SITE INFORMATION

L5QAP-200306-C-1410

Report Type: Proposed Monitoring Work Plan

General Site Information:						
Site:	**Big Papi Federal Com #2H**					
Company:	**COG Operating LLC**					
Section, Township and Range	**Unit C**	**Sec. 04**	**T 26S**	**R 29E**		
County:	**Eddy County**					
GPS:	**32.07758**			**-103.991414**		
Surface Owner:						
Directions:	From the intersection of Hwy 285 and Longhorn road go approx 2.4m and turn north and go 1m and then turn west and go .7m and arrive on location					

Release Data:	
Date Released:	7/12/2019
Type Release:	Produced Water
Source of Contamination:	Flowline
Fluid Released:	240 bbl water
Fluids Recovered:	40 bbls water

Official Communication:			
Name:	Ike Tavarez		Mike Carmona
Company:	COG Operating, LLC		Tetra Tech
Address:	One Concho Center		901 West Wall Street
	600 W. Illinois Ave.		Suite 100
City:	Midland Texas, 79701		Midland, Texas
Phone number:	(432) 686-3023		(432) 687-8121
Fax:	(432) 684-7137		
Email:	itavarez@concho.com		Mike.carmona@tetratech.com

Site Characterization	
Depth to Groundwater:	*78'*
Karst	*Medium*

Recommended Remedial Action Levels (RRALs)			
Benzene	***Total BTEX***	***TPH (GRO+DRO+MRO)***	***Chlorides***
10 mg/kg	*50 mg/kg*	*100 mg/kg*	*600*

TETRA TECH

March 5, 2020

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

Re: Proposed Monitoring Work Plan for the COG Operating, LLC, Big Papi Federal Com #2H, Unit C, Section 04, Township 26 South, Range 29 East, Eddy County, New Mexico.

Mr Bratcher:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating, LLC (COG) to assess a release that occurred at the Big Papi Federal Com #2H, Unit C, Section 04, Township 26 South, Range 29 East, Eddy County, New Mexico (Site). The spill site coordinates are 32.077580°, -103.991414°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the release was discovered on July 12, 2019, and released approximately 240 barrels of produced water due to the flowline being ruptured. None of the produced water was recovered. The release occurred behind the tank battery in the pasture and migrated into the wash/draw impacting areas measuring approximately 65' x 40' and 1,290' x 15'. The C-141 Form is included in Appendix A.

Site Characterization

A Site characterization was performed for the site, and no 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. However, the site is in a medium karst potential area and migrated into a draw. Also, a watercourse is located within 300' of the site, according to the USGS topographic map.

The nearest water well is listed on the New Mexico State Engineer's (NMOSE) database, approximately 1.50 miles southwest of the site, and has a reported depth to groundwater of 78' below surface. According to the Chevron Texaco Groundwater Trend map, the average depth to groundwater in the area is approximately 125' below surface. The site characterization 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. 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 on the site characterization, the proposed RRAL for TPH is 100 mg/kg (GRO + DRO + MRO). Additionally, based on the site characterization, the proposed RRAL for chlorides is 600 mg/kg.

Tetra Tech
901 West Wall St, Suite 100, Midland, TX 79701
Tel 432.682.4559 Fax 432.682.3946 www.tetratech.com

Soil Assessment and Analytical Results

On July 25, 2019, Tetra Tech personnel were onsite to evaluate and sample the release area. A total of fourteen (14) hand auger holes (AH-1 through AH-14) were installed in the pasture area and draw area to total depths ranging from surface to 2.5' below surface. Selected 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 and Figure 3A.

Pasture and Draw Areas

One auger hole (AH-1) was installed in the top of the draw to a total depth of 0-0.5' below surface. The remaining auger holes (AH-2 through AH-14) were installed in the wash/draw area.

Referring to Table 1, none of the samples analyzed showed benzene, TPH, or total BTEX concentrations above the laboratory reporting limits, with the exception of areas of AH-9 and AH-11, which showed TPH concentrations of 719 mg/kg and 1,020 mg/kg, respectively.

Auger hole (AH-1) showed elevated chloride concentrations of 20,700 mg/kg at a depth of 0-0.5' below surface and deeper samples were not collected due to the dense formation. The remaining auger holes (AH-2 through AH-14) in the draw all showed chloride concentrations above the RRALs, with concentrations ranging from 1,250 mg/kg to 17,200 mg/kg. The area of AH-10 was showed a chloride concentration of 12,600 mg/kg at 0-0.5" below surface.

Remediation

On August 8-13, 2019, Tetra Tech personnel were onsite to remediate the top pasture area and a portion of the wash/draw area to the maximum extent practical. Due to limited access, the BLM requested the draw area be flushed with clean freshwater using a power washer to washout the visual staining and chlorides from the draw. In addition, all the fluids generated during the washing would be captured and properly disposed. However, no fluids were generated during the washing due to the sandy formation in the bottom of the draw.

The area of auger hole (AH-2) was excavated to a depth of 4.0' and the area of auger hole (AH-1) to a depth of 6.0' below surface. Deeper samples were not collected due to dense formation in the bottom. A total of three (3) bottom hole confirmation samples and seven (7) sidewall confirmation samples were collected to ensure proper removal of the impacted soils to the maximum extent possible. The samples were submitted to the laboratory to be analyzed for TPH method 8015 extended, BTEX method 8021B, and Chloride by EPA Method 300.0. The sampling results are summarized in Table 2. The excavation depths and sample locations are shown on Figure 4.

Referring to Table 2, all of the confirmation samples analyzed for benzene, total BTEX, and TPH were below the laboratory reporting limits.

The area of Bottom 1 showed a chloride concentration of 2,480 mg/kg at 4.0' below surface and was considered the beginning of the draw. It was excavated to the maximum extent practicable, due to dense formation.

The areas of Bottom 2 and Bottom 3 were excavated to a total depth of 6.0' below surface and showed chloride concentrations of 112 mg/kg and 144 mg/kg below surface. The sidewalls (NSW, WSW-1 and ESW-2) Showed chloride concentrations below the RRALs, with chloride concentrations ranging from 48.0 mg/kg to 592 mg/kg. In the area near the draw, sidewalls (WSW-2 and ESW-1) showed chloride concentrations of 1,250 mg/kg and 1,500 mg/kg and were not remediated due to the natural course of the draw being altered. The area of SSW-1 showed a chloride concentration of 7,520 mg/kg and connects to the draw, which limited our access to the area.

Approximately 200 cubic yards of material were excavated and transported offsite for proper disposal. The area was then backfilled with clean material to surface grade.

TETRA TECH

Site Monitoring and Proposed Work Plan

Due to access issues, COG proposes to monitor the draw area and collect samples every quarter in 2020 or after any heavy rainfall events to monitor the chloride concentrations. The draw area has limited access to use mechanical equipment to remediate the chloride impact in the draw.

On February 12, 2020, Tetra Tech performed the first monitoring event to evaluate the draw area to monitor the chloride concentrations. The sampling results are summarized in Table 3. Referring to Table 3, the areas of auger holes (AH-2 through AH-14) in the draw were resampled to total depths ranging from surface to 2.5' below surface. The soil samples were collected and submitted to the laboratory for chloride by EPA method 300.0.

The areas of auger holes (AH-2, AH-3, and AH-6 through AH-14) showed chloride concentrations ranging from <9.92 mg/kg to 310 mg/kg, all below the RRALs. The areas of auger hole (AH-4) showed chloride concentrations of 142 mg/kg at surface to 1.0', 189 mg/kg at 1.0-1.5', and 607 mg/kg at 1.5'-2.0' below surface. The area of (AH-5) showed concentrations ranging from 624 mg/kg to 1,040 mg/kg below surface. Deeper samples were not collected due to dense formation in the bottom for the areas of auger hole (AH-4 and AH-5). Based on the data supported from the second event of sampling, the rain events have showed to help the chloride concentrations decrease overtime.

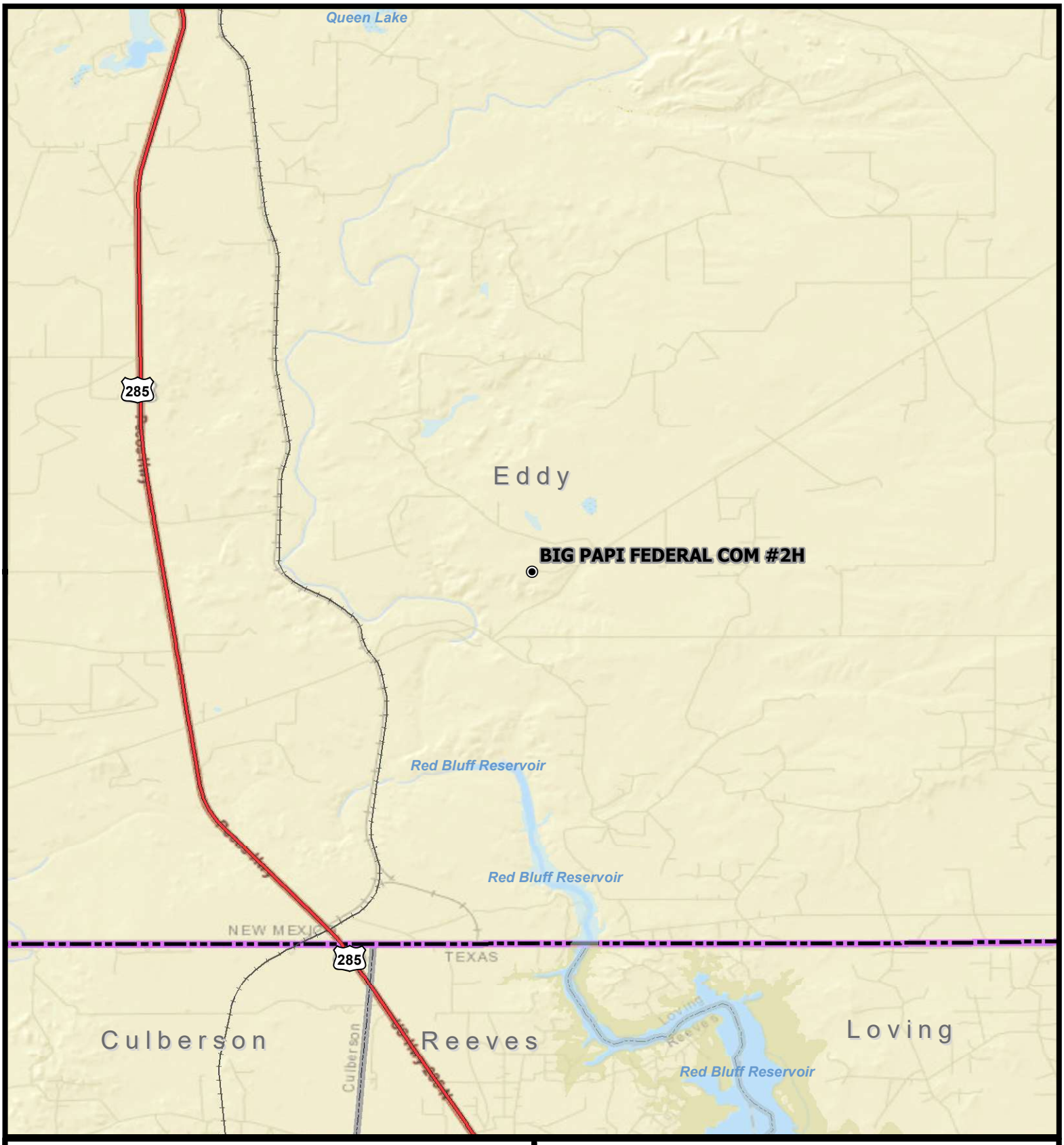
Conclusion

Once the monitoring activities have been completed, a final report will be submitted. 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

Mike Carmona
Geologist

Figures



SITE LOCATION

N
W E
S

0 4,954 9,908

Approximate Scale in Feet

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

STATE LOCATOR MAP

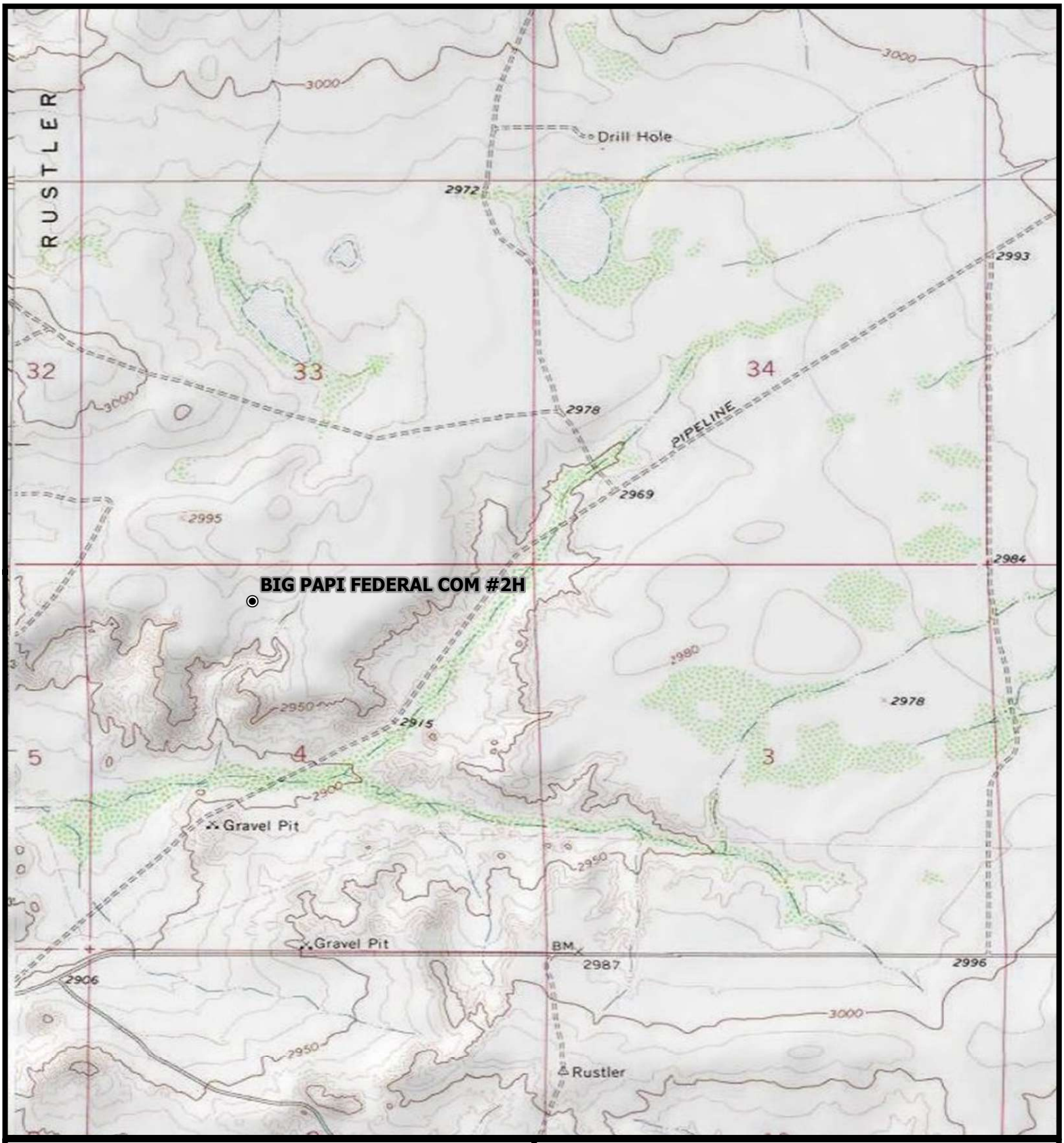
OVERVIEW MAP
BIG PAPI FEDERAL COM #2H
Property Located at coordinates 32.077580°,-103.991414°
EDDY COUNTY, NEW MEXICO

CONCHO

Project #:
212C-MD-01855
Date: 10/14/2019

FIGURE
1

Document Path: H:\GIS\CONCHO RESOURCES - COG\212C-MD-01855 BIG PAPI FEDERAL COM #2H\MXD\212C-MD-01855 BIG PAPI FEDERAL COM #2H FIG. 1.mxd



SITE LOCATION

N
W E
S

0 900 1,800

Approximate Scale in Feet

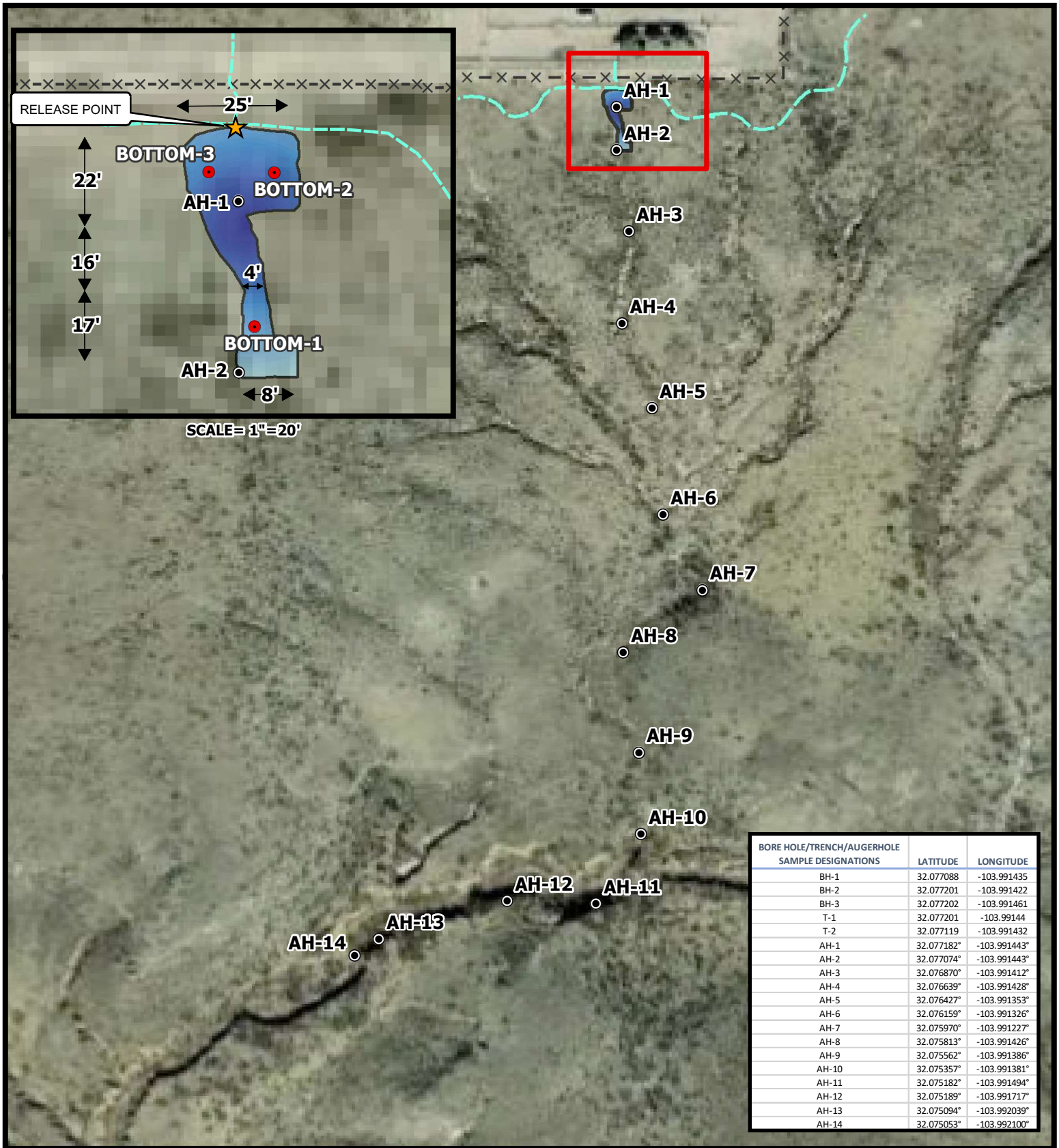
TOPOGRAPHIC MAP
BIG PAPI FEDERAL COM #2H
Property Located at coordinates 32.077580°,-103.991414°
EDDY COUNTY, NEW MEXICO

CONCHO

Project #:
212C-MD-01855
Date: 10/14/2019

FIGURE
2

Document Path: H:\GIS\CONCHO RESOURCES - COG\212C-MD-01855 BIG PAPI FEDERAL COM #2H\MXD\212C-MD-01855 BIG PAPI FEDERAL COM #2H FIG. 2.mxd



BORE HOLE/TRENCH/AUGERHOLE SAMPLE DESIGNATIONS	LATITUDE	LONGITUDE
BH-1	32.077088	-103.991435
BH-2	32.077201	-103.991422
BH-3	32.077202	-103.991461
T-1	32.077201	-103.99144
T-2	32.077119	-103.991432
AH-1	32.077182°	-103.991443°
AH-2	32.077074°	-103.991443°
AH-3	32.076870°	-103.991412°
AH-4	32.076639°	-103.991428°
AH-5	32.076427°	-103.991353°
AH-6	32.076159°	-103.991326°
AH-7	32.075970°	-103.991227°
AH-8	32.075813°	-103.991426°
AH-9	32.075562°	-103.991386°
AH-10	32.075357°	-103.991381°
AH-11	32.075182°	-103.991494°
AH-12	32.075189°	-103.991717°
AH-13	32.075094°	-103.992039°
AH-14	32.075053°	-103.992100°

BOTTOM HOLE SAMPLE LOCATION
AUGERHOLE SAMPLE LOCATIONS
SOURCE
FLOWLINE
FENCELINE
AFFECTED SPILL AREA

N
W
E
S

0 60 120
Approximate Scale in Feet

Source: "New Mexico". 32° 4'39.29"N, 103°59'29.09"W. Google Earth. February 2019.October 14,2019.

SPILL ASSESSMENT MAP
BIG PAPI FEDERAL COM #2H
Property Located at coordinates 32.077580°,-103.991414°
EDDY COUNTY, NEW MEXICO

CONCHO

Project #:
212C-MD-01855
Date: 01-09-2020

FIGURE
3

Date: 3/5/2020 Document Path: H:\GIS\CONCHO RESOURCES - COG\212C-MD-01855 BIG PAPI FEDERAL COM #2H\MXD\212C-MD-01855 BIG PAPI FEDERAL COM #2H FIG. 3a.mxd

BOTTOM HOLE SAMPLE LOCATION
SIDEWALL SAMPLE LOCATION
FENCELINE
FLOWLINE
4.0' EXCAVATED DEPTH AREA
6.0' EXCAVATED DEPTH AREA

N
W
E
S

0 10 20
Approximate Scale in Feet

Source: "New Mexico". 32° 4'39.29"N, 103°59'29.09"W. **Google Earth.** February 2019.October 14,2019.

EXCAVATION AREA & DEPTH MAP
BIG PAPI FEDERAL COM #2H
Property Located at coordinates 32.077580°,-103.991414°
EDDY COUNTY, NEW MEXICO

CONCHO

Project #:
212C-MD-01855
Date: 10/14/2019

FIGURE
4

Date: 3/6/2020 Document Path: H:\GIS\CONCHO RESOURCES - COG\212C-MD-01855 BIG PAPI FEDERAL COM #2H\MXD\212C-MD-01855 BIG PAPI FEDERAL COM #2H FIG. 4.mxd

Tables

Table 1
COG
Big Pappy Federal Com #002H (7.12.19)
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	BEB Sample Depth (ft)	Soil Status		TPH (mg/kg)				Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	ORO	Total						
AH-1	7/25/2019	0-0.5	-		X	<15.0	36.7	<15.0	36.7	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	**20,700**
AH-2	7/25/2019	0-0.5	-		X	<15.0	22.8	<15.0	22.8	<0.00198	<0.00198	<0.00198	<0.00198	<0.00198	**13,300**
AH-3	7/25/2019	0-1	-	X		<14.9	<14.9	<14.9	<14.9	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	**15,600**
AH-4	7/25/2019	0-1	-	X		<15.0	27.6	<15.0	27.6	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	**14,400**
	"	1-1.5	-	X		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	**9,810**
	"	1.5-2	-	X		<15.0	<15.0	<15.0	<15.0	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	**8,450**
AH-5	7/25/2019	0-1	-	X		<15.0	<15.0	<15.0	<15.0	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	**11,300**
	"	1-1.5	-	X		<15.0	<15.0	<15.0	<15.0	<0.00198	<0.00198	<0.00198	<0.00198	<0.00198	**5,000**
	"	2-2.5	-	X		<15.0	<15.0	<15.0	<15.0	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	**1,250**
AH-6	7/25/2019	0-1	-	X		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	**9,240**
AH-7	7/25/2019	0.5	-	X		18.9	50.5	<15.0	69.4	0.00345	<0.00198	<0.00198	0.00842	0.0119	**15,700**
AH-8	7/25/2019	0.5	-	X		<15.0	29.9	<15.0	29.9	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	**14,000**
AH-9	7/25/2019	0.5	-	X		**147**	**523**	**49.4**	**719**	0.0200	0.00522	0.0446	0.154	0.223	**15,400**
AH-10	7/25/2019	0.5	-	X		<15.0	37.8	<15.0	37.8	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	**12,600**
AH-11	7/25/2019	0.5	-	X		**38.2**	**903**	**76.7**	**1,020**	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	**13,700**
AH-12	7/25/2019	0.5	-	X		<15.0	170	26.2	196	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	**13,300**
AH-13	7/25/2019	0.5	-	X		<15.0	<15.0	<15.0	<15.0	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	**17,200**
AH-14	7/25/2019	0.5	-	X		<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	12.5

Table 2
COG
Big Pappy Federal Com #002H (7.12.19)
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	BEB Sample Depth (ft)	Soil Status		TPH (mg/kg)				Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	ORO	Total						
Bottom Hole 1	8/8/2019	-	4.0		X	<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	**2,480**
Bottom Hole 2	8/8/2019	-	4.0	X		<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	**960**
	8/13/2019	-	6.0	X		<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	112
Bottom Hole 3	8/8/2019	-	4.0		X	<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	512
	8/13/2019	-	6.0	X		<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	144
North Sidewall	8/8/2019	-	-	X		<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	592
South Sidewall	8/8/2019	-	-	X		<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	**7,520**
West Sidewall 1	8/8/2019	-	-	X		<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	272
West Sidewall 2	8/8/2019	-	-	X		<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	**1,250**
East Sidewall 1	8/8/2019	-	-	X		<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	**1,500**
East Sidewall 2	8/8/2019	-	-	X		<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	64.0
	8/13/2019	-	-	X		<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	48.0

Table 3
COG
Big Pappy Federal Com #002H (7.12.19)
Eddy County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	BEB Sample Depth (ft)	Soil Status		TPH (mg/kg)				Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
				In-Situ	Removed	GRO	DRO	ORO	Total						
AH-2	2/12/2020	0-1	-	X		-	-	-	-	-	-	-	-	-	67.4
	"	1-1.5	-	X		-	-	-	-	-	-	-	-	-	197
AH-3	2/12/2020	0-1	-	X		-	-	-	-	-	-	-	-	-	248
AH-4	2/12/2020	0-1	-	X		-	-	-	-	-	-	-	-	-	142
	"	1-1.5	-	X		-	-	-	-	-	-	-	-	-	189
	"	1.5-2	-	X		-	-	-	-	-	-	-	-	-	**607**
AH-5	2/12/2020	0-1	-	X		-	-	-	-	-	-	-	-	-	**624**
	"	1-1.5	-	X		-	-	-	-	-	-	-	-	-	**823**
	"	2-2.5	-	X		-	-	-	-	-	-	-	-	-	**1,040**
AH-6	2/12/2020	0-1	-	X		-	-	-	-	-	-	-	-	-	310
AH-7	2/12/2020	0.5	-	X		-	-	-	-	-	-	-	-	-	69.7
AH-8	2/12/2020	0.5	-	X		-	-	-	-	-	-	-	-	-	<9.92
AH-9	2/12/2020	0.5	-	X		-	-	-	-	-	-	-	-	-	29.1
AH-10	2/12/2020	0.5	-	X		-	-	-	-	-	-	-	-	-	99.2
AH-11	2/12/2020	0.5	-	X		-	-	-	-	-	-	-	-	-	160
AH-12	2/12/2020	0.5	-	X		-	-	-	-	-	-	-	-	-	34.4
AH-13	2/12/2020	0.5	-	X		-	-	-	-	-	-	-	-	-	29.6
AH-14	2/12/2020	0.5	-	X		-	-	-	-	-	-	-	-	-	15.3

Photos

Concho Big Papi Federal Com #002H (7.12.19)

Eddy County, New Mexico

View South, area of Bottomholes 2 and 3

View South, area of bottomhole 1

Concho Big Papi Federal Com #002H (7.12.19)

Eddy County, New Mexico

View North, area of AH-3 and AH-4

View South, AH-5 and AH-6

Concho Big Papi Federal Com #002H (7.12.19)

Eddy County, New Mexico

View East, area of AH-7

View West, area of AH-8

View South, area of AH-9

View South, area of AH-10 and AH-11

Concho Big Papi Federal Com #002H (7.12.19)

Eddy County, New Mexico

View West, area of AH-12, AH-3, and AH-14

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

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

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

Incident ID	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party	COG Operating, LLC	OGRID	229137
Contact Name	Jennifer Knowlton	Contact Telephone	(575) 748-1570
Contact email	JKnowlton@concho.com	Incident # *(assigned by OCD)*	
Contact mailing address	600 West Illinois Avenue, Midland, Texas 79701		

Location of Release Source

Latitude 32.07719 Longitude -103.99144

(NAD 83 in decimal degrees to 5 decimal places)

Site Name	Big Papi Federal Com #002H	Site Type	Flowline
Date Release Discovered	July 12, 2019	API# *(if applicable)*	

Unit Letter	Section	Township	Range	County
C	04	26S	29E	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)

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
■ Produced Water	Volume Released (bbls) 240	Volume Recovered (bbls) 0
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	■ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ 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 repaired.
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.

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? ☒ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release? The volume released was 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 Rebecca Haskell via e-mail July 12, 2019 at 2:44 pm to Mike Bratcher and Jim Amos.

Initial Response

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

- ☒ The source of the release has been stopped.
- ☒ The impacted area has been secured to protect human health and the environment.
- ☒ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.
- ☒ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not 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: DeAnn Grant
Title: HSE Administrative Assistant

Signature: DeAnn Grant
Date: 7/19/2019

email: agrant@concho.com
Telephone: (432) 253-4513

OCD Only

Received by: _____
Date: _____

****** LIQUID SPILLS - VOLUME CALCULATIONS ******

Location of spill: Big Papi Federal Com #2H **Date of Spill:** 12-Jul-2019

If the leak/spill is associated with production equipment, i.e. - wellhead, stuffing box, flowline, tank battery, production vessel, transfer pump, or storage tank **place an "X" here:** X

Input Data:

	OIL:	WATER:
If spill volumes from measurement, i.e. metering, tank volumes, etc. are known enter the volumes here:	0.0 BBL	0.0 BBL

If "known" spill volumes are given, input data for the following "Area Calculations" is optional. The above will override the calculated volumes.

Total Area Calculations

Total Surface Area	width		length		wet soil depth	oil (%)
Rectangle Area #1	20 ft	X	1,445 ft	X	4.00 in	0%
Rectangle Area #2	0 ft	X	0 ft	X	0 in	0%
Rectangle Area #3	0 ft	X	0 ft	X	0 in	0%
Rectangle Area #4	0 ft	X	0 ft	X	0 in	0%
Rectangle Area #5	0 ft	X	0 ft	X	0 in	0%
Rectangle Area #6	0 ft	X	0 ft	X	0 in	0%
Rectangle Area #7	0 ft	X	0 ft	X	0 in	0%
Rectangle Area #8	0 ft	X	0 ft	X	0 in	0%

Standing Liquid Calculations

Standing Liquid Area	width		length		liquid depth	oil (%)
Rectangle Area #1	0 ft	X	0 ft	X	0 in	0%
Rectangle Area #2	0 ft	X	0 ft	X	0 in	0%
Rectangle Area #3	0 ft	X	0 ft	X	0 in	0%
Rectangle Area #4	0 ft	X	0 ft	X	0 in	0%
Rectangle Area #5	0 ft	X	0 ft	X	0 in	0%
Rectangle Area #6	0 ft	X	0 ft	X	0 in	0%
Rectangle Area #7	0 ft	X	0 ft	X	0 in	0%
Rectangle Area #8	0 ft	X	0 ft	X	0 in	0%

okay

production system leak - DAILY PRODUCTION DATA REQUIRED

Average Daily Production: Oil 0 BBL Water 0 BBL 0 Gas (MCFD)

Total Hydrocarbon Content in gas: 0% (percentage)

Did leak occur before the separator?: YES N/A *(place an "X")*

H2S Content in Produced Gas: 0 PPM

H2S Content in Tank Vapors: 0 PPM

Amount of Free Liquid Recovered: 0 BBL okay

Percentage of Oil in Free Liquid Recovered: 0% (percentage)

Liquid holding factor *: 0.14 gal per gal

Use the following when the spill wets the grains of the soil.
* Sand = **0.08** gallon (gal.) liquid per gal. volume of soil.
* Gravelly (caliche) loam = **0.14** gal. liquid per gal. volume of soil.
* Sandy clay loam soil = **0.14** gal liquid per gal. volume of soil.
* Clay loam = **0.16** gal. liquid per gal. volume of soil.

Use the following when the liquid completely fills the pore space of the soil:
Occurs when the spill soaked soil is contained by barriers, natural (or not).
* Clay loam = **0.20** gal. liquid per gal. volume of soil.
* Gravelly (caliche) loam = **0.25** gal. liquid per gal. volume of soil.
* Sandy loam = **0.5** gal. liquid per gal. volume of soil.

Total Solid/Liquid Volume: 28,900 sq. ft. 9,633 cu. ft. cu. ft.

Total Free Liquid Volume: sq. ft. cu. ft. cu. ft.

Estimated Volumes Spilled

	H2O	OIL
Liquid in Soil:	240.2 BBL	0.0 BBL
Free Liquid:	0.0 BBL	0.0 BBL
Totals:	240.2 BBL	0.0 BBL
Total Liquid Spill Liquid:	240.2 BBL	0.00 BBL

Estimated Production Volumes Lost

	H2O	OIL
Estimated Production Spilled:	0.0 BBL	0.0 BBL

Estimated Surface Damage

Surface Area: 28,900 sq. ft.

Surface Area: .6635 acre

Recovered Volumes

Estimated oil recovered: BBL check - okay

Estimated water recovered: BBL check - okay

Estimated Weights, and Volumes

Saturated Soil = 1,078,933 lbs 9,633 cu. ft. 357 cu. yds.

Total Liquid = 240 BBL 10,088 gallon 83,932 lbs

Air Emission from flowline leaks:

Volume of oil spill:	-	BBL
Separator gas calculated:	-	MCF
Separator gas released:	-	MCF
Gas released from oil:	-	lb
H2S released:	-	lb
Total HC gas released:	-	lb
Total HC gas released:	-	MCF

Air Emission of Reporting Requirements:

	New Mexico	Texas
HC gas release reportable?	NO	NO
H2S release reportable?	NO	NO

State of New Mexico
Oil Conservation Division

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?	78 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☑ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☑ Yes ☐ 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)?	☐ Yes ☑ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☑ 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?	☐ Yes ☑ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☑ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☑ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☑ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☑ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☑ Yes ☐ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☑ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☑ Yes ☐ 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.

State of New Mexico
Oil Conservation Division

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: Ike Tavarez Title: Sr HSE Supervisor

Signature: Date: 3/05/2020

email: itavarez@concho.com Telephone: 432-701-8630

OCD Only

Received by: Date:

State of New Mexico
Oil Conservation Division

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.***

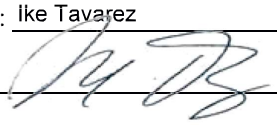
☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.

☐ 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: Ike Tavarez Title: Sr HSE Supervisor

Signature:  Date: 3/05/2020

email: itavarez@concho.com Telephone: 432-701-8630

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)
Big Papi Federal #2H
Eddy County, New Mexico

25 South 28 East

6	5 59	4 35	3 32	2	1 Site
7	8	9	10	11	12
18 67	17	16	15 48 49	14	13
19	20 96	21	22	23	24
30	29 15	28 90	27	26 40	25
31	32	33	34	35	36 40

25 South 29 East

6 40	5	4	3	2	1
7	8	9	10 40	11	12
18	17	16	15 60	14	13
19	20	21	22	23	24
30 30	29	28	27	26	25
31	32 98	33	34	35	36

25 South 30 East

6	5	4	3	2 295	1
7 264	8	9 295	10	11	12 390
18	17	16	15	14	13
19	20	21 265 268	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

26 South 28 East

6	5	4	3	2 120 21	1
7	8	9	10	11	12 100
18	17	16	15	14 120	13 56
19	20	21	22 120	23	24
30	29	28	27	26	25
31	32	33	34	35	36

26 South 29 East

6	5 78	4 Site	3	2	1
7	8	9	10	11	12
18	17	16 125	15	14	13
19	20	21	22 57	23 80	24
30	29	28	27	26	25
31	32	33	34	35	36

26 South 30 East

6	5 179 180	4	3	2	1
7	8 172	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24 180
30	29	28	27	26	25
31	32	33	34	35	36

88 New Mexico State Engineers Well Reports

105 USGS Well Reports

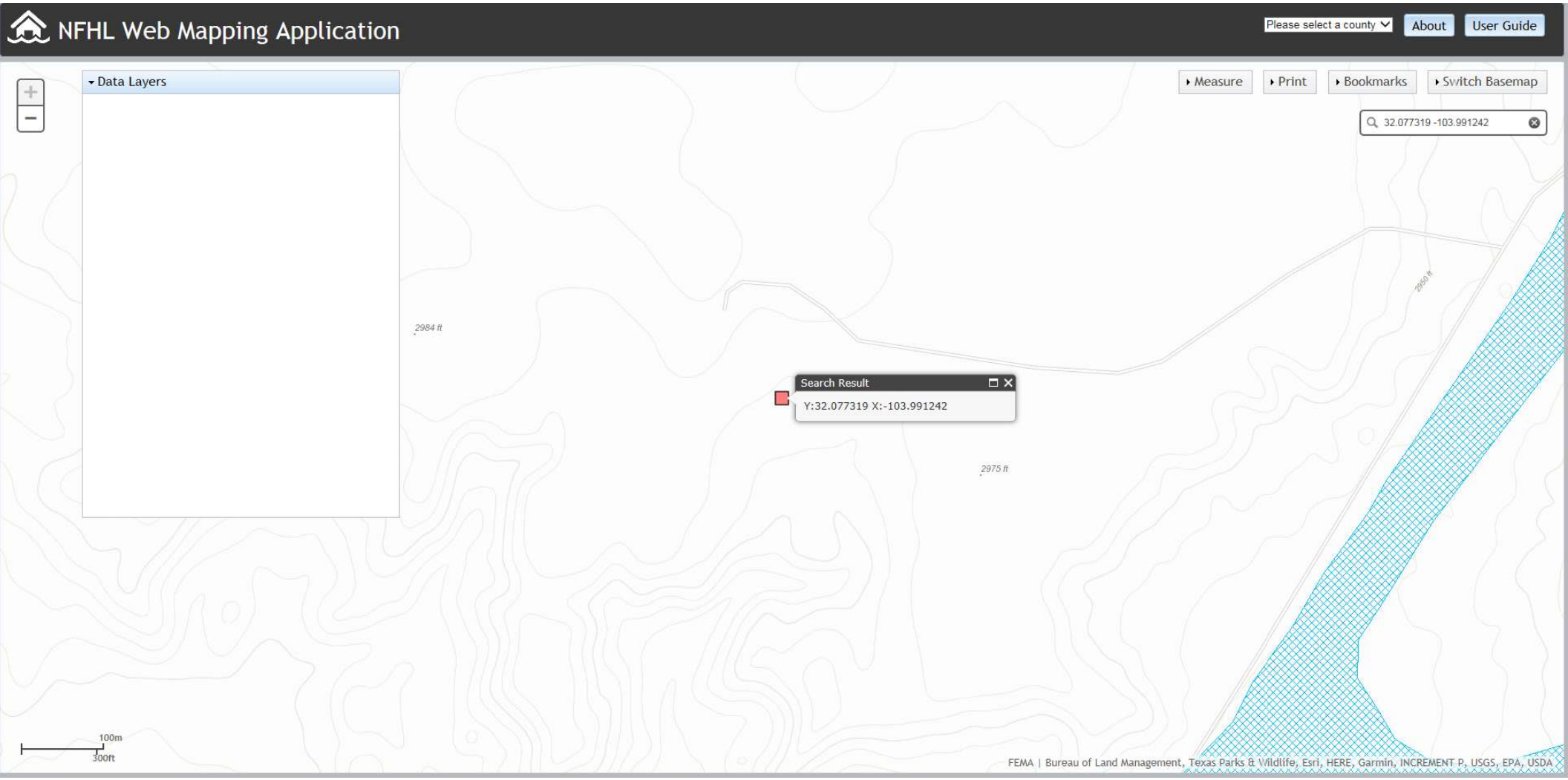
90 Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6)

Geology and Groundwater Resources of Eddy County, NM (Report 3)

34 NMOCD - Groundwater Data

123 Tetra Tech installed temporary wells and field water level

143 NMOCD Groundwater map well location


NFHL Web Mapping Application
Please select a county
About
User Guide
Data Layers
Measure
Print
Bookmarks
Switch Basemap
32.077319 -103.991242
2984 ft
Search Result
Y:32.077319 X:-103.991242
2975 ft
100m
300ft
FEMA | Bureau of Land Management, Texas Parks & Wildlife, Esri, HERE, Garmin, INCREMENT P, USGS, EPA, USDA


COG Big Papi Fed #2H
Legend
High
Low
Medium
32.077319 -103.991242
Pipeline Road Number 1
Google Earth
© 2018 Google
N
3000 ft

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	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y		Depth Well	Depth Water	Water Column
C 01354 X-3		CUB	ED	2	1	3	23	26S	29E	598323	3543837		170		
C 02038		C	ED	3	2	4	26	26S	29E	599204	3541992*		200		
C 03507 POD1		C	ED	1	3	3	05	26S	29E	593064	3548313		140	78	62
C 03508 POD1		C	ED	1	3	3	05	26S	29E	593063	3548361		140	75	65
C 03605 POD1		CUB	ED	4	2	3	27	26S	29E	596990	3541983		45	0	45

Average Depth to Water: **51 feet**

Minimum Depth: **0 feet**

Maximum Depth: **78 feet**

Record Count: 5

PLSS Search:

Township: 26S **Range:** 29E

***UTM location was derived from PLSS - see Help**

Search Results -- 1 sites found

Agency code = usgs
site_no list =
- 320532104001701

Minimum number of levels = 1
Save file of selected sites to local disk for future upload

USGS 320532104001701 25S.29E.32.21111

Eddy County, New Mexico
Latitude 32°05'32", Longitude 104°00'17" NAD27
Land-surface elevation 2,988 feet above NAVD88
The depth of the well is 128 feet below land surface.
This well is completed in the Rustler Formation (312RSLR) local aquifer.

Output formats

Table of data
Tab-separated data
Graph of data
Reselect period

1958-08-19		D	98.63	2			U		U		A
1978-01-13		D	95.23	2			U		U		A
1987-10-14		D	96.69	2			U		U		A
1992-11-03		D	98.13	2			S		U		A

Water-level accuracy	2	Water level accuracy to nearest hundredth of a foot
Method of measurement	S	Steel-tape measurement.
Measuring agency		Not determined
Water-level approval status	A	Approved for publication -- Processing and review completed.

Appendix C

Analytical Report 632174

for

Tetra Tech- Midland

Project Manager: Mike Carmona

Pappy's Preference Federal #1

212C-MD-01855

29-JUL-19

Collected By: Client

1211 W. Florida Ave
Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-19-29), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-19-19), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-20)
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-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429), North Carolina (483)

29-JUL-19

Project Manager: **Mike Carmona**
Tetra Tech- Midland
901 West Wall ST
Midland, TX 79701

Reference: XENCO Report No(s): **632174**
Pappy's Preference Federal #1
Project Address: Eddy County,NM

Mike Carmona:

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) 632174. 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. 632174 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

Jessica Kramer

Jessica Kramer
Project Assistant

Sample Cross Reference 632174

Tetra Tech- Midland, Midland, TX

Pappy's Preference Federal #1

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
AH-1 (0-6")	S	07-25-19 00:00		632174-001
AH-2 (0-6")	S	07-25-19 00:00		632174-002
AH-3 (0-1')	S	07-25-19 00:00		632174-003
AH-4 (0-1')	S	07-25-19 00:00		632174-004
AH-4 (1'-1.5')	S	07-25-19 00:00		632174-005
AH-4 (1.5'-2')	S	07-25-19 00:00		632174-006
AH-5 (0-1')	S	07-25-19 00:00		632174-007
AH-5 (1'-1.5')	S	07-25-19 00:00		632174-008
AH-2 (2'-2.5')	S	07-25-19 00:00		632174-009
AH-6 (0-1')	S	07-25-19 00:00		632174-010
AH-7 (0-6")	S	07-25-19 00:00		632174-011
AH-8 (0-6")	S	07-25-19 00:00		632174-012
AH-9 (0-6")	S	07-25-19 00:00		632174-013
AH-10 (0-6")	S	07-25-19 00:00		632174-014
AH-11 (0-6")	S	07-25-19 00:00		632174-015
AH-12 (0-6")	S	07-25-19 00:00		632174-016
AH-13 (0-6")	S	07-25-19 00:00		632174-017
AH-14 (0-6")	S	07-25-19 00:00		632174-018

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3096731 TPH by SW8015 Mod

Surrogate o-Terphenyl recovered below QC limits. Samples affected are: 7682996-1-BLK,632174-010,632174-011,632174-012,632174-018,632174-006,632174-008.

Surrogate 1-Chlorooctane recovered above QC limits. Matrix interferences is suspected.
Samples affected are: 632174-004.

Batch: LBA-3096779 BTEX by EPA 8021B

Surrogate 4-Bromofluorobenzene recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.
Samples affected are: 632174-013.

Lab Sample ID 632174-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Ethylbenzene, Toluene, m,p-Xylenes, o-Xylene recovered below QC limits in the Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 632174-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -011, -012, -013, -014, -015, -016, -017, -018.

The Laboratory Control Sample for Toluene, m,p-Xylenes, Ethylbenzene, o-Xylene is within laboratory Control Limits, therefore the data was accepted.

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

Certificate of Analysis Summary 632174

Tetra Tech- Midland, Midland, TX

Project Name: Pappy's Preference Federal #1

Project Id: 212C-MD-01855
Contact: Mike Carmona
Project Location: Eddy County,NM

Date Received in Lab: Fri Jul-26-19 10:20 am
Report Date: 29-JUL-19
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	632174-001		632174-002		632174-003		632174-004		632174-005		632174-006	
	Field Id:	AH-1 (0-6")		AH-2 (0-6")		AH-3 (0-1')		AH-4 (0-1')		AH-4 (1'-1.5')		AH-4 (1.5'-2')	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jul-25-19 00:00		Jul-25-19 00:00		Jul-25-19 00:00		Jul-25-19 00:00		Jul-25-19 00:00		Jul-25-19 00:00	
BTEX by EPA 8021B	***Extracted:***	Jul-26-19 11:33		Jul-26-19 11:33		Jul-26-19 11:33		Jul-26-19 11:33		Jul-26-19 11:33		Jul-26-19 11:33	
	Analyzed:	Jul-27-19 21:48		Jul-27-19 22:08		Jul-27-19 22:28		Jul-27-19 22:48		Jul-27-19 23:08		Jul-27-19 23:28	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		<0.00200	0.00200	<0.00198	0.00198	<0.00202	0.00202	<0.00200	0.00200	<0.00200	0.00200	<0.00201	0.00201
Toluene		<0.00200	0.00200	<0.00198	0.00198	<0.00202	0.00202	<0.00200	0.00200	<0.00200	0.00200	<0.00201	0.00201
Ethylbenzene		<0.00200	0.00200	<0.00198	0.00198	<0.00202	0.00202	<0.00200	0.00200	<0.00200	0.00200	<0.00201	0.00201
m,p-Xylenes		<0.00401	0.00401	<0.00397	0.00397	<0.00403	0.00403	<0.00401	0.00401	<0.00401	0.00401	<0.00402	0.00402
o-Xylene		<0.00200	0.00200	<0.00198	0.00198	<0.00202	0.00202	<0.00200	0.00200	<0.00200	0.00200	<0.00201	0.00201
Total Xylenes		<0.00200	0.00200	<0.00198	0.00198	<0.00202	0.00202	<0.00200	0.00200	<0.00200	0.00200	<0.00201	0.00201
Total BTEX		<0.00200	0.00200	<0.00198	0.00198	<0.00202	0.00202	<0.00200	0.00200	<0.00200	0.00200	<0.00201	0.00201
Chloride by EPA 300	***Extracted:***	Jul-27-19 12:30		Jul-27-19 12:30		Jul-27-19 12:30		Jul-27-19 12:30		Jul-27-19 12:30		Jul-27-19 12:30	
	Analyzed:	Jul-27-19 17:43		Jul-27-19 18:04		Jul-27-19 18:10		Jul-27-19 18:26		Jul-27-19 18:32		Jul-27-19 18:37	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		20700	100	13300	100	15600	101	14400	99.6	9810	50.5	8450	49.7
TPH by SW8015 Mod	***Extracted:***	Jul-27-19 09:00		Jul-27-19 09:00		Jul-27-19 09:00		Jul-27-19 09:00		Jul-27-19 09:00		Jul-27-19 09:00	
	Analyzed:	Jul-27-19 22:43		Jul-27-19 23:54		Jul-28-19 00:17		Jul-28-19 00:41		Jul-28-19 01:05		Jul-28-19 01:28	
	Units/RL:	mg/kg	RL	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	<14.9	14.9	<15.0	15.0	<15.0	15.0	<15.0	15.0
Diesel Range Organics (DRO)		36.7	15.0	22.8	15.0	<14.9	14.9	27.6	15.0	<15.0	15.0	<15.0	15.0
Motor Oil Range Hydrocarbons (MRO)		<15.0	15.0	<15.0	15.0	<14.9	14.9	<15.0	15.0	<15.0	15.0	<15.0	15.0
Total TPH		36.7	15.0	22.8	15.0	<14.9	14.9	27.6	15.0	<15.0	15.0	<15.0	15.0

Certificate of Analysis Summary 632174

Tetra Tech- Midland, Midland, TX

Project Name: Pappy's Preference Federal #1

Project Id: 212C-MD-01855
Contact: Mike Carmona
Project Location: Eddy County,NM

Date Received in Lab: Fri Jul-26-19 10:20 am
Report Date: 29-JUL-19
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	632174-007		632174-008		632174-009		632174-010		632174-011		632174-012	
	Field Id:	AH-5 (0-1')		AH-5 (1'-1.5')		AH-2 (2'-2.5')		AH-6 (0-1')		AH-7 (0-6")		AH-8 (0-6")	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jul-25-19 00:00		Jul-25-19 00:00		Jul-25-19 00:00		Jul-25-19 00:00		Jul-25-19 00:00		Jul-25-19 00:00	
BTEX by EPA 8021B	***Extracted:***	Jul-26-19 11:33		Jul-26-19 11:33		Jul-26-19 11:33		Jul-26-19 11:33		Jul-26-19 11:33		Jul-26-19 11:33	
	Analyzed:	Jul-27-19 23:49		Jul-28-19 00:09		Jul-28-19 00:29		Jul-28-19 00:49		Jul-28-19 02:07		Jul-28-19 02:28	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		<0.00201	0.00201	<0.00198	0.00198	<0.00202	0.00202	<0.00200	0.00200	0.00345	0.00198	<0.00202	0.00202
Toluene		<0.00201	0.00201	<0.00198	0.00198	<0.00202	0.00202	<0.00200	0.00200	<0.00198	0.00198	<0.00202	0.00202
Ethylbenzene		<0.00201	0.00201	<0.00198	0.00198	<0.00202	0.00202	<0.00200	0.00200	<0.00198	0.00198	<0.00202	0.00202
m,p-Xylenes		<0.00402	0.00402	<0.00396	0.00396	<0.00404	0.00404	<0.00400	0.00400	0.00842	0.00396	<0.00404	0.00404
o-Xylene		<0.00201	0.00201	<0.00198	0.00198	<0.00202	0.00202	<0.00200	0.00200	<0.00198	0.00198	<0.00202	0.00202
Total Xylenes		<0.00201	0.00201	<0.00198	0.00198	<0.00202	0.00202	<0.00200	0.00200	0.00842	0.00198	<0.00202	0.00202
Total BTEX		<0.00201	0.00201	<0.00198	0.00198	<0.00202	0.00202	<0.00200	0.00200	0.0119	0.00198	<0.00202	0.00202
Chloride by EPA 300	***Extracted:***	Jul-27-19 12:30		Jul-27-19 12:30		Jul-27-19 12:30		Jul-27-19 12:30		Jul-27-19 14:00		Jul-27-19 14:00	
	Analyzed:	Jul-27-19 18:42		Jul-27-19 18:48		Jul-27-19 18:53		Jul-27-19 18:59		Jul-27-19 19:13		Jul-27-19 19:18	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		11300	49.9	5000	25.1	1250	25.3	9240	49.7	15700	100	14000	99.8
TPH by SW8015 Mod	***Extracted:***	Jul-27-19 09:00		Jul-27-19 09:00		Jul-27-19 09:00		Jul-27-19 09:00		Jul-27-19 09:00		Jul-27-19 09:00	
	Analyzed:	Jul-28-19 01:51		Jul-28-19 02:15		Jul-28-19 02:38		Jul-28-19 03:02		Jul-28-19 03:49		Jul-28-19 04:12	
	Units/RL:	mg/kg	RL	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	18.9	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	50.5	15.0	29.9	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	<15.0	15.0
Total TPH		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	69.4	15.0	29.9	15.0

Certificate of Analysis Summary 632174

Tetra Tech- Midland, Midland, TX

Project Name: Pappy's Preference Federal #1

Project Id: 212C-MD-01855
Contact: Mike Carmona
Project Location: Eddy County,NM

Date Received in Lab: Fri Jul-26-19 10:20 am
Report Date: 29-JUL-19
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	632174-013		632174-014		632174-015		632174-016		632174-017		632174-018	
	Field Id:	AH-9 (0-6")		AH-10 (0-6")		AH-11 (0-6")		AH-12 (0-6")		AH-13 (0-6")		AH-14 (0-6")	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jul-25-19 00:00		Jul-25-19 00:00		Jul-25-19 00:00		Jul-25-19 00:00		Jul-25-19 00:00		Jul-25-19 00:00	
BTEX by EPA 8021B	***Extracted:***	Jul-26-19 11:33		Jul-26-19 11:33		Jul-26-19 11:33		Jul-26-19 11:33		Jul-26-19 11:33		Jul-26-19 11:33	
	Analyzed:	Jul-28-19 05:09		Jul-28-19 02:48		Jul-28-19 04:49		Jul-28-19 03:08		Jul-28-19 03:28		Jul-28-19 03:48	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		0.0200	0.00198	<0.00201	0.00201	<0.00200	0.00200	<0.00202	0.00202	<0.00202	0.00202	<0.00200	0.00200
Toluene		0.00522	0.00198	<0.00201	0.00201	<0.00200	0.00200	<0.00202	0.00202	<0.00202	0.00202	<0.00200	0.00200
Ethylbenzene		0.0446	0.00198	<0.00201	0.00201	<0.00200	0.00200	<0.00202	0.00202	<0.00202	0.00202	<0.00200	0.00200
m,p-Xylenes		0.133	0.00396	<0.00402	0.00402	<0.00400	0.00400	<0.00403	0.00403	<0.00403	0.00403	<0.00399	0.00399
o-Xylene		0.0205	0.00198	<0.00201	0.00201	<0.00200	0.00200	<0.00202	0.00202	<0.00202	0.00202	<0.00200	0.00200
Total Xylenes		0.154	0.00198	<0.00201	0.00201	<0.00200	0.00200	<0.00202	0.00202	<0.00202	0.00202	<0.00200	0.00200
Total BTEX		0.223	0.00198	<0.00201	0.00201	<0.00200	0.00200	<0.00202	0.00202	<0.00202	0.00202	<0.00200	0.00200
Chloride by EPA 300	***Extracted:***	Jul-27-19 14:00		Jul-27-19 14:00		Jul-27-19 14:00		Jul-27-19 14:00		Jul-27-19 14:00		Jul-27-19 14:00	
	Analyzed:	Jul-27-19 19:23		Jul-27-19 19:29		Jul-27-19 19:45		Jul-27-19 19:50		Jul-27-19 19:55		Jul-27-19 18:57	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		15400	101	12600	99.2	13700	99.8	13300	100	17200	100	12.5	4.98
TPH by SW8015 Mod	***Extracted:***	Jul-27-19 09:00		Jul-27-19 09:00		Jul-27-19 09:00		Jul-27-19 09:00		Jul-27-19 09:00		Jul-27-19 09:00	
	Analyzed:	Jul-28-19 04:36		Jul-28-19 04:59		Jul-28-19 05:23		Jul-28-19 05:46		Jul-28-19 06:10		Jul-28-19 06:33	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)		147	15.0	<15.0	15.0	38.2	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0
Diesel Range Organics (DRO)		523	15.0	37.8	15.0	903	15.0	170	15.0	<15.0	15.0	<15.0	15.0
Motor Oil Range Hydrocarbons (MRO)		49.4	15.0	<15.0	15.0	76.7	15.0	26.2	15.0	<15.0	15.0	<15.0	15.0
Total TPH		719	15.0	37.8	15.0	1020	15.0	196	15.0	<15.0	15.0	<15.0	15.0

Jessica Kramer
Project Assistant

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

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

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

+ NELAC certification not offered for this compound.

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

Form 2 - Surrogate Recoveries

Project Name: Pappy's Preference Federal #1

Work Orders : 632174,

Project ID: 212C-MD-01855

Lab Batch #: 3096779 **Sample:** 632174-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/27/19 21:48

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	0.0310	0.0300	103	70-130	

Lab Batch #: 3096779 **Sample:** 632174-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/27/19 22:08

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0325	0.0300	108	70-130	
4-Bromofluorobenzene	0.0349	0.0300	116	70-130	

Lab Batch #: 3096779 **Sample:** 632174-003 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/27/19 22:28

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0314	0.0300	105	70-130	
4-Bromofluorobenzene	0.0329	0.0300	110	70-130	

Lab Batch #: 3096731 **Sample:** 632174-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/27/19 22:43

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	79.9	99.9	80	70-135	
o-Terphenyl	36.6	50.0	73	70-135	

Lab Batch #: 3096779 **Sample:** 632174-004 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/27/19 22:48

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0314	0.0300	105	70-130	
4-Bromofluorobenzene	0.0320	0.0300	107	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: Pappy's Preference Federal #1

Work Orders : 632174,

Project ID: 212C-MD-01855

Lab Batch #: 3096779 **Sample:** 632174-005 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/27/19 23:08

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0307	0.0300	102	70-130	
4-Bromofluorobenzene	0.0318	0.0300	106	70-130	

Lab Batch #: 3096779 **Sample:** 632174-006 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/27/19 23:28

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0321	0.0300	107	70-130	
4-Bromofluorobenzene	0.0357	0.0300	119	70-130	

Lab Batch #: 3096779 **Sample:** 632174-007 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/27/19 23:49

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0307	0.0300	102	70-130	
4-Bromofluorobenzene	0.0322	0.0300	107	70-130	

Lab Batch #: 3096731 **Sample:** 632174-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/27/19 23:54

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	79.2	99.9	79	70-135	
o-Terphenyl	35.1	50.0	70	70-135	

Lab Batch #: 3096779 **Sample:** 632174-008 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/28/19 00:09

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0308	0.0300	103	70-130	
4-Bromofluorobenzene	0.0320	0.0300	107	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: Pappy's Preference Federal #1

Work Orders : 632174,

Project ID: 212C-MD-01855

Lab Batch #: 3096731 **Sample:** 632174-003 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/28/19 00:17

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	79.7	99.6	80	70-135	
o-Terphenyl	35.9	49.8	72	70-135	

Lab Batch #: 3096779 **Sample:** 632174-009 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/28/19 00:29

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0310	0.0300	103	70-130	
4-Bromofluorobenzene	0.0335	0.0300	112	70-130	

Lab Batch #: 3096731 **Sample:** 632174-004 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/28/19 00:41

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	172	99.7	173	70-135	**
o-Terphenyl	63.1	49.9	126	70-135	

Lab Batch #: 3096779 **Sample:** 632174-010 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/28/19 00:49

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0308	0.0300	103	70-130	
4-Bromofluorobenzene	0.0324	0.0300	108	70-130	

Lab Batch #: 3096731 **Sample:** 632174-005 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/28/19 01:05

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	84.1	99.9	84	70-135	
o-Terphenyl	35.1	50.0	70	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: Pappy's Preference Federal #1

Work Orders : 632174,

Project ID: 212C-MD-01855

Lab Batch #: 3096731 **Sample:** 632174-006 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/28/19 01:28

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	79.7	99.8	80	70-135	
o-Terphenyl	33.7	49.9	68	70-135	**

Lab Batch #: 3096731 **Sample:** 632174-007 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/28/19 01:51

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	79.8	100	80	70-135	
o-Terphenyl	35.7	50.0	71	70-135	

Lab Batch #: 3096779 **Sample:** 632174-011 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/28/19 02:07

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0338	0.0300	113	70-130	
4-Bromofluorobenzene	0.0337	0.0300	112	70-130	

Lab Batch #: 3096731 **Sample:** 632174-008 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/28/19 02:15

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	80.3	99.9	80	70-135	
o-Terphenyl	32.2	50.0	64	70-135	**

Lab Batch #: 3096779 **Sample:** 632174-012 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/28/19 02:28

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	0.0336	0.0300	112	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: Pappy's Preference Federal #1

Work Orders : 632174,

Project ID: 212C-MD-01855

Lab Batch #: 3096731 **Sample:** 632174-009 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/28/19 02:38

TPH by SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	80.3	99.7	81	70-135	
o-Terphenyl	35.7	49.9	72	70-135	

Lab Batch #: 3096779 **Sample:** 632174-014 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/28/19 02:48

BTEX by EPA 8021B Analytes	SURROGATE RECOVERY STUDY 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	0.0326	0.0300	109	70-130	

Lab Batch #: 3096731 **Sample:** 632174-010 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/28/19 03:02

TPH by SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	81.4	100	81	70-135	
o-Terphenyl	33.4	50.0	67	70-135	**

Lab Batch #: 3096779 **Sample:** 632174-016 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/28/19 03:08

BTEX by EPA 8021B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0311	0.0300	104	70-130	
4-Bromofluorobenzene	0.0345	0.0300	115	70-130	

Lab Batch #: 3096779 **Sample:** 632174-017 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/28/19 03:28

BTEX by EPA 8021B Analytes	SURROGATE RECOVERY STUDY 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	0.0357	0.0300	119	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: Pappy's Preference Federal #1

Work Orders : 632174,

Project ID: 212C-MD-01855

Lab Batch #: 3096779 **Sample:** 632174-018 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/28/19 03:48

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0307	0.0300	102	70-130	
4-Bromofluorobenzene	0.0327	0.0300	109	70-130	

Lab Batch #: 3096731 **Sample:** 632174-011 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/28/19 03:49

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	74.3	99.9	74	70-135	
o-Terphenyl	32.5	50.0	65	70-135	**

Lab Batch #: 3096731 **Sample:** 632174-012 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/28/19 04:12

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	80.4	99.8	81	70-135	
o-Terphenyl	33.1	49.9	66	70-135	**

Lab Batch #: 3096731 **Sample:** 632174-013 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/28/19 04:36

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	77.2	99.9	77	70-135	
o-Terphenyl	39.9	50.0	80	70-135	

Lab Batch #: 3096779 **Sample:** 632174-015 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/28/19 04:49

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0300	0.0300	100	70-130	
4-Bromofluorobenzene	0.0364	0.0300	121	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.

Version: 1.%

Form 2 - Surrogate Recoveries

Project Name: Pappy's Preference Federal #1

Work Orders : 632174,

Project ID: 212C-MD-01855

Lab Batch #: 3096731 **Sample:** 632174-014 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/28/19 04:59

TPH by SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	76.3	100	76	70-135	
o-Terphenyl	35.0	50.0	70	70-135	

Lab Batch #: 3096779 **Sample:** 632174-013 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/28/19 05:09

BTEX by EPA 8021B Analytes	SURROGATE RECOVERY STUDY 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	0.0493	0.0300	164	70-130	**

Lab Batch #: 3096731 **Sample:** 632174-015 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/28/19 05:23

TPH by SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	77.8	99.9	78	70-135	
o-Terphenyl	43.5	50.0	87	70-135	

Lab Batch #: 3096731 **Sample:** 632174-016 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/28/19 05:46

TPH by SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	75.4	99.7	76	70-135	
o-Terphenyl	36.3	49.9	73	70-135	

Lab Batch #: 3096731 **Sample:** 632174-017 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/28/19 06:10

TPH by SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	72.4	99.9	72	70-135	
o-Terphenyl	39.2	50.0	78	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: Pappy's Preference Federal #1

Work Orders : 632174,

Project ID: 212C-MD-01855

Lab Batch #: 3096731 **Sample:** 632174-018 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/28/19 06:33

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	71.9	100	72	70-135	
o-Terphenyl	31.6	50.0	63	70-135	**

Lab Batch #: 3096779 **Sample:** 7682924-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 07/27/19 21:28

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0317	0.0300	106	70-130	
4-Bromofluorobenzene	0.0313	0.0300	104	70-130	

Lab Batch #: 3096731 **Sample:** 7682996-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 07/27/19 21:32

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	76.8	100	77	70-135	
o-Terphenyl	33.8	50.0	68	70-135	**

Lab Batch #: 3096779 **Sample:** 7682924-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 07/27/19 19:48

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	0.0300	0.0300	100	70-130	

Lab Batch #: 3096731 **Sample:** 7682996-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 07/27/19 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	82.7	100	83	70-135	
o-Terphenyl	39.4	50.0	79	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: Pappy's Preference Federal #1

Work Orders : 632174,

Project ID: 212C-MD-01855

Lab Batch #: 3096779 **Sample:** 7682924-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 07/27/19 20:08

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0309	0.0300	103	70-130	
4-Bromofluorobenzene	0.0305	0.0300	102	70-130	

Lab Batch #: 3096731 **Sample:** 7682996-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 07/27/19 22:20

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	75.5	100	76	70-135	
o-Terphenyl	38.3	50.0	77	70-135	

Lab Batch #: 3096779 **Sample:** 632174-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/27/19 20:28

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0312	0.0300	104	70-130	
4-Bromofluorobenzene	0.0320	0.0300	107	70-130	

Lab Batch #: 3096731 **Sample:** 632174-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/27/19 23:07

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	75.6	99.8	76	70-135	
o-Terphenyl	38.9	49.9	78	70-135	

Lab Batch #: 3096779 **Sample:** 632174-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 07/27/19 20:48

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0315	0.0300	105	70-130	
4-Bromofluorobenzene	0.0317	0.0300	106	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: Pappy's Preference Federal #1

Work Orders : 632174,
Project ID: 212C-MD-01855
Lab Batch #: 3096731 **Sample:** 632174-001 SD / MSD **Batch:** 1 **Matrix:** Soil
Units: mg/kg **Date Analyzed:** 07/27/19 23:30

TPH by SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	80.7	99.7	81	70-135	
o-Terphenyl	39.7	49.9	80	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.

BS / BSD Recoveries

Project Name: Pappy's Preference Federal #1

Work Order #: 632174 **Project ID:** 212C-MD-01855

Analyst: FOV **Date Prepared:** 07/26/2019 **Date Analyzed:** 07/27/2019

Lab Batch ID: 3096779 **Sample:** 7682924-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.000385	0.100	0.103	103	0.100	0.0994	99	4	70-130	35	
Toluene	<0.000456	0.100	0.0909	91	0.100	0.0880	88	3	70-130	35	
Ethylbenzene	<0.00200	0.100	0.0889	89	0.100	0.0855	86	4	70-130	35	
m,p-Xylenes	<0.00101	0.200	0.176	88	0.200	0.170	85	3	70-130	35	
o-Xylene	<0.000344	0.100	0.0931	93	0.100	0.0914	91	2	70-130	35	

Analyst: SPC **Date Prepared:** 07/27/2019 **Date Analyzed:** 07/27/2019

Lab Batch ID: 3096746 **Sample:** 7682945-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<5.00	250	266	106	250	265	106	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: Pappy's Preference Federal #1

Work Order #: 632174 **Project ID:** 212C-MD-01855

Analyst: SPC **Date Prepared:** 07/27/2019 **Date Analyzed:** 07/27/2019

Lab Batch ID: 3096754 **Sample:** 7682948-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Chloride by EPA 300 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<0.858	250	263	105	250	260	104	1	90-110	20	

Analyst: ARM **Date Prepared:** 07/27/2019 **Date Analyzed:** 07/27/2019

Lab Batch ID: 3096731 **Sample:** 7682996-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<8.00	1000	1010	101	1000	875	88	14	70-135	20	
Diesel Range Organics (DRO)	<8.13	1000	1040	104	1000	964	96	8	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

Version: 1.%

Form 3 - MS / MSD Recoveries

Project Name: Pappy's Preference Federal #1

Work Order # : 632174 **Project ID:** 212C-MD-01855

Lab Batch ID: 3096779 **QC- Sample ID:** 632174-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 07/27/2019 **Date Prepared:** 07/26/2019 **Analyst:** FOV

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	<0.000386	0.100	0.0925	93	0.101	0.0780	77	17	70-130	35	
Toluene	0.000661	0.100	0.0822	82	0.101	0.0649	64	24	70-130	35	X
Ethylbenzene	<0.00201	0.100	0.0780	78	0.101	0.0578	57	30	70-130	35	X
m,p-Xylenes	<0.00102	0.201	0.163	81	0.202	0.116	57	34	70-130	35	X
o-Xylene	<0.000346	0.100	0.0864	86	0.101	0.0611	60	34	70-130	35	X

Lab Batch ID: 3096746 **QC- Sample ID:** 631951-033 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 07/27/2019 **Date Prepared:** 07/27/2019 **Analyst:** SPC

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	4.89	249	271	107	249	272	107	0	90-110	20	

Lab Batch ID: 3096746 **QC- Sample ID:** 631951-040 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 07/27/2019 **Date Prepared:** 07/27/2019 **Analyst:** SPC

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	2.16	249	282	112	249	278	111	1	90-110	20	X

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: Pappy's Preference Federal #1

Work Order # : 632174 **Project ID:** 212C-MD-01855

Lab Batch ID: 3096754 **QC- Sample ID:** 632058-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 07/27/2019 **Date Prepared:** 07/27/2019 **Analyst:** SPC

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	194	249	454	104	249	454	104	0	90-110	20	

Lab Batch ID: 3096754 **QC- Sample ID:** 632174-018 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 07/27/2019 **Date Prepared:** 07/27/2019 **Analyst:** SPC

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	12.5	249	276	106	249	274	105	1	90-110	20	

Lab Batch ID: 3096731 **QC- Sample ID:** 632174-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 07/27/2019 **Date Prepared:** 07/27/2019 **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)	10.0	998	848	84	997	918	91	8	70-135	20	
Diesel Range Organics (DRO)	36.7	998	930	90	997	992	96	6	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.

Analysis Request of Chain of Custody Record

l632174

Page 1 of 2

Tetra Tech, Inc.

901 West Wall, Suite 100
Midland,Texas 79701
Tel (432) 682-4559
Fax (432) 682-3946

Client Name: COG	**Site Manager:** Mike Carmona
Project Name: Pappy's Preference Federal #1	
Project Location: (county, state) Eddy County, NM	**Project #:** 212C-MD-01855
Invoice to: COG Ike Tavarez	
Receiving Laboratory: Xenco Midland Tx	**Sampler Signature:** Mike Carmona-Devin D
Comments:	

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING YEAR: 2019 DATE	SAMPLING TIME	MATRIX WATER	MATRIX SOIL	MATRIX	PRESERVATIVE METHOD HCL	PRESERVATIVE METHOD HNO_3	PRESERVATIVE METHOD ICE	PRESERVATIVE METHOD None		# CONTAINERS	FILTERED (Y/N)	BTEX 8021B	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					Hold
	AH-1 (0-6")	7/25/2019			X				X			1	N	X		X												X							
	AH-2 (0-6")	7/25/2019			X				X			1	N	X		X												X							
	AH-3 (0-1')	7/25/2019			X				X			1	N	X		X												X							
	AH-4 (0-1')	7/25/2019			X				X			1	N	X		X												X							
	AH-4 (1'-1.5')	7/25/2019			X				X			1	N	X		X												X							
	AH-4 (1.5'-2')	7/25/2019			X				X			1	N	X		X												X							
	AH-5 (0-1')	7/25/2019			X				X			1	N	X		X												X							
	AH-5 (1'-1.5')	7/25/2019			X				X			1	N	X		X												X							
	AH-5 (2'-2.5')	7/25/2019			X				X			1	N	X		X												X							
	AH-6 (0-1')	7/25/2019			X				X			1	N	X		X												X							

Relinquished by:	Date: 7/26/19	Time:	Received by:
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by:

Received by: Date: 7/26/19 Time: 1020

Received by: Date: Time:

Received by: Date: Time:

LAB USE ONLY

Sample Temperature

3.3 | 3.1

REMARKS:

☐ STANDARD

☒ RUSH: Same Day 24 hr 48 hr (2 hr)

☐ Rush Charges Authorized

☐ Special Report Limits or TRRP Report

(Circle) HAND DELIVERED FEDEX UPS Tracking #: _____

Final 1.000

Page 23 of 24

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Analysis Request of Chain of Custody Record

603174

Tetra Tech, Inc.

901 West Wall, Suite 100
Midland,Texas 79701
Tel (432) 682-4559
Fax (432) 682-3946

Client Name: COG	**Site Manager:** Mike Carmona
Project Name: Pappy's Preference Federal #1	
Project Location: (county, state) Eddy County, NM	**Project #:** 212C-MD-01855
Invoice to: COG Ike Tavarez	
Receiving Laboratory: Xenco Midland Tx	**Sampler Signature:** Mike Carmona-Devin D
Comments:	

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING YEAR: 2019 DATE	SAMPLING TIME	MATRIX WATER	MATRIX SOIL	MATRIX	PRESERVATIVE METHOD HCL	PRESERVATIVE METHOD HNO_3	PRESERVATIVE METHOD ICE	PRESERVATIVE METHOD None		# CONTAINERS	FILTERED (Y/N)	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				Hold
	AH-7 (0-6")	7/25/2019			X				X			1	N	X		X												X						
	AH-8 (0-6")	7/25/2019			X				X			1	N	X		X												X						
	AH-9 (0-6")	7/25/2019			X				X			1	N	X		X												X						
	AH-10 (0-6")	7/25/2019			X				X			1	N	X		X												X						
	AH-11 (0-6")	7/25/2019			X				X			1	N	X		X												X						
	AH-12 (0-6")	7/25/2019			X				X			1	N	X		X												X						
	AH-13 (0-6")	7/25/2019			X				X			1	N	X		X												X						
	AH-14 (0-6")	7/25/2019			X				X			1	N	X		X												X						

Final 1.000
Page 24 of 24

Relinquished by:	Date: 7/26/19	Time:	Received by:
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by:

Received by: Date: 7/26/19 Time: 1020

LAB USE ONLY

Sample Temperature 3.3/3.1

REMARKS:

- ☐ STANDARD
- ☒ RUSH: Same Day 24 hr 48 hr (2 hr)
- ☐ Rush Charges Authorized
- ☐ Special Report Limits or TRRP Report

(Circle) HAND DELIVERED FEDEX UPS Tracking #: _____

ORIGINAL COPY

CARDINAL Laboratories

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

August 09, 2019

MIKE CARMONA

TETRA TECH

901 WEST WALL STREET , STE 100

MIDLAND, TX 79701

RE: BIG PAPI FEDERAL COM 2H

Enclosed are the results of analyses for samples received by the laboratory on 08/08/19 17:06.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

Mike Snyder For Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
MIKE CARMONA
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	08/08/2019	Sampling Date:	08/08/2019
Reported:	08/09/2019	Sampling Type:	Soil
Project Name:	BIG PAPI FEDERAL COM 2H	Sampling Condition:	Cool & Intact
Project Number:	212C -MD - 01885 (7-12-19)	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: BOTTOM HOLE #1 (4' BEB) (H902739-01)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/09/2019	ND	1.91	95.5	2.00	3.81	
Toluene*	<0.050	0.050	08/09/2019	ND	1.92	96.2	2.00	1.60	
Ethylbenzene*	<0.050	0.050	08/09/2019	ND	1.92	95.8	2.00	2.17	
Total Xylenes*	<0.150	0.150	08/09/2019	ND	5.82	97.0	6.00	1.74	
Total BTEX	<0.300	0.300	08/09/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *102 %* *73.3-129*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2480**	16.0	08/09/2019	ND	416	104	400	0.00	QM-07

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/09/2019	ND	203	102	200	2.11	
DRO >C10-C28*	<10.0	10.0	08/09/2019	ND	195	97.5	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	08/09/2019	ND					

Surrogate: 1-Chlorooctane *112 %* *41-142*

Surrogate: 1-Chlorooctadecane *115 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
MIKE CARMONA
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	08/08/2019	Sampling Date:	08/08/2019
Reported:	08/09/2019	Sampling Type:	Soil
Project Name:	BIG PAPI FEDERAL COM 2H	Sampling Condition:	Cool & Intact
Project Number:	212C -MD - 01885 (7-12-19)	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: BOTTOM HOLE #2 (4' BEB) (H902739-02)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/09/2019	ND	1.91	95.5	2.00	3.81	
Toluene*	<0.050	0.050	08/09/2019	ND	1.92	96.2	2.00	1.60	
Ethylbenzene*	<0.050	0.050	08/09/2019	ND	1.92	95.8	2.00	2.17	
Total Xylenes*	<0.150	0.150	08/09/2019	ND	5.82	97.0	6.00	1.74	
Total BTEX	<0.300	0.300	08/09/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *105 %* *73.3-129*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**960**	16.0	08/09/2019	ND	416	104	400	0.00	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/09/2019	ND	203	102	200	2.11	
DRO >C10-C28*	<10.0	10.0	08/09/2019	ND	195	97.5	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	08/09/2019	ND					

Surrogate: 1-Chlorooctane *111 %* *41-142*

Surrogate: 1-Chlorooctadecane *113 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
MIKE CARMONA
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	08/08/2019	Sampling Date:	08/08/2019
Reported:	08/09/2019	Sampling Type:	Soil
Project Name:	BIG PAPI FEDERAL COM 2H	Sampling Condition:	Cool & Intact
Project Number:	212C -MD - 01885 (7-12-19)	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: BOTTOM HOLE #3 (4' BEB) (H902739-03)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/09/2019	ND	1.91	95.5	2.00	3.81	
Toluene*	<0.050	0.050	08/09/2019	ND	1.92	96.2	2.00	1.60	
Ethylbenzene*	<0.050	0.050	08/09/2019	ND	1.92	95.8	2.00	2.17	
Total Xylenes*	<0.150	0.150	08/09/2019	ND	5.82	97.0	6.00	1.74	
Total BTEX	<0.300	0.300	08/09/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *103 %* *73.3-129*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**512**	16.0	08/09/2019	ND	416	104	400	0.00	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/09/2019	ND	195	97.7	200	4.87	
DRO >C10-C28*	<10.0	10.0	08/09/2019	ND	191	95.7	200	5.50	
EXT DRO >C28-C36	<10.0	10.0	08/09/2019	ND					

Surrogate: 1-Chlorooctane *106 %* *41-142*

Surrogate: 1-Chlorooctadecane *109 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
MIKE CARMONA
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	08/08/2019	Sampling Date:	08/08/2019
Reported:	08/09/2019	Sampling Type:	Soil
Project Name:	BIG PAPI FEDERAL COM 2H	Sampling Condition:	Cool & Intact
Project Number:	212C -MD - 01885 (7-12-19)	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: NORTH SIDEWALL (H902739-04)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/09/2019	ND	1.91	95.5	2.00	3.81	
Toluene*	<0.050	0.050	08/09/2019	ND	1.92	96.2	2.00	1.60	
Ethylbenzene*	<0.050	0.050	08/09/2019	ND	1.92	95.8	2.00	2.17	
Total Xylenes*	<0.150	0.150	08/09/2019	ND	5.82	97.0	6.00	1.74	
Total BTEX	<0.300	0.300	08/09/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *106 %* *73.3-129*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**592**	16.0	08/09/2019	ND	416	104	400	0.00	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/09/2019	ND	195	97.7	200	4.87	
DRO >C10-C28*	<10.0	10.0	08/09/2019	ND	191	95.7	200	5.50	
EXT DRO >C28-C36	<10.0	10.0	08/09/2019	ND					

Surrogate: 1-Chlorooctane *116 %* *41-142*

Surrogate: 1-Chlorooctadecane *121 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
MIKE CARMONA
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	08/08/2019	Sampling Date:	08/08/2019
Reported:	08/09/2019	Sampling Type:	Soil
Project Name:	BIG PAPI FEDERAL COM 2H	Sampling Condition:	Cool & Intact
Project Number:	212C -MD - 01885 (7-12-19)	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: EAST 1 SIDEWALL (H902739-05)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/09/2019	ND	1.91	95.5	2.00	3.81	
Toluene*	<0.050	0.050	08/09/2019	ND	1.92	96.2	2.00	1.60	
Ethylbenzene*	<0.050	0.050	08/09/2019	ND	1.92	95.8	2.00	2.17	
Total Xylenes*	<0.150	0.150	08/09/2019	ND	5.82	97.0	6.00	1.74	
Total BTEX	<0.300	0.300	08/09/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *104 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1500**	16.0	08/09/2019	ND	416	104	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/09/2019	ND	195	97.7	200	4.87	
DRO >C10-C28*	<10.0	10.0	08/09/2019	ND	191	95.7	200	5.50	
EXT DRO >C28-C36	<10.0	10.0	08/09/2019	ND					

Surrogate: 1-Chlorooctane *118 %* *41-142*

Surrogate: 1-Chlorooctadecane *124 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
MIKE CARMONA
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	08/08/2019	Sampling Date:	08/08/2019
Reported:	08/09/2019	Sampling Type:	Soil
Project Name:	BIG PAPI FEDERAL COM 2H	Sampling Condition:	Cool & Intact
Project Number:	212C -MD - 01885 (7-12-19)	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: EAST 2 SIDEWALL (H902739-06)

BTEX 8021B mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/09/2019	ND	2.05	102	2.00	0.251	
Toluene*	<0.050	0.050	08/09/2019	ND	2.15	108	2.00	1.81	
Ethylbenzene*	<0.050	0.050	08/09/2019	ND	2.03	102	2.00	1.25	
Total Xylenes*	<0.150	0.150	08/09/2019	ND	6.09	102	6.00	0.936	
Total BTEX	<0.300	0.300	08/09/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *95.8 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**64.0**	16.0	08/09/2019	ND	416	104	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/09/2019	ND	195	97.7	200	4.87	
DRO >C10-C28*	<10.0	10.0	08/09/2019	ND	191	95.7	200	5.50	
EXT DRO >C28-C36	<10.0	10.0	08/09/2019	ND					

Surrogate: 1-Chlorooctane *123 %* *41-142*

Surrogate: 1-Chlorooctadecane *128 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
MIKE CARMONA
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	08/08/2019	Sampling Date:	08/08/2019
Reported:	08/09/2019	Sampling Type:	Soil
Project Name:	BIG PAPI FEDERAL COM 2H	Sampling Condition:	Cool & Intact
Project Number:	212C -MD - 01885 (7-12-19)	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: WEST 1 SIDEWALL (H902739-07)

BTEX 8021B mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/09/2019	ND	2.05	102	2.00	0.251	
Toluene*	<0.050	0.050	08/09/2019	ND	2.15	108	2.00	1.81	
Ethylbenzene*	<0.050	0.050	08/09/2019	ND	2.03	102	2.00	1.25	
Total Xylenes*	<0.150	0.150	08/09/2019	ND	6.09	102	6.00	0.936	
Total BTEX	<0.300	0.300	08/09/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *96.6 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**272**	16.0	08/09/2019	ND	416	104	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/09/2019	ND	195	97.7	200	4.87	
DRO >C10-C28*	<10.0	10.0	08/09/2019	ND	191	95.7	200	5.50	
EXT DRO >C28-C36	<10.0	10.0	08/09/2019	ND					

Surrogate: 1-Chlorooctane *112 %* *41-142*

Surrogate: 1-Chlorooctadecane *118 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
MIKE CARMONA
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	08/08/2019	Sampling Date:	08/08/2019
Reported:	08/09/2019	Sampling Type:	Soil
Project Name:	BIG PAPI FEDERAL COM 2H	Sampling Condition:	Cool & Intact
Project Number:	212C -MD - 01885 (7-12-19)	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: WEST 2 SIDEWALL (H902739-08)

BTEX 8021B mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/09/2019	ND	2.05	102	2.00	0.251	
Toluene*	<0.050	0.050	08/09/2019	ND	2.15	108	2.00	1.81	
Ethylbenzene*	<0.050	0.050	08/09/2019	ND	2.03	102	2.00	1.25	
Total Xylenes*	<0.150	0.150	08/09/2019	ND	6.09	102	6.00	0.936	
Total BTEX	<0.300	0.300	08/09/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *96.8 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1250**	16.0	08/09/2019	ND	416	104	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/09/2019	ND	195	97.7	200	4.87	
DRO >C10-C28*	<10.0	10.0	08/09/2019	ND	191	95.7	200	5.50	
EXT DRO >C28-C36	<10.0	10.0	08/09/2019	ND					

Surrogate: 1-Chlorooctane *110 %* *41-142*

Surrogate: 1-Chlorooctadecane *114 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
MIKE CARMONA
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	08/08/2019	Sampling Date:	08/08/2019
Reported:	08/09/2019	Sampling Type:	Soil
Project Name:	BIG PAPI FEDERAL COM 2H	Sampling Condition:	Cool & Intact
Project Number:	212C -MD - 01885 (7-12-19)	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: SOUTH 1 SIDEWALL (H902739-09)

BTEX 8021B mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/09/2019	ND	2.05	102	2.00	0.251	
Toluene*	<0.050	0.050	08/09/2019	ND	2.15	108	2.00	1.81	
Ethylbenzene*	<0.050	0.050	08/09/2019	ND	2.03	102	2.00	1.25	
Total Xylenes*	<0.150	0.150	08/09/2019	ND	6.09	102	6.00	0.936	
Total BTEX	<0.300	0.300	08/09/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *97.2 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**7520**	16.0	08/09/2019	ND	416	104	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/09/2019	ND	195	97.7	200	4.87	
DRO >C10-C28*	<10.0	10.0	08/09/2019	ND	191	95.7	200	5.50	
EXT DRO >C28-C36	<10.0	10.0	08/09/2019	ND					

Surrogate: 1-Chlorooctane *120 %* *41-142*

Surrogate: 1-Chlorooctadecane *124 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

Analysis Request of Chain of Custody Record

Page 1 of 1

Tetra Tech, Inc.

901W Wall Street, Ste 100
Midland, Texas 79705
Tel (432) 682-4559
Fax (432) 682-3946

Client Name: Concho	Site Manager: Mike Carmona
Project Name: Big Papi Fed Com 2H (7.12.19)	
Project Location: (county, state) Eddy Co, NM	Project #: 212C-MD-01885
Invoice to: COG - Ike Tavarez	
Receiving Laboratory: Cardinal	Sampler Signature: Conner Moehring
Comments:	

H9D2739

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING YEAR: 2019 DATE	SAMPLING TIME	MATRIX WATER	MATRIX SOIL	MATRIX	PRESERVATIVE METHOD HCL	PRESERVATIVE METHOD HNO_3	PRESERVATIVE METHOD ICE	PRESERVATIVE METHOD None	PRESERVATIVE METHOD	# CONTAINERS	FILTERED (Y/N)
1	BOTTOM HOLE #1 (4' BEB)	8/8/19			X				X			1	N
2	BOTTOM HOLE #2 (1'	8/8/19			X				X			1	N
3	BOTTOM HOLE #3	8/8/19			X				X			1	N
4	NORTH SIDEWALL	8/8/19			X				X			1	N
5	EAST 1 SIDEWALL	8/8/19			X				X			1	N
6	EAST 2 SIDEWALL	8/8/19			X				X			1	N
7	WEST 1 SIDEWALL	8/8/19			X				X			1	N
8	WEST 2 SIDEWALL	8/8/19			X				X			1	N
9	SOUTH 1 SIDEWALL	8/8/19			X				X			1	N

ANALYSIS REQUEST
(Circle or Specify Method No.)

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			Hold
	X		X												X						
	X		X												X						
	X		X												X						
	X		X												X						
	X		X												X						
	X		X												X						
	X		X												X						
	X		X												X						
	X		X												X						
	X		X												X						

Relinquished by: Conner Moehring Date: 8/8/19 Time: 1700
Received by: Jodi Henson Date: 8/8/19 Time: 17:06

Relinquished by: Date: Time:
Received by: Date: Time:

Relinquished by: Date: Time:
Received by: Date: Time:

LAB USE ONLY

Sample Temperature
0.8c + .4 corrected
1.2c / #97

REMARKS:

- ☐ STANDARD
- ☒ RUSH: Same Day (24 hr) 48 hr 72 hr
- ☐ Rush Charges Authorized
- ☐ Special Report Limits or TRRP Report

(Circle) HAND DELIVERED FEDEX UPS Tracking #: _____

ORIGINAL COPY

CARDINAL Laboratories

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

August 14, 2019

MIKE CARMONA

TETRA TECH

901 WEST WALL STREET , STE 100

MIDLAND, TX 79701

RE: BIG PAPI FEDERAL COM 2H

Enclosed are the results of analyses for samples received by the laboratory on 08/13/19 17:10.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

Mike Snyder For Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
MIKE CARMONA
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	08/13/2019	Sampling Date:	08/13/2019
Reported:	08/14/2019	Sampling Type:	Soil
Project Name:	BIG PAPI FEDERAL COM 2H	Sampling Condition:	Cool & Intact
Project Number:	212C -MD - 01885 (7-12-19)	Sample Received By:	Tamara Oldaker
Project Location:	COG - EDDY CO NM		

Sample ID: BOTTOM HOLE #2 (6' BEB) (H902775-01)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/14/2019	ND	1.85	92.4	2.00	1.69	
Toluene*	<0.050	0.050	08/14/2019	ND	1.97	98.6	2.00	4.30	
Ethylbenzene*	<0.050	0.050	08/14/2019	ND	1.97	98.7	2.00	4.93	
Total Xylenes*	<0.150	0.150	08/14/2019	ND	5.99	99.8	6.00	6.80	
Total BTEX	<0.300	0.300	08/14/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *102 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**112**	16.0	08/14/2019	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/14/2019	ND	194	97.1	200	7.24	
DRO >C10-C28*	<10.0	10.0	08/14/2019	ND	180	90.0	200	9.13	
EXT DRO >C28-C36	<10.0	10.0	08/14/2019	ND					

Surrogate: 1-Chlorooctane *69.8 %* *41-142*

Surrogate: 1-Chlorooctadecane *67.9 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
MIKE CARMONA
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	08/13/2019	Sampling Date:	08/13/2019
Reported:	08/14/2019	Sampling Type:	Soil
Project Name:	BIG PAPI FEDERAL COM 2H	Sampling Condition:	Cool & Intact
Project Number:	212C -MD - 01885 (7-12-19)	Sample Received By:	Tamara Oldaker
Project Location:	COG - EDDY CO NM		

Sample ID: BOTTOM HOLE #3 (6' BEB) (H902775-02)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/14/2019	ND	1.85	92.4	2.00	1.69	
Toluene*	<0.050	0.050	08/14/2019	ND	1.97	98.6	2.00	4.30	
Ethylbenzene*	<0.050	0.050	08/14/2019	ND	1.97	98.7	2.00	4.93	
Total Xylenes*	<0.150	0.150	08/14/2019	ND	5.99	99.8	6.00	6.80	
Total BTEX	<0.300	0.300	08/14/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *104 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**144**	16.0	08/14/2019	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/14/2019	ND	194	97.1	200	7.24	
DRO >C10-C28*	<10.0	10.0	08/14/2019	ND	180	90.0	200	9.13	
EXT DRO >C28-C36	<10.0	10.0	08/14/2019	ND					

Surrogate: 1-Chlorooctane *70.5 %* *41-142*

Surrogate: 1-Chlorooctadecane *70.7 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
MIKE CARMONA
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	08/13/2019	Sampling Date:	08/13/2019
Reported:	08/14/2019	Sampling Type:	Soil
Project Name:	BIG PAPI FEDERAL COM 2H	Sampling Condition:	Cool & Intact
Project Number:	212C -MD - 01885 (7-12-19)	Sample Received By:	Tamara Oldaker
Project Location:	COG - EDDY CO NM		

Sample ID: EAST 2 SIDEWALL (H902775-03)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/14/2019	ND	1.85	92.4	2.00	1.69	
Toluene*	<0.050	0.050	08/14/2019	ND	1.97	98.6	2.00	4.30	
Ethylbenzene*	<0.050	0.050	08/14/2019	ND	1.97	98.7	2.00	4.93	
Total Xylenes*	<0.150	0.150	08/14/2019	ND	5.99	99.8	6.00	6.80	
Total BTEX	<0.300	0.300	08/14/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *103 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**48.0**	16.0	08/14/2019	ND	432	108	400	0.00	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/14/2019	ND	194	97.1	200	7.24	
DRO >C10-C28*	<10.0	10.0	08/14/2019	ND	180	90.0	200	9.13	
EXT DRO >C28-C36	<10.0	10.0	08/14/2019	ND					

Surrogate: 1-Chlorooctane *76.2 %* *41-142*

Surrogate: 1-Chlorooctadecane *75.5 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

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

Cardinal Laboratories

*=Accredited Analyte

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

Analysis Request of Chain of Custody Record

Page 1 of 1

Tetra Tech, Inc.

901W Wall Street, Ste 100
Midland, Texas 79705
Tel (432) 682-4559
Fax (432) 682-3946

Client Name: Concho	**Site Manager:** Mike Carmona
Project Name: Big Papi Fed Com 2H (7.12.19)	
Project Location: (county, state) Eddy Co, NM	**Project #:** 212C-MD-01885
Invoice to: COG - Ike Tavarez	
Receiving Laboratory: Cardinal	**Sampler Signature:** Conner Moehring
Comments:	

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING DATE	SAMPLING TIME	MATRIX: WATER	MATRIX: SOIL	MATRIX:	PRESERVATIVE METHOD: HCL	PRESERVATIVE METHOD: HNO_3	PRESERVATIVE METHOD: ICE	PRESERVATIVE METHOD: None	PRESERVATIVE METHOD:	# CONTAINERS	FILTERED (Y/N)	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				Hold
H902775																																			
1	Bottom Hole #2 @ (6' BEB)	8/13/19			X				X			1	N	X		X												X							
2	Bottom Hole #3 (6' BEB)	8/13/19			X				X			1	N	X		X												X							
3	EAST 2 SIDEWALL	8/13/19			X				X			1	N	X		X												X							

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Conner Moehring	8/13/19		Tamara Oldaker	8-13-19	17:10
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

LAB USE ONLY

Sample Temperature
3.8° #97
Corrected
4.2°

REMARKS:

- ☐ STANDARD
- ☑ RUSH: Same Day (24 hr) 48 hr 72 hr
- ☐ Rush Charges Authorized
- ☐ Special Report Limits or TRRP Report

(Circle) HAND DELIVERED FEDEX UPS Tracking #: _____

ORIGINAL COPY

Analytical Report 652156

for

Tetra Tech- Midland

Project Manager: Mike Carmona

Big Pappy Fed Com 2H (7-12-19)

212C-MD-01855

14-FEB-20

Collected By: Client

1089 N Canal Street
Carlsbad, NM 88220

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-19-30), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (19-037-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (TX104704295-19-22), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-21)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Tampa: Florida (E87429), North Carolina (483)

14-FEB-20

Project Manager: **Mike Carmona**
Tetra Tech- Midland
901 West Wall ST
Midland, TX 79701

Reference: XENCO Report No(s): **652156**
Big Pappy Fed Com 2H (7-12-19)
Project Address: Eddy Co, NM

Mike Carmona:

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) 652156. 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. 652156 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

Jessica Kramer

Jessica Kramer
Project Assistant

Sample Cross Reference 652156

Tetra Tech- Midland, Midland, TX

Big Pappy Fed Com 2H (7-12-19)

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
AH#2 (0-1')	S	02-12-20 00:00	0 - 1 ft	652156-001
AH#2 (1-1.5')	S	02-12-20 00:00	1 - 1.5 ft	652156-002
AH#3(0-1')	S	02-12-20 00:00	0 - 1 ft	652156-003
AH#4(0-1')	S	02-12-20 00:00	0 - 1 ft	652156-004
AH#4 (1-1.5')	S	02-12-20 00:00	1 - 1.5 ft	652156-005
AH#4 (1.5-2')	S	02-12-20 00:00	1.5 - 2 ft	652156-006
AH#5(0-1')	S	02-12-20 00:00	0 - 1 ft	652156-007
AH#5 (1-1.5')	S	02-12-20 00:00	1 - 1.5 ft	652156-008
AH#5 (2-2.5')	S	02-12-20 00:00	2 - 2.5 ft	652156-009
AH#6(0-1')	S	02-12-20 00:00	0 - 1 ft	652156-010
AH#7 (0-6")	S	02-12-20 00:00	0 - 6 In	652156-011
AH#8 (0-6")	S	02-12-20 00:00	0 - 6 In	652156-012
AH#9 (0-6")	S	02-12-20 00:00	0 - 6 In	652156-013
AH#10 (0-6")	S	02-12-20 00:00	0 - 6 In	652156-014
AH#11 (0-6")	S	02-12-20 00:00	0 - 6 In	652156-015
AH#12 (0-6")	S	02-12-20 00:00	0 - 6 In	652156-016
AH#13 (0-6")	S	02-12-20 00:00	0 - 6 In	652156-017
AH#14 (0-6")	S	02-12-20 00:00	0 - 6 In	652156-018

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3116368 Chloride by EPA 300

Lab Sample ID 652161-008 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered above QC limits in the Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 652156-016, -017, -018.

The Laboratory Control Sample for Chloride is within laboratory Control Limits, therefore the data was accepted.

Certificate of Analysis Summary 652156

Tetra Tech- Midland, Midland, TX

Project Name: Big Pappy Fed Com 2H (7-12-19)

Project Id: 212C-MD-01855
Contact: Mike Carmona
Project Location: Eddy Co, NM

Date Received in Lab: Wed Feb-12-20 01:15 pm
Report Date: 14-FEB-20
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	652156-001		652156-002		652156-003		652156-004		652156-005		652156-006	
	Field Id:	AH#2 (0-1')		AH#2 (1-1.5')		AH#3(0-1')		AH#4(0-1')		AH#4 (1-1.5')		AH#4 (1.5-2')	
	Depth:	0-1 ft		1-1.5 ft		0-1 ft		0-1 ft		1-1.5 ft		1.5-2 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Feb-12-20 00:00		Feb-12-20 00:00		Feb-12-20 00:00		Feb-12-20 00:00		Feb-12-20 00:00		Feb-12-20 00:00	
Chloride by EPA 300	***Extracted:***	Feb-12-20 14:30		Feb-12-20 14:30		Feb-12-20 14:30		Feb-12-20 14:30		Feb-12-20 14:30		Feb-12-20 14:30	
	Analyzed:	Feb-12-20 16:31		Feb-12-20 16:37		Feb-12-20 16:43		Feb-12-20 16:49		Feb-12-20 16:55		Feb-12-20 17:01	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		67.4	10.0	197	10.1	248	9.98	142	9.88	189	9.94	607	9.90

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Version: 1.%

Jessica Kramer
Project Assistant

Final 1.000

Certificate of Analysis Summary 652156

Tetra Tech- Midland, Midland, TX

Project Name: Big Pappy Fed Com 2H (7-12-19)

Project Id: 212C-MD-01855
Contact: Mike Carmona
Project Location: Eddy Co, NM

Date Received in Lab: Wed Feb-12-20 01:15 pm
Report Date: 14-FEB-20
Project Manager: Jessica Kramer

Analysis Requested	*Lab Id:*	652156-007		652156-008		652156-009		652156-010		652156-011		652156-012	
	Field Id:	AH#5(0-1')		AH#5 (1-1.5')		AH#5 (2-2.5')		AH#6(0-1')		AH#7 (0-6")		AH#8 (0-6")	
	Depth:	0-1 ft		1-1.5 ft		2-2.5 ft		0-1 ft		0-6 In		0-6 In	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Feb-12-20 00:00		Feb-12-20 00:00		Feb-12-20 00:00		Feb-12-20 00:00		Feb-12-20 00:00		Feb-12-20 00:00	
Chloride by EPA 300	*Extracted:*	Feb-12-20 14:30		Feb-12-20 14:30		Feb-12-20 14:30		Feb-12-20 14:30		Feb-12-20 14:30		Feb-12-20 14:30	
	Analyzed:	Feb-12-20 17:19		Feb-12-20 17:25		Feb-12-20 17:42		Feb-12-20 17:48		Feb-12-20 17:54		Feb-12-20 18:00	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		624	9.98	823	10.0	1040	9.96	310	9.98	69.7	9.98	<9.92	9.92

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Version: 1.%

Jessica Kramer
Project Assistant

Certificate of Analysis Summary 652156

Tetra Tech- Midland, Midland, TX

Project Name: Big Pappy Fed Com 2H (7-12-19)

Project Id: 212C-MD-01855
Contact: Mike Carmona
Project Location: Eddy Co, NM

Date Received in Lab: Wed Feb-12-20 01:15 pm
Report Date: 14-FEB-20
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	652156-013		652156-014		652156-015		652156-016		652156-017		652156-018	
	Field Id:	AH#9 (0-6")		AH#10 (0-6")		AH#11 (0-6")		AH#12 (0-6")		AH#13 (0-6")		AH#14 (0-6")	
	Depth:	0-6 In		0-6 In		0-6 In		0-6 In		0-6 In		0-6 In	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Feb-12-20 00:00		Feb-12-20 00:00		Feb-12-20 00:00		Feb-12-20 00:00		Feb-12-20 00:00		Feb-12-20 00:00	
Chloride by EPA 300	***Extracted:***	Feb-12-20 14:30		Feb-12-20 14:30		Feb-12-20 14:30		Feb-12-20 17:31		Feb-12-20 17:31		Feb-12-20 17:31	
	Analyzed:	Feb-12-20 18:06		Feb-12-20 18:12		Feb-12-20 18:18		Feb-12-20 18:56		Feb-12-20 19:15		Feb-12-20 19:22	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		29.1	9.92	99.2	9.98	160	9.90	34.4	9.98	29.6	9.88	15.3	9.92

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Version: 1.%

Jessica Kramer
Project Assistant

Certificate of Analytical Results 652156

Tetra Tech- Midland, Midland, TX

Big Pappy Fed Com 2H (7-12-19)

Sample Id:	**AH#2 (0-1')**	Matrix:	Soil	Date Received:	02.12.20 13.15
Lab Sample Id:	652156-001	Date Collected:	02.12.20 00.00	Sample Depth:	0 - 1 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	02.12.20 14.30	Basis:	Wet Weight
Seq Number:	3116357				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**67.4**	10.0	mg/kg	02.12.20 16.31		1

Certificate of Analytical Results 652156

Tetra Tech- Midland, Midland, TX

Big Pappy Fed Com 2H (7-12-19)

Sample Id:	**AH#2 (1-1.5')**	Matrix:	Soil	Date Received:	02.12.20 13.15
Lab Sample Id:	652156-002	Date Collected:	02.12.20 00.00	Sample Depth:	1 - 1.5 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	02.12.20 14.30	Basis:	Wet Weight
Seq Number:	3116357				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**197**	10.1	mg/kg	02.12.20 16.37		1

Certificate of Analytical Results 652156

Tetra Tech- Midland, Midland, TX

Big Pappy Fed Com 2H (7-12-19)

Sample Id:	**AH#3(0-1')**	Matrix:	Soil	Date Received:	02.12.20 13.15
Lab Sample Id:	652156-003	Date Collected:	02.12.20 00.00	Sample Depth:	0 - 1 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	02.12.20 14.30	Basis:	Wet Weight
Seq Number:	3116357				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**248**	9.98	mg/kg	02.12.20 16.43		1

Certificate of Analytical Results 652156

Tetra Tech- Midland, Midland, TX

Big Pappy Fed Com 2H (7-12-19)

Sample Id:	**AH#4(0-1')**	Matrix:	Soil	Date Received:	02.12.20 13.15
Lab Sample Id:	652156-004	Date Collected:	02.12.20 00.00	Sample Depth:	0 - 1 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	02.12.20 14.30	Basis:	Wet Weight
Seq Number:	3116357				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**142**	9.88	mg/kg	02.12.20 16.49		1

Certificate of Analytical Results 652156

Tetra Tech- Midland, Midland, TX

Big Pappy Fed Com 2H (7-12-19)

Sample Id:	**AH#4 (1-1.5')**	Matrix:	Soil	Date Received:	02.12.20 13.15
Lab Sample Id:	652156-005	Date Collected:	02.12.20 00.00	Sample Depth:	1 - 1.5 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	02.12.20 14.30	Basis:	Wet Weight
Seq Number:	3116357				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**189**	9.94	mg/kg	02.12.20 16.55		1

Certificate of Analytical Results 652156

Tetra Tech- Midland, Midland, TX

Big Pappy Fed Com 2H (7-12-19)

Sample Id:	**AH#4 (1.5-2')**	Matrix:	Soil	Date Received:	02.12.20 13.15
Lab Sample Id:	652156-006	Date Collected:	02.12.20 00.00	Sample Depth:	1.5 - 2 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	02.12.20 14.30	Basis:	Wet Weight
Seq Number:	3116357				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**607**	9.90	mg/kg	02.12.20 17.01		1

Certificate of Analytical Results 652156

Tetra Tech- Midland, Midland, TX

Big Pappy Fed Com 2H (7-12-19)

Sample Id:	**AH#5(0-1')**	Matrix:	Soil	Date Received:	02.12.20 13.15
Lab Sample Id:	652156-007	Date Collected:	02.12.20 00.00	Sample Depth:	0 - 1 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	02.12.20 14.30	Basis:	Wet Weight
Seq Number:	3116357				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**624**	9.98	mg/kg	02.12.20 17.19		1

Certificate of Analytical Results 652156

Tetra Tech- Midland, Midland, TX

Big Pappy Fed Com 2H (7-12-19)

Sample Id:	**AH#5 (1-1.5')**	Matrix:	Soil	Date Received:	02.12.20 13.15
Lab Sample Id:	652156-008	Date Collected:	02.12.20 00.00	Sample Depth:	1 - 1.5 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	02.12.20 14.30	Basis:	Wet Weight
Seq Number:	3116357				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**823**	10.0	mg/kg	02.12.20 17.25		1

Certificate of Analytical Results 652156

Tetra Tech- Midland, Midland, TX

Big Pappy Fed Com 2H (7-12-19)

Sample Id:	**AH#5 (2-2.5')**	Matrix:	Soil	Date Received:	02.12.20 13.15
Lab Sample Id:	652156-009	Date Collected:	02.12.20 00.00	Sample Depth:	2 - 2.5 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	02.12.20 14.30	Basis:	Wet Weight
Seq Number:	3116357				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**1040**	9.96	mg/kg	02.12.20 17.42		1

Certificate of Analytical Results 652156

Tetra Tech- Midland, Midland, TX

Big Pappy Fed Com 2H (7-12-19)

Sample Id:	**AH#6(0-1')**	Matrix:	Soil	Date Received:	02.12.20 13.15
Lab Sample Id:	652156-010	Date Collected:	02.12.20 00.00	Sample Depth:	0 - 1 ft
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	02.12.20 14.30	Basis:	Wet Weight
Seq Number:	3116357				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**310**	9.98	mg/kg	02.12.20 17.48		1

Certificate of Analytical Results 652156

Tetra Tech- Midland, Midland, TX

Big Pappy Fed Com 2H (7-12-19)

Sample Id:	**AH#7 (0-6")**	Matrix:	Soil	Date Received:	02.12.20 13.15
Lab Sample Id:	652156-011	Date Collected:	02.12.20 00.00	Sample Depth:	0 - 6 In
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	02.12.20 14.30	Basis:	Wet Weight
Seq Number:	3116357				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**69.7**	9.98	mg/kg	02.12.20 17.54		1

Certificate of Analytical Results 652156

Tetra Tech- Midland, Midland, TX

Big Pappy Fed Com 2H (7-12-19)

Sample Id:	**AH#8 (0-6")**	Matrix:	Soil	Date Received:	02.12.20 13.15
Lab Sample Id:	652156-012	Date Collected:	02.12.20 00.00	Sample Depth:	0 - 6 In
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	02.12.20 14.30	Basis:	Wet Weight
Seq Number:	3116357				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<9.92	9.92	mg/kg	02.12.20 18.00	U	1

Certificate of Analytical Results 652156

Tetra Tech- Midland, Midland, TX

Big Pappy Fed Com 2H (7-12-19)

Sample Id:	**AH#9 (0-6")**	Matrix:	Soil	Date Received:	02.12.20 13.15
Lab Sample Id:	652156-013	Date Collected:	02.12.20 00.00	Sample Depth:	0 - 6 In
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	02.12.20 14.30	Basis:	Wet Weight
Seq Number:	3116357				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**29.1**	9.92	mg/kg	02.12.20 18.06		1

Certificate of Analytical Results 652156

Tetra Tech- Midland, Midland, TX

Big Pappy Fed Com 2H (7-12-19)

Sample Id:	**AH#10 (0-6")**	Matrix:	Soil	Date Received:	02.12.20 13.15
Lab Sample Id:	652156-014	Date Collected:	02.12.20 00.00	Sample Depth:	0 - 6 In
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	02.12.20 14.30	Basis:	Wet Weight
Seq Number:	3116357				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**99.2**	9.98	mg/kg	02.12.20 18.12		1

Certificate of Analytical Results 652156

Tetra Tech- Midland, Midland, TX

Big Pappy Fed Com 2H (7-12-19)

Sample Id:	**AH#11 (0-6")**	Matrix:	Soil	Date Received:	02.12.20 13.15
Lab Sample Id:	652156-015	Date Collected:	02.12.20 00.00	Sample Depth:	0 - 6 In
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	02.12.20 14.30	Basis:	Wet Weight
Seq Number:	3116357				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**160**	9.90	mg/kg	02.12.20 18.18		1

Certificate of Analytical Results 652156

Tetra Tech- Midland, Midland, TX

Big Pappy Fed Com 2H (7-12-19)

Sample Id:	**AH#12 (0-6")**	Matrix:	Soil	Date Received:	02.12.20 13.15
Lab Sample Id:	652156-016	Date Collected:	02.12.20 00.00	Sample Depth:	0 - 6 In
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	02.12.20 17.31	Basis:	Wet Weight
Seq Number:	3116368				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**34.4**	9.98	mg/kg	02.12.20 18.56		1

Certificate of Analytical Results 652156

Tetra Tech- Midland, Midland, TX

Big Pappy Fed Com 2H (7-12-19)

Sample Id:	**AH#13 (0-6")**	Matrix:	Soil	Date Received:	02.12.20 13.15
Lab Sample Id:	652156-017	Date Collected:	02.12.20 00.00	Sample Depth:	0 - 6 In
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	02.12.20 17.31	Basis:	Wet Weight
Seq Number:	3116368				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**29.6**	9.88	mg/kg	02.12.20 19.15		1

Certificate of Analytical Results 652156

Tetra Tech- Midland, Midland, TX

Big Pappy Fed Com 2H (7-12-19)

Sample Id:	**AH#14 (0-6")**	Matrix:	Soil	Date Received:	02.12.20 13.15
Lab Sample Id:	652156-018	Date Collected:	02.12.20 00.00	Sample Depth:	0 - 6 In
Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	02.12.20 17.31	Basis:	Wet Weight
Seq Number:	3116368				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**15.3**	9.92	mg/kg	02.12.20 19.22		1

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

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

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

+ NELAC certification not offered for this compound.

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

QC Summary 652156

Tetra Tech- Midland

Big Pappy Fed Com 2H (7-12-19)

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3116357 Matrix: Solid Date Prep: 02.12.20
MB Sample Id: 7696526-1-BLK LCS Sample Id: 7696526-1-BKS LCSD Sample Id: 7696526-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<10.0	250	255	102	256	102	90-110	0	20	mg/kg	02.12.20 15:26	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3116368 Matrix: Solid Date Prep: 02.12.20
MB Sample Id: 7696527-1-BLK LCS Sample Id: 7696527-1-BKS LCSD Sample Id: 7696527-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<10.0	250	256	102	258	103	90-110	1	20	mg/kg	02.12.20 18:43	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3116357 Matrix: Soil Date Prep: 02.12.20
Parent Sample Id: 652152-004 MS Sample Id: 652152-004 S MSD Sample Id: 652152-004 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	17.5	200	205	94	207	95	90-110	1	20	mg/kg	02.12.20 15:44	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3116357 Matrix: Soil Date Prep: 02.12.20
Parent Sample Id: 652156-006 MS Sample Id: 652156-006 S MSD Sample Id: 652156-006 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	607	199	812	103	816	105	90-110	0	20	mg/kg	02.12.20 17:07	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3116368 Matrix: Soil Date Prep: 02.12.20
Parent Sample Id: 652156-016 MS Sample Id: 652156-016 S MSD Sample Id: 652156-016 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	34.4	200	253	109	264	115	90-110	4	20	mg/kg	02.12.20 19:02	X

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

[D] = 100*(C-A) / B
RPD = 200* | (C-E) / (C+E) |
[D] = 100 * (C) / [B]
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

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

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

QC Summary 652156

Tetra Tech- Midland

Big Pappy Fed Com 2H (7-12-19)

Analytical Method:	**Chloride by EPA 300**			Prep Method:	E300P
Seq Number:	3116368	Matrix:	Soil	Date Prep:	02.12.20
Parent Sample Id:	652161-008	MS Sample Id:	652161-008 S	MSD Sample Id:	652161-008 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	25.8	200	237	106	239	107	90-110	1	20	mg/kg	02.12.20 20:32	

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

[D] = 100*(C-A) / B
RPD = 200* | (C-E) / (C+E) |
[D] = 100 * (C) / [B]
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

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

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

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652156

Analysis Request of Chain of Custody Record

Tetra Tech, Inc.

901W Wall Street, Ste 100
Midland,Texas 79705
Tel (432) 682-4559
Fax (432) 682-3946

Client Name:	Concho	**Site Manager:**	Mike Carmona
Project Name:	Big Pappy Fed Com 2H (7.12.19)		
Project Location: (county, state)	Eddy Co, NM	**Project #:**	212C-MD-01855
Invoice to:	COG - Ike Tavarez		
Receiving Laboratory:	Xenco	**Sampler Signature:**	Conner Moehring
Comments:			

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING DATE	SAMPLING TIME	MATRIX: WATER	MATRIX: SOIL	PRESERVATIVE METHOD: HCL	PRESERVATIVE METHOD: HNO_3	PRESERVATIVE METHOD: ICE	PRESERVATIVE METHOD: None	# CONTAINERS	FILTERED (Y/N)	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	PCBs 8082 / 608	NORM	PLM (Asbestos)	Chloride	Chloride Sulfate TDS	General Water Chemistry (see attached list)	Anion/Cation Balance					Hold
	AH#2 (0-1')	2/12/2020			X			X		1	N														X									
	AH#2 (1-1.5')	2/12/20			X			X		1	N														X									
	AH#3 (0-1')	2/12/20			X			X		1	N														X									
	AH#4 (0-1')	2/12/20			X			X		1	N														X									
	AH#4 (1-1.5')	2/12/20			X			X		1	N														X									
	AH#4 (1.5-2')	2/12/20			X			X		1	N														X									
	AH#5 (0-1')	2/12/20			X			X		1	N														X									
	AH#5 (1-1.5')	2/12/20			X			X		1	N														X									
	AH#5 (2-2.5')	2/12/20			X			X		1	N														X									
	AH#6 (0-1')	2/12/20			X			X		1	N														X									

Relinquished by: Conner Moehring	Date: 2/12/20	Time: 1315	Received by: [signature]
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by:

Date: 2/12/20 Time: 1315

LAB USE ONLY

Sample Temperature 3.2

REMARKS:

- [X] STANDARD
- [ ] RUSH: Same Day 24 hr 48 hr 72 hr
- [ ] Rush Charges Authorized
- [ ] Special Report Limits or TRRP Report

(Circle) HAND DELIVERED FEDEX UPS Tracking #: _____

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Page 29 of 31

652156

Page 2 of 2

Analysis Request of Chain of Custody Record

Tetra Tech, Inc.

901W Wall Street, Ste 100
Midland,Texas 79705
Tel (432) 682-4559
Fax (432) 682-3946

Client Name: Concho	**Site Manager:** Mike Carmona
Project Name: Big Pappy Fed Com 2H (7.12.19)	
Project Location: (county, state) Eddy Co, NM	**Project #:** 212C-MD-01855
Invoice to: COG - Ike Tavarez	
Receiving Laboratory: Xenco	**Sampler Signature:** Conner Moehring
Comments:	

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING DATE	SAMPLING TIME	MATRIX: WATER	MATRIX: SOIL	PRESERVATIVE METHOD: HCL	PRESERVATIVE METHOD: HNO_3	PRESERVATIVE METHOD: ICE	PRESERVATIVE METHOD: None	# CONTAINERS	FILTERED (Y/N)	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				Hold
	AH #7 (0-6")	2/12/2020			X			X		1	N															X							
	AH #8 (0-6")	2/12/20			X			X		1	N															X							
	AH #9 (0-6")	2/12/20			X			X		1	N															X							
	AH #10 (0-6")	2/12/20			X			X		1	N															X							
	AH #11 (0-6")	2/12/20			X			X		1	N															X							
	AH #12 (0-6")	2/12/20			X			X		1	N															X							
	AH #13 (0-6")	2/12/20			X			X		1	N															X							
	AH #14 (0-6")	2/12/20			X			X		1	N															X							

ANALYSIS REQUEST
(Circle or Specify Method No.)

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Conner Moehring	2/12/20	1315		2/12/20	1315
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

LAB USE ONLY

Sample Temperature

3.2

REMARKS:

- [X] STANDARD
- [ ] RUSH: Same Day 24 hr 48 hr 72 hr
- [ ] Rush Charges Authorized
- [ ] Special Report Limits or TRRP Report

(Circle) HAND DELIVERED FEDEX UPS Tracking #: _____

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Page 30 of 31

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Tetra Tech- Midland

Date/ Time Received: 02.12.2020 01.15.00 PM

Work Order #: 652156

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

Temperature Measuring device used : T-NM-007

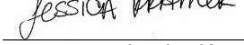
Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	3.2
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**Yes**
#5 Custody Seals intact on sample bottles?	**Yes**
#6*Custody Seals Signed and dated?	**Yes**
#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:  Date: 02.12.2020

Elizabeth McClellan

Checklist reviewed by:  Date: 02.12.2020

Jessica Kramer