

August 4, 2016

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

**Re: Canvasback 13 Federal #2H  
30-015-40538  
Sec. 13, T24S-R31E  
Eddy County, NM**

Ms. Patterson/Ms. Tucker,

COG Operating LLC would like to submit for your consideration the enclosed work plan for the above captioned well. The plan is in response to the C-141 Initial report February 19, 2016.

#### **Background**

This release was caused when a gauge was removed from the wellhead overnight while the well was being serviced. Vandalism was suspected. A vacuum truck was dispatched to recover standing fluid. An impacted area outside the berm measures approximately 0.36 acres. This area was addressed with an initial scrap and all impacted material hauled to an NMOCD approved facility.

#### **Groundwater & Soil Assessment**

Based on the Chevron Trend Maps, the release area would be classified at a site ranking of Zero due to the depth of groundwater at approximately 375'. The soil at the well site has been classified as a Pajarito loamy fine sand, 0 to 3 percent slope, eroded. This characterized by dunal complexes of mixed alluvium and/or eolian sands with a restrictive barrier at more than 80 inches.

#### **Analytical Results**

Initial soil samples were taken on 3-30-2016 and on 6-15-2016 when samples were further delineated. Samples indicated TPH and BTEX were within RRALs for site ranking zero. Chloride concentration in sampling areas S2 and S3 were elevated at 1 foot depth and S1 had elevated concentrated to a depth of 4 foot. (see attached site diagram)

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#### **CORPORATE ADDRESS**

One Concho Center | 600 West Illinois Avenue | Midland, Texas 79701  
**P** 432.683 7443 | **F** 432.683 7441

#### **CARLSBAD OFFICE**

1401 Commerce Drive | Carlsbad, New Mexico 88220  
**P** 575.689 3100 | **F** 575.941.2081

**Site Ranking: Zero****Depth to GW per SEO: >300'**

<b>S1</b>	<b>DRO</b>	<b>GRO</b>	<b>TPH</b>	<b>BTEX</b>	<b>GI</b>
1'	< 10.0	< 10.0	< 10.0	<0.300	5440
2'	< 50.0	< 50.0	< 50.0	<0.300	3480
3'	< 10.0	< 10.0	< 10.0	<0.300	1920
4'	66.5	< 10.0	66.5	<0.300	1760
6'					688
8'					496
10'					272
12'					224
14'					208
<b>S2</b>	<b>DRO</b>	<b>GRO</b>	<b>TPH</b>	<b>BTEX</b>	<b>GI</b>
1'	< 10.0	< 10.0	< 10.0	<0.300	1170
2'	< 10.0	< 10.0	< 10.0	<0.300	432
3'	< 10.0	< 10.0	< 10.0	<0.300	272
4'	< 10.0	< 10.0	< 10.0	<0.300	64
8'					224
10'					272
12'					48
14'					224
<b>S3</b>	<b>DRO</b>	<b>GRO</b>	<b>TPH</b>	<b>BTEX</b>	<b>GI</b>
1'	16.4	< 10.0	16.4	<0.300	6640
2'	< 10.0	< 10.0	< 10.0	<0.300	160
3'	< 10.0	< 10.0	< 10.0	<0.300	160
4'	< 10.0	< 10.0	< 10.0	<0.300	192
6'					128
8'					32
10'					128
12'					32
14'					192

**Bold values exceed RRLs per NMOCD Guidelines (1993)**

**Work Plan**

COG proposes the partial excavation and deferment of 2RP-3588 due to the associated hazards with buried lines. These hazards pose a safety concern with respect to excavation. At a site ranking of Zero, any chlorides found on this location from this release pose no threat to wildlife, human health, or ground water. Portions of S1 and S3 will be excavated to a depth of 2 feet and foot, respectively, as indicated on the attached map. This location will be further excavated at the time of abandonment.

If there are no objections or further stipulations, COG Operating LLC would like to begin the remediation process based on approval of this work plan. Please feel free to contact me with any questions or concerns at (575) 748-6940.

Sincerely,



Amanda Trujillo Davis  
Senior Environmental Coordinator

**Enclosed**

- (1) Site Diagram and Summary Table
- (2) Laboratory Analysis

Legend

Area of Impact

Sampling Point

Site Ranking: Zero

Depth to GW per SEO: >300'

S1	DRO	GRO	TPH	BTEX	Cl-
1'	<10.0	<10.0	<10.0	<0.300	5440
2'	<50.0	<50.0	<50.0	<0.300	3480
3'	<10.0	<10.0	<10.0	<0.300	1920
4'	66.5	<10.0	66.5	<0.300	1760
6'					688
8'					496
10'					272
12'					224
14'					208
S2	DRO	GRO	TPH	BTEX	Cl-
1'	<10.0	<10.0	<10.0	<0.300	1170
2'	<10.0	<10.0	<10.0	<0.300	432
3'	<10.0	<10.0	<10.0	<0.300	272
4'	<10.0	<10.0	<10.0	<0.300	64
8'					224
10'					272
12'					48
14'					224
S3	DRO	GRO	TPH	BTEX	Cl-
1'	16.4	<10.0	16.4	<0.300	6640
2'	<10.0	<10.0	<10.0	<0.300	160
3'	<10.0	<10.0	<10.0	<0.300	160
4'	<10.0	<10.0	<10.0	<0.300	192
6'					128
8'					32
10'					128
12'					32
14'					192

Bold values exceed RRALs per NMOCD Guidelines (1993)





PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

June 21, 2016

LUPE CARRASCO  
COG Operating, LLC  
500 W. ILLINOIS  
Midland, TX 79701

RE: CANVASBACK FED #2H

Enclosed are the results of analyses for samples received by the laboratory on 06/15/16 14:15.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-15-7. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene  
Lab Director/Quality Manager

**Analytical Results For:**

COG Operating, LLC  
LUPE CARRASCO  
500 W. ILLINOIS  
Midland TX, 79701  
Fax To: None

Received: 06/15/2016  
Reported: 06/21/2016  
Project Name: CANVASBACK FED #2H  
Project Number: NONE GIVEN  
Project Location: NONE GIVEN

Sampling Date: 06/07/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: S2-1' (H601325-01)**

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/16/2016	ND	1.96	98.0	2.00	0.357	
Toluene*	<0.050	0.050	06/16/2016	ND	1.99	99.5	2.00	0.686	
Ethylbenzene*	<0.050	0.050	06/16/2016	ND	1.83	91.7	2.00	0.552	
Total Xylenes*	<0.150	0.150	06/16/2016	ND	5.71	95.2	6.00	0.128	
Total BTEX	<0.300	0.300	06/16/2016	ND					

Surrogate: 4-Bromofluorobenzene (PIC) 103 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	1170	16.0	06/17/2016	ND	416	104	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	06/17/2016	ND	190	95.1	200	0.0594		
DRO >C10-C28	<10.0	10.0	06/17/2016	ND	190	94.8	200	2.04		

Surrogate: 1-Chlorooctane 79.4 % 35-147

Surrogate: 1-Chlorooctadecane 67.3 % 28-171

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

COG Operating, LLC  
LUPE CARRASCO  
500 W. ILLINOIS  
Midland TX, 79701  
Fax To: None

Received: 06/15/2016  
Reported: 06/21/2016  
Project Name: CANVASBACK FED #2H  
Project Number: NONE GIVEN  
Project Location: NONE GIVEN

Sampling Date: 06/07/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: S2-2' (H601325-02)**

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	06/16/2016	ND	1.96	98.0	2.00	0.357		
Toluene*	<0.050	0.050	06/16/2016	ND	1.99	99.5	2.00	0.686		
Ethylbenzene*	<0.050	0.050	06/16/2016	ND	1.83	91.7	2.00	0.552		
Total Xylenes*	<0.150	0.150	06/16/2016	ND	5.71	95.2	6.00	0.128		
Total BTEX	<0.300	0.300	06/16/2016	ND						

Surrogate: 4-Bromofluorobenzene (PIC) 102 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	432	16.0	06/17/2016	ND	416	104	400	3.92	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/17/2016	ND	190	95.1	200	0.0594	
DRO >C10-C28	<10.0	10.0	06/17/2016	ND	190	94.8	200	2.04	

Surrogate: 1-Chlorooctane 80.2 % 35-147

Surrogate: 1-Chlorooctadecane 82.7 % 28-171

**Cardinal Laboratories**

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

COG Operating, LLC  
LUPE CARRASCO  
500 W. ILLINOIS  
Midland TX, 79701  
Fax To: None

Received: 06/15/2016  
Reported: 06/21/2016  
Project Name: CANVASBACK FED #2H  
Project Number: NONE GIVEN  
Project Location: NONE GIVEN

Sampling Date: 06/07/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: S2-3' (H601325-03)**

BTEX 80218			mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	06/20/2016	ND	1.88	94.2	2.00	0.942		
Toluene*	<0.050	0.050	06/20/2016	ND	1.95	97.3	2.00	1.52		
Ethylbenzene*	<0.050	0.050	06/20/2016	ND	1.80	90.1	2.00	1.39		
Total Xylenes*	<0.150	0.150	06/20/2016	ND	5.72	95.3	6.00	0.620		
Total BTEX	<0.300	0.300	06/20/2016	ND						

Surrogate: 4-Bromofluorobenzene (PIC) 101 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	272	16.0	06/17/2016	ND	416	104	400	3.92	

TPH 8015M			mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	06/17/2016	ND	190	95.1	200	0.0594		
DRO >C10-C28	<10.0	10.0	06/17/2016	ND	190	94.8	200	2.04		

Surrogate: 1-Chlorooctane 79.1 % 35-147

Surrogate: 1-Chlorooctadecane 80.8 % 28-171

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\*=Accredited Analyte

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Celest D. Keene, Lab Director/Quality Manager

### Analytical Results For:

COG Operating, LLC  
LUPE CARRASCO  
500 W. ILLINOIS  
Midland TX, 79701  
Fax To: None

Received: 06/15/2016  
Reported: 06/21/2016  
Project Name: CANVASBACK FED #2H  
Project Number: NONE GIVEN  
Project Location: NONE GIVEN

Sampling Date: 06/07/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

### Sample ID: S2-4' (H601325-04)

BTEx 80218		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/20/2016	ND	1.88	94.2	2.00	0.942	
Toluene*	<0.050	0.050	06/20/2016	ND	1.95	97.3	2.00	1.52	
Ethylbenzene*	<0.050	0.050	06/20/2016	ND	1.80	90.1	2.00	1.39	
Total Xylenes*	<0.150	0.150	06/20/2016	ND	5.72	95.3	6.00	0.620	
Total BTEx	<0.300	0.300	06/20/2016	ND					

Surrogate: 4-Bromofluorobenzene (PIE) 102 % 73 6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	06/17/2016	ND	416	104	400	3.92	
TPH 8015M		mg/kg		Analyzed By: MS					

Surrogate: 1-Chlorooctane 75.0 % 35-147

Surrogate: 1-Chlorooctadecane 74.9 % 28-171

### Sample ID: S2-6' (H601325-05)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	240	16.0	06/17/2016	ND	416	104	400	3.92		

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Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**

COG Operating, LLC  
LUPE CARRASCO  
500 W. ILLINOIS  
Midland TX, 79701  
Fax To: None

Received: 06/15/2016  
Reported: 06/21/2016  
Project Name: CANVASBACK FED #2H  
Project Number: NONE GIVEN  
Project Location: NONE GIVEN

Sampling Date: 06/07/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: S2-8' (H601325-06)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	224	16.0	06/17/2016	ND	416	104	400	3.92	

**Sample ID: S2-10' (H601325-07)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	272	16.0	06/17/2016	ND	416	104	400	3.92	

**Sample ID: S2-12' (H601325-08)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	48.0	16.0	06/20/2016	ND	400	100	400	3.92		

**Sample ID: S2-14' (H601325-09)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	224	16.0	06/20/2016	ND	400	100	400	3.92	

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

COG Operating, LLC  
LUPE CARRASCO  
500 W. ILLINOIS  
Midland TX, 79701  
Fax To: None

Received: 06/15/2016  
Reported: 06/21/2016  
Project Name: CANVASBACK FED #2H  
Project Number: NONE GIVEN  
Project Location: NONE GIVEN

Sampling Date: 06/07/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: S3-1' (H601325-10)**

BTEX 8021B			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/20/2016	ND	1.88	94.2	2.00	0.942	
Toluene*	<0.050	0.050	06/20/2016	ND	1.95	97.3	2.00	1.52	
Ethylbenzene*	<0.050	0.050	06/20/2016	ND	1.80	90.1	2.00	1.39	
Total Xylenes*	<0.150	0.150	06/20/2016	ND	5.72	95.3	6.00	0.620	
Total BTEX	<0.300	0.300	06/20/2016	ND					

Surrogate: 4-Bromofluorobenzene (PIC) 104 % 73.6-140

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AP				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	6640	16.0	06/20/2016	ND	400	100	400	3.92	

TPH 8015M			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/17/2016	ND	190	95.1	200	0.0594	
DRO >C10-C28	16.4	10.0	06/17/2016	ND	190	94.8	200	2.04	

Surrogate: 1-Chlorooctane 76.6 % 35-147

Surrogate: 1-Chlorooctadecane 79.5 % 28-171

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

COG Operating, LLC  
LUPE CARRASCO  
500 W. ILLINOIS  
Midland TX, 79701  
Fax To: None

Received: 06/15/2016  
Reported: 06/21/2016  
Project Name: CANVASBACK FED #2H  
Project Number: NONE GIVEN  
Project Location: NONE GIVEN

Sampling Date: 06/07/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: S3-2' (H601325-11)**

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	06/20/2016	ND	1.88	94.2	2.00	0.942		
Toluene*	<0.050	0.050	06/20/2016	ND	1.95	97.3	2.00	1.52		
Ethylbenzene*	<0.050	0.050	06/20/2016	ND	1.80	90.1	2.00	1.39		
Total Xylenes*	<0.150	0.150	06/20/2016	ND	5.72	95.3	6.00	0.620		
Total BTEX	<0.300	0.300	06/20/2016	ND						

Surrogate: 4-Bromofluorobenzene (PIC) 102 % 73 6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	160	16.0	06/20/2016	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/17/2016	ND	190	95.1	200	0.0594	
DRO >C10-C28	<10.0	10.0	06/17/2016	ND	190	94.8	200	2.04	

Surrogate: 1-Chlorooctane 78.2 % 35-147

Surrogate: 1-Chlorooctadecane 75.6 % 28-171

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

COG Operating, LLC  
LUPE CARRASCO  
500 W. ILLINOIS  
Midland TX, 79701  
Fax To: None

Received: 06/15/2016  
Reported: 06/21/2016  
Project Name: CANVASBACK FED #2H  
Project Number: NONE GIVEN  
Project Location: NONE GIVEN

Sampling Date: 06/07/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: S3-3' (H601325-12)**
**BTEX 80218**
**mg/kg**
**Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/20/2016	ND	1.88	94.2	2.00	0.942	
Toluene*	<0.050	0.050	06/20/2016	ND	1.95	97.3	2.00	1.52	
Ethylbenzene*	<0.050	0.050	06/20/2016	ND	1.80	90.1	2.00	1.39	
Total Xylenes*	<0.150	0.150	06/20/2016	ND	5.72	95.3	6.00	0.620	
Total BTEX	<0.300	0.300	06/20/2016	ND					

Surrogate: 4-Bromofluorobenzene (PIC) 104 % 73.6-140

**Chloride, SM4500Cl-B**
**mg/kg**
**Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	160	16.0	06/20/2016	ND	400	100	400	3.92	

**TPH 8015M**
**mg/kg**
**Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/17/2016	ND	190	95.1	200	0.0594	
DRO >C10-C28	<10.0	10.0	06/17/2016	ND	190	94.8	200	2.04	

Surrogate: 1-Chlorooctane 84.8 % 35-147

Surrogate: 1-Chlorooctadecane 84.5 % 28-171

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

COG Operating, LLC  
LUPE CARRASCO  
500 W. ILLINOIS  
Midland TX, 79701  
Fax To: None

Received: 06/15/2016  
Reported: 06/21/2016  
Project Name: CANVASBACK FED #2H  
Project Number: NONE GIVEN  
Project Location: NONE GIVEN

Sampling Date: 06/07/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: S3-4' (H601325-13)**
**BTEX 80218**
**mg/kg**
**Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/20/2016	ND	1.88	94.2	2.00	0.942	
Toluene*	<0.050	0.050	06/20/2016	ND	1.95	97.3	2.00	1.52	
Ethylbenzene*	<0.050	0.050	06/20/2016	ND	1.80	90.1	2.00	1.39	
Total Xylenes*	<0.150	0.150	06/20/2016	ND	5.72	95.3	6.00	0.620	
Total BTEX	<0.300	0.300	06/20/2016	ND					

Surrogate: 4-Bromofluorobenzene (PIE) 104 % 73.6-140

**Chloride, SM4500Cl-B**
**mg/kg**
**Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	192	16.0	06/20/2016	ND	400	100	400	3.92	

**TPH 8015M**
**mg/kg**
**Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/17/2016	ND	190	95.1	200	0.0594	
DRO >C10-C28	<10.0	10.0	06/17/2016	ND	190	94.8	200	2.04	

Surrogate: 1-Chlorooctane 79.9 % 35-147

Surrogate: 1-Chlorooctadecane 84.3 % 28-171

**Sample ID: S3-6' (H601325-14)**
**Chloride, SM4500Cl-B**
**mg/kg**
**Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	128	16.0	06/20/2016	ND	400	100	400	3.92	

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Celest D. Keene, Lab Director/Quality Manager



**Analytical Results For:**

COG Operating, LLC  
LUPE CARRASCO  
500 W. ILLINOIS  
Midland TX, 79701  
Fax To: None

Received: 06/15/2016  
Reported: 06/21/2016  
Project Name: CANVASBACK FED #2H  
Project Number: NONE GIVEN  
Project Location: NONE GIVEN

Sampling Date: 06/07/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: S3-8' (H601325-15)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	06/20/2016	ND	400	100	400	3.92	

**Sample ID: S3-10' (H601325-16)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	128	16.0	06/20/2016	ND	400	100	400	3.92	

**Sample ID: S3-12' (H601325-17)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	06/20/2016	ND	400	100	400	3.92	

**Sample ID: S3-14' (H601325-18)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	192	16.0	06/20/2016	ND	400	100	400	3.92	

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

COG Operating, LLC  
LUPE CARRASCO  
500 W. ILLINOIS  
Midland TX, 79701  
Fax To: None

Received: 06/15/2016  
Reported: 06/21/2016  
Project Name: CANVASBACK FED #2H  
Project Number: NONE GIVEN  
Project Location: NONE GIVEN

Sampling Date: 06/07/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: S1-1' (H601325-19)**

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/20/2016	ND	1.88	94.2	2.00	0.942	
Toluene*	<0.050	0.050	06/20/2016	ND	1.95	97.3	2.00	1.52	
Ethylbenzene*	<0.050	0.050	06/20/2016	ND	1.80	90.1	2.00	1.39	
Total Xylenes*	<0.150	0.150	06/20/2016	ND	5.72	95.3	6.00	0.620	
Total BTEX	<0.300	0.300	06/20/2016	ND					

Surrogate: 4-Bromofluorobenzene (PIC) 102 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	5440	16.0	06/20/2016	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/18/2016	ND	182	91.2	200	0.0713	
DRO >C10-C28	<10.0	10.0	06/18/2016	ND	198	98.9	200	7.68	

Surrogate: 1-Chlorooctane 65.3 % 35-147

Surrogate: 1-Chlorooctadecane 67.6 % 28-171

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Celest D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

COG Operating, LLC  
LUPE CARRASCO  
500 W. ILLINOIS  
Midland TX, 79701  
Fax To: None

Received: 06/15/2016  
Reported: 06/21/2016  
Project Name: CANVASBACK FED #2H  
Project Number: NONE GIVEN  
Project Location: NONE GIVEN

Sampling Date: 06/07/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: S1-2' (H601325-20)**
**BTEX 8021B**

mg/kg

Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/20/2016	ND	1.88	94.2	2.00	0.942	
Toluene*	<0.050	0.050	06/20/2016	ND	1.95	97.3	2.00	1.52	
Ethylbenzene*	<0.050	0.050	06/20/2016	ND	1.80	90.1	2.00	1.39	
Total Xylenes*	<0.150	0.150	06/20/2016	ND	5.72	95.3	6.00	0.620	
Total BTEX	<0.300	0.300	06/20/2016	ND					

Surrogate 4-Bromofluorobenzene (PIC) 103 % 73.6-140

**Chloride, SM4500Cl-B**

mg/kg

Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3480	16.0	06/20/2016	ND	400	100	400	3.92	

**TPH 8015M**

mg/kg

Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/18/2016	ND	182	91.2	200	0.0713	
DRO >C10-C28	<10.0	10.0	06/18/2016	ND	198	98.9	200	7.68	

Surrogate 1-Chlorooctane 76.1 % 35-147

Surrogate 1-Chlorooctadecane 75.9 % 28-171

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

COG Operating, LLC  
LUPE CARRASCO  
500 W. ILLINOIS  
Midland TX, 79701  
Fax To: None

Received: 06/15/2016  
Reported: 06/21/2016  
Project Name: CANVASBACK FED #2H  
Project Number: NONE GIVEN  
Project Location: NONE GIVEN

Sampling Date: 06/07/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: S1-3' (H601325-21)**
**BTEX 8021B**

mg/kg

Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/20/2016	ND	1.88	94.2	2.00	0.942	
Toluene*	<0.050	0.050	06/20/2016	ND	1.95	97.3	2.00	1.52	
Ethylbenzene*	<0.050	0.050	06/20/2016	ND	1.80	90.1	2.00	1.39	
Total Xylenes*	<0.150	0.150	06/20/2016	ND	5.72	95.3	6.00	0.620	
Total BTEX	<0.300	0.300	06/20/2016	ND					

Surrogate: 4-Bromofluorobenzene (PIC) 104 % 73.6-140

**Chloride, SM4500Cl-B**

mg/kg

Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1920	16.0	06/20/2016	ND	400	100	400	3.92	

**TPH 8015M**

mg/kg

Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/18/2016	ND	182	91.2	200	0.0713	
DRO >C10-C28	<10.0	10.0	06/18/2016	ND	198	98.9	200	7.68	

Surrogate: 1-Chlorooctane 74.1 % 35-147

Surrogate: 1-Chlorooctadecane 70.7 % 28-171

**Cardinal Laboratories**

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

COG Operating, LLC  
LUPE CARRASCO  
500 W. ILLINOIS  
Midland TX, 79701  
Fax To: None

Received: 06/15/2016  
Reported: 06/21/2016  
Project Name: CANVASBACK FED #2H  
Project Number: NONE GIVEN  
Project Location: NONE GIVEN

Sampling Date: 06/07/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: S1-4' (H601325-22)**

BTEX 8021B			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/20/2016	ND	1.88	94.2	2.00	0.942	
Toluene*	<0.050	0.050	06/20/2016	ND	1.95	97.3	2.00	1.52	
Ethylbenzene*	<0.050	0.050	06/20/2016	ND	1.80	90.1	2.00	1.39	
Total Xylenes*	<0.150	0.150	06/20/2016	ND	5.72	95.3	6.00	0.620	
Total BTEX	<0.300	0.300	06/20/2016	ND					

Surrogate: 4-Bromofluorobenzene (PIE) 102 % 73.6-140

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AP				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1760	16.0	06/20/2016	ND	400	100	400	3.92	

TPH 8015M			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/18/2016	ND	182	91.2	200	0.0713	
DRO >C10-C28	66.5	10.0	06/18/2016	ND	198	98.9	200	7.68	

Surrogate: 1-Chlorooctane 75.0 % 35-147

Surrogate: 1-Chlorooctadecane 74.0 % 28-171

**Sample ID: S1-6' (H601325-23)**

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AP				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	688	16.0	06/20/2016	ND	400	100	400	3.92	

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Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**

 COG Operating, LLC  
 LUPE CARRASCO  
 500 W. ILLINOIS  
 Midland TX, 79701  
 Fax To: None

 Received: 06/15/2016  
 Reported: 06/21/2016  
 Project Name: CANVASBACK FED #2H  
 Project Number: NONE GIVEN  
 Project Location: NONE GIVEN

 Sampling Date: 06/07/2016  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: S1-8' (H601325-24)**

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AP				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	496	16.0	06/20/2016	ND	400	100	400	3.92	

**Sample ID: S1-10' (H601325-25)**

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AP				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	272	16.0	06/20/2016	ND	400	100	400	3.92	

**Sample ID: S1-12' (H601325-26)**

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AP				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	224	16.0	06/20/2016	ND	400	100	400	3.92	

**Sample ID: S1-14' (H601325-27)**

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AP				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	208	16.0	06/20/2016	ND	400	100	400	3.92	

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Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene, Lab Director/Quality Manager



101 East Marland, Hobbs, NM 88240  
(575) 393-2326 FAX (575) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

BILL TO

ANALYSIS REQUEST

Company Name: COG Operating LLC

Project Manager: Dakota Neel

Address: 2208 West Main

City: Artesia

Phone #: (575) 748-6930

Project #:

Project Name: CANVASBACK FED #2H

Project Location:

Sampler Name: Dakota Neel

FOR LAB USE ONLY

Lab I.D.

Sample I.D.

Handwritten: H2O/325

Handwritten sample IDs: -1, -2, -3, -4, -5, -6, -7, -8, -9

(G)RAB OR (C)OMP.  
# CONTAINERS  
GROUNDWATER  
WASTEWATER  
SOIL  
OIL  
SLUDGE  
OTHER :  
ACID/BASE:  
ICE / COOL  
OTHER :

MATRIX

PRESERV

SAMPLING

Fax #:

P.O. #:

Company: COG Operating LLC

Attn: Robert McNeill

Address: 600 W Illinois

City: Midland

State: TX Zip: 79701

Phone #: (432) 221-0388

BTEX  
TPH  
Chloride

PLEASE NOTE: Liability and Damages. Cardinal's liability and amount payable for any claim arising from this contract shall be limited to the amount paid by the client for the analysis. All claims involving those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruption, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal. Signatures of neither party shall be deemed to constitute any of the above stated releases or otherwise.

Relinquished By:

Date: 6/15/2016

Received By:

Relinquished By:

Date: 6/15/2016

Received By:

Time:

Delivered By: (Circle One)

Sampler - UPS - Bus - Other:

Sample Condition

Cool Intact

Yes No

CHECKED BY:

(Initials)

Phone Result: ☐ Yes ☐ No Add'l Phone #:  
Fax Result: ☐ Yes ☐ No Add'l Fax #:  
REMARKS:  
dneel2@concho.com  
lcamasoo@concho.com  
atrujillo@concho.com

5. Please fax written changes to 575-393-2476

1053



101 East Marland, Hobbs, NM 88240  
(575) 393-2326 FAX (575) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: COG Operating LLC

Project Manager: Dakota Neel

Address: 2208 West Main

City: Artesia

Phone #: (575) 748-6930

Project #:

Project Name: CANVASBACK FED #2H

Project Location:

Sampler Name: Dakota Neel

FOR LAB USE ONLY

Lab I.D.

Sample I.D.

HWCBAS  
-10  
-11  
-12  
-13  
-14  
-15  
-16  
-17  
-18

S3-1'  
S3-2'  
S3-3'  
S3-4'  
S3-6'  
S3-8'  
S3-10'  
S3-12'  
S3-14'

(G)RAB OR (C)OMP

# CONTAINERS

GROUNDWATER

WASTEWATER

SOIL

OIL

SLUDGE

OTHER:

ACID/BASE:

ICE / COOL

OTHER:

DATE

TIME

BTEX

TPH

Chloride

ANALYSIS REQUEST

P.O. #:

Company: COG Operating LLC

Attn: Robert McNeill

Address: 600 W Illinois

City: Midland

State: TX Zip: 79701

Phone #: (432) 221-0388

Fax #:

PRESERV

SAMPLING

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claims arising whether based in contract or tort, shall be limited to the amount paid by the client for the analysis. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits sustained by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated theories or otherwise.

Relinquished By:

Date: 6/15/2016

Received By:

12:15  
Date: 6/15/2016  
Received By: Cynthia Cabera

Relinquished By:

Time:

Delivered By: (Circle One)

Sampler - UPS - Bus - Other:

Sample Condition

CHECKED BY:

(Initials)

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5. Please fax written changes to 575-393-2476



101 East Marland, Hobbs, NM 88240  
(575) 393-2326 FAX (575) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: COG Operating LLC

Project Manager: Dakota Neel

Address: 2208 West Main

City: Artesia State: NM Zip: 88210

Phone #: (575) 748-8930 Fax #:

Project #: Project Owner:

Project Name: CANVASBACK FED #2H

Project Location:

Sampler Name: Dakota Neel

P.O. #:

Company: COG Operating LLC

Attn: Robert McNeill

Address: 600 W Illinois

City: Midland

State: TX Zip: 79701

Phone #: (432) 221-0388

Fax #:

ANALYSIS REQUEST

Lab I.D.	Sample I.D.	MATRIX					DATE	TIME	ANALYSIS REQUEST									
		(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL			BTEX	TPH	Chloride							
1401305	S1-1'						6/7/16	9:30 AM	X	X	X							
-19	S1-2'						6/7/16	9:30 AM	X	X	X							
-20	S1-3'						6/7/16	9:30 AM	X	X	X							
-21	S1-4'						6/7/16	9:30 AM	X	X	X							
-22	S1-6'						6/7/16	9:30 AM	X	X	X							
-23	S1-8'						6/7/16	9:30 AM	X	X	X							
-24	S1-10'						6/7/16	9:30 AM	X	X	X							
-25	S1-12'						6/7/16	9:30 AM	X	X	X							
-26	S1-14'						6/7/16	9:30 AM	X	X	X							
-27							6/7/16	9:30 AM										

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Relinquished By: Date: 6/15/2016

Received By: Angela Cabrera

Relinquished By:

Date: 6/15/2016

Received By:

Time:

Delivered By: (Circle One)

2.8

Sample Condition

Cool Intact

Checked By: (Initials)

Sampler - UPS - Bus - Other:

2.8

Sample Condition

Cool Intact

Checked By: (Initials)

5. Please fax written changes to 575-393-2476