

June 13, 2018

Ms. Olivia Yu
Oil Conservation Division, District 1
1625 N. French Drive
Hobbs, New Mexico 88240

Ms. Shelly Tucker
Bureau of Land Management, CFO
620 E. Green Street
Carlsbad. New Mexico 88220

RE: Closure Report

COG – BC Federal #032 API #: 30-025-38829 RP #: 1RP-4811

Unit Letter G, Section 20, Township 17S, Range 32E

Lea County, New Mexico

Release Date: September 10, 2017

Dear Ms. Yu/Ms. Tucker:

EnTech Consulting Corporation (EnTech), has prepared this closure report documenting remediation of the COG Operating, LLC (COG), BC Federal #032 release, located in Lea County, New Mexico (hereinafter referred to as the "Site").

#### **Background**

The BC Federal #032 release is located in Unit Letter G, Section 20, Township 17 South, and Range 32 East in Lea County, New Mexico. The Site consists of a caliche covered production pad measuring approximately 216-feet x 315-feet, a pumping unit, and a flow line. The production pad is located at latitude 32.8208771 North and -103.7854462 West, approximately 36.6 miles east of Artesia, New Mexico, and illustrated on **Figure 1**.

On September 10, 2017, a ¼-inch nipple on a gauge failed due to corrosion resulting in the release of approximately three (3) barrels (bbls) of oil and four (4) bbls of produced water. A vacuum truck was utilized to recover all freestanding fluids, with the balance soaking into the caliche pad covering the Site. Approximately two (2) bbls of oil and three (3) bbls of produced water were recovered. The release was reported to the New Mexico Oil Conservation Division (NMOCD), on September 18, 2017. A copy of the Initial and Final Form C-141 is included in **Attachment D.** 

**APPROVED** 

By Olivia Yu at 9:25 am, Jun 15, 2018

NMOCD approves 1RP-4811 for closure.

#### **Groundwater, Site Ranking and Proposed Remedial Action Goals**

According to the New Mexico Office of the State Engineer (NMOSE), groundwater in the Site vicinity is approximately eighty-one (81) feet below ground surface (bgs). NMOSE records were provided in the approved remediation work plan. No water well or surface water was observed within 1,000-feet of the release Site.

The Site is subject to regulatory oversite by the NMOCD and Bureau of Land Management (BLM). To address activities related to releases, the NMOCD utilizes the *Guidelines for Remediation of Leaks, Spill, and Releases* (August 13, 1993) as guidance, in addition to the NMOCD rules, specifically New Mexico Administrative Code (NMAC) 19.15.29, *Release Notification*. The referenced documents establish investigation and abatement action requirements for sites subject to reporting and/or corrective action.

In accordance with the NMOCD guidance documents and approved in the remediation work plan, COG utilized the general site characteristics to determine the appropriate "ranking" for the Site.

Per NMOCD remediation standards, the analytical goals for confirmation samples collected from the remediated areas at the Site are: total petroleum hydrocarbons (TPH) target concentration of 1,000 milligrams per kilogram (mg/Kg), benzene target concentration of 10 mg/Kg, total benzene, toluene, ethylbenzene, and xylene (BTEX) target concentration of 50 mg/Kg, and chloride target concentration of 600 mg/Kg or background, whichever is greater. A field soil vapor headspace measurement of 100 parts per million vapor (ppmv) may be substituted for a laboratory analysis of the benzene and total BTEX concentration limits as per NMOCD guidelines.

#### Assessment

On October 16, 2017, a Site assessment and soil sampling were conducted in order to vertically and horizontally define the impacted area. A Site Map is included in **Figure 2**. The analytical results from the soil sampling activities are summarized in **Table 1**.

A total of twenty-six (26) soil samples were collected from seven (7) sample locations. Three (3) sample locations [T-1, T-2, and T-3], occurred within the "foot print" of the release (i.e., the area exhibiting the greatest apparent impact based on visual and/or olfactory evidence from the release of September 10, 2017). Four (4) sample locations [N, S, E, and W], occurred on the north, south, east, and west sides of the release respectively, and were selected to demonstrate the horizontal extent of the release.

Soil samples were collected from the three (3) sample locations [T-1, T-2, and T-3], occurring in the release "foot print" at various depths. Sample location T-1 and T-2 were sampled at surface, 1-foot bgs, 2-foot bgs, 3-foot bgs, and 9-foot bgs. Sample location T-3 was sampled at surface, 1-foot bgs, 2-foot bgs, 3-foot bgs, and 8-foot bgs. A total of eight (8) soil samples were collected from the four (4) sample locations (N, S, E, W) at the following two (2) depths: surface and 1-foot bgs.

Laboratory analysis of the soil samples collected from the area of impact indicated benzene concentrations ranging from nondetectable to 0.103 milligrams per kilogram (mg/Kg), BTEX concentrations ranging from nondetectable to 2.63 mg/Kg, TPH concentrations ranging from nondetectable to 2,920 mg/Kg, and chloride concentrations ranging from nondetectable to 1,060 mg/Kg. The only soil sample that indicated contaminant-of-concern (COC) concentrations above the NMOCD investigation and abatement action levels occurred in the surface soils sample collected from sample location T-2. All other soil samples were analyzed at concentrations below the NMOCD assessment and cleanup levels for all COCs.

Following all assessment activities, a formal Work Plan (dated December 21, 2017), was prepared and submitted to NMOCD and BLM for approval. The Work Plan proposed excavation of the impacted area represented by sample location T-2 to be excavated to a depth of 1-foot bgs and the areas in the vicinity of sample locations T-1 and T-3 scraped to a depth of ½-foot bgs to remove surface staining. The Work Plan further proposed that the excavated material be transported off-Site for disposal at an NMOCD approved solid waste disposal facility, backfilling all excavated areas with caliche, and contouring the backfilled area to match the surrounding location. The Work Plan was approved by NMOCD on January 2, 2018 with the addition of the laboratory method to be used for TPH analysis (Method 8105 Extended), evaluation of chloride concentrations, and the addition of confirmation edge and bottom samples for the area represented by T-2.

#### Remediation

Once all underground utilities were exposed, the areas in sample locations T-1, T-2, and T-3 were excavated, on April 17 through April 18, 2018. The area represented by sample location T-1 was excavated to a depth of approximately 0.3- to 0.5-feet bgs and measured approximately 56-feet wide by 62-feet long (3,472 square feet). The area represented by sample location T-2 was excavated to a depth of approximately 1-foot bgs and measured approximately 33-feet wide by 62-feet long (2,046 square feet). The area represented by sample location T-3 was excavated to a depth of approximately 0.3- to 0.5-feet bgs and measured approximately 43-feet wide by 56-feet long (2,408 square feet). The excavated areas generated approximately 200-cubic yards of impacted soil that was transported to the R360 facility located in Hobbs, New Mexico. Photographic documentation of assessment and remediation activities are included as **Attachment A.** Copies of the disposal manifests are included in **Attachment C.** 

Prior to backfilling, six (6) confirmation soil samples were collected from the excavation around sample location T-2. All confirmation soil samples were collected using a hand trowel, decontaminated prior to sampling. Two (2) confirmation soil samples (B-1 and B-2), were collected from the bottom of the excavation at a depth of approximately 1-foot bgs. Four (4) confirmation soil samples were collected from the edge of the excavation (SW-1, SW-2, SW-3, and SW-4), at a depth of approximately 8-inches bgs on the north, south, east, and west excavation edges. All confirmation soil samples were collected as discreet soil samples. The soil samples were collected in sealable, one-gallon polyethylene bags and kneaded from the outside to ensure a uniform sample. The soil sample was then transferred to clean, laboratory supplied glass jars, sealed, labeled with a unique identifier, and placed on ice for transport to the laboratory. The plastic bag, which still contained an portion of the confirmation sample, was

resealed and allowed to equilibrate for approximately 15-minutes. After equilibration, the confirmation soil sample was field screened with an organic vapor meter (OVM) calibrated with 100-ppmv isobutylene. Field screening results indicated OVM reading ranging from 1.0 ppmv to 2.8 ppmv. The highest field screened confirmation sample was collected from sample location SW-3, which is located on the extreme western edge of the excavation in the T-2 area.

At the conclusion of all field activities, the confirmation soil samples were transported to the Xenco Laboratory in Midland, Texas, following proper chain-of-custody protocol. The soil samples were analyzed on standard turnaround for TPH using Method 8015 Extended (gasoline range organics (GRO), diesel range organics (DRO), and mid-range organics (MRO)) and chlorides, using Method 300.0.

Laboratory analyses of the confirmation soil samples collected from the bottom of the excavation in area T-2, indicated TPH [C6-C35] concentrations ranging from 19.8 mg/Kg to 22.9 mg/Kg and chloride concentrations ranging from 33 mg/Kg to 343 mg/Kg. Laboratory analyses of the confirmation soil samples collected from the edge of the excavation, indicated TPH [C6-C35] concentrations ranging from nondetectable to 237 mg/Kg and chloride concentration ranging from nondetectable to 172 mg/Kg. All analytical reports are contained in **Attachment B**.

#### **Conclusions/Recommendations**

- The Site was impacted by a release of approximately three (3) bbls of oil and four (4) bbls of produced water on September 10, 2017. Approximately two (2) bbls of oil and three (3) bbls of produced water were recovered by vacuum truck, with the balance soaking into the caliche pad covering the Site.
- A Site assessment and soil sampling were conducted in order to vertically and horizontally define the impacted area. Laboratory analyses of the soil samples collected during the assessment indicated that all TPH and chloride concentrations above the NMOCD investigation and abatement action requirements occurred in area T-2, in the surface soils.
- Following all assessment activities, a formal Work Plan was prepared and submitted to NMOCD and BLM for approval. The Work Plan was approved by NMOCD on January 2, 2018 with the addition of the laboratory method to be used for TPH analysis (Method 8105 Extended), evaluation of chloride concentrations, and the addition of confirmation edge and bottom samples for the area represented by T-2.
- The approved Work Plan was implemented with the excavation of approximately 200-cubic yards of impacted soil. The impacted areas were excavated to a maximum depth of 1-foot bgs, with an average depth of approximately 0.3- to 0.5-feet bgs. Laboratory analyses of confirmation soil samples collected from the base of the excavation and edges, indicated TPH and chloride concentrations below the NMOCD investigation and abatement action requirements.
- All excavated soil was transported to R360 facility located in Hobbs, New Mexico.
- At the conclusion of all excavation activities, approximately 240 cubic yards of fresh caliche was imported to the Site, backfilled in the excavation, and compacted using the backhoe.

Since all affected soil that occurred within the impacted area of the Site has been excavated and transported off-Site for appropriate disposal and the Site restored to its original condition, no further action is deemed warranted.

Sincerely,

Peter Schram Project Manager

#### Attachments:

Table 1 – Assessment/Remediation Analytical Results

Figure 1 – Site Location Map

Figure 2 - Site Map

Attachment A – Site Photographs

Attachment B - Laboratory Analytical Reports

Attachment C - Disposal Manifests

Attachment D – NMOCD Form C-141 (Initial)/NMOCD Form C-141 (Final)

#### TABLE 1 - ASSESSMENT/REMEDIATION ANALYTICAL RESULTS

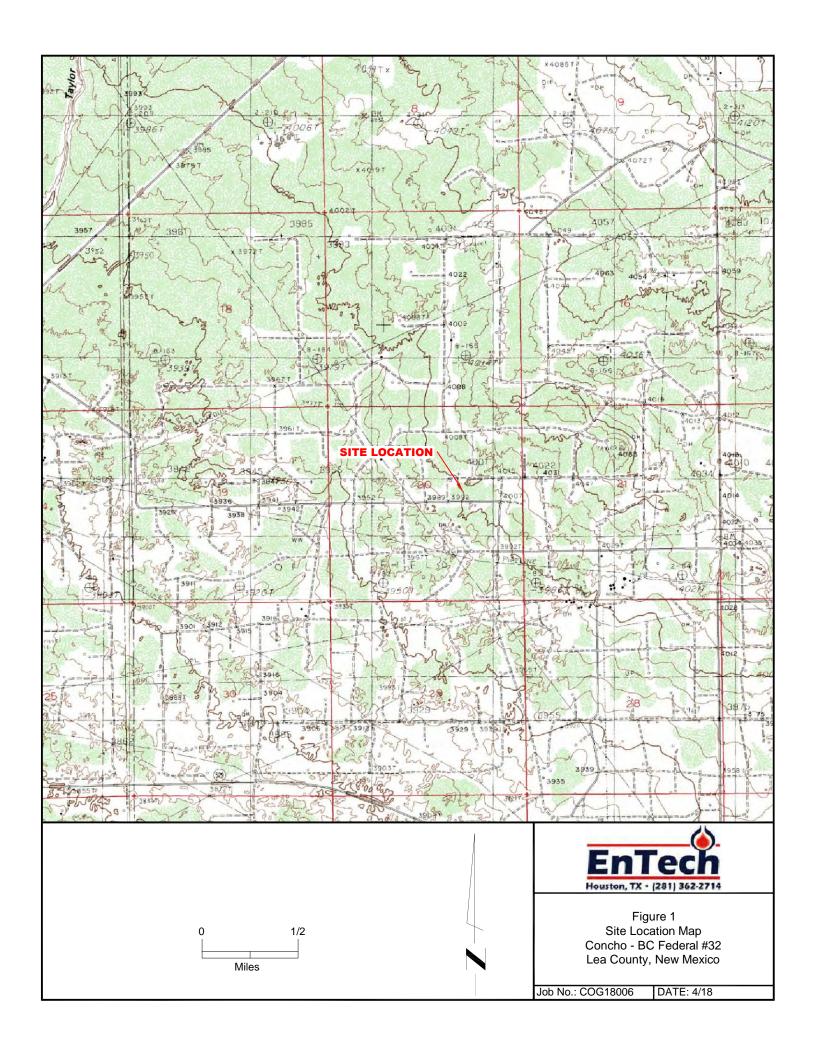
#### COG BC Federal #032 Lea County, New Mexico NMOCD Ref: 1RP-4811

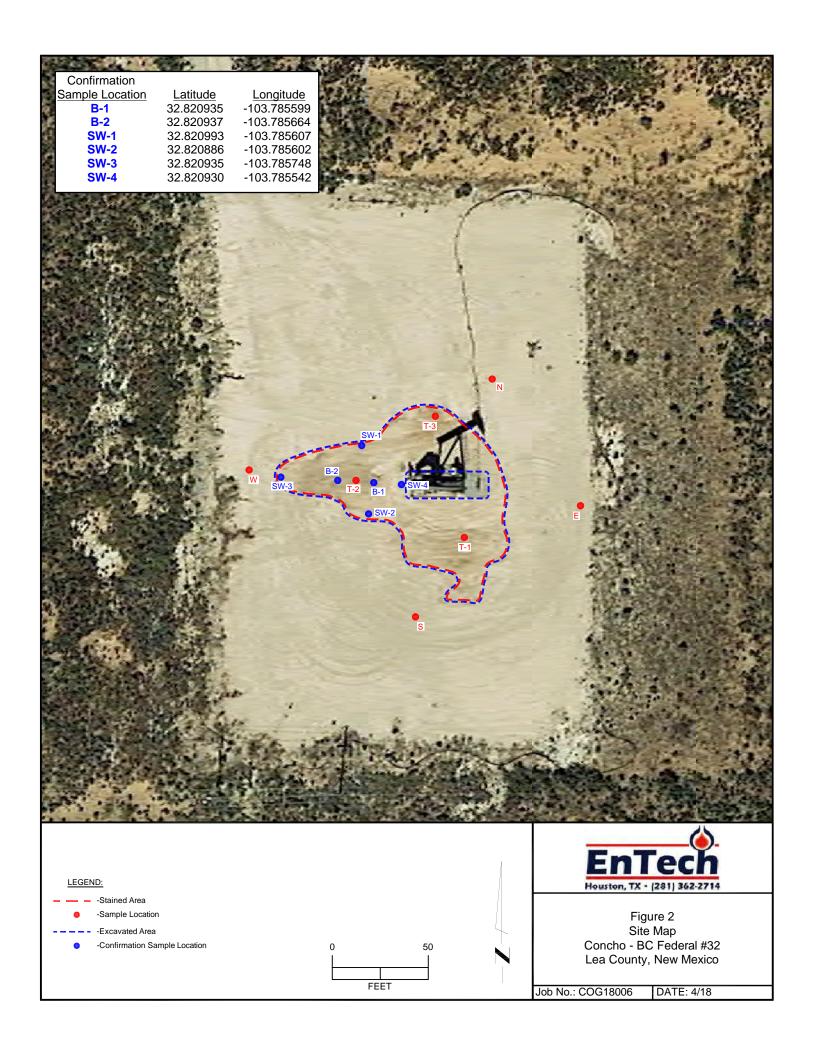
Release Date: September 10, 2017

	Laboratory			Sample Depth	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	TPH [C6-C12]	TPH [C12-C28]	TPH [C28-C35]	TPH [C6-C35]	Chlorides
Field ID	ID	Date	Time	(feet)	(mg/Kg)	(mg/Kg	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
Assessme	nt Samples				<u> </u>			<u> </u>				•		
Target Cle	anup Levels				10	NE	NE	NE	50	NE	NE	NE	1000	600
T-1 0'	566213-001	10/16/2017	900	surface	<0.00338	<0.00338	<0.00338	<0.00338	<0.00338	<25.0	545	54.5	600	301
T-1 1'	566213-002	10/16/2017	900	1	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<25.0	<25.0	<25.0	<25.0	230
T-1 2'	566213-003	10/16/2017	900	2	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<24.9	<24.9	<24.9	<24.9	480
T-1 3'	566213-004	10/16/2017	900	3	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	<25.0	<25.0	<25.0	<25.0	82.9
T-1 4'	566213-005	10/16/2017	900	4	< 0.00200	<0.00277	<0.00200	<0.00200	< 0.00277	<25.0	<25.0	<25.0	<25.0	40.7
T-1 9'	566213-0016	10/16/2017	900	9	NA	NA	NA	NA	NA	NA	NA	NA	NA	82.2
T-2 0'	566213-007	10/16/2017	1000	surface	< 0.0201	0.103	0.595	1.93	2.63	488	2220	212	2920	1060
T-2 1'	566213-008	10/16/2017	1000	1	< 0.00199	<0.00199	< 0.00199	< 0.00199	< 0.00199	<24.9	26.1	<24.9	26.1	128
T-2 2'	566213-009	10/16/2017	1000	2	< 0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<24.9	<24.9	<24.9	<24.9	15.3
T-2 3'	566213-010	10/16/2017	100	3	< 0.00199	< 0.00199	< 0.00199	< 0.00199	< 0.00199	<25.0	<25.0	<25.0	<25.0	15.9
T-2 4'	566213-011	10/16/2017	1000	4	<0.00202	0.00240	<0.00202	<0.00202	0.00240	<24.9	<24.9	<24.9	<24.9	<4.95
T-2 9'	566213-012	10/16/2017	1000	9	NA	NA	NA	NA	NA	NA	NA	NA	NA	<4.94
T-3 0'	566213-013	10/16/2017	1030	surface	<0.00202	<0.00202	<0.00202	<0.00202	< 0.00202	<24.9	<24.9	<24.9	<24.9	158
T-3 1'	566213-014	10/16/2017	1030	1	< 0.00200	<0.00200	<0.00200	<0.00200	< 0.00200	<24.9	<24.9	<24.9	<24.9	252
T-3 2'	566213-015	10/16/2017	1030	2	< 0.00201	<0.00201	<0.00201	<0.00201	< 0.00201	<25.0	<25.0	<25.0	<25.0	19.2
T-3 3'	566213-016	10/16/2017	1030	3	< 0.00199	< 0.00199	< 0.00199	< 0.00199	< 0.00199	<25.0	<25.0	<25.0	<25.0	<4.90
T-3 8'	566213-017	10/16/2017	1030	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	65.1
North 0'	566215-001	10/16/2017	1100	surface	< 0.00199	< 0.00199	< 0.00199	< 0.00199	< 0.00199	<25.0	<25.0	<25.0	<25.0	<4.90
North 1'	566215-002	10/16/2017	1100	1	<0.002	<0.002	<0.002	<0.002	<0.002	<25.0	<25.0	<25.0	<25.0	5.8
South 0'	566215-003	10/16/2017	1100	surface	<0.002	<0.002	<0.002	<0.002	<0.002	<25.0	<25.0	<25.0	<25.0	19.9
South 1'	566215-004	10/16/2017	1100	1	<0.00198	<0.00198	<0.00198	<0.00198	<0.00198	<25.0	<25.0	<25.0	<25.0	56.8
East 0'	566215-005	10/16/2017	1100	surface	< 0.00201	<0.00201	<0.00201	< 0.00201	< 0.00201	<24.9	103	37.3	140	<4.98
East 1'	566215-006	10/16/2017	1100	1	<0.00202	<0.00202	<0.00202	<0.00202	< 0.00202	<25.0	<25.0	<25.0	<25.0	35.5
West 0'	566215-007	10/16/2017	1100	surface	<0.00202	<0.00202	<0.00202	<0.00202	< 0.00202	<25.0	<25.0	<25.0	<25.0	<4.98
West 1'	566215-008	10/16/2018	1100	1	< 0.00199	<0.00199	< 0.00199	<0.00199	<0.00199	<24.9	<24.9	<24.9	<24.9	<5.00
										GRO TPH [C6-		ORO TPH [C28-	TPH [C6-C35]	Chlorides
										C12] (mg/Kg)	C28] (mg/Kg)	C35] (mg/Kg)	(mg/Kg)	(mg/Kg)
Remediat	ion Samples													
B-1	582946-001	4/18/2018	1123	1	NA	NA	NA	NA	NA	<14.9	19.8	<14.9	19.8	343
B-2	582946-002	4/18/2018		1	NA	NA	NA	NA	NA	<15.0	22.9	<15.0	22.9	33
SW-1	582946-003	4/18/2018	1230	8-inches	NA	NA	NA	NA	NA	<15.0	<15.0	<15.0	<15.0	<5.00
SW-2	582946-004	4/18/2018	1235	8-inches	NA	NA	NA	NA	NA	<14.9	<14.9	<14.9	<14.9	12.1
SW-3	582946-005	4/18/2018	1239	8-inches	NA	NA	NA	NA	NA	<15.0	213	24.1	237	172
SW-4	582946-006	4/18/2018	1450	8-inches	NA	NA	NA	NA	NA	<15.0	38.7	<15.0	38.7	28.3
Makai kalda	d II a a dill anno alborio di		,	taraet cleanun levels.										

Note: bolded "red" results indicate concentrations exceed target cleanup levels.

NA - not analyzed NE - not established





**ATTACHMENT A** 

**Site Photographs** 

## ATTACHMENT A – SITE PHOTOGRAPHS COG BC Federal #032, Lea County, New Mexico

Release Date: September 10, 2017



Photo 1: Closeup view of lease signage (09/19/2017).



Photo 2: Northwestern view across well pad and impact area (09/19/2017).



Photo 3: Northeastern closeup view of release area and impacted caliche on well pad (09/19/2017).



Photo 4: Southwestern closeup view of release area and impacted caliche on well pad (09/19/2017).

Photo 5: Eastern closeup view of release area and impacted caliche on well pad (09/19/2017).



Photo 6: closeup view of exposed 440-volt power line from southwest corner of pad to panel at pumping unit [power line denoted by "red" arrow] (04/17/2018).



Photo 7: Northern view of excavation on eastern end of pumping unit (04/17/2018).



Photo 8: Western view of excavation on western end of pumping unit [representative to sample locations B-1, B-2, SW-1, SW-2, and SW-3] (04/18/2018).

## ATTACHMENT A – SITE PHOTOGRAPHS COG BC Federal #032, Lea County, New Mexico

Release Date: September 10, 2017



Photo 9: Eastern view on southern side of pumping unit after backfilling with imported caliche (04/18/2018).



Photo 10: Western view of northern side of pumping unit after backfilling with imported caliche (04/18/2018).



Photo 11: Southern view across backfilled location from western side of pumping unit (04/18/2018).



Photo 12: Eastern view across backfilled location from western side of pumping unit (04/18/2018).

#### ATTACHMENT B

**Laboratory Analytical Reports** 

## **Analytical Report 566213**

## for COG Operating, LLC

Project Manager: Sheldon Hitchcock BC Federal #32

30-OCT-17

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)





30-OCT-17

Project Manager: Sheldon Hitchcock

COG Operating, LLC

600 W Illinois Midland, TX 79701

Reference: XENCO Report No(s): 566213

**BC Federal #32** Project Address:

#### **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) 566213. 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. 566213 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,

Kelsey Brooks

Knus Hoah

Project Manager

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

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



## **Sample Cross Reference 566213**



## COG Operating, LLC, Midland, TX

BC Federal #32

Sample Id	Matrix	<b>Date Collected</b>	Sample Depth	Lab Sample Id
T-1 Surface	S	10-16-17 09:00	0	566213-001
T-1 1'	S	10-16-17 09:00	1	566213-002
T-1 2'	S	10-16-17 09:00	2	566213-003
T-1 3'	S	10-16-17 09:00	3	566213-004
T-1 4'	S	10-16-17 09:00	4	566213-005
T-1 9'	S	10-16-17 09:00	9	566213-006
T-2 Surface	S	10-16-17 10:00	0	566213-007
T-2 1'	S	10-16-17 10:00	1	566213-008
T-2 2'	S	10-16-17 10:00	2	566213-009
T-2 3'	S	10-16-17 10:00	3	566213-010
T-2 4'	S	10-16-17 10:00	4	566213-011
T-2 9'	S	10-16-17 10:00	9	566213-012
T-3 Surface	S	10-16-17 10:30	0	566213-013
T-3 1'	S	10-16-17 10:30	1	566213-014
T-3 2'	S	10-16-17 10:30	2	566213-015
T-3 3'	S	10-16-17 10:30	3	566213-016
T-3 8'	S	10-16-17 10:30	8	566213-017

## XENCO

#### CASE NARRATIVE

Client Name: COG Operating, LLC Project Name: BC Federal #32

Project ID: Report Date: 30-OCT-17
Work Order Number(s): 566213

Report Date: 10/19/2017

#### Sample receipt non conformances and comments:

#### Sample receipt non conformances and comments per sample:

None

#### Analytical non conformances and comments:

Batch: LBA-3031638 BTEX by EPA 8021B

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

Batch: LBA-3031655 BTEX by EPA 8021B

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

Batch: LBA-3031729 BTEX by EPA 8021B

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

Page 4 of 27

Final 1.000



## **Certificate of Analysis Summary 566213**

#### COG Operating, LLC, Midland, TX

**Project Name: BC Federal #32** 

TNI TABORATOR

**Project Id:** 

**Contact:** Sheldon Hitchcock

**Project Location:** 

**Date Received in Lab:** Thu Oct-19-17 11:45 am

**Report Date:** 30-OCT-17

Project Manager: Kelsey Brooks

	Lab Id:	566213-	001	566213-0	002	566213-0	003	566213-	004	566213-	005	566213-0	006
	Field Id:	T-1 Surf		T-1 1		T-1 2'		T-1 3		T-1 4		T-1 9'	
Analysis Requested	Depth:	0-	ucc	1-		2-		3-		4-		9-	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOII		SOIL	
	Sampled:	Oct-16-17	09:00	Oct-16-17	09:00	Oct-16-17	09:00	Oct-16-17	09:00	Oct-16-17	09:00	Oct-16-17 (	09:00
BTEX by EPA 8021B	Extracted:	Oct-26-17	10:30	Oct-25-17	14:00	Oct-25-17	14:00	Oct-25-17	14:00	Oct-25-17	14:00		
	Analyzed:	Oct-26-17	14:35	Oct-25-17	23:46	Oct-26-17	00:48	Oct-26-17	01:08	Oct-26-17	01:26		
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Benzene		< 0.00338	0.00338	< 0.00200	0.00200	< 0.00202	0.00202	< 0.00201	0.00201	< 0.00200	0.00200		
Toluene		< 0.00338	0.00338	< 0.00200	0.00200	< 0.00202	0.00202	< 0.00201	0.00201	0.00277	0.00200		
Ethylbenzene		< 0.00338	0.00338	< 0.00200	0.00200	< 0.00202	0.00202	< 0.00201	0.00201	< 0.00200	0.00200		
m,p-Xylenes		< 0.00676	0.00676	< 0.00399	0.00399	< 0.00404	0.00404	< 0.00402	0.00402	< 0.00399	0.00399		
o-Xylene		< 0.00338	0.00338	< 0.00200	0.00200	< 0.00202	0.00202	< 0.00201	0.00201	< 0.00200	0.00200		
Total Xylenes		< 0.00338	0.00338	< 0.00200	0.00200	< 0.00202	0.00202	< 0.00201	0.00201	< 0.00200	0.00200		
Total BTEX		< 0.00338	0.00338	< 0.00200	0.00200	< 0.00202	0.00202	< 0.00201	0.00201	0.00277	0.00200		
Chloride by EPA 300	Extracted:	Oct-25-17	09:00	Oct-25-17	09:00	Oct-25-17 (	09:00	Oct-25-17	09:00	Oct-25-17	09:00	Oct-25-17 (	09:00
	Analyzed:	Oct-25-17	19:47	Oct-25-17	19:53	Oct-25-17	20:00	Oct-25-17	20:07	Oct-25-17	20:14	Oct-25-17 2	20:20
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		301	4.99	230	4.95	480	4.91	82.9	4.90	40.7	4.90	82.2	4.94
TPH by Texas1005	Extracted:	Oct-26-17	08:00	Oct-26-17	08:00	Oct-26-17	08:00	Oct-26-17	08:00	Oct-26-17	08:00		
	Analyzed:	Oct-26-17	14:02	Oct-26-17	14:21	Oct-26-17	15:20	Oct-26-17	15:40	Oct-26-17	16:02		
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL		
C6-C12 Range Hydrocarbons	·	<25.0	25.0	<25.0	25.0	<24.9	24.9	<25.0	25.0	<25.0	25.0		
C12-C28 Range Hydrocarbons		545	25.0	<25.0	25.0	<24.9	24.9	<25.0	25.0	<25.0	25.0		
C28-C35 Range Hydrocarbons		54.5	25.0	<25.0	25.0	<24.9	24.9	<25.0	25.0	<25.0	25.0		
Total TPH		600	25.0	<25.0	25.0	<24.9	24.9	<25.0	25.0	<25.0	25.0		

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Kelsey Brooks Project Manager

Knis Roah



## **Certificate of Analysis Summary 566213**

#### COG Operating, LLC, Midland, TX

**Project Name: BC Federal #32** 



**Project Id:** 

**Contact:** Sheldon Hitchcock

**Project Location:** 

Date Received in Lab: Thu Oct-19-17 11:45 am

**Report Date:** 30-OCT-17 **Project Manager:** Kelsey Brooks

	Lab Id:	566213-	007	566213-0	08	566213-0	009	566213-0	010	566213-	011	566213-0	12
Analysis Requested	Field Id:	T-2 Surf	face	T-2 1'		T-2 2'		T-2 3'		T-2 4	'	T-2 9'	
Analysis Requesieu	Depth:	0-		1-		2-		3-		4-		9-	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	,	SOIL	
	Sampled:	Oct-16-17	10:00	Oct-16-17	0:00	Oct-16-17	10:00	Oct-16-17	10:00	Oct-16-17	10:00	Oct-16-17 1	0:00
BTEX by EPA 8021B	Extracted:	Oct-26-17	10:30	Oct-25-17 1	4:00	Oct-25-17 1	4:00	Oct-25-17	14:00	Oct-26-17	11:00		
	Analyzed:	Oct-26-17	18:25	Oct-26-17 (	1:45	Oct-26-17 (	02:04	Oct-26-17 (	)2:22	Oct-26-17	21:55		
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Benzene		< 0.0201	0.0201	< 0.00199	0.00199	< 0.00200	0.00200	< 0.00199	0.00199	< 0.00202	0.00202		
Toluene		0.103	0.0201	< 0.00199	0.00199	< 0.00200	0.00200	< 0.00199	0.00199	0.00240	0.00202		
Ethylbenzene		0.595	0.0201	< 0.00199	0.00199	< 0.00200	0.00200	< 0.00199	0.00199	< 0.00202	0.00202		
m,p-Xylenes		1.23	0.0402	< 0.00398	0.00398	< 0.00401	0.00401	< 0.00398	0.00398	< 0.00404	0.00404		
o-Xylene		0.703	0.0201	< 0.00199	0.00199	< 0.00200	0.00200	< 0.00199	0.00199	< 0.00202	0.00202		
Total Xylenes		1.93	0.0201	< 0.00199	0.00199	< 0.00200	0.00200	< 0.00199	0.00199	< 0.00202	0.00202		
Total BTEX		2.63	0.0201	< 0.00199	0.00199	< 0.00200	0.00200	< 0.00199	0.00199	0.00240	0.00202		
Chloride by EPA 300	Extracted:	Oct-25-17	09:00	Oct-25-17 (	9:00	Oct-25-17 (	9:00	Oct-25-17 (	09:00	Oct-25-17	09:00	Oct-25-17 0	9:00
	Analyzed:	Oct-25-17	20:27	Oct-25-17 2	20:34	Oct-25-17 2	20:41	Oct-25-17	21:15	Oct-25-17	21:22	Oct-25-17 2	21:28
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		1060	24.6	128	4.93	15.3	4.94	15.9	4.98	<4.95	4.95	<4.94	4.94
TPH by Texas1005	Extracted:	Oct-26-17	08:00	Oct-26-17 (	08:00	Oct-26-17 (	08:00	Oct-26-17 (	08:00	Oct-26-17	08:00		
	Analyzed:	Oct-26-17	16:22	Oct-26-17 1	6:42	Oct-26-17 1	7:02	Oct-26-17	17:22	Oct-26-17	17:42		
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL		
C6-C12 Range Hydrocarbons		488	125	<24.9	24.9	<24.9	24.9	<25.0	25.0	<24.9	24.9		
C12-C28 Range Hydrocarbons		2220	125	26.1	24.9	<24.9	24.9	<25.0	25.0	<24.9	24.9		
C28-C35 Range Hydrocarbons		212	125	<24.9	24.9	<24.9	24.9	<25.0	25.0	<24.9	24.9		
Total TPH		2920	125	26.1	24.9	<24.9	24.9	<25.0	25.0	<24.9	24.9		

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Kelsey Brooks Project Manager

Knis Roah



## **Certificate of Analysis Summary 566213**

#### COG Operating, LLC, Midland, TX

**Project Name: BC Federal #32** 



**Project Id:** 

Contact: Sheldon Hitchcock

**Project Location:** 

Date Received in Lab: Thu Oct-19-17 11:45 am

**Report Date:** 30-OCT-17 **Project Manager:** Kelsey Brooks

			1						1			
	Lab Id:	566213-0	013	566213-0	14	566213-0	)15	566213-	016	566213-0	17	
Analysis Requested	Field Id:	T-3 Surfa	ace	T-3 1'		T-3 2'		T-3 3	'	T-3 8'		
Anatysis Requesteu	Depth:	0-		1-		2-		3-		8-		
	Matrix:	SOIL		SOIL		SOIL		SOIL	,	SOIL		
	Sampled:	Oct-16-17 1	10:30	Oct-16-17 1	0:30	Oct-16-17	10:30	Oct-16-17	10:30	Oct-16-17 1	0:30	
BTEX by EPA 8021B	Extracted:	Oct-25-17 1	14:00	Oct-25-17 1	4:00	Oct-26-17	11:00	Oct-26-17	11:00			
	Analyzed:	Oct-26-17 (	03:02	Oct-26-17 (	3:22	Oct-26-17	21:37	Oct-26-17	22:14			
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL			
Benzene		< 0.00202	0.00202	< 0.00200	0.00200	< 0.00201	0.00201	< 0.00199	0.00199			
Toluene		< 0.00202	0.00202	< 0.00200	0.00200	< 0.00201	0.00201	< 0.00199	0.00199			
Ethylbenzene		< 0.00202	0.00202	< 0.00200	0.00200	< 0.00201	0.00201	< 0.00199	0.00199			
m,p-Xylenes		< 0.00403	0.00403	< 0.00401	0.00401	< 0.00402	0.00402	< 0.00398	0.00398			
o-Xylene		< 0.00202	0.00202	< 0.00200	0.00200	< 0.00201	0.00201	< 0.00199	0.00199			
Total Xylenes		< 0.00202	0.00202	< 0.00200	0.00200	< 0.00201	0.00201	< 0.00199	0.00199			
Total BTEX		< 0.00202	0.00202	< 0.00200	0.00200	< 0.00201	0.00201	< 0.00199	0.00199			
Chloride by EPA 300	Extracted:	Oct-25-17 (	09:00	Oct-25-17 (	9:00	Oct-25-17 (	09:00	Oct-25-17	09:00	Oct-25-17 0	9:00	
	Analyzed:	Oct-25-17 2	21:35	Oct-25-17 2	1:42	Oct-25-17	21:49	Oct-25-17	21:55	Oct-25-17 2	2:02	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	
Chloride		158	4.90	252	4.95	19.2	4.99	<4.90	4.90	65.1	4.94	
TPH by Texas1005	Extracted:	Oct-26-17 (	08:00	Oct-26-17 (	8:00	Oct-26-17 (	08:00	Oct-26-17	08:00			
	Analyzed:	Oct-26-17 1	18:45	Oct-26-17 1	9:05	Oct-26-17	19:26	Oct-26-17	19:47			
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL			
C6-C12 Range Hydrocarbons		<24.9	24.9	<24.9	24.9	<25.0	25.0	<25.0	25.0			
C12-C28 Range Hydrocarbons		<24.9	24.9	<24.9	24.9	<25.0	25.0	<25.0	25.0			
C28-C35 Range Hydrocarbons		<24.9	24.9	<24.9	24.9	<25.0	25.0	<25.0	25.0			
Total TPH		<24.9	24.9	<24.9	24.9	<25.0	25.0	<25.0	25.0			

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Kelsey Brooks Project Manager

Knis Roah



### **Flagging Criteria**



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

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

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

**DL** Method Detection Limit

NC Non-Calculable

- + 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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Project Name: BC Federal #32

 Work Orders: 566213,
 Project ID:

 Lab Batch #: 3031729
 Sample: 566213-002 / SMP
 Batch: 1 Matrix: Soil

<b>Units:</b> mg/kg <b>Date Analyzed:</b>	10/25/17 23:46	SU	RROGATE RE	COVERY S	STUDY	
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes				[D]		
1,4-Difluorobenzene		0.0288	0.0300	96	80-120	
4-Bromofluorobenzene		0.0338	0.0300	113	80-120	

Units:	mg/kg	<b>Date Analyzed:</b> 10/26/17 00:48	SURROGATE RECOVERY STUDY								
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags				
		Analytes			[D]						
1,4-Difluor	obenzene		0.0299	0.0300	100	80-120					
4-Bromoflu	iorobenzene		0.0336	0.0300	112	80-120					

Units: mg/kg Date Analyzed: 10/26/17 01:08 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0295	0.0300	98	80-120	
4-Bromofluorobenzene	0.0341	0.0300	114	80-120	

Units:	mg/kg	<b>Date Analyzed:</b> 10/26/17 01:26	SURROGATE RECOVERY STUDY									
	ВТЕ	X by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags					
1.4-Difluoro	hanzana	Analytes	0.0275	0.0300	92	80-120						
4-Bromofluo			0.0273	0.0300	107	80-120						

Units: mg/	/kg	<b>Date Analyzed:</b> 10/26/17 01:45	SURROGATE RECOVERY STUDY									
		oy EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags					
1,4-Difluorobenzen		nuiy tes	0.0355	0.0300	118	80-120						
4-Bromofluorobenz	ene		0.0355	0.0300	118	80-120						

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



Project Name: BC Federal #32

 Work Orders:
 566213,
 Project ID:

 Lab Batch #:
 3031729
 Sample:
 566213-009 / SMP
 Batch:
 1 Matrix:
 Soil

<b>Units:</b> mg/kg <b>Date Analyzed:</b> 10/26/17 02:04	SU	RROGATE RI	ECOVERY S	STUDY	
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
1,4-Difluorobenzene	0.0305	0.0300	102	80-120	
4-Bromofluorobenzene	0.0352	0.0300	117	80-120	

**Date Analyzed:** 10/26/17 02:22 **Units:** mg/kg SURROGATE RECOVERY STUDY **Amount** True Control BTEX by EPA 8021B Found Limits Flags Amount Recovery [A] [B] %R %R [D] **Analytes** 1,4-Difluorobenzene 0.0298 0.0300 99 80-120 4-Bromofluorobenzene 0.0345 0.0300 80-120 115

Units: mg/kg Date Analyzed: 10/26/17 03:02 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0305	0.0300	102	80-120	
4-Bromofluorobenzene	0.0356	0.0300	119	80-120	

Units:	mg/kg	<b>Date Analyzed:</b> 10/26/17 03:22	SURROGATE RECOVERY STUDY						
	ВТЕ	X by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluoro	benzene	•	0.0299	0.0300	100	80-120			
4-Bromofluorobenzene			0.0347	0.0300	116	80-120			

Units:	mg/kg	<b>Date Analyzed:</b> 10/26/17 14:02	SURROGATE RECOVERY STUDY						
	TP	H by Texas1005  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
o-Terphenyl		<del>-</del>	50.4	50.0	101	70-130			
1-Chloroocta	ane		110	100	110	70-130			

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



**Project Name: BC Federal #32** 

 Work Orders: 566213,
 Project ID:

 Lab Batch #: 3031677
 Sample: 566213-002 / SMP
 Batch: 1 Matrix: Soil

Units:	mg/kg <b>Date Analyzed:</b> 10/26/17 14:21	4:21 SURROGATE RECOVERY STUDY							
TPH by Texas1005		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
	Analytes			ردا					
o-Terpheny	I	51.4	49.9	103	70-130				
1-Chlorooct	ane	107	99.8	107	70-130				

Lab Batch #: 3031638Sample: 566213-001 / SMPBatch: 1Matrix: Soil

Units:	mg/kg	<b>Date Analyzed:</b> 10/26/17 14:35	SURROGATE RECOVERY STUDY						
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
		Analytes			[D]				
1,4-Difluor	obenzene		0.0309	0.0300	103	80-120			
4-Bromoflu	orobenzene		0.0354	0.0300	118	80-120			

**Lab Batch #:** 3031677 **Sample:** 566213-003 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg Date Analyzed: 10/26/17 15:20 SURROGATE RECOVERY STUDY

TPH by Texas1005  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	50.0	49.8	100	70-130	
1-Chlorooctane	107	99.6	107	70-130	

Units:	mg/kg	<b>Date Analyzed:</b> 10/26/17 15:40	SURROGATE RECOVERY STUDY						
	TP	H by Texas1005  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
o-Terpheny	·l		50.7	49.9	102	70-130			
1-Chlorooc	tane		105	99.8	105	70-130			

Units:	mg/kg	<b>Date Analyzed:</b> 10/26/17 16:02	SURROGATE RECOVERY STUDY						
	TPl	H by Texas1005  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
o-Terphenyl			49.5	49.9	99	70-130			
1-Chloroocta	ane		101	99.8	101	70-130			

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



**Project Name: BC Federal #32** 

 Work Orders:
 566213,
 Project ID:

 Lab Batch #:
 3031677
 Sample:
 566213-007 / SMP
 Batch:
 1
 Matrix:
 Soil

Units:	mg/kg	<b>Date Analyzed:</b> 10/26/17 16:22	SURROGATE RECOVERY STUDY					
TPH by Texas1005		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
		Analytes			[D]			
o-Terphenyl			50.2	50.0	100	70-130		
1-Chlorooctan	e		103	99.9	103	70-130		

Units:	mg/kg	<b>Date Analyzed:</b> 10/26/17 16:42	SURROGATE RECOVERY STUDY						
	TP	H by Texas1005  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
o-Terpheny	1	<del>-</del>	51.7	49.9	104	70-130			
1-Chlorooc	tane		109	99.7	109	70-130			

**Lab Batch #:** 3031677 **Sample:** 566213-009 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg Date Analyzed: 10/26/17 17:02 SURROGATE RECOVERY STUDY

TPH by Texas1005  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	49.0	49.9	98	70-130	
1-Chlorooctane	105	99.7	105	70-130	

Units:	mg/kg	<b>Date Analyzed:</b> 10/26/17 17:22	SURROGATE RECOVERY STUDY						
	TP	H by Texas1005  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
o-Terphenyl	<u> </u>		49.4	50.0	99	70-130			
1-Chlorooct	ane		106	99.9	106	70-130			

Units:	mg/kg	<b>Date Analyzed:</b> 10/26/17 17:42	SURROGATE RECOVERY STUDY						
	TP	H by Texas1005  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
o-Terphenyl			50.9	49.8	102	70-130			
1-Chloroocta	ane		106	99.6	106	70-130			

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



**Project Name: BC Federal #32** 

 Work Orders: 566213,
 Project ID:

 Lab Batch #: 3031638
 Sample: 566213-007 / SMP
 Batch: 1 Matrix: Soil

Units: mg/kg Date Analyzed: 10/26/17 18:25 SURROGATE RECOVERY STUDY								
	BTE	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
		Analytes			[D]			
1,4-Difluoro	benzene		0.0306	0.0300	102	80-120		
4-Bromofluo	orobenzene		0.0337	0.0300	112	80-120		

Units: mg/kg Date Analyzed: 10/26/17 18:45 SURROGATE RECOVERY STUDY							
	TP	H by Texas1005	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
o-Terpheny	1		49.3	49.9	99	70-130	
1-Chlorooct	tane		106	99.7	106	70-130	

**Lab Batch #:** 3031677 **Sample:** 566213-014 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg Date Analyzed: 10/26/17 19:05 SURROGATE RECOVERY STUDY

TPH by Texas1005  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	48.7	49.8	98	70-130	
1-Chlorooctane	104	99.6	104	70-130	

**Lab Batch #:** 3031677 **Sample:** 566213-015 / SMP **Batch:** 1 **Matrix:** Soil

Units:	mg/kg	<b>Date Analyzed:</b> 10/26/17 19:26	SURROGATE RECOVERY STUDY						
	TP	H by Texas1005  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
o-Terpheny	1	<del>-</del>	46.7	50.0	93	70-130			
1-Chlorooc	tane		94.2	99.9	94	70-130			

Units:	mg/kg	<b>Date Analyzed:</b> 10/26/17 19:47	SURROGATE RECOVERY STUDY						
	TP	H by Texas1005  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
o-Terphenyl			50.1	50.0	100	70-130			
1-Chloroocta	ine		104	99.9	104	70-130			

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



**Project Name: BC Federal #32** 

 Work Orders: 566213,
 Project ID:

 Lab Batch #: 3031655
 Sample: 566213-015 / SMP
 Batch: 1 Matrix: Soil

Units: mg/kg Date Analyzed: 1	Units: mg/kg Date Analyzed: 10/26/17 21:37 SURROGATE RECOVERY STUDY								
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
Analytes				[D]					
1,4-Difluorobenzene		0.0266	0.0300	89	80-120				
4-Bromofluorobenzene	0.0275	0.0300	92	80-120					

Units:	mg/kg	<b>Date Analyzed:</b> 10/26/17 21:55	SURROGATE RECOVERY STUDY						
	ВТЕ	X by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluorob	penzene		0.0254	0.0300	85	80-120			
4-Bromofluo	robenzene		0.0254	0.0300	85	80-120			

**Lab Batch #:** 3031655 **Sample:** 566213-016 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg Date Analyzed: 10/26/17 22:14 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0285	0.0300	95	80-120	
4-Bromofluorobenzene	0.0265	0.0300	88	80-120	

Lab Batch #: 3031729 Sample: 7633243-1-BLK / BLK Batch: 1 Matrix: Solid

Units:	mg/kg	<b>Date Analyzed:</b> 10/25/17 20:47	SURROGATE RECOVERY STUDY						
	ВТЕ	X by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluore	obenzene		0.0292	0.0300	97	80-120			
4-Bromoflu	orobenzene		0.0348	0.0300	116	80-120			

Lab Batch #: 3031638 Sample: 7633352-1-BLK / BLK Batch: 1 Matrix: Solid

Units: mg/kg Date Analyzed: 10/26/17 11:18 SURROGATE RECOVERY STUDY								
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
		Analytes			[D]			
1,4-Difluorobenzene			0.0311	0.0300	104	80-120		
4-Bromofluo	orobenzene		0.0346	0.0300	115	80-120		

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



**Project Name: BC Federal #32** 

Work Orders: 566213,
Lab Batch #: 3031677
Sample: 7633286-1-BLK / BLK
Batch: 1 Matrix: Solid

Units:	Units: mg/kg Date Analyzed: 10/26/17 13:01 SURROGATE RECOVERY STUDY								
	TPH	I by Texas1005	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
		Analytes			[D]				
o-Terphenyl			53.3	50.0	107	70-130			
1-Chloroocta	ine		107	100	107	70-130			

Lab Batch #: 3031655 Sample: 7633345-1-BLK / BLK Batch: 1 Matrix: Solid

Units:	mg/kg	<b>Date Analyzed:</b> 10/26/17 15:27	SU	RROGATE RI	ECOVERY S	STUDY	
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluoro	obenzene		0.0288	0.0300	96	80-120	
4-Bromoflu	orobenzene		0.0264	0.0300	88	80-120	

Lab Batch #: 3031729 Sample: 7633243-1-BKS / BKS Batch: 1 Matrix: Solid

Units: mg/kg Date Analyzed: 10/25/17 18:53 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0320	0.0300	107	80-120	
4-Bromofluorobenzene	0.0333	0.0300	111	80-120	

Lab Batch #: 3031638 Sample: 7633352-1-BKS / BKS Batch: 1 Matrix: Solid

Units:	mg/kg	<b>Date Analyzed:</b> 10/26/17 09:43	SURROGATE RECOVERY STUDY						
BTEX by EPA 8021B  Analytes			Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluore	obenzene	•	0.0295	0.0300	98	80-120			
4-Bromoflu	orobenzene		0.0351	0.0300	117	80-120			

Lab Batch #: 3031655 Sample: 7633345-1-BKS / BKS Batch: 1 Matrix: Solid

Units: mg/kg	<b>Date Analyzed:</b> 10/26/17 13:17	SURROGATE RECOVERY STUDY						
В	TEX by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluorobenzene	121111111111111111111111111111111111111	0.0279	0.0300	93	80-120			
4-Bromofluorobenzene		0.0312	0.0300	104	80-120			

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



**Project Name: BC Federal #32** 

Work Orders: 566213,
Lab Batch #: 3031677
Sample: 7633286-1-BKS / BKS
Batch: 1 Matrix: Solid

Units: mg/kg Date Analyzed: 10/26/17 13:22 SURROGATE RECOVERY STUDY								
	TPI	H by Texas1005	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
		Analytes			[D]			
o-Terphenyl			51.9	50.0	104	70-130		
1-Chloroocta	ine		102	100	102	70-130		

Units:	Units: mg/kg Date Analyzed: 10/25/17 19:15 SURROGATE RECOVERY STUDY								
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
		Analytes			[D]				
1,4-Difluoro	obenzene		0.0293	0.0300	98	80-120			
4-Bromoflu	orobenzene		0.0348	0.0300	116	80-120			

Lab Batch #: 3031638 Sample: 7633352-1-BSD / BSD Batch: 1 Matrix: Solid

Units: mg/kg Date Analyzed: 10/26/17 10:01 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0302	0.0300	101	80-120	
4-Bromofluorobenzene	0.0354	0.0300	118	80-120	

Lab Batch #: 3031655 Sample: 7633345-1-BSD / BSD Batch: 1 Matrix: Solid

Units:	mg/kg	<b>Date Analyzed:</b> 10/26/17 13:36	SURROGATE RECOVERY STUDY						
BTEX by EPA 8021B  Analytes		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1,4-Difluoro	benzene	<u> </u>	0.0288	0.0300	96	80-120			
4-Bromoflu	orobenzene		0.0294	0.0300	98	80-120			

Lab Batch #: 3031677 Sample: 7633286-1-BSD / BSD Batch: 1 Matrix: Solid

Units:	mg/kg	<b>Date Analyzed:</b> 10/26/17 13:42	SURROGATE RECOVERY STUDY							
TPH by Texas1005  Analytes		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags				
o-Terpheny	1		50.1	50.0	100	70-130				
1-Chlorooct	ane		108	100	108	70-130				

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



**Project Name: BC Federal #32** 

 Work Orders: 566213,
 Project ID:

 Lab Batch #: 3031729
 Sample: 566215-001 S / MS
 Batch: 1 Matrix: Soil

Units:	Units: mg/kg Date Analyzed: 10/25/17 19:33 SURROGATE RECOVERY STUDY								
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
	A	nalytes			[D]				
1,4-Difluorober	nzene		0.0319	0.0300	106	80-120			
4-Bromofluorobenzene			0.0350	0.0300	117	80-120			

Units:	mg/kg	<b>Date Analyzed:</b> 10/26/17 10:19	SURROGATE RECOVERY STUDY						
	вте	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
		Analytes			[D]				
1,4-Difluor	obenzene		0.0352	0.0300	117	80-120			
4-Bromoflu	orobenzene		0.0352	0.0300	117	80-120			

Units: mg/kg Date Analyzed: 10/26/17 13:55 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0283	0.0300	94	80-120	
4-Bromofluorobenzene	0.0318	0.0300	106	80-120	

**Lab Batch #:** 3031677 **Sample:** 566213-002 S / MS **Batch:** 1 **Matrix:** Soil

Units:	mg/kg	<b>Date Analyzed:</b> 10/26/17 14:41	SURROGATE RECOVERY STUDY						
TPH by Texas1005  Analytes		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
o-Terpheny	·l	Marytes	49.3	50.0	99	70-130			
1-Chlorooc	tane		95.1	99.9	95	70-130			

Units: mg/kg	<b>Date Analyzed:</b> 10/25/17 19:52	SU	RROGATE RI	ECOVERY S	STUDY	
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes			[D]		
1,4-Difluorobenzene		0.0284	0.0300	95	80-120	
4-Bromofluorobenzene		0.0351	0.0300	117	80-120	

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



**Project Name: BC Federal #32** 

 Work Orders: 566213,
 Project ID:

 Lab Batch #: 3031638
 Sample: 566321-001 SD / MSD
 Batch: 1 Matrix: Soil

Units: mg/	kg <b>Date Analyzed:</b> 10/26/17 10:37	SU	RROGATE RI	ECOVERY S	STUDY	
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes			[D]		
1,4-Difluorobenzene	2	0.0336	0.0300	112	80-120	
4-Bromofluorobenzo	ene	0.0356	0.0300	119	80-120	

Units:	mg/kg	<b>Date Analyzed:</b> 10/26/17 14:13	SURROGATE RECOVERY STUDY								
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags				
1,4-Difluorober	nzene	Analytes	0.0337	0.0300	112	80-120					
4-Bromofluorol	benzene		0.0355	0.0300	118	80-120					

**Units:** mg/kg Date Analyzed: 10/26/17 15:01 SURROGATE RECOVERY STUDY Amount True Control TPH by Texas1005 **Found** Limits Flags Amount Recovery [B] %R %R [A] [D] **Analytes** o-Terphenyl 49.0 50.0 98 70-130 1-Chlorooctane 107 99.9 107 70-130

Surrogate Recovery [D] = 100 \* A / B

<sup>\*</sup> Surrogate outside of Laboratory QC limits

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



#### **BS / BSD Recoveries**



**Project Name: BC Federal #32** 

Work Order #: 566213 Project ID:

Analyst: ALJ Date Prepared: 10/25/2017 Date Analyzed: 10/25/2017

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[B]	[C]	[D]	[E]	Result [F]	[G]				
Benzene	< 0.00201	0.101	0.0851	84	0.100	0.0900	90	6	70-130	35	
Toluene	< 0.00201	0.101	0.0939	93	0.100	0.0954	95	2	70-130	35	
Ethylbenzene	< 0.00201	0.101	0.0952	94	0.100	0.0971	97	2	71-129	35	
m,p-Xylenes	< 0.00402	0.201	0.187	93	0.200	0.190	95	2	70-135	35	
o-Xylene	< 0.00201	0.101	0.0926	92	0.100	0.0946	95	2	71-133	35	

Analyst: ALJ Date Prepared: 10/26/2017 Date Analyzed: 10/26/2017

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B  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
Benzene	< 0.00200	0.100	0.0958	96	0.0998	0.0867	87	10	70-130	35	
Toluene	< 0.00200	0.100	0.101	101	0.0998	0.0908	91	11	70-130	35	
Ethylbenzene	< 0.00200	0.100	0.110	110	0.0998	0.0997	100	10	71-129	35	
m,p-Xylenes	< 0.00401	0.200	0.216	108	0.200	0.196	98	10	70-135	35	
o-Xylene	< 0.00200	0.100	0.108	108	0.0998	0.0977	98	10	71-133	35	

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



#### **BS / BSD Recoveries**



**Project Name: BC Federal #32** 

Work Order #: 566213 Project ID:

Analyst: ALJ Date Prepared: 10/26/2017 Date Analyzed: 10/26/2017

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes  Benzene	<0.00202	0.101	0.0831	82	0.100	0.0804	80	3	70-130	35	
Toluene	<0.00202	0.101	0.0941	93	0.100	0.0894	89	5	70-130	35	
Ethylbenzene	< 0.00202	0.101	0.0997	99	0.100	0.0943	94	6	71-129	35	
m,p-Xylenes	< 0.00404	0.202	0.196	97	0.200	0.185	93	6	70-135	35	
o-Xylene	< 0.00202	0.101	0.0958	95	0.100	0.0907	91	5	71-133	35	

Analyst: MNV Date Prepared: 10/25/2017 Date Analyzed: 10/25/2017

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 S 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	< 5.00	250	244	98	250	243	97	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



### **BS / BSD Recoveries**



**Project Name: BC Federal #32** 

Work Order #: 566213 Project ID:

**Analyst:** ARM **Date Prepared:** 10/26/2017 **Date Analyzed:** 10/26/2017

**Lab Batch ID:** 3031677 **Sample:** 7633286-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by Texas1005  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
C6-C12 Range Hydrocarbons	<25.0	1000	956	96	1000	974	97	2	75-125	25	
C12-C28 Range Hydrocarbons	<25.0	1000	1010	101	1000	1020	102	1	75-125	25	

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: BC Federal #32** 

Work Order #: 566213 Project ID:

**Lab Batch ID:** 3031638 **QC- Sample ID:** 566321-001 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 10/26/2017 **Date Prepared:** 10/26/2017 **Analyst:** ALJ

Reporting Units: mg/kg MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD	Control Limits %R	Control Limits %RPD	Flag
Analytes	[A]	[B]	[0]	[D]	[E]	Kesuit [F]	[G]	70	/0K	/UKI D	
Benzene	< 0.00199	0.0996	0.118	118	0.0992	0.117	118	1	70-130	35	
Toluene	0.00315	0.0996	0.112	109	0.0992	0.103	101	8	70-130	35	
Ethylbenzene	< 0.00199	0.0996	0.0959	96	0.0992	0.0847	85	12	71-129	35	
m,p-Xylenes	< 0.00398	0.199	0.190	95	0.198	0.167	84	13	70-135	35	
o-Xylene	< 0.00199	0.0996	0.0904	91	0.0992	0.0786	79	14	71-133	35	

**Lab Batch ID:** 3031655 **QC- Sample ID:** 566321-002 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 10/26/2017 **Date Prepared:** 10/26/2017 **Analyst:** ALJ

Reporting Units: mg/kg 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	0.00211	0.100	0.111	109	0.101	0.113	110	2	70-130	35	
Toluene	0.00542	0.100	0.0991	94	0.101	0.0928	87	7	70-130	35	
Ethylbenzene	< 0.00201	0.100	0.0881	88	0.101	0.0768	76	14	71-129	35	
m,p-Xylenes	< 0.00402	0.201	0.176	88	0.202	0.152	75	15	70-135	35	
o-Xylene	< 0.00201	0.100	0.0847	85	0.101	0.0753	75	12	71-133	35	

Final 1.000





**Project Name: BC Federal #32** 

Work Order #: 566213 Project ID:

**Lab Batch ID:** 3031729 **QC- Sample ID:** 566215-001 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 10/25/2017 **Date Prepared:** 10/25/2017 **Analyst:** ALJ

Reporting Units: mg/kg MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes	[A]	[B]	[C]	[D]	[E]	Kesuit [F]	76K [G]	70	70K	76KFD	
Benzene	< 0.00202	0.101	0.112	111	0.100	0.113	113	1	70-130	35	
Toluene	< 0.00202	0.101	0.109	108	0.100	0.111	111	2	70-130	35	
Ethylbenzene	< 0.00202	0.101	0.102	101	0.100	0.102	102	0	71-129	35	
m,p-Xylenes	< 0.00404	0.202	0.202	100	0.201	0.203	101	0	70-135	35	
o-Xylene	< 0.00202	0.101	0.0950	94	0.100	0.0959	96	1	71-133	35	

**Lab Batch ID:** 3031397 **QC- Sample ID:** 565635-008 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 10/25/2017 **Date Prepared:** 10/25/2017 **Analyst:** MNV

Reporting Units: mg/kg 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	5650	245	5680	12	245	5660	4	0	90-110	20	X

**Lab Batch ID:** 3031397 **QC- Sample ID:** 566213-009 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 10/25/2017 **Date Prepared:** 10/25/2017 **Analyst:** MNV

Reporting Units: mg/kg MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD	Control Limits %R	Control Limits %RPD	Flag
Analytes	[A]	[B]	[0]	[D]	[E]	Result [1]	[G]	70	/ <b>U</b> K	70KI D	
Chloride	15.3	247	267	102	247	268	102	0	90-110	20	

Matrix Spike Percent Recovery [D] = 100\*(C-A)/B Relative Percent Difference RPD = 200\*|(C-F)/(C+F)| Matrix Spike Duplicate Percent Recovery [G] = 100\*(F-A)/E





**Project Name: BC Federal #32** 

Work Order #: 566213 Project ID:

**Lab Batch ID:** 3031677 **QC- Sample ID:** 566213-002 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 10/26/2017 Date Prepared: 10/26/2017 Analyst: ARM

Reporting Units: mg/kg MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH by Texas1005  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
C6-C12 Range Hydrocarbons	<25.0	999	917	92	999	970	97	6	75-125	25	
C12-C28 Range Hydrocarbons	<25.0	999	998	100	999	1040	104	4	75-125	25	



Stafford, Texas (281-240-4200)

# CHAIN OF CUSTODY

San Antonio, Texas (210-509-3334) Midland, Texas (432-704-5251)

Phoenix, Arizona (480-355-0900)

H2SO4 PFE SERVED NaOH NAHSO4 NAHSO4 NEOH SERVED NEOH SERVED NAOH NAHSO4 NAHSO4 NAOH NAHSO4 NAOH NAHSO4 NAOH NAOH NAOH NAOH NAOH NAOH NAOH NAOH	Peraling. LLC bert McNeill lithrois Ave. Tx, 79701  Nanthix bollies S 1 1 Nacetate HNO3 H2SO4 NaHSO4 NAHSO5 S 1 1 S S 1 S S 1 S S S S S S S S S S
WWW.XENCO.COM  WWW.XENCO.COM  AT 32  Project Information  er: BC Palend # 32  Operating, LLC Operating, LLC Robert McNeill N. Illnois Ave. Ind Tx, 79701  Number of preserved bottles  Number	Number of preserved bottles  NaOH/Zn Accetate  HNO3  H2SO4  NaOH ASOH  NaHSO4  NAHSO4
	Date Time:



# CHAIN OF CUSTODY

San Antonio, Texas (210-509-3334) Midland, Texas (432-704-5251)

Phoenix, Arizona (480-355-0900)

			WWW.AGIIDO.COIII		Analytical Information		Matrix Codes
Client / Reporting Information		Projec	Project Information				Manny cones
COG Operating, LLC		Project Name/Number:	3	#32			W = Water
Company Address: 2407 Pecos Ave. Artesia NM 88210		Project Location:	of participation of the partic				S = Soil/Sed/Solid GW =Ground Water DW = Drinking Water
Email: <u>slhitchcock@concho.com</u> Phone No: 575.70: dneel2@concho.com; alieb@concho.com; rhaskell@concho.com	-6475	Invoice To: COG Operating, LLC Attn: Robert McNeill	ating, LLC rt McNeill				P = Product SW = Surface water SL = Sludge
Project Contact: Sheldon Hitchcock		Midland Tx, 79701	, 79701		D		OW = Ocean/Sea Water WI = Wipe
Samplers's Name: Sheldon Hitchcock		C Mulliper.					0 = 01
		Collection	z	umber of preserved hottles			WW= Waste Water
No. Field ID / Point of Collection	ection		n Z	Jues	EXT		2
	Sample Depth	Date Time	Matrix boilles	HNO3 H2SO4 HaOH HaHSO4 HEOH	TPH I		1
1 T-2 4	n	_	4	h N	×		Fleid Comments
2 7-2 9	4		S 1				
3 T-3 Surface	0	10:30	3		× × ×		
4 T-3 1'			<i>S</i>		-		
5 T-3 2'	2		ss -				
6 T-3 3'	3		so -		XX		
7 1-3 8	8		- v				
8	c		<i>S</i> →		,		
9			s -				
10			±				
Turnaround Time ( Business days)			Data Deliverable Information	ormation		Notes:	
Same Day TAT	5 Day TAT	Leve	Level II Std QC	Level IV (Full Data Pkg /raw	g /raw data)		
Next Day EMERGENCY	7 Day TAT	Leve	Level III Std QC+ Forms	TRRP Level IV		Temp: 3.2	IR ID:R-8
2 Day EMERGENCY	Contract TAT	Leve	Level 3 (CLP Forms)	UST/RG-411		CF:(0-6: -0.2°C)	
3 Day EMERGENCY		TRRI	TRRP Checklist			(6-23: +0.2°C)	°C)
TAT Starts Day received by Lab, if received by 5:00 pm	if received by 5:00 pm				FED.	Corrected Temp: 3	ς. Θ.
Relinquished by Sampler:	SAMPLE CUSTODY MUST BE D	OCUMENTED BELOW EAC	H TIME SAMPLES CHANG	E SE	LIVERY		
Religional by:	Date Time:	Received By: Received By:	with 10-19-17	9-17 Relipquished By: 2 Life Buttle Relinquished By:	Date Time:    10-14-17	// SRepélved By:	Tank
Relinquished by:	Date Time:	Received By:	V:	Custody Seal #	Preserved where applicable	icable On Ice	Cooler Temp. Thermo. Corr. Factor



# XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In



Client: COG Operating, LLC

Date/ Time Received: 10/19/2017 11:45:00 AM

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Work Order #: 566213

Temperature Measuring device used: R8

	Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?		13.2
#2 *Shipping container in good condition	?	Yes
#3 *Samples received on ice?		Yes
#4 *Custody Seals intact on shipping cor	ntainer/ cooler?	N/A
#5 Custody Seals intact on sample bottle	es?	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 relinqu	uished/ received?	Yes
#10 Chain of Custody agrees with sampl	e 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 indicate	ed test(s)?	Yes
#16 All samples received within hold time	e?	Yes
#17 Subcontract of sample(s)?		No
#18 Water VOC samples have zero head	dspace?	N/A
* Must be completed for after-hours de Analyst:	livery of samples prior to placing in PH Device/Lot#:	the refrigerator
	Connie Hernandez	Date: 10/23/2017
Checklist reviewed by:	Kelsey Brooks	Date: 10/23/2017

# **Analytical Report 566215**

# for COG Operating, LLC

Project Manager: Sheldon Hitchcock BC Federal #32

30-OCT-17

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)





30-OCT-17

Project Manager: Sheldon Hitchcock

**COG Operating, LLC** 

600 W Illinois Midland, TX 79701

Reference: XENCO Report No(s): **566215** 

**BC Federal #32** Project Address:

#### **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) 566215. 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. 566215 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,

Kelsey Brooks

Knus Hoah

Project Manager

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# **Sample Cross Reference 566215**



# COG Operating, LLC, Midland, TX

BC Federal #32

Sample Id	Matrix	<b>Date Collected</b>	Sample Depth	Lab Sample Id
N. Surface	S	10-16-17 11:00	0	566215-001
N. 1'	S	10-16-17 11:00	1	566215-002
S. Surface	S	10-16-17 11:00	0	566215-003
S. 1'	S	10-16-17 11:00	1	566215-004
E. Surface	S	10-16-17 11:00	0	566215-005
E. 1'	S	10-16-17 11:00	1	566215-006
W. Surface	S	10-16-17 11:00	0	566215-007
W. 1'	S	10-16-17 11:00	1	566215-008

# XENCO

#### CASE NARRATIVE

Client Name: COG Operating, LLC Project Name: BC Federal #32

Project ID: Report Date: 30-OCT-17
Work Order Number(s): 566215

Report Date: 10/19/2017

#### Sample receipt non conformances and comments:

#### Sample receipt non conformances and comments per sample:

None

#### **Analytical non conformances and comments:**

Batch: LBA-3031729 BTEX by EPA 8021B

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

Page 4 of 21 Final 1.000



# **Certificate of Analysis Summary 566215**

#### COG Operating, LLC, Midland, TX

**Project Name: BC Federal #32** 



**Project Id:** 

**Contact:** Sheldon Hitchcock

**Project Location:** 

Date Received in Lab: Thu Oct-19-17 11:45 am

**Report Date:** 30-OCT-17 **Project Manager:** Kelsey Brooks

			566215 001										
	Lab Id:	566215-0	001	566215-0	002	566215-0	003	566215-0	004	566215-	005	566215-0	006
Analysis Requested	Field Id:	N. Surfa	ice	N. 1'		S. Surfa	ce	S. 1'		E. Surfa	ace	E. 1'	
Analysis Requested	Depth:	0-		1-		0-		1-		0-		1-	
	Matrix:	SOIL	,	SOIL		SOIL		SOIL	,	SOIL	.	SOIL	,
	Sampled:	Oct-16-17	11:00	Oct-16-17	11:00	Oct-16-17	11:00	Oct-16-17	11:00	Oct-16-17	11:00	Oct-16-17	11:00
BTEX by EPA 8021B	Extracted:	Oct-25-17	14:00	Oct-25-17	4:00	Oct-25-17	14:00	Oct-25-17	14:00	Oct-25-17	14:00	Oct-25-17	14:00
	Analyzed:	Oct-25-17	21:07	Oct-25-17 2	21:25	Oct-25-17	21:44	Oct-25-17	22:09	Oct-25-17	22:29	Oct-25-17	22:50
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		< 0.00199	0.00199	< 0.00200	0.00200	< 0.00200	0.00200	< 0.00198	0.00198	< 0.00201	0.00201	< 0.00202	0.00202
Toluene		< 0.00199	0.00199	< 0.00200	0.00200	< 0.00200	0.00200	< 0.00198	0.00198	< 0.00201	0.00201	< 0.00202	0.00202
Ethylbenzene		< 0.00199	0.00199	< 0.00200	0.00200	< 0.00200	0.00200	< 0.00198	0.00198	< 0.00201	0.00201	< 0.00202	0.00202
m,p-Xylenes		< 0.00398	0.00398	< 0.00401	0.00401	< 0.00399	0.00399	< 0.00397	0.00397	< 0.00402	0.00402	< 0.00404	0.00404
o-Xylene		< 0.00199	0.00199	< 0.00200	0.00200	< 0.00200	0.00200	< 0.00198	0.00198	< 0.00201	0.00201	< 0.00202	0.00202
Total Xylenes		<0.00199 0.00199		< 0.00200	0.00200	< 0.00200	0.00200	< 0.00198	0.00198	< 0.00201	0.00201	< 0.00202	0.00202
Total BTEX		<0.00199 0.00199		< 0.00200	0.00200	< 0.00200	0.00200	< 0.00198	0.00198	< 0.00201	0.00201	< 0.00202	0.00202
Chloride by EPA 300	Extracted:	Oct-25-17 (	09:00	Oct-25-17	1:00	Oct-25-17	11:00	Oct-25-17	11:00	Oct-25-17	11:00	Oct-25-17	11:00
	Analyzed:	Oct-25-17	22:09	Oct-25-17 22:50		Oct-25-17	23:10	Oct-26-17	00:45	Oct-26-17	00:52	Oct-26-17	01:12
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride	,	<4.90	4.90	5.80	4.96	19.9	4.96	56.8	4.97	<4.98	4.98	35.5	4.92
TPH by Texas1005	Extracted:	Oct-24-17	16:00	Oct-24-17 16:00		Oct-24-17 16:00		Oct-24-17 16:00		Oct-24-17 16:00		Oct-24-17	16:00
	Analyzed:	Oct-25-17	02:17	Oct-25-17 (	02:39	Oct-25-17 (	03:39	Oct-25-17	03:59	Oct-25-17	04:19	Oct-25-17	04:39
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
C6-C12 Range Hydrocarbons	·	<25.0	25.0	<25.0	25.0	<25.0	25.0	<25.0	25.0	<24.9	24.9	<25.0	25.0
C12-C28 Range Hydrocarbons		<25.0	25.0	<25.0	25.0	<25.0	25.0	<25.0	25.0	103	24.9	<25.0	25.0
C28-C35 Range Hydrocarbons		<25.0	25.0	<25.0	25.0	<25.0	25.0	<25.0	25.0	37.3	24.9	<25.0	25.0
Total TPH		<25.0	25.0	<25.0	25.0	<25.0	25.0	<25.0	25.0	140	24.9	<25.0	25.0

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

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Kelsey Brooks Project Manager

Knis Roah



# **Certificate of Analysis Summary 566215**

COG Operating, LLC, Midland, TX

**Project Name: BC Federal #32** 



**Project Id:** 

Contact: Sheldon Hitchcock

**Project Location:** 

Date Received in Lab: Thu Oct-19-17 11:45 am

**Report Date:** 30-OCT-17 **Project Manager:** Kelsey Brooks

			. 1					$\neg$
	Lab Id:	566215-007	′	566215-0	800			
Analysis Requested	Field Id:	W. Surface		W. 1'				
Tinutysis Requesicu	Depth:	0-		1-				
	Matrix:	SOIL		SOIL				
	Sampled:	Oct-16-17 11:	:00	Oct-16-17	11:00			
BTEX by EPA 8021B	Extracted:	Oct-25-17 14:	:00	Oct-25-17 1	14:00			
	Analyzed:	Oct-25-17 23:	:09	Oct-25-17 2	23:28			
	Units/RL:	mg/kg	RL	mg/kg	RL			
Benzene		<0.00202 0.	.00202	< 0.00199	0.00199			
Toluene		<0.00202 0.	.00202	< 0.00199	0.00199			
Ethylbenzene		<0.00202 0.	.00202	< 0.00199	0.00199			
m,p-Xylenes		<0.00403 0.	.00403	< 0.00398	0.00398			
o-Xylene			.00202	< 0.00199	0.00199			
Total Xylenes		<0.00202 0.	.00202	< 0.00199	0.00199			
Total BTEX		<0.00202 0.	.00202	< 0.00199	0.00199			
Chloride by EPA 300	Extracted:	Oct-25-17 11:	:00	Oct-25-17 1	11:00			
	Analyzed:	Oct-26-17 01:	:19	Oct-26-17 (	01:26			
	Units/RL:	mg/kg	RL	mg/kg	RL			
Chloride		<4.98	4.98	< 5.00	5.00			
TPH by Texas1005	Extracted:	Oct-26-17 08:	:00	Oct-26-17 (	08:00			
	Analyzed:	Oct-26-17 20:	:08	Oct-26-17 2	20:28			
	Units/RL:	mg/kg	RL	mg/kg	RL			
C6-C12 Range Hydrocarbons		<25.0	25.0	<24.9	24.9			
C12-C28 Range Hydrocarbons		<25.0	25.0	<24.9	24.9			
C28-C35 Range Hydrocarbons		<25.0	25.0	<24.9	24.9			
Total TPH		<25.0	25.0	<24.9	24.9			

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 beest judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Kelsey Brooks Project Manager

Knis Roah



### **Flagging Criteria**



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

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

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

**DL** Method Detection Limit

NC Non-Calculable

- + 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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1211 W Florida Ave, Midland, TX 79701 (432) 563-1800 (432) 563-1713
2525 W. Huntington Dr. - Suite 102, Tempe AZ 85282 (602) 437-0330



Project Name: BC Federal #32

 Work Orders: 566215,
 Project ID:

 Lab Batch #: 3031320
 Sample: 566215-001 / SMP
 Batch: 1 Matrix: Soil

Units:	mg/kg	<b>Date Analyzed:</b> 10/25/17 02:17	SURROGATE RECOVERY STUDY							
TPH by Texas1005		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags				
		Analytes			[2]					
o-Terphenyl			50.5	49.9	101	70-130				
1-Chloroocta	ine		109	99.8	109	70-130				

**Date Analyzed:** 10/25/17 02:39 **Units:** mg/kg SURROGATE RECOVERY STUDY **Amount** True Control TPH by Texas1005 Found Limits Flags Amount Recovery [A] [B] %R %R [D] **Analytes** o-Terphenyl 45.0 49.9 90 70-130 1-Chlorooctane 99.8 101 70-130 101

Units: mg/kg Date Analyzed: 10/25/17 03:39 SURROGATE RECOVERY STUDY

TPH by Texas1005  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	47.4	50.0	95	70-130	
1-Chlorooctane	97.8	100	98	70-130	

Units:	mg/kg	<b>Date Analyzed:</b> 10/25/17 03:59	SURROGATE RECOVERY STUDY						
TPH by Texas1005  Analytes		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
o-Terpheny	1	•	50.8	50.0	102	70-130			
1-Chlorooct	ane		109	99.9	109	70-130			

Units:	mg/kg	<b>Date Analyzed:</b> 10/25/17 04:19	SURROGATE RECOVERY STUDY						
	TP	H by Texas1005  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
o-Terphenyl			48.0	49.9	96	70-130			
1-Chloroocta	ane		103	99.7	103	70-130			

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



**Project Name: BC Federal #32** 

 Work Orders:
 566215,
 Project ID:

 Lab Batch #:
 3031320
 Sample:
 566215-006 / SMP
 Batch:
 1
 Matrix:
 Soil

Units:	mg/kg	<b>Date Analyzed:</b> 10/25/17 04:39	SURROGATE RECOVERY STUDY							
	ТРН	by Texas1005	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
		Analytes			[D]					
o-Terphenyl			44.7	49.9	90	70-130				
1-Chloroocta	ine		95.1	99.8	95	70-130				

**Date Analyzed:** 10/25/17 21:07 **Units:** mg/kg SURROGATE RECOVERY STUDY **Amount** True Control BTEX by EPA 8021B Found Limits Amount Recovery Flags [A] [B] %R %R [D] **Analytes** 1,4-Difluorobenzene 0.0321 0.0300 107 80-120 4-Bromofluorobenzene 0.0359 0.0300 80-120 120

Units: mg/kg Date Analyzed: 10/25/17 21:25 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0329	0.0300	110	80-120	
4-Bromofluorobenzene	0.0359	0.0300	120	80-120	

Units:	mg/kg	<b>Date Analyzed:</b> 10/25/17 21:44	SURROGATE RECOVERY STUDY						
	ВТЕ	X by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluoro	benzene	•	0.0296	0.0300	99	80-120			
4-Bromoflu	orobenzene		0.0356	0.0300	119	80-120			

Units: mg	g/kg	<b>Date Analyzed:</b> 10/25/17 22:09	SURROGATE RECOVERY STUDY						
		by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluorobenze			0.0290	0.0300	97	80-120			
4-Bromofluoroben	zene		0.0354	0.0300	118	80-120			

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



**Project Name: BC Federal #32** 

 Work Orders:
 566215,
 Project ID:

 Lab Batch #:
 3031729
 Sample:
 566215-005 / SMP
 Batch:
 1
 Matrix:
 Soil

Units: mg/kg	<b>Date Analyzed:</b> 10/25/17 22:29	SURROGATE RECOVERY STUDY						
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
An	alytes			[D]				
1,4-Difluorobenzene		0.0284	0.0300	95	80-120			
4-Bromofluorobenzene		0.0355	0.0300	118	80-120			

Units:	mg/kg	<b>Date Analyzed:</b> 10/25/17 22:50	SURROGATE RECOVERY STUDY						
	ВТЕ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
		Analytes			[2]				
1,4-Difluoro	benzene		0.0291	0.0300	97	80-120			
4-Bromoflu	orobenzene		0.0337	0.0300	112	80-120			

Units: mg/kg Date Analyzed: 10/25/17 23:09 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0316	0.0300	105	80-120	
4-Bromofluorobenzene	0.0348	0.0300	116	80-120	

Units:	mg/kg	<b>Date Analyzed:</b> 10/25/17 23:28	SURROGATE RECOVERY STUDY						
	ВТЕ	X by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluoro	benzene	•	0.0274	0.0300	91	80-120			
4-Bromofluorobenzene			0.0334	0.0300	111	80-120			

Units:	mg/kg	<b>Date Analyzed:</b> 10/26/17 20:08	SURROGATE RECOVERY STUDY						
	TPI	H by Texas1005  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
o-Terphenyl			50.1	50.0	100	70-130			
1-Chloroocta	ane		102	100	102	70-130			

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



**Project Name: BC Federal #32** 

 Work Orders:
 566215,
 Project ID:

 Lab Batch #:
 3031677
 Sample:
 566215-008 / SMP
 Batch:
 1
 Matrix:
 Soil

Units: mg/kg Date Analyzed: 10/26/17 20:28 SURROGATE RECOVERY STUDY							
TPH by Texas1005		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
		Analytes			[D]		
o-Terphenyl			45.6	49.9	91	70-130	
1-Chloroocta	ine		93.6	99.7	94	70-130	

Lab Batch #: 3031320 Sample: 7633149-1-BLK / BLK Batch: 1 Matrix: Solid

Units:	mg/kg	<b>Date Analyzed:</b> 10/24/17 21:50	SURROGATE RECOVERY STUDY						
	TPl	H by Texas1005  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
o-Terphenyl		Analytes	55.6	50.0	111	70-130			
1-Chloroocta	ane		119	100	119	70-130			

Lab Batch #: 3031729 Sample: 7633243-1-BLK / BLK Batch: 1 Matrix: Solid

Units: mg/kg Date Analyzed: 10/25/17 20:47 SURROGATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0292	0.0300	97	80-120	
4-Bromofluorobenzene	0.0348	0.0300	116	80-120	

Lab Batch #: 3031677 Sample: 7633286-1-BLK / BLK Batch: 1 Matrix: Solid

Units:	mg/kg	<b>Date Analyzed:</b> 10/26/17 13:01	SURROGATE RECOVERY STUDY						
TPH by Texas1005  Analytes		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
o-Terpheny	1	Analytes	53.3	50.0	107	70-130			
1-Chlorooc	tane		107	100	107	70-130			

Lab Batch #: 3031320 Sample: 7633149-1-BKS / BKS Batch: 1 Matrix: Solid

Units:	ng/kg	<b>Date Analyzed:</b> 10/24/17 22:11	SURROGATE RECOVERY STUDY						
	TPH	I by Texas1005  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
o-Terphenyl		<u> </u>	48.9	50.0	98	70-130			
1-Chlorooctane			103	100	103	70-130			

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



**Project Name: BC Federal #32** 

 Work Orders:
 566215,
 Project ID:

 Lab Batch #:
 3031729
 Sample:
 7633243-1-BKS / BKS
 Batch:
 1 Matrix:
 Solid

Units:	mg/kg	SURROGATE RECOVERY STUDY								
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags				
		Analytes			[D]					
1,4-Difluorobenzene			0.0320	0.0300	107	80-120				
4-Bromofluorobenzene			0.0333	0.0300	111	80-120				

**Lab Batch #:** 3031677 **Sample:** 7633286-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units:	mg/kg	<b>Date Analyzed:</b> 10/26/17 13:22	SURROGATE RECOVERY STUDY						
	TP	H by Texas1005  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
o-Terpheny	·1	Analytes	51.9	50.0	104	70-130			
1-Chlorooc	tane		102	100	102	70-130			

Lab Batch #: 3031320 Sample: 7633149-1-BSD / BSD Batch: 1 Matrix: Solid

Units: mg/kg Date Analyzed: 10/24/17 22:31 SURROGATE RECOVERY STUDY

TPH by Texas1005  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	46.2	50.0	92	70-130	
1-Chlorooctane	101	100	101	70-130	

Units:	mg/kg	<b>Date Analyzed:</b> 10/25/17 19:15	SURROGATE RECOVERY STUDY						
	ВТЕ	X by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluoro	benzene	•	0.0293	0.0300	98	80-120			
4-Bromofluorobenzene			0.0348	0.0300	116	80-120			

Lab Batch #: 3031677 Sample: 7633286-1-BSD / BSD Batch: 1 Matrix: Solid

Units:	mg/kg	<b>Date Analyzed:</b> 10/26/17 13:42	SURROGATE RECOVERY STUDY						
	TPI	H by Texas1005  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
o-Terphenyl		•	50.1	50.0	100	70-130			
1-Chloroocta	ine		108	100	108	70-130			

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



**Project Name: BC Federal #32** 

 Work Orders: 566215,
 Project ID:

 Lab Batch #: 3031320
 Sample: 566212-001 S / MS
 Batch: 1 Matrix: Soil

Units:	mg/kg	<b>Date Analyzed:</b> 10/24/17 23:15	SU	RROGATE RI	ECOVERY S	STUDY	
	TPH	I by Texas1005	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
o-Terphenyl			48.0	50.0	96	70-130	
1-Chloroocta	nne		102	99.9	102	70-130	

Units:	mg/kg	<b>Date Analyzed:</b> 10/25/17 19:33	SU	RROGATE RI	ECOVERY S	STUDY	
	ВТЕ	X by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluoro	benzene	Analytes	0.0319	0.0300	106	80-120	
4-Bromofluo	orobenzene		0.0350	0.0300	117	80-120	

**Lab Batch #:** 3031677 **Sample:** 566213-002 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg Date Analyzed: 10/26/17 14:41 SURROGATE RECOVERY STUDY

TPH by Texas1005  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terphenyl	49.3	50.0	99	70-130	
1-Chlorooctane	95.1	99.9	95	70-130	

**Lab Batch #:** 3031320 **Sample:** 566212-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units:	mg/kg	<b>Date Analyzed:</b> 10/24/17 23:35	SU	RROGATE RE	ECOVERY S	STUDY	
	TP	H by Texas1005  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
o-Terpheny	1		47.4	49.9	95	70-130	
1-Chlorooct	ane		99.5	99.8	100	70-130	

Units:	mg/kg	<b>Date Analyzed:</b> 10/25/17 19:52	SU	RROGATE RE	ECOVERY S	STUDY	
	ВТЕ	X by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobe	enzene		0.0284	0.0300	95	80-120	
4-Bromofluoro	obenzene		0.0351	0.0300	117	80-120	

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



**Project Name: BC Federal #32** 

 Work Orders:
 566215,
 Project ID:

 Lab Batch #:
 3031677
 Sample:
 566213-002 SD / MSD
 Batch:
 1 Matrix:
 Soil

Units:	mg/kg	<b>Date Analyzed:</b> 10/26/17 15:01	SU	RROGATE RE	ECOVERY S	STUDY	
	TP	H by Texas1005	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
o-Terphenyl			49.0	50.0	98	70-130	
1-Chloroocta	ane		107	99.9	107	70-130	

Surrogate Recovery [D] = 100 \* A / B

<sup>\*</sup> Surrogate outside of Laboratory QC limits

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



#### **BS / BSD Recoveries**



**Project Name: BC Federal #32** 

Work Order #: 566215 Project ID:

Analyst: ALJ Date Prepared: 10/25/2017 Date Analyzed: 10/25/2017

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B  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
Benzene	< 0.00201	0.101	0.0851	84	0.100	0.0900	90	6	70-130	35	
Toluene	< 0.00201	0.101	0.0939	93	0.100	0.0954	95	2	70-130	35	
Ethylbenzene	< 0.00201	0.101	0.0952	94	0.100	0.0971	97	2	71-129	35	
m,p-Xylenes	< 0.00402	0.201	0.187	93	0.200	0.190	95	2	70-135	35	
o-Xylene	< 0.00201	0.101	0.0926	92	0.100	0.0946	95	2	71-133	35	

Analyst: MNV Date Prepared: 10/25/2017 Date Analyzed: 10/25/2017

**Lab Batch ID:** 3031397 **Sample:** 7633169-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 S 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	< 5.00	250	244	98	250	243	97	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



#### **BS / BSD Recoveries**



**Project Name:** BC Federal #32

Work Order #: 566215 Project ID:

Analyst: MNV Date Prepared: 10/25/2017 Date Analyzed: 10/25/2017

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300  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	< 5.00	250	248	99	250	246	98	1	90-110	20	

**Analyst:** ARM **Date Prepared:** 10/24/2017 **Date Analyzed:** 10/24/2017

**Lab Batch ID:** 3031320 **Sample:** 7633149-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by Texas1005	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[B]	[C]	[D]	[E]	Result [F]	[G]				
C6-C12 Range Hydrocarbons	<25.0	1000	939	94	1000	925	93	2	75-125	25	
C12-C28 Range Hydrocarbons	<25.0	1000	1010	101	1000	1060	106	5	75-125	25	

**Analyst:** ARM **Date Prepared:** 10/26/2017 **Date Analyzed:** 10/26/2017

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by Texas1005  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
C6-C12 Range Hydrocarbons	<25.0	1000	956	96	1000	974	97	2	75-125	25	
C12-C28 Range Hydrocarbons	<25.0	1000	1010	101	1000	1020	102	1	75-125	25	

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: BC Federal #32** 

Work Order #: 566215 Project ID:

**Lab Batch ID:** 3031729 **QC- Sample ID:** 566215-001 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 10/25/2017 **Date Prepared:** 10/25/2017 **Analyst:** ALJ

Reporting Units: mg/kg 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	< 0.00202	0.101	0.112	111	0.100	0.113	113	1	70-130	35	
Toluene	< 0.00202	0.101	0.109	108	0.100	0.111	111	2	70-130	35	
Ethylbenzene	< 0.00202	0.101	0.102	101	0.100	0.102	102	0	71-129	35	
m,p-Xylenes	< 0.00404	0.202	0.202	100	0.201	0.203	101	0	70-135	35	
o-Xylene	< 0.00202	0.101	0.0950	94	0.100	0.0959	96	1	71-133	35	

**Lab Batch ID:** 3031397 **QC- Sample ID:** 565635-008 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 10/25/2017 **Date Prepared:** 10/25/2017 **Analyst:** MNV

Reporting Units: mg/kg 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	5650	245	5680	12	245	5660	4	0	90-110	20	X

**Lab Batch ID:** 3031397 **QC- Sample ID:** 566213-009 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 10/25/2017 Date Prepared: 10/25/2017 Analyst: MNV

Reporting Units: mg/kg MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD	Control Limits %R	Control Limits %RPD	Flag
Analytes	[A]	[B]	[0]	[D]	[E]	Result [1]	[G]	70	/ <b>U</b> K	70KI D	
Chloride	15.3	247	267	102	247	268	102	0	90-110	20	

Matrix Spike Percent Recovery [D] = 100\*(C-A)/B Relative Percent Difference RPD = 200\*|(C-F)/(C+F)| Matrix Spike Duplicate Percent Recovery [G] = 100\*(F-A)/E





**Project Name: BC Federal #32** 

Work Order #: 566215 Project ID:

**Lab Batch ID:** 3031539 **QC- Sample ID:** 566212-008 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 10/26/2017 **Date Prepared:** 10/25/2017 **Analyst:** MNV

Reporting Units: mg/kg 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	47.3	249	310	106	249	310	106	0	90-110	20	

**Lab Batch ID:** 3031539 **QC- Sample ID:** 566215-002 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 10/25/2017 **Date Prepared:** 10/25/2017 **Analyst:** MNV

Reporting Units: mg/kg 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	5.80	248	266	105	248	269	106	1	90-110	20	

**Lab Batch ID:** 3031320 **QC- Sample ID:** 566212-001 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 10/24/2017 **Date Prepared:** 10/24/2017 **Analyst:** ARM

Reporting Units: mg/kg MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH by Texas1005  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
C6-C12 Range Hydrocarbons	<25.0	999	1040	104	998	1020	102	2	75-125	25	
C12-C28 Range Hydrocarbons	<25.0	999	1050	105	998	1020	102	3	75-125	25	





**Project Name: BC Federal #32** 

Work Order #: 566215 Project ID:

**Lab Batch ID:** 3031677 **QC- Sample ID:** 566213-002 S **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH by Texas1005  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
C6-C12 Range Hydrocarbons	<25.0	999	917	92	999	970	97	6	75-125	25	
C12-C28 Range Hydrocarbons	<25.0	999	998	100	999	1040	104	4	75-125	25	



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Phoenix, Arizona (480-355-0900)

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Client / Reporting Information			Project Information	ormation					Analyti	Analytical Information	ion
COG Operating, LLC		Project Name/Number:	mber: R /	1		サンク					
Company Address: 2407 Pecos Ave. Artesia NM 88210		Project Location:	-	CONTRA		30					
Email: shitchcock@concho.com Phone No: 575-703-6475 dneel2@concho.com; alieb@concho.com; rhaskell@concho.com	3-6475	Invoice To: CC	COG Operating, LLC Attn: Robert McNeill	J, LLC Nelli							
Project Contact: Sheldon Hitchcock			600 W. Illnois Ave. Midland Tx, 79701	701				)			
Samplers's Name: Sheldon Hitchcock		PO Number:						DED			
		Collection			Number	Number of preserved bottles	bottles	ENE	DES		
No. Field ID / Point of Collection				7	n	- Post income	- 10	_	RID		
	Sample Depth	Date	Time Matrix	bottles	NaOH/Zr Acetate	12SO4 1aOH	EOH	PH E	HLO		
1 N. Surpace	0	11/0c	S				N	- 7	× (		
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	-		S	-				× ×	×		
3 D. Survec	0		S	4				×	׬		
20	-		S	1				× :	4-		
5 t. Surface	0		S	1		1		X	× >		
13	-		co	-				×	×		
7 W. Surface	0		S	4					×		
8 4.	_	_	s	1					*>		
8			s	-1				7	7		
Turnaround Time / Business days)			s	1							
(ektr centiera jama massa				Data Deliverable Information	le Information					Natar	
Same Day TAT 5 Day TAT		П	Level II Std QC	100	П	Level IV (Fi	Level IV (Full Data Pkg /raw	aw data)		-	
Next Day EMERGENCY 7 Day TAT		П	Level III Sto	Level III Std QC+ Forms		TRRP Level IV	IV			0 -	OF (D-A: D Sec
2 Day EMERGENCY Contract TAT	1		Level 3 (CLP Forms)	P Forms)		UST/RG-411	=			1	(6-23: 10 2:0)
3 Day EMERGENCY		П	TRRP Checklist	cklist						0	Corrected Temp:
TAT Starts Day received by Lab, if received by 5:00 pm	5:00 pm										
	SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION INCLUDING COLUMN ASSESSION ASSESSION INCLUDING COLUMN ASSESSION A	CUMENTED BEL	OW EACH TIME	E SAMPLES CH	ANGE POSSE	NOISE INCIDENT			-	ED-EX/UP	FED-EX / UPS: Tracking #
Sampler:	Date Time:	Received By:	ived By:	16	16-19-17	Relinquished By:	By:		Date Time:	\	γυς Received By:
Reinquished by:	Date Time:	Rece	ived By:		100	Relinquished By:	ed By:		0-4-17 Date Time:		Received By:
seindusned by:	Date Time:	Rece	Received By:			Custody Seal #	t		Donothin	4	1



# XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In



Client: COG Operating, LLC

Date/ Time Received: 10/19/2017 11:45:00 AM

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Work Order #: 566215

Temperature Measuring device used: R8

	Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?		13.2
#2 *Shipping container in good condition	?	Yes
#3 *Samples received on ice?		Yes
#4 *Custody Seals intact on shipping cor	ntainer/ cooler?	N/A
#5 Custody Seals intact on sample bottle	es?	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 relinqu	uished/ received?	Yes
#10 Chain of Custody agrees with sample	e 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 indicat	ed test(s)?	Yes
#16 All samples received within hold time	e?	Yes
#17 Subcontract of sample(s)?		No
#18 Water VOC samples have zero head	dspace?	N/A
* Must be completed for after-hours de Analyst:	livery of samples prior to placing in	the refrigerator
Checklist completed by:	Connie Hernandez	Date: 10/23/2017
Checklist reviewed by:	Kelsey Brooks	Date: 10/23/2017

# **Analytical Report 582946**

# for **Entech Consulting**

Project Manager: Pete Schram COG BC Federal #032

26-APR-18

Collected By: Client





#### 1211 W. Florida Ave, Midland TX 79701

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)

Xenco-Tampa: Florida (E87429) Xenco-Lakeland: Florida (E84098)





26-APR-18

Project Manager: Pete Schram

**Entech Consulting** 

21 Waterway Ave, Suite 300 The Woodlands, TX 77380

Reference: XENCO Report No(s): 582946

COG BC Federal #032

Project Address: Lea County, New Mexico

#### **Pete Schram:**

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) 582946. 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. 582946 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,

Kelsey Brooks

Knus Hoah

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 582946



# Entech Consulting, The Woodlands, TX

COG BC Federal #032

Sample Id	Matrix	<b>Date Collected</b>	Sample Depth	Lab Sample Id
B-1 (bottom discreet at T2)	S	04-18-18 11:23	12 In	582946-001
B-2 (bottom discreet at T2)	S	04-18-18 11:27	12 In	582946-002
SW-1 (Sidewall at T2)	S	04-18-18 12:30	8 In	582946-003
SW-2 (Sidewall at T2)	S	04-18-18 12:35	8 In	582946-004
SW-3 (Sidewall at T2)	S	04-18-18 12:39	8 In	582946-005
SW-4 (Sidewall at T2)	S	04-18-18 14:50	8 In	582946-006

# XENCO

#### **CASE NARRATIVE**

Client Name: Entech Consulting Project Name: COG BC Federal #032

Project ID: Report Date: 26-APR-18 Work Order Number(s): 582946 Date Received: 04/19/2018

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None



# Certificate of Analysis Summary 582946

#### Entech Consulting, The Woodlands, TX

**Project Name: COG BC Federal #032** 



**Project Id:** 

**Contact:** Pete Schram

**Project Location:** Lea County, New Mexico

**Date Received in Lab:** Thu Apr-19-18 12:05 pm

**Report Date:** 26-APR-18

Project Manager: Kelsey Brooks

		5000466	0.1	500046.0	.02	502046.0	00	502046.0	0.4	502046.0	0.5	502046.0	10.6
	Lab Id:	582946-0	101	582946-0	02	582946-0	03	582946-0	04	582946-0	05	582946-0	006
Analysis Requested	Field Id:	B-1 (bottom disc	reet at T2)	B-2 (bottom disc	reet at T2)	SW-1 (Sidewal	1 at T2)	SW-2 (Sidewal	1 at T2)	SW-3 (Sidewal	l at T2)	SW-4 (Sidewal	ll at T2)
Anaiysis Kequesieu	Depth:	12- In		12- In		8- In		8- In		8- In		8- In	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Apr-18-18	11:23	Apr-18-18	11:27	Apr-18-18 1	2:30	Apr-18-18 1	2:35	Apr-18-18 1	2:39	Apr-18-18 1	14:50
Chloride by EPA 300	Extracted:	Apr-25-18	10:30	Apr-25-18	0:30	Apr-25-18 1	0:30	Apr-25-18 1	0:30	Apr-25-18 1	0:30	Apr-25-18 1	10:30
	Analyzed:	Apr-25-18	18:27	Apr-25-18	8:33	Apr-25-18 1	6:36	Apr-25-18 1	8:39	Apr-25-18 1	8:45	Apr-25-18 1	18:51
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		343	4.97	33.0	4.97	< 5.00	5.00	12.1	4.95	172	5.00	28.3	4.97
TPH by SW8015 Mod	Extracted:	Apr-19-18	16:00	Apr-19-18	6:00	Apr-19-18 1	6:00	Apr-19-18 1	6:00	Apr-19-18 1	6:00	Apr-19-18 1	16:00
	Analyzed:	Apr-20-18	11:17	Apr-20-18 12:37		Apr-20-18 1	3:49	Apr-20-18 1	4:15	Apr-20-18 14:41		Apr-20-18 1	15:09
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)	·	<14.9	14.9	<15.0	15.0	<15.0	15.0	<14.9	14.9	<15.0	15.0	<15.0	15.0
Diesel Range Organics (DRO)		19.8	14.9	22.9	15.0	<15.0	15.0	<14.9	14.9	213	15.0	38.7	15.0
Oil Range Hydrocarbons (ORO)		<14.9	14.9	<15.0	15.0	<15.0	15.0	<14.9	14.9	24.1	15.0	<15.0	15.0
Total TPH		19.8	14.9	22.9	15.0	<15.0	15.0	<14.9	14.9	237	15.0	38.7	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

Kelsey Brooks Project Manager

Knis Roah



### **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.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample BLK Method Blank

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

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

- + NELAC certification not offered for this compound.
- \* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

<sup>\*\*</sup> Surrogate recovered outside laboratory control limit.



Project Name: COG BC Federal #032

 Work Orders: 582946,
 Project ID:

 Lab Batch #: 3047364
 Sample: 582946-001 / SMP
 Batch: 1 Matrix: Soil

Units: n	ng/kg <b>Date Analyzed:</b> 04/20/18 11:17	SU	RROGATE RI	ECOVERY S	STUDY	
	TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
	Analytes			[-]		
1-Chlorooctane		103	99.6	103	70-135	
o-Terphenyl		52.7	49.8	106	70-135	

**Lab Batch #:** 3047364 **Sample:** 582946-002 / SMP **Batch:** 1 **Matrix:** Soil

**Units:** mg/kg **Date Analyzed:** 04/20/18 12:37 SURROGATE RECOVERY STUDY **Amount** True Control TPH by SW8015 Mod Found Limits Flags Amount Recovery [A] [B] %R %R [D] **Analytes** 1-Chlorooctane 95.7 99.8 96 70-135 o-Terphenyl 48.7 49.9 70-135 98

**Lab Batch #:** 3047364 **Sample:** 582946-003 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg Date Analyzed: 04/20/18 13:49 SURROGATE RECOVERY STUDY

TPH by SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	99.0	100	99	70-135	
o-Terphenyl	50.1	50.0	100	70-135	

Units:	mg/kg	<b>Date Analyzed:</b> 04/20/18 14:15	SU	RROGATE RI	ECOVERY S	STUDY	
	ТРН	by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorood	ctane		104	99.6	104	70-135	
o-Terpheny	yl		52.6	49.8	106	70-135	

Units:	mg/kg	<b>Date Analyzed:</b> 04/20/18 14:41	SURROGATE RECOVERY STUDY						
	ТРН	by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1-Chloroocta	ane		97.5	99.9	98	70-135			
o-Terphenyl			51.5	50.0	103	70-135			

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



**Project Name: COG BC Federal #032** 

 Work Orders: 582946,
 Project ID:

 Lab Batch #: 3047364
 Sample: 582946-006 / SMP
 Batch: 1 Matrix: Soil

Units: mg/kg Date Analyzed: 04/20/18 15:09 SURROGATE RECOVERY STUDY							
	ТРН	by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
		Analytes					
1-Chloroocta	ine		97.7	99.9	98	70-135	
o-Terphenyl			50.2	50.0	100	70-135	

Lab Batch #: 3047364 Sample: 7643028-1-BLK / BLK Batch: 1 Matrix: Solid

Units: mg/kg Date Analyzed: 04/20/18 05:15 SURROGATE RECOVERY STUDY							
	ТРН	by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooc	tane		98.3	100	98	70-135	
o-Terpheny	1		50.1	50.0	100	70-135	

Lab Batch #: 3047364 Sample: 7643028-1-BKS / BKS Batch: 1 Matrix: Solid

Units: mg/kg Date Analyzed: 04/20/18 05:41 SURROGATE RECOVERY STUDY

TPH by SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	116	100	116	70-135	
o-Terphenyl	57.8	50.0	116	70-135	

Lab Batch #: 3047364 Sample: 7643028-1-BSD / BSD Batch: 1 Matrix: Solid

Units:	mg/kg	<b>Date Analyzed:</b> 04/20/18 06:08	SURROGATE RECOVERY STUDY						
	ТРН	by SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1-Chlorooc	tane		113	100	113	70-135			
o-Terpheny	<i>i</i> 1		58.0	50.0	116	70-135			

Units:	mg/kg	<b>Date Analyzed:</b> 04/20/18 06:59	SURROGATE RECOVERY STUDY						
	ТРН	by SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1-Chlorooc	tane		110	100	110	70-135			
o-Terpheny	1		52.9	50.0	106	70-135			

<sup>\*</sup> Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 \* A / B

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



# Form 2 - Surrogate Recoveries

**Project Name: COG BC Federal #032** 

 Work Orders: 582946,
 Project ID:

 Lab Batch #: 3047364
 Sample: 582908-001 SD / MSD
 Batch: 1 Matrix: Soil

Units:	mg/kg	<b>Date Analyzed:</b> 04/20/18 07:24	SU	RROGATE RE	ECOVERY S	STUDY	
	ТРН	by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooctan	ne		107	99.8	107	70-135	
o-Terphenyl			53.3	49.9	107	70-135	

Surrogate Recovery [D] = 100 \* A / B

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

<sup>\*</sup> Surrogate outside of Laboratory QC limits

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution



# **BS / BSD Recoveries**



**Project Name: COG BC Federal #032** 

Work Order #: 582946 Project ID:

Analyst: SCM Date Prepared: 04/25/2018 Date Analyzed: 04/25/2018

 Lab Batch ID: 3047921
 Sample: 7643359-1-BKS
 Batch #: 1
 Matrix: Solid

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300  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	<5.00	250	226	90	250	226	90	0	90-110	20	

**Analyst:** ARM **Date Prepared:** 04/19/2018 **Date Analyzed:** 04/20/2018

**Lab Batch ID:** 3047364 **Sample:** 7643028-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod  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
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	1030	103	1000	1030	103	0	70-135	20	
Diesel Range Organics (DRO)	<15.0	1000	1070	107	1000	1090	109	2	70-135	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: COG BC Federal #032

Work Order #: 582946 Project ID:

**Lab Batch ID:** 3047921 **QC- Sample ID:** 582946-003 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 04/25/2018 **Date Prepared:** 04/25/2018 **Analyst:** SCM

Reporting Units: mg/kg MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	%R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes	[A]	[B]		[D]	[E]		[G]				
Chloride	<5.00	250	240	96	250	240	96	0	90-110	20	

**Lab Batch ID:** 3047921 **QC- Sample ID:** 582946-006 S **Batch #:** 1 **Matrix:** Soil

**Date Analyzed:** 04/25/2018 **Date Prepared:** 04/25/2018 **Analyst:** SCM

Reporting Units: mg/kg 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	28.3	249	291	106	249	281	101	3	90-110	20	

**Lab Batch ID:** 3047364 **QC- Sample ID:** 582908-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 04/20/2018 Date Prepared: 04/19/2018 Analyst: ARM

Reporting Units: mg/kg MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 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
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	943	94	998	945	95	0	70-135	20	
Diesel Range Organics (DRO)	<15.0	1000	972	97	998	974	98	0	70-135	20	

CHAIN OF CUSTODY

	U	wenniquisited by semiprer	3	neilinquished by sampler	1/ And X X	Relinquished by Sampler		Next Day EMERGENCY 2-Day EMERGENCY 3-Day EMERGENCY	Same Day TAT	9 8 .	6 SW-4 (sidewall at T2)	5 SW-3 (sidewall at T2)	4 SW-2 (sidewall at T2)	3 SW-1 (sidewall at T2)	2 B-2 (bottom discreet at T2)	1 B-1 (bottom discreet at T2)		No. Field ID/Point of Collection		Samplers Name: Peter Schram	Peter Schram	Project Contact:	Email:	The Woodlands, Texas 77380	Company Address	EnTech Consulting Corporation	Company Name:
					9		SAM	0	Turnaround Time (Business Days)		8" bgs	8" bgs	8" bgs	8" bgs	12" bgs	12" bgs	Sample Depth	00				210-326-7831	Phone No.				nation
		Date/ Ilme		Date/Time	41911812	Date/Time	PLE CUSTODY I	7-Day TAT Contract TAT	S-Day TAT		4/18/2018	4/18/2018	4/18/2018	4/18/2018	4/18/2018	4/18/2018	Date	Collection		PO Number:	Midland, Texas	Concho (COG)	Invoice To:	Lea County, New Mexico	Project Location:	COG BC Federal #032	
	s	Receiv	ω	1	98	Recei	MUST BE DOCU	U		$\parallel$				1230 S		1123 S	Time Matrix				s 79701			ew Mexico	on:	al #032	
CF:(0-6: -0.2°C	Temp: 4.	Received By:		Received By:	Mexec 10	Received By:	SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION,	Level II Std QC + Forms Level 3 (CLP Forms) TRRP Checklist	/		1	1		1	1	1	# of	Num									Project Information
	0 IR ID:R-8	Relinquished By:	4	Relinquished By:	2	Relinquished By:	IE SAMPLES CHANGE POS		Data Deliverable Information								NaOH/Zn Acetate HNO3 H2SO4 NaOH NaHSO4 MEOH	Number of preserved bottles									
							SESSION, INCLU	Level IV (Full Data Pkg/raw data) TRRP Level IV UST/RG-411	ion		×	×	×	×		×	None IPH 8015 Extende Chlorides (300.0)	ed (GRO	D/DRO/MRO)				1	3			
		Date/Time		Date/Time		Date/Time	INCLUDING COURIER DELIVERY	(g/raw data)																			Analtyical Information
	(210) 326-7831	Manager Phone Number:	pete.schram@	Manager Email:	Peter Schram	Project Manager:	DELIVERY	thecese	)					-	-	1											nformation
		ne Number:	pete.schram@entechservice.com	=		ger:		5-4 Cog DINECT	Notes:							rieid Comments	Field Commons	WW= Waste Water	C E	WI = Wipe	OW = Ocean/Sea Water	SL = Sludge	SW = Surface Water	DW = Drinking Water	GW = Groundwater	W = Water	Matrix Codes



# XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In



Client: Entech Consulting

**Date/ Time Received:** 04/19/2018 12:05:00 PM

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Date: 04/20/2018

Work Order #: 582946

Temperature Measuring device used: R8

	Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?		4.4	
#2 *Shipping container in good condition	1?	Yes	
#3 *Samples received on ice?		Yes	
#4 *Custody Seals intact on shipping col	ntainer/ cooler?	N/A	
#5 Custody Seals intact on sample bottle	es?	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 relinque	uished/ received?	Yes	
#10 Chain of Custody agrees with samp	le labels/matrix?	Yes	
#11 Container label(s) legible and intact	?	Yes	
#12 Samples in proper container/ bottle?	?	Yes	TPH received in bulk container
#13 Samples properly preserved?		Yes	
#14 Sample container(s) intact?		Yes	
#15 Sufficient sample amount for indicat	red test(s)?	Yes	
#16 All samples received within hold tim	e?	Yes	
#17 Subcontract of sample(s)?		No	
#18 Water VOC samples have zero head	dspace?	N/A	
* Must be completed for after-hours de Analyst:	elivery of samples prior to placing in	n the refrigo	erator
Checklist completed by:	Mildeline Katie Lowe	Date: <u>04/1</u>	19/2018
Checklist reviewed by:	Hely Taylor		

ATTACHMENT C

**Disposal Manifests** 



Name Phone No.

	G	ENERATOR	NO. 303	957
Operator No. 229 137		Permit/RRC No.	900	J. J. I ymanna i
Operators Name Coulcide (cod)		Lease/Well Name & No.	BC Frederal # 0	8-22 million filia
Address	SAVE	County	The COM	P ope No. = Feet
		API No.	30-625-35829	- BETTHETHE
City, State, Zip MIDCASO, TA	79701	Rig Name & No.	William State of the State of t	single stood
Phone No. 432-693-744	3	AFE/PO No.	The state of the s	- NEL NO - PIO -
EXEMPT E&P Wa	aste/Service Identification and A	mount (place volume next to wa	aste type in barrels or cubic yards)	の日本の日本の
Oil Based Muds Oil Based Cuttings	NON-INJECTABLE WATERS  Washout Water (Non-Injectable)	AND PARTY OF THE P	Washout Water (Injectable)	DESCRIPTION OF THE PROPERTY OF
Water Based Muds Water Based Cuttings	Completion Fluid/Flow back (Non-I	njectable)	Completion Fluid/Flow back (Injectable)	le)
Produced Formation Solids	Produced Water (Non-Injectable) Gathering Line Water/Waste (Non-	Injectable)	Produced Water (Injectable) Gathering Line Water/Waste (Injectal	
Tank Bottoms  E&P Contaminated Soil	Truck Washout (exempt waste)		OTHER EXEMPT WASTES (type and gene	eration process of the waste)
Gas Plant Waste		110000000000000000000000000000000000000		C. W.
WASTE GENERATION PROCESS:	DRILLING	COMPLETION	PRODUCTION	GATHERING LINES
All pag avaget 59.0 v		Vaste/Service Identification and Amo	ount LP), Ignitability, Corrosivity and Reactivi	
Non-Exempt Other	waste must be analysed and be below		om Non-Exempt Waste List on back	ty.
QUANTITY	B - BARRELS	L - LIQUID	Y - YARDS	E - EACH
hereby certify that according to the Resource Conservation (Check the appropriate classification)	rvation and Recovery Act (RCRA) and	the US Environmental Protection Ag	ency's July 1988 regulatory determinat	ion, the above described waste
Oil field wastes g	enerated from oil and gas exploration	n and production operations and are	not mixed with non-exempt waste (R3	60 Accepts certifications on a per
RCRA EXEMPT: load basis only)				
			raste hazardous by characteristics estab ended. The following documentation d	
	ached. (Check the appropriate items a			
MSDS Information	on RCRA Hazardous	Waste Analysis	Other (Provide Description Below)	
STATE OF THE PARTY	16.11.1	Land of the Name o	En. Lii- C-f-1- /khd det-hi	an of the boundary weeks
I FMFRGENCY NON-OILFEILD:	nazradous, non-olifelid waste that has nd a desciption of the waste must acc		of Public Safety (the order, documentati	on of non-nazardous waste
PETER V. Scham		4 18/18	Ties of	5
(PRINT) AUTHORIZED AGENTS NAME	-	DATE	SIGNAT	URE
Triple I	Truzer, ny IR	ANSPORTER		
Transporter's Name	1, ment2	Driver's Name		- I - miles
Address		Print Name		The state of the s
7 - 10 <u>1 - 10 - 10 - 10 - 10 - 10 - 10 -</u>		Phone No.		and the second second
Phone No.		Truck No.	a to delicate about the advanced facilities from	buta
I hereby certify that the above named material(s) was	s/were picked up at the Generator's s	ite listed above and delivered withou	ut incident to the disposal facility listed	below.
SHIPMENT DATE	DRIVER'S SIGNATURE	DELIVE	ERY DATE	DRIVER'S SIGNATURE
TRUCK TIME STAMP	DISP	OSAL FACILITY	RECEIVIN	IG AREA
IN: OUT:		nuttino mettar	Name/No.	bovers (other or)
Site Name/		Phone No.	E7E 202 1070	- New York
Permit No. Halfway Facility / NM1-006  Address 6601 Hobbs Hwy US 62/180 Mile N	Aarkon 66 Carlohad NAA 99330		575-393-1079	THE CHARLES AND A STREET
NORM READINGS TAKEN? (Circle One		If VFS was readi	ing > 50 micro roentgens? (circle one)	YES NO
PASS THE PAINT FILTER TEST? (Circle One		NO NO	and the state of t	100
2,700,700	TAI	NK BOTTOMS	The second in this	-cream
Feet	Inches		The second	Total State State - 1
1st Gauge	The second last	BS	&W/BBLS Received Free Water	BS&W (%)
2nd Gauge Received		PART OF THE STREET	Total Received	NEWSTRAND OF THE PARTY OF THE P
		DENIED IN LAND		
I hereby certify that the above load material has b	peen (circle one): ACCEPTED	DENIED If denied, why	The state of the state of	and the state of t
NAME (PRINT)	DATE	TITLE	SIGNA	TURE



# NEW MEXICO NON-HAZARDOUS OIL FIFLD WASTE MANIFEST

(PLEASE PRINT)

Company Man Contact Information

Name	Preclar

Phone No. 210-772 GENERATOR Permit/RRC No Lease/Well Name & No. Operators Name Address County API No. 19 to 1 City, State, Zip Rig Name & No. AFE/PO No. Phone No. EXEMPT E&P Waste/Service Identification and Amount (place volume next to waste type in barrels or cubic yards) Oil Based Muds **NON-INJECTABLE WATERS** Oil Based Cuttings Washout Water (Non-Injectable) Washout Water (Injectable) Water Based Muds Completion Fluid/Flow back (Non-Injectable) Completion Fluid/Flow back (Injectable) Produced Water (Injectable) Water Based Cuttings Produced Water (Non-Injectable) Gathering Line Water/Waste (Non-Injectable) **Produced Formation Solids** Gathering Line Water/Waste (Injectable OTHER EXEMPT WASTES ( Tank Bottoms **E&P** Contaminated Soil Truck Washout (exempt waste) Gas Plant Waste WASTE GENERATION PROCESS: COMPLETION **PRODUCTION GATHERING LINES** DRILLING All non-exempt E&P waste must be analysed and be below the threshold limits for toxicity (TCLP), Ignitability, Corrosivity and Reactivity Non-Exempt Other \*please select from Non-Exempt Waste List on back QUANTITY B - BARRELS L-LIQUID Y - YARDS E - EACH I hereby certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination, the above described waste load is (Check the appropriate classification) Oil field wastes generated from oil and gas exploration and production operations and are not mixed with non-exempt waste (R360 Accepts certifications on a per RCRA EXEMPT: Oil field waste which is non-hazardous that does not exceed the minimum standards for waste hazardous by characteristics established in RCRA regulations, 40 CFR RCRA NON-EXEMPT: 261.21-261.24, or listed hazardous waste as defined by 40 CFR, part 261, subpart D, as amended. The following documentation demonstrating the waste as nonhazardous is attached. (Check the appropriate items as provided) Other (Provide Description Below) RCRA Hazardous Waste Analysis Emergency non-hazradous, non-oilfeild waste that has been ordered by the Department of Public Safety (the order, documentation of non-hazradous waste EMERGENCY NON-OILFEILD: determination and a desciption of the waste must accompany this form) SIGNATURE TRANSPORTER Transporter's Driver's Name Name **Print Name** Address Phone No Truck No. Phone No. I hereby certify that the above named material(s) was/were picked up at the Generator's site listed above and delivered without incident to the disposal facility listed below. 118 DRIVER'S SIGNATURE DELIVERY DATE DRIVER'S SIGNATURE RECEIVING AREA TRUCK TIME STAMP Name/No. OUT: IN: Site Name/ Phone No. 575-393-1079 Halfway Facility / NM1-006 Permit No. Address 6601 Hobbs Hwy US 62/180 Mile Marker 66 Carlsbad, NM 88220 If YES, was reading > 50 micro roentgens? (circle one) NORM READINGS TAKEN? (Circle One) YES PASS THE PAINT FILTER TEST? (Circle One) YES Feet Inches BS&W (%) BS&W/BBLS Received 1st Gauge Free Wate 2nd Gauge Total Received Received DENIED If denied, why? I hereby certify that the above load material has been (circle one): ACCEPTED SIGNATURE NAME (PRINT) DATE TITLE



Company Man Contact Information

Name	PV	41	A	

SOLUTIONS			t III and ii	Phone No. 2	10-326-7831
			GENERATOR	No. 303	952
Operator No.	229137	~	Permit/RRC No. Lease/Well	A series and the series of the	and sample
Operators Name	Coverno (LOF	)	Name & No.	BE FEDERAL :	4030 Million
Address	600 W. Iltm	ors Auc	County	LEA CO. HM	There are seen and the seen and the seen are seen as a seen are seen are seen as a seen are seen as a seen are seen
-		70	API No.	20 - 025.79	829
City, State, Zip	MIDWID TX	79701	Rig Name & No.	a statement of the stat	U man - Wrupy
Phone No.			AFE/PO No.	III THOUGHTS THE STATE OF	
Oil Based Muds	EXEMPT E&P Wa	NON-INJECTABLE WATERS	d Amount (place volume next to v	waste type in barrels or cubic yard  INJECTABLE WATERS	s) - cal a massa et a
Oil Based Cutting		Washout Water (Non-Injectable		Washout Water (Injectable)	
Water Based Mu Water Based Cut		Completion Fluid/Flow back (No Produced Water (Non-Injectable	The second control of	Completion Fluid/Flow back (Injecta Produced Water (Injectable)	able)
Produced Forma Tank Bottoms	tion Solids	Gathering Line Water/Waste (No INTERNAL USE ONLY	on-Injectable)	Gathering Line Water/Waste (Inject OTHER EXEMPT WASTES (type and ge	
E&P Contaminate	ed Soil 10 4/3	Truck Washout (exempt waste)		OTTIER EXCIVIFT WASTES (type and ge	neration process of the waste)
Gas Plant Waste	ATION PROCESS:	DRILLING	COMPLETION	PRODUCTION	GATHERING LINES
WASTE GENER	ATION PROCESS:				GATHERING LINES
and Direction	All non-exempt E&P		P Waste/Service Identification and An low the threshold limits for toxicity (Toxicity)	nount CLP), Ignitability, Corrosivity and Reacti	vity.
Non-Exempt Othe				from Non-Exempt Waste List on back	
QUANTITY		B - BARRELS	L-LIQUID	Y - YARDS	E - EACH
	nat according to the Resource Conse	vation and Recovery Act (RCRA) a	and the US Environmental Protection A	Agency's July 1988 regulatory determin	ation, the above described waste
RCRA EXI	Oil field wastes g	enerated from oil and gas explora	tion and production operations and ar	re not mixed with non-exempt waste (F	360 Accepts certifications on a per
RCRA NO		nich is non-hazardous that does no	ot exceed the minimum standards for	waste hazardous by characteristics est	ablished in RCRA regulations, 40 CFR
	261.21-261.24, o			mended. The following documentation	demonstrating the waste as non-
	MSDS Informatio	ched. (Check the appropriate item	ous Waste Analysis	Other (Provide Description Below)	
			strasted strett		
☐ EMERGEN	CV NON-OIL FEIL D.			of Public Safety (the order, documenta	ition of non-hazardous waste
Pere	determination ar	nd a desciption of the waste must	accompany this form)	Turs 3	
(PRI	NT) AUTHORIZED AGENTS NAME		DATE	SIGN	ATURE
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Transporter's	- 1 per my service	6/	Driver's Name	1 1	THE STATE OF THE S
Name Address	10 10 (ng no)	KJ.	Print Name	Juan Mantoy	× )(
7.440.405.0	Hospid II Man 8.65	2.5	Phone No.	1575 510-5981	Desire the state of
Phone No.	The same of the sa		Truck No.	2	White and the second
I hereby certify t	hat the above named material(s) was	/were picked up at the Generato	r's site listed above and delivered with	out incident to the disposal facility liste	ed below.
4/18/1	SIENT DATE	DRIVER'S SIGNATURE	DEL	IVERY DATE	DRIVER'S SIGNATURE
SHIPM	TRUCK TIME STAMP		POSAL FACILITY		NG AREA
INI	OUT:	THE MENTAL STATE	O SALTACILITY	Name/No.	Imm pysked -
IN:	001.			Hume/Ho.	totales a
Site Name/ Permit No.	Halfway Facility / NM1-006		Phone No.	575-393-1079	Letter
Address	6601 Hobbs Hwy US 62/180 Mile N	larker 66 Carlsbad, NM 88220	ALL STATE OF THE S	The second second	AND RESTORED TO THE RESTORED T
	NORM READINGS TAKEN? (Circle One THE PAINT FILTER TEST? (Circle One		If YES, was rea	ding > 50 micro roentgens? (circle one	YES NO
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1st Gauge			physical specific	BS&W/BBLS Received	BS&W (%)
2nd Gauge Received			THE PROPERTY OF THE PARTY OF TH	Free Water Total Received	11 march mb-
			A STATE OF THE STA		
I hereby certi	ify that the above load material has b	een (circle one): ACCEPTE	D DENIED If denied, wh	ny?	and the late of th
-	NAME (PRINT)	DATE	TITLE	SIGI	NATURE
	The second secon	and the second s	The second secon		



Company Man Contact Information

								Phone No.		
				(	SENERAT	OR	N	0.30	3953	3
perator No.	224137				0100-0113	Permit/RRC No.	-			
perators Name	CONCHO (106)					Lease/Well Name & No.	BC Fador	110	32	
dress	600 W. Illin	Di S	Ave			County	LEACO.			DE NOTE OF
idi C33	Today of		4-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1			API No.	30-025	-3287	9	at and in the second
ty, State, Zip	MIDLAND, TEX	15	79701			Rig Name & No.			Table Della Series	19/201
none No.	432-683-74	4 2		- 51		AFE/PO No.				- AM 1812
	EXEMPT E&P	Wa	ste/Service Identificatio	n and	Amount (place v	volume next to wa	aste type in barrels	or cubic y	ards)	STATE OF THE PARTY
il Based Muds			NON-INJECTABLE WATERS	_			INJECTABLE WATER	S	ALERS IN	H09)=
il Based Cuttings Vater Based Muds		-	Washout Water (Non-Inje Completion Fluid/Flow ba				Washout Water (Injuid/Floor Completion Fluid/Floor Flu		ectable)	-
Vater Based Cutting	gs		Produced Water (Non-Inje				Produced Water (Inj	jectable)		
roduced Formation ank Bottoms	n Solids	-	Gathering Line Water/Wa INTERNAL USE ONLY	ste (No	n-Injectable)		OTHER EXEMPT WAS			cess of the waste)
&P Contaminated	Soil To NS		Truck Washout (exempt w	raste)	dustrielle	Personal Property (see	Maria de San		N - massic	
as Plant Waste	Since say of the		The Department of the Control of the		7		PROPULCTION	Г	TATUED	INC LINES
ASTE GENERAT	ION PROCESS:		DRILLING		COMPLETION	L DETERMINED	PRODUCTION		GATHER	NG LINES
	All		NON-EXEM waste must be analysed and			entification and Amo		ivity and Re	activity	
on-Exempt Other	All non-exempt b	OF W	raste must be analysed and	ne ne	ow the threshold if		om Non-Exempt Was			
				DEV.S		I HOUR	v	- YARDS		E - EACH
UANTITY			B - BAR			L - LIQUID				
	according to the Resource Co	onser	vation and Recovery Act (R	CRA) a	nd the US Environn	nental Protection Ag	ency's July 1988 regu	latory deter	mination, the a	bove described waste
ad is (Check the ap	ppropriate classification)	tos a	enerated from oil and gas e	vnlora	tion and production	operations and are	not mixed with non-	exempt was	te (R360 Accep	ts certifications on a per
RCRA EXEM	PT: load basis or	nly)								
RCRA NON-	EXEMPT: Oil field was	te wh	nich is non-hazardous that o	does no	ot exceed the minin	num standards for w	vaste hazardous by ch	aracteristics	established in	RCRA regulations, 40 CFR
			r listed hazardous waste as ched. (Check the appropria			61, subpart D, as am	ended. The following	documenta	tion demonstra	ating the waste as non-
	MSDS Inform				us Waste Analysis		Other (Provide Desc	ription Belo	w)	
	L Wisos Milon	ilutio	ii III	-	MOSSTELL	A SERVICE OF THE SERV				
n)ZBV	Emergency	non-l	hazradous, non-oilfeild was	te that	has been ordered	by the Department of	of Public Safety (the o	rder, docum	entation of no	n-hazardous waste
EMERGENCY			nd a desciption of the waste				1	2-		_
PETER	V. Scupani				4/18	DATE	- Tear	1	SIGNATURE	-
(PRINT)	AUTHORIZED AGENTS NAME	_		-	DANICRO			-		
					RANSPO	KIEK				901
Transporter's	155 7%		J. Me-			Driver's Name	white the			Self-Street and
Address					1900	Print Name			m=4 m j	The state of the s
	and the same of th					Phone No.	manufacture and the second			California Livera No.
Phone No.	A - 6-16-17-1	97				Truck No.	#5		-	of being bases
hereby certify tha	at the above named material(	s) wa	s/were picked up at the Ge	nerato	r's site listed above	and delivered without	out incident to the dis	posal facility	listed below.	Marie Company
4/18/18				711		1		Contraction of	etamina i	SIGNATURE
SHIPMEN	THE RESERVE AND ADDRESS OF THE PERSON NAMED IN		DRIVER'S SIGNATURE	DI	DOCALE	-	VERY DATE	DECE	IVING AF	
0001	TRUCK TIME STA	MF		DIS	SPOSAL F	ACILITY			IVING AF	ti autorium and
IN:	OUT:	(2)					Name	/No.		The state of the s
Site Name/						Phone No.	575-393-1079			
. Crimie ito:	Halfway Facility / NM1-006	All .	Markey CG Carlebad NA 4 00	220	-		3,3 333 20,3		'advantage	July
Charles and Co.	6601 Hobbs Hwy US 62/180 M					If VES was road	ding > 50 micro roent	gens? (circle	one) v	ES NO
	ORM READINGS TAKEN? (Circl			NO		NO	umb - 30 micro roem	Janor (on cic	Talente :	
PASS T	THE PAINT FILTER TEST? (Circl	e One	e) YES	7	ANIV POT	TOMS	1		The same	-31
			lanks:	-1	AINK BUT	TOIVIS				
1et Gauge	Feet		Inches	Line of the last	No. of Persons and	В	S&W/BBLS Received		BS&	W (%)
1st Gauge 2nd Gauge					interior and in	au romalia	Free Water			(MAI) 11 - 12 - 13 - 13 - 13 - 13 - 13 - 13 -
Received			distribution of the same of th	house	College No. of	resident	Total Received	L ban		
15.000	shaksha ahasia landa ahasia	has	hean (circle one)	CCEPTE	D DENIED	If denied, wh	iv?	-	and it is its	tane his region
I hereby certify	that the above load materia	nas	been (circle one): At	CLFIL	DEMIED	The state of the	LIFE LIFE	Carried to the	i sis mi	- Williams
	NAME (PRINT)		DATE			TITLE	_	- diese se	SIGNATURE	
	LASSIALE (C.VILA))									



Company Man Contact Information

Name	TV	SCHRAM
Ivallie	-	

Phone No GENERATOR 29137 Permit/RRC No. Operator No. Lease/Well enteral 1022 Name & No. **Operators Name** Address County API No. 79701 City, State, Zip Rig Name & No. Phone No. AFE/PO No. EXEMPT E&P Waste/Service Identification and Amount (place volume next to waste type in barrels or cubic yards) Oil Based Muds INJECTABLE WATERS Oil Based Cuttings Washout Water (Non-Injectable) Washout Water (Injectable) Water Based Muds Completion Fluid/Flow back (Non-Injectable) Completion Fluid/Flow back (Injectable) Produced Water (Injectable) Water Based Cuttings Produced Water (Non-Injectable) **Produced Formation Solids** Gathering Line Water/Waste (Non-Injectable) Gathering Line Water/Waste (Injectable) Tank Bottoms OTHER EXEMPT WASTES (type and gen INTERNAL USE ONLY **E&P** Contaminated Soil Truck Washout (exempt waste) Gas Plant Waste WASTE GENERATION PROCESS DRILLING COMPLETION **PRODUCTION GATHERING LINES** NON-EXEMPT E&P Waste/Service Identification and Amount All non-exempt E&P waste must be analysed and be below the threshold limits for toxicity (TCLP), Ignitability, Corrosivity and Reactivity \*please select from Non-Exempt Waste List on back Non-Exempt Other QUANTITY B - BARRELS L-LIQUID Y - YARDS E - EACH I hereby certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination, the above described waste load is (Check the appropriate classification) Oil field wastes generated from oil and gas exploration and production operations and are not mixed with non-exempt waste (R360 Accepts certifications on a per RCRA EXEMPT: load basis only) Oil field waste which is non-hazardous that does not exceed the minimum standards for waste hazardous by characteristics established in RCRA regulations, 40 CFR RCRA NON-EXEMPT: 261.21-261.24, or listed hazardous waste as defined by 40 CFR, part 261, subpart D, as amended. The following documentation demonstrating the waste as nonhazardous is attached. (Check the appropriate items as provided) RCRA Hazardous Waste Analysis Other (Provide Description Below) MSDS Information Emergency non-hazradous, non-oilfeild waste that has been ordered by the Department of Public Safety (the order, documentation of non-hazradous waste **EMERGENCY NON-OILFEILD:** determination and a desciption of the waste must accompany this form) PETER V. SCHMAN NT) AUTHORIZED AGENTS NA TRANSPORTER Transporter's Driver's Name Name Print Name Address Phone No Phone No. Truck No. I hereby certify that the above named material(s) was/were picked up at the Generator's site listed above and delivered without incident to the disposal facility listed below. DELIVERY DATE DRIVER'S SIGNATURE DRIVER'S SIGNATURE SHIPMENT DATE RECEIVING AREA TRUCK TIME STAMP DISPOSAL FACIL Name/No. OUT: IN: Site Name/ Phone No. 575-393-1079 Halfway Facility / NM1-006 Permit No. Address 6601 Hobbs Hwy US 62/180 Mile Marker 66 Carlsbad, NM 88220 NO If YES, was reading > 50 micro roentgens? (circle one) YES NORM READINGS TAKEN? (Circle One) YES PASS THE PAINT FILTER TEST? (Circle One) Inches Feet BS&W (%) BS&W/BBLS Received 1st Gauge Free Wate 2nd Gauge Total Received Received DENIED If denied, why? I hereby certify that the above load material has been (circle one): ACCEPTED SIGNATURE TITLE DATE NAME (PRINT)

#### NEW MEXICO NON-HAZARDOUS OILFIELD WASTE MANIFEST

(PLEASE PRINT)

Company Man Contact Information

Phone No. GENERATOR 229137 Permit/RRC No Lease/Well EC FEDERAL MODIZ Name & No. Operators Name 13 M Address County API No. City, State, Zip Rig Name & No. AFE/PO No. Phone No. EXEMPT E&P Waste/Service Identification and Amount (place volume next to waste type in barrels or cubic yards) Oil Based Muds NJECTABLE WATERS **NON-INJECTABLE WATERS** Oil Based Cuttings Washout Water (Injectable) Washout Water (Non-Injectable) Water Based Muds Completion Fluid/Flow back (Non-Injectable) Completion Fluid/Flow back (Injectable) Produced Water (Injectable) Water Based Cuttings Produced Water (Non-Injectable) **Produced Formation Solids** Gathering Line Water/Waste (Non-Injectable) Gathering Line Water/Waste (Injectable) OTHER EXEMPT WASTES (type Tank Bottoms INTERNAL USE ONLY **E&P** Contaminated Soil Truck Washout (exempt waste) Gas Plant Waste WASTE GENERATION PROCESS: DRILLING COMPLETION **PRODUCTION GATHERING LINES** All non-exempt E&P waste must be analysed and be below the threshold limits for toxicity (TCLP), Ignitability, Corrosivity and Reactivity. Non-Exempt Other \*please select from Non-Exempt Waste List on back B - BARRELS Y - YARDS L-LIQUID E - EACH QUANTITY I hereby certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination, the above described waste load is (Check the appropriate classification) Oil field wastes generated from oil and gas exploration and production operations and are not mixed with non-exempt waste (R360 Accepts certifications on a per RCRA EXEMPT: Oil field waste which is non-hazardous that does not exceed the minimum standards for waste hazardous by characteristics established in RCRA regulations, 40 CFR RCRA NON-EXEMPT: 261.21-261.24, or listed hazardous waste as defined by 40 CFR, part 261, subpart D, as amended. The following documentation demonstrating the waste as nonhazardous is attached. (Check the appropriate items as provided) MSDS Information RCRA Hazardous Waste Analysis Other (Provide Description Below) Emergency non-hazradous, non-oilfeild waste that has been ordered by the Department of Public Safety (the order, documentation of non-hazradous waste EMERGENCY NON-OILFEILD: determination and a desciption of the waste must accompany this form) FEHRAM SIGNATURE Transporter's Driver's Name Name Print Name Address Phone No. Truck No. Phone No. I hereby certify that the above named material(s) was/were picked up at the Generator's site listed above and delivered without incident to the disposal facility listed below. 118 DELIVERY DATE DRIVER'S SIGNATURE DRIVER'S SIGNATURE RECEIVING AREA TRUCK TIME STAMP OUT: Name/No. IN: Site Name/ Phone No. 575-393-1079 Halfway Facility / NM1-006 Permit No. Address 6601 Hobbs Hwy US 62/180 Mile Marker 66 Carlsbad, NM 88220 NORM READINGS TAKEN? (Circle One) If YES, was reading > 50 micro roentgens? (circle one) YES NO YES PASS THE PAINT FILTER TEST? (Circle One) YES Feet Inches BS&W/BBLS Received BS&W (%) 1st Gauge 2nd Gauge Received Total Received I hereby certify that the above load material has been (circle one): ACCEPTED DENIED

NAME (PRINT)

SIGNATURE



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Phone No.

GENERATOR 229137 Permit/RRC No. Operator No. Lease/Well CONCHO (COG) FEDERAL FOR **Operators Name** Name & No. GOO CO TILLIONS AND Address County API No. MIDLAND City, State, Zip Rig Name & No Phone No. AFE/PO No EXEMPT E&P Waste/Service Identification and Amount (place volume next to waste type in barrels or cubic yards) Oil Based Muds NJECTABLE WATERS Oil Based Cuttings Washout Water (Non-Injectable) Washout Water (Injectable) Water Based Muds Completion Fluid/Flow back (Non-Injectable) Completion Fluid/Flow back (Injectable) Produced Water (Injectable) Water Based Cuttings Produced Water (Non-Injectable) **Produced Formation Solids** Gathering Line Water/Waste (Non-Injectable) Gathering Line Water/Waste (Injectable) Tank Bottoms INTERNAL USE ONLY OTHER EXEMPT WASTES (type ar **E&P** Contaminated Soil Truck Washout (exempt waste) Gas Plant Waste WASTE GENERATION PROCESS DRILLING COMPLETION **PRODUCTION** GATHERING LINES NON-EXEMPT E&P Waste/Service Identification and Amount All non-exempt E&P waste must be analysed and be below the threshold limits for toxicity (TCLP), Ignitability, Corrosivity and Reactivity Non-Exempt Other \*please select from Non-Exempt Waste List on back QUANTITY B - BARRELS L-LIQUID Y - YARDS E - EACH I hereby certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination, the above described waste load is (Check the appropriate classification) Oil field wastes generated from oil and gas exploration and production operations and are not mixed with non-exempt waste (R360 Accepts certifications on a per RCRA EXEMPT: load basis only) Oil field waste which is non-hazardous that does not exceed the minimum standards for waste hazardous by characteristics established in RCRA regulations, 40 CFR RCRA NON-EXEMPT: 261.21-261.24, or listed hazardous waste as defined by 40 CFR, part 261, subpart D, as amended. The following documentation demonstrating the waste as nonhazardous is attached. (Check the appropriate items as provided) RCRA Hazardous Waste Analysis MSDS Information Other (Provide Description Below) Emergency non-hazradous, non-oilfeild waste that has been ordered by the Department of Public Safety (the order, documentation of non-hazardous waste **EMERGENCY NON-OILFEILD:** determination and a desciption of the waste must accompany this form SIGNATURE TRANSPORTER Transporter's Driver's Name Name Address Print Name Phone No Phone No. Truck No. I hereby certify that the above named material(s) was/were picked up at the Generator's site listed above and delivered without incident to the disposal facility listed below. DRIVER'S SIGNATURE DELIVERY DATE DRIVER'S SIGNATURE SHIPMENT DATE **RECEIVING AREA** TRUCK TIME STAMP DISPOSAL FACIL OUT: Name/No. IN: Site Name Phone No. 575-393-1079 Halfway Facility / NM1-006 Permit No. Address 6601 Hobbs Hwy US 62/180 Mile Marker 66 Carlsbad, NM 88220 NORM READINGS TAKEN? (Circle One) If YES, was reading > 50 micro roentgens? (circle one) PASS THE PAINT FILTER TEST? (Circle One) YES Feet Inches BS&W/BBLS Received BS&W (%) 1st Gauge Free Water 2nd Gauge Total Received Received ACCEPTED I hereby certify that the above load material has been (circle one): DENIED If denied, why? DATE NAME (PRINT)



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GENERATOR Permit/RRC No. Operator No. Lease/Well Name & No. Operators Name County Address +028-3682 API No. 19701 City, State, Zip Rig Name & No. Phone No. AFE/PO No. EXEMPT E&P Waste/Service Identification and Amount (place volume next to waste type in barrels or cubic yards) Oil Based Muds INJECTABLE WATERS Oil Based Cuttings Washout Water (Non-Injectable) Washout Water (Injectable) Completion Fluid/Flow back (Injectable) Water Based Muds Completion Fluid/Flow back (Non-Injectable) Produced Water (Injectable) Water Based Cuttings Produced Water (Non-Injectable) Gathering Line Water/Waste (Injectable) **Produced Formation Solids** Gathering Line Water/Waste (Non-Injectable) Tank Bottoms INTERNAL USE ONLY **E&P** Contaminated Soil Truck Washout (exempt waste) Gas Plant Waste WASTE GENERATION PROCESS DRILLING COMPLETION **PRODUCTION GATHERING LINES** NON-EXEMPT E&P Waste/Service Identification and Amount All non-exempt E&P waste must be analysed and be below the threshold limits for toxicity (TCLP), Ignitability, Corrosivity and Reactivity Non-Exempt Other \*please select from Non-Exempt Waste List on back QUANTITY B - BARRELS L - LIQUID Y - YARDS F-FACH I hereby certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination, the above described waste load is (Check the appropriate classification) Oil field wastes generated from oil and gas exploration and production operations and are not mixed with non-exempt waste (R360 Accepts certifications on a per RCRA EXEMPT: load basis only) Oil field waste which is non-hazardous that does not exceed the minimum standards for waste hazardous by characteristics established in RCRA regulations, 40 CFR RCRA NON-EXEMPT: 261.21-261.24, or listed hazardous waste as defined by 40 CFR, part 261, subpart D, as amended. The following documentation demonstrating the waste as nonhazardous is attached. (Check the appropriate items as provided) RCRA Hazardous Waste Analysis Other (Provide Description Below) MSDS Information Emergency non-hazradous, non-oilfeild waste that has been ordered by the Department of Public Safety (the order, documentation of non-hazradous waste **EMERGENCY NON-OILFEILD:** determination and a desciption of the waste must accompany this form) TRANSPORTER Transporter's Driver's Name Print Name Address Phone No. Phone No. Truck No. I hereby certify that the above named material(s) was/were picked up at the Generator's site listed above and delivered without incident to the disposal facility listed below DELIVERY DATE DRIVER'S SIGNATURE DRIVER'S SIGNATURE SHIPMENT DATE RECEIVING AREA DISPOSAL FACIL TRUCK TIME STAMP Name/No. OUT: IN: Site Name Phone No. 575-393-1079 Halfway Facility / NM1-006 Permit No. Address 6601 Hobbs Hwy US 62/180 Mile Marker 66 Carlsbad, NM 88220 If YES, was reading > 50 micro roentgens? (circle one) YES NORM READINGS TAKEN? (Circle One) PASS THE PAINT FILTER TEST? (Circle One) YES Feet Inches BS&W/BBLS Received BS&W (%) 1st Gauge Free Water 2nd Gauge **Total Received** Received DENIED If denied, why? I hereby certify that the above load material has been (circle one): ACCEPTED SIGNATURE NAME (PRINT) DATE



1 )

Company Man Contact Information
Name

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Phone No.	432-63-74	43	and an order		FE/PO No.		Transpart st	
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Phone No.	并 575- 626-	8891			ruck No.	#5		a lint toward would
I hereby certify th	nat the above named material(s) was	/were picked up at t	the Generator's si	te listed above and	delivered withou	it incident to the disposal	acility listed belo	DW.
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Site Name/ Permit No.	Halfway Facility / NM1-006			P	hone No.	575-393-1079		
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(PRINT) AUTO  Transporter's Name Address  Phone No. I hereby certify that the SHIPMENT DAT  TR  IN:  Site Name/ Permit No. Address 6601  NORM PASS THE P  1st Gauge 2nd Gauge Received	MSDS Information and determination and determina	Arker 66 Carlsbad, NM 88	TRANSPORTI  Dr.  Pri  enerator's site listed above and company the site of the	ER viver's Name one No. uck No. delivered without  DELIVE  LITY  one No.	Public Safety (the order, doctors)  But incident to the disposal facility	Ility listed below.  DRIVER'S SIGNATURE  CEIVING AREA	aste
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## ATTACHMENT D

NMOCD Form C-141 (Initial) NMOCD Form C-141 (Final) <u>District I</u> 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 <u>District IV</u> 1220 S. St. Francis Dr., Santa Fe, NM 87505

# State of New Mexico **Energy Minerals and Natural Resources**

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

Form C-141

Revised August 8, 2011

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

# **Release Notification and Corrective Action**

						<b>OPERA</b>	OR											
Name of Co		37 (	Contact: Robert McNeill															
Address:	600 West		Telephone N			2-683-7443	3											
Facility Nan	ne: BC Fed	deral #032	<u> </u>	Facility Typ	e: Wellhead	<u>i</u>												
Surface Own	ner: Fed	deral		Mineral Ov	vner: F	Federal			API No.	30-025-3	8829							
				·			E A CE											
7 T. Ca 7	C4: 1	T	D			OF REI		Enat/S	Van Lina I		Count							
Unit Letter G	Section 20	Township 17S	Range 32E	2,360		South Line North	Feet from the 1,650		West Line   East		Count Lea	•						
Latitude 32.8208771 Longitude -103.7854462																		
				NATU	JRE	OF RELI	EASE											
Type of Relea						Volume of			Volume R									
Source of Re		Oil and Produ	ced Water				Oil & 4 bbl. PW			2 bbl. Oil &								
Source of Ke	ease:	Wellhe	ad				our of Occurrence or 10, 2017 3:00			Hour of Dis tember 10,								
Was Immedia	ite Notice C	Given?				If YES, To												
			Yes 🛚	No 🛛 Not Rec	uired													
		By Who	m?			Date and H												
Was a Water	course Reac		Yes ⊠	l No		If YES, Vo	lume Impacting t	he Wate	ercourse.									
If a Watercou	irse was Im	pacted, Descri	be Fully.			RECEIVED												
V-10-0						Bv	Olivia Yu a	nt 10:	:20 am.	Sep 1	8. 20	017						
Describe Cau	se of Proble	em and Remed	lial Actio	Taken.*														
The release u	as due to c	orrosion on a	nne-fourth	inch nipple on the	gange	The ninnle	vas removed and	the gau	ge was insta	alled directl	v into tl	he valve						
Describe Are	a Affected	and Cleanup A	ction Tak	en.*	БииБе	. тие паррае	ras ranio rad and	uie gaa	<b>64</b>		<i>y</i> 1111.5 1.							
						•					••	1 . 16						
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				is true and comple														
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				e of a C-141 repor investigate and re														
or the enviro	nment. In a	ddition, NMC	CD accer	tance of a C-141 re	port de	oes not reliev	e the operator of i	respons	ibility for co	ompliance v	vith any	other						
federal, state,	or local lay	ws and/or regu	lations.															
Signature: /	O. Lon	a Hass	111				OIL CON	<u>SERV</u>		<u>DIVISIO</u>	<u>N(</u>							
Signature. /	was		-						$\Theta$	4								
Printed Name	<b>3</b> :	Rebecca	Haskell			Approved by	Environmental S	pecialis	t:	V								
Title:		Senior HS	E Coordi	nator		Approval Dat	e: 9/18/201	7	Expiration l	Date:								
E-mail Addre	300°	rhockoli/e	concho.c	om.		Conditions of	Annroval				_/							
L-man Addr	-33.	maskema	COHCHO.C	ŻIII				VQ		Attached	J 🔽							
Date: Senter	her 15, 201	7 Phone:	432-683	3-7443		שבם מוום	ched directi	٧ <b>٠</b>				see attached directive						

\* Attach Additional Sheets If Necessary

1RP-4811

nOY1726137462

pOY1726137714

#### Operator/Responsible Party,

The OCD has received the form C-141 you provided on \_9/15/2017\_ regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number \_1RP-4811\_\_ has been assigned. Please refer to this case number in all future correspondence.

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

The responsible person shall complete <u>division-approved corrective action</u> for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC. [emphasis added]

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District \_1\_ office in \_\_Hobbs\_\_\_\_ on or before \_10/18/2017\_. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

- Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C<sub>6</sub> thru C<sub>36</sub>), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.
- Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C<sub>6</sub> thru C<sub>36</sub>), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.
- Nominal detection limits for field and laboratory analyses must be provided.
- Composite sampling is not generally allowed.
- Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

- •Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.
- If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.
- Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.

#### Jim Griswold

OCD Environmental Bureau Chief 1220 South St. Francis Drive Santa Fe, New Mexico 87505 505-476-3465 jim.griswold@state.nm.us <u>District I</u> 1625 N. French Dr., Hobbs, NM 88240 District II 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**

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

☐ Initial Report

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

Form C-141

Final Report

Revised August 8, 2011

# **Release Notification and Corrective Action**

**OPERATOR** 

Name of Company: COG Operating LLC OGRID # 229137						Contact: Robert McNeill Talaphana No. 432 683 7443						
Address: 600 West Illinois Avenue, Midland TX 79701  Facility Name: BC Federal #032						Telephone No. 432-683-7443  Facility Type: Wellhead						
Facility Name: BC Federal #032						Facility Type: Wellhead						
Surface Own	ner: Fe	deral		Mineral Ov	vner:	r: Federal API No. 30-025-38829						
			ΓΙΟ	N OF REI	LEASE							
Unit Letter	1 0									Vest Line County		
, , , , , , , , , , , , , , , , , , , ,							1,650		East		Lea	
				Latitude 32.82		OF RELI						
Type of Relea	2501			NAIC	INE	Volume of		1	Volume R	anovarad:		
		Oil and Produ	ced Water			3 bbl	. Oil & 4 bbl. PW		2	bbl. Oil &	& 3 bbl. PW	
Source of Rel	ease:	Wellhe	ead				our of Occurrence oer 10, 2017 3:00		Date and I		scovery: , 2017 3:00 pn	n
Was Immedia	te Notice C	Given?				If YES, To		r	~~ <u>r</u>		,	-
				No Not Req	uired							
Was a Watero	Dans Dans	By Who	om'?			Date and H	our: lume Impacting t	ha Wata				
was a watero	course Reac	ened?	Yes 🛚	No		II YES, VO	iume impacting t	ne wate	ercourse.			
If a Watercou	rse was Im	pacted, Descri	be Fully.*			ΔDI	PROVED	)				
											- 0040	
Describe Cau	se of Proble	em and Remed	dial Action	Taken.*		- By C	Ilivia Yu a	t 9:2	4 am, .	Jun 15	5, 2018 <sub> </sub>	
The release w	as due to c	orrosion on a	one-fourth	inch nipple on the	gauge	e. The nipple v	was removed and	the gaus	ge was insta	lled direct	tly into the val	ve.
Describe Area					8 8				3		<i>,</i>	
				site was delineated				d. Remo	ediation was	s complete	ed in accordance	ce with
						BLM on March 6, 2018. o the best of my knowledge and understand that pursuant to NMOCD rules and						
						e notifications and perform corrective actions for releases which may endanger						
public health	or the envi	ronment. The	acceptance	e of a C-141 report	by th	e NMOCD ma	arked as "Final Re	eport" d	oes not relie	eve the ope	erator of liabil	ity
				investigate and rentance of a C-141 re								
federal, state,				tance of a C-141 re	port o	ioes not renev	e the operator of i	responsi	bility for co	mpnance	with any other	Ī
,,							OIL CONS	SERV	ATION	DIVISI	ON	
-	Dala	6	1.1.	00								
Signature: Rellecca Haskell						Approved by	Environmental S <sub>1</sub>	nacialist				
						Approved by	Environmental Sp	peciansi	. \[ \int \]			
Printed Name	:	Rebecca l	Haskell				C/4E/004	0			, ,	1
Title:		Senior HS	E Coordin	ator		Approval Dat	e: 6/15/201	<u>د</u> ا	Expiration I	Date: XX	x/xx/xxxx	
E-mail Addre	ss:	<u>rha</u> skell@	concho.co	o <u>m</u>		Conditions of	Approval:				. $\square$	
						Attached						

Phone:

432-683-7443

1RP-4811

Date: June 12, 2018 \* Attach Additional Sheets If Necessary