



March 3, 2020

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

Kelsey Wade
Bureau of Land Management, CFO
620 E. Green Street
Carlsbad, NM 88220

Closure Report
Horned Owl Federal #003H
API#: 30-015-42502
Tracking#: NRM2002938385
DOR: December 4, 2019
GPS: 32.0199738 -104.243515
Unit Letter B, Section 25, Township 26 South, Range 26 East
Eddy 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 Horned Owl Federal #003H. The release was located in Unit Letter B, Section 25, Township 26 South and Range 26 East in Eddy County, New Mexico. More specifically the latitude and longitude for the release are 32.0199738 North and -104.243515 West.

BACKGROUND

The release was discovered on December 4, 2019 and a C-141 initial report was submitted to the New Mexico Oil Conservation Division (NMOCD) and the Bureau of Land Management (BLM). A pinhole in the water leg of the production heater resulted in a release of approximately ten (10) barrels (bbls) of produced water and ten (10) bbls of oil. The fluid impacted the lined containment and the pasture adjacent to the containment. The lined containment was pressure washed and determined to be free of defects.

GROUNDWATER AND REGULATORY FRAMEWORK

According to the United States Geological Survey (USGS) groundwater in the project vicinity is approximately thirty-six (36) 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 the affected area has a high potential for cave karst, no other receptors (water wells, playas, 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.)
High Karst Potential	>100 feet

Delineation and Closure Criteria:

Recommended Remedial Action Levels (RRALs)	
Chlorides	600 mg/kg
TPH (GRO and DRO and MRO)	100 mg/kg
Benzene	10 mg/kg
Total BTEX	50 mg/kg

REMEDIAL ACTIONS

- The impacted area was excavated to depths of one (1) to two (2) feet BGS. The excavation depths are outlined in the attached site diagram.
- All of the excavated material was hauled to an NMOCD approved solid waste disposal facility.
- Confirmation soil samples were taken from bottom and sidewalls of the excavation per NMAC 19.15.29.
- The site was backfilled with clean “like” material and contoured to match the surrounding terrain.

SITE RECLAMATION AND RESTORATION

Per NMED 19.15.29.13 reclamation of the pasture area has been performed by removing the impacted soil containing chloride concentrations greater than 600 mg/kg within the first four (4) feet BGS. Approximately two-hundred and seventy-seven (277) cubic yards of material was removed and hauled to an NMOCD approved solid waste disposal facility. Once excavated, soil samples were collected from the bottom and sidewalls of the excavation to confirm the removal of impacted soil greater than 600 mg/kg of chlorides. The backfill material was non-contaminated with concentrations below 600 mg/kg of chlorides. The surface was left in a rough condition to approximate natural surface deviations. The site will be mechanically seeded with the BLM #4 seed mixture once proper seasonal conditions exist.

CLOSURE REQUEST

COG Operating, LLC respectfully requests that the New Mexico Oil Conservation Division and the Bureau of Land Management grant closure approval for the Horned Owl Federal #003H incident that occurred on December 4, 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

Horned Owl Federal #003H



TABLES

Table 1
COG Operating LLC.
Horned Owl Federal #003H
Eddy 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 RRL Limits (mg/kg)														
BTTM-1	1	1/14/2019	X		<50.0	<50.0	<50.0	0.0	<50.0	<50.0	0.0	<0.002	<0.002	600
BTTM-2	1	1/14/2019	X		<50.0	<50.0	<50.0	0.0	<50.0	<50.0	0.0	<0.002	<0.002	15.4
BTTM-3	1	1/14/2019	X		<50.0	<50.0	<50.0	0.0	<50.0	<50.0	0.0	<0.002	<0.002	15.2
BTTM-4	1	1/14/2019	X		<50.0	<50.0	<50.0	0.0	<50.0	<50.0	0.0	<0.002	<0.002	14.3
BTTM-5	1	1/14/2019	X		<50.0	<50.0	<50.0	0.0	<50.0	<50.0	0.0	<0.002	<0.002	13.2
BTTM-6	1	1/14/2019	X		<50.0	<50.0	<50.0	0.0	<50.0	<50.0	0.0	<0.002	<0.002	14.6
BTTM-7	1	1/14/2019	X		<50.0	<50.0	<50.0	0.0	<50.0	<50.0	0.0	<0.002	<0.002	18.5
BTTM-8	1	1/14/2019	X		<50.0	<50.0	<50.0	0.0	<50.0	<50.0	0.0	<0.002	<0.002	14.5
BTTM-9	1	1/14/2019	X		<50.0	<50.0	<50.0	0.0	<50.0	<50.0	0.0	<0.002	<0.002	18.6
BTTM-10	1	1/14/2019	X		<50.0	<50.0	<50.0	0.0	<50.0	<50.0	0.0	<0.002	<0.002	108.0
BTTM-11	1	1/14/2019	X		<50.0	<50.0	<50.0	0.0	<50.0	<50.0	0.0	<0.002	<0.002	119.0
BTTM-12	1	1/14/2019	X		<50.0	<50.0	<50.0	0.0	<50.0	<50.0	0.0	<0.002	<0.002	91.9
BTTM-13	1	1/14/2019	X		<50.0	<50.0	<50.0	0.0	<50.0	<50.0	0.0	<0.002	<0.002	117.0
BTTM-14	1	1/14/2019	X		<50.0	<50.0	<50.0	0.0	<50.0	<50.0	0.0	<0.002	<0.002	106.0
BTTM-15	1	1/14/2019	X		<50.0	<50.0	<50.0	0.0	<50.0	<50.0	0.0	<0.002	<0.002	141.0
BTTM-16	1	1/14/2019	X		<50.0	<50.0	<50.0	0.0	<50.0	<50.0	0.0	<0.002	<0.002	103.0
BTTM-17	1	1/14/2019	X		<50.0	<50.0	<50.0	0.0	<50.0	<50.0	0.0	<0.002	<0.002	112.0
BTTM-18	1	1/14/2019	X		<50.0	<50.0	<50.0	0.0	<50.0	<50.0	0.0	<0.002	<0.002	121.0
BTTM-19	1	1/14/2019	X		<50.0	<50.0	<50.0	0.0	<50.0	<50.0	0.0	<0.002	<0.002	118.0
BTTM-20	1	1/14/2019	X		<50.0	93.1	<50.0	93.1	<50.0	93.1	93.1	<0.002	<0.002	131.0
BTTM-21	1	1/14/2019	X		<50.0	<50.0	<50.0	0.0	<50.0	<50.0	0.0	<0.002	<0.002	211.0
BTTM-22	1	1/14/2019	X		<50.0	65.5	<50.0	65.5	<50.0	65.5	65.5	<0.002	<0.002	183.0
BTTM-23	1	1/14/2019	X		<50.0	<50.0	<50.0	0.0	<50.0	<50.0	0.0	<0.002	<0.002	237.0
BTTM-24	1	1/14/2019	X		<50.0	<50.0	<50.0	0.0	<50.0	<50.0	0.0	<0.002	<0.002	184.0
BTTM-25	1	1/14/2019	X		<50.2	86.2	<50.2	86.2	<50.2	86.2	86.2	<0.002	<0.002	210.0
BTTM-26	1	1/14/2019		X	<50.0	141	<50.0	141.0	<50.0	141	141.0	<0.002	<0.002	201.0
BTTM-27	1	1/14/2019		X	<50.2	133	<50.2	133.0	<50.2	133	133.0	<0.002	<0.002	197.0
BTTM-28	1	1/14/2019		X	<49.9	152	<49.9	152.0	<49.9	152	152.0	<0.002	<0.002	211.0
BTTM-29	1	1/14/2019		X	<50.0	156	<50.0	156.0	<50.0	156	156.0	<0.002	<0.002	173.0
BTTM-30	1	1/14/2019		X	<50.0	115	<50.0	115.0	<50.0	115	115.0	<0.002	<0.002	206.0
BTTM-31	1	1/14/2019		X	<50.0	146	<50.0	146.0	<50.0	146	146.0	<0.002	<0.002	215.0
BTTM-32	1	1/14/2019		X	<50.0	169	<50.0	169.0	<50.0	169	169.0	<0.002	<0.002	213.0
SW-1	N/A	1/14/2019	X		<50.1	84.7	<50.1	84.7	<50.1	84.7	84.7	<0.002	<0.002	70.6
SW-2	N/A	1/14/2019	X		<50.2	<50.2	<50.2	0.0	<50.2	<50.2	0.0	<0.002	<0.002	176.0
SW-3	N/A	1/14/2019		X	<49.8	147	<49.8	147.0	<49.8	147	147.0	<0.002	<0.002	184.0
BTTM-26	2	1/21/2020	X		<50.1	<50.1	<50.1	0.0	<50.1	<50.1	0.0	#	#	#
BTTM-27	2	1/21/2020	X		<50.1	<50.1	<50.1	0.0	<50.1	<50.1	0.0	#	#	#
BTTM-28	2	1/21/2020	X		<50.1	<50.1	<50.1	0.0	<50.1	<50.1	0.0	#	#	#
BTTM-29	2	1/21/2020	X		<50.1	<50.1	<50.1	0.0	<50.1	<50.1	0.0	#	#	#
BTTM-30	2	1/21/2020	X		<50.1	<50.1	<50.1	0.0	<50.1	<50.1	0.0	#	#	#
BTTM-31	2	1/21/2020	X		<50.1	<50.1	<50.1	0.0	<50.1	<50.1	0.0	#	#	#

Table 1
COG Operating LLC.
Horned Owl Federal #003H
Eddy 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			
BTTM-32	2	1/21/2020	X		<50.1	<50.1	<50.1	0.0	<50.1	<50.1	0.0	#	#	#
SW-3	2	1/21/2020	X		<50.1	<50.1	<50.1	0.0	<50.1	<50.1	0.0	#	#	#

(#) 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	COG Operating, LLC	OGRID	229137
Contact Name	Jennifer Knowlton	Contact Telephone	(432) 683-7443
Contact email	jknowlton@concho.com	Incident # (assigned by OCD)	
Contact mailing address	600 West Illinois Avenue, Midland, Texas 79701		

Location of Release Source

Latitude 32.02005 Longitude -104.24320
(NAD 83 in decimal degrees to 5 decimal places)

Site Name	Horned Owl Federal #003H	Site Type	Tank Battery
Date Release Discovered	December 4, 2019	API# (if applicable)	30-015-42502

Unit Letter	Section	Township	Range	County
B	25	26S	26E	Eddy

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) 10	Volume Recovered (bbls) 9
☒ Produced Water	Volume Released (bbls) 10	Volume Recovered (bbls) 9
	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

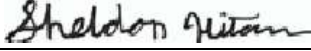
The release was caused by a pinhole developed in the water leg of the production heater.
The release was on the lined facility with over spray onto the pasture. A vacuum truck was dispatched to remove all freestanding fluids.

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: <u>Sheldon L. Hitchcock</u>	Title: <u>HSE Coordinator</u>
Signature: <u></u>	Date: <u>3/3/2020</u>
email: <u>slhitchcock@concho.com</u>	Telephone: <u>575-746-2010</u>
<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?	36 (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

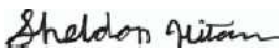
Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

Characterization Report Checklist: Each of the following items must be included in the report. ☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells. ☐ Field data ☒ Data table of soil contaminant concentration data ☒ Depth to water determination ☒ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release ☐ Boring or excavation logs ☒ Photographs including date and GIS information ☒ Topographic/Aerial maps ☒ Laboratory data including chain of custody
--

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	nRM2002938385
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: Sheldon L. HitchcockTitle: HSE CoordinatorSignature: Date: 3/3/2020email: slhitchcock@concho.comTelephone: 575-746-2010**OCD Only**Received by: Cristina EadsDate: 04/07/2020

Incident ID	
District RP	
Facility ID	
Application ID	

Remediation Plan

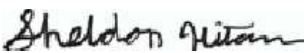
Remediation Plan Checklist: *Each of the following items must be included in the plan.*

- ☐ 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: Sheldon L. Hitchcock Title: HSE Coordinator
Signature:  Date: 3/3/2020
email: slhitchcock@concho.com Telephone: 575-746-2010

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.

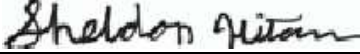
Closure Report Attachment Checklist: *Each of the following items must be included in the closure report.*

- ☐ 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: Sheldon L. Hitchcock

Title: HSE Coordinator

Signature: 

Date: 3/3/2020

email: slhitchcock@concho.com

Telephone: 575-746-2010

OCD Only

Received by: Cristina Eads

Date: 04/07/2020

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.

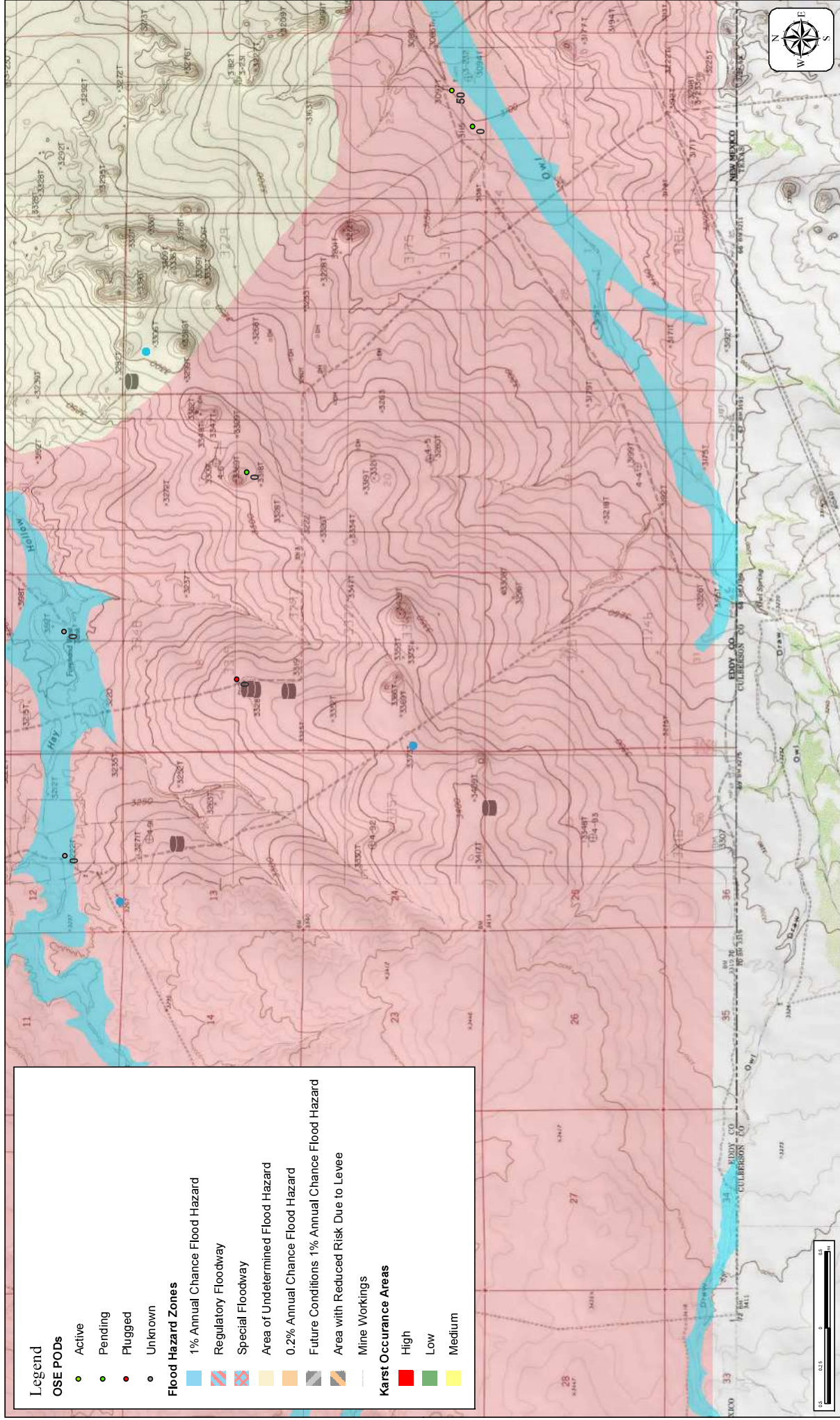
Closure Approved by: 

Date: 04/07/2020

Printed Name: Cristina Eads

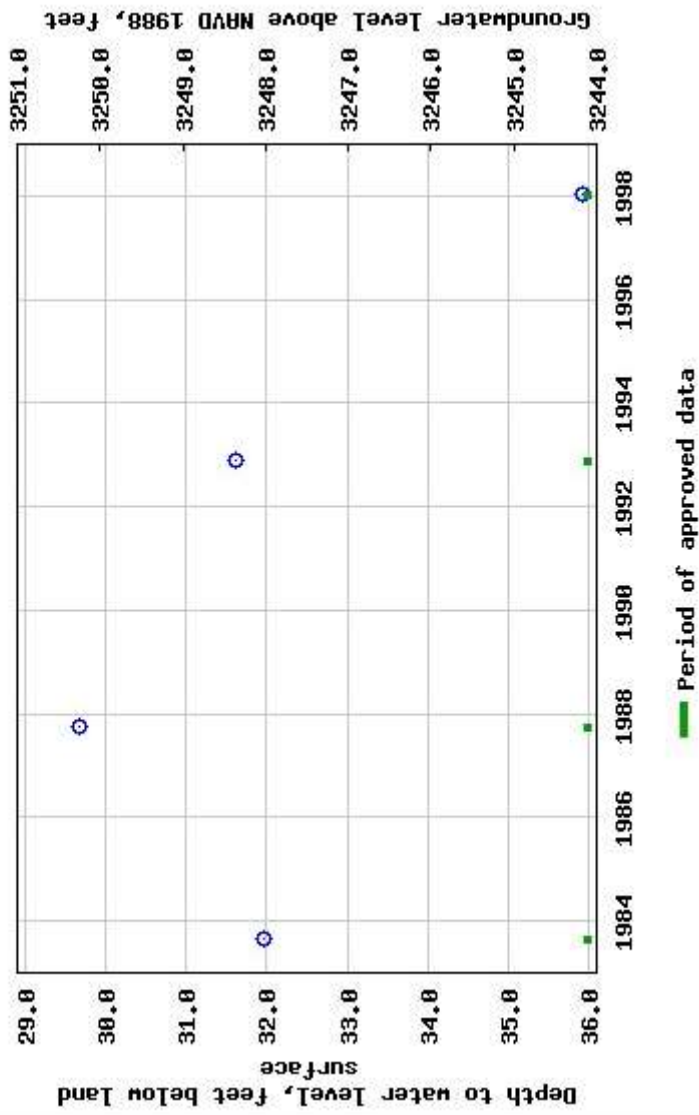
Title: Environmental Specialist

APPENDIX B





USGS 320244104161501 26S.26E.15.24444



APPENDIX C



Certificate of Analysis Summary 648981
COG Operating LLC, Artesia, NM
Project Name: Horned Owl Fed #3

Project Id: Sheldon Hitchcock
Contact: Eddy, NM
Project Location:

Date Received in Lab: Tue Jan-14-20 02:00 pm
Report Date: 16-JAN-20
Project Manager: Jessica Kramer

Analysis Requested		Lab Id:	648981-001	648981-002	648981-003	648981-004	648981-005	648981-006
		Field Id:	Bttm- 1	Bttm- 2	Bttm- 3	Bttm- 4	Bttm- 5	Bttm- 6
		Depth:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Matrix:						
		Sampled:	Jan-14-20 10:00	Jan-14-20 10:02	Jan-14-20 10:04	Jan-14-20 10:06	Jan-14-20 10:08	Jan-14-20 10:10
BTEX by EPA 8021B	Extracted:		Jan-14-20 17:00	Jan-14-20 17:00	Jan-14-20 17:00	Jan-14-20 17:00	Jan-14-20 17:00	Jan-14-20 17:00
	Analyzed:		Jan-14-20 18:44	Jan-14-20 19:03	Jan-14-20 19:23	Jan-14-20 20:27	Jan-14-20 20:46	Jan-14-20 21:05
	Units/RL:		mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
			<0.00197 0.00197	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198	<0.00198 0.00198
			<0.00197 0.00197	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198	<0.00198 0.00198
			<0.00197 0.00197	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198	<0.00198 0.00198
Chloride by EPA 300	Extracted:		Jan-14-20 15:08	Jan-14-20 15:08	Jan-14-20 15:08	Jan-14-20 15:08	Jan-14-20 15:08	Jan-14-20 15:08
	Analyzed:		Jan-14-20 16:23	Jan-14-20 16:29	Jan-14-20 16:35	Jan-14-20 16:41	Jan-14-20 16:59	Jan-14-20 17:05
	Units/RL:		mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
			15.4 10.1	15.2 9.92	14.3 9.98	13.2 9.92	14.6 10.0	18.5 10.0
			Jan-14-20 15:30	Jan-14-20 15:30	Jan-14-20 15:30	Jan-14-20 15:30	Jan-14-20 15:30	Jan-14-20 15:30
			Jan-14-20 21:34	Jan-14-20 21:54	Jan-14-20 22:14	Jan-14-20 22:14	Jan-14-20 22:35	Jan-14-20 22:35
TPH By SW8015 Mod	Extracted:		mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
	Analyzed:		<50.3 50.3	<50.2 50.2	<50.2 50.2	<50.2 50.2	<50.0 50.0	<50.2 50.2
	Units/RL:		<50.3 50.3	<50.2 50.2	<50.2 50.2	<50.2 50.2	<50.0 50.0	<50.2 50.2
			<50.3 50.3	<50.2 50.2	<50.2 50.2	<50.2 50.2	<50.0 50.0	<50.2 50.2
Gasoline Range Hydrocarbons	Extracted:		mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
	Analyzed:		<50.3 50.3	<50.2 50.2	<50.2 50.2	<50.2 50.2	<50.0 50.0	<50.2 50.2
Diesel Range Organics	Extracted:		mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
	Analyzed:		<50.3 50.3	<50.2 50.2	<50.2 50.2	<50.2 50.2	<50.0 50.0	<50.2 50.2
Motor Oil Range Hydrocarbons (MIRO)	Extracted:		mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
	Analyzed:		<50.3 50.3	<50.2 50.2	<50.2 50.2	<50.2 50.2	<50.0 50.0	<50.2 50.2
Total TPH	Extracted:		mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
	Analyzed:		<50.3 50.3	<50.2 50.2	<50.2 50.2	<50.2 50.2	<50.0 50.0	<50.2 50.2

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Version: 1.9%

Jessica Kramer

Jessica Kramer
Project Assistant



Certificate of Analysis Summary 648981
COG Operating LLC, Artesia, NM
Project Name: Horned Owl Fed #3

Project Id: Sheldon Hitchcock
Contact: Eddy, NM
Project Location:

Date Received in Lab: Tue Jan-14-20 02:00 pm
Report Date: 16-JAN-20
Project Manager: Jessica Kramer

Analysis Requested		Lab Id: Field Id: Depth: Matrix: Sampled:	648981-007 Bttm- 7 SOIL Jan-14-20 10:12	648981-008 Bttm- 8 SOIL Jan-14-20 10:14	648981-009 Bttm- 9 SOIL Jan-14-20 10:16	648981-010 Bttm- 10 SOIL Jan-14-20 10:18	648981-011 Bttm- 11 SOIL Jan-14-20 10:20	648981-012 Bttm- 12 SOIL Jan-14-20 10:22
BTEX by EPA 8021B		Extracted:	Jan-14-20 17:00	Jan-14-20 17:00	Jan-14-20 17:00	Jan-14-20 17:00	Jan-14-20 17:00	Jan-14-20 17:00
		Analyzed:	Jan-14-20 21:25	Jan-14-20 21:44	Jan-14-20 22:03	Jan-14-20 22:22	Jan-14-20 22:41	Jan-14-20 23:00
		Units/RL:	mg/kg RL <0.00200 0.00200	mg/kg RL <0.00201 0.00201	mg/kg RL <0.00200 0.00200	mg/kg RL <0.00200 0.00200	mg/kg RL <0.00200 0.00200	mg/kg RL <0.00200 0.00200
Benzene								
Toluene								
Ethylbenzene								
m,p-Xylenes								
o-Xylene								
Total Xylenes								
Total BTEX								
Chloride by EPA 300		Extracted:	Jan-14-20 15:08	Jan-14-20 15:08	Jan-14-20 15:08	Jan-14-20 15:08	Jan-14-20 15:08	Jan-14-20 15:08
		Analyzed:	Jan-14-20 17:22	Jan-14-20 17:28	Jan-14-20 17:34	Jan-14-20 17:40	Jan-14-20 17:45	Jan-14-20 17:51
		Units/RL:	mg/kg RL 14.5 9.98	mg/kg RL 18.6 9.92	mg/kg RL 108 9.98	mg/kg RL 119 9.96	mg/kg RL 91.9 10.0	mg/kg RL 117 10.0
Chloride								
TPH By SW8015 Mod		Extracted:	Jan-14-20 15:30	Jan-14-20 15:30	Jan-14-20 15:30	Jan-14-20 15:30	Jan-14-20 15:30	Jan-14-20 15:30
		Analyzed:	Jan-15-20 17:22	Jan-14-20 22:55	Jan-14-20 23:15	Jan-14-20 23:15	Jan-15-20 17:22	Jan-14-20 23:35
		Units/RL:	mg/kg RL <50.2 50.2	mg/kg RL <50.2 50.2	mg/kg RL <50.3 50.3	mg/kg RL <50.3 50.3	mg/kg RL <50.2 50.2	mg/kg RL <50.3 50.3
Gasoline Range Hydrocarbons								
Diesel Range Organics								
Motor Oil Range Hydrocarbons (MRO)								
Total TPH								

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Jessica Kramer

Jessica Kramer
Project Assistant



Certificate of Analysis Summary 648981
COG Operating LLC, Artesia, NM
Project Name: Horned Owl Fed #3

Project Id: Sheldon Hitchcock
Contact: Eddy, NM
Project Location:

Date Received in Lab: Tue Jan-14-20 02:00 pm
Report Date: 16-JAN-20
Project Manager: Jessica Kramer

Analysis Requested		Lab Id:	Field Id:	Depth:	Matrix:	Sampled:	648981-013	648981-014	648981-015	648981-016	648981-017	648981-018
BTEX by EPA 8021B		Extracted:	Jan-14-20 17:00	Jan-14-20 17:39	Jan-14-20 17:39	Jan-14-20 10:28	Jan-14-20 10:26	Jan-14-20 10:26	Jan-14-20 10:28	Jan-14-20 10:30	Jan-14-20 10:32	Jan-14-20 10:34
		Analyzed:	Jan-14-20 23:19	Jan-15-20 03:14	Jan-15-20 03:31	Jan-15-20 03:31	Jan-15-20 03:14	Jan-15-20 03:14	Jan-15-20 03:31	Jan-15-20 07:17	Jan-15-20 04:06	Jan-15-20 04:23
		Units/RL:	mg/kg	RL	RL	RL	mg/kg	mg/kg	mg/kg	mg/kg	RL	mg/kg
Benzene			<0.00200	0.00200	0.00200	0.00200	<0.00200	<0.00200	<0.00200	0.00200	0.00200	<0.00199
Toluene			<0.00200	0.00200	0.00200	0.00200	<0.00200	<0.00200	<0.00200	0.00200	0.00200	<0.00199
Ethylbenzene			<0.00200	0.00200	0.00200	0.00200	<0.00200	<0.00200	<0.00200	0.00200	0.00200	<0.00199
m,p-Xylenes			<0.00399	0.00399	0.00399	0.00399	<0.00399	<0.00399	<0.00399	0.00399	0.00399	<0.00398
o-Xylene			<0.00200	0.00200	0.00200	0.00200	<0.00200	<0.00200	<0.00200	0.00200	0.00200	<0.00199
Total Xylenes			<0.00200	0.00200	0.00200	0.00200	<0.00200	<0.00200	<0.00200	0.00200	0.00200	<0.00199
Total BTEX			<0.00200	0.00200	0.00200	0.00200	<0.00200	<0.00200	<0.00200	0.00200	0.00200	<0.00199
Chloride by EPA 300		Extracted:	Jan-14-20 17:00	Jan-14-20 17:00	Jan-14-20 17:00	Jan-14-20 17:00	Jan-14-20 17:00	Jan-14-20 17:00	Jan-14-20 17:00	Jan-14-20 17:00	Jan-14-20 17:00	Jan-14-20 17:00
		Analyzed:	Jan-14-20 18:32	Jan-14-20 18:49	Jan-14-20 18:55	Jan-14-20 18:55	Jan-14-20 18:49	Jan-14-20 18:49	Jan-14-20 18:55	Jan-14-20 19:02	Jan-14-20 19:07	Jan-14-20 19:24
		Units/RL:	mg/kg	RL	RL	RL	mg/kg	mg/kg	mg/kg	mg/kg	RL	mg/kg
Chloride			106	9.98	141	9.92	141	9.92	103	112	121	118
TPH By SW8015 Mod		Extracted:	Jan-14-20 16:00	Jan-14-20 16:00	Jan-14-20 16:00	Jan-14-20 16:00	Jan-14-20 16:00	Jan-14-20 16:00	Jan-14-20 16:00	Jan-14-20 16:00	Jan-14-20 16:00	Jan-14-20 16:00
		Analyzed:	Jan-15-20 09:18	Jan-15-20 09:58	Jan-15-20 09:58	Jan-15-20 09:58	Jan-15-20 09:58	Jan-15-20 09:58	Jan-15-20 09:58	Jan-16-20 11:29	Jan-15-20 10:19	Jan-15-20 10:39
		Units/RL:	mg/kg	RL	RL	RL	mg/kg	mg/kg	mg/kg	mg/kg	RL	mg/kg
Gasoline Range Hydrocarbons			<50.1	50.1	<50.3	50.3	<50.3	50.3	<50.1	50.1	<50.1	<50.2
Diesel Range Organics			<50.1	50.1	<50.3	50.3	<50.3	50.3	<50.1	50.1	<50.1	<50.2
Motor Oil Range Hydrocarbons (MRO)			<50.1	50.1	<50.3	50.3	<50.3	50.3	<50.1	50.1	<50.1	<50.2
Total TPH			<50.1	50.1	<50.3	50.3	<50.3	50.3	<50.1	50.1	<50.1	<50.2

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Version: 1.9%

Jessica Kramer

Jessica Kramer
Project Assistant



Certificate of Analysis Summary 648981
COG Operating LLC, Artesia, NM
Project Name: Horned Owl Fed #3

Project Id: Sheldon Hitchcock
Contact: Eddy, NM
Project Location:

Date Received in Lab: Tue Jan-14-20 02:00 pm
Report Date: 16-JAN-20
Project Manager: Jessica Kramer

Analysis Requested		Lab Id:	648981-019	648981-020	648981-021	648981-022	648981-023	648981-024
Field Id:	Depth:	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampled:			Jan-14-20 10:36	Jan-14-20 10:38	Jan-14-20 10:40	Jan-14-20 10:42	Jan-14-20 10:44	Jan-14-20 10:46
BTEX by EPA 8021B		Extracted:	Jan-14-20 17:39	Jan-14-20 17:31	Jan-14-20 17:31	Jan-14-20 17:31	Jan-14-20 17:31	Jan-14-20 17:31
		Analyzed:	Jan-15-20 05:07	Jan-15-20 07:35	Jan-15-20 07:52	Jan-15-20 08:09	Jan-15-20 08:27	Jan-15-20 08:44
		Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene			<0.00198 0.00198	<0.00198 0.00198	<0.00197 0.00197	<0.00201 0.00201	<0.00198 0.00198	<0.00200 0.00200
Toluene			<0.00198 0.00198	<0.00198 0.00198	<0.00197 0.00197	<0.00201 0.00201	<0.00198 0.00198	<0.00200 0.00200
Ethylbenzene			<0.00198 0.00198	<0.00198 0.00198	<0.00197 0.00197	<0.00201 0.00201	<0.00198 0.00198	<0.00200 0.00200
m,p-Xylenes			<0.00397 0.00397	<0.00397 0.00397	<0.00394 0.00394	<0.00402 0.00402	<0.00395 0.00395	<0.00401 0.00401
o-Xylene			<0.00198 0.00198	<0.00198 0.00198	<0.00197 0.00197	<0.00201 0.00201	<0.00198 0.00198	<0.00200 0.00200
Total Xylenes			<0.00198 0.00198	<0.00198 0.00198	<0.00197 0.00197	<0.00201 0.00201	<0.00198 0.00198	<0.00200 0.00200
Total BTEX			<0.00198 0.00198	<0.00198 0.00198	<0.00197 0.00197	<0.00201 0.00201	<0.00198 0.00198	<0.00200 0.00200
Chloride by EPA 300		Extracted:	Jan-14-20 17:00	Jan-14-20 17:00	Jan-14-20 17:00	Jan-14-20 17:00	Jan-14-20 17:00	Jan-14-20 17:00
		Analyzed:	Jan-14-20 19:29	Jan-14-20 19:34	Jan-14-20 19:40	Jan-14-20 19:45	Jan-14-20 19:50	Jan-14-20 20:07
		Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride			131 9.98	211 9.92	183 9.96	237 9.98	184 9.92	210 10.1
TPH By SW8015 Mod		Extracted:	Jan-14-20 16:00	Jan-14-20 16:00	Jan-14-20 16:00	Jan-14-20 16:00	Jan-14-20 16:00	Jan-14-20 16:00
		Analyzed:	Jan-15-20 10:39	Jan-15-20 10:59	Jan-15-20 10:59	Jan-15-20 11:19	Jan-15-20 14:26	Jan-15-20 14:26
		Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons			<50.1 50.1	<49.9 49.9	<50.2 50.2	<50.2 50.2	<50.1 50.1	<50.2 50.2
Diesel Range Organics			<50.1 50.1	93.1 49.9	<50.2 50.2	65.5 50.2	<50.1 50.1	<50.2 50.2
Motor Oil Range Hydrocarbons (MIRO)			<50.1 50.1	<49.9 49.9	<50.2 50.2	<50.2 50.2	<50.1 50.1	<50.2 50.2
Total TPH			<50.1 50.1	93.1 49.9	<50.2 50.2	65.5 50.2	<50.1 50.1	<50.2 50.2

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Jessica Kramer

Jessica Kramer
Project Assistant



Certificate of Analysis Summary 648981
COG Operating LLC, Artesia, NM
Project Name: Horned Owl Fed #3

Project Id: Sheldon Hitchcock
Contact: Eddy, NM
Project Location:

Date Received in Lab: Tue Jan-14-20 02:00 pm
Report Date: 16-JAN-20
Project Manager: Jessica Kramer

Analysis Requested		Lab Id: Field Id: Depth: Matrix: Sampled:	648981-025 Bttm- 25 SOIL Jan-14-20 10:48	648981-026 Bttm- 26 SOIL Jan-14-20 10:50	648981-027 Bttm- 27 SOIL Jan-14-20 10:52	648981-028 Bttm- 28 SOIL Jan-14-20 10:54	648981-029 Bttm- 29 SOIL Jan-14-20 10:56	648981-030 Bttm- 30 SOIL Jan-14-20 10:58
BTEX by EPA 8021B		Extracted:	Jan-14-20 17:31	Jan-14-20 17:31	Jan-14-20 17:31	Jan-14-20 17:31	Jan-14-20 17:31	Jan-14-20 17:31
		Analyzed:	Jan-15-20 09:02	Jan-15-20 09:19	Jan-15-20 09:37	Jan-15-20 09:54	Jan-15-20 11:03	Jan-15-20 11:21
		Units/RL:	mg/kg RL <0.00198 0.00198	mg/kg RL <0.00200 0.00200	mg/kg RL <0.00199 0.00199	mg/kg RL <0.00200 0.00200	mg/kg RL <0.00200 0.00200	mg/kg RL <0.00199 0.00199
Benzene								
Toluene								
Ethylbenzene								
m,p-Xylenes								
o-Xylene								
Total Xylenes								
Total BTEX								
Chloride by EPA 300		Extracted:	Jan-14-20 17:00	Jan-14-20 17:00	Jan-14-20 17:00	Jan-14-20 17:00	Jan-14-20 17:00	Jan-14-20 17:00
		Analyzed:	Jan-14-20 20:12	Jan-14-20 20:28	Jan-14-20 20:33	Jan-14-20 20:39	Jan-14-20 20:44	Jan-14-20 20:50
		Units/RL:	mg/kg RL 201 10.1	mg/kg RL 197 10.1	mg/kg RL 211 10.0	mg/kg RL 173 9.94	mg/kg RL 206 9.98	mg/kg RL 215 10.0
Chloride								
TPH By SW8015 Mod		Extracted:	Jan-14-20 16:00	Jan-14-20 16:00	Jan-14-20 16:00	Jan-14-20 16:00	Jan-14-20 16:00	Jan-14-20 16:00
		Analyzed:	Jan-15-20 14:47	Jan-15-20 14:47	Jan-15-20 15:07	Jan-15-20 15:07	Jan-15-20 15:27	Jan-15-20 15:27
		Units/RL:	mg/kg RL <50.2 50.2	mg/kg RL <49.9 49.9	mg/kg RL <50.2 50.2	mg/kg RL <49.9 49.9	mg/kg RL <50.0 50.0	mg/kg RL <50.0 50.0
Gasoline Range Hydrocarbons								
Diesel Range Organics								
Motor Oil Range Hydrocarbons (MRO)								
Total TPH								

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Version: 1.9%

Jessica Kramer

Jessica Kramer
Project Assistant



Certificate of Analysis Summary 648981
COG Operating LLC, Artesia, NM
Project Name: Horned Owl Fed #3

Project Id: Sheldon Hitchcock
Contact: Eddy, NM
Project Location:

Date Received in Lab: Tue Jan-14-20 02:00 pm
Report Date: 16-JAN-20
Project Manager: Jessica Kramer

Analysis Requested		Lab Id: Field Id: Depth: Matrix: Sampled:	648981-031 Bttm- 31 SOIL Jan-14-20 11:00	648981-032 Bttm- 32 SOIL Jan-14-20 11:02	648981-033 SW-1 SOIL Jan-14-20 11:04	648981-034 SW-2 SOIL Jan-14-20 11:06	648981-035 SW-3 SOIL Jan-14-20 11:08
BTEX by EPA 8021B		Extracted:	Jan-14-20 17:31	Jan-14-20 17:31	Jan-14-20 17:31	Jan-14-20 17:35	Jan-14-20 17:35
		Analyzed:	Jan-15-20 11:38	Jan-15-20 11:56	Jan-15-20 12:13	Jan-15-20 02:38	Jan-15-20 02:19
		Units/RL:	mg/kg RL <0.00198 0.00198	mg/kg RL <0.00200 0.00200	mg/kg RL <0.00200 0.00200	mg/kg RL <0.00200 0.00200	mg/kg RL <0.00200 0.00200
Benzene							
Toluene							
Ethylbenzene							
m,p-Xylenes							
o-Xylene							
Total Xylenes							
Total BTEX							
Chloride by EPA 300		Extracted:	Jan-14-20 17:00	Jan-14-20 17:00	Jan-14-20 17:00	Jan-14-20 17:00	Jan-14-20 17:00
		Analyzed:	Jan-14-20 20:55	Jan-14-20 21:00	Jan-14-20 21:33	Jan-14-20 21:49	Jan-14-20 21:54
		Units/RL:	mg/kg RL 213 9.92	mg/kg RL 212 9.98	mg/kg RL 70.6 10.0	mg/kg RL 176 10.0	mg/kg RL 184 9.98
Chloride							
TPH By SW8015 Mod		Extracted:	Jan-14-20 16:00	Jan-14-20 16:00	Jan-15-20 18:00	Jan-15-20 18:00	Jan-15-20 18:00
		Analyzed:	Jan-15-20 15:47	Jan-15-20 15:47	*** **	*** **	*** **
		Units/RL:	mg/kg RL <50.0 50.0	mg/kg RL <50.3 50.3	mg/kg RL <50.1 50.1	mg/kg RL <50.2 50.2	mg/kg RL <49.8 49.8
Gasoline Range Hydrocarbons							
Diesel Range Organics							
Motor Oil Range Hydrocarbons (MIRO)							
Total TPH							

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Version: 1.9%

Jessica Kramer

Jessica Kramer
Project Assistant

Analytical Report 648981

for COG Operating LLC

Project Manager: Sheldon Hitchcock

Horned Owl Fed #3

16-JAN-20

Collected By: Client



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

Xenco-Houston (EPA Lab Code: TX00122):

Texas (T104704215-19-30), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (19-037-0)

Xenco-Dallas (EPA Lab Code: TX01468):

Texas (TX104704295-19-22), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)

Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-21)

Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)

Xenco-Carlsbad (LELAP): Louisiana (05092)

Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)

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

Xenco-Tampa: Florida (E87429), North Carolina (483)



16-JAN-20

Project Manager: **Sheldon Hitchcock**

COG Operating LLC

2407 Pecos Avenue

Artesia, NM 88210

Reference: XENCO Report No(s): **648981**

Horned Owl Fed #3

Project Address: Eddy, 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) 648981. 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. 648981 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

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



Sample Cross Reference 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
Bttm- 1	S	01-14-20 10:00		648981-001
Bttm- 2	S	01-14-20 10:02		648981-002
Bttm- 3	S	01-14-20 10:04		648981-003
Bttm- 4	S	01-14-20 10:06		648981-004
Bttm- 5	S	01-14-20 10:08		648981-005
Bttm- 6	S	01-14-20 10:10		648981-006
Bttm- 7	S	01-14-20 10:12		648981-007
Bttm- 8	S	01-14-20 10:14		648981-008
Bttm- 9	S	01-14-20 10:16		648981-009
Bttm- 10	S	01-14-20 10:18		648981-010
Bttm- 11	S	01-14-20 10:20		648981-011
Bttm- 12	S	01-14-20 10:22		648981-012
Bttm- 13	S	01-14-20 10:24		648981-013
Bttm- 14	S	01-14-20 10:26		648981-014
Bttm- 15	S	01-14-20 10:28		648981-015
Bttm- 16	S	01-14-20 10:30		648981-016
Bttm- 17	S	01-14-20 10:32		648981-017
Bttm- 18	S	01-14-20 10:34		648981-018
Bttm- 19	S	01-14-20 10:36		648981-019
Bttm- 20	S	01-14-20 10:38		648981-020
Bttm- 21	S	01-14-20 10:40		648981-021
Bttm- 22	S	01-14-20 10:42		648981-022
Bttm- 23	S	01-14-20 10:44		648981-023
Bttm- 24	S	01-14-20 10:46		648981-024
Bttm- 25	S	01-14-20 10:48		648981-025
Bttm- 26	S	01-14-20 10:50		648981-026
Bttm- 27	S	01-14-20 10:52		648981-027
Bttm- 28	S	01-14-20 10:54		648981-028
Bttm- 29	S	01-14-20 10:56		648981-029
Bttm- 30	S	01-14-20 10:58		648981-030
Bttm- 31	S	01-14-20 11:00		648981-031
Bttm- 32	S	01-14-20 11:02		648981-032
SW-1	S	01-14-20 11:04		648981-033
SW-2	S	01-14-20 11:06		648981-034
SW-3	S	01-14-20 11:08		648981-035



CASE NARRATIVE

Client Name: COG Operating LLC

Project Name: Horned Owl Fed #3

Project ID:

Work Order Number(s): 648981

Report Date: 16-JAN-20

Date Received: 01/14/2020

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3113257 BTEX by EPA 8021B

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

Batch: LBA-3113259 BTEX by EPA 8021B

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

Lab Sample ID 648981-035 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Ethylbenzene, o-Xylene recovered below QC limits in the Matrix Spike. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 648981-034, -035.

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

Batch: LBA-3113284 BTEX by EPA 8021B

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

Batch: LBA-3113296 TPH By SW8015 Mod

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

Samples affected are: 648981-001,648981-003,648981-004,648981-012.

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

Samples affected are: 648981-001,648981-003,648981-012.

Batch: LBA-3113333 BTEX by EPA 8021B

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



CASE NARRATIVE

Client Name: COG Operating LLC

Project Name: Horned Owl Fed #3

Project ID:

Work Order Number(s): 648981

Report Date: 16-JAN-20

Date Received: 01/14/2020

Batch: LBA-3113441 TPH By SW8015 Mod

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

Samples affected are: 648981-013,648981-018.

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

Samples affected are: 648981-015,648981-019.



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 1**
Lab Sample Id: 648981-001

Matrix: Soil
Date Collected: 01.14.20 10.00

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113238

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 15.08

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	15.4	10.1	mg/kg	01.14.20 16.23		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113296

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 15.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.3	50.3	mg/kg	01.14.20 21.34	U	1
Diesel Range Organics	C10C28DRO	<50.3	50.3	mg/kg	01.14.20 21.34	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.3	50.3	mg/kg	01.14.20 21.34	U	1
Total TPH	PHC635	<50.3	50.3	mg/kg	01.14.20 21.34	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	137	%	70-135	01.14.20 21.34	**	
o-Terphenyl	84-15-1	145	%	70-135	01.14.20 21.34	**	



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 1**
Lab Sample Id: 648981-001

Matrix: Soil
Date Collected: 01.14.20 10.00

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.00

Basis: Wet Weight

Seq Number: 3113257

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00197	0.00197	mg/kg	01.14.20 18.44	U	1
Toluene	108-88-3	<0.00197	0.00197	mg/kg	01.14.20 18.44	U	1
Ethylbenzene	100-41-4	<0.00197	0.00197	mg/kg	01.14.20 18.44	U	1
m,p-Xylenes	179601-23-1	<0.00394	0.00394	mg/kg	01.14.20 18.44	U	1
o-Xylene	95-47-6	<0.00197	0.00197	mg/kg	01.14.20 18.44	U	1
Total Xylenes	1330-20-7	<0.00197	0.00197	mg/kg	01.14.20 18.44	U	1
Total BTEX		<0.00197	0.00197	mg/kg	01.14.20 18.44	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	108	%	70-130	01.14.20 18.44		
1,4-Difluorobenzene	540-36-3	105	%	70-130	01.14.20 18.44		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 2**
Lab Sample Id: 648981-002

Matrix: Soil
Date Collected: 01.14.20 10.02

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113238

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 15.08

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	15.2	9.92	mg/kg	01.14.20 16.29		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113296

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 15.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.2	50.2	mg/kg	01.14.20 21.54	U	1
Diesel Range Organics	C10C28DRO	<50.2	50.2	mg/kg	01.14.20 21.54	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	01.14.20 21.54	U	1
Total TPH	PHC635	<50.2	50.2	mg/kg	01.14.20 21.54	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	126	%	70-135	01.14.20 21.54		
o-Terphenyl	84-15-1	126	%	70-135	01.14.20 21.54		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 2**
Lab Sample Id: 648981-002

Matrix: Soil
Date Collected: 01.14.20 10.02

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.00

Basis: Wet Weight

Seq Number: 3113257

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.14.20 19.03	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	01.14.20 19.03	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	01.14.20 19.03	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	01.14.20 19.03	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	01.14.20 19.03	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	01.14.20 19.03	U	1
Total BTEX		<0.00200	0.00200	mg/kg	01.14.20 19.03	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	109	%	70-130	01.14.20 19.03		
4-Bromofluorobenzene	460-00-4	112	%	70-130	01.14.20 19.03		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 3**
Lab Sample Id: 648981-003

Matrix: Soil
Date Collected: 01.14.20 10.04

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113238

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 15.08

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	14.3	9.98	mg/kg	01.14.20 16.35		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113296

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 15.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.2	50.2	mg/kg	01.14.20 22.14	U	1
Diesel Range Organics	C10C28DRO	<50.2	50.2	mg/kg	01.14.20 22.14	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	01.14.20 22.14	U	1
Total TPH	PHC635	<50.2	50.2	mg/kg	01.14.20 22.14	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	136	%	70-135	01.14.20 22.14	**	
o-Terphenyl	84-15-1	139	%	70-135	01.14.20 22.14	**	



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 3**
Lab Sample Id: 648981-003

Matrix: Soil
Date Collected: 01.14.20 10.04

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.00

Basis: Wet Weight

Seq Number: 3113257

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.14.20 19.23	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	01.14.20 19.23	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	01.14.20 19.23	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	01.14.20 19.23	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	01.14.20 19.23	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	01.14.20 19.23	U	1
Total BTEX		<0.00200	0.00200	mg/kg	01.14.20 19.23	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	109	%	70-130	01.14.20 19.23		
4-Bromofluorobenzene	460-00-4	109	%	70-130	01.14.20 19.23		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 4**
Lab Sample Id: 648981-004

Matrix: Soil
Date Collected: 01.14.20 10.06

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113238

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 15.08

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	13.2	9.92	mg/kg	01.14.20 16.41		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113296

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 15.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.2	50.2	mg/kg	01.14.20 22.14	U	1
Diesel Range Organics	C10C28DRO	<50.2	50.2	mg/kg	01.14.20 22.14	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	01.14.20 22.14	U	1
Total TPH	PHC635	<50.2	50.2	mg/kg	01.14.20 22.14	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	136	%	70-135	01.14.20 22.14	**	
o-Terphenyl	84-15-1	130	%	70-135	01.14.20 22.14		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 4**
Lab Sample Id: 648981-004

Matrix: Soil
Date Collected: 01.14.20 10.06

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.00

Basis: Wet Weight

Seq Number: 3113257

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	01.14.20 20.27	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	01.14.20 20.27	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	01.14.20 20.27	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	01.14.20 20.27	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	01.14.20 20.27	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	01.14.20 20.27	U	1
Total BTEX		<0.00198	0.00198	mg/kg	01.14.20 20.27	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	106	%	70-130	01.14.20 20.27		
4-Bromofluorobenzene	460-00-4	103	%	70-130	01.14.20 20.27		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 5**
Lab Sample Id: 648981-005

Matrix: Soil
Date Collected: 01.14.20 10.08

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113238

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 15.08

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	14.6	10.0	mg/kg	01.14.20 16.59		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113296

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 15.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.0	50.0	mg/kg	01.14.20 22.35	U	1
Diesel Range Organics	C10C28DRO	<50.0	50.0	mg/kg	01.14.20 22.35	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	01.14.20 22.35	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	01.14.20 22.35	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	122	%	70-135	01.14.20 22.35		
o-Terphenyl	84-15-1	125	%	70-135	01.14.20 22.35		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 5**
Lab Sample Id: 648981-005

Matrix: Soil
Date Collected: 01.14.20 10.08

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.00

Basis: Wet Weight

Seq Number: 3113257

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	01.14.20 20.46	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	01.14.20 20.46	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	01.14.20 20.46	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	01.14.20 20.46	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	01.14.20 20.46	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	01.14.20 20.46	U	1
Total BTEX		<0.00198	0.00198	mg/kg	01.14.20 20.46	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	100	%	70-130	01.14.20 20.46		
1,4-Difluorobenzene	540-36-3	104	%	70-130	01.14.20 20.46		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 6**
Lab Sample Id: 648981-006

Matrix: Soil
Date Collected: 01.14.20 10.10

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113238

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 15.08

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	18.5	10.0	mg/kg	01.14.20 17.05		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113296

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 15.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.2	50.2	mg/kg	01.14.20 22.35	U	1
Diesel Range Organics	C10C28DRO	<50.2	50.2	mg/kg	01.14.20 22.35	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	01.14.20 22.35	U	1
Total TPH	PHC635	<50.2	50.2	mg/kg	01.14.20 22.35	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	121	%	70-135	01.14.20 22.35		
o-Terphenyl	84-15-1	120	%	70-135	01.14.20 22.35		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 6**
Lab Sample Id: 648981-006

Matrix: Soil
Date Collected: 01.14.20 10.10

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.00

Basis: Wet Weight

Seq Number: 3113257

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	01.14.20 21.05	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	01.14.20 21.05	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	01.14.20 21.05	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	01.14.20 21.05	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	01.14.20 21.05	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	01.14.20 21.05	U	1
Total BTEX		<0.00198	0.00198	mg/kg	01.14.20 21.05	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	111	%	70-130	01.14.20 21.05		
1,4-Difluorobenzene	540-36-3	107	%	70-130	01.14.20 21.05		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 7**
Lab Sample Id: 648981-007

Matrix: Soil
Date Collected: 01.14.20 10.12

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113238

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 15.08

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	14.5	9.98	mg/kg	01.14.20 17.22		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113296

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 15.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.2	50.2	mg/kg	01.15.20 17.22	U	1
Diesel Range Organics	C10C28DRO	<50.2	50.2	mg/kg	01.15.20 17.22	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	01.15.20 17.22	U	1
Total TPH	PHC635	<50.2	50.2	mg/kg	01.15.20 17.22	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	99	%	70-135	01.15.20 17.22	
o-Terphenyl	84-15-1	96	%	70-135	01.15.20 17.22	



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 7**
Lab Sample Id: 648981-007

Matrix: Soil
Date Collected: 01.14.20 10.12

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.00

Basis: Wet Weight

Seq Number: 3113257

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.14.20 21.25	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	01.14.20 21.25	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	01.14.20 21.25	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	01.14.20 21.25	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	01.14.20 21.25	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	01.14.20 21.25	U	1
Total BTEX		<0.00200	0.00200	mg/kg	01.14.20 21.25	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	107	%	70-130	01.14.20 21.25		
4-Bromofluorobenzene	460-00-4	108	%	70-130	01.14.20 21.25		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 8**
Lab Sample Id: 648981-008

Matrix: Soil
Date Collected: 01.14.20 10.14

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113238

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 15.08

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	18.6	9.92	mg/kg	01.14.20 17.28		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113296

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 15.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.2	50.2	mg/kg	01.14.20 22.55	U	1
Diesel Range Organics	C10C28DRO	<50.2	50.2	mg/kg	01.14.20 22.55	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	01.14.20 22.55	U	1
Total TPH	PHC635	<50.2	50.2	mg/kg	01.14.20 22.55	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	125	%	70-135	01.14.20 22.55		
o-Terphenyl	84-15-1	130	%	70-135	01.14.20 22.55		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 8**
Lab Sample Id: 648981-008

Matrix: Soil
Date Collected: 01.14.20 10.14

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.00

Basis: Wet Weight

Seq Number: 3113257

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	01.14.20 21.44	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	01.14.20 21.44	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	01.14.20 21.44	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	01.14.20 21.44	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	01.14.20 21.44	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	01.14.20 21.44	U	1
Total BTEX		<0.00201	0.00201	mg/kg	01.14.20 21.44	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	109	%	70-130	01.14.20 21.44		
1,4-Difluorobenzene	540-36-3	104	%	70-130	01.14.20 21.44		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 9**
Lab Sample Id: 648981-009

Matrix: Soil
Date Collected: 01.14.20 10.16

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113238

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 15.08

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	108	9.98	mg/kg	01.14.20 17.34		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113296

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 15.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.3	50.3	mg/kg	01.14.20 23.15	U	1
Diesel Range Organics	C10C28DRO	<50.3	50.3	mg/kg	01.14.20 23.15	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.3	50.3	mg/kg	01.14.20 23.15	U	1
Total TPH	PHC635	<50.3	50.3	mg/kg	01.14.20 23.15	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	121	%	70-135	01.14.20 23.15		
o-Terphenyl	84-15-1	124	%	70-135	01.14.20 23.15		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 9**
Lab Sample Id: 648981-009

Matrix: Soil
Date Collected: 01.14.20 10.16

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.00

Basis: Wet Weight

Seq Number: 3113257

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.14.20 22.03	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	01.14.20 22.03	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	01.14.20 22.03	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	01.14.20 22.03	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	01.14.20 22.03	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	01.14.20 22.03	U	1
Total BTEX		<0.00200	0.00200	mg/kg	01.14.20 22.03	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	113	%	70-130	01.14.20 22.03		
1,4-Difluorobenzene	540-36-3	106	%	70-130	01.14.20 22.03		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 10**
Lab Sample Id: 648981-010

Matrix: Soil
Date Collected: 01.14.20 10.18

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113238

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 15.08

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	119	9.96	mg/kg	01.14.20 17.40		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113296

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 15.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.3	50.3	mg/kg	01.14.20 23.15	U	1
Diesel Range Organics	C10C28DRO	<50.3	50.3	mg/kg	01.14.20 23.15	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.3	50.3	mg/kg	01.14.20 23.15	U	1
Total TPH	PHC635	<50.3	50.3	mg/kg	01.14.20 23.15	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	127	%	70-135	01.14.20 23.15		
o-Terphenyl	84-15-1	134	%	70-135	01.14.20 23.15		



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COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 10**
Lab Sample Id: 648981-010

Matrix: Soil
Date Collected: 01.14.20 10.18

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.00

Basis: Wet Weight

Seq Number: 3113257

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.14.20 22.22	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	01.14.20 22.22	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	01.14.20 22.22	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	01.14.20 22.22	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	01.14.20 22.22	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	01.14.20 22.22	U	1
Total BTEX		<0.00200	0.00200	mg/kg	01.14.20 22.22	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	106	%	70-130	01.14.20 22.22		
1,4-Difluorobenzene	540-36-3	107	%	70-130	01.14.20 22.22		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 11**
Lab Sample Id: 648981-011

Matrix: Soil
Date Collected: 01.14.20 10.20

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113238

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 15.08

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	91.9	10.0	mg/kg	01.14.20 17.45		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113296

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 15.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.2	50.2	mg/kg	01.15.20 17.22	U	1
Diesel Range Organics	C10C28DRO	<50.2	50.2	mg/kg	01.15.20 17.22	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	01.15.20 17.22	U	1
Total TPH	PHC635	<50.2	50.2	mg/kg	01.15.20 17.22	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	101	%	70-135	01.15.20 17.22		
o-Terphenyl	84-15-1	99	%	70-135	01.15.20 17.22		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 11**
Lab Sample Id: 648981-011

Matrix: Soil
Date Collected: 01.14.20 10.20

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.00

Basis: Wet Weight

Seq Number: 3113257

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.14.20 22.41	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	01.14.20 22.41	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	01.14.20 22.41	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	01.14.20 22.41	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	01.14.20 22.41	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	01.14.20 22.41	U	1
Total BTEX		<0.00200	0.00200	mg/kg	01.14.20 22.41	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	109	%	70-130	01.14.20 22.41		
1,4-Difluorobenzene	540-36-3	108	%	70-130	01.14.20 22.41		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 12**
Lab Sample Id: 648981-012

Matrix: Soil
Date Collected: 01.14.20 10.22

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113238

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 15.08

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	117	10.0	mg/kg	01.14.20 17.51		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113296

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 15.30

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.3	50.3	mg/kg	01.14.20 23.35	U	1
Diesel Range Organics	C10C28DRO	<50.3	50.3	mg/kg	01.14.20 23.35	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.3	50.3	mg/kg	01.14.20 23.35	U	1
Total TPH	PHC635	<50.3	50.3	mg/kg	01.14.20 23.35	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	144	%	70-135	01.14.20 23.35	**	
o-Terphenyl	84-15-1	144	%	70-135	01.14.20 23.35	**	



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 12**
Lab Sample Id: 648981-012

Matrix: Soil
Date Collected: 01.14.20 10.22

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.00

Basis: Wet Weight

Seq Number: 3113257

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.14.20 23.00	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	01.14.20 23.00	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	01.14.20 23.00	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	01.14.20 23.00	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	01.14.20 23.00	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	01.14.20 23.00	U	1
Total BTEX		<0.00200	0.00200	mg/kg	01.14.20 23.00	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	108	%	70-130	01.14.20 23.00		
4-Bromofluorobenzene	460-00-4	113	%	70-130	01.14.20 23.00		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 13**
Lab Sample Id: 648981-013

Matrix: Soil
Date Collected: 01.14.20 10.24

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113242

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 17.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	106	9.98	mg/kg	01.14.20 18.32		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113441

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 16.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.1	50.1	mg/kg	01.15.20 09.18	U	1
Diesel Range Organics	C10C28DRO	<50.1	50.1	mg/kg	01.15.20 09.18	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	01.15.20 09.18	U	1
Total TPH	PHC635	<50.1	50.1	mg/kg	01.15.20 09.18	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	136	%	70-135	01.15.20 09.18	**	
o-Terphenyl	84-15-1	114	%	70-135	01.15.20 09.18		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 13**
Lab Sample Id: 648981-013

Matrix: Soil
Date Collected: 01.14.20 10.24

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.00

Basis: Wet Weight

Seq Number: 3113257

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.14.20 23.19	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	01.14.20 23.19	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	01.14.20 23.19	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	01.14.20 23.19	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	01.14.20 23.19	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	01.14.20 23.19	U	1
Total BTEX		<0.00200	0.00200	mg/kg	01.14.20 23.19	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	108	%	70-130	01.14.20 23.19		
4-Bromofluorobenzene	460-00-4	112	%	70-130	01.14.20 23.19		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 14**
Lab Sample Id: 648981-014

Matrix: Soil
Date Collected: 01.14.20 10.26

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113242

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 17.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	141	9.92	mg/kg	01.14.20 18.49		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113441

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 16.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.3	50.3	mg/kg	01.15.20 09.58	U	1
Diesel Range Organics	C10C28DRO	<50.3	50.3	mg/kg	01.15.20 09.58	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.3	50.3	mg/kg	01.15.20 09.58	U	1
Total TPH	PHC635	<50.3	50.3	mg/kg	01.15.20 09.58	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	132	%	70-135	01.15.20 09.58		
o-Terphenyl	84-15-1	132	%	70-135	01.15.20 09.58		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 14**
Lab Sample Id: 648981-014

Matrix: Soil
Date Collected: 01.14.20 10.26

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.39

Basis: Wet Weight

Seq Number: 3113284

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.15.20 03.14	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	01.15.20 03.14	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	01.15.20 03.14	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	01.15.20 03.14	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	01.15.20 03.14	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	01.15.20 03.14	U	1
Total BTEX		<0.00200	0.00200	mg/kg	01.15.20 03.14	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	104	%	70-130	01.15.20 03.14		
1,4-Difluorobenzene	540-36-3	99	%	70-130	01.15.20 03.14		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 15**
Lab Sample Id: 648981-015

Matrix: Soil
Date Collected: 01.14.20 10.28

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113242

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 17.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	103	10.0	mg/kg	01.14.20 18.55		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113441

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 16.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.1	50.1	mg/kg	01.15.20 09.58	U	1
Diesel Range Organics	C10C28DRO	<50.1	50.1	mg/kg	01.15.20 09.58	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	01.15.20 09.58	U	1
Total TPH	PHC635	<50.1	50.1	mg/kg	01.15.20 09.58	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	134	%	70-135	01.15.20 09.58		
o-Terphenyl	84-15-1	142	%	70-135	01.15.20 09.58	**	



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 15**
Lab Sample Id: 648981-015

Matrix: Soil
Date Collected: 01.14.20 10.28

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.39

Basis: Wet Weight

Seq Number: 3113284

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.15.20 03.31	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	01.15.20 03.31	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	01.15.20 03.31	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	01.15.20 03.31	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	01.15.20 03.31	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	01.15.20 03.31	U	1
Total BTEX		<0.00200	0.00200	mg/kg	01.15.20 03.31	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	100	%	70-130	01.15.20 03.31		
4-Bromofluorobenzene	460-00-4	101	%	70-130	01.15.20 03.31		



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COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 16**
Lab Sample Id: 648981-016

Matrix: Soil
Date Collected: 01.14.20 10.30

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113242

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 17.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	112	10.1	mg/kg	01.14.20 19.02		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113441

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 16.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.1	50.1	mg/kg	01.16.20 11.29	U	1
Diesel Range Organics	C10C28DRO	<50.1	50.1	mg/kg	01.16.20 11.29	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	01.16.20 11.29	U	1
Total TPH	PHC635	<50.1	50.1	mg/kg	01.16.20 11.29	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	80	%	70-135	01.16.20 11.29		
o-Terphenyl	84-15-1	77	%	70-135	01.16.20 11.29		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 16**
Lab Sample Id: 648981-016

Matrix: Soil
Date Collected: 01.14.20 10.30

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.31

Basis: Wet Weight

Seq Number: 3113333

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.15.20 07.17	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	01.15.20 07.17	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	01.15.20 07.17	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	01.15.20 07.17	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	01.15.20 07.17	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	01.15.20 07.17	U	1
Total BTEX		<0.00200	0.00200	mg/kg	01.15.20 07.17	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	100	%	70-130	01.15.20 07.17		
4-Bromofluorobenzene	460-00-4	105	%	70-130	01.15.20 07.17		



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COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 17**
Lab Sample Id: 648981-017

Matrix: Soil
Date Collected: 01.14.20 10.32

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113242

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 17.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	121	10.0	mg/kg	01.14.20 19.07		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113441

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 16.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.1	50.1	mg/kg	01.15.20 10.19	U	1
Diesel Range Organics	C10C28DRO	<50.1	50.1	mg/kg	01.15.20 10.19	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	01.15.20 10.19	U	1
Total TPH	PHC635	<50.1	50.1	mg/kg	01.15.20 10.19	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	118	%	70-135	01.15.20 10.19		
o-Terphenyl	84-15-1	117	%	70-135	01.15.20 10.19		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 17**
Lab Sample Id: 648981-017

Matrix: Soil
Date Collected: 01.14.20 10.32

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.39

Basis: Wet Weight

Seq Number: 3113284

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.15.20 04.06	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	01.15.20 04.06	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	01.15.20 04.06	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	01.15.20 04.06	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	01.15.20 04.06	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	01.15.20 04.06	U	1
Total BTEX		<0.00200	0.00200	mg/kg	01.15.20 04.06	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	101	%	70-130	01.15.20 04.06		
4-Bromofluorobenzene	460-00-4	105	%	70-130	01.15.20 04.06		



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COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 18**
Lab Sample Id: 648981-018

Matrix: Soil
Date Collected: 01.14.20 10.34

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113242

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 17.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	118	10.1	mg/kg	01.14.20 19.24		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113441

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 16.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.2	50.2	mg/kg	01.15.20 10.39	U	1
Diesel Range Organics	C10C28DRO	<50.2	50.2	mg/kg	01.15.20 10.39	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	01.15.20 10.39	U	1
Total TPH	PHC635	<50.2	50.2	mg/kg	01.15.20 10.39	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	137	%	70-135	01.15.20 10.39	**	
o-Terphenyl	84-15-1	119	%	70-135	01.15.20 10.39		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 18**
Lab Sample Id: 648981-018

Matrix: Soil
Date Collected: 01.14.20 10.34

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.39

Basis: Wet Weight

Seq Number: 3113284

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	01.15.20 04.23	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	01.15.20 04.23	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	01.15.20 04.23	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	01.15.20 04.23	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	01.15.20 04.23	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	01.15.20 04.23	U	1
Total BTEX		<0.00199	0.00199	mg/kg	01.15.20 04.23	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	101	%	70-130	01.15.20 04.23		
1,4-Difluorobenzene	540-36-3	99	%	70-130	01.15.20 04.23		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 19**
Lab Sample Id: 648981-019

Matrix: Soil
Date Collected: 01.14.20 10.36

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113242

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 17.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	131	9.98	mg/kg	01.14.20 19.29		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113441

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 16.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.1	50.1	mg/kg	01.15.20 10.39	U	1
Diesel Range Organics	C10C28DRO	<50.1	50.1	mg/kg	01.15.20 10.39	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	01.15.20 10.39	U	1
Total TPH	PHC635	<50.1	50.1	mg/kg	01.15.20 10.39	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	131	%	70-135	01.15.20 10.39		
o-Terphenyl	84-15-1	137	%	70-135	01.15.20 10.39	**	



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COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 19**
Lab Sample Id: 648981-019

Matrix: Soil
Date Collected: 01.14.20 10.36

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.39

Basis: Wet Weight

Seq Number: 3113284

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	01.15.20 05.07	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	01.15.20 05.07	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	01.15.20 05.07	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	01.15.20 05.07	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	01.15.20 05.07	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	01.15.20 05.07	U	1
Total BTEX		<0.00198	0.00198	mg/kg	01.15.20 05.07	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	101	%	70-130	01.15.20 05.07		
4-Bromofluorobenzene	460-00-4	105	%	70-130	01.15.20 05.07		



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COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 20**
Lab Sample Id: 648981-020

Matrix: Soil
Date Collected: 01.14.20 10.38

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113242

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 17.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	211	9.92	mg/kg	01.14.20 19.34		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113441

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 16.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<49.9	49.9	mg/kg	01.15.20 10.59	U	1
Diesel Range Organics	C10C28DRO	93.1	49.9	mg/kg	01.15.20 10.59		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	01.15.20 10.59	U	1
Total TPH	PHC635	93.1	49.9	mg/kg	01.15.20 10.59		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	128	%	70-135	01.15.20 10.59		
o-Terphenyl	84-15-1	131	%	70-135	01.15.20 10.59		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 20**
Lab Sample Id: 648981-020

Matrix: Soil
Date Collected: 01.14.20 10.38

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.31

Basis: Wet Weight

Seq Number: 3113333

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	01.15.20 07.35	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	01.15.20 07.35	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	01.15.20 07.35	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	01.15.20 07.35	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	01.15.20 07.35	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	01.15.20 07.35	U	1
Total BTEX		<0.00198	0.00198	mg/kg	01.15.20 07.35	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	102	%	70-130	01.15.20 07.35		
4-Bromofluorobenzene	460-00-4	105	%	70-130	01.15.20 07.35		



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COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 21**
Lab Sample Id: 648981-021

Matrix: Soil
Date Collected: 01.14.20 10.40

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113242

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 17.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	183	9.96	mg/kg	01.14.20 19.40		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113441

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 16.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.2	50.2	mg/kg	01.15.20 10.59	U	1
Diesel Range Organics	C10C28DRO	<50.2	50.2	mg/kg	01.15.20 10.59	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	01.15.20 10.59	U	1
Total TPH	PHC635	<50.2	50.2	mg/kg	01.15.20 10.59	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	120	%	70-135	01.15.20 10.59		
o-Terphenyl	84-15-1	124	%	70-135	01.15.20 10.59		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 21**
Lab Sample Id: 648981-021

Matrix: Soil
Date Collected: 01.14.20 10.40

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.31

Basis: Wet Weight

Seq Number: 3113333

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00197	0.00197	mg/kg	01.15.20 07.52	U	1
Toluene	108-88-3	<0.00197	0.00197	mg/kg	01.15.20 07.52	U	1
Ethylbenzene	100-41-4	<0.00197	0.00197	mg/kg	01.15.20 07.52	U	1
m,p-Xylenes	179601-23-1	<0.00394	0.00394	mg/kg	01.15.20 07.52	U	1
o-Xylene	95-47-6	<0.00197	0.00197	mg/kg	01.15.20 07.52	U	1
Total Xylenes	1330-20-7	<0.00197	0.00197	mg/kg	01.15.20 07.52	U	1
Total BTEX		<0.00197	0.00197	mg/kg	01.15.20 07.52	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	99	%	70-130	01.15.20 07.52		
4-Bromofluorobenzene	460-00-4	99	%	70-130	01.15.20 07.52		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 22**
Lab Sample Id: 648981-022

Matrix: Soil
Date Collected: 01.14.20 10.42

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113242

Prep Method: E300P

% Moisture:

Date Prep: 01.14.20 17.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	237	9.98	mg/kg	01.14.20 19.45		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113441

Prep Method: SW8015P

% Moisture:

Date Prep: 01.14.20 16.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.2	50.2	mg/kg	01.15.20 11.19	U	1
Diesel Range Organics	C10C28DRO	65.5	50.2	mg/kg	01.15.20 11.19		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	01.15.20 11.19	U	1
Total TPH	PHC635	65.5	50.2	mg/kg	01.15.20 11.19		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	124	%	70-135	01.15.20 11.19		
o-Terphenyl	84-15-1	126	%	70-135	01.15.20 11.19		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 22**
Lab Sample Id: 648981-022

Matrix: Soil
Date Collected: 01.14.20 10.42

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.31

Basis: Wet Weight

Seq Number: 3113333

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	01.15.20 08.09	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	01.15.20 08.09	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	01.15.20 08.09	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	01.15.20 08.09	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	01.15.20 08.09	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	01.15.20 08.09	U	1
Total BTEX		<0.00201	0.00201	mg/kg	01.15.20 08.09	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	103	%	70-130	01.15.20 08.09		
1,4-Difluorobenzene	540-36-3	101	%	70-130	01.15.20 08.09		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 23**
Lab Sample Id: 648981-023

Matrix: Soil
Date Collected: 01.14.20 10.44

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113242

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 17.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	184	9.92	mg/kg	01.14.20 19.50		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113441

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 16.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.1	50.1	mg/kg	01.15.20 14.26	U	1
Diesel Range Organics	C10C28DRO	<50.1	50.1	mg/kg	01.15.20 14.26	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	01.15.20 14.26	U	1
Total TPH	PHC635	<50.1	50.1	mg/kg	01.15.20 14.26	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	119	%	70-135	01.15.20 14.26		
o-Terphenyl	84-15-1	120	%	70-135	01.15.20 14.26		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 23**
Lab Sample Id: 648981-023

Matrix: Soil
Date Collected: 01.14.20 10.44

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.31

Basis: Wet Weight

Seq Number: 3113333

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	01.15.20 08.27	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	01.15.20 08.27	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	01.15.20 08.27	U	1
m,p-Xylenes	179601-23-1	<0.00395	0.00395	mg/kg	01.15.20 08.27	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	01.15.20 08.27	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	01.15.20 08.27	U	1
Total BTEX		<0.00198	0.00198	mg/kg	01.15.20 08.27	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	99	%	70-130	01.15.20 08.27		
4-Bromofluorobenzene	460-00-4	103	%	70-130	01.15.20 08.27		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 24**
Lab Sample Id: 648981-024

Matrix: Soil
Date Collected: 01.14.20 10.46

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113242

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 17.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	210	10.1	mg/kg	01.14.20 20.07		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113441

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 16.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.2	50.2	mg/kg	01.15.20 14.26	U	1
Diesel Range Organics	C10C28DRO	<50.2	50.2	mg/kg	01.15.20 14.26	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	01.15.20 14.26	U	1
Total TPH	PHC635	<50.2	50.2	mg/kg	01.15.20 14.26	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	121	%	70-135	01.15.20 14.26		
o-Terphenyl	84-15-1	122	%	70-135	01.15.20 14.26		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 24**
Lab Sample Id: 648981-024

Matrix: Soil
Date Collected: 01.14.20 10.46

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.31

Basis: Wet Weight

Seq Number: 3113333

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.15.20 08.44	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	01.15.20 08.44	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	01.15.20 08.44	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	01.15.20 08.44	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	01.15.20 08.44	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	01.15.20 08.44	U	1
Total BTEX		<0.00200	0.00200	mg/kg	01.15.20 08.44	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	108	%	70-130	01.15.20 08.44		
1,4-Difluorobenzene	540-36-3	103	%	70-130	01.15.20 08.44		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 25**
Lab Sample Id: 648981-025

Matrix: Soil
Date Collected: 01.14.20 10.48

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113242

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 17.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	201	10.1	mg/kg	01.14.20 20.12		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113441

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 16.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.2	50.2	mg/kg	01.15.20 14.47	U	1
Diesel Range Organics	C10C28DRO	86.2	50.2	mg/kg	01.15.20 14.47		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	01.15.20 14.47	U	1
Total TPH	PHC635	86.2	50.2	mg/kg	01.15.20 14.47		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	123	%	70-135	01.15.20 14.47		
o-Terphenyl	84-15-1	122	%	70-135	01.15.20 14.47		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 25**
Lab Sample Id: 648981-025

Matrix: Soil
Date Collected: 01.14.20 10.48

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.31

Basis: Wet Weight

Seq Number: 3113333

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	01.15.20 09.02	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	01.15.20 09.02	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	01.15.20 09.02	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	01.15.20 09.02	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	01.15.20 09.02	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	01.15.20 09.02	U	1
Total BTEX		<0.00198	0.00198	mg/kg	01.15.20 09.02	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	103	%	70-130	01.15.20 09.02		
4-Bromofluorobenzene	460-00-4	106	%	70-130	01.15.20 09.02		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 26**
Lab Sample Id: 648981-026

Matrix: Soil
Date Collected: 01.14.20 10.50

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113242

Prep Method: E300P

% Moisture:

Date Prep: 01.14.20 17.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	197	10.1	mg/kg	01.14.20 20.28		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113441

Prep Method: SW8015P

% Moisture:

Date Prep: 01.14.20 16.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<49.9	49.9	mg/kg	01.15.20 14.47	U	1
Diesel Range Organics	C10C28DRO	141	49.9	mg/kg	01.15.20 14.47		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	01.15.20 14.47	U	1
Total TPH	PHC635	141	49.9	mg/kg	01.15.20 14.47		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	119	%	70-135	01.15.20 14.47	
o-Terphenyl	84-15-1	126	%	70-135	01.15.20 14.47	



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 26**
Lab Sample Id: 648981-026

Matrix: Soil
Date Collected: 01.14.20 10.50

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.31

Basis: Wet Weight

Seq Number: 3113333

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.15.20 09.19	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	01.15.20 09.19	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	01.15.20 09.19	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	01.15.20 09.19	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	01.15.20 09.19	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	01.15.20 09.19	U	1
Total BTEX		<0.00200	0.00200	mg/kg	01.15.20 09.19	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	97	%	70-130	01.15.20 09.19		
4-Bromofluorobenzene	460-00-4	102	%	70-130	01.15.20 09.19		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 27**
Lab Sample Id: 648981-027

Matrix: Soil
Date Collected: 01.14.20 10.52

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113242

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 17.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	211	10.0	mg/kg	01.14.20 20.33		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113441

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 16.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.2	50.2	mg/kg	01.15.20 15.07	U	1
Diesel Range Organics	C10C28DRO	133	50.2	mg/kg	01.15.20 15.07		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	01.15.20 15.07	U	1
Total TPH	PHC635	133	50.2	mg/kg	01.15.20 15.07		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	117	%	70-135	01.15.20 15.07		
o-Terphenyl	84-15-1	117	%	70-135	01.15.20 15.07		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 27**
Lab Sample Id: 648981-027

Matrix: Soil
Date Collected: 01.14.20 10.52

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.31

Basis: Wet Weight

Seq Number: 3113333

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	01.15.20 09.37	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	01.15.20 09.37	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	01.15.20 09.37	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	01.15.20 09.37	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	01.15.20 09.37	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	01.15.20 09.37	U	1
Total BTEX		<0.00199	0.00199	mg/kg	01.15.20 09.37	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	100	%	70-130	01.15.20 09.37		
4-Bromofluorobenzene	460-00-4	114	%	70-130	01.15.20 09.37		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 28**
Lab Sample Id: 648981-028

Matrix: Soil
Date Collected: 01.14.20 10.54

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113242

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 17.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	173	9.94	mg/kg	01.14.20 20.39		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113441

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 16.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<49.9	49.9	mg/kg	01.15.20 15.07	U	1
Diesel Range Organics	C10C28DRO	152	49.9	mg/kg	01.15.20 15.07		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	01.15.20 15.07	U	1
Total TPH	PHC635	152	49.9	mg/kg	01.15.20 15.07		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	118	%	70-135	01.15.20 15.07		
o-Terphenyl	84-15-1	126	%	70-135	01.15.20 15.07		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 28**
Lab Sample Id: 648981-028

Matrix: Soil
Date Collected: 01.14.20 10.54

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.31

Basis: Wet Weight

Seq Number: 3113333

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.15.20 09.54	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	01.15.20 09.54	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	01.15.20 09.54	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	01.15.20 09.54	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	01.15.20 09.54	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	01.15.20 09.54	U	1
Total BTEX		<0.00200	0.00200	mg/kg	01.15.20 09.54	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	106	%	70-130	01.15.20 09.54		
1,4-Difluorobenzene	540-36-3	98	%	70-130	01.15.20 09.54		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 29**
Lab Sample Id: 648981-029

Matrix: Soil
Date Collected: 01.14.20 10.56

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113242

Prep Method: E300P

% Moisture:

Date Prep: 01.14.20 17.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	206	9.98	mg/kg	01.14.20 20.44		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113441

Prep Method: SW8015P

% Moisture:

Date Prep: 01.14.20 16.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.0	50.0	mg/kg	01.15.20 15.27	U	1
Diesel Range Organics	C10C28DRO	156	50.0	mg/kg	01.15.20 15.27		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	01.15.20 15.27	U	1
Total TPH	PHC635	156	50.0	mg/kg	01.15.20 15.27		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	124	%	70-135	01.15.20 15.27		
o-Terphenyl	84-15-1	126	%	70-135	01.15.20 15.27		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 29**
Lab Sample Id: 648981-029

Matrix: Soil
Date Collected: 01.14.20 10.56

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.31

Basis: Wet Weight

Seq Number: 3113333

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.15.20 11.03	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	01.15.20 11.03	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	01.15.20 11.03	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	01.15.20 11.03	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	01.15.20 11.03	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	01.15.20 11.03	U	1
Total BTEX		<0.00200	0.00200	mg/kg	01.15.20 11.03	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	100	%	70-130	01.15.20 11.03		
1,4-Difluorobenzene	540-36-3	98	%	70-130	01.15.20 11.03		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 30**
Lab Sample Id: 648981-030

Matrix: Soil
Date Collected: 01.14.20 10.58

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113242

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 17.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	215	10.0	mg/kg	01.14.20 20.50		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113441

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 16.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.0	50.0	mg/kg	01.15.20 15.27	U	1
Diesel Range Organics	C10C28DRO	115	50.0	mg/kg	01.15.20 15.27		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	01.15.20 15.27	U	1
Total TPH	PHC635	115	50.0	mg/kg	01.15.20 15.27		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	118	%	70-135	01.15.20 15.27		
o-Terphenyl	84-15-1	125	%	70-135	01.15.20 15.27		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 30**
Lab Sample Id: 648981-030

Matrix: Soil
Date Collected: 01.14.20 10.58

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.31

Basis: Wet Weight

Seq Number: 3113333

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	01.15.20 11.21	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	01.15.20 11.21	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	01.15.20 11.21	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	01.15.20 11.21	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	01.15.20 11.21	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	01.15.20 11.21	U	1
Total BTEX		<0.00199	0.00199	mg/kg	01.15.20 11.21	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	107	%	70-130	01.15.20 11.21		
1,4-Difluorobenzene	540-36-3	97	%	70-130	01.15.20 11.21		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 31**
Lab Sample Id: 648981-031

Matrix: Soil
Date Collected: 01.14.20 11.00

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113242

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 17.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	213	9.92	mg/kg	01.14.20 20.55		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113441

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 16.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.0	50.0	mg/kg	01.15.20 15.47	U	1
Diesel Range Organics	C10C28DRO	146	50.0	mg/kg	01.15.20 15.47		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	01.15.20 15.47	U	1
Total TPH	PHC635	146	50.0	mg/kg	01.15.20 15.47		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	135	%	70-135	01.15.20 15.47		
o-Terphenyl	84-15-1	117	%	70-135	01.15.20 15.47		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 31**
Lab Sample Id: 648981-031

Matrix: Soil
Date Collected: 01.14.20 11.00

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.31

Basis: Wet Weight

Seq Number: 3113333

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	01.15.20 11.38	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	01.15.20 11.38	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	01.15.20 11.38	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	01.15.20 11.38	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	01.15.20 11.38	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	01.15.20 11.38	U	1
Total BTEX		<0.00198	0.00198	mg/kg	01.15.20 11.38	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	101	%	70-130	01.15.20 11.38		
4-Bromofluorobenzene	460-00-4	111	%	70-130	01.15.20 11.38		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 32**
Lab Sample Id: 648981-032

Matrix: Soil
Date Collected: 01.14.20 11.02

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113242

Prep Method: E300P

% Moisture:

Date Prep: 01.14.20 17.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	212	9.98	mg/kg	01.14.20 21.00		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113441

Prep Method: SW8015P

% Moisture:

Date Prep: 01.14.20 16.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.3	50.3	mg/kg	01.15.20 15.47	U	1
Diesel Range Organics	C10C28DRO	169	50.3	mg/kg	01.15.20 15.47		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.3	50.3	mg/kg	01.15.20 15.47	U	1
Total TPH	PHC635	169	50.3	mg/kg	01.15.20 15.47		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	120	%	70-135	01.15.20 15.47		
o-Terphenyl	84-15-1	118	%	70-135	01.15.20 15.47		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **Bttm- 32**
Lab Sample Id: 648981-032

Matrix: Soil
Date Collected: 01.14.20 11.02

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.31

Basis: Wet Weight

Seq Number: 3113333

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.15.20 11.56	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	01.15.20 11.56	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	01.15.20 11.56	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	01.15.20 11.56	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	01.15.20 11.56	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	01.15.20 11.56	U	1
Total BTEX		<0.00200	0.00200	mg/kg	01.15.20 11.56	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	99	%	70-130	01.15.20 11.56		
1,4-Difluorobenzene	540-36-3	97	%	70-130	01.15.20 11.56		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **SW-1**
Lab Sample Id: 648981-033

Matrix: Soil
Date Collected: 01.14.20 11.04

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113245

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 17.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	70.6	10.0	mg/kg	01.14.20 21.33		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113342

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.15.20 18.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.1	50.1	mg/kg	01.15.20 17.42	U	1
Diesel Range Organics	C10C28DRO	84.7	50.1	mg/kg	01.15.20 17.42		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	01.15.20 17.42	U	1
Total TPH	PHC635	84.7	50.1	mg/kg	01.15.20 17.42		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	98	%	70-135	01.15.20 17.42	
o-Terphenyl	84-15-1	97	%	70-135	01.15.20 17.42	



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: SW-1
Lab Sample Id: 648981-033

Matrix: Soil
Date Collected: 01.14.20 11.04

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.31

Basis: Wet Weight

Seq Number: 3113333

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.15.20 12.13	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	01.15.20 12.13	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	01.15.20 12.13	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	01.15.20 12.13	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	01.15.20 12.13	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	01.15.20 12.13	U	1
Total BTEX		<0.00200	0.00200	mg/kg	01.15.20 12.13	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	103	%	70-130	01.15.20 12.13		
1,4-Difluorobenzene	540-36-3	99	%	70-130	01.15.20 12.13		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **SW-2**
Lab Sample Id: 648981-034

Matrix: Soil
Date Collected: 01.14.20 11.06

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113245

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 17.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	176	10.0	mg/kg	01.14.20 21.49		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113342

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.15.20 18.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.2	50.2	mg/kg	01.15.20 00.56	U	1
Diesel Range Organics	C10C28DRO	<50.2	50.2	mg/kg	01.15.20 00.56	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	01.15.20 00.56	U	1
Total TPH	PHC635	<50.2	50.2	mg/kg	01.15.20 00.56	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	128	%	70-135	01.15.20 00.56	
o-Terphenyl	84-15-1	130	%	70-135	01.15.20 00.56	



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **SW-2**
Lab Sample Id: 648981-034

Matrix: Soil
Date Collected: 01.14.20 11.06

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.35

Basis: Wet Weight

Seq Number: 3113259

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.15.20 02.38	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	01.15.20 02.38	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	01.15.20 02.38	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	01.15.20 02.38	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	01.15.20 02.38	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	01.15.20 02.38	U	1
Total BTEX		<0.00200	0.00200	mg/kg	01.15.20 02.38	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	106	%	70-130	01.15.20 02.38		
4-Bromofluorobenzene	460-00-4	111	%	70-130	01.15.20 02.38		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **SW-3**
Lab Sample Id: 648981-035

Matrix: Soil
Date Collected: 01.14.20 11.08

Date Received: 01.14.20 14.00

Analytical Method: Chloride by EPA 300

Tech: MAB

Analyst: MAB

Seq Number: 3113245

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 01.14.20 17.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	184	9.98	mg/kg	01.14.20 21.54		1

Analytical Method: TPH By SW8015 Mod

Tech: DTH

Analyst: DTH

Seq Number: 3113342

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 01.15.20 18.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<49.8	49.8	mg/kg	01.15.20 01.16	U	1
Diesel Range Organics	C10C28DRO	147	49.8	mg/kg	01.15.20 01.16		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	01.15.20 01.16	U	1
Total TPH	PHC635	147	49.8	mg/kg	01.15.20 01.16		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	118	%	70-135	01.15.20 01.16		
o-Terphenyl	84-15-1	124	%	70-135	01.15.20 01.16		



Certificate of Analytical Results 648981

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **SW-3**
Lab Sample Id: 648981-035

Matrix: Soil
Date Collected: 01.14.20 11.08

Date Received: 01.14.20 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 01.14.20 17.35

Basis: Wet Weight

Seq Number: 3113259

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	01.15.20 02.19	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	01.15.20 02.19	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	01.15.20 02.19	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	01.15.20 02.19	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	01.15.20 02.19	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	01.15.20 02.19	U	1
Total BTEX		<0.00200	0.00200	mg/kg	01.15.20 02.19	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	111	%	70-130	01.15.20 02.19		
1,4-Difluorobenzene	540-36-3	108	%	70-130	01.15.20 02.19		

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 **SQL** 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
Horned Owl Fed #3

Analytical Method: Chloride by EPA 300

Seq Number: 3113238

MB Sample Id: 7694326-1-BLK

Matrix: Solid

LCS Sample Id: 7694326-1-BKS

Prep Method: E300P

Date Prep: 01.14.20

LCSD Sample Id: 7694326-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	2.73	250	238	95	249	100	90-110	5	20	mg/kg	01.14.20 15:06	

Analytical Method: Chloride by EPA 300

Seq Number: 3113242

MB Sample Id: 7694371-1-BLK

Matrix: Solid

LCS Sample Id: 7694371-1-BKS

Prep Method: E300P

Date Prep: 01.14.20

LCSD Sample Id: 7694371-1-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	250	100	249	100	90-110	0	20	mg/kg	01.14.20 18:20	

Analytical Method: Chloride by EPA 300

Seq Number: 3113245

MB Sample Id: 7694373-1-BLK

Matrix: Solid

LCS Sample Id: 7694373-1-BKS

Prep Method: E300P

Date Prep: 01.14.20

LCSD Sample Id: 7694373-1-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	252	101	251	100	90-110	0	20	mg/kg	01.14.20 21:22	

Analytical Method: Chloride by EPA 300

Seq Number: 3113238

Parent Sample Id: 648950-001

Matrix: Soil

MS Sample Id: 648950-001 S

Prep Method: E300P

Date Prep: 01.14.20

MSD Sample Id: 648950-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	524	199	726	102	726	101	90-110	0	20	mg/kg	01.14.20 15:22	

Analytical Method: Chloride by EPA 300

Seq Number: 3113238

Parent Sample Id: 648981-004

Matrix: Soil

MS Sample Id: 648981-004 S

Prep Method: E300P

Date Prep: 01.14.20

MSD Sample Id: 648981-004 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	13.2	199	212	100	212	100	90-110	0	20	mg/kg	01.14.20 16:47	

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

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

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

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



QC Summary 648981

COG Operating LLC Horned Owl Fed #3

Analytical Method: Chloride by EPA 300

Seq Number: 3113242

Parent Sample Id: 648981-013

Matrix: Soil

MS Sample Id: 648981-013 S

Prep Method: E300P

Date Prep: 01.14.20

MSD Sample Id: 648981-013 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	106	200	318	106	318	106	90-110	0	20	mg/kg	01.14.20 18:38	

Analytical Method: Chloride by EPA 300

Seq Number: 3113242

Parent Sample Id: 648981-023

Matrix: Soil

MS Sample Id: 648981-023 S

Prep Method: E300P

Date Prep: 01.14.20

MSD Sample Id: 648981-023 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	184	198	391	105	391	105	90-110	0	20	mg/kg	01.14.20 19:56	

Analytical Method: Chloride by EPA 300

Seq Number: 3113245

Parent Sample Id: 648981-033

Matrix: Soil

MS Sample Id: 648981-033 S

Prep Method: E300P

Date Prep: 01.14.20

MSD Sample Id: 648981-033 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	70.6	201	276	102	279	104	90-110	1	20	mg/kg	01.14.20 21:38	

Analytical Method: Chloride by EPA 300

Seq Number: 3113245

Parent Sample Id: 649014-002

Matrix: Soil

MS Sample Id: 649014-002 S

Prep Method: E300P

Date Prep: 01.14.20

MSD Sample Id: 649014-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	193	199	404	106	404	106	90-110	0	20	mg/kg	01.14.20 22:38	

Analytical Method: TPH By SW8015 Mod

Seq Number: 3113296

MB Sample Id: 7694334-1-BLK

Matrix: Solid

LCS Sample Id: 7694334-1-BKS

Prep Method: SW8015P

Date Prep: 01.14.20

LCSD Sample Id: 7694334-1-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	<50.0	1000	883	88	918	92	70-135	4	35	mg/kg	01.14.20 19:33	
Diesel Range Organics	<50.0	1000	799	80	806	81	70-135	1	35	mg/kg	01.14.20 19:33	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	118		96		99		70-135	%	01.14.20 19:33
o-Terphenyl	118		81		84		70-135	%	01.14.20 19:33

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

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

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 648981

COG Operating LLC

Horned Owl Fed #3

Analytical Method: TPH By SW8015 Mod

Seq Number: 3113441

MB Sample Id: 7694347-1-BLK

Matrix: Solid

LCS Sample Id: 7694347-1-BKS

Prep Method: SW8015P

Date Prep: 01.14.20

LCSD Sample Id: 7694347-1-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	<50.0	1000	718	72	733	73	70-135	2	35	mg/kg	01.15.20 08:58	
Diesel Range Organics	<50.0	1000	772	77	760	76	70-135	2	35	mg/kg	01.15.20 08:58	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date	Flag		
1-Chlorooctane	124		126		125		70-135	%	01.15.20 08:58			
o-Terphenyl	125		128		126		70-135	%	01.15.20 08:58			

Analytical Method: TPH By SW8015 Mod

Seq Number: 3113342

MB Sample Id: 7694368-1-BLK

Matrix: Solid

LCS Sample Id: 7694368-1-BKS

Prep Method: SW8015P

Date Prep: 01.15.20

LCSD Sample Id: 7694368-1-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	<50.0	1000	852	85	947	95	70-135	11	35	mg/kg	01.15.20 00:16	
Diesel Range Organics	<50.0	1000	738	74	816	82	70-135	10	35	mg/kg	01.15.20 00:16	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date	Flag		
1-Chlorooctane	109		90		104		70-135	%	01.15.20 00:16			
o-Terphenyl	110		82		81		70-135	%	01.15.20 00:16			

Analytical Method: TPH By SW8015 Mod

Seq Number: 3113296

Matrix: Solid

MB Sample Id: 7694334-1-BLK

Prep Method: SW8015P

Date Prep: 01.14.20

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	01.14.20 19:33	

Analytical Method: TPH By SW8015 Mod

Seq Number: 3113441

Matrix: Solid

MB Sample Id: 7694347-1-BLK

Prep Method: SW8015P

Date Prep: 01.14.20

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	01.15.20 08:58	

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

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

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

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



QC Summary 648981

COG Operating LLC

Horned Owl Fed #3

Analytical Method: TPH By SW8015 Mod

Seq Number: 3113342

Matrix: Solid

Prep Method: SW8015P

Date Prep: 01.15.20

MB Sample Id: 7694368-1-BLK

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	01.14.20 23:55	

Analytical Method: TPH By SW8015 Mod

Seq Number: 3113296

Matrix: Soil

Prep Method: SW8015P

Date Prep: 01.14.20

Parent Sample Id: 648947-002

MS Sample Id: 648947-002 S

MSD Sample Id: 648947-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons	<50.1	1000	949	95	970	97	70-135	2	35	mg/kg	01.15.20 17:01	
Diesel Range Organics	<50.1	1000	1050	105	1100	110	70-135	5	35	mg/kg	01.15.20 17:01	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	125		131		70-135	%	01.15.20 17:01
o-Terphenyl	100		99		70-135	%	01.15.20 17:01

Analytical Method: TPH By SW8015 Mod

Seq Number: 3113441

Matrix: Soil

Prep Method: SW8015P

Date Prep: 01.14.20

Parent Sample Id: 648981-013

MS Sample Id: 648981-013 S

MSD Sample Id: 648981-013 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	<50.2	1000	777	78	833	82	70-135	7	35	mg/kg	01.15.20 14:05	
Diesel Range Organics	<50.2	1000	696	70	774	77	70-135	11	35	mg/kg	01.15.20 14:05	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	93		102		70-135	%	01.15.20 14:05
o-Terphenyl	84		87		70-135	%	01.15.20 14:05

Analytical Method: TPH By SW8015 Mod

Seq Number: 3113342

Matrix: Soil

Prep Method: SW8015P

Date Prep: 01.15.20

Parent Sample Id: 648981-033

MS Sample Id: 648981-033 S

MSD Sample Id: 648981-033 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	<50.0	999	1160	116	985	98	70-135	16	35	mg/kg	01.15.20 18:48	
Diesel Range Organics	84.7	999	1310	123	1170	107	70-135	11	35	mg/kg	01.15.20 18:48	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	129		116		70-135	%	01.15.20 18:48
o-Terphenyl	122		112		70-135	%	01.15.20 18:48

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
Horned Owl Fed #3

Analytical Method: BTEX by EPA 8021B

Seq Number: 3113257

MB Sample Id: 7694379-1-BLK

Matrix: Solid

LCS Sample Id: 7694379-1-BKS

Prep Method: SW5030B

Date Prep: 01.14.20

LCSD Sample Id: 7694379-1-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	0.108	108	0.108	108	70-130	0	35	mg/kg	01.14.20 14:55	
Toluene	<0.00200	0.100	0.106	106	0.105	105	70-130	1	35	mg/kg	01.14.20 14:55	
Ethylbenzene	<0.00200	0.100	0.107	107	0.106	106	71-129	1	35	mg/kg	01.14.20 14:55	
m,p-Xylenes	<0.00400	0.200	0.214	107	0.212	106	70-135	1	35	mg/kg	01.14.20 14:55	
o-Xylene	<0.00200	0.100	0.105	105	0.105	105	71-133	0	35	mg/kg	01.14.20 14:55	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits			Units	Analysis Date	
1,4-Difluorobenzene	101		103		103		70-130			%	01.14.20 14:55	
4-Bromofluorobenzene	99		106		106		70-130			%	01.14.20 14:55	

Analytical Method: BTEX by EPA 8021B

Seq Number: 3113333

MB Sample Id: 7694382-1-BLK

Matrix: Solid

LCS Sample Id: 7694382-1-BKS

Prep Method: SW5030B

Date Prep: 01.14.20

LCSD Sample Id: 7694382-1-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	0.0879	88	0.0912	91	70-130	4	35	mg/kg	01.15.20 05:50	
Toluene	<0.00200	0.100	0.0856	86	0.0831	83	70-130	3	35	mg/kg	01.15.20 05:50	
Ethylbenzene	<0.00200	0.100	0.0808	81	0.0724	72	71-129	11	35	mg/kg	01.15.20 05:50	
m,p-Xylenes	<0.00400	0.200	0.164	82	0.144	72	70-135	13	35	mg/kg	01.15.20 05:50	
o-Xylene	<0.00200	0.100	0.0816	82	0.0739	74	71-133	10	35	mg/kg	01.15.20 05:50	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date	Flag		
1,4-Difluorobenzene	99		98		102		70-130	%	01.15.20 05:50			
4-Bromofluorobenzene	97		97		102		70-130	%	01.15.20 05:50			

Analytical Method: BTEX by EPA 8021B

Seq Number: 3113259

MB Sample Id: 7694383-1-BLK

Matrix: Solid

LCS Sample Id: 7694383-1-BKS

Prep Method: SW5030B

Date Prep: 01.14.20

LCSD Sample Id: 7694383-1-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	0.0999	100	0.0997	100	70-130	0	35	mg/kg	01.15.20 00:43	
Toluene	<0.00200	0.100	0.0974	97	0.0963	96	70-130	1	35	mg/kg	01.15.20 00:43	
Ethylbenzene	<0.00200	0.100	0.0975	98	0.0954	95	71-129	2	35	mg/kg	01.15.20 00:43	
m,p-Xylenes	<0.00400	0.200	0.193	97	0.190	95	70-135	2	35	mg/kg	01.15.20 00:43	
o-Xylene	<0.00200	0.100	0.0960	96	0.0963	96	71-133	0	35	mg/kg	01.15.20 00:43	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits			Units	Analysis Date	
1,4-Difluorobenzene	103		100		103		70-130			%	01.15.20 00:43	
4-Bromofluorobenzene	101		100		107		70-130			%	01.15.20 00:43	

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

COG Operating LLC
Horned Owl Fed #3

Analytical Method: BTEX by EPA 8021B

Seq Number: 3113284

MB Sample Id: 7694384-1-BLK

Matrix: Solid

LCS Sample Id: 7694384-1-BKS

Prep Method: SW5030B

Date Prep: 01.14.20

LCSD Sample Id: 7694384-1-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	0.101	101	0.0939	94	70-130	7	35	mg/kg	01.14.20 20:34	
Toluene	<0.00200	0.100	0.101	101	0.0918	92	70-130	10	35	mg/kg	01.14.20 20:34	
Ethylbenzene	<0.00200	0.100	0.0977	98	0.0885	89	71-129	10	35	mg/kg	01.14.20 20:34	
m,p-Xylenes	<0.00400	0.200	0.201	101	0.182	91	70-135	10	35	mg/kg	01.14.20 20:34	
o-Xylene	<0.00200	0.100	0.0982	98	0.0897	90	71-133	9	35	mg/kg	01.14.20 20:34	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date			
1,4-Difluorobenzene	100		101		101		70-130	%	01.14.20 20:34			
4-Bromofluorobenzene	100		99		99		70-130	%	01.14.20 20:34			

Analytical Method: BTEX by EPA 8021B

Seq Number: 3113257

Parent Sample Id: 648950-006

Matrix: Soil

MS Sample Id: 648950-006 S

Prep Method: SW5030B

Date Prep: 01.14.20

MSD Sample Id: 648950-006 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00198	0.0992	0.125	126	0.120	121	70-130	4	35	mg/kg	01.14.20 15:33	
Toluene	<0.00198	0.0992	0.120	121	0.114	115	70-130	5	35	mg/kg	01.14.20 15:33	
Ethylbenzene	<0.00198	0.0992	0.121	122	0.113	114	71-129	7	35	mg/kg	01.14.20 15:33	
m,p-Xylenes	<0.00397	0.198	0.238	120	0.223	113	70-135	7	35	mg/kg	01.14.20 15:33	
o-Xylene	<0.00198	0.0992	0.117	118	0.111	112	71-133	5	35	mg/kg	01.14.20 15:33	
Surrogate			MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date			
1,4-Difluorobenzene			106		106		70-130	%	01.14.20 15:33			
4-Bromofluorobenzene			107		108		70-130	%	01.14.20 15:33			

Analytical Method: BTEX by EPA 8021B

Seq Number: 3113333

Parent Sample Id: 648981-016

Matrix: Soil

MS Sample Id: 648981-016 S

Prep Method: SW5030B

Date Prep: 01.14.20

MSD Sample Id: 648981-016 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.0998	0.0848	85	0.0799	80	70-130	6	35	mg/kg	01.15.20 06:25	
Toluene	<0.00200	0.0998	0.0830	83	0.0744	75	70-130	11	35	mg/kg	01.15.20 06:25	
Ethylbenzene	<0.00200	0.0998	0.0795	80	0.0752	75	71-129	6	35	mg/kg	01.15.20 06:25	
m,p-Xylenes	<0.00399	0.200	0.162	81	0.151	76	70-135	7	35	mg/kg	01.15.20 06:25	
o-Xylene	<0.00200	0.0998	0.0797	80	0.0762	76	71-133	4	35	mg/kg	01.15.20 06:25	
Surrogate			MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date			
1,4-Difluorobenzene			101		103		70-130	%	01.15.20 06:25			
4-Bromofluorobenzene			101		106		70-130	%	01.15.20 06:25			

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



QC Summary 648981

COG Operating LLC

Horned Owl Fed #3

Analytical Method: BTEX by EPA 8021B

Seq Number: 3113259

Parent Sample Id: 648981-035

Matrix: Soil

MS Sample Id: 648981-035 S

Prep Method: SW5030B

Date Prep: 01.14.20

MSD Sample Id: 648981-035 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	0.0836	84	0.0996	100	70-130	17	35	mg/kg	01.15.20 01:21	
Toluene	<0.00200	0.100	0.0759	76	0.0935	94	70-130	21	35	mg/kg	01.15.20 01:21	
Ethylbenzene	<0.00200	0.100	0.0701	70	0.0894	90	71-129	24	35	mg/kg	01.15.20 01:21	X
m,p-Xylenes	<0.00401	0.200	0.143	72	0.173	87	70-135	19	35	mg/kg	01.15.20 01:21	
o-Xylene	<0.00200	0.100	0.0694	69	0.0970	97	71-133	33	35	mg/kg	01.15.20 01:21	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	104		107		70-130	%	01.15.20 01:21
4-Bromofluorobenzene	106		109		70-130	%	01.15.20 01:21

Analytical Method: BTEX by EPA 8021B

Seq Number: 3113284

Parent Sample Id: 649025-030

Matrix: Soil

MS Sample Id: 649025-030 S

Prep Method: SW5030B

Date Prep: 01.14.20

MSD Sample Id: 649025-030 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	0.0901	91	0.0902	90	70-130	0	35	mg/kg	01.14.20 21:08	
Toluene	<0.00199	0.0994	0.0848	85	0.0836	84	70-130	1	35	mg/kg	01.14.20 21:08	
Ethylbenzene	<0.00199	0.0994	0.0773	78	0.0731	73	71-129	6	35	mg/kg	01.14.20 21:08	
m,p-Xylenes	<0.00398	0.199	0.155	78	0.147	74	70-135	5	35	mg/kg	01.14.20 21:08	
o-Xylene	<0.00199	0.0994	0.0768	77	0.0728	73	71-133	5	35	mg/kg	01.14.20 21:08	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	104		103		70-130	%	01.14.20 21:08
4-Bromofluorobenzene	106		103		70-130	%	01.14.20 21:08

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

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

6248981

ORIGINAL COPY

15

LAB USE ONLY

Sample Temperature

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

☐ Rush Charges Authorized☐ Special Report Limits or TRRP Report

(Circle) HAND DELIVERED FEDEX UPS Tracking #:

Final 1.000

Analysis Request of Chain of Custody Record



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

1248981
Page 2 of 4

Client Name: COG-Artesia		Site Manager: Sheldon Hitchcock	
Project Name: Harold Owl Feed #3			
Project Location: (county, state) Eddy NM		Project #:	
Invoice to: Sheldon Hitchcock		Sampler Name: Sheldon Hitchcock	
Receiving Laboratory: Xenco		Comments:	

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING		MATRIX		PRESERVATIVE METHOD		# CONTAINERS	(C)omposite/(G)rab	ANALYSIS REQUEST (Circle or Specify Method No.)	
		DATE	TIME	WATER	SOIL	HCL	HNO ₃				ICE
		YEAR	MO	DAY	TIME						
Bt+m-11		1/14	10:20		X				1	TPH 8015M (GRO - DRO - MRO)	
Bt+m-12			10:22						1	BTEX 8021B	
Bt+m-13			10:24						1	Chloride	
Bt+m-14			10:26						1		
Bt+m-15			10:28						1		
Bt+m-16			10:30						1		
Bt+m-17			10:32						1		
Bt+m-18			10:34						1		
Bt+m-19			10:36						1		
Bt+m-20			10:38						1		

Relinquished by: <u>Sheldon Hitchcock</u>	Date: 1/14/20	Time: 14:00	Received by: <u>[Signature]</u>	Date: 1/14/20	Time: 14:00
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
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LAB USE ONLY

Sample Temperature

1.4

REMARKS:

☒ RUSH: Same Day 24 hr 48 hr 72 hr

☐ Rush Charges Authorized

☐ Special Report Limits or TRRP Report

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(Circle) HAND DELIVERED FEDEX UPS Tracking #

Analysis Request of Custody Record



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

648981
Page 3 of 4

Client Name:		COG-Artesia		Site Manager:		Sheldon Hitchcock	
Project Name:		Horned Owl Fed #3					
Project Location:		(county, state)		Project #:			
Invoice to:		Sheldon Hitchcock					
Receiving Laboratory:		Sampler Name:		Sheldon Hitchcock			
Comments:		X enco					

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING		MATRIX		PRESERVATIVE METHOD		# CONTAINERS	(C)omposite/(G)rab	TPH 8015M (GRO - DRO - MRO)	BTX 8021B	Chloride		
		YEAR	DATE	TIME	WATER	SOIL	HCL						HNO ₃	ICE
		2020												
	Bttn-21		10:40		X				1	X	X	X		
	Bttn-22		10:42						1	X	X	X		
	Bttn-23		10:44						1	X	X	X		
	Bttn-24		10:46						1	X	X	X		
	Bttn-25		10:48						1	X	X	X		
	Bttn-26		10:50						1	X	X	X		
	Bttn-27		10:52						1	X	X	X		
	Bttn-28		10:54						1	X	X	X		
	Bttn-29		10:56						1	X	X	X		
	Bttn-30		10:58						1	X	X	X		

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Sheldon Hitchcock	11/14/20	14:00	Sheldon Hitchcock	11/14/20	14:00
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

ORIGINAL COPY

LAB USE ONLY
Sample Temperature
1.4

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

(Circle) HAND DELIVERED FEDEX UPS Tracking #

648981



Sheldon Hitchcock

Project Location:	(County, State)	Project #:

Sheldon Hitchcock

Sheldon Hitchcock

Sheldon Hitchcock

SAMPLE IDENTIFICATION

CONTAINERS

(C)omposite/(G)rab

Chloride

(Circle or Specify Method No.)

Date: Time:

Date: Time:

Sample Temperature

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

☐ Special Report Limits or TRRP Report

(Circle) HAND DELIVERED FEDEX UPS Tracking #:

XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In

Client: COG Operating LLC

Date/ Time Received: 01.14.2020 02:00.00 PM

Work Order #: 648981

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)?	1.4
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	Yes
#5 Custody Seals intact on sample bottles?	Yes
#6 *Custody Seals Signed and dated?	Yes
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	No
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes
#13 Samples properly preserved?	Yes
#14 Sample container(s) intact?	Yes
#15 Sufficient sample amount for indicated test(s)?	Yes
#16 All samples received within hold time?	Yes
#17 Subcontract of sample(s)?	No
#18 Water VOC samples have zero headspace?	N/A

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

Analyst:

PH Device/Lot#:

Checklist completed by:


Elizabeth McClellan

Date: 01.14.2020

Checklist reviewed by:


Jessica Kramer

Date: 01.15.2020



Certificate of Analysis Summary 649772
COG Operating LLC, Artesia, NM
Project Name: Horned Owl Fed #3

Project Id: Sheldon Hitchcock
Contact: Eddy, NM
Project Location:

Date Received in Lab: Tue Jan-21-20 01:20 pm
Report Date: 22-JAN-20
Project Manager: Jessica Kramer

Analysis Requested		Lab Id:	649772-001	649772-002	649772-003	649772-004	649772-005	649772-006
		Field Id:	BTTM- 26	BTTM- 27	BTTM- 28	BTTM- 29	BTTM- 30	BTTM- 31
		Depth:						
		Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Sampled:	Jan-21-20 09:00	Jan-21-20 09:02	Jan-21-20 09:04	Jan-21-20 09:06	Jan-21-20 09:08	Jan-21-20 09:10
TPH By SW8015 Mod		Extracted:	Jan-21-20 15:00	Jan-21-20 15:00	Jan-21-20 15:00	Jan-21-20 15:00	Jan-21-20 15:00	Jan-21-20 15:00
		Analyzed:	Jan-21-20 16:39	Jan-21-20 16:39	Jan-21-20 16:59	Jan-21-20 16:59	Jan-21-20 17:19	Jan-21-20 17:19
		Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons			<50.1 50.1	<50.2 50.2	<50.1 50.1	<50.1 50.1	<50.1 50.1	<50.1 50.1
Diesel Range Organics			<50.1 50.1	<50.2 50.2	<50.1 50.1	<50.1 50.1	<50.1 50.1	<50.1 50.1
Motor Oil Range Hydrocarbons (MRO)			<50.1 50.1	<50.2 50.2	<50.1 50.1	<50.1 50.1	<50.1 50.1	<50.1 50.1
Total TPH			<50.1 50.1	<50.2 50.2	<50.1 50.1	<50.1 50.1	<50.1 50.1	<50.1 50.1

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

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Version: 1.9%

Jessica Kramer

Jessica Kramer
Project Assistant



Certificate of Analysis Summary 649772
COG Operating LLC, Artesia, NM
Project Name: Horned Owl Fed #3

Project Id: Sheldon Hitchcock
Contact: Eddy, NM
Project Location:

Date Received in Lab: Tue Jan-21-20 01:20 pm
Report Date: 22-JAN-20
Project Manager: Jessica Kramer

Analysis Requested		Lab Id: Field Id: Depth: Matrix: Sampled:	649772-007 BTM- 32 SOIL Jan-21-20 09:12	649772-008 SW-3 SOIL Jan-21-20 09:14			
TPH By SW8015 Mod		Extracted:	Jan-21-20 15:00	Jan-21-20 17:00			
		Analyzed:	Jan-21-20 17:38	Jan-21-20 18:18			
		Units/RL:	mg/kg RL	mg/kg RL			
Gasoline Range Hydrocarbons			<50.0 50.0	<50.0 50.0			
Diesel Range Organics			<50.0 50.0	<50.0 50.0			
Motor Oil Range Hydrocarbons (MRO)			<50.0 50.0	<50.0 50.0			
Total TPH			<50.0 50.0	<50.0 50.0			

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: 1.5%

Jessica Kramer

Jessica Kramer
Project Assistant

Analytical Report 649772

for COG Operating LLC

Project Manager: Sheldon Hitchcock

Horned Owl Fed #3

22-JAN-20

Collected By: Client



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

Xenco-Houston (EPA Lab Code: TX00122):

Texas (T104704215-19-30), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (19-037-0)

Xenco-Dallas (EPA Lab Code: TX01468):

Texas (TX104704295-19-22), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)

Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-21)

Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)

Xenco-Carlsbad (LELAP): Louisiana (05092)

Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)

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

Xenco-Tampa: Florida (E87429), North Carolina (483)



22-JAN-20

Project Manager: **Sheldon Hitchcock**

COG Operating LLC

2407 Pecos Avenue

Artesia, NM 88210

Reference: XENCO Report No(s): **649772**

Horned Owl Fed #3

Project Address: Eddy, 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) 649772. 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. 649772 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

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



Sample Cross Reference 649772

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
BTTM- 26	S	01-21-20 09:00		649772-001
BTTM- 27	S	01-21-20 09:02		649772-002
BTTM- 28	S	01-21-20 09:04		649772-003
BTTM- 29	S	01-21-20 09:06		649772-004
BTTM- 30	S	01-21-20 09:08		649772-005
BTTM- 31	S	01-21-20 09:10		649772-006
BTTM- 32	S	01-21-20 09:12		649772-007
SW-3	S	01-21-20 09:14		649772-008



CASE NARRATIVE

Client Name: COG Operating LLC

Project Name: Horned Owl Fed #3

Project ID:

Work Order Number(s): 649772

Report Date: 22-JAN-20

Date Received: 01/21/2020

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None



Certificate of Analytical Results 649772

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **BTTM- 26**

Matrix: Soil

Date Received: 01.21.20 13.20

Lab Sample Id: 649772-001

Date Collected: 01.21.20 09.00

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DTH

% Moisture:

Analyst: DTH

Date Prep: 01.21.20 15.00

Basis: Wet Weight

Seq Number: 3114012

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.1	50.1	mg/kg	01.21.20 16.39	U	1
Diesel Range Organics	C10C28DRO	<50.1	50.1	mg/kg	01.21.20 16.39	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	01.21.20 16.39	U	1
Total TPH	PHC635	<50.1	50.1	mg/kg	01.21.20 16.39	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	105	%	70-135	01.21.20 16.39		
o-Terphenyl	84-15-1	97	%	70-135	01.21.20 16.39		



Certificate of Analytical Results 649772

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **BTTM-27**

Matrix: Soil

Date Received: 01.21.20 13.20

Lab Sample Id: 649772-002

Date Collected: 01.21.20 09.02

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DTH

% Moisture:

Analyst: DTH

Date Prep: 01.21.20 15.00

Basis: Wet Weight

Seq Number: 3114012

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.2	50.2	mg/kg	01.21.20 16.39	U	1
Diesel Range Organics	C10C28DRO	<50.2	50.2	mg/kg	01.21.20 16.39	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	01.21.20 16.39	U	1
Total TPH	PHC635	<50.2	50.2	mg/kg	01.21.20 16.39	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	104	%	70-135	01.21.20 16.39		
o-Terphenyl	84-15-1	106	%	70-135	01.21.20 16.39		



Certificate of Analytical Results 649772

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **BTTM- 28**

Matrix: Soil

Date Received: 01.21.20 13.20

Lab Sample Id: 649772-003

Date Collected: 01.21.20 09.04

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DTH

% Moisture:

Analyst: DTH

Date Prep: 01.21.20 15.00

Basis: Wet Weight

Seq Number: 3114012

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.1	50.1	mg/kg	01.21.20 16.59	U	1
Diesel Range Organics	C10C28DRO	<50.1	50.1	mg/kg	01.21.20 16.59	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	01.21.20 16.59	U	1
Total TPH	PHC635	<50.1	50.1	mg/kg	01.21.20 16.59	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	108	%	70-135	01.21.20 16.59		
o-Terphenyl	84-15-1	100	%	70-135	01.21.20 16.59		



Certificate of Analytical Results 649772

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **BTTM-29**

Matrix: Soil

Date Received: 01.21.20 13.20

Lab Sample Id: 649772-004

Date Collected: 01.21.20 09.06

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DTH

% Moisture:

Analyst: DTH

Date Prep: 01.21.20 15.00

Basis: Wet Weight

Seq Number: 3114012

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.1	50.1	mg/kg	01.21.20 16.59	U	1
Diesel Range Organics	C10C28DRO	<50.1	50.1	mg/kg	01.21.20 16.59	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	01.21.20 16.59	U	1
Total TPH	PHC635	<50.1	50.1	mg/kg	01.21.20 16.59	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	105	%	70-135	01.21.20 16.59		
o-Terphenyl	84-15-1	106	%	70-135	01.21.20 16.59		



Certificate of Analytical Results 649772

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **BTTM- 30**

Matrix: Soil

Date Received: 01.21.20 13.20

Lab Sample Id: 649772-005

Date Collected: 01.21.20 09.08

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DTH

% Moisture:

Analyst: DTH

Date Prep: 01.21.20 15.00

Basis: Wet Weight

Seq Number: 3114012

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.1	50.1	mg/kg	01.21.20 17.19	U	1
Diesel Range Organics	C10C28DRO	<50.1	50.1	mg/kg	01.21.20 17.19	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	01.21.20 17.19	U	1
Total TPH	PHC635	<50.1	50.1	mg/kg	01.21.20 17.19	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	104	%	70-135	01.21.20 17.19		
o-Terphenyl	84-15-1	96	%	70-135	01.21.20 17.19		



Certificate of Analytical Results 649772

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **BTTM- 31**

Matrix: Soil

Date Received: 01.21.20 13.20

Lab Sample Id: 649772-006

Date Collected: 01.21.20 09.10

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DTH

% Moisture:

Analyst: DTH

Date Prep: 01.21.20 15.00

Basis: Wet Weight

Seq Number: 3114012

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.1	50.1	mg/kg	01.21.20 17.19	U	1
Diesel Range Organics	C10C28DRO	<50.1	50.1	mg/kg	01.21.20 17.19	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	01.21.20 17.19	U	1
Total TPH	PHC635	<50.1	50.1	mg/kg	01.21.20 17.19	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	100	%	70-135	01.21.20 17.19		
o-Terphenyl	84-15-1	101	%	70-135	01.21.20 17.19		



Certificate of Analytical Results 649772

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **BTTM- 32**

Matrix: Soil

Date Received: 01.21.20 13.20

Lab Sample Id: 649772-007

Date Collected: 01.21.20 09.12

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DTH

% Moisture:

Analyst: DTH

Date Prep: 01.21.20 15.00

Basis: Wet Weight

Seq Number: 3114012

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.0	50.0	mg/kg	01.21.20 17.38	U	1
Diesel Range Organics	C10C28DRO	<50.0	50.0	mg/kg	01.21.20 17.38	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	01.21.20 17.38	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	01.21.20 17.38	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	102	%	70-135	01.21.20 17.38		
o-Terphenyl	84-15-1	95	%	70-135	01.21.20 17.38		



Certificate of Analytical Results 649772

COG Operating LLC, Artesia, NM

Horned Owl Fed #3

Sample Id: **SW-3**
Lab Sample Id: 649772-008

Matrix: Soil
Date Collected: 01.21.20 09.14

Date Received: 01.21.20 13.20

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DTH

% Moisture:

Analyst: DTH

Date Prep: 01.21.20 17.00

Basis: Wet Weight

Seq Number: 3114016

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<50.0	50.0	mg/kg	01.21.20 18.18	U	1
Diesel Range Organics	C10C28DRO	<50.0	50.0	mg/kg	01.21.20 18.18	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	01.21.20 18.18	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	01.21.20 18.18	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	104	%	70-135	01.21.20 18.18		
o-Terphenyl	84-15-1	105	%	70-135	01.21.20 18.18		

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

Horned Owl Fed #3

Analytical Method: TPH By SW8015 Mod

Seq Number: 3114012

MB Sample Id: 7694888-1-BLK

Matrix: Solid

LCS Sample Id: 7694888-1-BKS

Prep Method: SW8015P

Date Prep: 01.21.20

LCSD Sample Id: 7694888-1-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	<50.0	1000	1100	110	1100	110	70-135	0	35	mg/kg	01.21.20 13:30	
Diesel Range Organics	<50.0	1000	1200	120	1160	116	70-135	3	35	mg/kg	01.21.20 13:30	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date	Flag		
1-Chlorooctane	101		116		121		70-135	%	01.21.20 13:30			
o-Terphenyl	102		107		116		70-135	%	01.21.20 13:30			

Analytical Method: TPH By SW8015 Mod

Seq Number: 3114016

MB Sample Id: 7694910-1-BLK

Matrix: Solid

LCS Sample Id: 7694910-1-BKS

Prep Method: SW8015P

Date Prep: 01.21.20

LCSD Sample Id: 7694910-1-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	<50.0	1000	1040	104	1080	108	70-135	4	35	mg/kg	01.21.20 17:58	
Diesel Range Organics	<50.0	1000	1050	105	1020	102	70-135	3	35	mg/kg	01.21.20 17:58	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date	Flag		
1-Chlorooctane	100		119		115		70-135	%	01.21.20 17:58			
o-Terphenyl	93		111		106		70-135	%	01.21.20 17:58			

Analytical Method: TPH By SW8015 Mod

Seq Number: 3114012

Matrix: Solid

MB Sample Id: 7694888-1-BLK

Prep Method: SW8015P

Date Prep: 01.21.20

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	01.21.20 13:10	

Analytical Method: TPH By SW8015 Mod

Seq Number: 3114016

Matrix: Solid

MB Sample Id: 7694910-1-BLK

Prep Method: SW8015P

Date Prep: 01.21.20

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	01.21.20 17:58	

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

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

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

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



QC Summary 649772

COG Operating LLC

Horned Owl Fed #3

Analytical Method: TPH By SW8015 Mod

Seq Number: 3114012

Parent Sample Id: 649716-001

Matrix: Soil

MS Sample Id: 649716-001 S

Prep Method: SW8015P

Date Prep: 01.21.20

MSD Sample Id: 649716-001 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	<49.9	998	1230	123	1170	117	70-135	5	35	mg/kg	01.21.20 13:49	
Diesel Range Organics	<49.9	998	1250	125	1150	115	70-135	8	35	mg/kg	01.21.20 13:49	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	129		118		70-135	%	01.21.20 13:49
o-Terphenyl	130		115		70-135	%	01.21.20 13:49

Analytical Method: TPH By SW8015 Mod

Seq Number: 3114016

Parent Sample Id: 649772-008

Matrix: Soil

MS Sample Id: 649772-008 S

Prep Method: SW8015P

Date Prep: 01.21.20

MSD Sample Id: 649772-008 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	<50.0	999	1190	119	1110	110	70-135	7	35	mg/kg	01.21.20 18:38	
Diesel Range Organics	<50.0	999	1140	114	1120	111	70-135	2	35	mg/kg	01.21.20 18:38	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	124		117		70-135	%	01.21.20 18:38
o-Terphenyl	111		114		70-135	%	01.21.20 18:38

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

10497-72



CONCHO

42

(Circle) HAND DELIVERED FEDEX UPS Tracking #:



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In



Client: COG Operating LLC

Date/ Time Received: 01/21/2020 01:20:00 PM

Work Order #: 649772

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)?	4.2
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	Yes
#5 Custody Seals intact on sample bottles?	Yes
#6 *Custody Seals Signed and dated?	Yes
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	No
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes
#13 Samples properly preserved?	Yes
#14 Sample container(s) intact?	Yes
#15 Sufficient sample amount for indicated test(s)?	Yes
#16 All samples received within hold time?	Yes
#17 Subcontract of sample(s)?	No
#18 Water VOC samples have zero headspace?	N/A

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

Analyst:

PH Device/Lot#:

Checklist completed by:

Elizabeth McClellan

Date: 01/21/2020

Checklist reviewed by:

Jessica Kramer

Date: 01/22/2020

APPENDIX D

S

SW

W

150

180

210

240

270

☉ 214°SW (T) ☉ 32.020075°, -104.243569° ±16ft ▲ 3408ft

COG OPERATING LLC
HORNED OWL FEDERAL #3H
UL B SEC.25-T26S-R26E
190' FNL & 1810' FEL
EDDY COUNTY, NM
API #30-015-42502
NMNM-114965

06 Dec 2019, 08:35:42

SW

W

NW

210

240

270

300

330

☼ 275°W (T) ☉ 32.020457°, -104.243141° ±16ft ▲ 3403ft



06 Dec 2019, 08:40:11

SW

W

NW

240

270

300

330

☉ 288°W (T) ● 32°1'13"N, 104°14'36"W ±32ft ▲ 3410ft



03 Mar 2020, 12:22:07

S

180

SW

210

240

W

270

☀ 226°SW (T) ● 32°1'13"N, 104°14'34"W ±13ft ▲ 3412ft



03 Mar 2020, 12:18:42

E

90

SE

120

150

S

180

210

☉ 145°SE (T) ● 32°1'14"N, 104°14'35"W ±13ft ▲ 3413ft



03 Mar 2020, 12:18:08