

March 6, 2018

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

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

APPROVED

By Olivia Yu at 2:11 pm, Apr 09, 2018

NMOCD approves of the delineation completed for 1RP-4909 with these stipulations for proposed remediation:
1) excavate area represented by T1 to 1 ft. bgs and T2 to 4 ft. bgs.
2) confirmation bottom and sidewall samples for TPH extended and chlorides.

Re: Work Plan
Red Raider BKS State #005H
API #: 30-025-42758
RP#: 1RP-4909
Unit Letter P Section 25, Township 24S, Range 33E
Lea County, NM

Ms. Yu/Mr. Naranjo,

COG Operating, LLC (COG) is pleased to submit for your consideration the following remediation work plan for the Red Raider BKS State #005H. This plan is in response to an oil release that occurred on December 29, 2017. Subsequent to the release a C-141 initial report was approved by the New Mexico Oil Conservation Division (NMOCD) on January 3, 2018.

BACKGROUND

The Red Raider BKS State #005H release is located in Unit Letter P, Section 25, Township 24 South and Range 33 East in Lea County, New Mexico. More specifically the latitude and longitude for this release are 32.1819897 North and -103.518572 West.

On December 29, 2017, the Little Joe regulator on the casing supplying gas to the scrubber froze and resulted in the release of approximately eighteen (18) barrels (bbls) of oil. All of the fluid remained on location. A vacuum truck was able to recover approximately thirteen (13) bbls of oil.

On February 12, 2018 a site assessment and soil sampling were conducted in order to define the impacted area. A site diagram is included in Appendix I. The analytical results from the soil sampling activities are summarized in the table below.

GROUNDWATER AND SITE RANKING

According to the 2005 Chevron Texaco Groundwater Trend Map groundwater in the project vicinity is approximately fifty (50) feet below ground surface (BGS) (Appendix II). No water well or surface water was observed within one-thousand (1,000) feet of the release site. Therefore the site ranking for this release is ten (10) based on the following:

Depth to groundwater	>100-feet
Distance to surface water body	>1000-feet
Wellhead Protection Area	>1000-feet

Analytical Results

2/12/2018

Sample ID	Depth (feet)	Benzene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)	Total TPH (mg/kg)
T-1	0	<0.002	0.208	518	121
T-1	1	<0.002	<0.002	--	60
T-1	2	<0.002	<0.002	--	<15.0
T-2	0	<0.099	40.8	101	2980
T-2	1	<0.002	0.370	--	597
T-2	2	<0.002	0.192	--	350
T-2	3	<0.002	0.0642	--	171
T-2	5	<0.002	<0.002	--	26.7
T-2	6	<0.002	<0.002	--	<14.9

(--) Analysis not requested

PROPOSED REMEDIAL ACTIONS

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

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

Sincerely,



Sheldon L. Hitchcock
HSE Coordinator
slhitchcock@concho.com

Enclosed:

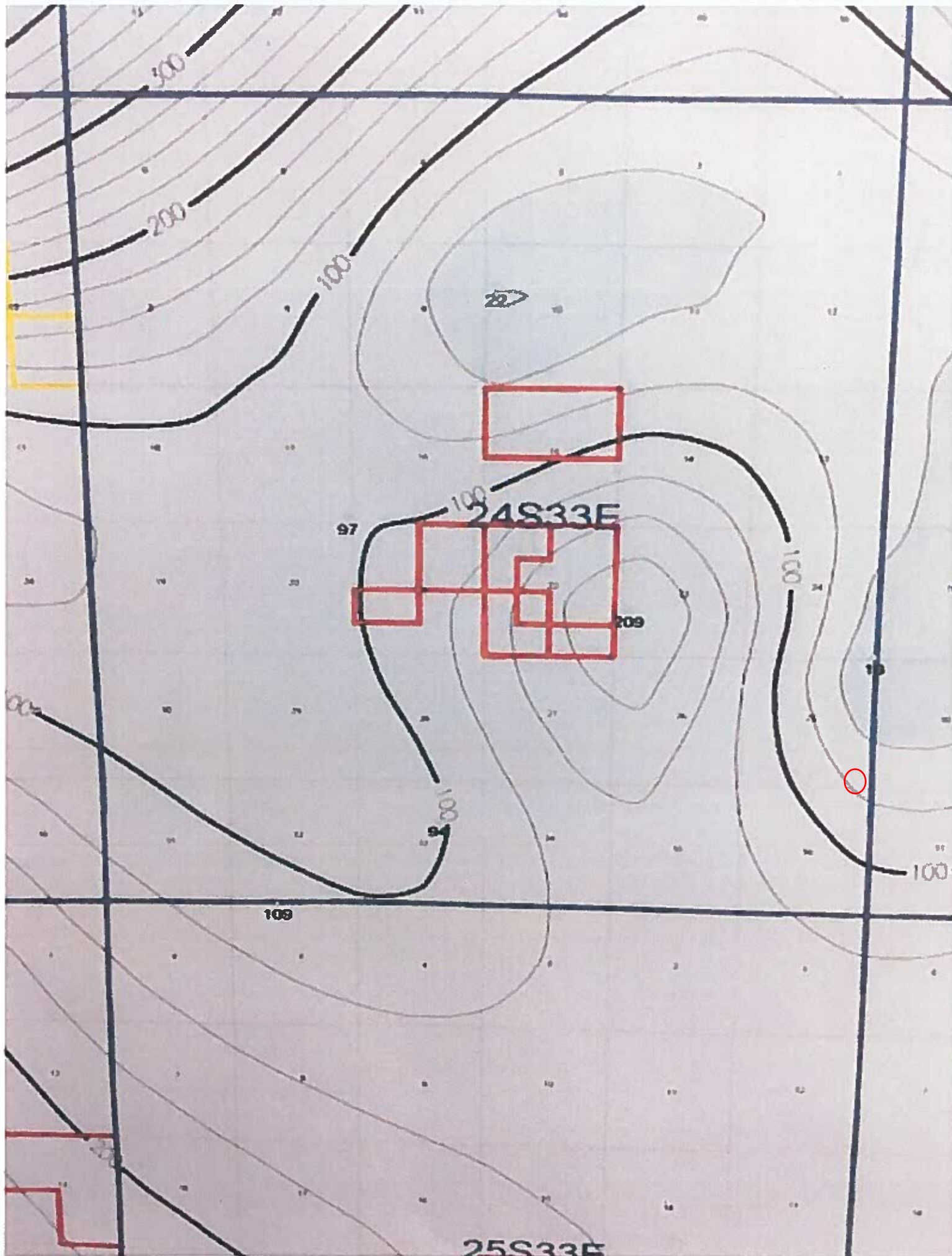
Appendix I: Site Diagram
Appendix II: Groundwater Data
Appendix III: Initial C-141 (Copy)
Appendix IV: Analytical Reports and Chain-of-Custody Forms

APPENDIX I

Red Raider BKS State #005H



APPENDIX II



APPENDIX III

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

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised April 3, 2017

Submit 1 Copy to appropriate District Office in
accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: COG Operating, LLC (OGRID# 229137)	Contact: Robert McNeill	
Address: 600 West Illinois Avenue, Midland TX 79701	Telephone No.: 432-683-7443	
Facility Name: Red Raider BKS State #005H	Facility Type: Well	
Surface Owner: State	Mineral Owner: State	API No.: 30-025-42758

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
P	25	24S	33E	250	S	330	E	Lea

Latitude: 32.1819897 Longitude: -103.518572 NAD83

NATURE OF RELEASE

Type of Release: Oil	Volume of Release: 18 BBLS	Volume Recovered: 13 BBLS
Source of Release: Well Head	Date and Hour of Occurrence: 12-29-2017 8:00 am	Date and Hour of Discovery: 12-29-2017 8:am
Was Immediate Notice Given? ☐ Yes ☐ No ☒ Not Required	If YES, To Whom?	
By Whom?	Date and Hour:	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

RECEIVED

By Olivia Yu at 9:39 am, Jan 03, 2018

Describe Cause of Problem and Remedial Action Taken.*

Little joe regulator on the casing supplying gas to the scrubber froze and failed sending oil up the casing resulting in the release of approximately 18 BBLS of oil. A vacuum truck was dispatched to recover free standing fluid approximately 13BBLS were recovered.

Describe Area Affected and Cleanup Action Taken.*

Fluid impacted the well pad. Concho will have the spill area evaluated for any possible impact from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation activities.

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

Signature: 	OIL CONSERVATION DIVISION	
Printed Name: Christopher Gray	Approved by Environmental Specialist: 	
Title: HSE Coordinator	Approval Date: 1/3/2018	Expiration Date:
E-mail Address: cgray@concho.com	Conditions of Approval: see attached directive	Attached ☒
Date: 01-02-2018	Phone: 575-746-2010	

* Attach Additional Sheets If Necessary

1RP-4909

nOY1800336980

pOY1800337874

APPENDIX IV



Certificate of Analysis Summary 576404

COG Operating LLC, Artesia, NM

Project Name: Red Raider BKS ST #005H



Project Id:

Contact: Sheldon Hitchcock

Project Location: Lea Co, NM

Date Received in Lab: Wed Feb-14-18 11:45 am

Report Date: 23-FEB-18

Project Manager: Jessica Kramer

Analysis Requested	Lab Id:	576404-001	576404-002	576404-003	576404-004	576404-005	576404-006
	Field Id:	T-1	T-1	T-1	T-2	T-2	T-2
	Depth:		1- ft	2- ft		1- ft	2- ft
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Feb-12-18 00:00	Feb-12-18 00:00	Feb-12-18 00:00	Feb-12-18 00:00	Feb-12-18 00:00	Feb-12-18 00:00
BTEX by EPA 8021B	Extracted:	Feb-19-18 09:30	Feb-17-18 08:30	Feb-17-18 08:30	Feb-17-18 08:30	Feb-17-18 08:30	Feb-17-18 08:30
	Analyzed:	Feb-19-18 15:32	Feb-18-18 02:09	Feb-18-18 02:47	Feb-17-18 23:56	Feb-18-18 03:06	Feb-18-18 03:25
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.0199 0.0199	<0.00200 0.00200	<0.00199 0.00199	<0.0992 0.0992	<0.00198 0.00198	<0.00201 0.00201
Toluene		<0.0199 0.0199	<0.00200 0.00200	<0.00199 0.00199	5.41 0.0992	0.00939 0.00198	0.00958 0.00201
Ethylbenzene		0.0232 0.0199	<0.00200 0.00200	<0.00199 0.00199	7.39 0.0992	0.0516 0.00198	0.0208 0.00201
m,p-Xylenes		0.118 0.0398	<0.00401 0.00401	<0.00398 0.00398	20.2 0.198	0.197 0.00396	0.101 0.00402
o-Xylene		0.0663 0.0199	<0.00200 0.00200	<0.00199 0.00199	7.77 0.0992	0.112 0.00198	0.0623 0.00201
Total Xylenes		0.184 0.0199	<0.00200 0.00200	<0.00199 0.00199	28.0 0.0992	0.309 0.00198	0.163 0.00201
Total BTEX		0.208 0.0199	<0.00200 0.00200	<0.00199 0.00199	40.8 0.0992	0.370 0.00198	0.194 0.00201
Chloride by EPA 300	Extracted:	Feb-22-18 12:55			Feb-21-18 16:30		
	Analyzed:	Feb-22-18 13:53			Feb-21-18 22:40		
	Units/RL:	mg/kg RL			mg/kg RL		
Chloride		518 4.90			101 5.04		
TPH By SW8015 Mod	Extracted:	Feb-18-18 11:00	Feb-18-18 11:00	Feb-18-18 11:00	Feb-18-18 11:00	Feb-18-18 11:00	Feb-18-18 11:00
	Analyzed:	Feb-18-18 13:40	Feb-18-18 15:01	Feb-18-18 15:29	Feb-18-18 15:54	Feb-18-18 16:20	Feb-18-18 16:46
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		16.4 15.0	<14.9 14.9	<14.9 14.9	749 15.0	74.3 15.0	43.0 15.0
Diesel Range Organics (DRO)		105 15.0	60.1 14.9	<14.9 14.9	2200 15.0	523 15.0	307 15.0
Oil Range Hydrocarbons (ORO)		<15.0 15.0	<14.9 14.9	<14.9 14.9	34.6 15.0	<15.0 15.0	<15.0 15.0
Total TPH		121 15.0	60.1 14.9	<14.9 14.9	2980 15.0	597 15.0	350 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
Odessa Laboratory Director



Certificate of Analysis Summary 576404

COG Operating LLC, Artesia, NM

Project Name: Red Raider BKS ST #005H



Project Id:

Contact: Sheldon Hitchcock

Project Location: Lea Co, NM

Date Received in Lab: Wed Feb-14-18 11:45 am

Report Date: 23-FEB-18

Project Manager: Jessica Kramer

Analysis Requested	Lab Id:	576404-007	576404-008	576404-009			
	Field Id:	T-2	T-2	T-2			
	Depth:	3- ft	5- ft	6- ft			
	Matrix:	SOIL	SOIL	SOIL			
	Sampled:	Feb-12-18 00:00	Feb-12-18 00:00	Feb-12-18 00:00			
BTEX by EPA 8021B	Extracted:	Feb-17-18 08:30	Feb-19-18 09:30	Feb-19-18 09:30			
	Analyzed:	Feb-18-18 01:50	Feb-19-18 12:26	Feb-19-18 12:45			
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL			
Benzene		<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200			
Toluene		0.00426 0.00200	<0.00201 0.00201	<0.00200 0.00200			
Ethylbenzene		0.00738 0.00200	<0.00201 0.00201	<0.00200 0.00200			
m,p-Xylenes		0.0310 0.00399	<0.00402 0.00402	<0.00400 0.00400			
o-Xylene		0.0216 0.00200	<0.00201 0.00201	<0.00200 0.00200			
Total Xylenes		0.0526 0.00200	<0.00201 0.00201	<0.00200 0.00200			
Total BTEX		0.0642 0.00200	<0.00201 0.00201	<0.00200 0.00200			
TPH By SW8015 Mod	Extracted:	Feb-18-18 11:00	Feb-18-18 11:00	Feb-18-18 11:00			
	Analyzed:	Feb-18-18 17:11	Feb-18-18 17:37	Feb-18-18 18:03			
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL			
Gasoline Range Hydrocarbons (GRO)		18.0 15.0	<15.0 15.0	<14.9 14.9			
Diesel Range Organics (DRO)		153 15.0	26.7 15.0	<14.9 14.9			
Oil Range Hydrocarbons (ORO)		<15.0 15.0	<15.0 15.0	<14.9 14.9			
Total TPH		171 15.0	26.7 15.0	<14.9 14.9			

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

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

Jessica Kramer

Jessica Kramer
Odessa Laboratory Director

Analytical Report 576404

for
COG Operating LLC

Project Manager: Sheldon Hitchcock

Red Raider BKS ST #005H

23-FEB-18

Collected By: Client



1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):

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

Xenco-Dallas (EPA Lab code: TX01468):

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

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

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

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

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

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

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



23-FEB-18

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

Reference: XENCO Report No(s): **576404**
Red Raider BKS ST #005H
Project Address: Lea Co, 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) 576404. 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. 576404 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

Odessa Laboratory Director

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Sample Cross Reference 576404



COG Operating LLC, Artesia, NM

Red Raider BKS ST #005H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
T-1	S	02-12-18 00:00		576404-001
T-1	S	02-12-18 00:00	1 ft	576404-002
T-1	S	02-12-18 00:00	2 ft	576404-003
T-2	S	02-12-18 00:00		576404-004
T-2	S	02-12-18 00:00	1 ft	576404-005
T-2	S	02-12-18 00:00	2 ft	576404-006
T-2	S	02-12-18 00:00	3 ft	576404-007
T-2	S	02-12-18 00:00	5 ft	576404-008
T-2	S	02-12-18 00:00	6 ft	576404-009



CASE NARRATIVE

Client Name: COG Operating LLC

Project Name: Red Raider BKS ST #005H

Project ID:

Work Order Number(s): 576404

Report Date: 23-FEB-18

Date Received: 02/14/2018

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3041450 BTEX by EPA 8021B

Dilution due to excessive hydrocarbons.

Batch: LBA-3041581 BTEX by EPA 8021B

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



Certificate of Analytical Results 576404



COG Operating LLC, Artesia, NM

Red Raider BKS ST #005H

Sample Id: T-1
Lab Sample Id: 576404-001

Matrix: Soil
Date Collected: 02.12.18 00.00

Date Received: 02.14.18 11.45

Analytical Method: Chloride by EPA 300

Tech: LRI

Analyst: OJS

Seq Number: 3041865

Prep Method: E300P

% Moisture:

Date Prep: 02.22.18 12.55

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	518	4.90	mg/kg	02.22.18 13.53		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3041602

Prep Method: TX1005P

% Moisture:

Date Prep: 02.18.18 11.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	16.4	15.0	mg/kg	02.18.18 13.40		1
Diesel Range Organics (DRO)	C10C28DRO	105	15.0	mg/kg	02.18.18 13.40		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.18.18 13.40	U	1
Total TPH	PHC635	121	15.0	mg/kg	02.18.18 13.40		1

Surrogate

1-Chlorooctane

o-Terphenyl

Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
111-85-3	98	%	70-135	02.18.18 13.40	
84-15-1	98	%	70-135	02.18.18 13.40	



Certificate of Analytical Results 576404



COG Operating LLC, Artesia, NM

Red Raider BKS ST #005H

Sample Id: T-1
Lab Sample Id: 576404-001

Matrix: Soil
Date Collected: 02.12.18 00.00

Date Received: 02.14.18 11.45

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 02.19.18 09.30

Basis: Wet Weight

Seq Number: 3041581

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.0199	0.0199	mg/kg	02.19.18 15.32	U	10
Toluene	108-88-3	<0.0199	0.0199	mg/kg	02.19.18 15.32	U	10
Ethylbenzene	100-41-4	0.0232	0.0199	mg/kg	02.19.18 15.32		10
m,p-Xylenes	179601-23-1	0.118	0.0398	mg/kg	02.19.18 15.32		10
o-Xylene	95-47-6	0.0663	0.0199	mg/kg	02.19.18 15.32		10
Total Xylenes	1330-20-7	0.184	0.0199	mg/kg	02.19.18 15.32		10
Total BTEX		0.208	0.0199	mg/kg	02.19.18 15.32		10
Surrogate	Cas Number	% Recovery		Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	108		%	80-120	02.19.18 15.32	
1,4-Difluorobenzene	540-36-3	80		%	80-120	02.19.18 15.32	



Certificate of Analytical Results 576404



COG Operating LLC, Artesia, NM

Red Raider BKS ST #005H

Sample Id: T-1
Lab Sample Id: 576404-002

Matrix: Soil
Date Collected: 02.12.18 00.00

Date Received: 02.14.18 11.45
Sample Depth: 1 ft

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3041602

Date Prep: 02.18.18 11.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	02.18.18 15.01	U	1
Diesel Range Organics (DRO)	C10C28DRO	60.1	14.9	mg/kg	02.18.18 15.01		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<14.9	14.9	mg/kg	02.18.18 15.01	U	1
Total TPH	PHC635	60.1	14.9	mg/kg	02.18.18 15.01		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	99	%	70-135	02.18.18 15.01	
o-Terphenyl	84-15-1	99	%	70-135	02.18.18 15.01	

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3041450

Date Prep: 02.17.18 08.30

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	02.18.18 02.09	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	02.18.18 02.09	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	02.18.18 02.09	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	02.18.18 02.09	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	02.18.18 02.09	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	02.18.18 02.09	U	1
Total BTEX		<0.00200	0.00200	mg/kg	02.18.18 02.09	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	105	%	80-120	02.18.18 02.09	
1,4-Difluorobenzene	540-36-3	84	%	80-120	02.18.18 02.09	



Certificate of Analytical Results 576404



COG Operating LLC, Artesia, NM

Red Raider BKS ST #005H

Sample Id: T-1
Lab Sample Id: 576404-003

Matrix: Soil
Date Collected: 02.12.18 00.00

Date Received: 02.14.18 11.45
Sample Depth: 2 ft

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3041602

Date Prep: 02.18.18 11.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	02.18.18 15.29	U	1
Diesel Range Organics (DRO)	C10C28DRO	<14.9	14.9	mg/kg	02.18.18 15.29	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<14.9	14.9	mg/kg	02.18.18 15.29	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	02.18.18 15.29	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	99	%	70-135	02.18.18 15.29	
o-Terphenyl	84-15-1	101	%	70-135	02.18.18 15.29	

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3041450

Date Prep: 02.17.18 08.30

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	02.18.18 02.47	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	02.18.18 02.47	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	02.18.18 02.47	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	02.18.18 02.47	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	02.18.18 02.47	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	02.18.18 02.47	U	1
Total BTEX		<0.00199	0.00199	mg/kg	02.18.18 02.47	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	81	%	80-120	02.18.18 02.47	
4-Bromofluorobenzene	460-00-4	106	%	80-120	02.18.18 02.47	



Certificate of Analytical Results 576404



COG Operating LLC, Artesia, NM

Red Raider BKS ST #005H

Sample Id: T-2
Lab Sample Id: 576404-004

Matrix: Soil
Date Collected: 02.12.18 00.00

Date Received: 02.14.18 11.45

Analytical Method: Chloride by EPA 300

Tech: LRI

Analyst: OJS

Seq Number: 3041784

Prep Method: E300P

% Moisture:

Date Prep: 02.21.18 16.30

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	101	5.04	mg/kg	02.21.18 22.40		1

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3041602

Prep Method: TX1005P

% Moisture:

Date Prep: 02.18.18 11.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	749	15.0	mg/kg	02.18.18 15.54		1
Diesel Range Organics (DRO)	C10C28DRO	2200	15.0	mg/kg	02.18.18 15.54		1
Oil Range Hydrocarbons (ORO)	PHCG2835	34.6	15.0	mg/kg	02.18.18 15.54		1
Total TPH	PHC635	2980	15.0	mg/kg	02.18.18 15.54		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	127	%	70-135	02.18.18 15.54	
o-Terphenyl	84-15-1	128	%	70-135	02.18.18 15.54	



Certificate of Analytical Results 576404



COG Operating LLC, Artesia, NM

Red Raider BKS ST #005H

Sample Id: T-2
Lab Sample Id: 576404-004

Matrix: Soil
Date Collected: 02.12.18 00.00

Date Received: 02.14.18 11.45

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 02.17.18 08.30

Basis: Wet Weight

Seq Number: 3041450

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.0992	0.0992	mg/kg	02.17.18 23.56	U	50
Toluene	108-88-3	5.41	0.0992	mg/kg	02.17.18 23.56		50
Ethylbenzene	100-41-4	7.39	0.0992	mg/kg	02.17.18 23.56		50
m,p-Xylenes	179601-23-1	20.2	0.198	mg/kg	02.17.18 23.56		50
o-Xylene	95-47-6	7.77	0.0992	mg/kg	02.17.18 23.56		50
Total Xylenes	1330-20-7	28.0	0.0992	mg/kg	02.17.18 23.56		50
Total BTEX		40.8	0.0992	mg/kg	02.17.18 23.56		50
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	87	%	80-120	02.17.18 23.56		
4-Bromofluorobenzene	460-00-4	111	%	80-120	02.17.18 23.56		



Certificate of Analytical Results 576404



COG Operating LLC, Artesia, NM

Red Raider BKS ST #005H

Sample Id: T-2
Lab Sample Id: 576404-005

Matrix: Soil
Date Collected: 02.12.18 00.00

Date Received: 02.14.18 11.45
Sample Depth: 1 ft

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3041602

Date Prep: 02.18.18 11.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	74.3	15.0	mg/kg	02.18.18 16.20		1
Diesel Range Organics (DRO)	C10C28DRO	523	15.0	mg/kg	02.18.18 16.20		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.18.18 16.20	U	1
Total TPH	PHC635	597	15.0	mg/kg	02.18.18 16.20		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	127	%	70-135	02.18.18 16.20	
o-Terphenyl	84-15-1	122	%	70-135	02.18.18 16.20	

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3041450

Date Prep: 02.17.18 08.30

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	02.18.18 03.06	U	1
Toluene	108-88-3	0.00939	0.00198	mg/kg	02.18.18 03.06		1
Ethylbenzene	100-41-4	0.0516	0.00198	mg/kg	02.18.18 03.06		1
m,p-Xylenes	179601-23-1	0.197	0.00396	mg/kg	02.18.18 03.06		1
o-Xylene	95-47-6	0.112	0.00198	mg/kg	02.18.18 03.06		1
Total Xylenes	1330-20-7	0.309	0.00198	mg/kg	02.18.18 03.06		1
Total BTEX		0.370	0.00198	mg/kg	02.18.18 03.06		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	83	%	80-120	02.18.18 03.06	
4-Bromofluorobenzene	460-00-4	113	%	80-120	02.18.18 03.06	



Certificate of Analytical Results 576404



COG Operating LLC, Artesia, NM

Red Raider BKS ST #005H

Sample Id: T-2
Lab Sample Id: 576404-006

Matrix: Soil
Date Collected: 02.12.18 00.00

Date Received: 02.14.18 11.45
Sample Depth: 2 ft

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3041602

Date Prep: 02.18.18 11.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	43.0	15.0	mg/kg	02.18.18 16.46		1
Diesel Range Organics (DRO)	C10C28DRO	307	15.0	mg/kg	02.18.18 16.46		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.18.18 16.46	U	1
Total TPH	PHC635	350	15.0	mg/kg	02.18.18 16.46		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	106	%	70-135	02.18.18 16.46		
o-Terphenyl	84-15-1	106	%	70-135	02.18.18 16.46		

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3041450

Date Prep: 02.17.18 08.30

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	02.18.18 03.25	U	1
Toluene	108-88-3	0.00958	0.00201	mg/kg	02.18.18 03.25		1
Ethylbenzene	100-41-4	0.0208	0.00201	mg/kg	02.18.18 03.25		1
m,p-Xylenes	179601-23-1	0.101	0.00402	mg/kg	02.18.18 03.25		1
o-Xylene	95-47-6	0.0623	0.00201	mg/kg	02.18.18 03.25		1
Total Xylenes	1330-20-7	0.163	0.00201	mg/kg	02.18.18 03.25		1
Total BTEX		0.194	0.00201	mg/kg	02.18.18 03.25		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	93	%	80-120	02.18.18 03.25		
1,4-Difluorobenzene	540-36-3	83	%	80-120	02.18.18 03.25		



Certificate of Analytical Results 576404



COG Operating LLC, Artesia, NM

Red Raider BKS ST #005H

Sample Id: T-2
Lab Sample Id: 576404-007

Matrix: Soil
Date Collected: 02.12.18 00.00

Date Received: 02.14.18 11.45
Sample Depth: 3 ft

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3041602

Date Prep: 02.18.18 11.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	18.0	15.0	mg/kg	02.18.18 17.11		1
Diesel Range Organics (DRO)	C10C28DRO	153	15.0	mg/kg	02.18.18 17.11		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.18.18 17.11	U	1
Total TPH	PHC635	171	15.0	mg/kg	02.18.18 17.11		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	114	%	70-135	02.18.18 17.11		
o-Terphenyl	84-15-1	115	%	70-135	02.18.18 17.11		

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3041450

Date Prep: 02.17.18 08.30

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	02.18.18 01.50	U	1
Toluene	108-88-3	0.00426	0.00200	mg/kg	02.18.18 01.50		1
Ethylbenzene	100-41-4	0.00738	0.00200	mg/kg	02.18.18 01.50		1
m,p-Xylenes	179601-23-1	0.0310	0.00399	mg/kg	02.18.18 01.50		1
o-Xylene	95-47-6	0.0216	0.00200	mg/kg	02.18.18 01.50		1
Total Xylenes	1330-20-7	0.0526	0.00200	mg/kg	02.18.18 01.50		1
Total BTEX		0.0642	0.00200	mg/kg	02.18.18 01.50		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	81	%	80-120	02.18.18 01.50		
4-Bromofluorobenzene	460-00-4	114	%	80-120	02.18.18 01.50		



Certificate of Analytical Results 576404



COG Operating LLC, Artesia, NM

Red Raider BKS ST #005H

Sample Id: T-2
Lab Sample Id: 576404-008

Matrix: Soil
Date Collected: 02.12.18 00.00

Date Received: 02.14.18 11.45
Sample Depth: 5 ft

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3041602

Date Prep: 02.18.18 11.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.18.18 17.37	U	1
Diesel Range Organics (DRO)	C10C28DRO	26.7	15.0	mg/kg	02.18.18 17.37		1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	02.18.18 17.37	U	1
Total TPH	PHC635	26.7	15.0	mg/kg	02.18.18 17.37		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	112	%	70-135	02.18.18 17.37	
o-Terphenyl	84-15-1	115	%	70-135	02.18.18 17.37	

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3041581

Date Prep: 02.19.18 09.30

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	02.19.18 12.26	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	02.19.18 12.26	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	02.19.18 12.26	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	02.19.18 12.26	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	02.19.18 12.26	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	02.19.18 12.26	U	1
Total BTEX		<0.00201	0.00201	mg/kg	02.19.18 12.26	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	82	%	80-120	02.19.18 12.26	
4-Bromofluorobenzene	460-00-4	107	%	80-120	02.19.18 12.26	



Certificate of Analytical Results 576404



COG Operating LLC, Artesia, NM

Red Raider BKS ST #005H

Sample Id: T-2
Lab Sample Id: 576404-009

Matrix: Soil
Date Collected: 02.12.18 00.00

Date Received: 02.14.18 11.45
Sample Depth: 6 ft

Analytical Method: TPH By SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3041602

Date Prep: 02.18.18 11.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	02.18.18 18.03	U	1
Diesel Range Organics (DRO)	C10C28DRO	<14.9	14.9	mg/kg	02.18.18 18.03	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<14.9	14.9	mg/kg	02.18.18 18.03	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	02.18.18 18.03	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	101	%	70-135	02.18.18 18.03	
o-Terphenyl	84-15-1	104	%	70-135	02.18.18 18.03	

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3041581

Date Prep: 02.19.18 09.30

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	02.19.18 12.45	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	02.19.18 12.45	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	02.19.18 12.45	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	02.19.18 12.45	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	02.19.18 12.45	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	02.19.18 12.45	U	1
Total BTEX		<0.00200	0.00200	mg/kg	02.19.18 12.45	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	81	%	80-120	02.19.18 12.45	
4-Bromofluorobenzene	460-00-4	105	%	80-120	02.19.18 12.45	

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

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

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

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COG Operating LLC
Red Raider BKS ST #005H

Analytical Method: Chloride by EPA 300

Seq Number: 3041784

MB Sample Id: 7639546-1-BLK

Matrix: Solid

LCS Sample Id: 7639546-1-BKS

Prep Method: E300P

Date Prep: 02.21.18

LCSD Sample Id: 7639546-1-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	273	109	274	110	90-110	0	20	mg/kg	02.21.18 21:31	

Analytical Method: Chloride by EPA 300

Seq Number: 3041865

MB Sample Id: 7639620-1-BLK

Matrix: Solid

LCS Sample Id: 7639620-1-BKS

Prep Method: E300P

Date Prep: 02.22.18

LCSD Sample Id: 7639620-1-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	268	107	258	103	90-110	4	20	mg/kg	02.22.18 12:44	

Analytical Method: Chloride by EPA 300

Seq Number: 3041784

Parent Sample Id: 576403-019

Matrix: Soil

MS Sample Id: 576403-019 S

Prep Method: E300P

Date Prep: 02.21.18

MSD Sample Id: 576403-019 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	184	248	454	109	424	97	90-110	7	20	mg/kg	02.21.18 21:47	

Analytical Method: Chloride by EPA 300

Seq Number: 3041865

Parent Sample Id: 576503-003

Matrix: Soil

MS Sample Id: 576503-003 S

Prep Method: E300P

Date Prep: 02.22.18

MSD Sample Id: 576503-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	66.2	244	353	118	321	104	90-110	9	20	mg/kg	02.22.18 13:01	X

Analytical Method: Chloride by EPA 300

Seq Number: 3041865

Parent Sample Id: 576503-004

Matrix: Soil

MS Sample Id: 576503-004 S

Prep Method: E300P

Date Prep: 02.22.18

MSD Sample Id: 576503-004 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	42.3	252	345	120	330	114	90-110	4	20	mg/kg	02.22.18 14:25	X

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

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

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

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



QC Summary 576404

COG Operating LLC Red Raider BKS ST #005H

Analytical Method: TPH By SW8015 Mod

Seq Number: 3041602

MB Sample Id: 7639462-1-BLK

Matrix: Solid

LCS Sample Id: 7639462-1-BKS

Prep Method: TX1005P

Date Prep: 02.18.18

LCSD Sample Id: 7639462-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	864	86	882	88	70-135	2	35	mg/kg	02.18.18 12:46	
Diesel Range Organics (DRO)	<15.0	1000	943	94	965	97	70-135	2	35	mg/kg	02.18.18 12:46	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date			
1-Chlorooctane	113		111		109		70-135	%	02.18.18 12:46			
o-Terphenyl	118		111		112		70-135	%	02.18.18 12:46			

Analytical Method: TPH By SW8015 Mod

Seq Number: 3041602

Parent Sample Id: 576404-001

Matrix: Soil

MS Sample Id: 576404-001 S

Prep Method: TX1005P

Date Prep: 02.18.18

MSD Sample Id: 576404-001 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 (GRO)	16.4	1000	876	86	866	85	70-135	1	35	mg/kg	02.18.18 14:06	
Diesel Range Organics (DRO)	105	1000	1020	92	1010	91	70-135	1	35	mg/kg	02.18.18 14:06	
Surrogate			MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date			
1-Chlorooctane			118		116		70-135	%	02.18.18 14:06			
o-Terphenyl			115		114		70-135	%	02.18.18 14:06			

Analytical Method: BTEX by EPA 8021B

Seq Number: 3041450

MB Sample Id: 7639379-1-BLK

Matrix: Solid

LCS Sample Id: 7639379-1-BKS

Prep Method: SW5030B

Date Prep: 02.17.18

LCSD Sample Id: 7639379-1-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	0.0838	84	0.0801	80	70-130	5	35	mg/kg	02.17.18 18:53	
Toluene	<0.00200	0.100	0.0881	88	0.0845	85	70-130	4	35	mg/kg	02.17.18 18:53	
Ethylbenzene	<0.00200	0.100	0.0969	97	0.0937	94	71-129	3	35	mg/kg	02.17.18 18:53	
m,p-Xylenes	<0.00401	0.200	0.192	96	0.185	93	70-135	4	35	mg/kg	02.17.18 18:53	
o-Xylene	<0.00200	0.100	0.0962	96	0.0924	93	71-133	4	35	mg/kg	02.17.18 18:53	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date			
1,4-Difluorobenzene	84		87		92		80-120	%	02.17.18 18:53			
4-Bromofluorobenzene	100		111		117		80-120	%	02.17.18 18:53			

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

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

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

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

COG Operating LLC
Red Raider BKS ST #005H

Analytical Method: BTEX by EPA 8021B

Seq Number: 3041581

MB Sample Id: 7639452-1-BLK

Matrix: Solid

LCS Sample Id: 7639452-1-BKS

Prep Method: SW5030B

Date Prep: 02.19.18

LCSD Sample Id: 7639452-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00199	0.0994	0.0907	91	0.0908	91	70-130	0	35	mg/kg	02.19.18 08:55	
Toluene	<0.00199	0.0994	0.0960	97	0.0966	97	70-130	1	35	mg/kg	02.19.18 08:55	
Ethylbenzene	<0.00199	0.0994	0.107	108	0.109	109	71-129	2	35	mg/kg	02.19.18 08:55	
m,p-Xylenes	<0.00398	0.199	0.211	106	0.217	109	70-135	3	35	mg/kg	02.19.18 08:55	
o-Xylene	<0.00199	0.0994	0.103	104	0.106	106	71-133	3	35	mg/kg	02.19.18 08:55	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	82		83		89		80-120	%	02.19.18 08:55
4-Bromofluorobenzene	99		113		116		80-120	%	02.19.18 08:55

Analytical Method: BTEX by EPA 8021B

Seq Number: 3041581

Parent Sample Id: 576793-001

Matrix: Soil

MS Sample Id: 576793-001 S

Prep Method: SW5030B

Date Prep: 02.19.18

MSD Sample Id: 576793-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00199	0.0996	0.0817	82	0.0725	73	70-130	12	35	mg/kg	02.19.18 09:34	
Toluene	<0.00199	0.0996	0.0873	88	0.0776	78	70-130	12	35	mg/kg	02.19.18 09:34	
Ethylbenzene	<0.00199	0.0996	0.0959	96	0.0888	89	71-129	8	35	mg/kg	02.19.18 09:34	
m,p-Xylenes	<0.00398	0.199	0.189	95	0.175	88	70-135	8	35	mg/kg	02.19.18 09:34	
o-Xylene	<0.00199	0.0996	0.0917	92	0.0875	88	71-133	5	35	mg/kg	02.19.18 09:34	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	84		80		80-120	%	02.19.18 09:34
4-Bromofluorobenzene	111		119		80-120	%	02.19.18 09:34

Analytical Method: BTEX by EPA 8021B

Seq Number: 3041450

Parent Sample Id: 576501-002

Matrix: Soil

MS Sample Id: 576501-002 S

Prep Method: SW5030B

Date Prep: 02.17.18

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	Limits	Units	Analysis Date	Flag
Benzene	<0.00200	0.0998	0.0765	77	70-130	mg/kg	02.17.18 19:29	
Toluene	<0.00200	0.0998	0.0743	74	70-130	mg/kg	02.17.18 19:29	
Ethylbenzene	<0.00200	0.0998	0.0790	79	71-129	mg/kg	02.17.18 19:29	
m,p-Xylenes	<0.00399	0.200	0.153	77	70-135	mg/kg	02.17.18 19:29	
o-Xylene	<0.00200	0.0998	0.0802	80	71-133	mg/kg	02.17.18 19:29	

Surrogate	MS %Rec	MS Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	86		80-120	%	02.17.18 19:29
4-Bromofluorobenzene	115		80-120	%	02.17.18 19:29

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



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Xenco Job #

576404

Client / Reporting Information				Project Information				Analytical Information				Matrix Codes						
Company Name / Branch: COG Operating, LLC				Project Name/Number: 1601 LARAIN BKS ST # 0054														
Company Address: 2407 Pecos Ave. Artesia NM 88210				Project Location: 1601 LARAIN BKS ST # 0054														
Email: slhitchcock@concho.com Phone No: 575-703-6475 dlhitchcock@concho.com; cgray@concho.com; mskell@concho.com				Invoice To: COG Operating, LLC Attn: Robert McNeill 600 W. Illinois Ave. Midland TX, 79701														
Project Contact: Sheldon Hitchcock				Po Number:														
Sampler's Name: Sheldon Hitchcock																		
No.	Field ID / Point of Collection	Sample Depth	Collection Date	Time	Matrix	# of bottles	HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MeOH	NONE	TPH EXTENDED (EPA8015M)	BTEX (EPA 8021B)	CHLORIDES (EPA 300)	Field Comments
1	T-1	0'			S	1									X	X	X	
2	T-1	1'			S	1												
3	T-1	2'			S	1												
4	T-2	0'			S	1												
5	T-2	1'			S	1												
6	T-2	2'			S	1												
7	T-2	3'			S	1												
8	T-2	4'			S	1												
9	T-2	6'			S	1												
10	Turnaround Time (Business days)				S	1												
Data Deliverable Information																		
Not																		
Same Day TAT ☐ 5 Day TAT ☐ Level II Std QC ☐ Level IV (Full Data Pkg /raw data) ☐																		
Next Day EMERGENCY ☐ 7 Day TAT ☐ Level III Std QC + Forms ☐ TRRP Level IV ☐																		
2 Day EMERGENCY ☒ Contract TAT ☐ Level 3 (CLP Forms) ☐ UST / RG 411 ☐																		
3 Day EMERGENCY ☐ TRRP Checklist ☐																		
TAT Starts Day received by Lab, if received by 5:00 pm																		
SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING CARRIER DELIVERY																		
FED-EX / UPS: Tracking #																		
Relinquished by Sampler: Date Time: 12-15-18 Received By: Relinquished By: Date Time: 12-15-18 Received By: Custody Seal # 4 Preserved where applicable On Ice ☒ Cooler Temp. Thermo. Corr. Factor 11.45																		
Relinquished by: Date Time: 12-15-18 Received By: Relinquished By: Date Time: 12-15-18 Received By: Custody Seal # 4 Preserved where applicable On Ice ☒ Cooler Temp. Thermo. Corr. Factor 11.45																		
Relinquished by: Date Time: 12-15-18 Received By: Relinquished By: Date Time: 12-15-18 Received By: Custody Seal # 4 Preserved where applicable On Ice ☒ Cooler Temp. Thermo. Corr. Factor 11.45																		

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the Client if such losses are due to circumstances beyond the control of Xenco. A minimum charge of \$75 will be applied to each project. Xenco's liability will be limited to the cost of samples. Any samples received by Xenco but not analyzed will be invoiced at \$5 per sample. These terms will be enforced unless previously negotiated under a fully executed client contract.



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In



Client: COG Operating LLC

Date/ Time Received: 02/14/2018 11:45:00 AM

Work Order #: 576404

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)?	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:

Connie Hernandez

Connie Hernandez

Date: 02/14/2018

Checklist reviewed by:

Jessica Kramer

Jessica Kramer

Date: 02/15/2018