



December 10, 2018

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

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

**Re: Work Plan - Site Reclamation
SL Deep Federal #3 (9/15/18)
RP#: 1RP-5216
GPS: 32.63602, -103.80878
Unit Letter C, Section 30, Township 19 South, Range 32 East
Lea County, New Mexico**

Ms. Hernandez/Ms. Tucker,

COG Operating, LLC (COG) is pleased to submit the following work plan report in response to a release that occurred at the SL Deep Federal #3 flowline located in Unit Letter C, Section 30, Township 19 South and Range 32 East in Lea County, New Mexico.

BACKGROUND

The release was discovered on September 15, 2018 and a C-141 initial report was submitted and approved by the New Mexico Oil Conservation Division (NMOCD). The release was caused by a flowline corrosion on the pad and some migrated into the pasture. Approximately eight (8) barrels of produced water were released and recovered four (4) barrels of fluid. The initial C-141 is shown in Appendix A.

GROUNDWATER AND REGULATORY

According to the USGS groundwater data, there are two (2) reported water wells in Section 19 and 20, with reported depths of 102' and 345' below surface, respectively. The water well information is shown in Appendix B.

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

characterization evaluation data is summarized in Appendix B. The delineation and closure criteria are listed below:

General Site Characterization and Groundwater:

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

Delineation and Closure Criteria:

Remedial Action Levels (RALs)	
Chlorides	20,000 mg/kg
TPH (GRO and DRO and MRO)	2,500 mg/kg
TPH (GRO and DRO)	1,000 mg/kg
Benzene	10 mg/kg
Total BTEX	50 mg/kg

REMEDIATION PLAN

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

SITE RECLAMATION AND RESTORATION

Concho will perform the reclamation and revegetation in the pasture area per 19.15.29.13. Based on the assessment results, the reclamation will be achieved by removing the impacted soil to a depth of 4.0' below surface above the Table 1 Closure Criteria (Groundwater <50 feet) constituents. Sidewall samples will be collected to confirm the removal of chlorides greater than 600 mg/kg or background (whichever is greater), TPH (GRO/DRO/MRO) of 100 mg/kg, benzene of 10 mg/kg and total BTEX of 50 mg/kg. Approximately 300 cubic yards of material will be removed and hauled to proper disposal. The backfilled material will be non-contaminated with concentrations below 600 mg/kg chlorides and reseeded per landowner guidelines when appropriate.

Once completed, COG will prepare a closure report for the release. Should you have any questions or concerns on the closure report, please do not hesitate to contact me.

Sincerely,

Concho Operating, LLC



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

CC:

Figures

SL Deep Federal #1
Section 30, T19S, T32E, Unit C
Lea County, New Mexico
32.63602 - 103.80878

SL Deep Federal #1
Section 30, T19S, T32E, Unit C
Lea County, New Mexico
32.63602 - 103.80878

■ SITE LOCATION



COG Operating LLC

SL Deep Federal #1
Section 30, T19S, T32E, Unit C
Lea County, New Mexico
32.63602 -103.80878

Legend

- Feature 1
- Spill Area Pad
- Spill Area Pasture



Google Earth

© 2018 Google

200 ft

Tables

Table 1
COG Operating LLC.
SL Deep Federal #3 Tank Battery
Lea County, New Mexico

Sample ID	Sample Date	Soil Status		TPH (mg/kg)							Benzene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)	
		In-Situ	Removed	GRO	DRO	MRO	Total	GRO	DRO	Total				
GW >100														
NMOCD RAL Limits (mg/kg)				-	-	-	2,500	-	-	-	1,000	10	50	20,000
AH-1 (0-1')	9/27/2018	X		<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<0.00202	0.00239	2,990	
AH-1 (1-1.5')	9/27/2018	X		<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	0.00244	0.00476	406	
AH-1 (2-2.5')	9/27/2018	X											496	
AH-2 (0-1')	9/27/2018	X		<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	11,900	
AH-2 (1-1.5')	9/27/2018	X		<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<0.00201	<0.00201	152	
AH-2 (2-2.5')	9/27/2018	X											277	
AH-3 (0-1')	9/27/2018	X		<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<0.00202	<0.00202	3,170	
AH-3 (1-1.5')	9/27/2018	X		<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	6,540	
AH-3 (2-2.5')	9/27/2018	X											12,600	
AH-3 (3-3.5')	9/27/2018	X											13,600	
AH-3 (4-4.45')	9/27/2018	X											2,830	
South (0-1')	9/27/2018	X		<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<0.00202	<0.00202	<4.99	
East (0-1')	9/27/2018	X		<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<4.95	
West (0-1')	9/27/2018	X		<14.9	<14.9	<14.9	<14.9	<14.9	<14.9	<14.9	<0.00200	<0.00200	82	
North (0-1')	9/27/2018	X		<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	1,030	



Proposed Excavation Depth

(-)

Not Analyzed

Appendix A

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

State of New Mexico
Energy Minerals and Natural
Resources Department

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

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

Incident ID	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

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

Location of Release Source

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

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

Unit Letter	Section	Township	Range	County

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

Nature and Volume of Release

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

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

Cause of Release

Incident ID	
District RP	
Facility ID	
Application ID	

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

Initial Response

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

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

Incident ID	
District RP	1RP 5216
Facility ID	
Application ID	

Site Assessment/Characterization

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

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

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

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

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

Incident ID	
District RP	1RP 5216
Facility ID	
Application ID	

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

Printed Name: Ike Tavaréz Title: Senior HSE Supervisor

Signature: _____ Date: 12/11/18

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

OCD Only

Received by: _____ Date: _____

Incident ID	
District RP	1RP 5216
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: Ike Tavarez Title: Senior HSE Supervisor

Signature:  Date: 12/11/18

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

OCD Only

Received by: _____ Date: _____

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

Signature: _____ Date: _____

Appendix B



New Mexico Office of the State Engineer

Water Column/Average Depth to Water

(A CLW##### in the
POD suffix indicates the
POD has been replaced &
no longer serves a water
right file.)

(R=POD has been
replaced,
O=orphaned,
C=the file is
closed)

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

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

(In feet)

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	DepthWell	DepthWater	Water Column
CP 00075	O	CP	LE	2	4	34	19S	32E		617502	3609301	575		
CP 00563 POD1		CP	LE	1	1	2	19	19S	32E	612118	3613376*	300		
CP 00639 POD1		CP	LE	3	1	20	19S	32E		613029	3612880*	350	345	5
CP 00640 POD1		CP	LE	2	2	19	19S	32E		612621	3613280*	260	102	158
CP 00812 POD1		CP	LE	4	4	01	19S	32E		620623	3616973*	200		
CP 01656 POD1		CP	LE	3	4	3	17	19S	32E	613368	3613646	70		

Average Depth to Water: **223 feet**

Minimum Depth: **102 feet**

Maximum Depth: **345 feet**

Record Count: 6

PLSS Search:

Township: 19S **Range:** 32E

*UTM location was derived from PLSS - see Help

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

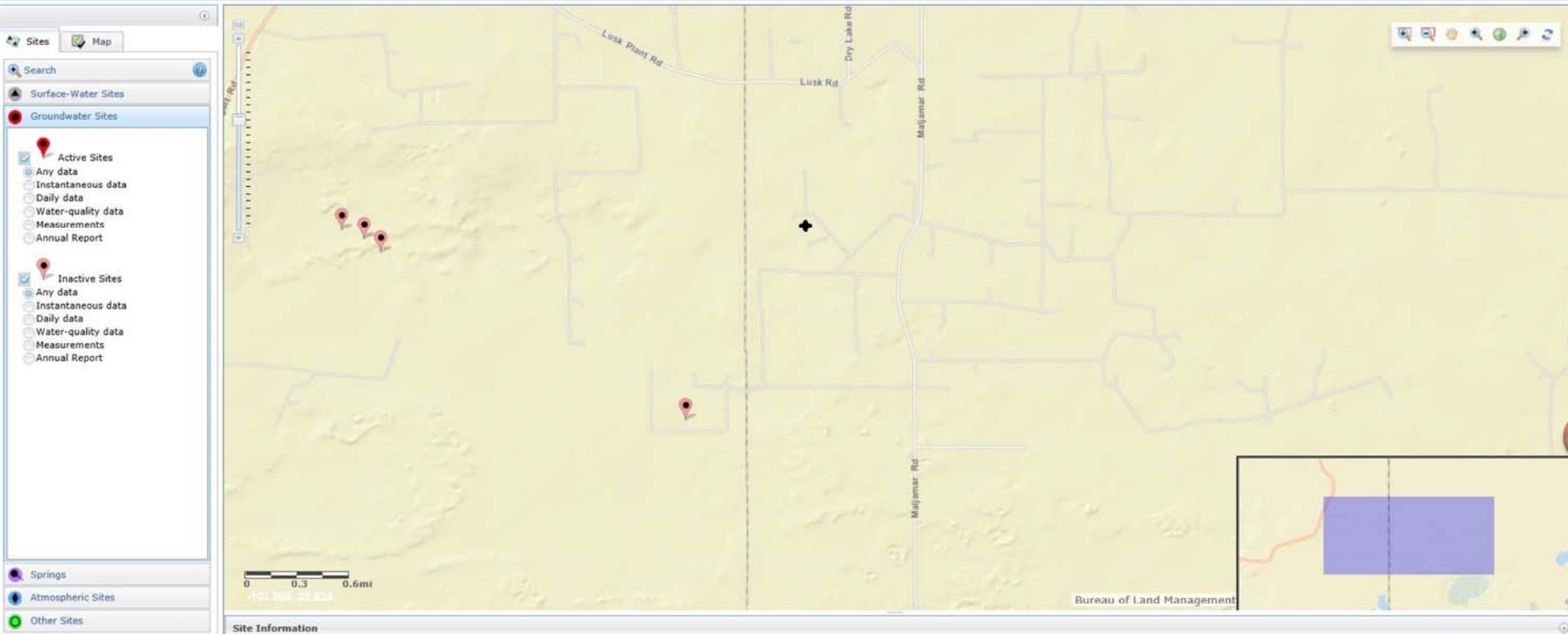
12/3/18 12:51 PM

WATER COLUMN/ AVERAGE DEPTH
TO WATER



National Water Information System: Mapper

[Help](#) [Info](#)





USGS Home
Contact USGS
Search USGS

National Water Information System: Web Interface

[USGS Water Resources](#)

Data Category: Geographic Area:

Click to hideNews Bulletins

- [Please see news on new formats](#)
- [Full News](#) 

Groundwater levels for the Nation

Search Results -- 1 sites found

site_no list =
• 323712103491001

Minimum number of levels = 1

[Save file of selected sites](#) to local disk for future upload

USGS 323712103491001 19S.32E.31.114

Available data for this site

Lea County, New Mexico

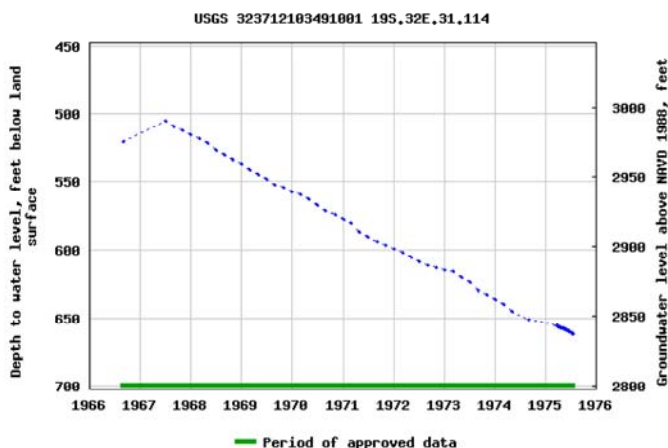
Hydrologic Unit Code 13060011

Latitude 32°37'12", Longitude 103°49'10" NAD27

Land-surface elevation 3,497 feet above NAVD88

Output formats

Table of data
Tab-separated data
Graph of data
Reselect period



Breaks in the plot represent a gap of at least one year between field measurements.

[Download a presentation-quality graph](#)

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[U.S. Department of the Interior](#) | [U.S. Geological Survey](#)

Title: Groundwater for USA: Water Levels

URL: [https://nwis.waterdata.usgs.gov/nwis/gwlevels?](https://nwis.waterdata.usgs.gov/nwis/gwlevels?site_no=323712103491001)



Page Contact Information: [USGS Water Data Support Team](#)

COG Operating LLC

SL Deep Federal #1
Section 30, T19S, T32E, Unit C
Lea County, New Mexico
32.63602 -103.80878

Legend

-  High
-  Low
-  Medium
-  SITE LOCATION


SITE LOCATION

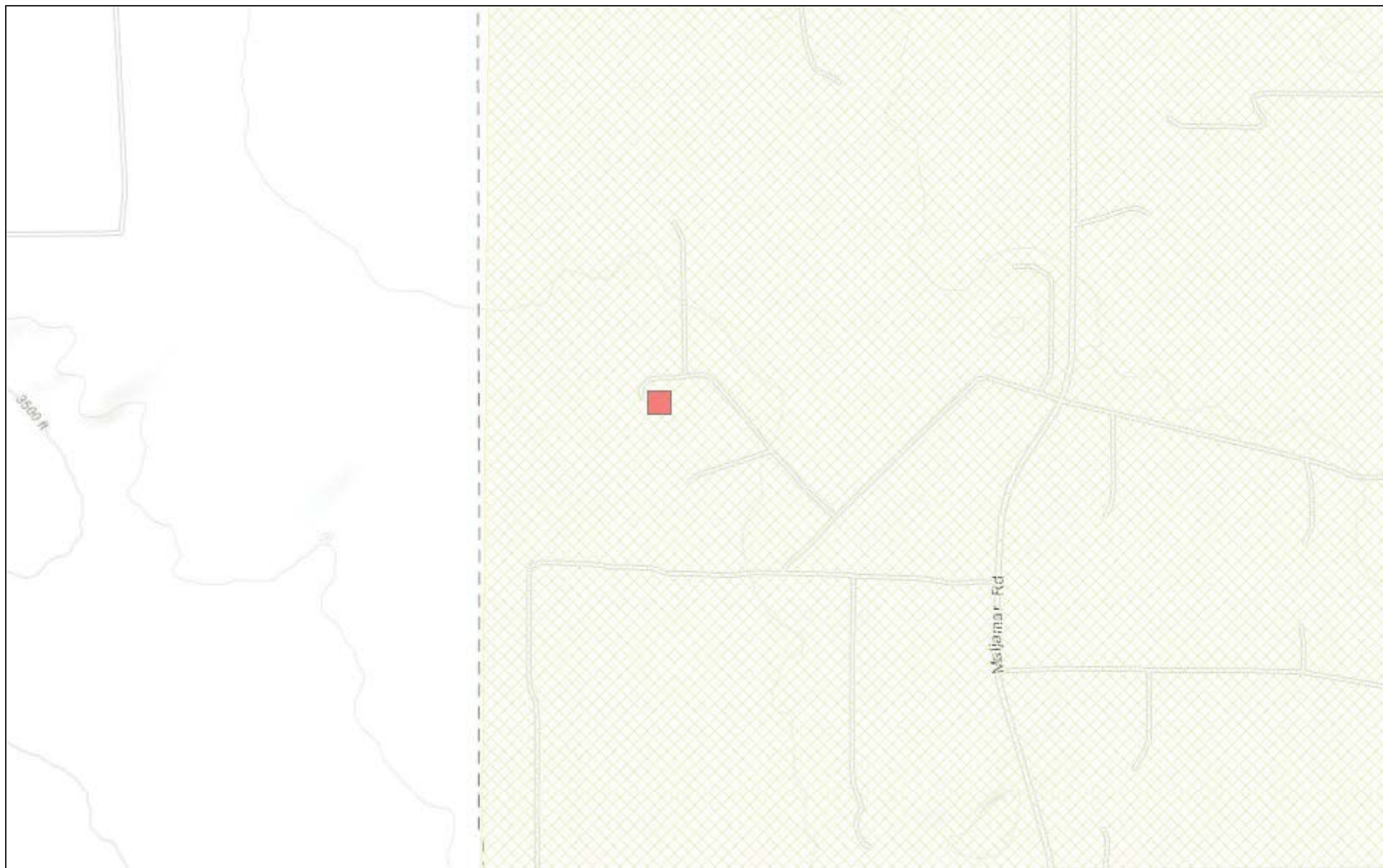
Google Earth

© 2018 Google



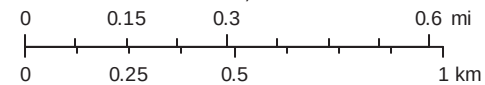
1 mi

New Mexico NFHL Data



December 4, 2018

1:18,056



FEMA
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS,

Appendix C



Certificate of Analysis Summary 600662

COG Operating LLC, Artesia, NM

Project Name: SL Deep Federal #3 Tank Battery (9/15/18)



Project Id:

Contact: Ike Tavaréz

Project Location: Lea County, New Mexico

Date Received in Lab: Fri Sep-28-18 10:10 am

Report Date: 02-OCT-18

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	600662-001	600662-002	600662-003	600662-004	600662-005	600662-006
	<i>Field Id:</i>	AH-1 (0-1')	AH-1 (1-1.5')	AH-1 (2-2.5')	AH-2 (0-1')	AH-2 (1-1.5')	AH-2 (2-2.5')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Sep-27-18 00:00	Sep-27-18 00:00	Sep-27-18 00:00	Sep-27-18 00:00	Sep-27-18 00:00	Sep-27-18 00:00
BTEX by EPA 8021B	<i>Extracted:</i>	Sep-30-18 08:30	Sep-30-18 08:30		Sep-30-18 08:30	Sep-30-18 08:30	
	<i>Analyzed:</i>	Sep-30-18 14:44	Sep-30-18 15:06		Sep-30-18 16:32	Sep-30-18 16:54	
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL		mg/kg RL	mg/kg RL	
Benzene		<0.00202 0.00202	0.00244 0.00199		<0.00200 0.00200	<0.00201 0.00201	
Toluene		0.00239 0.00202	0.00232 0.00199		<0.00200 0.00200	<0.00201 0.00201	
Ethylbenzene		<0.00202 0.00202	<0.00199 0.00199		<0.00200 0.00200	<0.00201 0.00201	
m,p-Xylenes		<0.00403 0.00403	<0.00398 0.00398		<0.00399 0.00399	<0.00402 0.00402	
o-Xylene		<0.00202 0.00202	<0.00199 0.00199		<0.00200 0.00200	<0.00201 0.00201	
Total Xylenes		<0.00202 0.00202	<0.00199 0.00199		<0.00200 0.00200	<0.00201 0.00201	
Total BTEX		0.00239 0.00202	0.00476 0.00199		<0.00200 0.00200	<0.00201 0.00201	
Chloride by EPA 300	<i>Extracted:</i>	Sep-28-18 15:30	Sep-28-18 15:30	Sep-28-18 15:30	Sep-28-18 15:30	Sep-28-18 15:30	Sep-28-18 15:30
	<i>Analyzed:</i>	Sep-28-18 19:33	Sep-28-18 19:39	Sep-28-18 19:44	Sep-28-18 19:50	Sep-28-18 19:56	Sep-28-18 20:01
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		2990 24.8	406 5.01	496 5.03	11900 99.0	152 5.03	277 5.00
TPH By SW8015 Mod	<i>Extracted:</i>	Sep-29-18 10:00	Sep-29-18 10:00		Sep-29-18 10:00	Sep-29-18 10:00	
	<i>Analyzed:</i>	Sep-30-18 23:06	Sep-30-18 23:25		Sep-30-18 23:43	Oct-01-18 00:02	
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL		mg/kg RL	mg/kg RL	
Gasoline Range Hydrocarbons		<15.0 15.0	<15.0 15.0		<15.0 15.0	<15.0 15.0	
Diesel Range Organics		<15.0 15.0	<15.0 15.0		<15.0 15.0	<15.0 15.0	
Motor Oil Range Hydrocarbons (MRO)		<15.0 15.0	<15.0 15.0		<15.0 15.0	<15.0 15.0	
Total TPH		<15.0 15.0	<15.0 15.0		<15.0 15.0	<15.0 15.0	

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

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

Jessica Kramer

Jessica Kramer
Project Assistant



Certificate of Analysis Summary 600662

COG Operating LLC, Artesia, NM

Project Name: SL Deep Federal #3 Tank Battery (9/15/18)



Project Id:

Contact: Ike Tavarez

Project Location: Lea County, New Mexico

Date Received in Lab: Fri Sep-28-18 10:10 am

Report Date: 02-OCT-18

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	600662-007	600662-008	600662-009	600662-010	600662-011	600662-012
	<i>Field Id:</i>	AH-3 (0-1')	AH-3 (1-1.5')	AH-3 (2-2.5')	AH-3 (3-3.5')	AH-3 (4-4.5')	South (0-1')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Sep-27-18 00:00	Sep-27-18 00:00	Sep-27-18 00:00	Sep-27-18 00:00	Sep-27-18 00:00	Sep-27-18 00:00
BTEX by EPA 8021B	<i>Extracted:</i>	Sep-30-18 08:30	Sep-30-18 08:30				Sep-30-18 10:00
	<i>Analyzed:</i>	Sep-30-18 17:15	Sep-30-18 17:37				Sep-30-18 22:57
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL				mg/kg RL
Benzene		<0.00202 0.00202	<0.00199 0.00199				<0.00202 0.00202
Toluene		<0.00202 0.00202	<0.00199 0.00199				<0.00202 0.00202
Ethylbenzene		<0.00202 0.00202	<0.00199 0.00199				<0.00202 0.00202
m,p-Xylenes		<0.00404 0.00404	<0.00398 0.00398				<0.00403 0.00403
o-Xylene		<0.00202 0.00202	<0.00199 0.00199				<0.00202 0.00202
Total Xylenes		<0.00202 0.00202	<0.00199 0.00199				<0.00202 0.00202
Total BTEX		<0.00202 0.00202	<0.00199 0.00199				<0.00202 0.00202
Chloride by EPA 300	<i>Extracted:</i>	Sep-28-18 17:00	Sep-28-18 17:00	Sep-28-18 17:00	Sep-28-18 17:00	Sep-28-18 17:00	Sep-28-18 17:00
	<i>Analyzed:</i>	Sep-28-18 20:52	Sep-28-18 20:58	Sep-28-18 21:04	Sep-28-18 21:09	Sep-28-18 21:26	Sep-28-18 20:35
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		3170 25.0	6540 49.6	12600 99.0	13600 99.0	2830 25.1	<4.99 4.99
TPH By SW8015 Mod	<i>Extracted:</i>	Sep-29-18 10:00	Sep-29-18 10:00				Sep-29-18 10:00
	<i>Analyzed:</i>	Oct-01-18 00:21	Oct-01-18 00:39				Oct-01-18 01:35
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL				mg/kg RL
Gasoline Range Hydrocarbons		<15.0 15.0	<15.0 15.0				<15.0 15.0
Diesel Range Organics		<15.0 15.0	<15.0 15.0				<15.0 15.0
Motor Oil Range Hydrocarbons (MRO)		<15.0 15.0	<15.0 15.0				<15.0 15.0
Total TPH		<15.0 15.0	<15.0 15.0				<15.0 15.0

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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Jessica Kramer

Jessica Kramer
Project Assistant



Certificate of Analysis Summary 600662

COG Operating LLC, Artesia, NM

Project Name: SL Deep Federal #3 Tank Battery (9/15/18)



Project Id:

Contact: Ike Tavaréz

Project Location: Lea County, New Mexico

Date Received in Lab: Fri Sep-28-18 10:10 am

Report Date: 02-OCT-18

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	600662-013	600662-014	600662-015			
	<i>Field Id:</i>	East (0-1')	West (0-1')	North (0-1')			
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL			
	<i>Sampled:</i>	Sep-27-18 00:00	Sep-27-18 00:00	Sep-27-18 00:00			
BTEX by EPA 8021B	<i>Extracted:</i>	Sep-30-18 10:00	Sep-30-18 10:00	Sep-30-18 10:00			
	<i>Analyzed:</i>	Sep-30-18 23:18	Sep-30-18 23:40	Oct-01-18 00:01			
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL			
Benzene		<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200			
Toluene		<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200			
Ethylbenzene		<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200			
m,p-Xylenes		<0.00398 0.00398	<0.00399 0.00399	<0.00401 0.00401			
o-Xylene		<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200			
Total Xylenes		<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200			
Total BTEX		<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200			
Chloride by EPA 300	<i>Extracted:</i>	Sep-28-18 17:00	Sep-28-18 17:00	Sep-28-18 17:00			
	<i>Analyzed:</i>	Sep-28-18 21:32	Sep-28-18 21:38	Sep-28-18 21:43			
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL			
Chloride		<4.95 4.95	82.1 4.96	1030 25.1			
TPH By SW8015 Mod	<i>Extracted:</i>	Sep-29-18 10:00	Sep-29-18 10:00	Sep-29-18 10:00			
	<i>Analyzed:</i>	Oct-01-18 01:54	Oct-01-18 02:13	Oct-01-18 02:31			
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL			
Gasoline Range Hydrocarbons		<15.0 15.0	<14.9 14.9	<15.0 15.0			
Diesel Range Organics		<15.0 15.0	<14.9 14.9	<15.0 15.0			
Motor Oil Range Hydrocarbons (MRO)		<15.0 15.0	<14.9 14.9	<15.0 15.0			
Total TPH		<15.0 15.0	<14.9 14.9	<15.0 15.0			

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

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Jessica Kramer

Jessica Kramer
Project Assistant

Analytical Report 600662

for COG Operating LLC

Project Manager: Ike Tavaréz

SL Deep Federal #3 Tank Battery (9/15/18)

02-OCT-18

Collected By: Client



1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):

Texas (T104704215-18-27), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):

Texas (T104704295-18-17), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-13)

Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-18-17)

Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-16)

Xenco-San Antonio (EPA Lab Code: TNi02385): Texas (T104704534-18-4)

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

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

Xenco-Atlanta (LELAP Lab ID #04176)

Xenco-Tampa: Florida (E87429)

Xenco-Lakeland: Florida (E84098)



02-OCT-18

Project Manager: **Ike Tavaréz**
COG Operating LLC
2407 Pecos Avenue
Artesia, NM 88210

Reference: XENCO Report No(s): **600662**
SL Deep Federal #3 Tank Battery (9/15/18)
Project Address: Lea County, New Mexico

Ike Tavaréz:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 600662. 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. 600662 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

Jessica Kramer
Project Assistant

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Sample Cross Reference 600662



COG Operating LLC, Artesia, NM

SL Deep Federal #3 Tank Battery (9/15/18)

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
AH-1 (0-1')	S	09-27-18 00:00		600662-001
AH-1 (1-1.5')	S	09-27-18 00:00		600662-002
AH-1 (2-2.5')	S	09-27-18 00:00		600662-003
AH-2 (0-1')	S	09-27-18 00:00		600662-004
AH-2 (1-1.5')	S	09-27-18 00:00		600662-005
AH-2 (2-2.5')	S	09-27-18 00:00		600662-006
AH-3 (0-1')	S	09-27-18 00:00		600662-007
AH-3 (1-1.5')	S	09-27-18 00:00		600662-008
AH-3 (2-2.5')	S	09-27-18 00:00		600662-009
AH-3 (3-3.5')	S	09-27-18 00:00		600662-010
AH-3 (4-4.5')	S	09-27-18 00:00		600662-011
South (0-1')	S	09-27-18 00:00		600662-012
East (0-1')	S	09-27-18 00:00		600662-013
West (0-1')	S	09-27-18 00:00		600662-014
North (0-1')	S	09-27-18 00:00		600662-015



CASE NARRATIVE

Client Name: COG Operating LLC

Project Name: SL Deep Federal #3 Tank Battery (9/15/18)

Project ID:
Work Order Number(s): 600662

Report Date: 02-OCT-18
Date Received: 09/28/2018

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3064879 BTEX by EPA 8021B

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

Batch: LBA-3064881 BTEX by EPA 8021B

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

Lab Sample ID 600662-012 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). o-Xylene recovered below QC limits in the Matrix Spike. Ethylbenzene, Toluene, m,p-Xylenes recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 600662-012, -013, -014, -015.

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



Certificate of Analytical Results 600662



COG Operating LLC, Artesia, NM SL Deep Federal #3 Tank Battery (9/15/18)

Sample Id: **AH-1 (0-1')** Matrix: Soil Date Received: 09.28.18 10.10
Lab Sample Id: 600662-001 Date Collected: 09.27.18 00.00
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Tech: CHE % Moisture:
Analyst: CHE Date Prep: 09.28.18 15.30 Basis: Wet Weight
Seq Number: 3064849

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2990	24.8	mg/kg	09.28.18 19.33		5

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.29.18 10.00 Basis: Wet Weight
Seq Number: 3064935

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	09.30.18 23.06	U	1
Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	09.30.18 23.06	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	09.30.18 23.06	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.30.18 23.06	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	98	%	70-135	09.30.18 23.06	
o-Terphenyl	84-15-1	102	%	70-135	09.30.18 23.06	



Certificate of Analytical Results 600662



COG Operating LLC, Artesia, NM SL Deep Federal #3 Tank Battery (9/15/18)

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

Matrix: Soil

Date Received: 09.28.18 10.10

Lab Sample Id: 600662-001

Date Collected: 09.27.18 00.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.30.18 08.30

Basis: Wet Weight

Seq Number: 3064879

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	09.30.18 14.44	U	1
Toluene	108-88-3	0.00239	0.00202	mg/kg	09.30.18 14.44		1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	09.30.18 14.44	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	09.30.18 14.44	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	09.30.18 14.44	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	09.30.18 14.44	U	1
Total BTEX		0.00239	0.00202	mg/kg	09.30.18 14.44		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	109	%	70-130	09.30.18 14.44		
4-Bromofluorobenzene	460-00-4	96	%	70-130	09.30.18 14.44		



Certificate of Analytical Results 600662



COG Operating LLC, Artesia, NM SL Deep Federal #3 Tank Battery (9/15/18)

Sample Id: **AH-1 (1-1.5')** Matrix: Soil Date Received: 09.28.18 10.10
Lab Sample Id: 600662-002 Date Collected: 09.27.18 00.00
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Tech: CHE % Moisture:
Analyst: CHE Date Prep: 09.28.18 15.30 Basis: Wet Weight
Seq Number: 3064849

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	406	5.01	mg/kg	09.28.18 19.39		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.29.18 10.00 Basis: Wet Weight
Seq Number: 3064935

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	09.30.18 23.25	U	1
Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	09.30.18 23.25	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	09.30.18 23.25	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.30.18 23.25	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	92	%	70-135	09.30.18 23.25	
o-Terphenyl	84-15-1	95	%	70-135	09.30.18 23.25	



Certificate of Analytical Results 600662



COG Operating LLC, Artesia, NM SL Deep Federal #3 Tank Battery (9/15/18)

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

Matrix: Soil

Date Received: 09.28.18 10.10

Lab Sample Id: 600662-002

Date Collected: 09.27.18 00.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.30.18 08.30

Basis: Wet Weight

Seq Number: 3064879

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	0.00244	0.00199	mg/kg	09.30.18 15.06		1
Toluene	108-88-3	0.00232	0.00199	mg/kg	09.30.18 15.06		1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	09.30.18 15.06	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	09.30.18 15.06	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	09.30.18 15.06	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	09.30.18 15.06	U	1
Total BTEX		0.00476	0.00199	mg/kg	09.30.18 15.06		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	94	%	70-130	09.30.18 15.06		
1,4-Difluorobenzene	540-36-3	102	%	70-130	09.30.18 15.06		



Certificate of Analytical Results 600662



COG Operating LLC, Artesia, NM SL Deep Federal #3 Tank Battery (9/15/18)

Sample Id: **AH-1 (2-2.5')**

Matrix: Soil

Date Received: 09.28.18 10.10

Lab Sample Id: 600662-003

Date Collected: 09.27.18 00.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.28.18 15.30

Basis: Wet Weight

Seq Number: 3064849

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	496	5.03	mg/kg	09.28.18 19.44		1



Certificate of Analytical Results 600662



COG Operating LLC, Artesia, NM SL Deep Federal #3 Tank Battery (9/15/18)

Sample Id: **AH-2 (0-1')** Matrix: Soil Date Received: 09.28.18 10.10
Lab Sample Id: 600662-004 Date Collected: 09.27.18 00.00
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Tech: CHE % Moisture:
Analyst: CHE Date Prep: 09.28.18 15.30 Basis: Wet Weight
Seq Number: 3064849

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	11900	99.0	mg/kg	09.28.18 19.50		20

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.29.18 10.00 Basis: Wet Weight
Seq Number: 3064935

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	09.30.18 23.43	U	1
Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	09.30.18 23.43	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	09.30.18 23.43	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	09.30.18 23.43	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	92	%	70-135	09.30.18 23.43		
o-Terphenyl	84-15-1	97	%	70-135	09.30.18 23.43		



Certificate of Analytical Results 600662



COG Operating LLC, Artesia, NM SL Deep Federal #3 Tank Battery (9/15/18)

Sample Id: **AH-2 (0-1')**

Matrix: Soil

Date Received: 09.28.18 10.10

Lab Sample Id: 600662-004

Date Collected: 09.27.18 00.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.30.18 08.30

Basis: Wet Weight

Seq Number: 3064879

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.30.18 16.32	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.30.18 16.32	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.30.18 16.32	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	09.30.18 16.32	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.30.18 16.32	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.30.18 16.32	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.30.18 16.32	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	94	%	70-130	09.30.18 16.32		
1,4-Difluorobenzene	540-36-3	106	%	70-130	09.30.18 16.32		



Certificate of Analytical Results 600662



COG Operating LLC, Artesia, NM SL Deep Federal #3 Tank Battery (9/15/18)

Sample Id: **AH-2 (1-1.5')** Matrix: Soil Date Received: 09.28.18 10.10
Lab Sample Id: 600662-005 Date Collected: 09.27.18 00.00
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Tech: CHE % Moisture:
Analyst: CHE Date Prep: 09.28.18 15.30 Basis: Wet Weight
Seq Number: 3064849

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	152	5.03	mg/kg	09.28.18 19.56		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.29.18 10.00 Basis: Wet Weight
Seq Number: 3064935

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	10.01.18 00.02	U	1
Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	10.01.18 00.02	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	10.01.18 00.02	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	10.01.18 00.02	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	93	%	70-135	10.01.18 00.02	
o-Terphenyl	84-15-1	99	%	70-135	10.01.18 00.02	



Certificate of Analytical Results 600662



COG Operating LLC, Artesia, NM SL Deep Federal #3 Tank Battery (9/15/18)

Sample Id: **AH-2 (1-1.5')**

Matrix: Soil

Date Received: 09.28.18 10.10

Lab Sample Id: 600662-005

Date Collected: 09.27.18 00.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.30.18 08.30

Basis: Wet Weight

Seq Number: 3064879

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	09.30.18 16.54	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	09.30.18 16.54	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	09.30.18 16.54	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	09.30.18 16.54	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	09.30.18 16.54	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	09.30.18 16.54	U	1
Total BTEX		<0.00201	0.00201	mg/kg	09.30.18 16.54	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	106	%	70-130	09.30.18 16.54		
4-Bromofluorobenzene	460-00-4	82	%	70-130	09.30.18 16.54		



Certificate of Analytical Results 600662



COG Operating LLC, Artesia, NM SL Deep Federal #3 Tank Battery (9/15/18)

Sample Id: **AH-2 (2-2.5')** Matrix: Soil Date Received: 09.28.18 10.10
Lab Sample Id: 600662-006 Date Collected: 09.27.18 00.00
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Tech: CHE % Moisture:
Analyst: CHE Date Prep: 09.28.18 15.30 Basis: Wet Weight
Seq Number: 3064849

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	277	5.00	mg/kg	09.28.18 20.01		1



Certificate of Analytical Results 600662



COG Operating LLC, Artesia, NM SL Deep Federal #3 Tank Battery (9/15/18)

Sample Id: **AH-3 (0-1')** Matrix: Soil Date Received: 09.28.18 10.10
Lab Sample Id: 600662-007 Date Collected: 09.27.18 00.00
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Tech: CHE % Moisture:
Analyst: CHE Date Prep: 09.28.18 17.00 Basis: Wet Weight
Seq Number: 3064851

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3170	25.0	mg/kg	09.28.18 20.52		5

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.29.18 10.00 Basis: Wet Weight
Seq Number: 3064935

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	10.01.18 00.21	U	1
Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	10.01.18 00.21	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	10.01.18 00.21	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	10.01.18 00.21	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	94	%	70-135	10.01.18 00.21	
o-Terphenyl	84-15-1	100	%	70-135	10.01.18 00.21	



Certificate of Analytical Results 600662



COG Operating LLC, Artesia, NM SL Deep Federal #3 Tank Battery (9/15/18)

Sample Id: **AH-3 (0-1')**

Matrix: Soil

Date Received: 09.28.18 10.10

Lab Sample Id: 600662-007

Date Collected: 09.27.18 00.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.30.18 08.30

Basis: Wet Weight

Seq Number: 3064879

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	09.30.18 17.15	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	09.30.18 17.15	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	09.30.18 17.15	U	1
m,p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	09.30.18 17.15	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	09.30.18 17.15	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	09.30.18 17.15	U	1
Total BTEX		<0.00202	0.00202	mg/kg	09.30.18 17.15	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	101	%	70-130	09.30.18 17.15		
4-Bromofluorobenzene	460-00-4	93	%	70-130	09.30.18 17.15		



Certificate of Analytical Results 600662



COG Operating LLC, Artesia, NM SL Deep Federal #3 Tank Battery (9/15/18)

Sample Id: **AH-3 (1-1.5')** Matrix: Soil Date Received: 09.28.18 10.10
Lab Sample Id: 600662-008 Date Collected: 09.27.18 00.00
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Tech: CHE % Moisture:
Analyst: CHE Date Prep: 09.28.18 17.00 Basis: Wet Weight
Seq Number: 3064851

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	6540	49.6	mg/kg	09.28.18 20.58		10

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.29.18 10.00 Basis: Wet Weight
Seq Number: 3064935

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	10.01.18 00.39	U	1
Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	10.01.18 00.39	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	10.01.18 00.39	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	10.01.18 00.39	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	96	%	70-135	10.01.18 00.39	
o-Terphenyl	84-15-1	99	%	70-135	10.01.18 00.39	



Certificate of Analytical Results 600662



COG Operating LLC, Artesia, NM SL Deep Federal #3 Tank Battery (9/15/18)

Sample Id: **AH-3 (1-1.5')**

Matrix: Soil

Date Received: 09.28.18 10.10

Lab Sample Id: 600662-008

Date Collected: 09.27.18 00.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.30.18 08.30

Basis: Wet Weight

Seq Number: 3064879

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	09.30.18 17.37	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	09.30.18 17.37	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	09.30.18 17.37	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	09.30.18 17.37	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	09.30.18 17.37	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	09.30.18 17.37	U	1
Total BTEX		<0.00199	0.00199	mg/kg	09.30.18 17.37	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	96	%	70-130	09.30.18 17.37		
1,4-Difluorobenzene	540-36-3	109	%	70-130	09.30.18 17.37		



Certificate of Analytical Results 600662



COG Operating LLC, Artesia, NM SL Deep Federal #3 Tank Battery (9/15/18)

Sample Id: **AH-3 (2-2.5')**

Matrix: Soil

Date Received: 09.28.18 10.10

Lab Sample Id: 600662-009

Date Collected: 09.27.18 00.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.28.18 17.00

Basis: Wet Weight

Seq Number: 3064851

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	12600	99.0	mg/kg	09.28.18 21.04		20



Certificate of Analytical Results 600662



COG Operating LLC, Artesia, NM SL Deep Federal #3 Tank Battery (9/15/18)

Sample Id: **AH-3 (3-3.5')**

Matrix: Soil

Date Received: 09.28.18 10.10

Lab Sample Id: 600662-010

Date Collected: 09.27.18 00.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.28.18 17.00

Basis: Wet Weight

Seq Number: 3064851

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	13600	99.0	mg/kg	09.28.18 21.09		20



Certificate of Analytical Results 600662



COG Operating LLC, Artesia, NM SL Deep Federal #3 Tank Battery (9/15/18)

Sample Id: **AH-3 (4-4.5')**

Matrix: Soil

Date Received: 09.28.18 10.10

Lab Sample Id: 600662-011

Date Collected: 09.27.18 00.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.28.18 17.00

Basis: Wet Weight

Seq Number: 3064851

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2830	25.1	mg/kg	09.28.18 21.26		5



Certificate of Analytical Results 600662



COG Operating LLC, Artesia, NM SL Deep Federal #3 Tank Battery (9/15/18)

Sample Id: **South (0-1')** Matrix: Soil Date Received: 09.28.18 10.10
Lab Sample Id: 600662-012 Date Collected: 09.27.18 00.00
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Tech: CHE % Moisture:
Analyst: CHE Date Prep: 09.28.18 17.00 Basis: Wet Weight
Seq Number: 3064851

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.99	4.99	mg/kg	09.28.18 20.35	U	1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.29.18 10.00 Basis: Wet Weight
Seq Number: 3064935

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	10.01.18 01.35	U	1
Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	10.01.18 01.35	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	10.01.18 01.35	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	10.01.18 01.35	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	92	%	70-135	10.01.18 01.35	
o-Terphenyl	84-15-1	98	%	70-135	10.01.18 01.35	



Certificate of Analytical Results 600662



COG Operating LLC, Artesia, NM SL Deep Federal #3 Tank Battery (9/15/18)

Sample Id: **South (0-1')**

Matrix: Soil

Date Received: 09.28.18 10.10

Lab Sample Id: 600662-012

Date Collected: 09.27.18 00.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.30.18 10.00

Basis: Wet Weight

Seq Number: 3064881

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	09.30.18 22.57	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	09.30.18 22.57	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	09.30.18 22.57	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	09.30.18 22.57	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	09.30.18 22.57	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	09.30.18 22.57	U	1
Total BTEX		<0.00202	0.00202	mg/kg	09.30.18 22.57	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	97	%	70-130	09.30.18 22.57		
4-Bromofluorobenzene	460-00-4	92	%	70-130	09.30.18 22.57		



Certificate of Analytical Results 600662



COG Operating LLC, Artesia, NM SL Deep Federal #3 Tank Battery (9/15/18)

Sample Id: **East (0-1')** Matrix: Soil Date Received: 09.28.18 10.10
Lab Sample Id: 600662-013 Date Collected: 09.27.18 00.00
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Tech: CHE % Moisture:
Analyst: CHE Date Prep: 09.28.18 17.00 Basis: Wet Weight
Seq Number: 3064851

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.95	4.95	mg/kg	09.28.18 21.32	U	1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.29.18 10.00 Basis: Wet Weight
Seq Number: 3064935

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	10.01.18 01.54	U	1
Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	10.01.18 01.54	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	10.01.18 01.54	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	10.01.18 01.54	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	93	%	70-135	10.01.18 01.54	
o-Terphenyl	84-15-1	96	%	70-135	10.01.18 01.54	



Certificate of Analytical Results 600662



COG Operating LLC, Artesia, NM SL Deep Federal #3 Tank Battery (9/15/18)

Sample Id: **East (0-1')**
Lab Sample Id: 600662-013

Matrix: Soil
Date Collected: 09.27.18 00.00

Date Received: 09.28.18 10.10

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.30.18 10.00

Basis: Wet Weight

Seq Number: 3064881

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	09.30.18 23.18	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	09.30.18 23.18	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	09.30.18 23.18	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	09.30.18 23.18	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	09.30.18 23.18	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	09.30.18 23.18	U	1
Total BTEX		<0.00199	0.00199	mg/kg	09.30.18 23.18	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	99	%	70-130	09.30.18 23.18		
4-Bromofluorobenzene	460-00-4	98	%	70-130	09.30.18 23.18		



Certificate of Analytical Results 600662



COG Operating LLC, Artesia, NM SL Deep Federal #3 Tank Battery (9/15/18)

Sample Id: **West (0-1')** Matrix: Soil Date Received: 09.28.18 10.10
Lab Sample Id: 600662-014 Date Collected: 09.27.18 00.00
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Tech: CHE % Moisture:
Analyst: CHE Date Prep: 09.28.18 17.00 Basis: Wet Weight
Seq Number: 3064851

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	82.1	4.96	mg/kg	09.28.18 21.38		1

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.29.18 10.00 Basis: Wet Weight
Seq Number: 3064935

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<14.9	14.9	mg/kg	10.01.18 02.13	U	1
Diesel Range Organics	C10C28DRO	<14.9	14.9	mg/kg	10.01.18 02.13	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<14.9	14.9	mg/kg	10.01.18 02.13	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	10.01.18 02.13	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	95	%	70-135	10.01.18 02.13		
o-Terphenyl	84-15-1	98	%	70-135	10.01.18 02.13		



Certificate of Analytical Results 600662



COG Operating LLC, Artesia, NM SL Deep Federal #3 Tank Battery (9/15/18)

Sample Id: **West (0-1')**

Matrix: Soil

Date Received: 09.28.18 10.10

Lab Sample Id: 600662-014

Date Collected: 09.27.18 00.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.30.18 10.00

Basis: Wet Weight

Seq Number: 3064881

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	09.30.18 23.40	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	09.30.18 23.40	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	09.30.18 23.40	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	09.30.18 23.40	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	09.30.18 23.40	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	09.30.18 23.40	U	1
Total BTEX		<0.00200	0.00200	mg/kg	09.30.18 23.40	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	97	%	70-130	09.30.18 23.40		
1,4-Difluorobenzene	540-36-3	114	%	70-130	09.30.18 23.40		



Certificate of Analytical Results 600662



COG Operating LLC, Artesia, NM SL Deep Federal #3 Tank Battery (9/15/18)

Sample Id: **North (0-1')** Matrix: Soil Date Received: 09.28.18 10.10
Lab Sample Id: 600662-015 Date Collected: 09.27.18 00.00
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Tech: CHE % Moisture:
Analyst: CHE Date Prep: 09.28.18 17.00 Basis: Wet Weight
Seq Number: 3064851

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1030	25.1	mg/kg	09.28.18 21.43		5

Analytical Method: TPH By SW8015 Mod Prep Method: TX1005P
Tech: ARM % Moisture:
Analyst: ARM Date Prep: 09.29.18 10.00 Basis: Wet Weight
Seq Number: 3064935

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	10.01.18 02.31	U	1
Diesel Range Organics	C10C28DRO	<15.0	15.0	mg/kg	10.01.18 02.31	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	10.01.18 02.31	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	10.01.18 02.31	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	94	%	70-135	10.01.18 02.31	
o-Terphenyl	84-15-1	98	%	70-135	10.01.18 02.31	



Certificate of Analytical Results 600662



COG Operating LLC, Artesia, NM SL Deep Federal #3 Tank Battery (9/15/18)

Sample Id: **North (0-1')**

Matrix: Soil

Date Received: 09.28.18 10.10

Lab Sample Id: 600662-015

Date Collected: 09.27.18 00.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 09.30.18 10.00

Basis: Wet Weight

Seq Number: 3064881

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.01.18 00.01	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.01.18 00.01	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.01.18 00.01	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	10.01.18 00.01	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.01.18 00.01	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.01.18 00.01	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.01.18 00.01	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	100	%	70-130	10.01.18 00.01		
1,4-Difluorobenzene	540-36-3	103	%	70-130	10.01.18 00.01		

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

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit

SDL Sample Detection Limit

LOD Limit of Detection

PQL Practical Quantitation Limit

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
SL Deep Federal #3 Tank Battery (9/15/18)

Analytical Method: Chloride by EPA 300

Seq Number: 3064849

MB Sample Id: 7663245-1-BLK

Matrix: Solid

LCS Sample Id: 7663245-1-BKS

Prep Method: E300P

Date Prep: 09.28.18

LCSD Sample Id: 7663245-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	245	98	262	105	90-110	7	20	mg/kg	09.28.18 16:58	

Analytical Method: Chloride by EPA 300

Seq Number: 3064851

MB Sample Id: 7663246-1-BLK

Matrix: Solid

LCS Sample Id: 7663246-1-BKS

Prep Method: E300P

Date Prep: 09.28.18

LCSD Sample Id: 7663246-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	245	98	247	99	90-110	1	20	mg/kg	09.28.18 20:24	

Analytical Method: Chloride by EPA 300

Seq Number: 3064849

Parent Sample Id: 600660-001

Matrix: Soil

MS Sample Id: 600660-001 S

Prep Method: E300P

Date Prep: 09.28.18

MSD Sample Id: 600660-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.855	249	269	108	269	108	90-110	0	20	mg/kg	09.28.18 18:53	

Analytical Method: Chloride by EPA 300

Seq Number: 3064849

Parent Sample Id: 600665-001

Matrix: Soil

MS Sample Id: 600665-001 S

Prep Method: E300P

Date Prep: 09.28.18

MSD Sample Id: 600665-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.850	248	257	104	255	103	90-110	1	20	mg/kg	09.28.18 17:15	

Analytical Method: Chloride by EPA 300

Seq Number: 3064851

Parent Sample Id: 600661-002

Matrix: Soil

MS Sample Id: 600661-002 S

Prep Method: E300P

Date Prep: 09.28.18

MSD Sample Id: 600661-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	56.0	248	334	112	324	108	90-110	3	20	mg/kg	09.28.18 22:01	X

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



QC Summary 600662

COG Operating LLC SL Deep Federal #3 Tank Battery (9/15/18)

Analytical Method: Chloride by EPA 300

Seq Number: 3064851

Parent Sample Id: 600662-012

Matrix: Soil

MS Sample Id: 600662-012 S

Prep Method: E300P

Date Prep: 09.28.18

MSD Sample Id: 600662-012 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.857	250	265	106	266	106	90-110	0	20	mg/kg	09.28.18 20:41	

Analytical Method: TPH By SW8015 Mod

Seq Number: 3064935

MB Sample Id: 7663258-1-BLK

Matrix: Solid

LCS Sample Id: 7663258-1-BKS

Prep Method: TX1005P

Date Prep: 09.29.18

LCSD Sample Id: 7663258-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons	<8.00	1000	966	97	967	97	70-135	0	20	mg/kg	09.30.18 20:38	
Diesel Range Organics	<8.13	1000	996	100	1000	100	70-135	0	20	mg/kg	09.30.18 20:38	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	102		116		112		70-135	%	09.30.18 20:38
o-Terphenyl	107		103		106		70-135	%	09.30.18 20:38

Analytical Method: TPH By SW8015 Mod

Seq Number: 3064935

Parent Sample Id: 600594-001

Matrix: Soil

MS Sample Id: 600594-001 S

Prep Method: TX1005P

Date Prep: 09.29.18

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	Limits	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons	<8.00	1000	911	91	70-135	mg/kg	09.30.18 21:34	
Gasoline Range Hydrocarbons	<8.00	1000	921	92	70-135	mg/kg	09.30.18 21:52	
Diesel Range Organics	51.3	1000	971	92	70-135	mg/kg	09.30.18 21:34	
Diesel Range Organics	51.3	1000	989	94	70-135	mg/kg	09.30.18 21:52	

Surrogate	MS %Rec	MS Flag	Limits	Units	Analysis Date
1-Chlorooctane	127		70-135	%	09.30.18 21:34
1-Chlorooctane	128		70-135	%	09.30.18 21:52
o-Terphenyl	107		70-135	%	09.30.18 21:34
o-Terphenyl	103		70-135	%	09.30.18 21:52

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
SL Deep Federal #3 Tank Battery (9/15/18)

Analytical Method: BTEX by EPA 8021B

Seq Number: 3064879

MB Sample Id: 7663274-1-BLK

Matrix: Solid

LCS Sample Id: 7663274-1-BKS

Prep Method: SW5030B

Date Prep: 09.30.18

LCSD Sample Id: 7663274-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00202	0.101	0.0819	81	0.0812	80	70-130	1	35	mg/kg	09.30.18 10:05	
Toluene	<0.00202	0.101	0.0759	75	0.0786	78	70-130	3	35	mg/kg	09.30.18 10:05	
Ethylbenzene	<0.00202	0.101	0.0862	85	0.0904	90	70-130	5	35	mg/kg	09.30.18 10:05	
m,p-Xylenes	<0.00403	0.202	0.169	84	0.179	89	70-130	6	35	mg/kg	09.30.18 10:05	
o-Xylene	<0.00202	0.101	0.0858	85	0.0904	90	70-130	5	35	mg/kg	09.30.18 10:05	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits			Units	Analysis Date	
1,4-Difluorobenzene	97		106		94		70-130			%	09.30.18 10:05	
4-Bromofluorobenzene	87		99		101		70-130			%	09.30.18 10:05	

Analytical Method: BTEX by EPA 8021B

Seq Number: 3064881

MB Sample Id: 7663275-1-BLK

Matrix: Solid

LCS Sample Id: 7663275-1-BKS

Prep Method: SW5030B

Date Prep: 09.30.18

LCSD Sample Id: 7663275-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00201	0.100	0.0971	97	0.0962	96	70-130	1	35	mg/kg	09.30.18 20:49	
Toluene	<0.00201	0.100	0.0903	90	0.0919	92	70-130	2	35	mg/kg	09.30.18 20:49	
Ethylbenzene	<0.00201	0.100	0.102	102	0.104	104	70-130	2	35	mg/kg	09.30.18 20:49	
m,p-Xylenes	<0.00402	0.201	0.197	98	0.198	99	70-130	1	35	mg/kg	09.30.18 20:49	
o-Xylene	<0.00201	0.100	0.101	101	0.101	101	70-130	0	35	mg/kg	09.30.18 20:49	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits			Units	Analysis Date	
1,4-Difluorobenzene	106		127		111		70-130			%	09.30.18 20:49	
4-Bromofluorobenzene	91		101		103		70-130			%	09.30.18 20:49	

Analytical Method: BTEX by EPA 8021B

Seq Number: 3064879

Parent Sample Id: 600661-010

Matrix: Soil

MS Sample Id: 600661-010 S

Prep Method: SW5030B

Date Prep: 09.30.18

MSD Sample Id: 600661-010 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.000388	0.101	0.0470	47	0.0568	57	70-130	19	35	mg/kg	09.30.18 10:48	X
Toluene	0.00152	0.101	0.0450	43	0.0499	48	70-130	10	35	mg/kg	09.30.18 10:48	X
Ethylbenzene	<0.00202	0.101	0.0405	40	0.0446	45	70-130	10	35	mg/kg	09.30.18 10:48	X
m,p-Xylenes	<0.00102	0.202	0.0757	37	0.0813	40	70-130	7	35	mg/kg	09.30.18 10:48	X
o-Xylene	<0.00202	0.101	0.0405	40	0.0437	44	70-130	8	35	mg/kg	09.30.18 10:48	X
Surrogate			MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date			
1,4-Difluorobenzene			108		109		70-130	%	09.30.18 10:48			
4-Bromofluorobenzene			111		111		70-130	%	09.30.18 10:48			

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



COG Operating LLC
SL Deep Federal #3 Tank Battery (9/15/18)

Analytical Method: BTEX by EPA 8021B

Seq Number: 3064881

Parent Sample Id: 600662-012

Matrix: Soil

MS Sample Id: 600662-012 S

Prep Method: SW5030B

Date Prep: 09.30.18

MSD Sample Id: 600662-012 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00201	0.100	0.0713	71	0.0839	83	70-130	16	35	mg/kg	09.30.18 21:31	
Toluene	<0.00201	0.100	0.0429	43	0.0508	50	70-130	17	35	mg/kg	09.30.18 21:31	X
Ethylbenzene	<0.00201	0.100	0.0520	52	0.0669	66	70-130	25	35	mg/kg	09.30.18 21:31	X
m,p-Xylenes	<0.00402	0.201	0.0838	42	0.110	54	70-130	27	35	mg/kg	09.30.18 21:31	X
o-Xylene	<0.00201	0.100	0.0615	62	0.0795	79	70-130	26	35	mg/kg	09.30.18 21:31	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	116		110		70-130	%	09.30.18 21:31
4-Bromofluorobenzene	107		110		70-130	%	09.30.18 21:31

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

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

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

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

Analysis Request of Chain of Custody Record

Page 1 of 1



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

Client Name:		COG		Site Manager:		Ike Tavaréz				
Project Name:				SL Deep Federal #3 Tank Battery (9/15/18)						
Project Location: (county, state)				Lea County, New Mexico						
Project #:										
Invoice to:				COG						
Receiving Laboratory:				Xenco						
Sampler Signature:				Ike Tavaréz						
Comments: Run Deeper samples if TPH exceeds 1000 mg/kg. Run Deeper samples of benzene exceeds 10 mg/kg or total BTEX exceeds 50 mg/kg										
LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING		MATRIX		PRESERVATIVE METHOD		# CONTAINERS	FILTERED (Y/N)	
		YEAR:	DATE	TIME	WATER	SOIL	HCL			HNO ₃
	AH-1 (0-1')		9/27/2018		X		X		1	
	AH-1 (1-1.5')		9/27/2018		X		X		1	
	AH-1 (2-2.5')		9/27/2018		X		X		1	
	AH-2 (0-1')		9/27/2018		X		X		1	
	AH-2 (1-1.5')		9/27/2018		X		X		1	
	AH-2 (2-2.5')		9/27/2018		X		X		1	
	AH-3 (0-1')		9/27/2018		X		X		1	
	AH-3 (1-1.5')		9/27/2018		X		X		1	
	AH-3 (2-2.5')		9/27/2018		X		X		1	
	AH-3 (3-3.5')		9/27/2018		X		X		1	
Relinquished by:		Date:	Time:	Received by:		Date:	Time:			
Relinquished by:		Date:	Time:	Received by:		Date:	Time:			
Relinquished by:		Date:	Time:	Received by:		Date:	Time:			

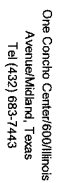
ANALYSIS REQUEST (Circle or Specify Method No.)									
BTEX 8021B BTEX 8260B									
TPH TX1005 (Ext to C35)									
TPH 8015M (GRO - DRO - MRO)									
PAH 8270C									
Total Metals Ag As Ba Cd Cr Pb Se Hg									
TCLP Metals Ag As Ba Cd Cr Pb Se Hg									
TCLP Volatiles									
TCLP Semi Volatiles									
RCI									
GC/MS Vol. 8260B / 624									
GC/MS Semi. Vol. 8270C/625									
PCB's 8082 / 608									
NORM									
PLM (Asbestos)									
Chloride									
Chloride Sulfate TDS									
General Water Chemistry (see attached list)									
Anion/Cation Balance									
Hold									

LAB USE ONLY	REMARKS:
Sample Temperature	☒ RUSH: Same Day 24 hr 48 hr 72 hr
30/0.0	☐ Rush Charges Authorized
NS	☐ Special Report Limits or TRRP Report

(Circle) HAND DELIVERED FEDEX UPS Tracking # _____

ORIGINAL COPY

Page 1 of 2



ORIGINAL COPY



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In



Client: COG Operating LLC

Date/ Time Received: 09/28/2018 10:10:00 AM

Work Order #: 600662

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sample Receipt Checklist

Comments

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

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

Analyst:

PH Device/Lot#:

Checklist completed by:

Brianna Teel

Brianna Teel

Date: 09/28/2018

Checklist reviewed by:

Jessica Kramer

Jessica Kramer

Date: 09/28/2018