-130	61	35	mg/kg	09.05.19 15:04	XF
o-Xylene	<0.00199	0.0994	0.0690	69	0.0382	38	70-130	57	35	mg/kg	09.05.19 15:04	XF

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	84		101		70-130	%	09.05.19 15:04
4-Bromofluorobenzene	125		112		70-130	%	09.05.19 15:04

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 Result

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

Page 1 of 1

((Circle)) HAND DELIVERED FEDEX UPS Tracking #: _____

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB USE ONLY

Sample Temperature

☒ **RUSH:** Same Day 24 hr 48 hr 72 hr

☐ Rush Charges Authorized

☐ Special Report Limits or TRRP Report

Hold

Final 1,000

Page 19 of 22

ORIGINAL COPY



Inter-Office Shipment

Page 1 of 1

IOS Number **47477**

Date/Time: 09/05/19 09:38

Created by: Elizabeth McClellan

Please send report to: Jessica Kramer

Lab# From: **Carlsbad**

Delivery Priority:

Address: 1089 N Canal Street

Lab# To: **Midland**

Air Bill No.:

E-Mail: jessica.kramer@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
635986-001	S	SW-1	09/04/19 13:56	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635986-002	S	SW-2	09/04/19 13:58	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635986-003	S	SW-3	09/04/19 14:00	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635986-004	S	SW-4	09/04/19 14:02	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	
635986-005	S	SW-5	09/04/19 14:04	SW8021B	BTEX by EPA 8021B	09/05/19	09/18/19	JKR	BR4FBZ BZ BZME EBZ X	

Inter Office Shipment or Sample Comments:

Relinquished By:

Jessica Kramer

Jessica Kramer

Date Relinquished: 09/05/2019

Received By:

Brianna Teel

Brianna Teel

Date Received: 09/05/2019 12:35

Cooler Temperature: 0.4



XENCO Laboratories

Inter Office Report- Sample Receipt Checklist

Sent To: Midland

IOS #: 47477

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sent By: Elizabeth McClellan

Date Sent: 09/05/2019 09:38 AM

Received By: Brianna Teel

Date Received: 09/05/2019 12:35 PM

Sample Receipt Checklist

Comments

#1 *Temperature of cooler(s)?	.4
#2 *Shipping container in good condition?	Yes
#3 *Samples received with appropriate temperature?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	Yes
#5 *Custody Seals Signed and dated for Containers/coolers	Yes
#6 *IOS present?	Yes
#7 Any missing/extra samples?	No
#8 IOS agrees with sample label(s)/matrix?	Yes
#9 Sample matrix/ properties agree with IOS?	Yes
#10 Samples in proper container/ bottle?	Yes
#11 Samples properly preserved?	Yes
#12 Sample container(s) intact?	Yes
#13 Sufficient sample amount for indicated test(s)?	Yes
#14 All samples received within hold time?	Yes

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

NonConformance:

Corrective Action Taken:

Nonconformance Documentation

Contact: _____ Contacted by : _____ Date: _____

Checklist reviewed by:

Brianna Teel

Date: 09/05/2019

XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In

Client: COG Operating LLC

Date/ Time Received: 09.04.2019 04.03.00 PM

Work Order #: 635986

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : T-NM-007

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	.8
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	No
#5 Custody Seals intact on sample bottles?	No
#6 *Custody Seals Signed and dated?	No
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	Yes
#9 Chain of Custody signed when relinquished/ received?	No
#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)?	Yes
#18 Water VOC samples have zero headspace?	N/A

Subbed to Xenco Midland.

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

Analyst:

PH Device/Lot#:

Checklist completed by:


Elizabeth McClellan

Date: 09.04.2019

Checklist reviewed by:


Jessica Kramer

Date: 09.05.2019



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

September 18, 2019

SHELDON HITCHCOCK

COG OPERATING

P. O. BOX 1630

ARTESIA, NM 88210

RE: BOONE 16 STATE COM #2H

Enclosed are the results of analyses for samples received by the laboratory on 09/18/19 12:10.

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

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive, flowing style.

Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:COG OPERATING
SHELDON HITCHCOCK
P. O. BOX 1630
ARTESIA NM, 88210
Fax To: NONEReceived: 09/18/2019
Reported: 09/18/2019
Project Name: BOONE 16 STATE COM #2H
Project Number: NONE GIVEN
Project Location: LEA CO NMSampling Date: 09/18/2019
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker**Sample ID: SW - 2 (H903214-01)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	240	16.0	09/18/2019	ND	400	100	400	0.00	

Sample ID: SW - 3 (H903214-02)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	09/18/2019	ND	400	100	400	0.00	

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

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

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

[illegible]

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APPENDIX D

NW

N

NE

330

0

30

60

☀ 15°N (T) ☉ 32°28.311', -103°34.557' ±16.4ft ▲ 3760ft

**CONCHO**

COG Operating LLC

BOONE 16 STATE COM #2H.
UNIT O, SEC. 16-T21S-R53E
190' FSL & 1980' FEL
LEA COUNTY, NM
API #30-025-41049

04 Sep 2019, 13:37:52

NW N NE
300 330 0 30
☼ 346°N (T) ☉ 32°28.321', -103°34.509' ±16.4ft ▲ 3769ft



04 Sep 2019, 13:39:26

