

REMEDIATION SUMMARY AND SOIL CLOSURE REQUEST

**COG Operating, LLC
Canvasback 13 Federal #002H
Eddy County, New Mexico
Unit Letter "A", Section 13, Township 24 South, Range 31 East
Latitude 32.22260° North, Longitude 103.72296° West
NMOCD Reference No. 2RP-4682**

Prepared For:

**COG Operating, LLC
600 W Illinois Avenue
Midland, Texas 79701**

Prepared By:

**TRC Environmental Corporation
10 Desta Drive, Suite 150E
Midland, Texas 79705**

April 2018



Joel Lowry
Senior Project Manager



Curt Stanley
Senior Project Manager

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INTRODUCTION & BACKGROUND INFORMATION

TRC Environmental Corporation (TRC), on behalf of COG Operating, LLC (COG), has prepared this *Remediation Summary and Soil Closure Request* for the Site known as Canvasback 13 Federal #002H. The legal description of the Site is Unit Letter "A", Section 13, Township 24 South, Range 31 East, in Eddy County, New Mexico. The subject property is owned by the United States Department of the Interior and administered by the United States Bureau of Land Management (BLM). The GPS coordinates for the site are N 32.22260° W 103.72296°. A "Site Location Map" is provided as Figure 1.

On March 27, 2018, COG discovered a produced water release on a flowline near the Canvasback 13 Federal #002H well site. The initial Release Notification and Corrective Action (Form C-141) indicated failure of a flowline resulted in the release of approximately eight (8) barrels (bbls) of produced water. During initial response activities, the flowline was repaired and approximately three (3) bbls of produced water were recovered utilizing a vacuum truck. The release affected an area adjacent to the caliche access road measuring approximately three hundred (300) square feet (sq. ft.). A copy of the Form C-141 is provided in Appendix C.

A groundwater database maintained by The New Mexico Office of the State Engineer (NMOSE) did not identify any registered water wells in Section 13, Township 24 South, Range 31 East. A reference map utilized by the NMOCD indicates groundwater should be encountered between approximately three hundred fifty (350) feet (ft.) and three hundred seventy-five (375) ft. below ground surface (bgs). Based on the NMOCD site classification system, zero (0) points will be assigned to the subject area ranking as a result of this criterion.

No water wells were observed within one-thousand (1,000) feet of the Release Site. Based on the NMOCD site classification system, zero (0) points will be assigned to the subject area ranking as a result of this criterion.

No surface water was observed within one-thousand (1,000) feet of the release. Based on the NMOCD site classification system, zero (0) points will be assigned to the subject area ranking as a result of this criterion. Based on the NMOCD Site Classification criteria, the Release Site soil remediation levels are 10 milligrams per kilogram (mg/kg) for benzene, 50 mg/kg for benzene, toluene, ethylbenzene and xylenes (BTEX), and five thousand (5,000) mg/kg for total petroleum hydrocarbons (TPH). Per NMOCD request, chloride remediation levels for the Release Site will be six hundred (600) mg/kg.

SUMMARY OF SOIL REMEDIATION ACTIVITIES

On April 2, 2018, remediation activities commenced at the Release Site. Prior to excavation activities, TRC conducted an initial investigation at the site. During the initial investigation, two (2) soil samples (SP1 @ 6" and SP1 @ 2') were collected from within the affected area in an effort to characterize the Release Site. The collected soil samples were submitted to Xenco Laboratories of Midland, Texas, for analysis of BTEX (8021b), TPH (8015M Ext.) and chloride (E300). Laboratory analytical results indicated BTEX and TPH concentrations were less than the applicable laboratory reporting limit (RL) in each of the submitted soil samples. Analytical results indicated soil samples SP1 @ 6" and SP1 @ 2' exhibited chloride concentrations of 2,500 mg/kg

and 47.2 mg/kg, respectively. Based on laboratory analytical results it was determined the soil was not affected above the NMOCD RRAL for chloride beyond two (2) ft. bgs.

Upon conducting the initial investigation, impacted soil within the release margins was excavated and transported to an NMOCD-permitted facility for disposal. Upon excavating impacted soil from within the release margins, four (4) excavation confirmation soil samples (FL1 @ 1', SP1 @ 2', N, S and W) were collected and submitted to the laboratory for analysis of BTEX, TPH and chloride concentrations. Laboratory analytical results indicated BTEX and TPH concentrations were below the NMOCD RRAL in each of the submitted soil samples. Analytical results indicated chloride concentrations ranged from less than the laboratory RL in soil samples N and W to 202 mg/kg in soil sample FL1 @ 1'. Sample collection and further excavation, if applicable, was precluded in eastern portion of the release site due to safety concerns associated with the proximity to the active oilfield access road.

Upon collecting the required confirmation soil samples, the excavated area was backfilled with locally-sourced, non-impacted material. Prior to backfilling, the final dimensions of the excavated area were approximately sixty (60) ft. in length, two (2) to ten (10) ft. in width and six (6) in. to one (1) ft. in depth.

On April 6, 2018, approximately thirty-six (36) cubic yards (cy) of impacted soil was transported to R360's Halfway Bar Facility for disposal.

SITE CLOSURE REQUEST

Laboratory analytical results from confirmation soil samples collected from the floor and sidewalls of the excavated areas indicated benzene, BTEX, TPH and chloride concentrations were below the NMOCD RRAL in each of the submitted soil samples. Sample collection and further excavation, if applicable, was precluded in eastern portion of the release site due to safety concerns associated with the proximity to the active oilfield access road. Upon collecting the required excavation confirmation soil samples, the excavated area was backfilled with locally-sourced, non-impacted material. Based on laboratory analytical results and field activities conducted to date, TRC recommends COG provide copies of this *Remediation Summary and Soil Closure Request* to the NMOCD and BLM and request closure status to the Canvasback 13 Federal #002H Site.

LIMITATIONS

TRC has prepared this Remediation Summary and Soil Closure Request to the best of its ability. No other warranty, expressed or implied, is made or intended.

TRC has examined and relied upon documents referenced in the report and has relied on oral statements made by certain individuals. TRC has not conducted an independent examination of the facts contained in referenced materials and statements. We have presumed the genuineness of the documents and that the information provided in documents or statements is true and accurate. TRC has prepared this report, in a professional manner, using the degree of skill and care exercised by similar environmental consultants. TRC also notes that the facts and conditions referenced in this report may change over time and the conclusions and recommendations set forth herein are applicable only to the facts and conditions as described at the time of this report.

This report has been prepared for the benefit of COG Operating, LLC. The information contained in this report, including all exhibits and attachments, may not be used by any other party without the express consent of TRC and/or COG Operating, LLC.

DISTRIBUTION

- Copy 1: Mike Bratcher
New Mexico Energy, Minerals and Natural Resources Department
Oil Conservation Division, District 2
811 S. First Street
Artesia, NM 88210
- Copy 2: Shelly Tucker
Carlsbad Field Office
United States Department of the Interior
Bureau of Land Management
620 E. Greene Street
Carlsbad, New Mexico 88220
- Copy 3: Rebecca Haskell
COG Operating, LLC
600 W. Illinois Avenue
Midland, Texas 79701
- Copy 4: TRC Environmental Corporation
10 Desta Drive, Suite 150 E
Midland, Texas 79705

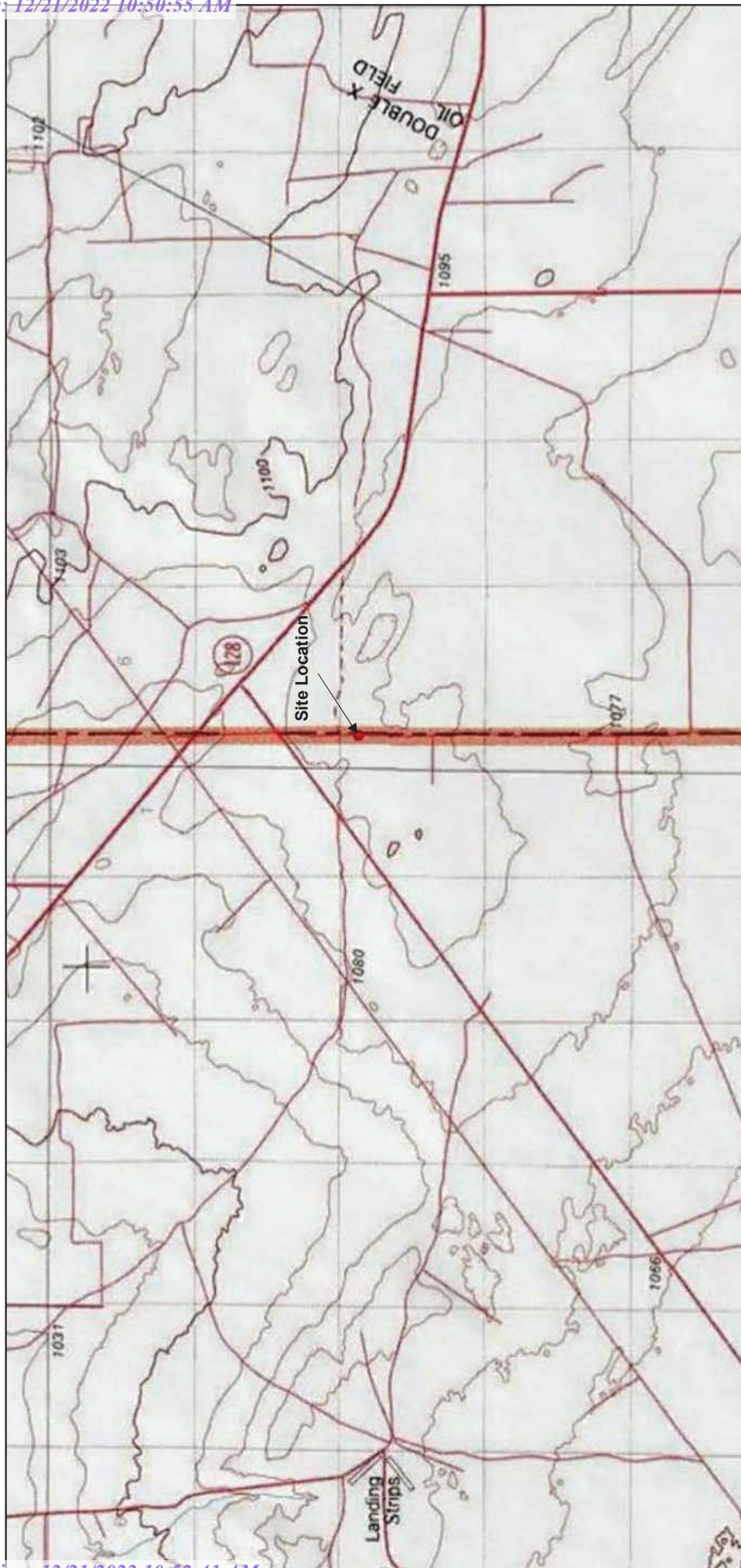


Figure 1

Site Location Map
COG Operating, LLC
Canvasback 13 Federal #002H
Eddy County, New Mexico

Scale 1" = ~5,000'

Drafted by: ZC	Checked by: JL
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Draft: April 9, 2018

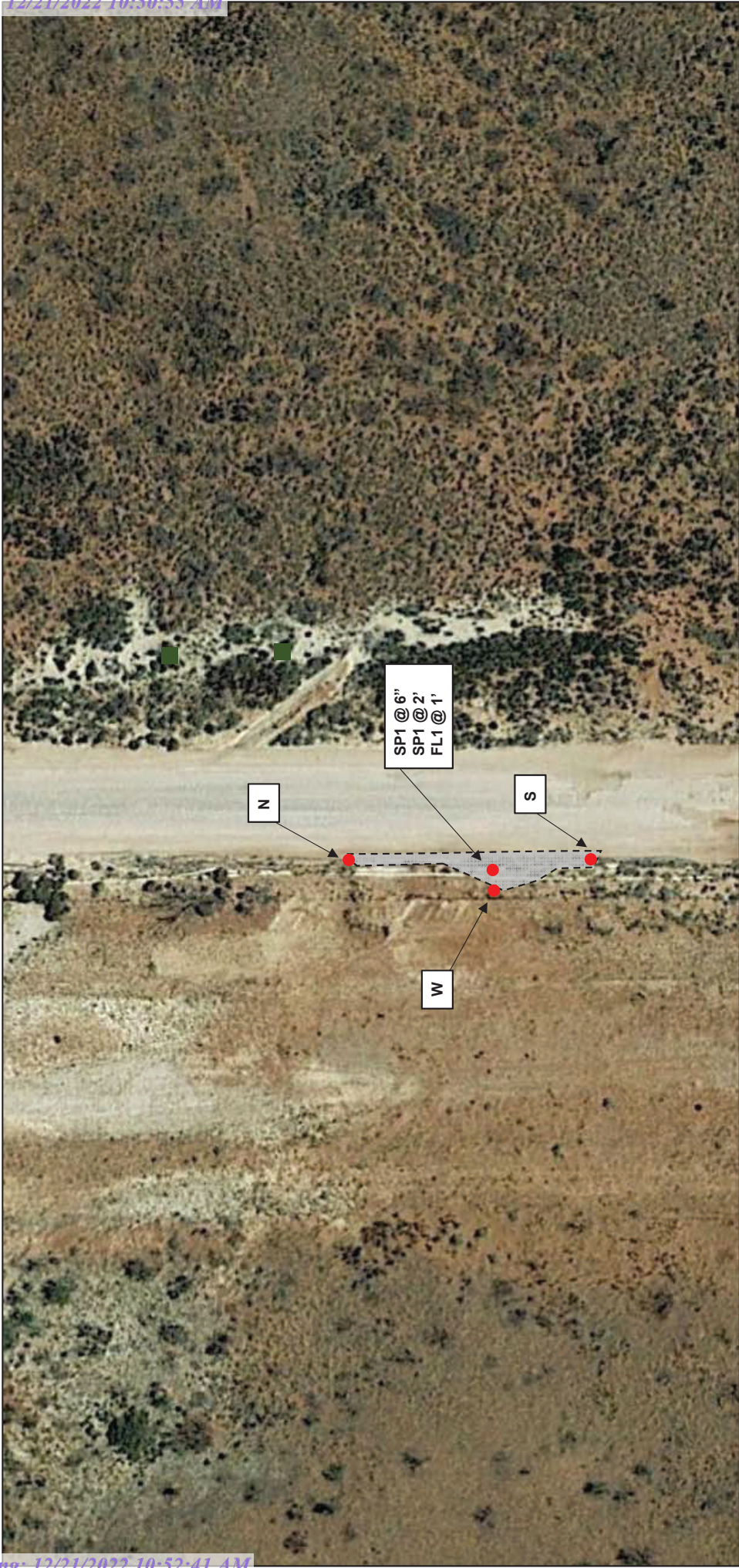
Lat. N 32.22260 Long. W 103.72296

UL "A", Sec. 13, T24S, R31E

TRC Proj. No.: 302162



2057 Commerce Drive
Midland, Texas 79703
432.520.7720



LEGEND:

- Confirmation Soil Sample Location
- ▭ Excavated Area

Figure 2

Site & Sample Location Map
COG Operating, LLC
Canvasback 13 Federal #002H
Eddy County, New Mexico

Scale 1" = ~50'

Drafted by: ZC	Checked by: JL
Draft: April 9, 2018	
Lat. N 32.22260 Long. W 103.72296	
UL "A", Sec. 13, T24S, R31E	
TRC Proj. No.: 302162	



2057 Commerce Drive
Midland, Texas 79703
432.520.7720

TABLE 1
CONCENTRATIONS OF BENZENE, BTEX, TPH AND CHLORIDE IN SOIL
COG OPERATING, LLC
CANVASBACK 13 FEDERAL #002H (2RP-4682)
EDDY COUNTY, NEW MEXICO

All concentrations are reported in mg/kg

SAMPLE LOCATION	SAMPLE DATE	SOIL STATUS	METHODS: SW 846-8021b					METHOD: SW 8015M				E 300.1	
			BENZENE	TOLUENE	ETHYL-BENZENE	m, p - XYLENES	o - XYLENE	TOTAL BTEX	TPH GRO C ₆ -C ₁₀	TPH DRO C ₁₀ -C ₂₈	TPH ORO C ₂₈ -C ₃₅		TOTAL TPH C ₆ -C ₃₅
SP1 @ 6"	04/02/18	Excavated	<0.0174	<0.0174	<0.0174	<0.0347	<0.0174	<0.0174	<3.47	<25.0	<25.0	<25.0	2,500
SP1 @ 2'	04/02/18	In-Situ	<0.0190	<0.0190	<0.0190	<0.0381	<0.0190	<0.0190	<3.81	<25.2	<25.2	<25.2	47.2
FL1 @ 1'	04/02/18	In-Situ	<0.0193	<0.0193	<0.0193	<0.0387	<0.0193	<0.0193	<3.87	<24.9	<24.9	<24.9	202
N	04/02/18	In-Situ	<0.0196	<0.0196	<0.0196	<0.0391	<0.0196	<0.0196	<3.91	<24.9	<24.9	<24.9	<25.0
S	04/02/18	In-Situ	<0.0180	<0.0180	<0.0180	<0.0360	<0.0180	<0.0180	<3.60	<24.9	<24.9	<24.9	48.3
W	04/02/18	In-Situ	<0.0198	<0.0198	<0.0198	<0.0396	<0.0198	<0.0198	<3.96	<24.9	<24.9	<24.9	<25.0
NMOCD Recommended Remediation Action Levels			10	-	-	-	-	50	-	-	-	5,000	600

Analytical Report 581751

for
TRC Solutions, Inc

Project Manager: Joel Lowry

Canvasback 13 Fed #002H 3/27

13-APR-18

Collected By: Client



6701 Aberdeen, Suite 9 Lubbock, TX 79424

Xenco-Houston (EPA Lab code: TX00122):

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

Xenco-Dallas (EPA Lab code: TX01468):

Texas (T104704295-17-16), 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 (T104704400-18-14)

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)

Xenco-Atlanta (LELAP Lab ID #04176)



13-APR-18

Project Manager: **Joel Lowry**
TRC Solutions, Inc
2057 Commerce
Midland, TX 79703

Reference: XENCO Report No(s): **581751**
Canvasback 13 Fed #002H 3/27
Project Address: Eddy Co. N.M.

Joel Lowry:

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) 581751. 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. 581751 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

A handwritten signature in black ink, appearing to read 'Kelsey Brooks', is written over a horizontal line.

Kelsey Brooks

Project Manager

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

Certified and approved by numerous States and Agencies.

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

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

**Sample Cross Reference 581751****TRC Solutions, Inc, Midland, TX**

Canvasback 13 Fed #002H 3/27

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SP1 @ 6"	S	04-02-18 09:00	6 In	581751-001
FL1 @ 1'	S	04-02-18 09:10	1 ft	581751-002
SP1 @ 2'	S	04-02-18 09:20	2 ft	581751-003
N	S	04-02-18 09:30	1 ft	581751-004
S	S	04-02-18 09:40	1 ft	581751-005
W	S	04-02-18 09:50	1 ft	581751-006



CASE NARRATIVE

Client Name: TRC Solutions, Inc

Project Name: Canvasback 13 Fed #002H 3/27

Project ID:

Work Order Number(s): 581751

Report Date: 13-APR-18

Date Received: 04/06/2018

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3046275 DRO-ORO By SW8015B

Surrogate Tricosane recovered above QC limits Data confirmed by re-analysis. Samples affected are: 7642346-1-BKS, 7642346-1-BSD.

Batch: LBA-3046326 BTEX by EPA 8021B

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



Certificate of Analysis Summary 581751

TRC Solutions, Inc, Midland, TX

Project Name: Canvasback 13 Fed #002H 3/27

Project Id: Joel Lowry
Contact: Eddy Co. N.M.
Project Location: Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Date Received in Lab: Fri Apr-06-18 06:04 pm
Report Date: 13-APR-18
Project Manager: Kelsey Brooks

<i>Analysis Requested</i>		Lab Id:	581751-001	581751-002	581751-003	581751-004	581751-005	581751-006
		Field Id:	SP1 @ 6"	FL1 @ 1'	SP1 @ 2'	N	S	W
		Depth:	6- In	1- ft	2- ft	1- ft	1- ft	1- ft
		Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Sampled:	Apr-02-18 09:00	Apr-02-18 09:10	Apr-02-18 09:20	Apr-02-18 09:30	Apr-02-18 09:40	Apr-02-18 09:50
BTEX by EPA 8021B		Extracted:	Apr-09-18 12:00	Apr-09-18 12:00	Apr-09-18 12:00	Apr-09-18 12:00	Apr-09-18 12:00	Apr-09-18 12:00
		Analyzed:	Apr-11-18 07:33	Apr-11-18 08:00	Apr-11-18 08:27	Apr-11-18 08:54	Apr-11-18 09:22	Apr-11-18 09:49
		Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene			<0.0174 0.0174	<0.0193 0.0193	<0.0190 0.0190	<0.0196 0.0196	<0.0180 0.0180	<0.0198 0.0198
Toluene			<0.0174 0.0174	<0.0193 0.0193	<0.0190 0.0190	<0.0196 0.0196	<0.0180 0.0180	<0.0198 0.0198
Ethylbenzene			<0.0174 0.0174	<0.0193 0.0193	<0.0190 0.0190	<0.0196 0.0196	<0.0180 0.0180	<0.0198 0.0198
m,p-Xylenes			<0.0347 0.0347	<0.0387 0.0387	<0.0381 0.0381	<0.0391 0.0391	<0.0360 0.0360	<0.0396 0.0396
o-Xylene			<0.0174 0.0174	<0.0193 0.0193	<0.0190 0.0190	<0.0196 0.0196	<0.0180 0.0180	<0.0198 0.0198
Total Xylenes			<0.0174 0.0174	<0.0193 0.0193	<0.0190 0.0190	<0.0196 0.0196	<0.0180 0.0180	<0.0198 0.0198
Total BTEX			<0.0174 0.0174	<0.0193 0.0193	<0.0190 0.0190	<0.0196 0.0196	<0.0180 0.0180	<0.0198 0.0198
Chloride by EPA 300		Extracted:	Apr-10-18 10:30	Apr-10-18 10:30	Apr-10-18 10:30	Apr-10-18 10:30	Apr-10-18 10:30	Apr-10-18 10:30
		Analyzed:	Apr-11-18 11:14	Apr-11-18 11:27	Apr-11-18 11:39	Apr-11-18 11:51	Apr-11-18 12:04	Apr-11-18 12:16
		Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride			2500 1250	202 25.0	47.4 25.0	<25.0 25.0	48.3 25.0	<25.0 25.0
DRO-ORO By SW8015B		Extracted:	Apr-10-18 11:35	Apr-10-18 11:35	Apr-10-18 11:35	Apr-10-18 11:35	Apr-10-18 11:35	Apr-10-18 11:35
		Analyzed:	Apr-10-18 23:24	Apr-11-18 00:00	Apr-11-18 00:35	Apr-11-18 01:10	Apr-11-18 01:46	Apr-11-18 02:22
		Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Diesel Range Organics (DRO)			<25.0 25.0	<24.9 24.9	<25.2 25.2	<24.9 24.9	<24.9 24.9	<24.9 24.9
Oil Range Hydrocarbons (ORO)			<25.0 25.0	<24.9 24.9	<25.2 25.2	<24.9 24.9	<24.9 24.9	<24.9 24.9
TPH GRO by EPA 8015 Mod.		Extracted:	Apr-09-18 12:00	Apr-09-18 12:00	Apr-09-18 12:00	Apr-09-18 12:00	Apr-09-18 12:00	Apr-09-18 12:00
		Analyzed:	Apr-11-18 07:33	Apr-11-18 08:00	Apr-11-18 08:27	Apr-11-18 08:54	Apr-11-18 09:22	Apr-11-18 09:49
		Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
TPH-GRO			<3.47 3.47	<3.87 3.87	<3.81 3.81	<3.91 3.91	<3.60 3.60	<3.96 3.96

Kelsey Brooks

Kelsey Brooks
Project Manager

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



Flagging Criteria

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

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

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



Form 2 - Surrogate Recoveries

Project Name: Canvasback 13 Fed #002H 3/27

Work Orders : 581751,

Lab Batch #: 3046275

Sample: 581751-001 / SMP

Project ID:

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 04/10/18 23:24

SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
Tricosane	13.3	9.99	133	65-144	
n-Triacontane	10.2	9.99	102	46-152	

Lab Batch #: 3046275

Sample: 581751-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 04/11/18 00:00

SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
Tricosane	11.5	9.97	115	65-144	
n-Triacontane	8.80	9.97	88	46-152	

Lab Batch #: 3046275

Sample: 581751-003 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 04/11/18 00:35

SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
Tricosane	11.9	10.1	118	65-144	
n-Triacontane	8.86	10.1	88	46-152	

Lab Batch #: 3046275

Sample: 581751-004 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 04/11/18 01:10

SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
Tricosane	10.1	9.94	102	65-144	
n-Triacontane	8.32	9.94	84	46-152	

Lab Batch #: 3046275

Sample: 581751-005 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 04/11/18 01:46

SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
Tricosane	9.19	9.94	92	65-144	
n-Triacontane	8.83	9.94	89	46-152	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.



Form 2 - Surrogate Recoveries

Project Name: Canvasback 13 Fed #002H 3/27

Work Orders : 581751,

Lab Batch #: 3046275

Sample: 581751-006 / SMP

Project ID:

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 04/11/18 02:22

SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
Tricosane	11.3	9.96	113	65-144	
n-Triacontane	8.58	9.96	86	46-152	

Lab Batch #: 3046326

Sample: 581751-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 04/11/18 07:33

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.107	0.100	107	68-120	
a,a,a-Trifluorotoluene	1.76	1.74	101	71-121	

Lab Batch #: 3046330

Sample: 581751-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 04/11/18 07:33

SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod.	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.101	0.100	101	76-123	
a,a,a-Trifluorotoluene	1.48	1.74	85	69-120	

Lab Batch #: 3046326

Sample: 581751-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 04/11/18 08:00

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.104	0.100	104	68-120	
a,a,a-Trifluorotoluene	2.05	1.93	106	71-121	

Lab Batch #: 3046330

Sample: 581751-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 04/11/18 08:00

SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod.	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0994	0.100	99	76-123	
a,a,a-Trifluorotoluene	1.91	1.93	99	69-120	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.



Form 2 - Surrogate Recoveries

Project Name: Canvasback 13 Fed #002H 3/27

Work Orders : 581751,

Lab Batch #: 3046326

Sample: 581751-003 / SMP

Project ID:

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 04/11/18 08:27

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.107	0.100	107	68-120	
a,a,a-Trifluorotoluene	2.00	1.90	105	71-121	

Lab Batch #: 3046326

Sample: 581751-003 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 04/11/18 08:27

SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod.	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.102	0.100	102	76-123	
a,a,a-Trifluorotoluene	1.80	1.90	95	69-120	

Lab Batch #: 3046326

Sample: 581751-004 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 04/11/18 08:54

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.104	0.100	104	68-120	
a,a,a-Trifluorotoluene	2.02	1.96	103	71-121	

Lab Batch #: 3046326

Sample: 581751-004 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 04/11/18 08:54

SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod.	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0995	0.100	100	76-123	
a,a,a-Trifluorotoluene	1.88	1.96	96	69-120	

Lab Batch #: 3046326

Sample: 581751-005 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 04/11/18 09:22

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.108	0.100	108	68-120	
a,a,a-Trifluorotoluene	1.90	1.80	106	71-121	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.



Form 2 - Surrogate Recoveries

Project Name: Canvasback 13 Fed #002H 3/27

Work Orders : 581751,

Lab Batch #: 3046330

Sample: 581751-005 / SMP

Project ID:

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 04/11/18 09:22

SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod. Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.103	0.100	103	76-123	
a,a,a-Trifluorotoluene	1.79	1.80	99	69-120	

Lab Batch #: 3046330

Sample: 581751-006 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 04/11/18 09:49

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.107	0.100	107	68-120	
a,a,a-Trifluorotoluene	2.03	1.98	103	71-121	

Lab Batch #: 3046330

Sample: 581751-006 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 04/11/18 09:49

SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod. Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0991	0.100	99	76-123	
a,a,a-Trifluorotoluene	1.93	1.98	97	69-120	

Lab Batch #: 3046275

Sample: 7642346-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 04/10/18 13:24

SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Tricosane	10.5	10.0	105	65-144	
n-Triacontane	12.8	10.0	128	46-152	

Lab Batch #: 3046326

Sample: 7642254-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 04/10/18 21:10

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0966	0.100	97	68-120	
a,a,a-Trifluorotoluene	1.94	2.00	97	71-121	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.



Form 2 - Surrogate Recoveries

Project Name: Canvasback 13 Fed #002H 3/27

Work Orders : 581751,

Lab Batch #: 3046330

Sample: 7642259-1-BLK / BLK

Project ID:

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 04/10/18 21:10

SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod. Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0933	0.100	93	76-123	
a,a,a-Trifluorotoluene	2.24	2.00	112	69-120	

Lab Batch #: 3046275

Sample: 7642346-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 04/10/18 14:00

SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Tricosane	16.7	10.0	167	65-144	**
n-Triacontane	11.6	10.0	116	46-152	

Lab Batch #: 3046326

Sample: 7642254-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 04/10/18 18:27

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0955	0.100	96	68-120	
a,a,a-Trifluorotoluene	1.69	2.00	85	71-121	

Lab Batch #: 3046330

Sample: 7642259-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 04/10/18 19:22

SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod. Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0971	0.100	97	76-123	
a,a,a-Trifluorotoluene	1.98	2.00	99	69-120	

Lab Batch #: 3046275

Sample: 7642346-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 04/10/18 14:35

SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Tricosane	15.7	10.0	157	65-144	**
n-Triacontane	11.8	10.0	118	46-152	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.



Form 2 - Surrogate Recoveries

Project Name: Canvasback 13 Fed #002H 3/27

Work Orders : 581751,

Lab Batch #: 3046326

Sample: 7642254-1-BSD / BSD

Project ID:

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 04/10/18 18:54

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0953	0.100	95	68-120	
a,a,a-Trifluorotoluene	1.78	2.00	89	71-121	

Lab Batch #: 3046330

Sample: 7642259-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 04/10/18 19:49

SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod.	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0995	0.100	100	76-123	
a,a,a-Trifluorotoluene	1.57	2.00	79	69-120	

Lab Batch #: 3046275

Sample: 581742-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 04/10/18 15:45

SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
Tricosane	12.6	10.1	125	65-144	
n-Triacontane	7.71	10.1	76	46-152	

Lab Batch #: 3046326

Sample: 581742-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 04/10/18 22:04

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.103	0.100	103	68-120	
a,a,a-Trifluorotoluene	1.79	1.94	92	71-121	

Lab Batch #: 3046330

Sample: 581742-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 04/10/18 22:57

SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod.	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.104	0.100	104	76-123	
a,a,a-Trifluorotoluene	1.60	1.98	81	69-120	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.



Form 2 - Surrogate Recoveries

Project Name: Canvasback 13 Fed #002H 3/27

Work Orders : 581751,

Lab Batch #: 3046275

Sample: 581742-001 SD / MSD

Project ID:

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 04/10/18 16:21

SURROGATE RECOVERY STUDY

DRO-ORO By SW8015B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
Tricosane	12.3	10.0	123	65-144	
n-Triacontane	8.97	10.0	90	46-152	

Lab Batch #: 3046326

Sample: 581742-001 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 04/10/18 22:31

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.104	0.100	104	68-120	
a,a,a-Trifluorotoluene	1.82	1.88	97	71-121	

Lab Batch #: 3046330

Sample: 581742-001 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 04/10/18 23:25

SURROGATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod.	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.105	0.100	105	76-123	
a,a,a-Trifluorotoluene	1.43	1.91	75	69-120	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Project Name: Canvasback 13 Fed #002H 3/27

Work Order #: 581751

Project ID:

Analyst: MIT

Date Analyzed: 04/10/2018

Lab Batch ID: 3046326

Date Prepared: 04/09/2018

Sample: 7642254-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
BTEX by EPA 8021B											
Benzene	<0.0200	2.00	1.92	96	2.00	1.93	97	1	55-120	20	
Toluene	<0.0200	2.00	1.93	97	2.00	1.96	98	2	77-120	20	
Ethylbenzene	<0.0200	2.00	1.95	98	2.00	2.00	100	3	77-120	20	
m,p-Xylenes	<0.0400	4.00	3.92	98	4.00	4.01	100	2	78-120	20	
o-Xylene	<0.0200	2.00	1.93	97	2.00	1.98	99	3	78-120	20	

Date Prepared: 04/10/2018

Date Analyzed: 04/11/2018

Analyst: RNL

Matrix: Solid

Sample: 7642472-1-BKS

Batch #: 1

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride by EPA 300											
Chloride	<25.0	250	251	100	250	252	101	0	90-110	20	

Relative Percent Difference RPD = $200 * [(C-F)/(C+F)]$
Blank Spike Recovery [D] = $100 * (C)/[B]$
Blank Spike Duplicate Recovery [G] = $100 * (F)/[E]$
All results are based on MDL and Validated for QC Purposes

Project Name: Canvasback 13 Fed #002H 3/27

Work Order #: 581751

Analyst: PGM

Lab Batch ID: 3046275

Units: mg/kg

Sample: 7642346-1-BKS

Date Prepared: 04/10/2018
Batch #: 1

Project ID:

Date Analyzed: 04/10/2018
Matrix: Solid

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY												
mg/kg												
DRO-ORO By SW8015B		Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes												
Diesel Range Organics (DRO)		<25.0	100	119	119	100	114	114	4	63-139	20	

Analyst: MIT
Lab Batch ID: 3046330
Units: mg/kg
Sample: 7642259-1-BKS
Date Prepared: 04/09/2018
Batch #: 1

Date Analyzed: 04/10/2018
Matrix: Solid

Units:		mg/kg										
BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY												
TPH GRO by EPA 8015 Mod.		Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes												
TPH-GRO		<4.00	20.0	19.2	96	20.0	20.7	104	8	35-129	20	

Relative Percent Difference RPD = $200 * [(C-F)/(C+F)]$
Blank Spike Recovery [D] = $100 * (C)/[B]$
Blank Spike Duplicate Recovery [G] = $100 * (F)/[E]$
All results are based on MDL and Validated for QC Purposes



Form 3 - MS / MSD Recoveries

Project Name: Canvasback 13 Fed #002H 3/27

Work Order #: 581751
Lab Batch ID: 3046326
Date Analyzed: 04/10/2018
Reporting Units: mg/kg

Project ID:

QC- Sample ID: 581742-001 S Batch #: 1 Matrix: Soil
Date Prepared: 04/09/2018 Analyst: MIT

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.0194	1.94	1.76	91	1.88	1.70	90	3	54-120	25	
Toluene	<0.0194	1.94	1.79	92	1.88	1.77	94	1	57-120	25	
Ethylbenzene	<0.0194	1.94	1.91	98	1.88	1.89	101	1	58-131	25	
m,p-Xylenes	<0.0388	3.88	3.83	99	3.75	3.78	101	1	62-124	25	
o-Xylene	<0.0194	1.94	1.89	97	1.88	1.87	99	1	62-124	25	

Lab Batch ID: 3046463 QC- Sample ID: 581747-005 S Batch #: 1 Matrix: Soil
Date Analyzed: 04/11/2018 Date Prepared: 04/10/2018 Analyst: RNL

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<25.0	250	257	103	250	258	103	0	80-120	20	

Lab Batch ID: 3046275 QC- Sample ID: 581742-001 S Batch #: 1 Matrix: Soil
Date Analyzed: 04/10/2018 Date Prepared: 04/10/2018 Analyst: PGM

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

DRO-ORO By SW8015B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Diesel Range Organics (DRO)	<25.1	101	86.4	86	100	85.9	86	1	63-139	20	

Matrix Spike Percent Recovery $[D] = 100 \times (C-A)/B$
Relative Percent Difference $RPD = 200 \times |(C-F)/(C+F)|$
ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.



Form 3 - MS / MSD Recoveries

Project Name: Canvasback 13 Fed #002H 3/27

Work Order # : 581751
Lab Batch ID: 3046330
Date Analyzed: 04/10/2018
Reporting Units: mg/kg

QC- Sample ID: 581742-001 S Batch #: 1 Matrix: Soil
Date Prepared: 04/09/2018 Analyst: MIT

Project ID:

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH GRO by EPA 8015 Mod. Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
	<3.95	19.8	15.6	79	19.1	14.9	78	5	35-129	20	

Matrix Spike Percent Recovery $[D] = 100 \times (C-A)/B$
Relative Percent Difference $RPD = 200 \times [(C-F)/(C+F)]$
ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Matrix Spike Duplicate Percent Recovery $[G] = 100 \times (F-A)/E$

581751

15185



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San Antonio, Texas (210-509-3334)
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Phoenix, Arizona (480-355-0900)

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Dallas Texas (214-902-0300)										Midland, Texas (432-704-5251)									
Client / Reporting Information										Project Information									
Company Name / Branch:					Project Name/Number:					Number:									
TRC Environmental Corporation					Canvasback 13 Fed #002H 3/27					269912									
Company Address:					Project Location:														
2657 Commerce Drive					Eddy Co, NM														
Midland, TX 79703																			
Email:					Phone No:														
jlowry@trcsolutions.com					432-488-4460														
Project Contact:					Invoice To:														
Joel Lowry					COG Operating, LLC					C/O Becky Haskell									
Sampler's Name Becky Griffin					Invoice:														
No.	Field ID / Point of Collection	Sample Depth	Date	Time	Matrix	# of bottles	IC	HNO ₃	H ₂ SO ₄	NaOH	NaHSO ₄	MeOH	NONE	TPH 8015 M EX	Chloride E 300	BTEX 8021B	Field Comments		
1	SP1 @ 6"	6"	4/2/2018	9:00	S	1								X	X	X			
2	FL @ 1'	1'	4/2/2018	9:10	S	1								X	X	X			
3	SP1 @ 2'	2'	4/2/2018	9:20	S	1								X	X	X			
4	N	1'	4/2/2018	9:30	S	1								X	X	X			
5	S	1'	4/2/2018	9:40	S	1								X	X	X			
6	W	1'	4/3/2018	9:50	S	1								X	X	X			
7																			
8																			
9																			
10																			
Turnaround Time (Business days)										Notes:									
<input type="checkbox"/> Same Day TAT <input type="checkbox"/> 5 Day TAT										<input type="checkbox"/> Level IV (Full Data Plg /raw data) jlowry@trcsolutions.com									
<input type="checkbox"/> Next Day EMERGENCY <input type="checkbox"/> 7 Day TAT										<input type="checkbox"/> TRRP Level IV rhaskell@concho.com									
<input type="checkbox"/> 2 Day EMERGENCY <input checked="" type="checkbox"/> Contract TAT										<input type="checkbox"/> UST / RG -411 zcorder@trcsolution.com									
<input type="checkbox"/> 3 Day EMERGENCY										<input type="checkbox"/> TRRP Checklist									
TAT Starts Day received by Lab, if received by 5:00 pm										FED-EX / UPS: Tracking #									
SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY																			
Relinquished by Sampler:					Received By:					Date Time:									
1. Becky [Signature]					1					2									
Relinquished by:					Received By:					Date Time:									
3					3					4									
Relinquished by:					Received By:					Date Time:									
5 [Signature]					5					5									
On ice cooler Temp. 4.5					Thermo Corr. Factor 18.3														

5 XENPO, ITS AFFILIATES AND SUBSIDIARIES IT ASSIGNS STANDARD TERMS AND CONDITIONS OF SERVICE. XENPO WILL BE LIABLE ONLY FOR THE COST OF SAMPLES AND SHALL NOT ASSUME ANY RESPONSIBILITY FOR ANY USES OR EXPENSES INCURRED BY THE CLIENT. IT SURROUNDES



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: TRC Solutions, Inc

Date/ Time Received: 04/06/2018 06:04:59 PM

Work Order #: 581751

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : IR-3

Sample Receipt Checklist**Comments**

#1 *Temperature of cooler(s)?	4.5
#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:

Brenda Ward
Brenda Ward

Date: 04/06/2018

Checklist reviewed by:

Kelsey Brooks
Kelsey Brooks

Date: 04/11/2018



Photographic Log

Client: COG Operating, LLC

Project Name: Canvasback 13 Federal #002H

Prepared by: TRC Environmental Corp.

Location: Eddy County, NM

Photograph No. 1

Description:
View of the initial
release.

Direction:
Northwest



Photograph No. 2

Description:
View of the initial
release.

Direction:
North





Photographic Log

Client: COG Operating, LLC

Prepared by: TRC Environmental Corp.

Project Name: Canvasback 13 Federal #002H

Location: Eddy County, NM

Photograph No. 3

Description:
View of portion of
the excavated
area.

Direction:
South



Photograph No. 4

Description:
View of the
affected area after
remediation
activities.

Direction:
South



NM OIL CONSERVATION

ARTESIA DISTRICT

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

MAR 29 2018

Form C-141
Revised April 3, 2017

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

RECEIVED

Release Notification and Corrective Action

NAB1808940940 OPERATOR ☒ Initial Report ☐ Final Report

Name of Company: COG Production LLC (OGRID# 217995)	Contact: Robert McNeill
Address: 600 West Illinois Avenue, Midland TX 79701	Telephone No. 432-683-7443
Facility Name: Canvasback 13 Federal #002H	Facility Type: Flowline

Surface Owner: Federal	Mineral Owner: Federal	API No. 30-015-40538
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LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
A	13	24S	31E					Eddy

Latitude 32.2226 Longitude -103.7230 NAD83

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: 8 bbl.	Volume Recovered: 3 bbl.
Source of Release: Flowline	Date and Hour of Occurrence: March 27, 2018 6:30pm	Date and Hour of Discovery: March 27, 2018 6:30pm
Was Immediate Notice Given? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> Not Required	If YES, To Whom?	
By Whom?	Date and Hour:	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	
If a Watercourse was Impacted, Describe Fully.*		
Describe Cause of Problem and Remedial Action Taken.*		
The release was caused due to a flowline blowing out. Flow lines will be inspected.		
Describe Area Affected and Cleanup Action Taken.*		
The release was on a lease road and within a pasture. A vacuum truck was dispatched to remove all freestanding fluids. Concho will have the spill area sampled to delineate any possible impact from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation activities.		
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.		
Signature: <u>DeAnn Grant</u>	OIL CONSERVATION DIVISION	
Printed Name: DeAnn Grant	Approved by Environmental Specialist: <u>[Signature]</u>	
Title: HSE Administrative Assistant	Approval Date: <u>3/30/18</u>	Expiration Date: <u>N/A</u>
E-mail Address: agrant@concho.com	Conditions of Approval: <u>See attached</u>	Attached <input type="checkbox"/> <u>JRP 4688</u>
Date: March 29, 2018	Phone: 432-253-4513	

* Attach Additional Sheets If Necessary

Incident ID	nAB1808940940
District RP	2RP-4682
Facility ID	
Application ID	

Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

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

- ☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC
- ☒ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)
- ☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)
- ☒ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: Charles R. Beauvais

Title: Senior Environmental Engineer

Signature: Charles R. Beauvais

Date: 12/20/2022

email: charles.r.beauvais@conocophillips.com

Telephone: 575-988-2043

OCD Only

Received by: _____

Date: _____

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: Brittany Hall

Date: 12/21/2022

Printed Name: Brittany Hall

Title: Environmental Specialist

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 169321

CONDITIONS

Operator: COG PRODUCTION, LLC 600 W. Illinois Ave Midland, TX 79701	OGRID: 217955
	Action Number: 169321
	Action Type: [IM-SD] Incident File Support Doc (ENV) (IM-BNF)

CONDITIONS

Created By	Condition	Condition Date
bhall	None	12/21/2022