

SITE INFORMATION

Report Type: Work Plan

General Site Information:

Site:	Canvasback 13 Federal #002H				
Company:	COG Operating LLC				
Section, Township and Range	Unit A	Sec. 13	T 24S	R 31E	
Lease Number:	API No. 30-015-40538				
County:	Eddy County				
GPS:	32.22300			-103.72300	
Surface Owner:	Federal				
Mineral Owner:					
Directions:	From the intersection of Hwy 128 and Buck Johnson Rd., head Southwest on Buck Johnson Rd for 0.43 miles, turn south onto unnamed lease road and go 0.53 miles and arrive at location.				

Release Data:

RP#	2RP-5008	2RP-5016
Date Released:	9/28/2018	10/6/2018
Type Release:	Produced Water	Produced Water
Source of Contamination:	Flowline	Flowline
Fluid Released:	52 bbl water	24 bbl water
Fluids Recovered:	20 bbls water	15 bbl water

Official Communication:

Name:	Ike Tavaréz	Clair Gonzales
Company:	COG Operating, LLC	Tetra Tech
Address:	One Concho Center 600 W. Illinois Ave.	901 West Wall Street Suite 100
City:	Midland Texas, 79701	Midland, Texas
Phone number:	(432) 686-3023	(432) 687-8110
Fax:	(432) 684-7137	
Email:	itavarez@concho.com	Clair.Gonzales@tetrattech.com

Site Characterization

Depth to Groundwater: 160' below surface

Recommended Remedial Action Levels (RRALs)

Benzene	Total BTEX	TPH (GRO+DRO)	TPH (GRO+DRO+MRO)	Chlorides
10 mg/kg	50 mg/kg	1,000 mg/kg	2,500 mg/kg	20,000 mg/kg



December 17, 2018

Mr. Mike Bratcher
District Supervisor
Oil Conservation Division, District 2
811 S. First Street
Artesia, New Mexico 88210

Re: Work Plan for the COG Operating, LLC, Canvasback 13 Federal #002H, Unit A, Section 13, Township 24 South, Range 31 East, Eddy County, New Mexico. 2RP-5008 and 2RP-5016

Mr. Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating, LLC (COG) to assess two releases that occurred at the Canvasback 13 Federal #002H, Unit A, Section 13, Township 24 South, Range 31 East, Eddy County, New Mexico (Site). The spill site coordinates are 32.22300°, -103.72300°. The site location is shown on Figures 1 and 2.

Background

Two releases occurred at the site and the release footprints overlapped. The releases migrated into the pasture along the sides of the lease road and impacted areas measuring approximately 15'x480' and 20'x115'. The initial C-141 Forms are included in Appendix A.

- **2RP-5008:** According to the State of New Mexico C-141 Initial Report the leak was discovered on September 28, 2018, and released approximately 52 barrels of produced water due to a ruptured flowline. Vacuum trucks were used to remove all freestanding fluids, recovering approximately 20 barrels of produced water.
- **2RP-5016:** According to the State of New Mexico C-141 Initial Report the leak was discovered on October 6, 2018, and released approximately 24 barrels of produced water due to a ruptured flowline. Vacuum trucks were used to remove all freestanding fluids, recovering approximately 15 barrels of produced water.

Groundwater

No water wells were listed within Section 13 on the New Mexico Office of the State Engineer's (NMOSE) database, the Geology and Groundwater Resources of Eddy County (Report 3), or the USGS National Water Information Database. The nearest well is listed in Section 02 on the NMOSE website, approximately 2.37 miles Northwest of the site, and has a reported depth to groundwater of 160' below surface. According to the Chevron Texaco

Tetra Tech

4000 North Big Spring, Suite 401, Midland, TX 79705

Tel 432.682.4559 Fax 432.682.3946 www.tetratech.com

Groundwater Trend map, the average depth to groundwater in the area is between 300' and 325' below surface. The groundwater data is shown in Appendix B.

Regulatory

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, updated August 14, 2018. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. A site characterization was performed for the site and no watercourses, lakebeds, sinkholes, playa lakes, residences, schools, hospitals, institutions, churches, springs, private domestic water wells, springs, wetlands, incorporated municipal boundaries, subsurface mines, or floodplains are located within the specified distances. Additionally, the site is located in a low karst potential area. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the site characterization, the proposed RRAL for TPH is 2,500 mg/kg (GRO + DRO + MRO). Additionally, based on the site characterization, the proposed RRAL for chlorides is 20,000 mg/kg.

Soil Assessment and Analytical Results

On October 16, 2018, Tetra Tech personnel were onsite to evaluate and sample the release area. A total of ten (10) auger holes (AH-1 through AH-10) were installed in the release area to total depths ranging from 2-2.5' to 5-5.5' below surface. A total of eleven (11) horizontal delineation samples (H-1 through H-11) were collected around the perimeter of the spill footprint to total depths of 0-1' below surface. Soil samples were collected and submitted to the laboratory for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B, and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The results of the sampling are summarized in Table 1. The sample locations are shown on Figure 3.

Auger Holes

Referring to Table 1, all analyzed samples showed benzene and total BTEX concentrations below the laboratory reporting limits. The area of auger hole (AH-7) showed a TPH concentration of 1,580 mg/kg at 0-1', which then declined with depth to 27.3 mg/kg at 1-1.5' below surface. No other samples analyzed showed TPH concentrations above the laboratory reporting limits. Additionally, all samples collected showed chloride concentrations below the RRAL, with concentrations ranging from below the laboratory reporting limits to 10,900 mg/kg.

Horizontals

Referring to Table 1, none of the samples collected showed benzene, total BTEX, or total TPH concentrations above the laboratory reporting limits. Additionally, none of the samples showed any significant chloride concentrations, with concentrations ranging from below the laboratory reporting limits to 58.2 mg/kg.

Work Plan

The TPH impacted areas will be excavated as highlighted (green) on Table 1 and shown in Figure 4. The area of auger hole (AH-7) will be excavated to approximately 4' below surface to remove the TPH and chloride impacted soils. Composite and sidewall confirmation samples will be collected every 200 square feet in the excavation area of auger hole (AH-7) to ensure proper removal of the TPH impact soils. Once the areas are properly excavated they will be backfilled with clean material to surface grade and the removed material will be hauled for proper disposal. COG estimates approximately 370 cubic yards will be excavated, and the remediation to be implemented 90 days after the work plan is approved.

The proposed excavation depths may not be reached due to wall cave ins and safety concerns for onsite personnel. In addition, impacted soil around oil and gas equipment, structures or lines may not be feasible or practicable to be removed due to safety concerns for onsite personnel. As such, COG will excavate the impacted soils to the maximum extent practicable.

Restoration and Reclamation

The areas of auger holes (AH-1, AH-3, AH-6, AH-7 and AH-8) showed chloride concentrations above 600 mg/kg in the shallow soils in the pasture areas adjacent to the lease road. These areas will be excavated up to four (4) feet below surface, as highlighted (green) on Table 1. Sidewall samples will be collected to ensure proper removal of the chloride impacted soils. Once the excavation is complete, the areas will be backfilled with clean material to surface grade.

Reseeding will be performed in June 2019 to coincide with the rainy season in Southeastern New Mexico and aid in revegetation. Based on the soils at the site, the BLM Loamy Sites Seed Mixture will be used and will be planted in the amount specified in the pounds pure live seed (PLS) per acre. The seed mixture will be spread by a drill equipped with a depth regulator or a handheld broadcaster and raked. If a hand-held broadcaster is used for dispersal, the pounds PLS per acre will be doubled.

Site inspections will be performed to assess the revegetation progress and evaluate the site for the presence of primary or secondary noxious weeds. If noxious weeds are identified, the BLM will be contacted to determine an effective method for eradication. If the site does not show revegetation after one growing season, the area will be reseeded as appropriate. The BLM seed mixture details and corresponding pounds PLS per acre are included in Appendix D.



Conclusion

Once the remediation activities are completed, a closure report will be prepared for NMOCD approval. If you have any questions or comments concerning the assessment or remediation activities for this site, please call at (432) 682-4559.

Respectfully submitted,
TETRA TECH

A handwritten signature in blue ink that reads 'Clair Gonzales'.

Clair Gonzales,
Project Manager

A handwritten signature in blue ink that reads 'Johnathon Kell'.

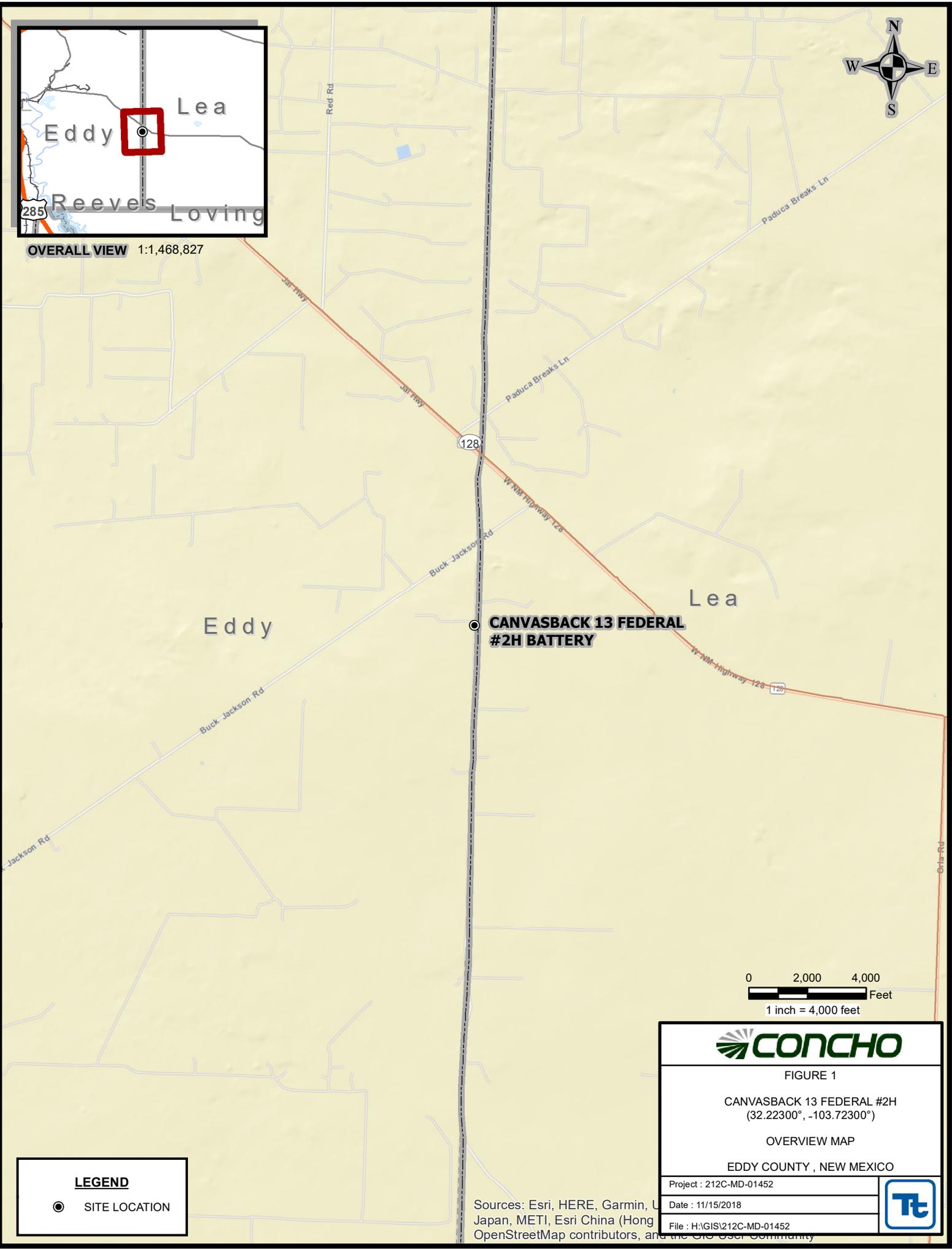
Johnathon Kell,
Geologist

cc: Shelly Tucker - BLM
Ike Tavarez - COG
Dakota Neel - COG
Rebecca Haskell - COG
Sheldon Hitchcock - COG
DeAnn Grant - COG
Maria Pruett - NMOCD

Figures



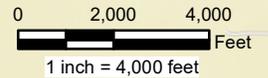
OVERALL VIEW 1:1,468,827



Eddy

Lea

**CANVASBACK 13 FEDERAL
#2H BATTERY**



LEGEND

● SITE LOCATION



FIGURE 1

CANVASBACK 13 FEDERAL #2H
(32.22300°, -103.72300°)

OVERVIEW MAP

EDDY COUNTY, NEW MEXICO

Project : 212C-MD-01452

Date : 11/15/2018

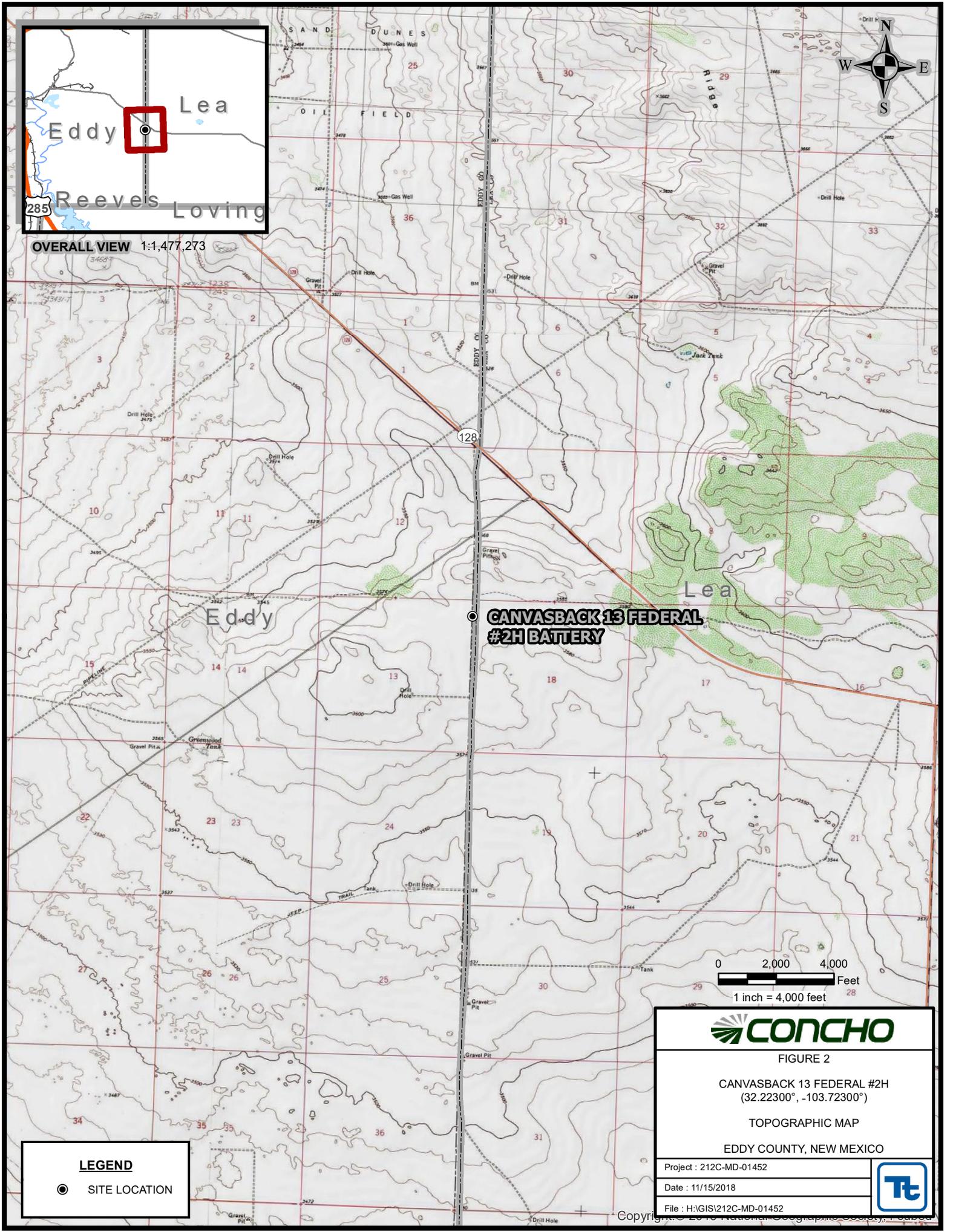
File : H:\GIS\212C-MD-01452



Sources: Esri, HERE, Garmin, U
Japan, METI, Esri China (Hong
OpenStreetMap contributors, and the GIS User Community

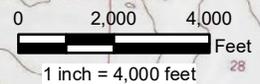


OVERALL VIEW 1:1,477,273



128

**CANVASBACK 13 FEDERAL
#2H BATTERY**



LEGEND

● SITE LOCATION

CONCHO

FIGURE 2

CANVASBACK 13 FEDERAL #2H
(32.22300°, -103.72300°)

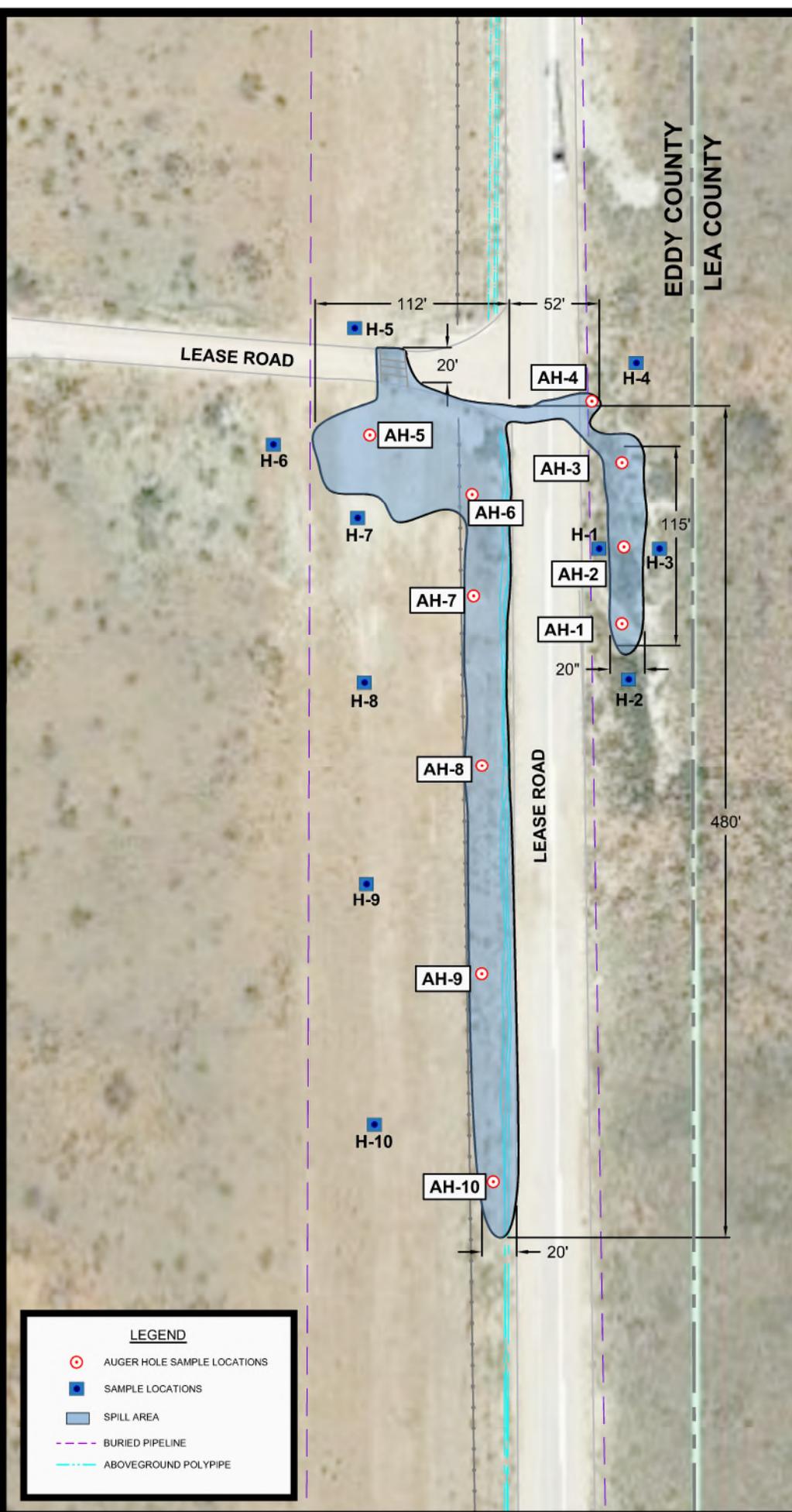
TOPOGRAPHIC MAP

EDDY COUNTY, NEW MEXICO

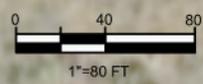
Project : 212C-MD-01452	
Date : 11/15/2018	
File : H:\GIS\212C-MD-01452	



EDDY COUNTY
LEA COUNTY



AUGER HOLE DESIGNATIONS	LATITUDE	LONGITUDE
AH-1	32.222877	-103.722816
AH-2	32.222989	-103.72281
AH-3	32.223124	-103.722814
AH-4	32.223218	-103.722859
AH-5	32.223168	-103.723203
AH-6	32.223076	-103.723051
AH-7	32.222922	-103.723041
AH-8	32.222659	-103.723035
AH-9	32.222347	-103.723031
AH-10	32.222026	-103.723013
H-1	32.22299	-103.722849
H-2	32.222791	-103.722805
H-3	32.222992	-103.722755
H-4	32.223274	-103.722795
H-5	32.223327	-103.723229
H-6	32.223152	-103.723356
H-7	32.223045	-103.723226
H-8	32.222788	-103.723218
H-9	32.222481	-103.723212
H-10	32.222111	-103.723196



LEGEND

- AUGER HOLE SAMPLE LOCATIONS
- SAMPLE LOCATIONS
- SPILL AREA
- BURIED PIPELINE
- ABOVEGROUND POLYPIPE



FIGURE 3

CANVAS BACK 13 FEDERAL #2H
(32.22300°, -103.72300°)

SPILL ASSESSMENT MAP
EDDY COUNTY, NEW MEXICO

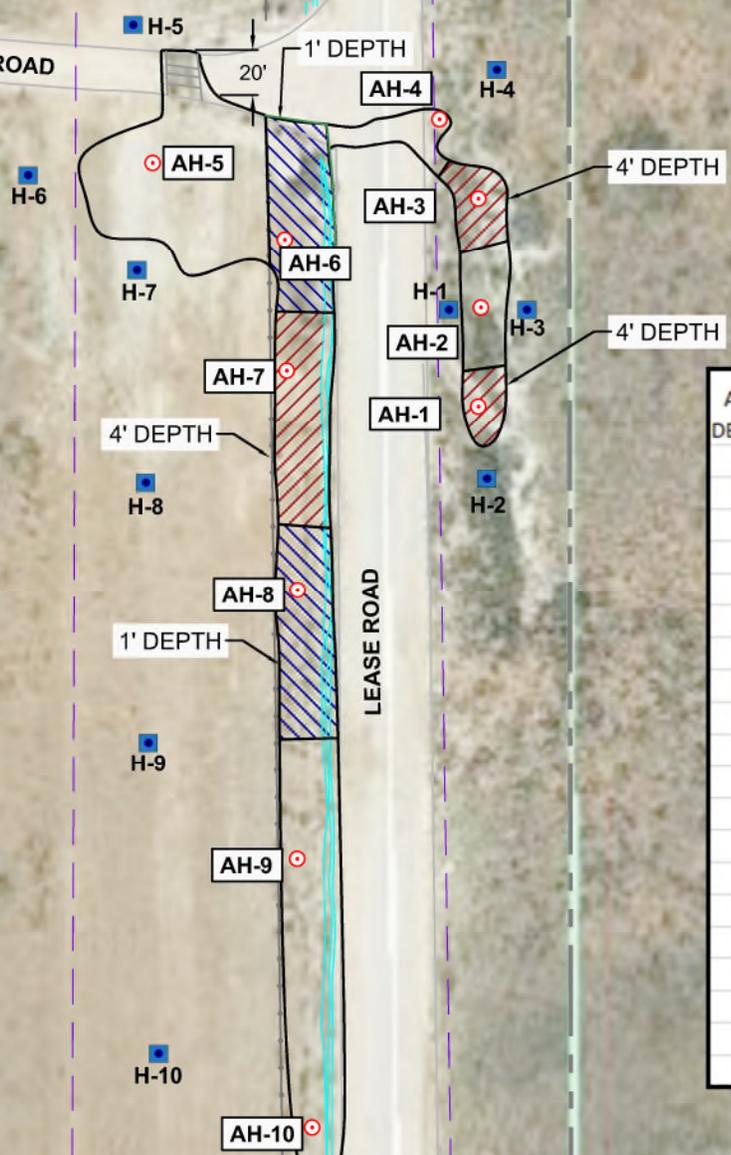
Project: 212C-MD-01452	
Date: 11/16/2018	
File: H:\GIS\212C-MD-01452	



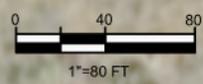
EDDY COUNTY
LEA COUNTY

LEASE ROAD

LEASE ROAD



AUGER HOLE DESIGNATIONS	LATITUDE	LONGITUDE
AH-1	32.222877	-103.722816
AH-2	32.222989	-103.72281
AH-3	32.223124	-103.722814
AH-4	32.223218	-103.722859
AH-5	32.223168	-103.723203
AH-6	32.223076	-103.723051
AH-7	32.222922	-103.723041
AH-8	32.222659	-103.723035
AH-9	32.222347	-103.723031
AH-10	32.222026	-103.723013
H-1	32.22299	-103.722849
H-2	32.222791	-103.722805
H-3	32.222992	-103.722755
H-4	32.223274	-103.722795
H-5	32.223327	-103.723229
H-6	32.223152	-103.723356
H-7	32.223045	-103.723226
H-8	32.222788	-103.723218
H-9	32.222481	-103.723212
H-10	32.222111	-103.723196



LEGEND	
	AUGER HOLE SAMPLE LOCATIONS
	SAMPLE LOCATIONS
	1' PROPOSED EXCAVATION AREA
	4' PROPOSED EXCAVATION AREA
	BURIED PIPELINE
	ABOVEGROUND POLYPIPE

FIGURE 4

CANVAS BACK 13 FEDERAL #2H
(32.22300°, -103.72300°)

PROPOSED EXCAVATION AREA
& DEPTH MAP
EDDY COUNTY, NEW MEXICO

Project: 212C-MD-01452	
Date: 11/16/2018	
File: H:\GIS\212C-MD-01452	

Tables

Table 1
COG
Canvasback 13 Federal #002H
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)					Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	GRO+DRO	ORO	Total						
AH-8	10/16/2018	0-1	X		<15.0	<15.0	<15.0	<15.0	<15.0	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	932
	"	1-1.5	X		<14.9	<14.9	<14.9	<14.9	<14.9	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	191
	"	2-2.5	X		-	-	-	-	-	-	-	-	-	-	-
AH-9	10/16/2018	0-1	X		<15.0	<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	89.3
	"	1-1.5	X		<15.0	<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	<4.96
	"	2-2.5	X		-	-	-	-	-	-	-	-	-	-	8.85
AH-10	10/16/2018	0-1	X		<15.0	<15.0	<15.0	<15.0	<15.0	<0.00198	<0.00198	<0.00198	<0.00198	<0.00198	179
	"	1-1.5	X		<15.0	<15.0	<15.0	<15.0	<15.0	<0.00198	<0.00198	<0.00198	<0.00198	<0.00198	46.7
	"	2-2.5	X		-	-	-	-	-	-	-	-	-	-	49.2
H-1	10/16/2018	0-1	X		<15.0	<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	58.2
H-2	10/16/2018	0-1	X		<15.0	<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	37.5
H-3	10/16/2018	0-1	X		<15.0	<15.0	<15.0	<15.0	<15.0	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	<5.00
H-4	10/16/2018	0-1	X		<15.0	<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	<4.95
H-5	10/16/2018	0-1	X		<14.9	<14.9	<14.9	<14.9	<14.9	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	48.9
H-6	10/16/2018	0-1	X		<15.0	<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<4.99
H-7	10/16/2018	0-1	X		<15.0	<15.0	<15.0	<15.0	<15.0	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	8.75
H-8	10/16/2018	0-1	X		<15.0	<15.0	<15.0	<15.0	<15.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	<5.00
H-9	10/16/2018	0-1	X		<15.0	<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<5.00
H-10	10/16/2018	0-1	X		<14.9	<14.9	<14.9	<14.9	<14.9	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<4.99

(-) Not Analyzed

Proposed Excavation Depths

Photos

COG
Canvasback 13 Fed 2H
Eddy County, New Mexico



TETRA TECH



View Northwest – Area of AH-1



View South – Area of AH-2

COG
Canvasback 13 Fed 2H
Eddy County, New Mexico



TETRA TECH



View West-northwest – Area of AH-3



View West – Area of AH-4

COG
Canvasback 13 Fed 2H
Eddy County, New Mexico



TETRA TECH



View North – Area of AH-5



View Southeast – Area of AH-6

COG
Canvasback 13 Fed 2H
Eddy County, New Mexico



TETRA TECH



View North-northeast – Area of AH-7



View South – Area of AH-8

COG
Canvasback 13 Fed 2H
Eddy County, New Mexico



TETRA TECH



View North – Area of AH-9



View North – Area of AH-10

Appendix A

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

State of New Mexico
Energy Minerals and Natural
Resources Department

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

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

Incident ID	NMAP1828466301
District RP	2RP-5008
Facility ID	N/A
Application ID	pMAP1828466072

Release Notification

Responsible Party

Responsible Party	COG Operating, LLC	OGRID	229137
Contact Name	Robert McNeill	Contact Telephone	(432) 683-7443
Contact email	RMcNeill@conhco.com	Incident # (assigned by OCD)	NMAP1828466301
Contact mailing address	600 West Illinois Avenue, Midland, Texas 79701		

Location of Release Source

Latitude 32.22300 Longitude -103.72300
(NAD 83 in decimal degrees to 5 decimal places)

Site Name	Canvasback 13 Federal #002H	Site Type	Flowline
Date Release Discovered	September 28, 2018	API# (if applicable)	30-015-40538

Unit Letter	Section	Township	Range	County
A	13	24S	31E	Eddy

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

Nature and Volume of Release

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

<input type="checkbox"/> Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
<input checked="" type="checkbox"/> Produced Water	Volume Released (bbls) 52	Volume Recovered (bbls) 20
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

The release was caused by a ruptured flowline. The flowline is being replaced. The release was in the pasture. A vacuum truck was dispatched to remove all freestanding fluids. Concho will evaluate the site to determine if we may commence remediation immediately or delineate any possible impact from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation activities.

Incident ID	NMAP1828466301
District RP	2RP-5008
Facility ID	N/A
Application ID	pMAP1828466072

Was this a major release as defined by 19.15.29.7(A) NMAC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If YES, for what reason(s) does the responsible party consider this a major release? The volume released was equal to or greater than 25 barrels.
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)? Immediate notice was given by Sheldon Hitchcock via e-mail September 28, 2018 at 6:36pm to Maria Pruet and Shelly Tucker.	

Initial Response

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

<input checked="" type="checkbox"/> The source of the release has been stopped. <input checked="" type="checkbox"/> The impacted area has been secured to protect human health and the environment. <input checked="" type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. <input checked="" type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.	
If all the actions described above have <u>not</u> been undertaken, explain why: 	
Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.	
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.	
Printed Name: <u>DeAnn Grant</u>	Title: <u>HSE Administrative Assistant</u>
Signature: _____	Date: <u>10/3/2018</u>
email: <u>agrants@concho.com</u>	Telephone: <u>(432) 253-4513</u>
<u>OCD Only</u>	
Received by: <u></u>	Date: <u>10/11/18</u>

Incident ID	
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

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

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

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

Characterization Report Checklist: Each of the following items must be included in the report.

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

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

Incident ID	
District RP	
Facility ID	
Application ID	

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

Printed Name: _____ Title: _____

Signature:  _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

Incident ID	
District RP	
Facility ID	
Application ID	

Remediation Plan

Remediation Plan Checklist: *Each of the following items must be included in the plan.*

- Detailed description of proposed remediation technique
- Scaled sitemap with GPS coordinates showing delineation points
- Estimated volume of material to be remediated
- Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: *Each of the following items must be confirmed as part of any request for deferral of remediation.*

- Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.
- Extents of contamination must be fully delineated.
- Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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

Printed Name: _____ Title: _____

Signature:  _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

- Approved
 Approved with Attached Conditions of Approval
 Denied
 Deferral Approved

Signature: _____ Date: _____

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

State of New Mexico
Energy Minerals and Natural
Resources Department

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

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

Incident ID	NMAP1829543220
District RP	2RP-5016
Facility ID	N/A
Application ID	pMAP1829541513

Release Notification

Responsible Party

Responsible Party	COG Operating, LLC	OGRID	229137
Contact Name	Robert McNeill	Contact Telephone	(432) 683-7443
Contact email	RMcNeill@concho.com	Incident # (assigned by OCD)	
Contact mailing address	600 West Illinois Avenue, Midland, Texas 79701		

Location of Release Source

Latitude 32.22324 Longitude -103.72283
(NAD 83 in decimal degrees to 5 decimal places)

Site Name	Canvasback 13 Federal #002H Battery	Site Type	Flowline
Date Release Discovered	October 6, 2018	API# (if applicable)	30-015-40538

Unit Letter	Section	Township	Range	County
D	18	24S	32E	Eddy

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

Nature and Volume of Release

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

<input type="checkbox"/> Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
<input checked="" type="checkbox"/> Produced Water	Volume Released (bbls) 24	Volume Recovered (bbls) 15
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

The release was caused by a flowline rupture. The flowline is being replaced.
The release was in the pasture and overlapped the release on September 28, 2018. A vacuum truck was dispatched to remove all freestanding fluids. Concho will evaluate the site to determine if we may commence remediation immediately or delineate any possible impact from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation activities.

Incident ID	NMAP1829543220
District RP	2RP-5016
Facility ID	N/A
Application ID	pMAP1829541513

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

Initial Response

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

<input checked="" type="checkbox"/> The source of the release has been stopped. <input checked="" type="checkbox"/> The impacted area has been secured to protect human health and the environment. <input checked="" type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. <input checked="" type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.
If all the actions described above have <u>not</u> been undertaken, explain why:
Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.
Printed Name: <u>DeAnn Grant</u> Title: <u>HSE Administrative Assistant</u> Signature: _____ Date: <u>10/8/2018</u> email: <u>agrants@concho.com</u> Telephone: <u>(432) 253-4513</u>
<u>OCD Only</u> Received by: <u></u> Date: <u>10/22/18</u>

Incident ID	
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

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

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

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

Characterization Report Checklist: Each of the following items must be included in the report.

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

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

Incident ID	
District RP	
Facility ID	
Application ID	

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

Printed Name: _____ Title: _____

Signature:  _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

Incident ID	
District RP	
Facility ID	
Application ID	

Remediation Plan

Remediation Plan Checklist: *Each of the following items must be included in the plan.*

- Detailed description of proposed remediation technique
- Scaled sitemap with GPS coordinates showing delineation points
- Estimated volume of material to be remediated
- Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: *Each of the following items must be confirmed as part of any request for deferral of remediation.*

- Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.
- Extents of contamination must be fully delineated.
- Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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

Printed Name: _____ Title: _____

Signature:  _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

- Approved
 Approved with Attached Conditions of Approval
 Denied
 Deferral Approved

Signature: _____ Date: _____

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG-Canvasback 13 Federal #002H

23 South			30 East		
6	5	4	3	2	1
110				250	
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36
			440		

23 South			31 East		
6	5	4	3	2	1
85	354	168			
7	8	9	10	11	12
140					
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

23 South			32 East		
6	5	4	3	2	1
			480		
7	639	8	9	10	11
18	17	16	15	14	13
19	20	21	22	23	24
30	713	400	27	26	25
31	32	33	34	35	36

24 South			30 East		
6	5	4	3	2	1
7	8	9	10	11	12
	186				
18	17	16	15	14	13
19	231	20	21	22	23
150				400	
30	29	28	27	26	25
31	32	33	34	35	36

24 South			31 East		
6	5	4	3	2	1
		436		160	
7	8	9	10	11	12
18	17	16	15	14	13
	74				
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36
		474			

24 South			32 East		
6	5	4	3	2	1
	380				
7	8	9	10	11	12
			20		
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36
		290			

25 South			30 East		
6	5	4	3	2	1
				295	
7	264	8	9	295	12
					390
18	17	16	15	14	13
19	20	21	22	23	24
		265			
		268			
30	29	28	27	26	25
31	32	33	34	35	36
31	32	33	34	35	36

25 South			31 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
		390			
		290			
30	29	28	27	26	25
31	32	33	34	35	36
31	32	33	34	35	36

25 South			32 East		
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36
		290			
31	32	33	34	35	36
		290			

- 88** New Mexico State Engineers Well Reports
- 105** USGS Well Reports
- 90** Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6)
- 90** Geology and Groundwater Resources of Eddy County, NM (Report 3)
- 34** NMOCD - Groundwater Data
- 121** Abandoned Waterwell (recently measured)

New Mexico Office of the State Engineer

Water Column/Average Depth to Water

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

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

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

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

(In feet)

POD Number	POD Code	Sub-basin	County	POD Sub-basin				Rng	X	Y	DepthWell	DepthWater	Water Column
				64	16	4	4						
C 02405	CUB	ED		4	1	02	24S	31E	617690	3568631*	275	160	115
C 02440	C	ED		2	3	10	24S	31E	616103	3566599*	350		
C 02460	C	ED		3	02		24S	31E	617496	3568022*	320		
C 02460 POD2	C	ED		3	02		24S	31E	617496	3568022*	320		
C 02464	C	ED	3	4	1	02	24S	31E	617589	3568530*	320	205	115
C 02661	CUB	ED	3	3	1	04	24S	31E	613969	3568485*	708		
C 02783	CUB	ED	3	3	1	04	24S	31E	613911	3568461	708		
C 02783 POD2	CUB	ED	3	3	1	04	24S	31E	613911	3568461	672		
C 02784	C	ED	4	2	4	04	24S	31E	613911	3568461	584		
C 02785	CUB	ED	3	3	1	04	24S	31E	613969	3568485*	692		

Average Depth to Water: **182 feet**
 Minimum Depth: **160 feet**
 Maximum Depth: **205 feet**

Record Count: 10

PLSS Search:

Township: 24S **Range:** 31E

*UTM location was derived from PLSS - see Help

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

10/24/18 1:09 PM

WATER COLUMN/ AVERAGE DEPTH TO WATER

COG-Canvasback 13 Federal #002H

Karst Potential

Legend

- CRIT
- HIGH
- LOW
- MEDIUM

Artesia

Atoka

Carlsbad

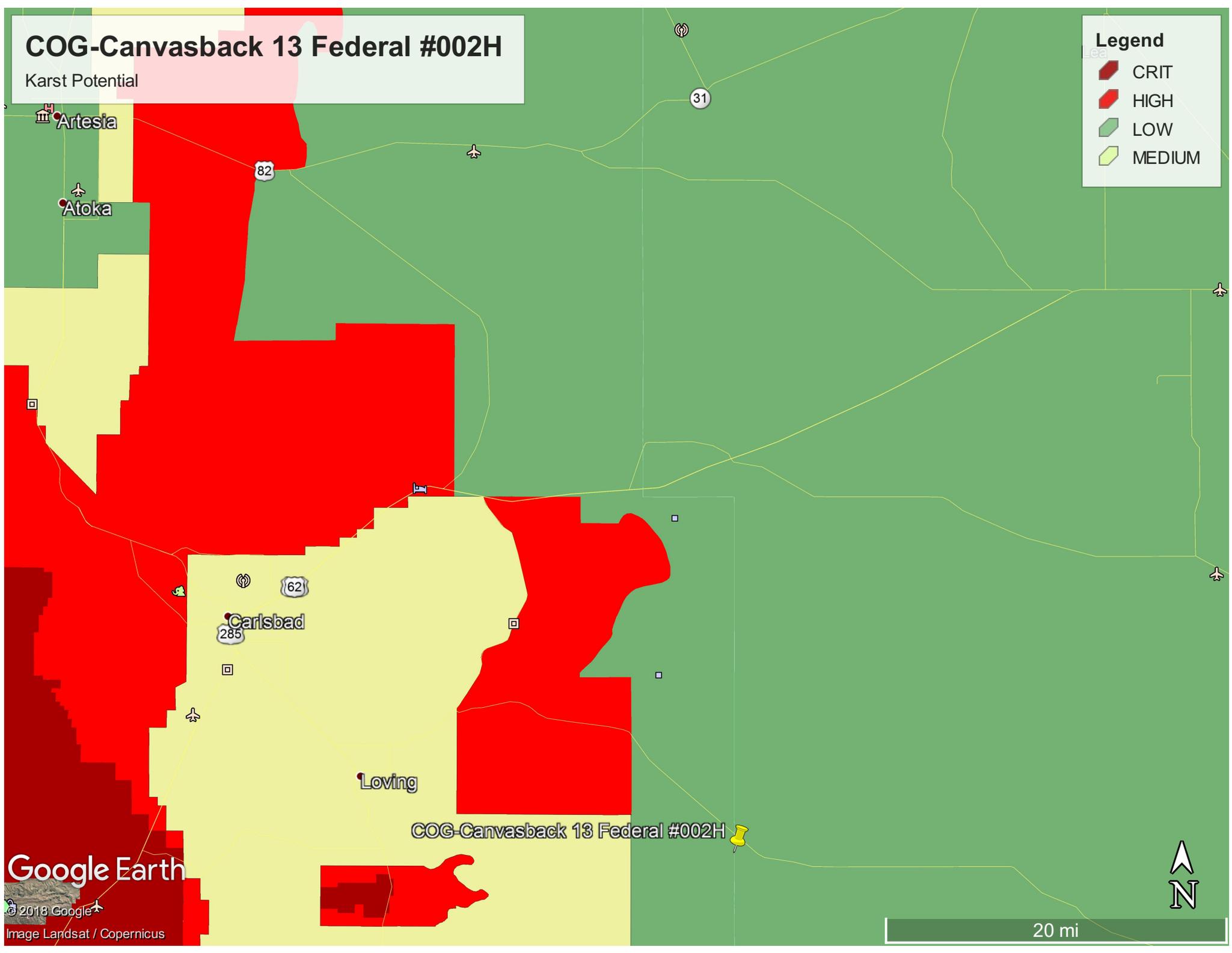
Loving

COG-Canvasback 13 Federal #002H

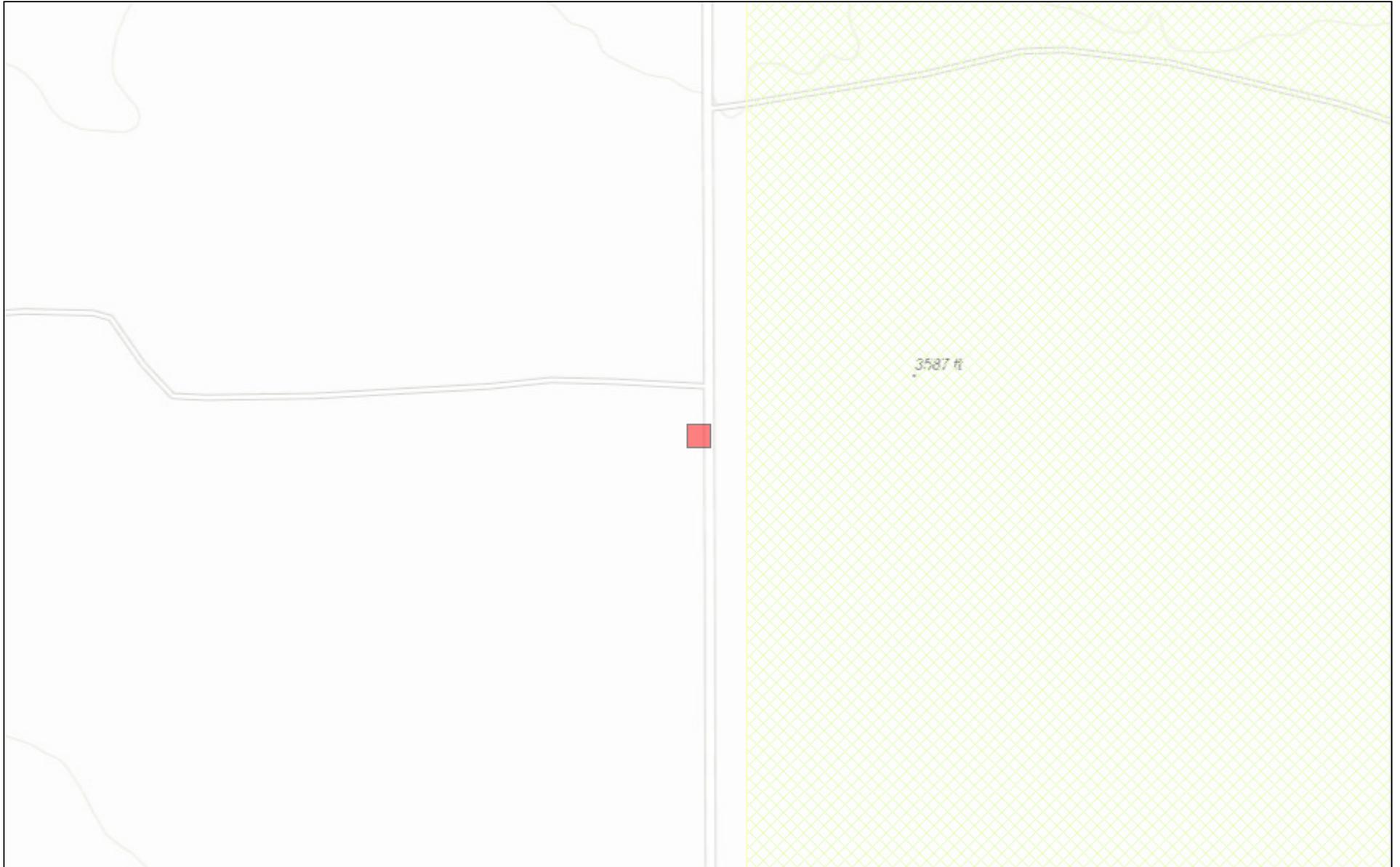
Google Earth

© 2018 Google
Image Landsat / Copernicus

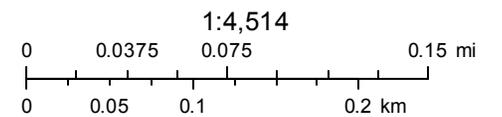
20 mi



New Mexico NFHL Data



November 2, 2018



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

Appendix C

Analytical Report 602870

for Tetra Tech- Midland

Project Manager: Clair Gonzales

Canvasback 13 Fed 2H

212C-MD-01452

24-OCT-18

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-18-28), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-18-17), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-18-18)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-18)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-18-4)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Phoenix Mobile (EPA Lab Code: AZ00901): Arizona (AZM757)
Xenco-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429)
Xenco-Lakeland: Florida (E84098)

24-OCT-18

Project Manager: **Clair Gonzales**
Tetra Tech- Midland
901 West Wall ST
Midland, TX 79701

Reference: XENCO Report No(s): **602870**
Canvasback 13 Fed 2H
Project Address: Lea Co, NM

Clair Gonzales:

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) 602870. 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. 602870 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

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 602870

Tetra Tech- Midland, Midland, TX

Canvasback 13 Fed 2H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
AH#1 (0-1')	S	10-16-18 00:00		602870-001
AH#1 (1-1.5')	S	10-16-18 00:00		602870-002
AH#1 (2-2.5)	S	10-16-18 00:00		602870-003
AH#1 (3-3.5)	S	10-16-18 00:00		602870-004
AH#2 (0-1')	S	10-16-18 00:00		602870-005
AH#2 (1-1.5')	S	10-16-18 00:00		602870-006
AH#2 (2-2.5)	S	10-16-18 00:00		602870-007
AH#2 (3-3.5)	S	10-16-18 00:00		602870-008
AH#3 (0-1')	S	10-16-18 00:00		602870-009
AH#3 (1-1.5')	S	10-16-18 00:00		602870-010
AH#3 (2-2.5)	S	10-16-18 00:00		602870-011
AH#4 (0-1')	S	10-16-18 00:00		602870-012
AH#4 (1-1.5')	S	10-16-18 00:00		602870-013
AH#4 (2-2.5)	S	10-16-18 00:00		602870-014
AH#5 (0-1')	S	10-16-18 00:00		602870-015
AH#5 (1-1.5')	S	10-16-18 00:00		602870-016
AH#5 (2-2.5)	S	10-16-18 00:00		602870-017
AH#5 (3-3.5)	S	10-16-18 00:00		602870-018
AH#6 (0-1')	S	10-16-18 00:00		602870-019
AH#6 (1-1.5')	S	10-16-18 00:00		602870-020
AH#6 (2-2.5)	S	10-16-18 00:00		602870-021
AH#6 (3-3.5)	S	10-16-18 00:00		602870-022
AH#6 (4-4.5)	S	10-16-18 00:00		602870-023
AH#6 (5-5.5)	S	10-16-18 00:00		602870-024
AH#7 (0-1')	S	10-16-18 00:00		602870-025
AH#7 (1-1.5')	S	10-16-18 00:00		602870-026
AH#7 (2-2.5)	S	10-16-18 00:00		602870-027
AH#7 (3-3.5)	S	10-16-18 00:00		602870-028
AH#7 (4-4.5)	S	10-16-18 00:00		602870-029
AH#8 (0-1')	S	10-16-18 00:00		602870-030
AH#8 (1-1.5')	S	10-16-18 00:00		602870-031
AH#8 (2-2.5)	S	10-16-18 00:00		602870-032
AH#9 (0-1')	S	10-16-18 00:00		602870-033
AH#9 (1-1.5')	S	10-16-18 00:00		602870-034
AH#9 (2-2.5)	S	10-16-18 00:00		602870-035
AH#10 (0-1')	S	10-16-18 00:00		602870-036
AH#10 (1-1.5')	S	10-16-18 00:00		602870-037
AH#10 (2-2.5)	S	10-16-18 00:00		602870-038
H-1 (0-1')	S	10-16-18 00:00		602870-039
H-2 (0-1')	S	10-16-18 00:00		602870-040
H-3 (0-1')	S	10-16-18 00:00		602870-041
H-4 (0-1')	S	10-16-18 00:00		602870-042
H-5 (0-1')	S	10-16-18 00:00		602870-043

Sample Cross Reference 602870

Tetra Tech- Midland, Midland, TX

Canvasback 13 Fed 2H

H-6 (0-1')	S	10-16-18 00:00	602870-044
H-7 (0-1')	S	10-16-18 00:00	602870-045
H-8 (0-1')	S	10-16-18 00:00	602870-046
H-9 (0-1')	S	10-16-18 00:00	602870-047
H-10 (0-1')	S	10-16-18 00:00	602870-048



CASE NARRATIVE

Client Name: Tetra Tech- Midland

Project Name: Canvasback 13 Fed 2H

Project ID: 212C-MD-01452
Work Order Number(s): 602870

Report Date: 24-OCT-18
Date Received: 10/19/2018

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3067203 BTEX by EPA 8021B

Surrogate 4-Bromofluorobenzene recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 602878-001 S.

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

Batch: LBA-3067221 BTEX by EPA 8021B

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

Batch: LBA-3067314 BTEX by EPA 8021B

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



Certificate of Analysis Summary 602870



Tetra Tech- Midland, Midland, TX

Project Name: Canvasback 13 Fed 2H

Project Id: 212C-MD-01452
Contact: Clair Gonzales
Project Location: Lea Co, NM

Date Received in Lab: Fri Oct-19-18 10:00 am
Report Date: 24-OCT-18
Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	602870-001	602870-002	602870-003	602870-004	602870-005	602870-006
	<i>Field Id:</i>	AH#1 (0-1')	AH#1 (1-1.5')	AH#1 (2-2.5)	AH#1 (3-3.5)	AH#2 (0-1')	AH#2 (1-1.5')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00
BTEX by EPA 8021B	<i>Extracted:</i>	Oct-19-18 13:00	Oct-19-18 13:00			Oct-19-18 13:00	Oct-19-18 13:00
	<i>Analyzed:</i>	Oct-19-18 16:40	Oct-19-18 17:14			Oct-19-18 18:01	Oct-19-18 18:41
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL			mg/kg RL	mg/kg RL
	Benzene	<0.00199 0.00199	<0.00200 0.00200			<0.00201 0.00201	<0.00200 0.00200
	Toluene	<0.00199 0.00199	<0.00200 0.00200			<0.00201 0.00201	<0.00200 0.00200
	Ethylbenzene	<0.00199 0.00199	<0.00200 0.00200			<0.00201 0.00201	<0.00200 0.00200
	m,p-Xylenes	<0.00398 0.00398	<0.00401 0.00401			<0.00402 0.00402	<0.00399 0.00399
	o-Xylene	<0.00199 0.00199	<0.00200 0.00200			<0.00201 0.00201	<0.00200 0.00200
Total Xylenes	<0.00199 0.00199	<0.00200 0.00200			<0.00201 0.00201	<0.00200 0.00200	
Total BTEX	<0.00199 0.00199	<0.00200 0.00200			<0.00201 0.00201	<0.00200 0.00200	
Chloride by EPA 300	<i>Extracted:</i>	Oct-22-18 08:30	Oct-22-18 08:30	Oct-22-18 08:30	Oct-22-18 08:30	Oct-22-18 16:30	Oct-22-18 16:30
	<i>Analyzed:</i>	Oct-22-18 16:30	Oct-22-18 16:36	Oct-22-18 16:41	Oct-22-18 16:46	Oct-22-18 20:48	Oct-22-18 20:53
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride	<5.02 5.02	<4.95 4.95	342 4.95	3580 25.0	<4.97 4.97	<4.96 4.96	
TPH by SW8015 Mod	<i>Extracted:</i>	Oct-19-18 17:00	Oct-19-18 17:00			Oct-19-18 17:00	Oct-19-18 17:00
	<i>Analyzed:</i>	Oct-20-18 15:53	Oct-20-18 16:12			Oct-20-18 16:30	Oct-20-18 16:49
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL			mg/kg RL	mg/kg RL
	Gasoline Range Hydrocarbons (GRO)	<15.0 15.0	<15.0 15.0			<15.0 15.0	<15.0 15.0
	Diesel Range Organics (DRO)	<15.0 15.0	<15.0 15.0			<15.0 15.0	<15.0 15.0
Motor Oil Range Hydrocarbons (MRO)	<15.0 15.0	<15.0 15.0			<15.0 15.0	<15.0 15.0	
Total TPH	<15.0 15.0	<15.0 15.0			<15.0 15.0	<15.0 15.0	

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

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

Kelsey Brooks
Project Manager



Certificate of Analysis Summary 602870



Tetra Tech- Midland, Midland, TX

Project Name: Canvasback 13 Fed 2H

Project Id: 212C-MD-01452

Contact: Clair Gonzales

Project Location: Lea Co, NM

Date Received in Lab: Fri Oct-19-18 10:00 am

Report Date: 24-OCT-18

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	602870-007	602870-008	602870-009	602870-010	602870-011	602870-012
	Field Id:	AH#2 (2-2.5)	AH#2 (3-3.5)	AH#3 (0-1')	AH#3 (1-1.5')	AH#3 (2-2.5)	AH#4 (0-1')
	Depth:						
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00
BTEX by EPA 8021B	Extracted:			Oct-19-18 13:00	Oct-19-18 13:00		Oct-19-18 13:00
	Analyzed:			Oct-19-18 19:03	Oct-19-18 19:24		Oct-19-18 19:46
	Units/RL:			mg/kg RL	mg/kg RL		mg/kg RL
	Benzene			<0.00198 0.00198	<0.00198 0.00198		<0.00201 0.00201
	Toluene			<0.00198 0.00198	<0.00198 0.00198		<0.00201 0.00201
	Ethylbenzene			<0.00198 0.00198	<0.00198 0.00198		<0.00201 0.00201
	m,p-Xylenes			<0.00397 0.00397	<0.00396 0.00396		<0.00402 0.00402
	o-Xylene			<0.00198 0.00198	<0.00198 0.00198		<0.00201 0.00201
Total Xylenes			<0.00198 0.00198	<0.00198 0.00198		<0.00201 0.00201	
Total BTEX			<0.00198 0.00198	<0.00198 0.00198		<0.00201 0.00201	
Chloride by EPA 300	Extracted:	Oct-22-18 16:30	Oct-22-18 16:30	Oct-22-18 16:30	Oct-22-18 16:30	Oct-22-18 16:30	Oct-22-18 16:30
	Analyzed:	Oct-22-18 20:59	Oct-22-18 21:14	Oct-22-18 21:20	Oct-22-18 21:25	Oct-22-18 21:30	Oct-22-18 21:36
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		<5.02 5.02	603 5.02	100 5.00	461 4.98	6810 49.5	<4.96 4.96
TPH by SW8015 Mod	Extracted:			Oct-19-18 17:00	Oct-19-18 17:00		Oct-19-18 17:00
	Analyzed:			Oct-20-18 17:45	Oct-20-18 18:03		Oct-20-18 18:22
	Units/RL:			mg/kg RL	mg/kg RL		mg/kg RL
Gasoline Range Hydrocarbons (GRO)			<15.0 15.0	<15.0 15.0		<15.0 15.0	
Diesel Range Organics (DRO)			<15.0 15.0	<15.0 15.0		<15.0 15.0	
Motor Oil Range Hydrocarbons (MRO)			<15.0 15.0	<15.0 15.0		<15.0 15.0	
Total TPH			<15.0 15.0	<15.0 15.0		<15.0 15.0	

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

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

Kelsey Brooks
Project Manager



Certificate of Analysis Summary 602870



Tetra Tech- Midland, Midland, TX

Project Name: Canvasback 13 Fed 2H

Project Id: 212C-MD-01452

Contact: Clair Gonzales

Project Location: Lea Co, NM

Date Received in Lab: Fri Oct-19-18 10:00 am

Report Date: 24-OCT-18

Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	602870-013	602870-014	602870-015	602870-016	602870-017	602870-018
	<i>Field Id:</i>	AH#4 (1-1.5')	AH#4 (2-2.5)	AH#5 (0-1')	AH#5 (1-1.5')	AH#5 (2-2.5)	AH#5 (3-3.5)
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00
BTEX by EPA 8021B	<i>Extracted:</i>	Oct-19-18 13:00		Oct-19-18 13:00	Oct-19-18 13:00		
	<i>Analyzed:</i>	Oct-19-18 20:09		Oct-19-18 20:31	Oct-19-18 20:53		
	<i>Units/RL:</i>	mg/kg RL		mg/kg RL	mg/kg RL		
Benzene		<0.00202 0.00202		<0.00199 0.00199	<0.00200 0.00200		
Toluene		<0.00202 0.00202		<0.00199 0.00199	<0.00200 0.00200		
Ethylbenzene		<0.00202 0.00202		<0.00199 0.00199	<0.00200 0.00200		
m,p-Xylenes		<0.00403 0.00403		<0.00398 0.00398	<0.00399 0.00399		
o-Xylene		<0.00202 0.00202		<0.00199 0.00199	<0.00200 0.00200		
Total Xylenes		<0.00202 0.00202		<0.00199 0.00199	<0.00200 0.00200		
Total BTEX		<0.00202 0.00202		<0.00199 0.00199	<0.00200 0.00200		
Chloride by EPA 300	<i>Extracted:</i>	Oct-22-18 16:30	Oct-22-18 16:30	Oct-22-18 16:30	Oct-22-18 16:30	Oct-22-18 16:30	Oct-22-18 16:30
	<i>Analyzed:</i>	Oct-22-18 21:57	Oct-22-18 22:02	Oct-22-18 22:18	Oct-22-18 22:23	Oct-22-18 22:29	Oct-22-18 22:34
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		<4.95 4.95	624 5.00	43.3 5.02	<4.99 4.99	<4.97 4.97	<5.01 5.01
TPH by SW8015 Mod	<i>Extracted:</i>	Oct-19-18 17:00		Oct-19-18 17:00	Oct-19-18 17:00		
	<i>Analyzed:</i>	Oct-20-18 18:40		Oct-20-18 18:59	Oct-20-18 19:18		
	<i>Units/RL:</i>	mg/kg RL		mg/kg RL	mg/kg RL		
Gasoline Range Hydrocarbons (GRO)		<15.0 15.0		<14.9 14.9	<14.9 14.9		
Diesel Range Organics (DRO)		<15.0 15.0		<14.9 14.9	<14.9 14.9		
Motor Oil Range Hydrocarbons (MRO)		<15.0 15.0		<14.9 14.9	<14.9 14.9		
Total TPH		<15.0 15.0		<14.9 14.9	<14.9 14.9		

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

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

Kelsey Brooks
Project Manager



Certificate of Analysis Summary 602870



Tetra Tech- Midland, Midland, TX

Project Name: Canvasback 13 Fed 2H

Project Id: 212C-MD-01452
Contact: Clair Gonzales
Project Location: Lea Co, NM

Date Received in Lab: Fri Oct-19-18 10:00 am
Report Date: 24-OCT-18
Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	602870-019	602870-020	602870-021	602870-022	602870-023	602870-024
	<i>Field Id:</i>	AH#6 (0-1')	AH#6 (1-1.5')	AH#6 (2-2.5)	AH#6 (3-3.5)	AH#6 (4-4.5)	AH#6 (5-5.5)
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00
BTEX by EPA 8021B	<i>Extracted:</i>	Oct-19-18 13:00	Oct-19-18 13:00				
	<i>Analyzed:</i>	Oct-19-18 21:57	Oct-19-18 22:19				
	<i>Units/RL:</i>	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		<0.00404 0.00404	<0.00398 0.00398				
o-Xylene		<0.00202 0.00202	<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	<i>Extracted:</i>	Oct-22-18 16:30	Oct-22-18 16:30	Oct-22-18 16:30	Oct-22-18 16:30	Oct-22-18 16:30	Oct-23-18 08:00
	<i>Analyzed:</i>	Oct-22-18 22:39	Oct-22-18 22:45	Oct-22-18 20:27	Oct-22-18 21:41	Oct-22-18 22:50	Oct-23-18 09:09
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		3730 24.9	421 5.02	32.5 5.02	28.0 5.00	205 4.95	529 5.03
TPH by SW8015 Mod	<i>Extracted:</i>	Oct-19-18 17:00	Oct-19-18 17:00				
	<i>Analyzed:</i>	Oct-20-18 19:36	Oct-20-18 19:55				
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL				
Gasoline Range Hydrocarbons (GRO)		<14.9 14.9	<15.0 15.0				
Diesel Range Organics (DRO)		15.5 14.9	<15.0 15.0				
Motor Oil Range Hydrocarbons (MRO)		<14.9 14.9	<15.0 15.0				
Total TPH		15.5 14.9	<15.0 15.0				

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

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

Kelsey Brooks
Project Manager



Certificate of Analysis Summary 602870



Tetra Tech- Midland, Midland, TX

Project Name: Canvasback 13 Fed 2H

Project Id: 212C-MD-01452
Contact: Clair Gonzales
Project Location: Lea Co, NM

Date Received in Lab: Fri Oct-19-18 10:00 am
Report Date: 24-OCT-18
Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	602870-025	602870-026	602870-027	602870-028	602870-029	602870-030
	<i>Field Id:</i>	AH#7 (0-1')	AH#7 (1-1.5')	AH#7 (2-2.5)	AH#7 (3-3.5)	AH#7 (4-4.5)	AH#8 (0-1')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00
BTEX by EPA 8021B	<i>Extracted:</i>	Oct-19-18 13:00	Oct-19-18 13:00				Oct-19-18 13:00
	<i>Analyzed:</i>	Oct-19-18 22:40	Oct-19-18 23:01				Oct-19-18 23:21
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL				mg/kg RL
Benzene		<0.00199 0.00199	<0.00198 0.00198				<0.00201 0.00201
Toluene		<0.00199 0.00199	<0.00198 0.00198				<0.00201 0.00201
Ethylbenzene		<0.00199 0.00199	<0.00198 0.00198				<0.00201 0.00201
m,p-Xylenes		<0.00398 0.00398	<0.00397 0.00397				<0.00402 0.00402
o-Xylene		<0.00199 0.00199	<0.00198 0.00198				<0.00201 0.00201
Total Xylenes		<0.00199 0.00199	<0.00198 0.00198				<0.00201 0.00201
Total BTEX		<0.00199 0.00199	<0.00198 0.00198				<0.00201 0.00201
Chloride by EPA 300	<i>Extracted:</i>	Oct-23-18 08:00	Oct-23-18 08:00	Oct-23-18 08:00	Oct-23-18 08:00	Oct-23-18 08:00	Oct-23-18 08:00
	<i>Analyzed:</i>	Oct-23-18 09:24	Oct-23-18 09:30	Oct-23-18 09:35	Oct-23-18 09:40	Oct-23-18 09:56	Oct-23-18 10:02
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		7290 50.0	6360 49.9	10900 99.6	2240 24.9	335 4.97	932 4.98
TPH by SW8015 Mod	<i>Extracted:</i>	Oct-19-18 17:00	Oct-19-18 17:00				Oct-19-18 16:00
	<i>Analyzed:</i>	Oct-20-18 20:14	Oct-20-18 20:32				Oct-20-18 20:33
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL				mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<15.0 15.0	<15.0 15.0				<15.0 15.0
Diesel Range Organics (DRO)		1270 15.0	27.3 15.0				<15.0 15.0
Motor Oil Range Hydrocarbons (MRO)		306 15.0	<15.0 15.0				<15.0 15.0
Total TPH		1580 15.0	27.3 15.0				<15.0 15.0

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

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

Kelsey Brooks
Project Manager



Certificate of Analysis Summary 602870



Tetra Tech- Midland, Midland, TX

Project Name: Canvasback 13 Fed 2H

Project Id: 212C-MD-01452
 Contact: Clair Gonzales
 Project Location: Lea Co, NM

Date Received in Lab: Fri Oct-19-18 10:00 am
 Report Date: 24-OCT-18
 Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	602870-031	602870-032	602870-033	602870-034	602870-035	602870-036
	<i>Field Id:</i>	AH#8 (1-1.5')	AH#8 (2-2.5)	AH#9 (0-1')	AH#9 (1-1.5')	AH#9 (2-2.5)	AH#10 (0-1')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00
BTEX by EPA 8021B	<i>Extracted:</i>	Oct-19-18 13:00		Oct-19-18 13:00	Oct-22-18 16:00		Oct-19-18 13:00
	<i>Analyzed:</i>	Oct-19-18 23:43		Oct-20-18 00:04	Oct-23-18 09:44		Oct-20-18 00:46
	<i>Units/RL:</i>	mg/kg RL		mg/kg RL	mg/kg RL		mg/kg RL
Benzene		<0.00200 0.00200		<0.00200 0.00200	<0.00199 0.00199		<0.00198 0.00198
Toluene		<0.00200 0.00200		<0.00200 0.00200	<0.00199 0.00199		<0.00198 0.00198
Ethylbenzene		<0.00200 0.00200		<0.00200 0.00200	<0.00199 0.00199		<0.00198 0.00198
m,p-Xylenes		<0.00401 0.00401		<0.00399 0.00399	<0.00398 0.00398		<0.00397 0.00397
o-Xylene		<0.00200 0.00200		<0.00200 0.00200	<0.00199 0.00199		<0.00198 0.00198
Total Xylenes		<0.00200 0.00200		<0.00200 0.00200	<0.00199 0.00199		<0.00198 0.00198
Total BTEX		<0.00200 0.00200		<0.00200 0.00200	<0.00199 0.00199		<0.00198 0.00198
Chloride by EPA 300	<i>Extracted:</i>	Oct-23-18 08:00	Oct-23-18 08:00	Oct-23-18 08:00	Oct-23-18 08:00	Oct-23-18 08:00	Oct-23-18 08:00
	<i>Analyzed:</i>	Oct-23-18 10:07	Oct-23-18 10:12	Oct-23-18 10:17	Oct-23-18 10:23	Oct-23-18 10:45	Oct-23-18 10:50
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		191 5.00	10700 100	89.3 4.96	<4.96 4.96	8.85 4.95	179 4.97
TPH by SW8015 Mod	<i>Extracted:</i>	Oct-19-18 16:00		Oct-19-18 16:00	Oct-19-18 16:00		Oct-19-18 16:00
	<i>Analyzed:</i>	Oct-20-18 21:35		Oct-20-18 21:56	Oct-20-18 22:16		Oct-20-18 22:37
	<i>Units/RL:</i>	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		<15.0 15.0
Diesel Range Organics (DRO)		<14.9 14.9		<15.0 15.0	<15.0 15.0		<15.0 15.0
Motor Oil Range Hydrocarbons (MRO)		<14.9 14.9		<15.0 15.0	<15.0 15.0		<15.0 15.0
Total TPH		<14.9 14.9		<15.0 15.0	<15.0 15.0		<15.0 15.0

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

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

Kelsey Brooks
Project Manager



Certificate of Analysis Summary 602870



Tetra Tech- Midland, Midland, TX

Project Name: Canvasback 13 Fed 2H

Project Id: 212C-MD-01452

Contact: Clair Gonzales

Project Location: Lea Co, NM

Date Received in Lab: Fri Oct-19-18 10:00 am

Report Date: 24-OCT-18

Project Manager: Kelsey Brooks

<i>Analysis Requested</i>	<i>Lab Id:</i>	602870-037	602870-038	602870-039	602870-040	602870-041	602870-042
	<i>Field Id:</i>	AH#10 (1-1.5')	AH#10 (2-2.5)	H-1 (0-1')	H-2 (0-1')	H-3 (0-1')	H-4 (0-1')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00	Oct-16-18 00:00
BTEX by EPA 8021B	<i>Extracted:</i>	Oct-22-18 16:00		Oct-22-18 08:00	Oct-22-18 08:00	Oct-22-18 08:00	Oct-22-18 08:00
	<i>Analyzed:</i>	Oct-23-18 10:04		Oct-22-18 13:32	Oct-22-18 13:53	Oct-22-18 14:14	Oct-22-18 14:35
	<i>Units/RL:</i>	mg/kg RL		mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00198 0.00198		<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00199 0.00199
Toluene		<0.00198 0.00198		<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00199 0.00199
Ethylbenzene		<0.00198 0.00198		<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00199 0.00199
m,p-Xylenes		<0.00397 0.00397		<0.00399 0.00399	<0.00401 0.00401	<0.00402 0.00402	<0.00398 0.00398
o-Xylene		<0.00198 0.00198		<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00199 0.00199
Total Xylenes		<0.00198 0.00198		<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00199 0.00199
Total BTEX		<0.00198 0.00198		<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00199 0.00199
Chloride by EPA 300	<i>Extracted:</i>	Oct-23-18 08:00	Oct-23-18 08:00	Oct-23-18 08:00	Oct-23-18 08:00	Oct-23-18 08:00	Oct-23-18 08:00
	<i>Analyzed:</i>	Oct-23-18 11:06	Oct-23-18 11:11	Oct-23-18 11:17	Oct-23-18 11:22	Oct-23-18 11:27	Oct-23-18 11:32
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		46.7 4.97	49.2 4.95	58.2 5.00	37.5 4.99	<5.00 5.00	<4.95 4.95
TPH by SW8015 Mod	<i>Extracted:</i>	Oct-19-18 16:00		Oct-19-18 16:00	Oct-19-18 16:00	Oct-19-18 16:00	Oct-19-18 16:00
	<i>Analyzed:</i>	Oct-20-18 22:57		Oct-20-18 23:18	Oct-20-18 23:38	Oct-20-18 23:59	Oct-21-18 00:20
	<i>Units/RL:</i>	mg/kg RL		mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<15.0 15.0		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0
Diesel Range Organics (DRO)		<15.0 15.0		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0
Motor Oil Range Hydrocarbons (MRO)		<15.0 15.0		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0
Total TPH		<15.0 15.0		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0

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

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

Kelsey Brooks
Project Manager



Certificate of Analysis Summary 602870



Tetra Tech- Midland, Midland, TX

Project Name: Canvasback 13 Fed 2H

Project Id: 212C-MD-01452

Contact: Clair Gonzales

Project Location: Lea Co, NM

Date Received in Lab: Fri Oct-19-18 10:00 am

Report Date: 24-OCT-18

Project Manager: Kelsey Brooks

Analysis Requested	Lab Id:	602870-043	602870-044	602870-045	602870-046	602870-047	602870-048
	Field Id:	H-5 (0-1')	H-6 (0-1')	H-7 (0-1')	H-8 (0-1')	H-9 (0-1')	H-10 (0-1')
	Depth:						
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Oct-16-18 00:00					
BTEX by EPA 8021B	Extracted:	Oct-22-18 08:00					
	Analyzed:	Oct-22-18 14:57	Oct-22-18 15:29	Oct-22-18 15:50	Oct-22-18 16:11	Oct-22-18 17:15	Oct-22-18 13:10
	Units/RL:	mg/kg RL					
Benzene		<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200
Toluene		<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200
Ethylbenzene		<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200
m,p-Xylenes		<0.00399 0.00399	<0.00401 0.00401	<0.00402 0.00402	<0.00398 0.00398	<0.00399 0.00399	<0.00401 0.00401
o-Xylene		<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200
Total Xylenes		<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200
Total BTEX		<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201	<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200
Chloride by EPA 300	Extracted:	Oct-23-18 08:00	Oct-23-18 10:00				
	Analyzed:	Oct-23-18 11:38	Oct-23-18 12:25	Oct-23-18 12:31	Oct-23-18 12:36	Oct-23-18 12:41	Oct-23-18 12:57
	Units/RL:	mg/kg RL					
Chloride		48.9 4.99	<4.99 4.99	8.75 4.98	<5.00 5.00	<5.00 5.00	<4.99 4.99
TPH by SW8015 Mod	Extracted:	Oct-19-18 16:00					
	Analyzed:	Oct-21-18 01:21	Oct-21-18 01:42	Oct-21-18 02:03	Oct-21-18 02:23	Oct-21-18 02:44	Oct-21-18 03:04
	Units/RL:	mg/kg RL					
Gasoline Range Hydrocarbons (GRO)		<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	<14.9 14.9
Diesel Range Organics (DRO)		<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	<14.9 14.9
Motor Oil Range Hydrocarbons (MRO)		<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	<14.9 14.9
Total TPH		<14.9 14.9	<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	<14.9 14.9

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

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

Kelsey Brooks
Project Manager



Form 2 - Surrogate Recoveries

Project Name: Canvasback 13 Fed 2H

Work Orders : 602870,

Project ID: 212C-MD-01452

Lab Batch #: 3067314

Sample: 602870-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/19/18 16:40

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0342	0.0300	114	70-130	
4-Bromofluorobenzene	0.0362	0.0300	121	70-130	

Lab Batch #: 3067314

Sample: 602870-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/19/18 17:14

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0359	0.0300	120	70-130	
4-Bromofluorobenzene	0.0356	0.0300	119	70-130	

Lab Batch #: 3067314

Sample: 602870-005 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/19/18 18:01

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0387	0.0300	129	70-130	
4-Bromofluorobenzene	0.0387	0.0300	129	70-130	

Lab Batch #: 3067314

Sample: 602870-006 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/19/18 18:41

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0345	0.0300	115	70-130	
4-Bromofluorobenzene	0.0352	0.0300	117	70-130	

Lab Batch #: 3067314

Sample: 602870-009 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/19/18 19:03

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	70-130	
4-Bromofluorobenzene	0.0346	0.0300	115	70-130	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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



Form 2 - Surrogate Recoveries

Project Name: Canvasback 13 Fed 2H

Work Orders : 602870,

Project ID: 212C-MD-01452

Lab Batch #: 3067314

Sample: 602870-010 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/19/18 19:24

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0358	0.0300	119	70-130	
4-Bromofluorobenzene	0.0387	0.0300	129	70-130	

Lab Batch #: 3067314

Sample: 602870-012 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/19/18 19:46

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0352	0.0300	117	70-130	
4-Bromofluorobenzene	0.0359	0.0300	120	70-130	

Lab Batch #: 3067314

Sample: 602870-013 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/19/18 20:09

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0310	0.0300	103	70-130	
4-Bromofluorobenzene	0.0326	0.0300	109	70-130	

Lab Batch #: 3067314

Sample: 602870-015 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/19/18 20:31

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0340	0.0300	113	70-130	
4-Bromofluorobenzene	0.0356	0.0300	119	70-130	

Lab Batch #: 3067314

Sample: 602870-016 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/19/18 20:53

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0316	0.0300	105	70-130	
4-Bromofluorobenzene	0.0353	0.0300	118	70-130	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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



Form 2 - Surrogate Recoveries

Project Name: Canvasback 13 Fed 2H

Work Orders : 602870,

Project ID: 212C-MD-01452

Lab Batch #: 3067314

Sample: 602870-019 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/19/18 21:57

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0385	0.0300	128	70-130	
4-Bromofluorobenzene	0.0342	0.0300	114	70-130	

Lab Batch #: 3067314

Sample: 602870-020 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/19/18 22:19

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0352	0.0300	117	70-130	
4-Bromofluorobenzene	0.0355	0.0300	118	70-130	

Lab Batch #: 3067314

Sample: 602870-025 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/19/18 22:40

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0334	0.0300	111	70-130	
4-Bromofluorobenzene	0.0356	0.0300	119	70-130	

Lab Batch #: 3067314

Sample: 602870-026 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/19/18 23:01

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0342	0.0300	114	70-130	
4-Bromofluorobenzene	0.0330	0.0300	110	70-130	

Lab Batch #: 3067314

Sample: 602870-030 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/19/18 23:21

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0349	0.0300	116	70-130	
4-Bromofluorobenzene	0.0351	0.0300	117	70-130	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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



Form 2 - Surrogate Recoveries

Project Name: Canvasback 13 Fed 2H

Work Orders : 602870,

Project ID: 212C-MD-01452

Lab Batch #: 3067314

Sample: 602870-031 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/19/18 23:43

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0332	0.0300	111	70-130	
4-Bromofluorobenzene	0.0365	0.0300	122	70-130	

Lab Batch #: 3067314

Sample: 602870-033 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 00:04

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0323	0.0300	108	70-130	
4-Bromofluorobenzene	0.0366	0.0300	122	70-130	

Lab Batch #: 3067314

Sample: 602870-036 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 00:46

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0360	0.0300	120	70-130	
4-Bromofluorobenzene	0.0376	0.0300	125	70-130	

Lab Batch #: 3067097

Sample: 602870-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 15:53

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	93.4	100	93	70-135	
o-Terphenyl	47.8	50.0	96	70-135	

Lab Batch #: 3067097

Sample: 602870-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 16:12

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	95.0	99.8	95	70-135	
o-Terphenyl	48.8	49.9	98	70-135	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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



Form 2 - Surrogate Recoveries

Project Name: Canvasback 13 Fed 2H

Work Orders : 602870,

Project ID: 212C-MD-01452

Lab Batch #: 3067097

Sample: 602870-005 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 16:30

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	98.6	99.8	99	70-135	
o-Terphenyl	50.2	49.9	101	70-135	

Lab Batch #: 3067097

Sample: 602870-006 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 16:49

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	93.5	99.9	94	70-135	
o-Terphenyl	47.6	50.0	95	70-135	

Lab Batch #: 3067097

Sample: 602870-009 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 17:45

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	97.2	99.7	97	70-135	
o-Terphenyl	49.4	49.9	99	70-135	

Lab Batch #: 3067097

Sample: 602870-010 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 18:03

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	95.7	99.9	96	70-135	
o-Terphenyl	48.7	50.0	97	70-135	

Lab Batch #: 3067097

Sample: 602870-012 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 18:22

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	96.1	99.7	96	70-135	
o-Terphenyl	48.7	49.9	98	70-135	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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



Form 2 - Surrogate Recoveries

Project Name: Canvasback 13 Fed 2H

Work Orders : 602870,

Project ID: 212C-MD-01452

Lab Batch #: 3067097

Sample: 602870-013 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 18:40

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	98.6	99.8	99	70-135	
o-Terphenyl	49.9	49.9	100	70-135	

Lab Batch #: 3067097

Sample: 602870-015 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 18:59

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	94.4	99.6	95	70-135	
o-Terphenyl	47.7	49.8	96	70-135	

Lab Batch #: 3067097

Sample: 602870-016 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 19:18

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	94.0	99.6	94	70-135	
o-Terphenyl	46.6	49.8	94	70-135	

Lab Batch #: 3067097

Sample: 602870-019 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 19:36

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	95.9	99.6	96	70-135	
o-Terphenyl	48.9	49.8	98	70-135	

Lab Batch #: 3067097

Sample: 602870-020 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 19:55

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	98.1	99.9	98	70-135	
o-Terphenyl	49.6	50.0	99	70-135	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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



Form 2 - Surrogate Recoveries

Project Name: Canvasback 13 Fed 2H

Work Orders : 602870,

Project ID: 212C-MD-01452

Lab Batch #: 3067097

Sample: 602870-025 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 20:14

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	94.9	100	95	70-135	
o-Terphenyl	52.1	50.0	104	70-135	

Lab Batch #: 3067097

Sample: 602870-026 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 20:32

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	97.7	99.8	98	70-135	
o-Terphenyl	49.6	49.9	99	70-135	

Lab Batch #: 3067103

Sample: 602870-030 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 20:33

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	91.4	99.9	91	70-135	
o-Terphenyl	47.8	50.0	96	70-135	

Lab Batch #: 3067103

Sample: 602870-031 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 21:35

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	86.9	99.6	87	70-135	
o-Terphenyl	45.0	49.8	90	70-135	

Lab Batch #: 3067103

Sample: 602870-033 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 21:56

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	93.5	99.9	94	70-135	
o-Terphenyl	48.4	50.0	97	70-135	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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



Form 2 - Surrogate Recoveries

Project Name: Canvasback 13 Fed 2H

Work Orders : 602870,

Project ID: 212C-MD-01452

Lab Batch #: 3067103

Sample: 602870-034 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 22:16

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	91.0	99.8	91	70-135	
o-Terphenyl	46.4	49.9	93	70-135	

Lab Batch #: 3067103

Sample: 602870-036 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 22:37

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	91.7	99.8	92	70-135	
o-Terphenyl	47.4	49.9	95	70-135	

Lab Batch #: 3067103

Sample: 602870-037 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 22:57

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	94.1	100	94	70-135	
o-Terphenyl	46.9	50.0	94	70-135	

Lab Batch #: 3067103

Sample: 602870-039 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 23:18

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	93.6	100	94	70-135	
o-Terphenyl	49.0	50.0	98	70-135	

Lab Batch #: 3067103

Sample: 602870-040 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 23:38

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	90.5	99.7	91	70-135	
o-Terphenyl	46.8	49.9	94	70-135	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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



Form 2 - Surrogate Recoveries

Project Name: Canvasback 13 Fed 2H

Work Orders : 602870,

Project ID: 212C-MD-01452

Lab Batch #: 3067103

Sample: 602870-041 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 23:59

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	91.1	99.7	91	70-135	
o-Terphenyl	48.2	49.9	97	70-135	

Lab Batch #: 3067103

Sample: 602870-042 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/21/18 00:20

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	91.5	99.9	92	70-135	
o-Terphenyl	48.3	50.0	97	70-135	

Lab Batch #: 3067103

Sample: 602870-043 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/21/18 01:21

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	92.1	99.6	92	70-135	
o-Terphenyl	48.5	49.8	97	70-135	

Lab Batch #: 3067103

Sample: 602870-044 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/21/18 01:42

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	89.9	99.8	90	70-135	
o-Terphenyl	47.3	49.9	95	70-135	

Lab Batch #: 3067103

Sample: 602870-045 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/21/18 02:03

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	89.6	99.9	90	70-135	
o-Terphenyl	47.5	50.0	95	70-135	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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



Form 2 - Surrogate Recoveries

Project Name: Canvasback 13 Fed 2H

Work Orders : 602870,

Project ID: 212C-MD-01452

Lab Batch #: 3067103

Sample: 602870-046 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/21/18 02:23

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	91.9	99.7	92	70-135	
o-Terphenyl	48.1	49.9	96	70-135	

Lab Batch #: 3067103

Sample: 602870-047 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/21/18 02:44

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	91.6	99.7	92	70-135	
o-Terphenyl	48.2	49.9	97	70-135	

Lab Batch #: 3067103

Sample: 602870-048 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/21/18 03:04

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	93.8	99.6	94	70-135	
o-Terphenyl	48.4	49.8	97	70-135	

Lab Batch #: 3067203

Sample: 602870-048 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/22/18 13:10

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0364	0.0300	121	70-130	
4-Bromofluorobenzene	0.0377	0.0300	126	70-130	

Lab Batch #: 3067203

Sample: 602870-039 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/22/18 13:32

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0327	0.0300	109	70-130	
4-Bromofluorobenzene	0.0389	0.0300	130	70-130	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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



Form 2 - Surrogate Recoveries

Project Name: Canvasback 13 Fed 2H

Work Orders : 602870,

Project ID: 212C-MD-01452

Lab Batch #: 3067203

Sample: 602870-040 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/22/18 13:53

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0342	0.0300	114	70-130	
4-Bromofluorobenzene	0.0380	0.0300	127	70-130	

Lab Batch #: 3067203

Sample: 602870-041 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/22/18 14:14

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0344	0.0300	115	70-130	
4-Bromofluorobenzene	0.0382	0.0300	127	70-130	

Lab Batch #: 3067203

Sample: 602870-042 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/22/18 14:35

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0325	0.0300	108	70-130	
4-Bromofluorobenzene	0.0382	0.0300	127	70-130	

Lab Batch #: 3067203

Sample: 602870-043 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/22/18 14:57

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0340	0.0300	113	70-130	
4-Bromofluorobenzene	0.0382	0.0300	127	70-130	

Lab Batch #: 3067203

Sample: 602870-044 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/22/18 15:29

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0367	0.0300	122	70-130	
4-Bromofluorobenzene	0.0386	0.0300	129	70-130	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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



Form 2 - Surrogate Recoveries

Project Name: Canvasback 13 Fed 2H

Work Orders : 602870,

Project ID: 212C-MD-01452

Lab Batch #: 3067203

Sample: 602870-045 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/22/18 15:50

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0306	0.0300	102	70-130	
4-Bromofluorobenzene	0.0385	0.0300	128	70-130	

Lab Batch #: 3067203

Sample: 602870-046 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/22/18 16:11

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0357	0.0300	119	70-130	
4-Bromofluorobenzene	0.0390	0.0300	130	70-130	

Lab Batch #: 3067203

Sample: 602870-047 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/22/18 17:15

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0335	0.0300	112	70-130	
4-Bromofluorobenzene	0.0382	0.0300	127	70-130	

Lab Batch #: 3067221

Sample: 602870-034 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/23/18 09:44

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0332	0.0300	111	70-130	
4-Bromofluorobenzene	0.0382	0.0300	127	70-130	

Lab Batch #: 3067221

Sample: 602870-037 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/23/18 10:04

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0336	0.0300	112	70-130	
4-Bromofluorobenzene	0.0344	0.0300	115	70-130	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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



Form 2 - Surrogate Recoveries

Project Name: Canvasback 13 Fed 2H

Work Orders : 602870,

Project ID: 212C-MD-01452

Lab Batch #: 3067314

Sample: 7664676-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 10/19/18 16:00

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0330	0.0300	110	70-130	
4-Bromofluorobenzene	0.0362	0.0300	121	70-130	

Lab Batch #: 3067097

Sample: 7664525-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 10/20/18 12:28

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	93.0	100	93	70-135	
o-Terphenyl	48.7	50.0	97	70-135	

Lab Batch #: 3067103

Sample: 7664527-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 10/20/18 19:31

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	91.0	100	91	70-135	
o-Terphenyl	49.8	50.0	100	70-135	

Lab Batch #: 3067203

Sample: 7664671-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 10/22/18 12:27

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0333	0.0300	111	70-130	
4-Bromofluorobenzene	0.0313	0.0300	104	70-130	

Lab Batch #: 3067221

Sample: 7664675-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 10/23/18 02:45

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0332	0.0300	111	70-130	
4-Bromofluorobenzene	0.0237	0.0300	79	70-130	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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



Form 2 - Surrogate Recoveries

Project Name: Canvasback 13 Fed 2H

Work Orders : 602870,

Project ID: 212C-MD-01452

Lab Batch #: 3067314

Sample: 7664676-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 10/19/18 12:20

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	70-130	
4-Bromofluorobenzene	0.0390	0.0300	130	70-130	

Lab Batch #: 3067097

Sample: 7664525-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 10/20/18 12:47

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	124	100	124	70-135	
o-Terphenyl	61.2	50.0	122	70-135	

Lab Batch #: 3067103

Sample: 7664527-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 10/20/18 19:52

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	125	100	125	70-135	
o-Terphenyl	52.9	50.0	106	70-135	

Lab Batch #: 3067203

Sample: 7664671-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 10/22/18 10:40

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0319	0.0300	106	70-130	
4-Bromofluorobenzene	0.0376	0.0300	125	70-130	

Lab Batch #: 3067221

Sample: 7664675-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 10/23/18 01:05

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0268	0.0300	89	70-130	
4-Bromofluorobenzene	0.0214	0.0300	71	70-130	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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



Form 2 - Surrogate Recoveries

Project Name: Canvasback 13 Fed 2H

Work Orders : 602870,

Project ID: 212C-MD-01452

Lab Batch #: 3067314

Sample: 7664676-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 10/19/18 13:54

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0310	0.0300	103	70-130	
4-Bromofluorobenzene	0.0371	0.0300	124	70-130	

Lab Batch #: 3067097

Sample: 7664525-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 10/20/18 13:06

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	126	100	126	70-135	
o-Terphenyl	62.0	50.0	124	70-135	

Lab Batch #: 3067103

Sample: 7664527-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 10/20/18 20:13

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	124	100	124	70-135	
o-Terphenyl	53.4	50.0	107	70-135	

Lab Batch #: 3067203

Sample: 7664671-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 10/22/18 11:01

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0337	0.0300	112	70-130	
4-Bromofluorobenzene	0.0389	0.0300	130	70-130	

Lab Batch #: 3067221

Sample: 7664675-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 10/23/18 01:25

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0278	0.0300	93	70-130	
4-Bromofluorobenzene	0.0250	0.0300	83	70-130	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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



Form 2 - Surrogate Recoveries

Project Name: Canvasback 13 Fed 2H

Work Orders : 602870,

Project ID: 212C-MD-01452

Lab Batch #: 3067314

Sample: 602870-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/19/18 14:22

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0294	0.0300	98	70-130	
4-Bromofluorobenzene	0.0373	0.0300	124	70-130	

Lab Batch #: 3067103

Sample: 602870-030 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 20:54

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	125	99.7	125	70-135	
o-Terphenyl	54.2	49.9	109	70-135	

Lab Batch #: 3067203

Sample: 602878-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/22/18 11:23

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0339	0.0300	113	70-130	
4-Bromofluorobenzene	0.0459	0.0300	153	70-130	**

Lab Batch #: 3067221

Sample: 602976-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/23/18 01:45

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0282	0.0300	94	70-130	
4-Bromofluorobenzene	0.0240	0.0300	80	70-130	

Lab Batch #: 3067314

Sample: 602870-001 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/19/18 14:53

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0270	0.0300	90	70-130	
4-Bromofluorobenzene	0.0295	0.0300	98	70-130	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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



Form 2 - Surrogate Recoveries

Project Name: Canvasback 13 Fed 2H

Work Orders : 602870,

Project ID: 212C-MD-01452

Lab Batch #: 3067097

Sample: 602716-012 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 13:42

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	119	100	119	70-135	
o-Terphenyl	53.1	50.0	106	70-135	

Lab Batch #: 3067097

Sample: 602716-012 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 14:01

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	129	100	129	70-135	
o-Terphenyl	52.4	50.0	105	70-135	

Lab Batch #: 3067103

Sample: 602870-030 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/20/18 21:14

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	121	99.7	121	70-135	
o-Terphenyl	51.9	49.9	104	70-135	

Lab Batch #: 3067221

Sample: 602976-001 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/23/18 02:05

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0286	0.0300	95	70-130	
4-Bromofluorobenzene	0.0235	0.0300	78	70-130	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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



BS / BSD Recoveries



Project Name: Canvasback 13 Fed 2H

Work Order #: 602870

Project ID: 212C-MD-01452

Analyst: ALJ

Date Prepared: 10/22/2018

Date Analyzed: 10/22/2018

Lab Batch ID: 3067203

Sample: 7664671-1-BKS

Batch #: 1

Matrix: Solid

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 [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Benzene	<0.00200	0.100	0.0868	87	0.101	0.0739	73	16	70-130	35	
Toluene	<0.00200	0.100	0.0762	76	0.101	0.0720	71	6	70-130	35	
Ethylbenzene	<0.00200	0.100	0.0904	90	0.101	0.0731	72	21	70-130	35	
m,p-Xylenes	<0.00401	0.200	0.184	92	0.202	0.150	74	20	70-130	35	
o-Xylene	<0.00200	0.100	0.0829	83	0.101	0.0710	70	15	70-130	35	

Analyst: ALJ

Date Prepared: 10/22/2018

Date Analyzed: 10/23/2018

Lab Batch ID: 3067221

Sample: 7664675-1-BKS

Batch #: 1

Matrix: Solid

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 [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Benzene	<0.00201	0.100	0.113	113	0.101	0.116	115	3	70-130	35	
Toluene	<0.00201	0.100	0.105	105	0.101	0.108	107	3	70-130	35	
Ethylbenzene	<0.00201	0.100	0.104	104	0.101	0.0964	95	8	70-130	35	
m,p-Xylenes	<0.00402	0.201	0.187	93	0.202	0.182	90	3	70-130	35	
o-Xylene	<0.00201	0.100	0.0840	84	0.101	0.0977	97	15	70-130	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: Canvasback 13 Fed 2H

Work Order #: 602870

Project ID: 212C-MD-01452

Analyst: ALJ

Date Prepared: 10/19/2018

Date Analyzed: 10/19/2018

Lab Batch ID: 3067314

Sample: 7664676-1-BKS

Batch #: 1

Matrix: Solid

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 [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Benzene	<0.00200	0.100	0.0943	94	0.0998	0.113	113	18	70-130	35	
Toluene	<0.00200	0.100	0.0844	84	0.0998	0.0985	99	15	70-130	35	
Ethylbenzene	<0.00200	0.100	0.0999	100	0.0998	0.113	113	12	70-130	35	
m,p-Xylenes	<0.00401	0.200	0.207	104	0.200	0.238	119	14	70-130	35	
o-Xylene	<0.00200	0.100	0.100	100	0.0998	0.119	119	17	70-130	35	

Analyst: CHE

Date Prepared: 10/22/2018

Date Analyzed: 10/22/2018

Lab Batch ID: 3067155

Sample: 7664568-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Chloride	<5.00	250	266	106	250	267	107	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: Canvasback 13 Fed 2H

Work Order #: 602870

Project ID: 212C-MD-01452

Analyst: CHE

Date Prepared: 10/22/2018

Date Analyzed: 10/22/2018

Lab Batch ID: 3067168

Sample: 7664627-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Chloride	<5.00	250	262	105	250	261	104	0	90-110	20	

Analyst: CHE

Date Prepared: 10/23/2018

Date Analyzed: 10/23/2018

Lab Batch ID: 3067200

Sample: 7664630-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Chloride	<5.00	250	259	104	250	259	104	0	90-110	20	

Analyst: CHE

Date Prepared: 10/23/2018

Date Analyzed: 10/23/2018

Lab Batch ID: 3067296

Sample: 7664649-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Chloride	<5.00	250	261	104	250	261	104	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: Canvasback 13 Fed 2H

Work Order #: 602870

Project ID: 212C-MD-01452

Analyst: ARM

Date Prepared: 10/19/2018

Date Analyzed: 10/20/2018

Lab Batch ID: 3067097

Sample: 7664525-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Gasoline Range Hydrocarbons (GRO)	<8.00	1000	852	85	1000	882	88	3	70-135	20	
Diesel Range Organics (DRO)	<8.13	1000	980	98	1000	1020	102	4	70-135	20	

Analyst: ARM

Date Prepared: 10/19/2018

Date Analyzed: 10/20/2018

Lab Batch ID: 3067103

Sample: 7664527-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Gasoline Range Hydrocarbons (GRO)	<8.00	1000	1000	100	1000	974	97	3	70-135	20	
Diesel Range Organics (DRO)	<8.13	1000	1030	103	1000	999	100	3	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 Recoveries
Project Name: Canvasback 13 Fed 2H



Work Order #: 602870

Lab Batch #: 3067203

Date Analyzed: 10/22/2018

QC- Sample ID: 602878-001 S

Reporting Units: mg/kg

Date Prepared: 10/22/2018

Batch #: 1

Project ID: 212C-MD-01452

Analyst: ALJ

Matrix: Soil

MATRIX / MATRIX SPIKE RECOVERY STUDY						
BTEX by EPA 8021B	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes						
Benzene	<0.00202	0.101	0.0621	61	70-130	X
Toluene	<0.00202	0.101	0.0602	60	70-130	X
Ethylbenzene	<0.00202	0.101	0.0648	64	70-130	X
m,p-Xylenes	<0.00403	0.202	0.140	69	70-130	X
o-Xylene	<0.00202	0.101	0.0701	69	70-130	X

Matrix Spike Percent Recovery [D] = 100*(C-A)/B

Relative Percent Difference [E] = 200*(C-A)/(C+B)

All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit



Form 3 - MS / MSD Recoveries



Project Name: Canvasback 13 Fed 2H

Work Order # : 602870

Project ID: 212C-MD-01452

Lab Batch ID: 3067221

QC- Sample ID: 602976-001 S

Batch #: 1 **Matrix:** Soil

Date Analyzed: 10/23/2018

Date Prepared: 10/22/2018

Analyst: ALJ

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00199	0.0996	0.102	102	0.100	0.0910	91	11	70-130	35	
Toluene	<0.00199	0.0996	0.0911	91	0.100	0.0802	80	13	70-130	35	
Ethylbenzene	<0.00199	0.0996	0.0773	78	0.100	0.0674	67	14	70-130	35	X
m,p-Xylenes	<0.00398	0.199	0.146	73	0.200	0.128	64	13	70-130	35	X
o-Xylene	<0.00199	0.0996	0.0703	71	0.100	0.0617	62	13	70-130	35	X

Lab Batch ID: 3067314

QC- Sample ID: 602870-001 S

Batch #: 1 **Matrix:** Soil

Date Analyzed: 10/19/2018

Date Prepared: 10/19/2018

Analyst: ALJ

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00199	0.0996	0.0963	97	0.100	0.0828	83	15	70-130	35	
Toluene	<0.00199	0.0996	0.0873	88	0.100	0.0861	86	1	70-130	35	
Ethylbenzene	<0.00199	0.0996	0.103	103	0.100	0.0985	99	4	70-130	35	
m,p-Xylenes	<0.00398	0.199	0.211	106	0.200	0.200	100	5	70-130	35	
o-Xylene	<0.00199	0.0996	0.106	106	0.100	0.0891	89	17	70-130	35	

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

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.



Form 3 - MS / MSD Recoveries



Project Name: Canvasback 13 Fed 2H

Work Order # : 602870

Project ID: 212C-MD-01452

Lab Batch ID: 3067155

QC- Sample ID: 602586-004 S

Batch #: 1 **Matrix:** Soil

Date Analyzed: 10/22/2018

Date Prepared: 10/22/2018

Analyst: CHE

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	68.9	251	328	103	251	326	102	1	90-110	20	

Lab Batch ID: 3067155

QC- Sample ID: 602652-009 S

Batch #: 1 **Matrix:** Soil

Date Analyzed: 10/22/2018

Date Prepared: 10/22/2018

Analyst: CHE

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	1070	248	1280	85	248	1290	89	1	90-110	20	X

Lab Batch ID: 3067168

QC- Sample ID: 602870-021 S

Batch #: 1 **Matrix:** Soil

Date Analyzed: 10/22/2018

Date Prepared: 10/22/2018

Analyst: CHE

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	32.5	251	300	107	251	298	106	1	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

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.



Form 3 - MS / MSD Recoveries



Project Name: Canvasback 13 Fed 2H

Work Order #: 602870

Project ID: 212C-MD-01452

Lab Batch ID: 3067168

QC- Sample ID: 602870-022 S

Batch #: 1 Matrix: Soil

Date Analyzed: 10/22/2018

Date Prepared: 10/22/2018

Analyst: CHE

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	28.0	250	292	106	250	292	106	0	90-110	20	

Lab Batch ID: 3067200

QC- Sample ID: 602870-024 S

Batch #: 1 Matrix: Soil

Date Analyzed: 10/23/2018

Date Prepared: 10/23/2018

Analyst: CHE

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	529	252	801	108	252	800	108	0	90-110	20	

Lab Batch ID: 3067200

QC- Sample ID: 602870-034 S

Batch #: 1 Matrix: Soil

Date Analyzed: 10/23/2018

Date Prepared: 10/23/2018

Analyst: CHE

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<0.852	248	266	107	248	266	107	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

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.



Form 3 - MS / MSD Recoveries



Project Name: Canvasback 13 Fed 2H

Work Order # : 602870

Project ID: 212C-MD-01452

Lab Batch ID: 3067296

QC- Sample ID: 602545-001 S

Batch #: 1 **Matrix:** Soil

Date Analyzed: 10/23/2018

Date Prepared: 10/23/2018

Analyst: CHE

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<0.858	250	261	104	250	262	105	0	90-110	20	

Lab Batch ID: 3067296

QC- Sample ID: 602545-006 S

Batch #: 1 **Matrix:** Soil

Date Analyzed: 10/23/2018

Date Prepared: 10/23/2018

Analyst: CHE

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<0.857	250	255	102	250	255	102	0	90-110	20	

Lab Batch ID: 3067103

QC- Sample ID: 602870-030 S

Batch #: 1 **Matrix:** Soil

Date Analyzed: 10/20/2018

Date Prepared: 10/19/2018

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)	<7.98	997	941	94	997	955	96	1	70-135	20	
Diesel Range Organics (DRO)	<8.10	997	979	98	997	1010	101	3	70-135	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

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.



Tetra Tech, Inc.

4000 N. Big Spring Street, Ste 401
Midland, Texas 79705
Tel (432) 682-4559
Fax (432) 682-3946

002870

ANALYSIS REQUEST

(Circle or Specify Method No.)

Client Name: COG Site Manager: Clair Gonzales

Project Name: Canvasback 13 Fed 2H

Project Location: Lea CO, NM

Project #: 212C-MD-01452

Invoice to: COG - Ike Taveres

Receiving Laboratory: Xenco

Sampler Signature: Conner Moehring

Comments: Run deeper if GRO + DRO exceed 1,000 mg/Kg. Run deeper if benzene exceeds 10 mg/kg or total BTEX exceeds 50 mg/Kg.

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION		DATE	TIME	MATRIX		PRESERVATIVE METHOD					# CONTAINERS	FILTERED (Y/N)	LAB USE ONLY				
	YEAR: 2018	SAMPLING			WATER	SOIL	HCL	HNO ₃	ICE	None	BTX			2	BTX	2	BTX	2
AH #1 (0-1)			10/16/2018		X		X					1	N	X	X			
AH #1 (1-1.5)			10/16/2018		X		X					1	N	X	X			
AH #1 (2-2.5)			10/16/2018		X		X					1	N	X	X			
AH #1 (3-3.5)			10/16/2018		X		X					1	N	X	X			
AH #2 (0-1)			10/16/2018		X		X					1	N	X	X			
AH #2 (1-1.5)			10/16/2018		X		X					1	N	X	X			
AH #2 (2-2.5)			10/16/2018		X		X					1	N	X	X			
AH #2 (3-3.5)			10/16/2018		X		X					1	N	X	X			
AH #3 (0-1)			10/16/2018		X		X					1	N	X	X			
AH #3 (1-1.5)			10/16/2018		X		X					1	N	X	X			

Relinquished by: *Brian Murphy* Date: 10/19/18 Time: *1000*

Relinquished by: *Clair Gonzales* Date: 10/19/18 Time: *1000*

Received by: _____ Date: _____ Time: _____

LAB USE ONLY

REMARKS:

STANDARD

RUSH: Same Day 24 hr 48 hr **72 hr**

Rush Charges Authorized

Special Report Limits or TRRP Report

Sample Temperature: *0-30.0*

ORIGINAL COPY

(Circle) HAND DELIVERED FEDEX UPS Tracking #:

Analysis Request of Custody Record



Tetra Tech, Inc.

4000 N. Big Spring Street, Ste
401 Midland, Texas 79705
Tel (432) 682-4559
Fax (432) 682-3946

602870

ANALYSIS REQUEST

(Circle or Specify Method No.)

Client Name: COG Site Manager: Clair Gonzales

Project Name: Canvasback 13 Fed 2H

Project Location: Lea CO. NM

Project #: 212C-MD-01452

Invoice to: COG - Ike Taveres

Receiving Laboratory: Xenco Sampler Signature: Conner Moehring

Comments:

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION		SAMPLING		MATRIX					PRESERVATIVE METHOD		# CONTAINERS	FILTERED (Y/N)	ANALYSIS REQUEST	
	YEAR: 2018	DATE	TIME	WATER	SOIL	HCL	HNO ₃	ICE	None	BTEX 8021B	BTEX 8260B				
AH #6 (2-2.5)		10/16/2018		X				X				1	N		
AH #6 (3-3.5)		10/16/2018		X				X				1	N		
AH #6 (4-4.5)		10/16/2018		X				X				1	N		
AH #6 (5-5.5)		10/16/2018		X				X				1	N		
AH #7 (0-1)		10/16/2018		X				X				1	N		
AH #7 (1-1.5)		10/16/2018		X				X				1	N		
AH #7 (2-2.5)		10/16/2018		X				X				1	N		
AH #7 (3-3.5)		10/16/2018		X				X				1	N		
AH #7 (4-4.5)		10/16/2018		X				X				1	N		
AH #8 (0-1)		10/16/2018		X				X				1	N		

Relinquished by: *Samir Mody* Date: _____ Time: _____
 Relinquished by: *MOEHRING* Date: *10/16/18* Time: *1000*
 Relinquished by: _____ Date: _____ Time: _____
 Received by: _____ Date: _____ Time: _____

LAB USE ONLY

REMARKS:

STANDARD

RUSH: Same Day 24 hr 48 hr 72 hr

Rush Charges Authorized

Special Report Limits or TRRP Report

Sample Temperature: *C-360*

(Circle) HAND DELIVERED FEDEX UPS Tracking #: _____

ORIGINAL COPY

Analysis Request of Custody Record



Tetra Tech, Inc.

4000 N. Big Spring Street, Ste 401
Midland, Texas 79705
Tel (432) 682-4559
Fax (432) 682-3946

602870

Client Name: COG Site Manager: Clair Gonzales

Project Name: Canvasback 13 Fed 2H

Project Location: Lea CO. NM Project #: 212C-MD-01452

Invoice to: COG - Ike Taveres

Receiving Laboratory: Xenco Sampler Signature: Conner Moehring

Comments:

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION		SAMPLING		MATRIX		PRESERVATIVE METHOD			# CONTAINERS	FILTERED (Y/N)	ANALYSIS REQUEST (Circle or Specify Method No.)
	YEAR: 2018	DATE	TIME	WATER	SOIL	HCL	HNO ₃	ICE	None			
AH #8 (1-1.5')	10/16/2018			X			X			1 N	X	BTEX 8021B BTEX 8260B TPH TX1005 (Ext to C35) TPH 8015M (GRO - DRO - ORO - MRO) PAH 8270C Total Metals Ag As Ba Cd Cr Pb Se Hg TCLP Metals Ag As Ba Cd Cr Pb Se Hg TCLP Volatiles TCLP Semi Volatiles RCI GC/MS Vol. 8260B / 624 GC/MS Semi. Vol. 8270C/625 PCB's 8082 / 608 NORM PLM (Asbestos) Chloride Chloride Sulfate TDS General Water Chemistry (see attached list) Anion/Cation Balance
AH #8 (2-2.5')	10/16/2018			X			X			1 N	X	
AH #9 (0-1')	10/16/2018			X			X			1 N	X	
AH #9 (1-1.5')	10/16/2018			X			X			1 N	X	
AH #9 (2-2.5')	10/16/2018			X			X			1 N	X	
AH #10 (0-1')	10/16/2018			X			X			1 N	X	
AH #10 (1-1.5')	10/16/2018			X			X			1 N	X	
AH #10 (2-2.5')	10/16/2018			X			X			1 N	X	
H-1 (0-1')	10/16/2018			X			X			1 N	X	
H-2 (0-1')	10/16/2018			X			X			1 N	X	

Relinquished by: *Conner Moehring* Date: _____ Time: _____
 Received by: *Braxton* Date: *10/16/18* Time: *10:00*
 Relinquished by: _____ Date: _____ Time: _____
 Received by: _____ Date: _____ Time: _____

LAB USE ONLY

REMARKS:

STANDARD

RUSH: Same Day 24 hr 48 hr 72 hr

Push Charges Authorized

Special Report Limits or TRRP Report

Sample Temperature: *0.8/0.5*

Wc

ORIGINAL COPY

Analysis Request of Chain of Custody Record



Tetra Tech, Inc.

4000 N. Big Spring Street, Ste 401
Midland, Texas 79705
Tel (432) 682-4559
Fax (432) 882-3946

002870

Client Name: **COG** Site Manager: **Clair Gonzales**

Project Name: **Canvaback 13 Fed 2H**

Project Location: **Lea CO. NM** Project #: **212C-MD-01452**

Invoice to: **COG - Ike Taveres**

Receiving Laboratory: **Xenco** Sampler Signature: **Conner Moehring**

Comments:

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION		SAMPLING		MATRIX					PRESERVATIVE METHOD		# CONTAINERS	
	DATE	TIME	YEAR: 2018	TIME	WATER	SOIL	HCL	HNO ₃	ICE	None			FILTERED (Y/N)
H-3 (0-1)	10/16/2018				X		X	X				1 N	X
H-4 (0-1)	10/16/2018				X		X	X				1 N	X
H-5 (0-1)	10/16/2018				X		X	X				1 N	X
H-6 (0-1)	10/16/2018				X		X	X				1 N	X
H-7 (0-1)	10/16/2018				X		X	X				1 N	X
H-8 (0-1)	10/16/2018				X		X	X				1 N	X
H-9 (0-1)	10/16/2018				X		X	X				1 N	X
H-10 (0-1)	10/16/2018				X		X	X				1 N	X

LAB USE ONLY	REMARKS:
<input type="checkbox"/> STANDARD	
<input checked="" type="checkbox"/> RUSH: Same Day 24 hr	
<input type="checkbox"/> Rush Charges Authorized	
<input type="checkbox"/> Special Report Limits or TRRP Report	

Relinquished by: **Brian Murphy** Date: **10/16/18** Time: **10:00 AM**

Received by: **M. G. R. L. C. G.** Date: **10/16/18** Time: **10:00 AM**

Sample Temperature: **23.0**

LAB USE ONLY: **23.0**

ORIGINAL COPY



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In



Client: Tetra Tech- Midland

Date/ Time Received: 10/19/2018 10:00:36 AM

Work Order #: 602870

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient
Temperature Measuring device used : R8

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

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

Analyst:

PH Device/Lot#:

Checklist completed by: 
 Katie Lowe

Date: 10/19/2018

Checklist reviewed by: 
 Kelsey Brooks

Date: 10/19/2018

Appendix D

Eddy Area, New Mexico

PA—Pajarito loamy fine sand, 0 to 3 percent slopes, eroded

Map Unit Setting

National map unit symbol: 1w54

Elevation: 2,700 to 5,500 feet

Mean annual precipitation: 5 to 15 inches

Mean annual air temperature: 57 to 70 degrees F

Frost-free period: 180 to 250 days

Farmland classification: Not prime farmland

Map Unit Composition

Pajarito and similar soils: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pajarito

Setting

Landform: Interdunes, dunes, plains

Landform position (three-dimensional): Side slope

Down-slope shape: Linear, convex

Across-slope shape: Linear, convex

Parent material: Mixed alluvium and/or eolian sands

Typical profile

H1 - 0 to 13 inches: loamy fine sand

H2 - 13 to 36 inches: fine sandy loam

H3 - 36 to 60 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): High
(2.00 to 6.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 15 percent

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum in profile: 1.0

Available water storage in profile: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): 2e

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: A

Ecological site: Loamy Sand (R042XC003NM)

Hydric soil rating: No

Minor Components

Wink

Percent of map unit:

Ecological site: Loamy Sand (R042XC003NM)

Hydric soil rating: No

Berino

Percent of map unit:

Ecological site: Loamy Sand (R042XC003NM)

Hydric soil rating: No

Data Source Information

Soil Survey Area: Eddy Area, New Mexico

Survey Area Data: Version 14, Sep 12, 2018

Soil Survey Area: Lea County, New Mexico

Survey Area Data: Version 15, Sep 12, 2018

BLM SERIAL #:

COMPANY REFERENCE:

3.1 Seed Mixture 1, for Loamy Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (small/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

<u>Species</u>	<u>lb/acre</u>
Plains lovegrass (<i>Eragrostis intermedia</i>)	0.5
Sand dropseed (<i>Sporobolus cryptandrus</i>)	1.0
Sideoats grama (<i>Bouteloua curtipendula</i>)	5.0
Plains bristlegrass (<i>Setaria macrostachya</i>)	2.0

*Pounds of pure live seed:

Pounds of seed x percent purity x percent germination = pounds pure live seed