

Site Assessment Report and Proposed Remediation Workplan

COG Operating, LLC Sebastian Fed Com #001H

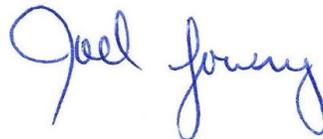
Lea County, New Mexico
Unit Letter "D", Section 18, Township 24 South, Range 34 West
Latitude 32.2243 North, Longitude 103.51539 West
NMOCD Reference No. 1RP-5749

Prepared By:

Etech Environmental & Safety Solutions, Inc.
3100 Plains Highway
Lovington, New Mexico 88260



Daniel Dominguez



Joel W. Lowry



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1.0 PROJECT INFORMATION

Etech Environmental & Safety Solutions, Inc. (Etech), on behalf of COG Operating, LLC, has prepared this Report for the Release Site known as the Sebastian Fed Com #001H. Details of the release are summarized below:

Location of Release Source				
Latitude: <u>32.2243</u>		Longitude: <u>-103.51539</u>		
Provided GPS are in WGS84 format.				
Site Name: <u>Sebastian Fed Com #001H</u>		Site Type: <u>Tank Battery</u>		
Date Release Discovered: <u>10/5/2019</u>		API # (if applicable):		
Unit Letter	Section	Township	Range	County
"D"	18	24S	34W	Lea
Surface Owner: <input type="checkbox"/> State <input type="checkbox"/> Federal <input type="checkbox"/> Tribal <input checked="" type="checkbox"/> Private (Name <u>Quail Ranch, LLC</u>)				
Nature and Volume of Release				
<input checked="" type="checkbox"/> Crude Oil	Volume Released (bbls)	10	Volume Recovered (bbls)	8
<input checked="" type="checkbox"/> Produced Water	Volume Released (bbls)	30	Volume Recovered (bbls)	25
	Is the concentration of dissolved chloride in the produced water > 10,000 mg/L?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
<input type="checkbox"/> Condensate	Volume Released (bbls)		Volume Recovered (bbls)	
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)		Volume Recovered (Mcf)	
<input type="checkbox"/> Other (describe)	Volume/Weight Released		Volume/Weight Recovered	
Cause of Release and Affected Area: The release was attributed to the failure of the gasket on a man way. The release was largely overspray, affecting an area measuring approximately 8,000 sq. ft. on the caliche well pad and 13,500 sq. ft. within the pasture and on the caliche access road.				
Initial Response				
<input checked="" type="checkbox"/> The source of the release has been stopped.				
<input checked="" type="checkbox"/> The impacted area has been secured to protect human health and the environment.				
<input checked="" type="checkbox"/> Release materials have been contained via the use of berms or dikes, absorbent pad, or other containment devices				
<input checked="" type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.				

Previously submitted portions of the NMOCD Form C-141 are available on the NMOCD Imaging System.

2.0 SITE CHARACTERIZATION

A search of groundwater databases maintained by the New Mexico Office of the State Engineer (NMOSE) and United States Geological Survey (USGS) was conducted in an effort to determine the horizontal distance to known water sources within a half mile radius of the Release Site. Probable groundwater depth was determined using data generated by numeric models based on available water well data and published information. Depth to groundwater information is provided as Appendix A.

What is the shallowest depth to groundwater beneath the area affected by the release?	~ 60 Ft.	
Did the release impact groundwater or surface water?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of any occupied permanent residence, school, hospital, institution or church?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the lateral extents of the release within the incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Did the release impact areas not on an exploration, development, production or storage site?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No

NMOCD Siting Criteria data was gathered from available resources including Bureau of Land Management (BLM) shapefiles; topographic maps; NMOSE and USGS databases; and aerial imagery. The results are depicted on Figures 1 & 2.

3.0 CLOSURE CRITERIA FOR SOILS IMPACTED BY A RELEASE

Based on the volume and nature of the release, inferred depth to groundwater and NMOCD Siting Criteria, the NMOCD Closure Criteria for the Site is as follows:

Closure Criteria for Soil Impacted by a Release			
Probable Depth to Groundwater	Constituent	Method	Limit
~ 60 Ft.	Chloride	EPA 300.0 or SM4500 Cl B	10000 mg/kg
	TPH (GRO + DRO + MRO)	EPA SW-846 Method 8015M Ext	2500 mg/kg
	DRO + GRO	EPA SW-846 Method 8015M	1000 mg/kg
	BTEX	EPA SW-846 Methods 8021b or 8260b	50 mg/kg
	Benzene	EPA SW-846 Methods 8021b or 8260b	10 mg/kg

4.0 INITIAL SITE ASSESSMENT

On **November 15, 2019**, Etech conducted an initial site assessment. During the initial site visit, **twelve (12)** soil samples (**P1 @ Surf., P3 @ Surf., P3 @ 1', P4 @ Surf., P4 @ 1', RS1 @ Surf., RS1 @ 1', EFS1 @ Surf., EFS2 @ Surf., EFS2 @ 1', EFS3 @ Surf. and FS9 @ Surf.**) were collected and submitted to a commercial laboratory for analysis of BTEX, TPH and chloride. Laboratory analytical results indicated soil was not affected above the NMOCD Closure Criteria and/or NMOCD Reclamation Standard beyond 1 Ft. bgs in the area characterized by sample points P3, P4, RS1 and EFS2. Further characterization would be required in the areas characterized by sample points P1 and EFS3. A "Site & Sample Location Map" is provided as Figure 3.

On **December 4, 2019**, Etech revisited the release site in an effort to further characterize soil impacts at the release site. During the site visit, a series of hand-augered soil bores (**V1 through V3**) were advanced within the release margins in an effort to determine the vertical extent of soil impact in the areas characterized by soil samples FS9, P1 and EFS3. In addition, **four (4)** hand-augered soil bores (**NH, EH, SH and WH**) were advanced near the inferred edges of the affected area in an effort to determine the horizontal extent of soil impacts. During the advancement of the hand-augered soil bores, **fifteen (15)** soil samples (**V1 @ 1', V1 @ 2', V2 @ 1', V2 @ 2', V2 @ 3', V3 @ 1', V3 @ 2', NH @ Surf., NH @ 4', EH @ Surf., EH @ 4', SH @ Surf., SH @ 4', WH @ Surf. and WH @ 4'**) were collected and submitted to a commercial laboratory for analysis of BTEX, TPH and chloride. Laboratory analytical results indicated the horizontal extent of soil impacts were adequately delineated and soil was not affected above the NMOCD Closure Criteria and/or NMOCD Reclamation Standard beyond 1 Ft. bgs in the area characterized by sample point V1 or 2 Ft. bgs in the areas characterized by sample points V2 and V3. A "Soil Chemistry Table" is provided as Table 1. Laboratory Analytical Reports are provided in Appendix B.

5.0 PROPOSED REMEDIATION PLAN

Based on laboratory analytical results, site characteristics and field observations made during the initial site assessment, COG Operating, LLC proposes the following remediation activities designed to advance the Site toward an approved closure:

- Utilizing mechanical equipment, excavate impacted soil affected above the NMOCD Closure Criteria present within the affected pasture in the area characterized by sample point EFS2 and RS1 and on the production pad in the areas characterized by sample points P1, P3, P4 and V2. The floor and sidewalls of the excavated area will be advanced until laboratory analytical results indicate concentrations of BTEX, TPH and chloride are below the NMOCD Closure Criteria.
- Excavate impacted soil affected above the NMOCD Reclamation Standard present within the uppermost 4 Ft of the affected pasture in the area characterized by sample point EFS2, EFS3 and V3. The floor and sidewalls of the excavated area will be advanced until laboratory analytical results from confirmation soil samples indicate BTEX, TPH and chloride are below the NMOCD Reclamation Standard.
- Impacted soil will be temporarily stockpiled on-site atop an impermeable liner, the transported to an NMOCD-permitted facility for disposal.
- Upon excavating impacted soil affected above the NMOCD Closure Criteria and/or NMOCD Reclamation Standard, collect the requisite excavation confirmation soil samples.
- Upon receiving laboratory analytical results from excavation confirmation soil samples, backfill the excavated area with locally sourced, non-impacted "like" material.
- Upon completion of remediation activities, prepare a *Remediation Summary and Soil Closure Request* detailing field activities and laboratory analytical results from confirmation soil samples.

6.0 ALTERNATIVE SAMPLING PLAN

A minimum of **one (1)** representative five-point composite excavation confirmation soil sample will be collected from the base and sidewalls of the excavated area representing every **500 square feet**. Additional, discrete grab samples will be collected from wet or visibly stained areas inferred to have been affected by the release, as necessary.

7.0 TIMELINE AND ESTIMATED VOLUME OF SOIL TO BE REMEDIATED

Remediation activities are expected to be completed **within 90 days** of receiving necessary approval(s) of the Site Assessment Summary and Proposed Remediation Plan. Based on laboratory analytical results, site characteristics and field observations made during the initial site assessment it is estimated that approximately **380 cubic yards** is in need of removal.

8.0 RESTORATION, RECLAMATION AND RE-VEGETATION PLAN

Areas affected by remediation and closure activities will be substantially restored to the condition that existed prior to the release, to the extent practicable. Excavated areas will be backfilled with locally sourced, non-impacted "like" material placed at or near original relative positions. The affected area will be contoured and/or compacted to achieve erosion control, stability and preservation of surface water flow to the extent practicable. Affected areas not on production pads and/or lease roads will be reseeded in accordance with the landowner during the first favorable growing season following closure of the site.

9.0 LIMITATIONS

Etech Environmental & Safety Solutions, Inc., has prepared this Site Assessment Report and Proposed Remediation Plan to the best of its ability. No other warranty, expressed or implied, is made or intended. Etech has examined and relied upon documents reference in the report and on oral statements made by certain individuals. Basis has not conducted an independent examination of the facts contained in referenced materials and statements. Etech has presumed the genuineness of these documents and statements and that the information provided therein is true and accurate. Etech has prepared the report in a professional manner, using the degree of skill and care exercised by similar environmental consultants. Etech notes that the facts and conditions referenced in this report may change over time, and the conclusions and recommendations set forth herein are applicable only to the facts and conditions as described at the time of this report.

This report has been prepared for the benefit of COG Operating, LLC. Use of the information contained in this report is prohibited within the consent of Etech and/or COG Operating, LLC.

10.0 DISTRIBUTION

COG Operating, LLC

600 West Illinois Avenue

Midland, TX 79701

New Mexico Energy, Minerals and Natural Resources Department

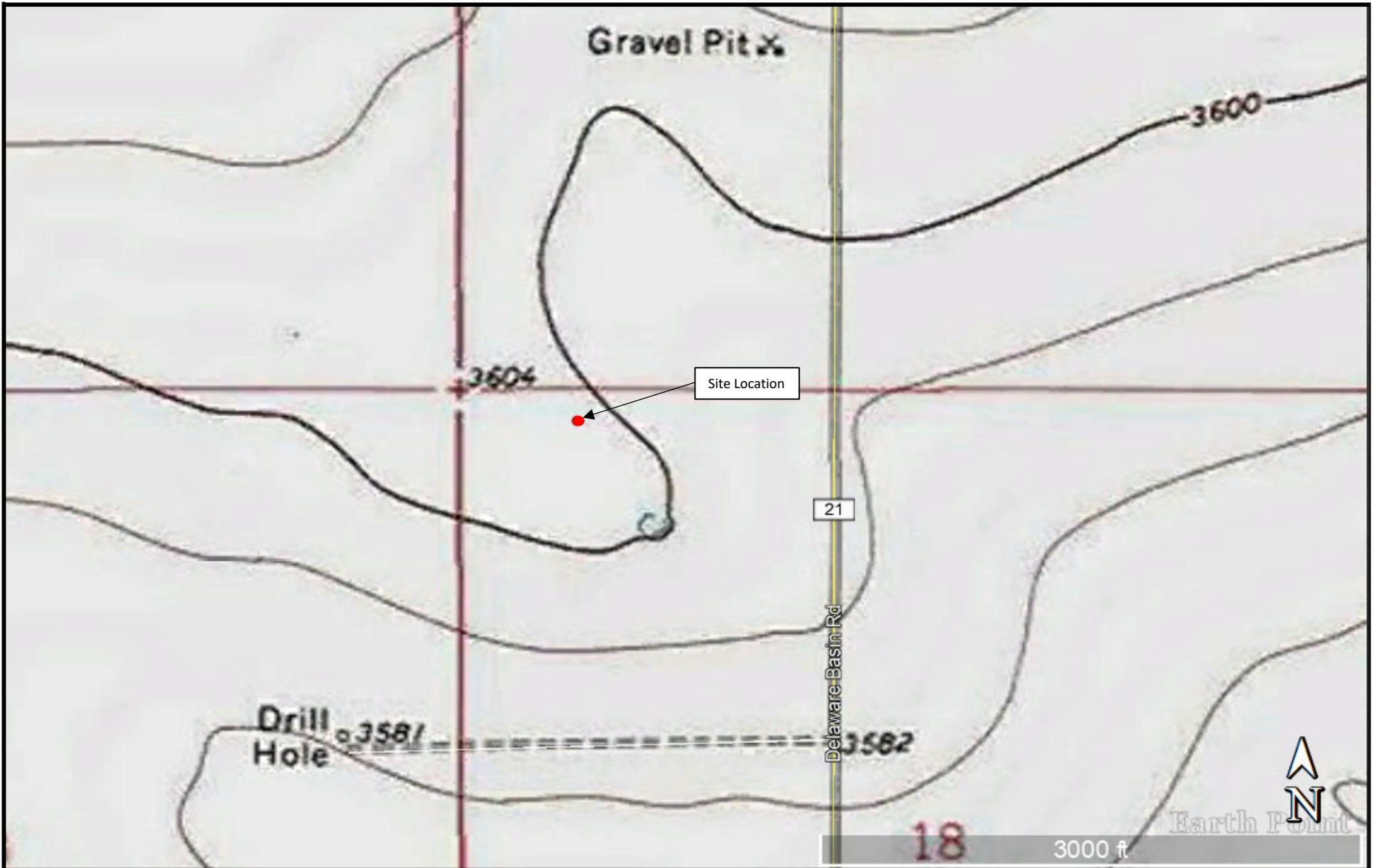
Oil Conservation Division, District 1

1220 South St. Francis Drive

Santa Fe, NM 87505

(Electronic Submission)

Figure 1
Topographic Map



Legend:

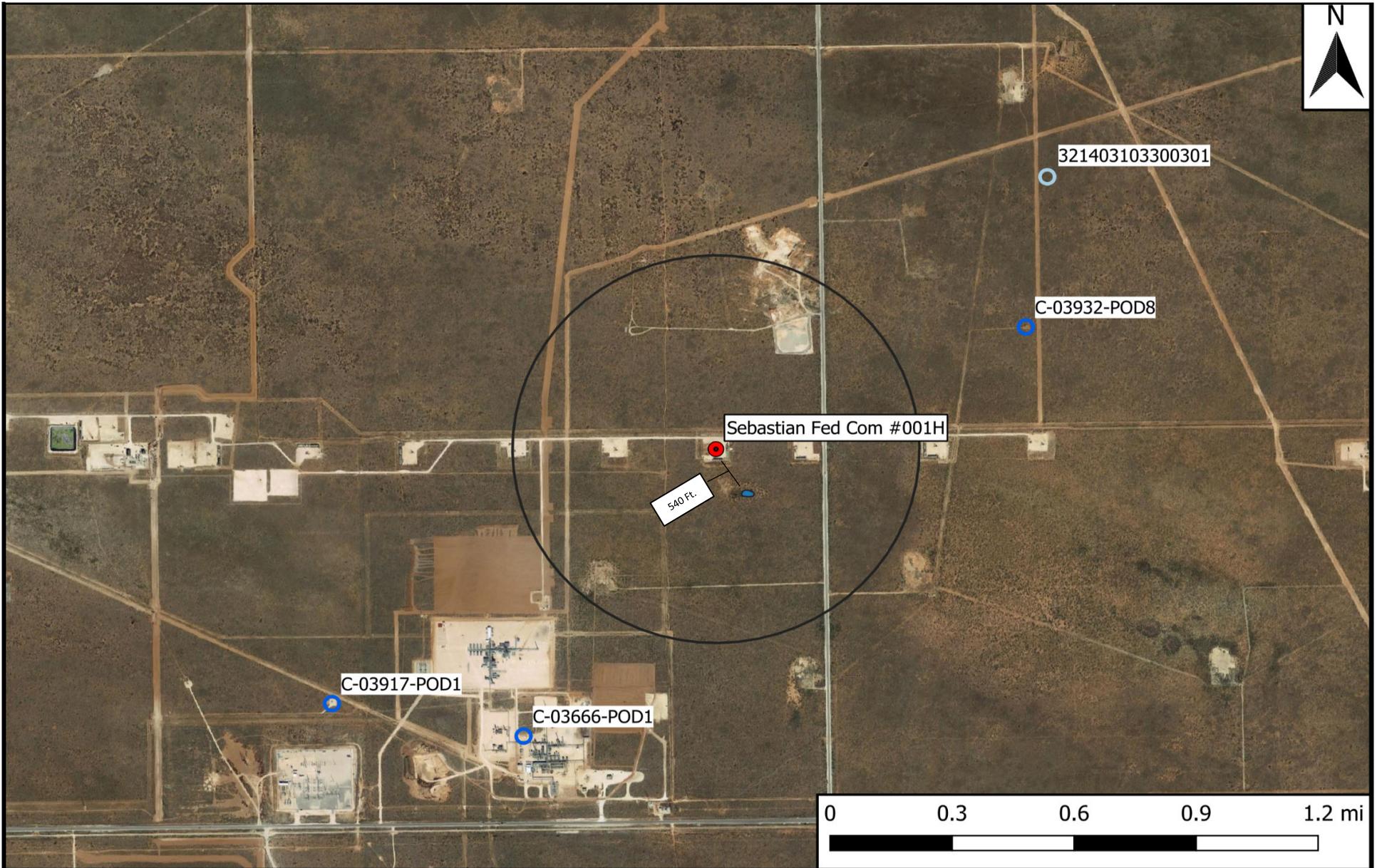
●	Site Location
---	---------------

Figure 1
Topographic Map
COG Operating, LLC
Sebastian Fed Com #001H
GPS: 32.2243, -103.51539
Lea County

eTECH Environmental & Safety Solutions, Inc. 

Drafted: Checked: jwl Date: 12/11/19

Figure 2
Aerial Proximity Map



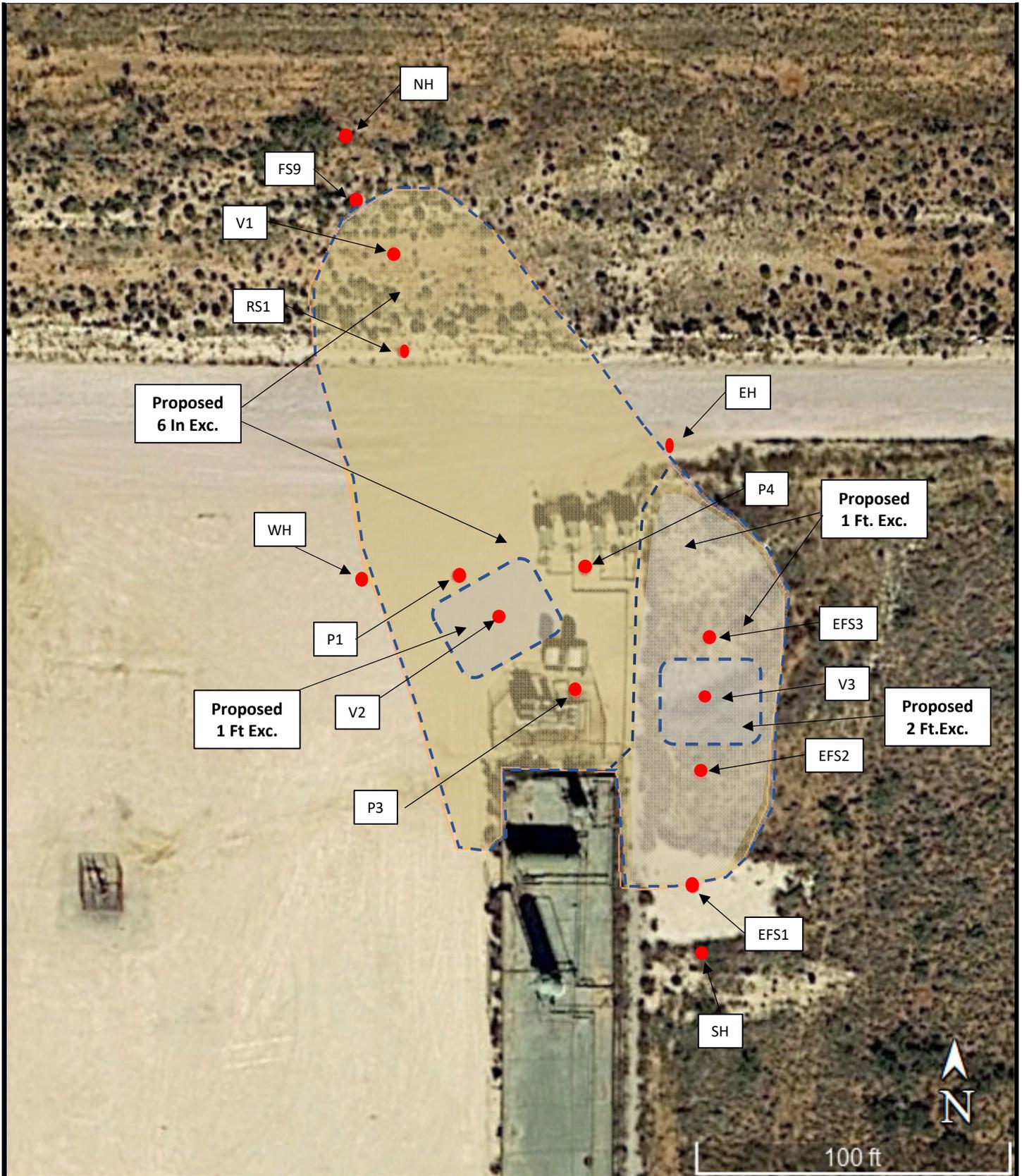
Legend	
	Site Location
	Potash Mine Workings
	0.5 Mi Radius
	1% Annual Flood Chance
	Surface Water
	Well - USGS
	Well - NMOSE
	High Karst
	Medium Karst

Figure 2
 Aerial Map
 COG Operating, LLC
 Sebastian Fed Com #001H
 GPS: 32.2243, -103.51539
 Lea County

eTECH 
 Environmental & Safety Solutions, Inc.

Drafted: mag Checked: jwl Date: 12/11/19

Figure 3
Site and Sample Location Map



Legend:

	Confirmation Sample Point
	Affected Area
	Proposed Excavation

Figure 3
Site and Sample Location Map
COG Operating, LLC
Sebastian Fed Com #001H
GPS: 32.2243, -103.51539
Lea County

eTECH
Environmental & Safety Solutions, Inc.

Drafted:
Checked: jwl Date: 12/18/19

Table 1
Concentrations of BTEX, TPH, and/or Chloride in Soil

TABLE 1
CONCENTRATIONS OF BENZENE, BTEX TPH AND CHLORIDE IN SOIL
COG Operating, LLC
Sebastian Fed Com #001H
NMOCD Ref. #: 1RP-5749

Sample ID	Date	Depth	Soil Status	SW 846 8021B		SW 846 8015M Ext.					4500 Cl
				Benzene (mg/kg)	BTEX (mg/kg)	GRO C ₆ -C ₁₀ (mg/kg)	DRO C ₁₀ -C ₂₈ (mg/kg)	GRO + DRO C ₆ -C ₂₈ (mg/kg)	ORO C ₂₈ -C ₃₆ (mg/kg)	TPH C ₆ -C ₃₆ (mg/kg)	Chloride (mg/kg)
P1 @ Surf.	11/15/2019	Surf.	In-Situ	<0.050	<0.300	<10.0	5,310	5,310	1,160	6,470	608
P3 @ Surf.	11/15/2019	Surf.	In-Situ	<0.050	<0.300	<10.0	4,610	4,610	1,260	5,870	1,340
P3 @ 1'	11/15/2019	1'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
P4 @ Surf.	11/15/2019	Surf.	In-Situ	<0.050	3.03	241	21,200	21,441	4,840	26,281	1,170
P4 @ 1'	11/15/2019	1'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
RS1 @ Surf.	11/15/2019	Surf.	In-Situ	<0.050	<0.300	<10.0	1,150	1,150	251	1,401	880
RS1 @ 1'	11/15/2019	1'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
EFS1 @ Surf.	11/15/2019	Surf.	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
EFS2 @ Surf.	11/15/2019	Surf.	In-Situ	<0.050	<0.300	<10.0	4,130	4,130	902	5,032	1,390
EFS2 @ 1'	11/15/2019	1'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	48.0
EFS3 @ Surf.	11/15/2019	Surf.	In-Situ	<0.050	<0.300	<10.0	218	218	43.8	261.8	608
FS9 @ Surf.	11/15/2019	Surf.	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
V1 @ 1'	12/4/2019	1'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	64.0
V1 @ 2'	12/4/2019	2'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
V2 @ 1'	12/4/2019	1'	In-Situ	<0.050	1.10	146	12,800	12,946	2,560	15,506	112
V2 @ 2'	12/4/2019	2'	In-Situ	<0.050	<0.300	<10.0	158	158	32.9	190.9	32.0
V2 @ 3'	12/4/2019	3'	In-Situ	<0.050	<0.300	<10.0	720	720	127	847	32.0
V3 @ 1'	12/4/2019	1'	In-Situ	<0.050	<0.300	<10.0	95.1	95.1	20.3	115.4	160
V3 @ 2'	12/4/2019	2'	In-Situ	<0.050	<0.300	<10.0	36.7	36.7	<10.0	36.7	224
NH @ Surf.	12/4/2019	Surf.	In-Situ	<0.050	<0.300	<10.0	41.5	41.5	<10.0	41.5	48.0
NH @ 4'	12/4/2019	4'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	16.0
EH @ Surf.	12/4/2019	Surf.	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	512
EH @ 4'	12/4/2019	4'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	80.0
SH @ Surf.	12/4/2019	Surf.	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
SH @ 4'	12/4/2019	4'	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
WH @ Surf.	12/4/2019	Surf.	In-Situ	<0.050	<0.300	<10.0	39.1	39.1	11.9	51.0	240
WH @ 4'	12/4/2019	4'	In-Situ	<0.050	<0.300	<10.0	16.00	16.00	<10.0	16.0	192
Closure Criteria				10	50	-	-	1,000	-	2,500	10,000

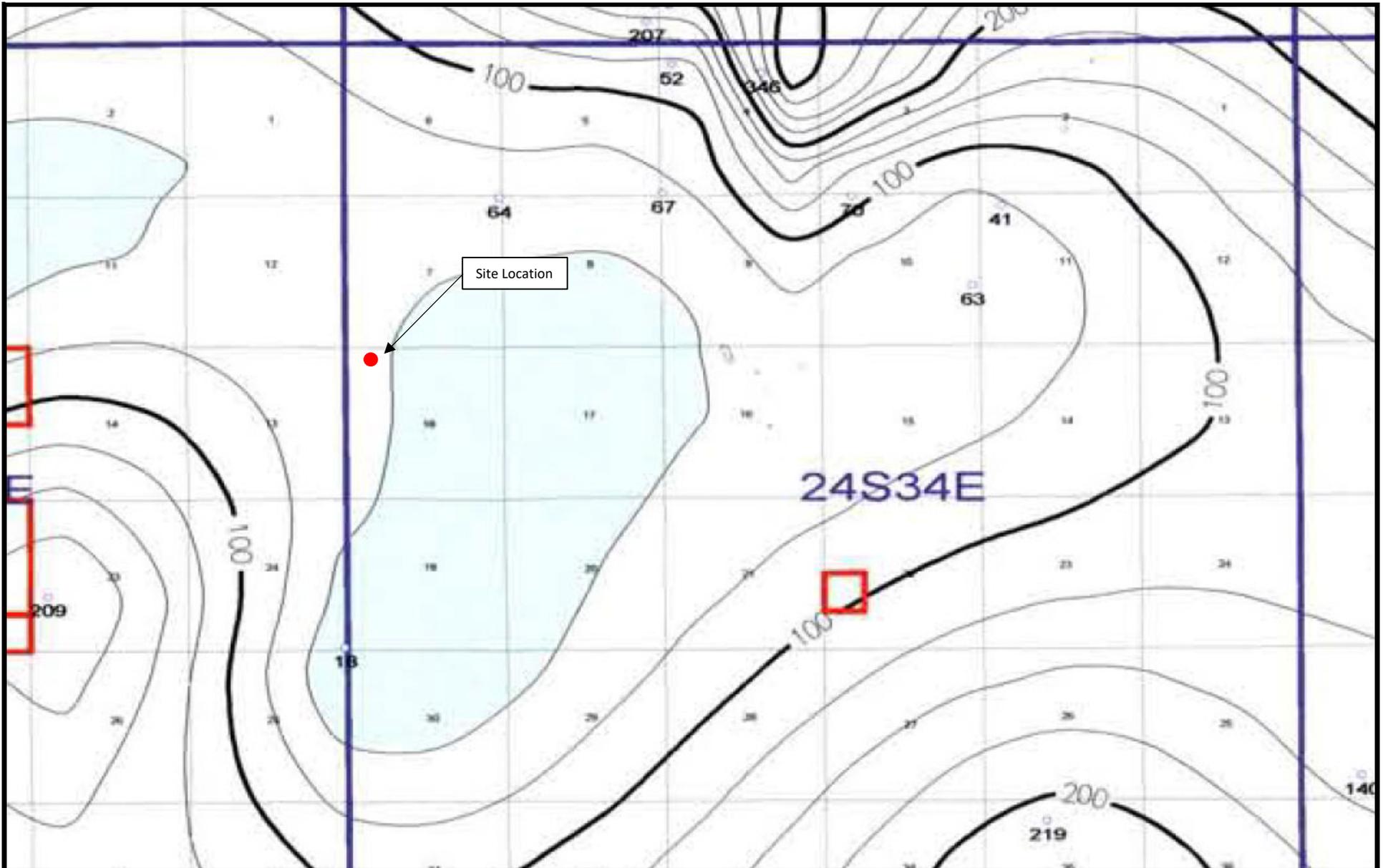
NOTES:

- =

Bold text denotes a concentration that exceeds the NMOCD Closure Criteria and/or NMOCD Reclamation Standard

Appendix A

Depth to Groundwater Information

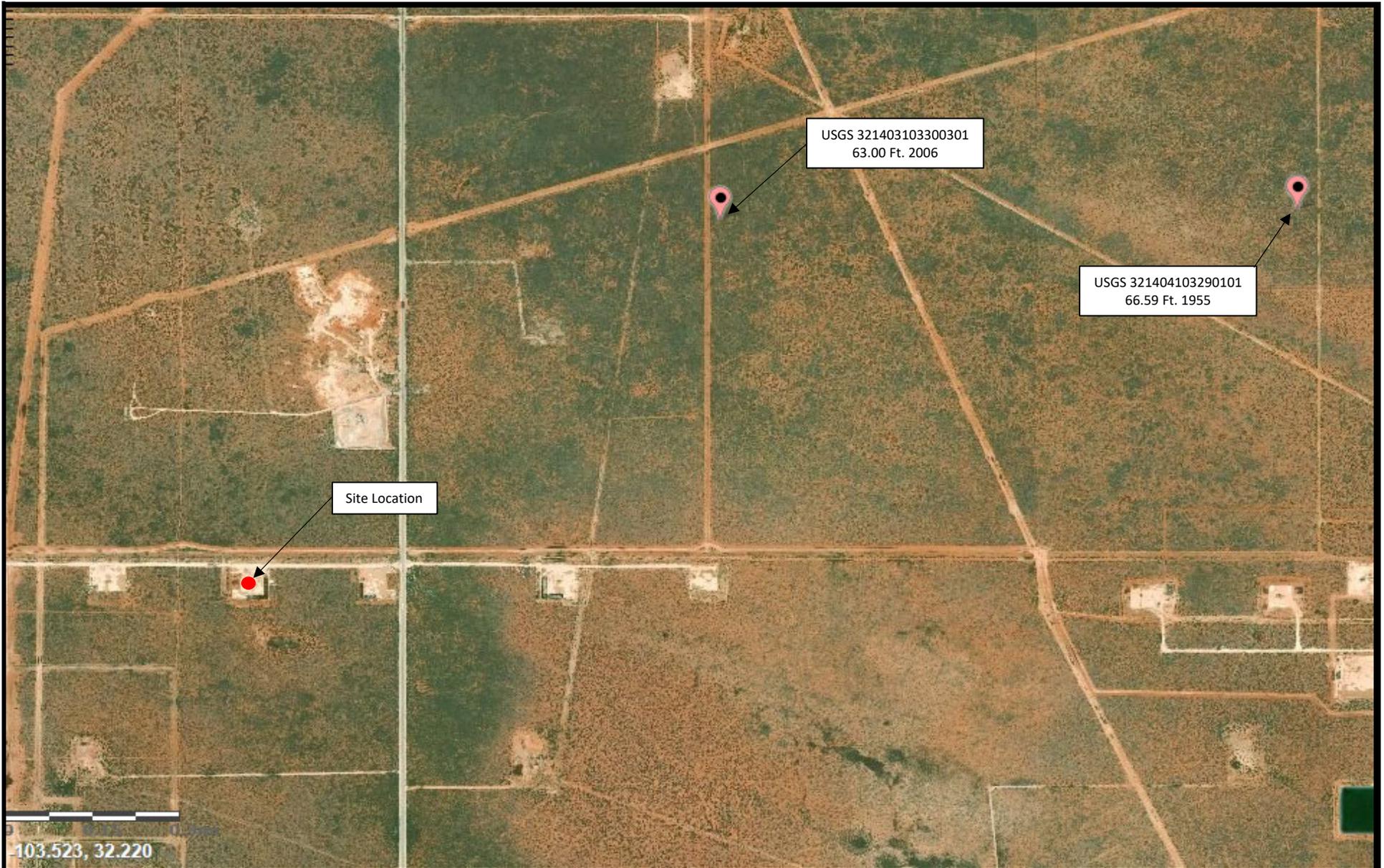


Legend:
● Site Location

Figure 4
Inferred Depth to Groundwater Trend Map
COG Operating, LLC
Sebastian Fed Com #001H
GPS: 32.2243, -103.51539
Lea County



Drafted: Checked: jwl Date: 12/11/19



- Legend:
- Site Location
 - USGS Water Well

Figure 5
USGS Well Proximity Map
COG Operating, LLC
Sebastian Fed Com #001H
GPS: 32.2243, -103.51539
Lea County



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Data Category:	Geographic Area:	
Groundwater	United States	GO

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Search Results -- No sites found

No sites were found for groundwater level data using your search criteria.

The sites you requested may be available offline. For more information, contact [USGS Water Data Inquiries](#).

lat_long_bounding_box =

Position	Latitude	Longitude
Corner 1	32.232329	103.523865
Corner 2	32.216679	103.505951

Coordinates are entered as Decimal Degrees. DMS values are converted to Decimal degrees using NAD83 as the datum. Make your bounding box bigger if you are using NAD27 Datum for your DMS values

Minimum number of 1 levels =

Use the "Back" button on your browser to change your search criteria.

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Data Category: Geographic Area:

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Groundwater levels for the Nation

Search Results -- 1 sites found

Agency code = usgs
 site_no list =

- 321403103300301

Minimum number of levels = 1
[Save file of selected sites](#) to local disk for future upload

USGS 321403103300301 24S.34E.07.22222

Lea County, New Mexico
 Latitude 32°14'03", Longitude 103°30'03" NAD27
 Land-surface elevation 3,606 feet above NAVD88
 This well is completed in the Ogallala Formation (121OGLL) local aquifer.

Output formats

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

Date	Time	? Water-level date-time accuracy	Water level, feet below land surface	Water level, feet above specific vertical datum	Referenced vertical datum	? Water-level accuracy	? Status	? Method of measurement	? Measuring agency	? Source of measurement
1970-12-08		D	72.19				2	R	U	
1976-01-16		D	85.84				2		U	
1981-03-19		D	82.95				2		U	
1986-03-06		D	79.31				2		U	
1991-05-30		D	74.56				2		U	
1996-03-13		D	64.12				2		S	
2001-02-28		D	63.38				2		S	
2006-02-07	08:40 MST	m	63.00				2		S	USGS

Explanation

Section	Code	Description
Water-level date-time accuracy	D	Date is accurate to the Day
Water-level date-time accuracy	m	Date is accurate to the Minute
Water-level accuracy	2	Water level accuracy to nearest hundredth of a foot
Status		The reported water-level measurement represents a static level
Status	R	Site had been pumped recently.
Method of measurement	S	Steel-tape measurement.
Method of measurement	U	Unknown method.
Measuring agency		Not determined
Measuring agency	USGS	U.S. Geological Survey
Source of measurement	S	Measured by personnel of reporting agency.

Section	Code	Description
Source of measurement	U	Source is unknown.
Water-level approval status	A	Approved for publication -- Processing and review completed.

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Title: Groundwater for USA: Water Levels

URL: <https://nwis.waterdata.usgs.gov/nwis/gwlevels?>

Page Contact Information: [USGS Water Data Support Team](#)

Page Last Modified: 2019-10-15 16:12:10 EDT

0.53 0.5 nadww02





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Groundwater levels for the Nation

Search Results -- 1 sites found

Agency code = usgs
 site_no list =

- 321404103290101

Minimum number of levels = 1
[Save file of selected sites](#) to local disk for future upload

USGS 321404103290101 24S.34E.04.33333

Lea County, New Mexico
 Latitude 32°14'04", Longitude 103°29'01" NAD27
 Land-surface elevation 3,571 feet above NAVD88
 This well is completed in the Ogallala Formation (121OGLL) local aquifer.

Output formats

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

Date	Time	? Water-level date-time accuracy	Water level, feet below land surface	Water level, feet above specific vertical datum	Referenced vertical datum	? Water-level accuracy	? Status	? Method of measurement	? Measuring agency	? Source of measurement
1955-04-21		D	66.59			2		U		

Explanation

Section	Code	Description
Water-level date-time accuracy	D	Date is accurate to the Day
Water-level accuracy	2	Water level accuracy to nearest hundredth of a foot
Status		The reported water-level measurement represents a static level
Method of measurement	U	Unknown method.
Measuring agency		Not determined
Source of measurement	U	Source is unknown.
Water-level approval status	A	Approved for publication -- Processing and review completed.

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Title: Groundwater for USA: Water Levels

URL: <https://nwis.waterdata.usgs.gov/nwis/gwlevels?>



Page Contact Information: [USGS Water Data Support Team](#)

Page Last Modified: 2019-10-15 16:13:09 EDT

0.6 0.58 nadww02

Appendix B

Laboratory Analytical Reports



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

November 20, 2019

DANIEL DOMINGUEZ
Etech Environmental & Safety Solutions
P.O. Box 301
Lovington, NM 88260

RE: SEBASTION FED COM #001H

Enclosed are the results of analyses for samples received by the laboratory on 11/15/19 15:38.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-19-12. 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/ga/lab_accred_certif.html.

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

Celey D. Keene
Lab Director/Quality Manager



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

Analytical Results For:

Etech Environmental & Safety Solutions
 DANIEL DOMINGUEZ
 P.O. Box 301
 Lovington NM, 88260
 Fax To: (575) 396-1429

Received:	11/15/2019	Sampling Date:	11/15/2019
Reported:	11/20/2019	Sampling Type:	Soil
Project Name:	SEBASTION FED COM #001H	Sampling Condition:	Cool & Intact
Project Number:	11378	Sample Received By:	Jodi Henson
Project Location:	COG - RURAL LEA COUNTY		

Sample ID: P1 @ SURFACE (H903894-01)

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	11/18/2019	ND	1.93	96.5	2.00	9.93		
Toluene*	<0.050	0.050	11/18/2019	ND	2.02	101	2.00	15.6		
Ethylbenzene*	<0.050	0.050	11/18/2019	ND	2.09	105	2.00	21.8		
Total Xylenes*	<0.150	0.150	11/18/2019	ND	6.11	102	6.00	21.0		
Total BTEX	<0.300	0.300	11/18/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 111 % 73.3-129

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	608	16.0	11/19/2019	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS							S-04
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier		
GRO C6-C10*	<10.0	10.0	11/19/2019	ND	225	112	200	1.24			
DRO >C10-C28*	5310	10.0	11/19/2019	ND	221	111	200	1.31			
EXT DRO >C28-C36	1160	10.0	11/19/2019	ND							

Surrogate: 1-Chlorooctane 113 % 41-142

Surrogate: 1-Chlorooctadecane 302 % 37.6-147

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* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

Etech Environmental & Safety Solutions
 DANIEL DOMINGUEZ
 P.O. Box 301
 Lovington NM, 88260
 Fax To: (575) 396-1429

Received:	11/15/2019	Sampling Date:	11/15/2019
Reported:	11/20/2019	Sampling Type:	Soil
Project Name:	SEBASTION FED COM #001H	Sampling Condition:	Cool & Intact
Project Number:	11378	Sample Received By:	Jodi Henson
Project Location:	COG - RURAL LEA COUNTY		

Sample ID: P3 @ SURFACE (H903894-02)

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	11/18/2019	ND	1.80	90.2	2.00	0.0904		
Toluene*	<0.050	0.050	11/18/2019	ND	1.81	90.3	2.00	0.912		
Ethylbenzene*	<0.050	0.050	11/18/2019	ND	1.82	90.9	2.00	0.137		
Total Xylenes*	<0.150	0.150	11/18/2019	ND	5.47	91.2	6.00	0.272		
Total BTEX	<0.300	0.300	11/18/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 100 % 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	1340	16.0	11/19/2019	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS							S-04
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier		
GRO C6-C10*	<10.0	10.0	11/19/2019	ND	225	112	200	1.24			
DRO >C10-C28*	4610	10.0	11/19/2019	ND	221	111	200	1.31			
EXT DRO >C28-C36	1260	10.0	11/19/2019	ND							

Surrogate: 1-Chlorooctane 99.9 % 41-142

Surrogate: 1-Chlorooctadecane 289 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

Etech Environmental & Safety Solutions
 DANIEL DOMINGUEZ
 P.O. Box 301
 Lovington NM, 88260
 Fax To: (575) 396-1429

Received:	11/15/2019	Sampling Date:	11/15/2019
Reported:	11/20/2019	Sampling Type:	Soil
Project Name:	SEBASTION FED COM #001H	Sampling Condition:	Cool & Intact
Project Number:	11378	Sample Received By:	Jodi Henson
Project Location:	COG - RURAL LEA COUNTY		

Sample ID: P3 @ 1' (H903894-03)

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	11/18/2019	ND	1.80	90.2	2.00	0.0904		
Toluene*	<0.050	0.050	11/18/2019	ND	1.81	90.3	2.00	0.912		
Ethylbenzene*	<0.050	0.050	11/18/2019	ND	1.82	90.9	2.00	0.137		
Total Xylenes*	<0.150	0.150	11/18/2019	ND	5.47	91.2	6.00	0.272		
Total BTEX	<0.300	0.300	11/18/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 115 % 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	<16.0	16.0	11/19/2019	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	11/19/2019	ND	225	112	200	1.24		
DRO >C10-C28*	<10.0	10.0	11/19/2019	ND	221	111	200	1.31		
EXT DRO >C28-C36	<10.0	10.0	11/19/2019	ND						

Surrogate: 1-Chlorooctane 119 % 41-142

Surrogate: 1-Chlorooctadecane 129 % 37.6-147

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Analytical Results For:

Etech Environmental & Safety Solutions
 DANIEL DOMINGUEZ
 P.O. Box 301
 Lovington NM, 88260
 Fax To: (575) 396-1429

Received:	11/15/2019	Sampling Date:	11/15/2019
Reported:	11/20/2019	Sampling Type:	Soil
Project Name:	SEBASTION FED COM #001H	Sampling Condition:	Cool & Intact
Project Number:	11378	Sample Received By:	Jodi Henson
Project Location:	COG - RURAL LEA COUNTY		

Sample ID: P4 @ SURFACE (H903894-04)

BTEX 8021B		mg/kg		Analyzed By: MS					S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	11/18/2019	ND	1.80	90.2	2.00	0.0904		
Toluene*	0.050	0.050	11/18/2019	ND	1.81	90.3	2.00	0.912		
Ethylbenzene*	0.479	0.050	11/18/2019	ND	1.82	90.9	2.00	0.137		
Total Xylenes*	2.50	0.150	11/18/2019	ND	5.47	91.2	6.00	0.272		
Total BTEX	3.03	0.300	11/18/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 149 % 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	1170	16.0	11/19/2019	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	241	50.0	11/19/2019	ND	225	112	200	1.24		
DRO >C10-C28*	21200	50.0	11/19/2019	ND	221	111	200	1.31		
EXT DRO >C28-C36	4840	50.0	11/19/2019	ND						

Surrogate: 1-Chlorooctane 166 % 41-142

Surrogate: 1-Chlorooctadecane 980 % 37.6-147

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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

Etech Environmental & Safety Solutions
 DANIEL DOMINGUEZ
 P.O. Box 301
 Lovington NM, 88260
 Fax To: (575) 396-1429

Received:	11/15/2019	Sampling Date:	11/15/2019
Reported:	11/20/2019	Sampling Type:	Soil
Project Name:	SEBASTION FED COM #001H	Sampling Condition:	Cool & Intact
Project Number:	11378	Sample Received By:	Jodi Henson
Project Location:	COG - RURAL LEA COUNTY		

Sample ID: P4 @ 1' (H903894-05)

BTEX 8021B		mg/kg		Analyzed By: MS				S-04		
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	11/18/2019	ND	1.80	90.2	2.00	0.0904		
Toluene*	<0.050	0.050	11/18/2019	ND	1.81	90.3	2.00	0.912		
Ethylbenzene*	<0.050	0.050	11/18/2019	ND	1.82	90.9	2.00	0.137		
Total Xylenes*	<0.150	0.150	11/18/2019	ND	5.47	91.2	6.00	0.272		
Total BTEX	<0.300	0.300	11/18/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 139 % 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	<16.0	16.0	11/19/2019	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	11/19/2019	ND	225	112	200	1.24		
DRO >C10-C28*	<10.0	10.0	11/19/2019	ND	221	111	200	1.31		
EXT DRO >C28-C36	<10.0	10.0	11/19/2019	ND						

Surrogate: 1-Chlorooctane 117 % 41-142

Surrogate: 1-Chlorooctadecane 128 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

Etech Environmental & Safety Solutions
 DANIEL DOMINGUEZ
 P.O. Box 301
 Lovington NM, 88260
 Fax To: (575) 396-1429

Received:	11/15/2019	Sampling Date:	11/15/2019
Reported:	11/20/2019	Sampling Type:	Soil
Project Name:	SEBASTION FED COM #001H	Sampling Condition:	Cool & Intact
Project Number:	11378	Sample Received By:	Jodi Henson
Project Location:	COG - RURAL LEA COUNTY		

Sample ID: RS1 @ SURFACE (H903894-06)

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	11/18/2019	ND	1.80	90.2	2.00	0.0904		
Toluene*	<0.050	0.050	11/18/2019	ND	1.81	90.3	2.00	0.912		
Ethylbenzene*	<0.050	0.050	11/18/2019	ND	1.82	90.9	2.00	0.137		
Total Xylenes*	<0.150	0.150	11/18/2019	ND	5.47	91.2	6.00	0.272		
Total BTEX	<0.300	0.300	11/18/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 115 % 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	880	16.0	11/19/2019	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	11/19/2019	ND	222	111	200	2.38		
DRO >C10-C28*	1150	10.0	11/19/2019	ND	211	106	200	7.20	QR-03, QM-07	
EXT DRO >C28-C36	251	10.0	11/19/2019	ND						

Surrogate: 1-Chlorooctane 93.7 % 41-142

Surrogate: 1-Chlorooctadecane 133 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

Etech Environmental & Safety Solutions
 DANIEL DOMINGUEZ
 P.O. Box 301
 Lovington NM, 88260
 Fax To: (575) 396-1429

Received:	11/15/2019	Sampling Date:	11/15/2019
Reported:	11/20/2019	Sampling Type:	Soil
Project Name:	SEBASTION FED COM #001H	Sampling Condition:	Cool & Intact
Project Number:	11378	Sample Received By:	Jodi Henson
Project Location:	COG - RURAL LEA COUNTY		

Sample ID: RS1 @ 1' (H903894-07)

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	11/18/2019	ND	1.80	90.2	2.00	0.0904		
Toluene*	<0.050	0.050	11/18/2019	ND	1.81	90.3	2.00	0.912		
Ethylbenzene*	<0.050	0.050	11/18/2019	ND	1.82	90.9	2.00	0.137		
Total Xylenes*	<0.150	0.150	11/18/2019	ND	5.47	91.2	6.00	0.272		
Total BTEX	<0.300	0.300	11/18/2019	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	32.0	16.0	11/19/2019	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	11/19/2019	ND	222	111	200	2.38		
DRO >C10-C28*	<10.0	10.0	11/19/2019	ND	211	106	200	7.20		
EXT DRO >C28-C36	<10.0	10.0	11/19/2019	ND						

Surrogate: 1-Chlorooctane 95.0 % 41-142

Surrogate: 1-Chlorooctadecane 91.3 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

Etech Environmental & Safety Solutions
 DANIEL DOMINGUEZ
 P.O. Box 301
 Lovington NM, 88260
 Fax To: (575) 396-1429

Received:	11/15/2019	Sampling Date:	11/15/2019
Reported:	11/20/2019	Sampling Type:	Soil
Project Name:	SEBASTION FED COM #001H	Sampling Condition:	Cool & Intact
Project Number:	11378	Sample Received By:	Jodi Henson
Project Location:	COG - RURAL LEA COUNTY		

Sample ID: EFS1 @ SURFACE (H903894-08)

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	11/18/2019	ND	1.80	90.2	2.00	0.0904		
Toluene*	<0.050	0.050	11/18/2019	ND	1.81	90.3	2.00	0.912		
Ethylbenzene*	<0.050	0.050	11/18/2019	ND	1.82	90.9	2.00	0.137		
Total Xylenes*	<0.150	0.150	11/18/2019	ND	5.47	91.2	6.00	0.272		
Total BTEX	<0.300	0.300	11/18/2019	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	32.0	16.0	11/19/2019	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	11/19/2019	ND	222	111	200	2.38		
DRO >C10-C28*	<10.0	10.0	11/19/2019	ND	211	106	200	7.20		
EXT DRO >C28-C36	<10.0	10.0	11/19/2019	ND						

Surrogate: 1-Chlorooctane 89.0 % 41-142

Surrogate: 1-Chlorooctadecane 84.5 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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

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 DANIEL DOMINGUEZ
 P.O. Box 301
 Lovington NM, 88260
 Fax To: (575) 396-1429

Received:	11/15/2019	Sampling Date:	11/15/2019
Reported:	11/20/2019	Sampling Type:	Soil
Project Name:	SEBASTION FED COM #001H	Sampling Condition:	Cool & Intact
Project Number:	11378	Sample Received By:	Jodi Henson
Project Location:	COG - RURAL LEA COUNTY		

Sample ID: EFS2 @ SURFACE (H903894-09)

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	11/18/2019	ND	1.80	90.2	2.00	0.0904		
Toluene*	<0.050	0.050	11/18/2019	ND	1.81	90.3	2.00	0.912		
Ethylbenzene*	<0.050	0.050	11/18/2019	ND	1.82	90.9	2.00	0.137		
Total Xylenes*	<0.150	0.150	11/18/2019	ND	5.47	91.2	6.00	0.272		
Total BTEX	<0.300	0.300	11/18/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 100 % 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	1390	16.0	11/19/2019	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS							S-04
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier		
GRO C6-C10*	<10.0	10.0	11/19/2019	ND	222	111	200	2.38			
DRO >C10-C28*	4130	10.0	11/19/2019	ND	211	106	200	7.20			
EXT DRO >C28-C36	902	10.0	11/19/2019	ND							

Surrogate: 1-Chlorooctane 101 % 41-142

Surrogate: 1-Chlorooctadecane 211 % 37.6-147

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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

Etech Environmental & Safety Solutions
 DANIEL DOMINGUEZ
 P.O. Box 301
 Lovington NM, 88260
 Fax To: (575) 396-1429

Received:	11/15/2019	Sampling Date:	11/15/2019
Reported:	11/20/2019	Sampling Type:	Soil
Project Name:	SEBASTION FED COM #001H	Sampling Condition:	Cool & Intact
Project Number:	11378	Sample Received By:	Jodi Henson
Project Location:	COG - RURAL LEA COUNTY		

Sample ID: EFS2 @ 1' (H903894-10)

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	11/19/2019	ND	1.80	90.2	2.00	0.0904		
Toluene*	<0.050	0.050	11/19/2019	ND	1.81	90.3	2.00	0.912		
Ethylbenzene*	<0.050	0.050	11/19/2019	ND	1.82	90.9	2.00	0.137		
Total Xylenes*	<0.150	0.150	11/19/2019	ND	5.47	91.2	6.00	0.272		
Total BTEX	<0.300	0.300	11/19/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 122 % 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	11/19/2019	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	11/19/2019	ND	222	111	200	2.38		
DRO >C10-C28*	<10.0	10.0	11/19/2019	ND	211	106	200	7.20		
EXT DRO >C28-C36	<10.0	10.0	11/19/2019	ND						

Surrogate: 1-Chlorooctane 96.4 % 41-142

Surrogate: 1-Chlorooctadecane 98.6 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

Etech Environmental & Safety Solutions
 DANIEL DOMINGUEZ
 P.O. Box 301
 Lovington NM, 88260
 Fax To: (575) 396-1429

Received:	11/15/2019	Sampling Date:	11/15/2019
Reported:	11/20/2019	Sampling Type:	Soil
Project Name:	SEBASTION FED COM #001H	Sampling Condition:	Cool & Intact
Project Number:	11378	Sample Received By:	Jodi Henson
Project Location:	COG - RURAL LEA COUNTY		

Sample ID: EFS3 @ SURFACE (H903894-11)

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	11/19/2019	ND	1.80	90.2	2.00	0.0904		
Toluene*	<0.050	0.050	11/19/2019	ND	1.81	90.3	2.00	0.912		
Ethylbenzene*	<0.050	0.050	11/19/2019	ND	1.82	90.9	2.00	0.137		
Total Xylenes*	<0.150	0.150	11/19/2019	ND	5.47	91.2	6.00	0.272		
Total BTEX	<0.300	0.300	11/19/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 111 % 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	608	16.0	11/19/2019	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	11/19/2019	ND	222	111	200	2.38		
DRO >C10-C28*	218	10.0	11/19/2019	ND	211	106	200	7.20		
EXT DRO >C28-C36	43.8	10.0	11/19/2019	ND						

Surrogate: 1-Chlorooctane 89.2 % 41-142

Surrogate: 1-Chlorooctadecane 101 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

Etech Environmental & Safety Solutions
 DANIEL DOMINGUEZ
 P.O. Box 301
 Lovington NM, 88260
 Fax To: (575) 396-1429

Received:	11/15/2019	Sampling Date:	11/15/2019
Reported:	11/20/2019	Sampling Type:	Soil
Project Name:	SEBASTION FED COM #001H	Sampling Condition:	Cool & Intact
Project Number:	11378	Sample Received By:	Jodi Henson
Project Location:	COG - RURAL LEA COUNTY		

Sample ID: FS9 @ SURFACE (H903894-12)

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	11/19/2019	ND	1.80	90.2	2.00	0.0904		
Toluene*	<0.050	0.050	11/19/2019	ND	1.81	90.3	2.00	0.912		
Ethylbenzene*	<0.050	0.050	11/19/2019	ND	1.82	90.9	2.00	0.137		
Total Xylenes*	<0.150	0.150	11/19/2019	ND	5.47	91.2	6.00	0.272		
Total BTEX	<0.300	0.300	11/19/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 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	<16.0	16.0	11/19/2019	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	11/19/2019	ND	222	111	200	2.38		
DRO >C10-C28*	<10.0	10.0	11/19/2019	ND	211	106	200	7.20		
EXT DRO >C28-C36	<10.0	10.0	11/19/2019	ND						

Surrogate: 1-Chlorooctane 89.4 % 41-142

Surrogate: 1-Chlorooctadecane 90.3 % 37.6-147

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* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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Notes and Definitions

- S-06 The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
- S-04 The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
- QR-03 The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
- QR-02 The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
- 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

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Coley D. Keene

Coley D. Keene, Lab Director/Quality Manager



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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: Etech Environmental & Safety Solutions, Inc. Project Manager: Daniel Dominguez Address: P.O. Box 301 City: Lovington State: NM Zip: 88260 Phone #: (575) 396-2378 Fax #: (575) 396-1429 Project #: 11378 Project Owner: Concho Project Name: Sebastian Fed Com #001H Project Location: Rural Lea County Sampler Name: Joel Lowry		BILL TO P.O. #: _____ Company: Concho Attn: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone #: _____ Fax #: _____															
FOR LAB USE ONLY Lab I.D. Sample I.D. H905894		(G)RAB OR (C)OMP. # CONTAINERS MATRIX: GROUNDWATER, WASTEWATER, SOIL, OIL, SLUDGE, OTHER: PRESERV: ACID/BASE, ICE / COOL, OTHER: DATE TIME															
1	P1 @ Surface	g	1	X	11/15/19	10:00	X	X	X								
2	P3 @ Surface	g	1	X	11/15/19	10:15	X	X	X								
3	P3 @ 1'	g	1	X	11/15/19	10:20	X	X	X								
4	P4 @ Surface	g	1	X	11/15/19	10:30	X	X	X								
5	P4 @ 1'	g	1	X	11/15/19	10:35	X	X	X								
6	RS1 @ Surface	g	1	X	11/15/19	11:00	X	X	X								
7	RS1 @ 1'	g	1	X	11/15/19	11:05	X	X	X								
8	EFSS1 @ Surface	g	1	X	11/15/19	11:20	X	X	X								
9	EFSS2 @ Surface	g	1	X	11/15/19	11:25	X	X	X								
10	EFSS2 @ 1'	g	1	X	11/15/19	11:30	X	X	X								

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Relinquished By: *[Signature]* Date: 11/15/19 Time: 15:38
 Received By: *[Signature]* Date: _____ Time: _____
 Relinquished By: _____ Date: _____ Time: _____
 Received By: _____ Date: _____ Time: _____

Delivered By: (Circle One) UPS Bus Other: 2.44 / 2.82 #97
 Sample Condition: Cool Intact Yes No No

CHECKED BY: *[Signature]*
 Phone Result: Yes No Add'l Phone #: _____
 Fax Result: Yes No Add'l Fax #: _____
 REMARKS: Please email results to daniel@etechnv.com, joel@etechnv.com.

FORM-006
 Revision 1.0

† Cardinal cannot accept verbal changes. Please fax written changes to 575-393-2476



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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

BILL TO

ANALYSIS REQUEST

Company Name: Etech Environmental & Safety Solutions, Inc.		P.O. #:	
Project Manager: Daniel Dominguez		Company:	Concho
Address: P.O. Box 301		Attn:	
City: Lovington		State: NM	Zip: 88260
Phone #: (575) 396-2378		Fax #: (575) 396-1429	
Project #: 11378		Project Owner:	Concho
Project Name: Sebastian Fed Com #001H		State:	Zip:
Project Location: Rural Lea County		Phone #:	
Sampler Name: Joel Lowry		Fax #:	

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX							PRESERV.		DATE	TIME	Chloride	TPH (8015M)	BTEX (8021B)
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :					
H903894																	
11	EFSS3 @ Surface	g	1			X					X		11/15/19	11:45	X	X	X
12	FSS9 @ Surface	g	1			X					X		11/15/19	11:55	X	X	X

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Relinquished By: <i>[Signature]</i>	Date: 11/15/19	Received By: <i>[Signature]</i>	Time: 15:38
Relinquished By: <i>[Signature]</i>	Date: 11/15/19	Received By: <i>[Signature]</i>	Time: 15:38
Delivered By: (Circle One) 14	Sampler - UPS - Bus - Other: 2.44 / 2.80 #97	Sample Condition Cool <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Intact <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	CHECKED BY: <i>[Signature]</i>

REMARKS:

Phone Result: Yes No Add'l Phone #:

Fax Result: Yes No Add'l Fax #:

Please email results to danield@etechenv.com, joel@etechenv.com.



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

December 06, 2019

SHELDON HITCHCOCK
COG OPERATING
P. O. BOX 1630
ARTESIA, NM 88210

RE: SEBASTIAN FED COM #001H

Enclosed are the results of analyses for samples received by the laboratory on 12/04/19 16:45.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-19-12. 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/ga/lab_accred_certif.html.

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive style.

Celey D. Keene
Lab Director/Quality Manager



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

Analytical Results For:

COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	12/04/2019	Sampling Date:	12/04/2019
Reported:	12/06/2019	Sampling Type:	Soil
Project Name:	SEBASTIAN FED COM #001H	Sampling Condition:	Cool & Intact
Project Number:	11378	Sample Received By:	Jodi Henson
Project Location:	RURAL LEA		

Sample ID: V1 @ 1' (H904060-01)

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	12/05/2019	ND	1.94	97.1	2.00	2.46		
Toluene*	<0.050	0.050	12/05/2019	ND	1.87	93.5	2.00	3.50		
Ethylbenzene*	<0.050	0.050	12/05/2019	ND	1.90	95.2	2.00	3.13		
Total Xylenes*	<0.150	0.150	12/05/2019	ND	5.76	95.9	6.00	2.75		
Total BTEX	<0.300	0.300	12/05/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 99.2 % 73.3-129

Chloride, SM4500CI-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	12/05/2019	ND	400	100	400	7.69		

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	12/05/2019	ND	200	99.8	200	0.430		
DRO >C10-C28*	<10.0	10.0	12/05/2019	ND	197	98.4	200	1.30		
EXT DRO >C28-C36	<10.0	10.0	12/05/2019	ND						

Surrogate: 1-Chlorooctane 102 % 41-142

Surrogate: 1-Chlorooctadecane 105 % 37.6-147

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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

COG OPERATING
SHELDON HITCHCOCK
P. O. BOX 1630
ARTESIA NM, 88210
Fax To: NONE

Received:	12/04/2019	Sampling Date:	12/04/2019
Reported:	12/06/2019	Sampling Type:	Soil
Project Name:	SEBASTIAN FED COM #001H	Sampling Condition:	Cool & Intact
Project Number:	11378	Sample Received By:	Jodi Henson
Project Location:	RURAL LEA		

Sample ID: V1 @ 2' (H904060-02)

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	12/05/2019	ND	1.94	97.1	2.00	2.46		
Toluene*	<0.050	0.050	12/05/2019	ND	1.87	93.5	2.00	3.50		
Ethylbenzene*	<0.050	0.050	12/05/2019	ND	1.90	95.2	2.00	3.13		
Total Xylenes*	<0.150	0.150	12/05/2019	ND	5.76	95.9	6.00	2.75		
Total BTEX	<0.300	0.300	12/05/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 99.9 % 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	<16.0	16.0	12/05/2019	ND	400	100	400	7.69		

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	12/05/2019	ND	200	99.8	200	0.430		
DRO >C10-C28*	<10.0	10.0	12/05/2019	ND	197	98.4	200	1.30		
EXT DRO >C28-C36	<10.0	10.0	12/05/2019	ND						

Surrogate: 1-Chlorooctane 102 % 41-142

Surrogate: 1-Chlorooctadecane 105 % 37.6-147

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* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	12/04/2019	Sampling Date:	12/04/2019
Reported:	12/06/2019	Sampling Type:	Soil
Project Name:	SEBASTIAN FED COM #001H	Sampling Condition:	Cool & Intact
Project Number:	11378	Sample Received By:	Jodi Henson
Project Location:	RURAL LEA		

Sample ID: V2 @ 1' (H904060-03)

BTEX 8021B		mg/kg		Analyzed By: MS					S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	12/05/2019	ND	1.94	97.1	2.00	2.46		
Toluene*	<0.050	0.050	12/05/2019	ND	1.87	93.5	2.00	3.50		
Ethylbenzene*	0.148	0.050	12/05/2019	ND	1.90	95.2	2.00	3.13		
Total Xylenes*	0.951	0.150	12/05/2019	ND	5.76	95.9	6.00	2.75		
Total BTEX	1.10	0.300	12/05/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 131 % 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	12/05/2019	ND	400	100	400	7.69		

TPH 8015M		mg/kg		Analyzed By: MS					S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	146	50.0	12/05/2019	ND	200	99.8	200	0.430		
DRO >C10-C28*	12800	50.0	12/05/2019	ND	197	98.4	200	1.30		
EXT DRO >C28-C36	2560	50.0	12/05/2019	ND						

Surrogate: 1-Chlorooctane 148 % 41-142

Surrogate: 1-Chlorooctadecane 532 % 37.6-147

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Analytical Results For:

COG OPERATING
SHELDON HITCHCOCK
P. O. BOX 1630
ARTESIA NM, 88210
Fax To: NONE

Received:	12/04/2019	Sampling Date:	12/04/2019
Reported:	12/06/2019	Sampling Type:	Soil
Project Name:	SEBASTIAN FED COM #001H	Sampling Condition:	Cool & Intact
Project Number:	11378	Sample Received By:	Jodi Henson
Project Location:	RURAL LEA		

Sample ID: V2 @ 2' (H904060-04)

BTEX 8021B		mg/kg		Analyzed By: MS				S-04		
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	12/05/2019	ND	1.94	97.1	2.00	2.46		
Toluene*	<0.050	0.050	12/05/2019	ND	1.87	93.5	2.00	3.50		
Ethylbenzene*	<0.050	0.050	12/05/2019	ND	1.90	95.2	2.00	3.13		
Total Xylenes*	<0.150	0.150	12/05/2019	ND	5.76	95.9	6.00	2.75		
Total BTEX	<0.300	0.300	12/05/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 193 % 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	32.0	16.0	12/05/2019	ND	400	100	400	7.69		

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	12/05/2019	ND	200	99.8	200	0.430		
DRO >C10-C28*	158	10.0	12/05/2019	ND	197	98.4	200	1.30		
EXT DRO >C28-C36	32.9	10.0	12/05/2019	ND						

Surrogate: 1-Chlorooctane 111 % 41-142

Surrogate: 1-Chlorooctadecane 124 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

COG OPERATING
SHELDON HITCHCOCK
P. O. BOX 1630
ARTESIA NM, 88210
Fax To: NONE

Received:	12/04/2019	Sampling Date:	12/04/2019
Reported:	12/06/2019	Sampling Type:	Soil
Project Name:	SEBASTIAN FED COM #001H	Sampling Condition:	Cool & Intact
Project Number:	11378	Sample Received By:	Jodi Henson
Project Location:	RURAL LEA		

Sample ID: V2 @ 3' (H904060-05)

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	12/05/2019	ND	1.94	97.1	2.00	2.46		
Toluene*	<0.050	0.050	12/05/2019	ND	1.87	93.5	2.00	3.50		
Ethylbenzene*	<0.050	0.050	12/05/2019	ND	1.90	95.2	2.00	3.13		
Total Xylenes*	<0.150	0.150	12/05/2019	ND	5.76	95.9	6.00	2.75		
Total BTEX	<0.300	0.300	12/05/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 108 % 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	32.0	16.0	12/05/2019	ND	400	100	400	7.69		

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	12/05/2019	ND	200	99.8	200	0.430		
DRO >C10-C28*	720	10.0	12/05/2019	ND	197	98.4	200	1.30		
EXT DRO >C28-C36	127	10.0	12/05/2019	ND						

Surrogate: 1-Chlorooctane 109 % 41-142

Surrogate: 1-Chlorooctadecane 135 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

COG OPERATING
SHELDON HITCHCOCK
P. O. BOX 1630
ARTESIA NM, 88210
Fax To: NONE

Received:	12/04/2019	Sampling Date:	12/04/2019
Reported:	12/06/2019	Sampling Type:	Soil
Project Name:	SEBASTIAN FED COM #001H	Sampling Condition:	Cool & Intact
Project Number:	11378	Sample Received By:	Jodi Henson
Project Location:	RURAL LEA		

Sample ID: V3 @ 1' (H904060-06)

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	12/05/2019	ND	1.94	97.1	2.00	2.46		
Toluene*	<0.050	0.050	12/05/2019	ND	1.87	93.5	2.00	3.50		
Ethylbenzene*	<0.050	0.050	12/05/2019	ND	1.90	95.2	2.00	3.13		
Total Xylenes*	<0.150	0.150	12/05/2019	ND	5.76	95.9	6.00	2.75		
Total BTEX	<0.300	0.300	12/05/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 122 % 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	160	16.0	12/05/2019	ND	400	100	400	7.69		

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	12/05/2019	ND	200	99.8	200	0.430		
DRO >C10-C28*	95.1	10.0	12/05/2019	ND	197	98.4	200	1.30		
EXT DRO >C28-C36	20.3	10.0	12/05/2019	ND						

Surrogate: 1-Chlorooctane 93.0 % 41-142

Surrogate: 1-Chlorooctadecane 103 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

COG OPERATING
SHELDON HITCHCOCK
P. O. BOX 1630
ARTESIA NM, 88210
Fax To: NONE

Received:	12/04/2019	Sampling Date:	12/04/2019
Reported:	12/06/2019	Sampling Type:	Soil
Project Name:	SEBASTIAN FED COM #001H	Sampling Condition:	Cool & Intact
Project Number:	11378	Sample Received By:	Jodi Henson
Project Location:	RURAL LEA		

Sample ID: V3 @ 2' (H904060-07)

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	12/05/2019	ND	1.94	97.1	2.00	2.46		
Toluene*	<0.050	0.050	12/05/2019	ND	1.87	93.5	2.00	3.50		
Ethylbenzene*	<0.050	0.050	12/05/2019	ND	1.90	95.2	2.00	3.13		
Total Xylenes*	<0.150	0.150	12/05/2019	ND	5.76	95.9	6.00	2.75		
Total BTEX	<0.300	0.300	12/05/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 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	224	16.0	12/05/2019	ND	400	100	400	7.69		

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	12/05/2019	ND	200	99.8	200	0.430		
DRO >C10-C28*	36.7	10.0	12/05/2019	ND	197	98.4	200	1.30		
EXT DRO >C28-C36	<10.0	10.0	12/05/2019	ND						

Surrogate: 1-Chlorooctane 101 % 41-142

Surrogate: 1-Chlorooctadecane 107 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	12/04/2019	Sampling Date:	12/04/2019
Reported:	12/06/2019	Sampling Type:	Soil
Project Name:	SEBASTIAN FED COM #001H	Sampling Condition:	Cool & Intact
Project Number:	11378	Sample Received By:	Jodi Henson
Project Location:	RURAL LEA		

Sample ID: SH @ SURFACE (H904060-08)

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	12/05/2019	ND	1.94	97.1	2.00	2.46		
Toluene*	<0.050	0.050	12/05/2019	ND	1.87	93.5	2.00	3.50		
Ethylbenzene*	<0.050	0.050	12/05/2019	ND	1.90	95.2	2.00	3.13		
Total Xylenes*	<0.150	0.150	12/05/2019	ND	5.76	95.9	6.00	2.75		
Total BTEX	<0.300	0.300	12/05/2019	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	<16.0	16.0	12/05/2019	ND	400	100	400	7.69		

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	12/05/2019	ND	200	99.8	200	0.430		
DRO >C10-C28*	<10.0	10.0	12/05/2019	ND	197	98.4	200	1.30		
EXT DRO >C28-C36	<10.0	10.0	12/05/2019	ND						

Surrogate: 1-Chlorooctane 109 % 41-142

Surrogate: 1-Chlorooctadecane 114 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	12/04/2019	Sampling Date:	12/04/2019
Reported:	12/06/2019	Sampling Type:	Soil
Project Name:	SEBASTIAN FED COM #001H	Sampling Condition:	Cool & Intact
Project Number:	11378	Sample Received By:	Jodi Henson
Project Location:	RURAL LEA		

Sample ID: NH @ SURFACE (H904060-09)

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	12/05/2019	ND	1.94	97.1	2.00	2.46		
Toluene*	<0.050	0.050	12/05/2019	ND	1.87	93.5	2.00	3.50		
Ethylbenzene*	<0.050	0.050	12/05/2019	ND	1.90	95.2	2.00	3.13		
Total Xylenes*	<0.150	0.150	12/05/2019	ND	5.76	95.9	6.00	2.75		
Total BTEX	<0.300	0.300	12/05/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 100 % 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	12/05/2019	ND	400	100	400	7.69		

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	12/05/2019	ND	200	99.8	200	0.430		
DRO >C10-C28*	41.5	10.0	12/05/2019	ND	197	98.4	200	1.30		
EXT DRO >C28-C36	<10.0	10.0	12/05/2019	ND						

Surrogate: 1-Chlorooctane 107 % 41-142

Surrogate: 1-Chlorooctadecane 116 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	12/04/2019	Sampling Date:	12/04/2019
Reported:	12/06/2019	Sampling Type:	Soil
Project Name:	SEBASTIAN FED COM #001H	Sampling Condition:	Cool & Intact
Project Number:	11378	Sample Received By:	Jodi Henson
Project Location:	RURAL LEA		

Sample ID: SH @ 4' (H904060-10)

BTEX 8021B		mg/kg		Analyzed By: MS				S-04		
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	12/05/2019	ND	1.94	97.1	2.00	2.46		
Toluene*	<0.050	0.050	12/05/2019	ND	1.87	93.5	2.00	3.50		
Ethylbenzene*	<0.050	0.050	12/05/2019	ND	1.90	95.2	2.00	3.13		
Total Xylenes*	<0.150	0.150	12/05/2019	ND	5.76	95.9	6.00	2.75		
Total BTEX	<0.300	0.300	12/05/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 163 % 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	<16.0	16.0	12/05/2019	ND	400	100	400	7.69		

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	12/05/2019	ND	200	99.8	200	0.430		
DRO >C10-C28*	<10.0	10.0	12/05/2019	ND	197	98.4	200	1.30		
EXT DRO >C28-C36	<10.0	10.0	12/05/2019	ND						

Surrogate: 1-Chlorooctane 110 % 41-142

Surrogate: 1-Chlorooctadecane 113 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	12/04/2019	Sampling Date:	12/04/2019
Reported:	12/06/2019	Sampling Type:	Soil
Project Name:	SEBASTIAN FED COM #001H	Sampling Condition:	Cool & Intact
Project Number:	11378	Sample Received By:	Jodi Henson
Project Location:	RURAL LEA		

Sample ID: EH @ 4' (H904060-11)

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	12/05/2019	ND	1.94	97.1	2.00	2.46		
Toluene*	<0.050	0.050	12/05/2019	ND	1.87	93.5	2.00	3.50		
Ethylbenzene*	<0.050	0.050	12/05/2019	ND	1.90	95.2	2.00	3.13		
Total Xylenes*	<0.150	0.150	12/05/2019	ND	5.76	95.9	6.00	2.75		
Total BTEX	<0.300	0.300	12/05/2019	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	80.0	16.0	12/05/2019	ND	400	100	400	7.69		

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	12/05/2019	ND	200	99.8	200	0.430		
DRO >C10-C28*	<10.0	10.0	12/05/2019	ND	197	98.4	200	1.30		
EXT DRO >C28-C36	<10.0	10.0	12/05/2019	ND						

Surrogate: 1-Chlorooctane 102 % 41-142

Surrogate: 1-Chlorooctadecane 106 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	12/04/2019	Sampling Date:	12/04/2019
Reported:	12/06/2019	Sampling Type:	Soil
Project Name:	SEBASTIAN FED COM #001H	Sampling Condition:	Cool & Intact
Project Number:	11378	Sample Received By:	Jodi Henson
Project Location:	RURAL LEA		

Sample ID: WH @ SURFACE (H904060-12)

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	12/05/2019	ND	1.94	97.1	2.00	2.46		
Toluene*	<0.050	0.050	12/05/2019	ND	1.87	93.5	2.00	3.50		
Ethylbenzene*	<0.050	0.050	12/05/2019	ND	1.90	95.2	2.00	3.13		
Total Xylenes*	<0.150	0.150	12/05/2019	ND	5.76	95.9	6.00	2.75		
Total BTEX	<0.300	0.300	12/05/2019	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	240	16.0	12/05/2019	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	12/05/2019	ND	200	99.8	200	0.430		
DRO >C10-C28*	39.1	10.0	12/05/2019	ND	197	98.4	200	1.30		
EXT DRO >C28-C36	11.9	10.0	12/05/2019	ND						

Surrogate: 1-Chlorooctane 97.1 % 41-142

Surrogate: 1-Chlorooctadecane 104 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	12/04/2019	Sampling Date:	12/04/2019
Reported:	12/06/2019	Sampling Type:	Soil
Project Name:	SEBASTIAN FED COM #001H	Sampling Condition:	Cool & Intact
Project Number:	11378	Sample Received By:	Jodi Henson
Project Location:	RURAL LEA		

Sample ID: EH @ SURFACE (H904060-13)

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	12/05/2019	ND	1.94	97.1	2.00	2.46		
Toluene*	<0.050	0.050	12/05/2019	ND	1.87	93.5	2.00	3.50		
Ethylbenzene*	<0.050	0.050	12/05/2019	ND	1.90	95.2	2.00	3.13		
Total Xylenes*	<0.150	0.150	12/05/2019	ND	5.76	95.9	6.00	2.75		
Total BTEX	<0.300	0.300	12/05/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 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	12/05/2019	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	12/05/2019	ND	200	99.8	200	0.430		
DRO >C10-C28*	<10.0	10.0	12/05/2019	ND	197	98.4	200	1.30		
EXT DRO >C28-C36	<10.0	10.0	12/05/2019	ND						

Surrogate: 1-Chlorooctane 104 % 41-142

Surrogate: 1-Chlorooctadecane 108 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	12/04/2019	Sampling Date:	12/04/2019
Reported:	12/06/2019	Sampling Type:	Soil
Project Name:	SEBASTIAN FED COM #001H	Sampling Condition:	Cool & Intact
Project Number:	11378	Sample Received By:	Jodi Henson
Project Location:	RURAL LEA		

Sample ID: WH @ 4' (H904060-14)

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	12/05/2019	ND	1.94	97.1	2.00	2.46		
Toluene*	<0.050	0.050	12/05/2019	ND	1.87	93.5	2.00	3.50		
Ethylbenzene*	<0.050	0.050	12/05/2019	ND	1.90	95.2	2.00	3.13		
Total Xylenes*	<0.150	0.150	12/05/2019	ND	5.76	95.9	6.00	2.75		
Total BTEX	<0.300	0.300	12/05/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 99.2 % 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	192	16.0	12/05/2019	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	12/05/2019	ND	200	99.8	200	0.430		
DRO >C10-C28*	16.0	10.0	12/05/2019	ND	197	98.4	200	1.30		
EXT DRO >C28-C36	<10.0	10.0	12/05/2019	ND						

Surrogate: 1-Chlorooctane 98.6 % 41-142

Surrogate: 1-Chlorooctadecane 103 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	12/04/2019	Sampling Date:	12/04/2019
Reported:	12/06/2019	Sampling Type:	Soil
Project Name:	SEBASTIAN FED COM #001H	Sampling Condition:	Cool & Intact
Project Number:	11378	Sample Received By:	Jodi Henson
Project Location:	RURAL LEA		

Sample ID: NH @ 4' (H904060-15)

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	12/05/2019	ND	1.94	97.1	2.00	2.46		
Toluene*	<0.050	0.050	12/05/2019	ND	1.87	93.5	2.00	3.50		
Ethylbenzene*	<0.050	0.050	12/05/2019	ND	1.90	95.2	2.00	3.13		
Total Xylenes*	<0.150	0.150	12/05/2019	ND	5.76	95.9	6.00	2.75		
Total BTEX	<0.300	0.300	12/05/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 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	16.0	16.0	12/05/2019	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	12/05/2019	ND	200	99.8	200	0.430		
DRO >C10-C28*	<10.0	10.0	12/05/2019	ND	197	98.4	200	1.30		
EXT DRO >C28-C36	<10.0	10.0	12/05/2019	ND						

Surrogate: 1-Chlorooctane 111 % 41-142

Surrogate: 1-Chlorooctadecane 116 % 37.6-147

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Notes and Definitions

- S-06 The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
- S-04 The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- ** Samples not received at proper temperature of 6°C or below.
- *** Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C
Samples reported on an as received basis (wet) unless otherwise noted on report

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Coley D. Keene

Coley D. Keene, Lab Director/Quality Manager



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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: COG Operating, LLC Project Manager: Daniel Dominguez Address: 3100 Plains Hwy City: Lovington State: NM Zip: 88260 Phone #: 575-396-2378 Fax #: 575-396-1429 Project #: 11378 Project Owner: COG Operating, LLC Project Name: Sebastian Fed Com #001H Project Location: Rural Lea Sampler Name: FOR LAB USE ONLY		P.O. #: Company: COG Attn: CO Sheldon Hitchcock Address: City: State: NM Zip:	
Lab I.D.: H904000 Sample I.D.:		BILL TO	
(G)RAB OR (C)OMP. # CONTAINERS GROUNDWATER WASTEWATER SOIL OIL SLUDGE OTHER : ACID/BASE: ICE / COOL OTHER :		MATRIX PRESERV SAMPLING	
DATE TIME		ANALYSIS REQUEST	
Chloride TPH BTEX 8021		Yes <input type="checkbox"/> No <input type="checkbox"/> Add'l Phone #: Fax Result: Yes <input type="checkbox"/> No <input type="checkbox"/> Add'l Fax #:	
PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.			
Reinquished By: <i>[Signature]</i> Date: 2/14/16 Time: 16:45		Received By: <i>[Signature]</i> Date: 5/12/16 Time: 5:52	
Delivered By: (Circle One) Sampler - UPS - Bus - Other: 5/12/16 5:52 #97		Sample Condition Cool <input checked="" type="checkbox"/> Intact <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Checked By: <i>[Signature]</i>	
REMARKS: Email results to daniel@etechenv.com			



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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: COG Operating, LLC Project Manager: Daniel Dominguez Address: 3100 Plains Hwy City: Lovington State: NM Zip: 88260 Phone #: 575-396-2378 Fax #: 575-396-1429 Project #: 11378 Project Owner: COG Operating, LLC Project Name: Sebastian Fed Com #001H Project Location: Rural Lea Sampler Name:		P.O. #: Company: COG Attn: CO Sheldon Hitchcock Address: City: State: NM Zip: Phone #: Fax #:	
FOR LAB USE ONLY Lab I.D.: Sample I.D. HP00060		BILL TO	
PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising under this contract or that shall be limited to the amount paid by the client for the analysis. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or accessions arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.		ANALYSIS REQUEST	
Relinquished By: <i>[Signature]</i> Date: 12/14/19 Time: 6:45 Relinquished By: <i>[Signature]</i> Date: Time:		Received By: <i>[Signature]</i> Date: Time:	
Delivered By: (Circle One) Sampler - UPS - Bus - Other: 5:16/5:52 #97 Sample Condition: <input checked="" type="checkbox"/> Cool <input checked="" type="checkbox"/> Intact <input type="checkbox"/> Yes <input type="checkbox"/> No		CHECKED BY: <i>[Signature]</i> REMARKS: Email results to danield@etechny.com	
11 FH @ 4' (G) GRAB OR (C) COMP. # CONTAINERS 12 WH @ surface GROUNDWATER 13 FH @ surface WASTEWATER 14 WH @ 4' SOIL 15 WH @ 4' OIL SLUDGE OTHER: ACID/BASE: ICE / COOL OTHER:		PRESERV SAMPLING DATE TIME Chloride TPH BTEX 8021	

Appendix C

Photographic Log

Photographic Log

Photo Number: 1	
Photo Direction: East	
Photo Description: View of the area on the caliche well pad.	

Photo Number: 2	
Photo Direction: North	
Photo Description: View of the area within the pasture.	