SITE INFORMATION

Report Type: Closure Report (1RP-5125)

General Site Information:						
Site:	**Mars 10 SC 506**					
Company:	**EOG Resources**					
Section, Township and Range	**Unit M**	**Sec. 3**	**T 24S**	**R 33E**		
County:	**Lea County, NM**					
GPS:	**32.24140**			**-103.5662**		
Surface Owner:	**State of New Mexico**					

Release Data:	
Date Released:	7/8/2018
Type Release:	Produced Water
Source of Contamination:	Illegal dump
Fluid Released:	60 bbls. PW
Fluids Recovered:	0 bbls. PW

Official Communication:			
Name:	James Kennedy		Clair Gonzales
Company:	EOG Resources		Tetra Tech
Address:	5509 Champions Dr		901 West Wall Street
			Suite 100
City:	Midland, TX 79706		Midland, Texas 79701
Phone number:	432-686-7016		432-687-8634
Fax:			
Email:	James.Kennedy@eogresources.com		clair.gonzales@tetratech.com

Site Characterization	
Depth to Groundwater:	*22.09' below ground surface (bgs)*
Karst Potential:	*Low - Playa Lake within 200'*

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

TETRA TECH

July 13, 2021

Bradford Billings
Hydrologist
District 2 Artesia
Oil Conservation Division
Santa Fe, NM 87505

Re: Closure Report
EOG Resources
Mars 10 SC 506
Unit M, Section 3, Township 24 South, Range 33 East
Lea County, New Mexico
1RP-5125
Incident Id: NOY1819840745

Mr. Billings:

Tetra Tech, Inc. (Tetra Tech) was contacted by EOG Resources (EOG) to supervise the remediation and reclamation activities at the EOG Mars 10 SC 506 (Site), which is located in the Public Land Survey System (PLSS) Unit M, Section 3, Township 24 South, Range 33 East, Lea County, New Mexico (Site). The Site coordinates are 32.2414º, -103.5662º. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the release occurred on July 9, 2018 due to an illegal dump of approximately 60 barrels (bbls.) of produced water that was found on lease road heading to the Mars CTB. During immediate response actions, no fluids were recovered. The initial C-141 report was submitted on July 16, 2018 and approved by the NMOCD on July 17, 2018. The release was subsequently assigned the Remediation Permit (RP) number 1RP-5125. The C-141 forms are included in Appendix A.

Site Characterization

A site characterization was performed for the site, and no watercourses, lakebeds, sinkholes, residences, schools, hospitals, institutions, churches, springs, private domestic water wells, wetlands, incorporated municipal boundaries, subsurface mines, or floodplains are located within the specified distances, a playa lake exists within 200 feet of the southern end of the release, in addition, the site is in a low karst potential area. The nearest well is listed in the USGS National Water Information Database website in Section 10, approximately 0.5 miles South of the site, and has a reported depth to groundwater of 22.09 ft. below ground surface (bgs.). Site characterization data is included in Appendix B.

Regulatory

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

TETRA TECH

A risk-based evaluation was performed for the site per 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 upon the site characterization, the proposed RRAL for TPH is 100 mg/kg (GRO+DRO+MRO), and chlorides is 600 mg/kg).

Previous Soil Assessment and Analytical Results

GHD Assessment and Remediation

On July 16, 2018, GHD on behalf of EOG performed initial assessment activities. Initial, pre-emptive spill response measures were conducted upon the approval of Ryan Mann with the NMSLO. The initial response consisted of mechanical scraping and excavation to minimize migration and spread of produced water to an unnamed playa lake approximately 200 feet to the south. In addition, during the assessment activities a total of four (4) test pits utilizing a backhoe were dug to depths ranging from 0.5 to 6 ft bgs and two hand auger soil borings were advanced to depths ranging from 0.5 to 1 ft bgs. Collected soil samples were field screened for chloride content using HACH test strips. Selected samples were submitted to Hall Environmental Analysis Laboratory (HEAL) located in Albuquerque, New Mexico, for chloride analysis by EPA Method 300.0, BTEX by EPA method 8021 and for TPH (gasoline, diesel, and oil range organics) by EPA method 8015.

Chloride field screening concentrations ranged from <120 to >2,560 milligrams per liter (mg/L). The highest concentrations were contained in soils from ground surface to 0.5 ft bgs. Chloride laboratory concentrations ranged from below the laboratory reporting limit (LRL) to 620 mg/kg. The sample collected from TP-2 at 4 ft bgs exceeded the Table 1 closure criteria of 600 mg/kg. All BTEX and TPH results were below the LRLs (non-detect). Soil sample locations and analytical results are summarized on Figure 2 and in Table 1, as well as the laboratory reports which are within the GHD report included in Appendix C.

GHD and SDR Enterprises LLC initiated contaminated soil scraping and excavation at the southern end of the release near the playa on July 25, 2018 after receiving authorization from Ryan Mann. Subsequently, on July 27, 2018, all work was stopped due to the potential presence of cultural materials.

A meeting with concerned parties was held at the NMSLO on November 16, 2018 to discuss the continuation of assessment/remediation activities in light of recognized archeological resources on the Site. As a result of that meeting, GHD performed an additional assessment under the supervision of a New Mexico permitted archaeologist on December 10, 2018 that included advancing eight (8) additional hand auger borings (HA-12 through HA-19) and the TP-2 location was deepened to 5 ft bgs with a hand auger (HA-2). Soil samples were collected from 6 inches and 1 ft bgs in HA-12 through HA-19 and 5 ft bgs in HA-2.

The samples were submitted to HEAL for chloride analysis by EPA Method 300. Chloride concentrations ranged from below the LRL to 660 mg/kg. The sample collected from HA-2 at 5 ft

bgs exceeded the closure criteria and was collected at the third-party release point. All remaining soil sample chloride concentrations were below the closure criteria. All soils disturbed via the hand auger process were observed by an archeologist to evaluate for the presence of cultural resources.

Goshawk Limited Testing Plan and Remediation and Stabilization Plan

On April 2019, Goshawk Environmental Consulting, Inc (Goshawk) developed a limited testing plan and a Remediation and Stabilization Plan (See Attachment C) and submitted them to the New Mexico State Land Office (NMSLO) for proposed contaminant remediation activities within the Site.

Remediation Activities

Between May 06 and May 30, 2019, Tetra Tech personnel were on site to supervise the remediation activities under the monitoring of Goshawk and collect samples. Based on Goshawk Remediation plan, three (3) areas (northern blade scrape, two-track path, and a southern blade scrape (see Attachment C). Tetra Tech was supervising the screening of the soil removed from the southern area to collect any cultural resource artifacts that may have been removed during the initial remediation effort. Before excavation, several areas within the proposed excavation area were screened for cultural artifacts and for salinity using an Extech EC400 ExStik to determine the chloride concentrations. A sample from the caliche pit composite (L/T/ Dillion Caliche Pit) was collected and submitted for laboratory analysis. An auger hole was advanced to a total depth of 6.5 ft. bgs and sample intervals were field screened for salinity to determine the chloride concentrations. All of the readings were below chloride limit. In addition, Tetra Tech performed delineation of the impacted area. Several sample locations were advanced and screened to the north (N-1 and N-2), to the west (W-1 through W-5), to the east (E-1 through E-3), and to the south (S-1 and S-2). Based on the chloride readings, five (5) sample locations (N-1, S-1, E-2, W-2 and W-5) were advanced at a depth from top to 5 ft. bgs. A total of eleven (11) samples were submitted and analyzed 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 D. The results of the sampling are summarized in Table 1. See sample locations on Figure 3.

Referring to Table 1, the caliche pit composite sample, and all the delineation samples analyzed were below the Site RRAL for chloride (600 mg/kg) and TPH (100 mg/kg), BTEX (50 m/kg) and benzene (10 mg/kg).

Remediation and Confirmation Samples

On June 17, 2019, Tetra Tech collected confirmation samples at the excavation area every 200 sq. ft. A total of four (4) bottomhole (BH1 through B-4) samples were collected at a total depth of 5 ft. bgs. In addition, four (4) sidewall (NSW-1, ESW-1, SSW-1, and WSW-1) samples were collected at north, east, south and west of the excavation area. A total of eight (8) samples were submitted and analyzed 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 D. The results of the sampling are summarized in Table 2. See sample locations on Figure 4.

TETRA TECH

Referring to Table 2, the sample analyzed was below the Site RRAL for chloride (600 mg/kg) and TPH (100 mg/kg), BTEX (50 m/kg) and benzene (10 mg/kg).

The archaeological damage assessment also raised concerns about further degradation to site by wind and rainfall erosion. EOG proposed to implement secondary erosion and stabilization controls to minimize further impacts to the maximum extent practicable. Within the stabilization plan presented by Goshawk was proposed the following activities (Referred to Attachment C for figures, photos, and tables).

On July 19, 2019 Tetra Tech supervised the placing of seven (7) wattles in the locations shown on Figure 4. Backfilling of southern area (near playa-lake) was supervised using topsoil from a nearby area and the placement of the erosion control blanket was observed. Besides, large boulders were placed south of the access road at the edge of existing vegetation to serve as a "road" block. On June 22, 2019 backfilling of the northern area was conducted.

On August 16, 2019 the erosion control blanket was placed at the northern backfilled and along the two-track path as part of the stabilization efforts.

The excavations were all backfilled with clean soil material. Approximately 4.6 cubic yards of material was transported offsite for proper disposal.

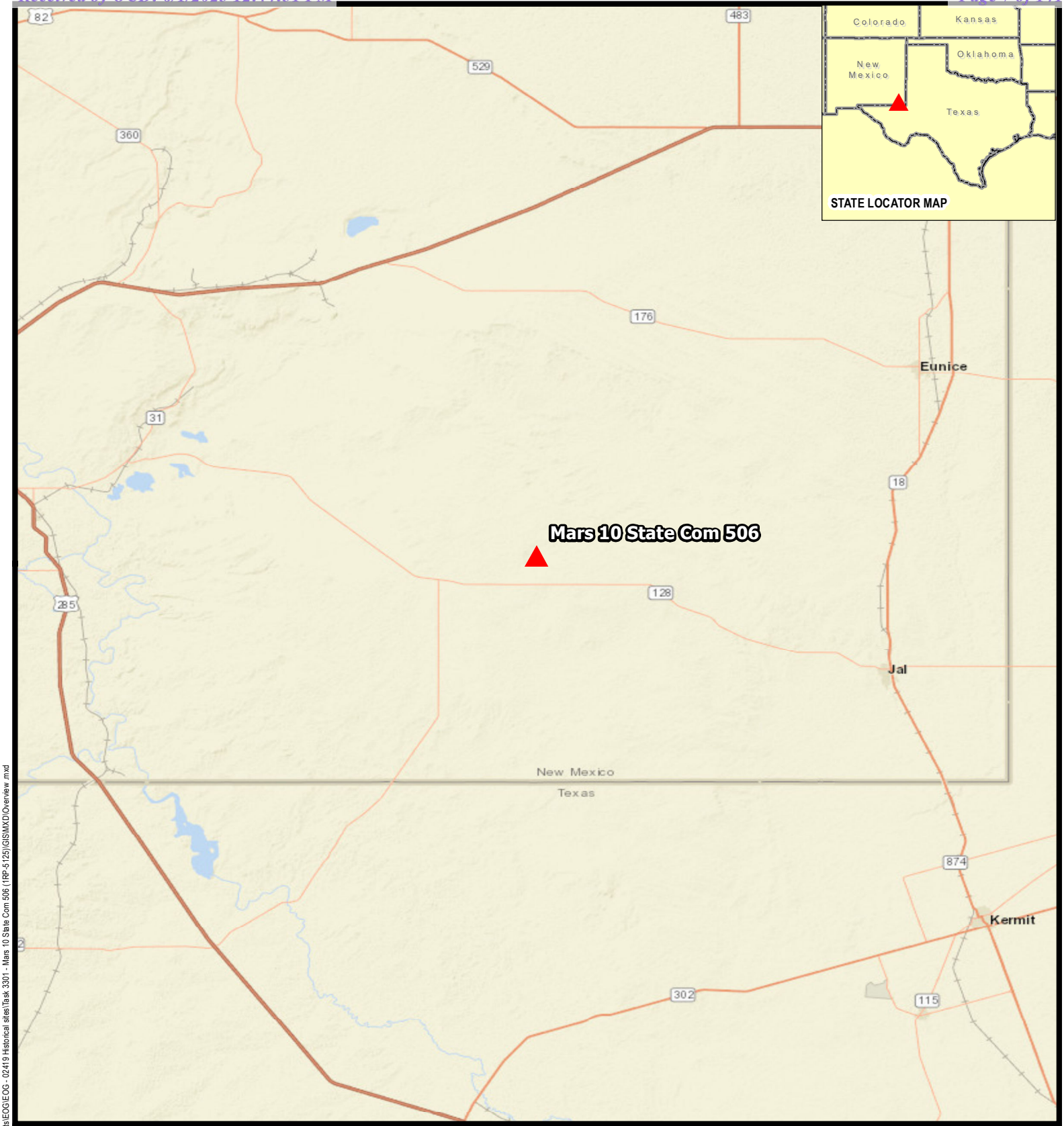
Conclusion

Based on the laboratory results and the remediation activities performed, EOG requests closure of this spill issue. The final C-141 initial reports are enclosed in Appendix A. 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

Paula Tocora Alonso
Paula Tocora Alonso
Environmental Engineer I
Tetra Tech, Inc

Figures



SITE LOCATION

N
W
E
S

0 5 10 Miles

Approximate Scale

Service Layer Credits: ESRI Basemap - Streets, 2021.

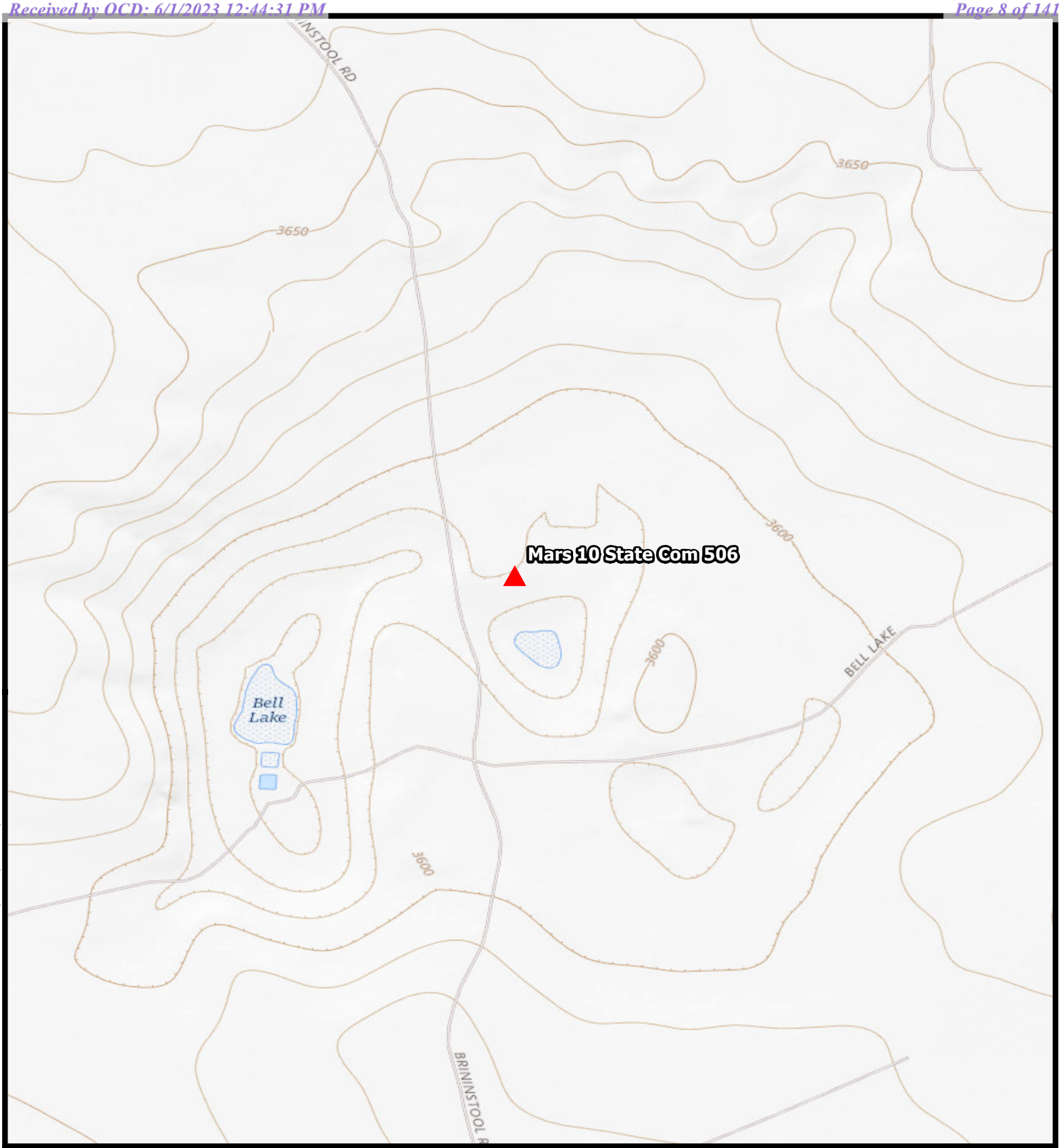
OVERVIEW MAP
MARS 10 STATE COM 506
Property located at coordinates 32.24140°, -103.5662°
LEA COUNTY, NEW MEXICO

eog resources

Project #:
212C-MD-02419

FIGURE
1

Document Path: C:\Users\E.MORENOFLORES\Documents\Projects\EOG\EOG - 02419 Historical sites\Task 3301 - Mars 10 State Com 506 (1RP-5125)\GIS\MXD\Overview.mxd



SITE LOCATION

N
W E
S

0 500 1,000 2,000

Approximate Scale in Feet

Service Layer Credits: USGS, The National Map, Topo Base, 2021.

TOPOGRAPHIC MAP
MARS 10 STATE COM 506
Property located at coordinates 32.24140°, -103.5662°
LEA COUNTY, NEW MEXICO

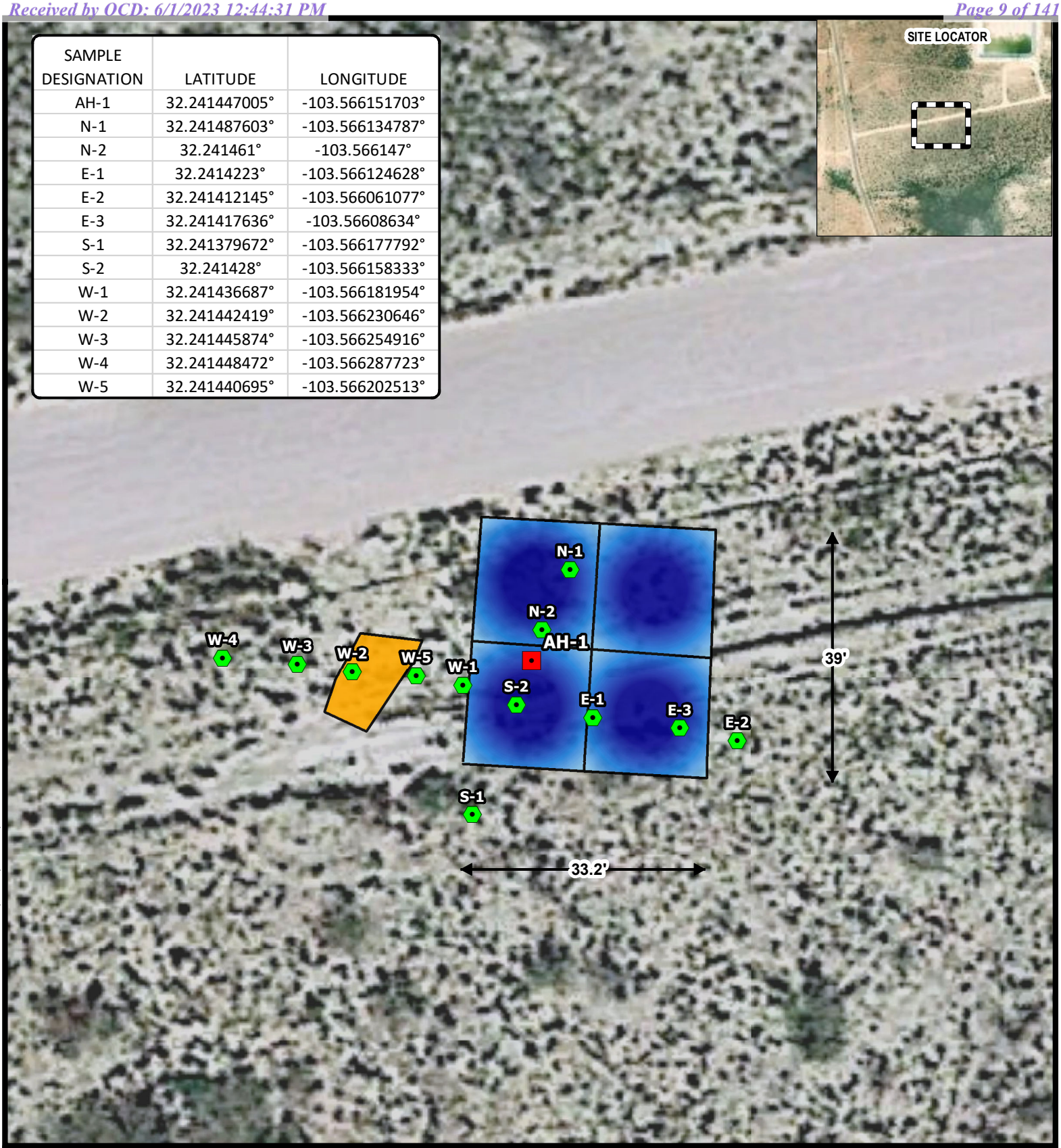
eog resources

Project #:
212C-MD-02419

FIGURE
2

Document Path: C:\Users\E.MORENOFLORES\Documents\Projects\EOG\EOG - 02419 Historical sites\Task 3301 - Mars 10 State Com 506 (1RP-5125)\GIS\MXD\Topo .mxd

SAMPLE DESIGNATION	LATITUDE	LONGITUDE
AH-1	32.241447005°	-103.566151703°
N-1	32.241487603°	-103.566134787°
N-2	32.241461°	-103.566147°
E-1	32.2414223°	-103.566124628°
E-2	32.241412145°	-103.566061077°
E-3	32.241417636°	-103.56608634°
S-1	32.241379672°	-103.566177792°
S-2	32.241428°	-103.566158333°
W-1	32.241436687°	-103.566181954°
W-2	32.241442419°	-103.566230646°
W-3	32.241445874°	-103.566254916°
W-4	32.241448472°	-103.566287723°
W-5	32.241440695°	-103.566202513°



AUGERHOLE SAMPLE LOCATION

DELINEATION SAMPLE LOCATIONS

SPOIL PILE LOCATION

AFFECTED AREA EXTENT

N
W
E
S

0 10 20 Feet

Approximate Scale

Service Layer Credits: ESRI Basemap - Streets, 2021.

SPILL ASSESSMENT MAP
MARS 10 STATE COM 506
Property located at coordinates 32.24140°, -103.5662°
LEA COUNTY, NEW MEXICO

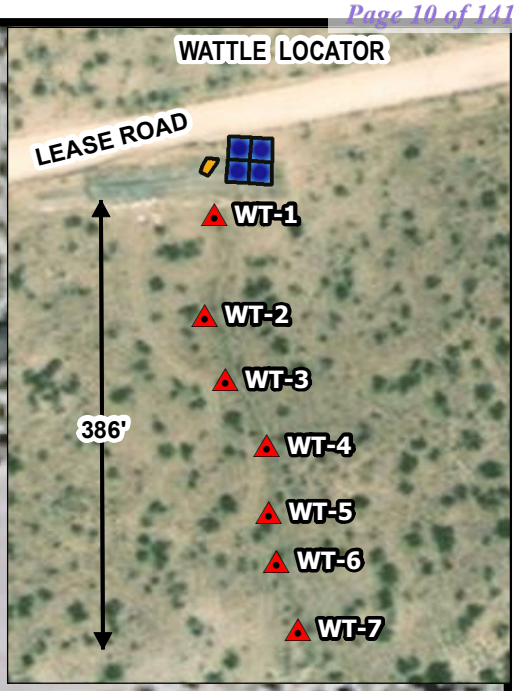
eog resources

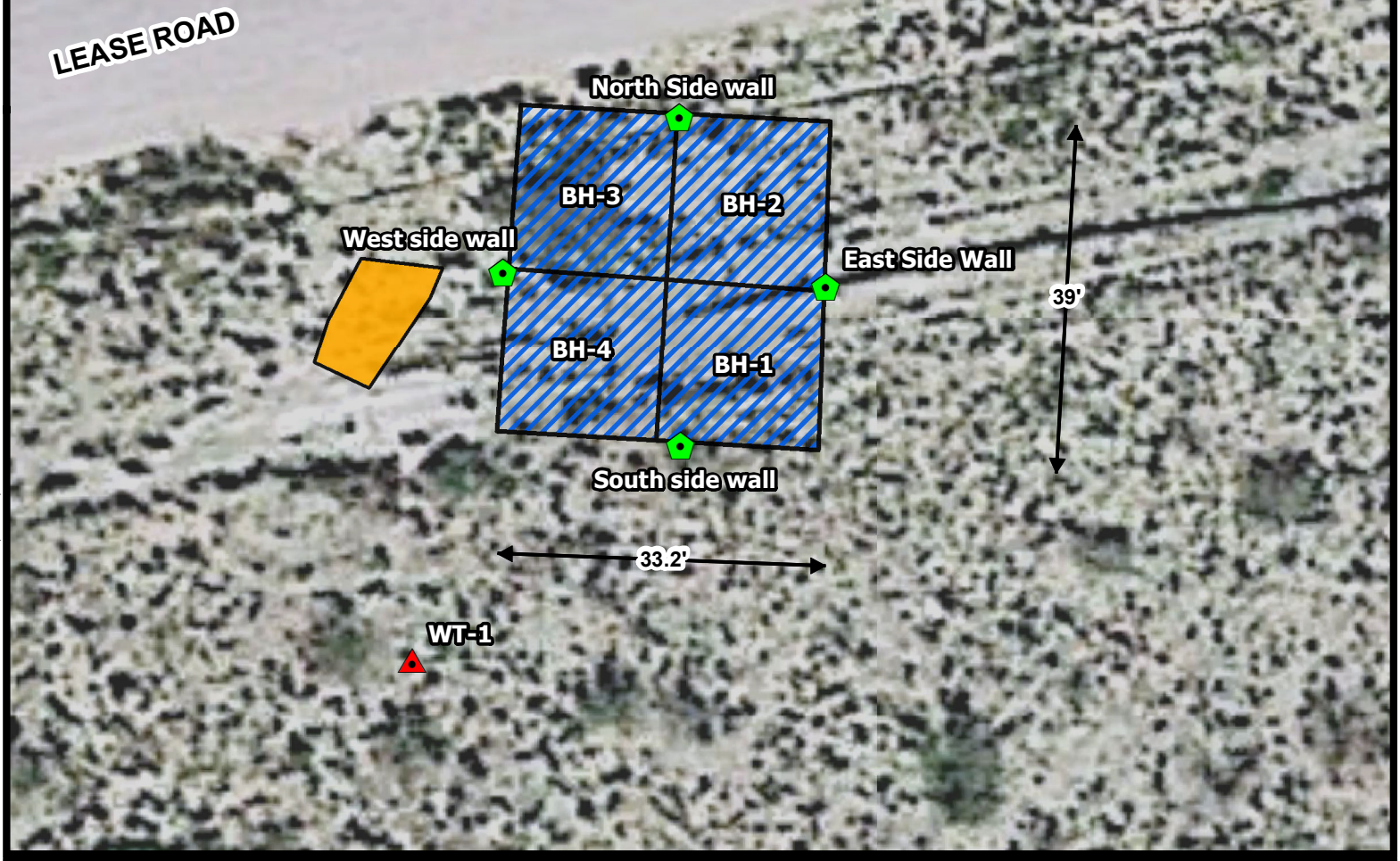
Project #:
212C-MD-02419

FIGURE
3

Document Path: C:\Users\E.MORENOFLORES\Documents\Projects\EOG\EOG - 02419 Historical sites\Task 3301 - Mars 10 State Com 506 (1RP-5125)\GIS\MXD\Spill .mxd

SAMPLE DESIGNATION	LATITUDE	LONGITUDE
BH-1	32.241425315°	-103.566099394°
BH-2	32.241478968°	-103.566096719°
BH-3	32.241481677°	-103.566150267°
BH-4	32.241430567°	-103.566153334°
East Side Wall	32.241449634°	-103.566072079°
North Side Wall	32.24150649°	-103.566120896°
South Side Wall	32.241396793°	-103.566120491°
West Side Wall	32.241454704°	-103.566179759°
WT-1	32.241325°	-103.56621°
WT-2	32.241086°	-103.566233°
WT-3	32.240931°	-103.566184°
WT-4	32.240774°	-103.566084°
WT-5	32.240616667°	-103.56608°
WT-6	32.2405°	-103.566061°
WT-7	32.240338°	-103.56601°





BH BOTTOMHOLE SAMPLE LOCATIONS

SIDEWALL SAMPLE LOCATIONS

WATTLE LOCATIONS

SPOIL PILE LOCATION

5' DEPTH EXCAVATED AREA

N W E S

0 10 20 Feet

Approximate Scale

Service Layer Credits: ESRI Basemap - Streets, 2021.

EXCAVATION AREA & DEPTH MAP
MARS 10 STATE COM 506
Property located at coordinates 32.24140°, -103.5662°
LEA COUNTY, NEW MEXICO

eog resources

Project #: 212C-MD-02419

FIGURE 4

Document Path: C:\Users\E.MORENOFLORES\Documents\Projects\EOG\EOG - 02419 Historical sites\Task 3301 - Mars 10 State Com 506 (1RP-5125)\GIS\MXD\Excavation .mxd

Tables

Table 1
COG
Mars 10 SC 506
Lea County, New Mexico

Sample ID	Sample Date	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	MRO	Total						
Caliche Pit Composite	5/9/2019	-	X		<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	64
North-1 20'Stepout	5/29/2019	4-4.5	X		<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	288
North-1 20'Stepout	5/29/2019	4.5-5	X		<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	160
South-1 20'Stepout	5/29/2019	4-4.5	X		<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	416
South-1 20'Stepout	5/29/2019	4.5-5	X		<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	368
East-2 20'Stepout	5/29/2019	4-4.5	X		<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	352
East-2 20'Stepout	5/29/2019	4.5-5	X		<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	336
West-2 20'Stepout	5/29/2019	4-4.5	X		<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	368
West-2 20'Stepout	5/29/2019	4.5-5	X		<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	480
West-5	5/30/2019	4-4.5	X		<10.0	<10.0	<10.0	<10.0	<0.025	<0.025	<0.025	<0.075	<0.150	288
West-5	5/30/2019	4.5-5	X		<10.0	<10.0	<10.0	<10.0	<0.025	<0.025	<0.025	<0.075	<0.150	288

(-) Not Analyzed

Exceeding Thresholds

Table 2
EOG
Mars 10 SC 506
Lea County, New Mexico

Sample ID	Sample Date	Sample Depth	BEB Sample	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						
BH-1	7/18/2019	-	5	X	-	<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	112
BH-2	7/18/2019	-	5	X	-	<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	<16.0
BH-3	7/18/2019	-	5	X	-	<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	96
BH-4	7/18/2019	-	5	X	-	<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	48
NSW-1	7/18/2019	-	-	X	-	<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	32
ESW-1	7/18/2019	-	-	X	-	<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	<16.0
SSW-1	7/18/2019	-	-	X	-	<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	<16.0
WSW-1	7/18/2019	-	-	X	-	<10.0	<10.0	<10.0	<10.0	<0.050	<0.050	<0.050	<0.150	<0.300	176

(-) Not Analyzed
Excavated

Photos

EOG Resources
Mars 10 SC 506
Lea County, New Mexico

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View of the Northern Excavated Area

View of the Northern Excavated Area

EOG Resources
Mars 10 SC 506
Lea County, New Mexico

TETRA TECH

View of the backfilling of the northern excavated area.

View of the backfilling of excavated northern area.

EOG Resources
Mars 10 SC 506
Lea County, New Mexico

TETRA TECH

View of the Remediation Activities (Wattles).

View of the backfilling of excavated northern area.

EOG Resources
Mars 10 SC 506
Lea County, New Mexico

TETRA TECH

View of the remediation activities (placement of erosion control blanket and boulders) .

View of the remediation activities (placement of erosion control blanket at the two-track path) . .

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

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

Form C-141
Revised August 8, 2011

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

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☐ Final Report

Name of Company: EOG Resources, Inc	Contact: Jamon Hohensee
Address: 5509 Champions Dr, Midland TX, 7976	Telephone No.: 432-556-8074
Facility Name: Mars 10 SC 506	Facility Type: Production Facility

Surface Owner: State Lands	Mineral Owner: State	API No.

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
M	3	24S	33E					

Latitude 32.2414 **Longitude** -103.5662

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: 60bbls	Volume Recovered: 0
Source of Release: illegal dump	Date and Hour of Occurrence 7/9/18 at night	Date and Hour of Discovery 7/12/18 1300
Was Immediate Notice Given? ☐ Yes ☒ No ☐ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*
na

RECEIVED
By Olivia Yu at 11:02 am, Jul 17, 2018

Describe Cause of Problem and Remedial Action Taken.*
Illegal dump of approximately 60bbls of PW was found on lease road heading to the Mars 10 CTB on 7/12/18. No fluids were recovered.

Describe Area Affected and Cleanup Action Taken.*
Area will be delineated and remediated to regulatory standards. Contaminated soils will be transferred to an approved disposal facility. Site will be brought back to natural state with appropriate seed mixes for the area.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD 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 NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD 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.

Signature:

Printed Name: Jamon Hohensee

Title: Environmental Representative

E-mail Address: jamon_hohensee@eogresources.com

Date: 7-16-18 Phone: 432-556-8074

OIL CONSERVATION DIVISION

Approved by Environmental Specialist:

Approval Date: 7/17/2018 Expiration Date:

Conditions of Approval:
see attached directive

Attached ☐

* Attach Additional Sheets If Necessary

fOY1819840649 1RP-5125 nOY1819840745 pOY1819841663

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?	_____ (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.

Form C-141
Page 4

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: _____ Title: _____

Signature: James F Kennedy Date: _____

email: _____ Telephone: _____

OCD Only

Received by: Jocelyn Harimon Date: 06/05/2023

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

Closure Report Attachment Checklist: ***Each of the following items must be included in the closure report.***

☐ A scaled site and sampling diagram as described in 19.15.29.11 NMAC

☐ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)

☐ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)

☐ Description of remediation activities

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. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: _____ Title: _____

Signature: James F Kennedy Date: _____

email: _____ Telephone: _____

OCD Only

Received by: Jocelyn Harimon Date: 06/05/2023

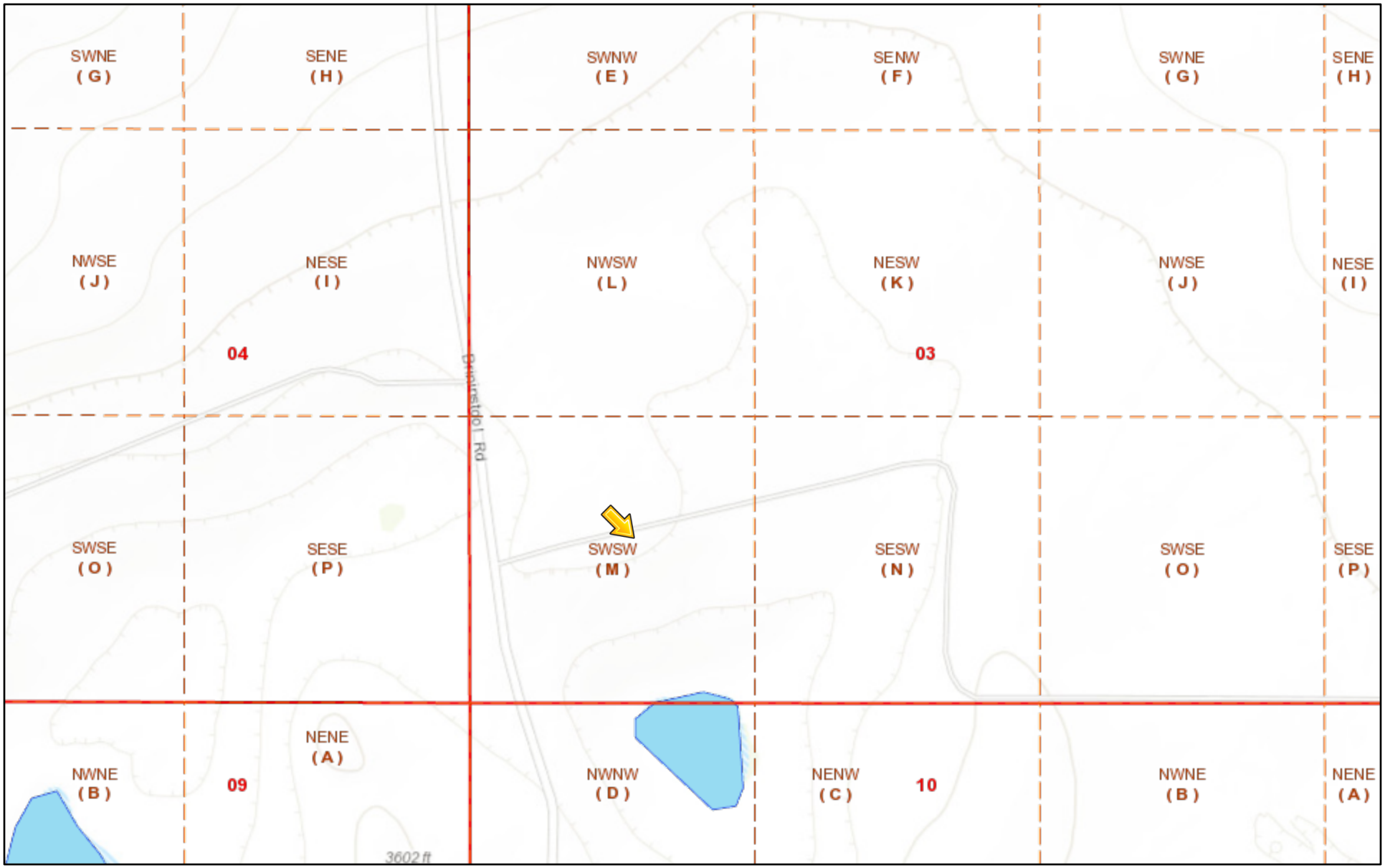
Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: _____ Date: 06/30/2023

Printed Name: Jocelyn Harimon Title: Environmental Specialist

Appendix B

1RP-5125



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0 0.1 0.2 0.4 km

Override 1

OCD District Offices

PLSS First Division

PLSS Second Division

OSE Water-bodies

PLJV Probable Playas

OSE Streams

Bureau of Land Management, Texas Parks & Wildlife, Esri, HERE, Garmin,

New Mexico Oil Conservation Division

NM OCD Oil and Gas Map. http://nm-emnrd.maps.arcgis.com/apps/webappviewer/index.html?id=4d017f2306164de29fd2fb9f8f35ca75: New Mexico Oil Conservation Division

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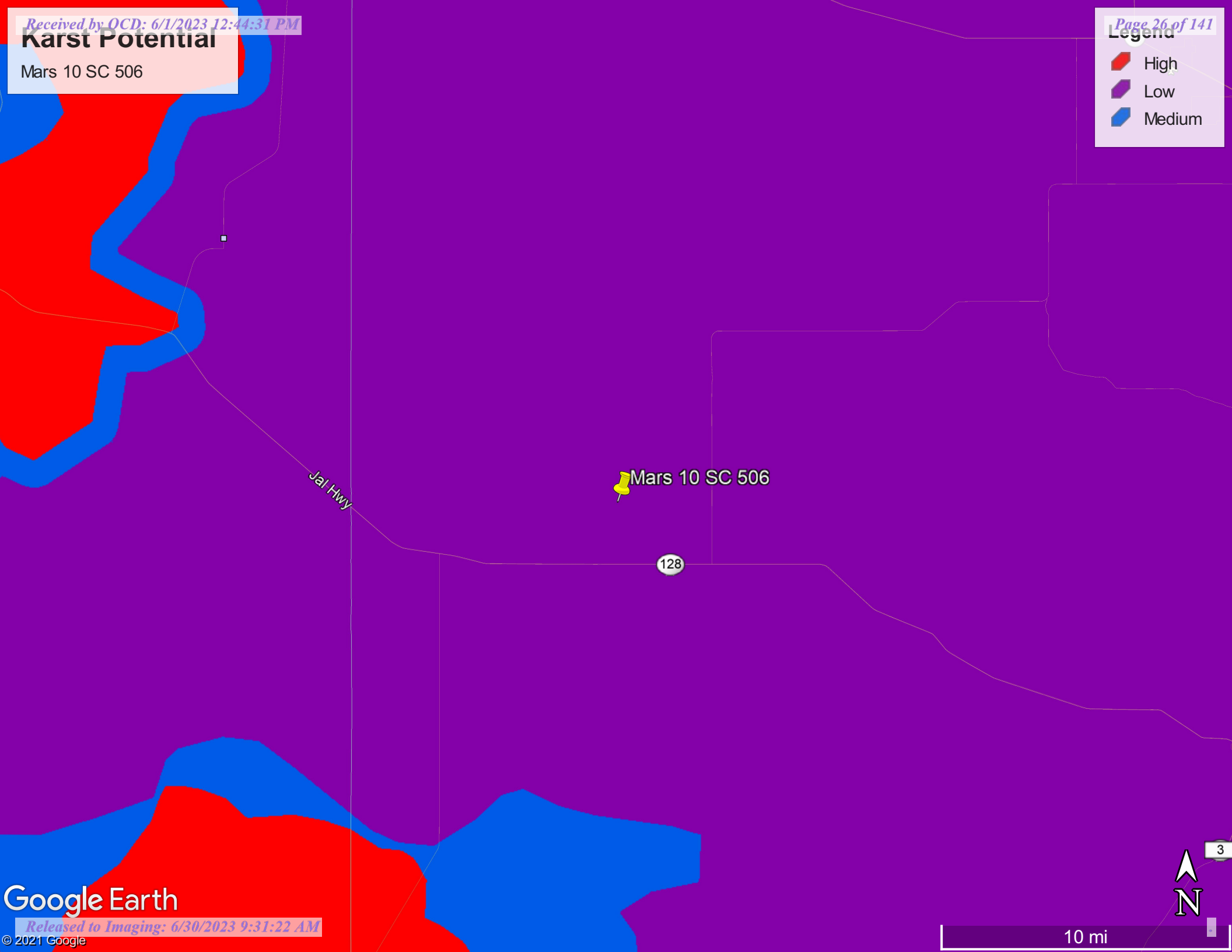
Karst Potential

Mars 10 SC 506



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New Mexico Office of the State Engineer
Water Column/Average Depth to Water

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

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

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

(NAD83 UTM in meters)

(In feet)

POD Number	POD Code	Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
C 02308		CUB	LE	1	3	1	10	24S	33E	634953	3567364*	741	40	20	20

Average Depth to Water: **20 feet**

Minimum Depth: **20 feet**

Maximum Depth: **20 feet**

Record Count: 1

UTMNAD83 Radius Search (in meters):

Easting (X): 635081 **Northing (Y):** 3568094.78 **Radius:** 800

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

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

4/19/21 10:56 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER

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Click to hideNews Bulletins

- Explore the **NEW** USGS National Water Dashboard to access real-time data from over 13,500 stations nationwide.
- Full News

Groundwater levels for New Mexico

Click to hide state-specific text

* IMPORTANT: Next Generation Station Page

Search Results -- 1 sites found

Agency code = usgs
site_no list =
- 321348103340401

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

USGS 321348103340401 24S.33E.10.13123

Lea County, New Mexico
Latitude 32°14'04.9", Longitude 103°34'02.4" NAD83
Land-surface elevation 3,592 feet above NAVD88
The depth of the well is 36 feet below land surface.
This well is completed in the Other aquifers (N9999OTHER) national aquifer.
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	? Parameter code	Water level, feet below land surface	Water level, feet above specific vertical datum	Referenced vertical datum	? Status	? Method of measurement	? Measuring agency	? Source of measurement	? Water-level approval status
1953-11-27		D	62610		3565.69	NGVD29	1	Z			A
1953-11-27		D	62611		3567.40	NAVD88	1	Z			A
1953-11-27		D	72019	24.60			1	Z			A
1973-04-17		D	62610		3568.09	NGVD29	1	Z			A
1973-04-17		D	62611		3569.80	NAVD88	1	Z			A
1973-04-17		D	72019	22.20			1	Z			A
1976-01-21		D	62610		3569.90	NGVD29	1	Z			A
1976-01-21		D	62611		3571.61	NAVD88	1	Z			A
1976-01-21		D	72019	20.39			1	Z			A
1981-03-20		D	62610		3570.27	NGVD29	1	Z			A
1981-03-20		D	62611		3571.98	NAVD88	1	Z			A
1981-03-20		D	72019	20.02			1	Z			A
1986-03-07		D	62610		3574.42	NGVD29	1	Z			A
1986-03-07		D	62611		3576.13	NAVD88	1	Z			A
1986-03-07		D	72019	15.87			1	Z			A
1991-05-24		D	62610		3568.37	NGVD29	1	Z			A
1991-05-24		D	62611		3570.08	NAVD88	1	Z			A
1991-05-24		D	72019	21.92			1	Z			A
1996-03-13		D	62610		3568.20	NGVD29	1	S			A
1996-03-13		D	62611		3569.91	NAVD88	1	S			A
1996-03-13		D	72019	22.09			1	S			A

Explanation

Section	Code	Description
Water-level date-time accuracy	D	Date is accurate to the Day
Parameter code	62610	Groundwater level above NGVD 1929, feet
Parameter code	62611	Groundwater level above NAVD 1988, feet
Parameter code	72019	Depth to water level, feet below land surface
Referenced vertical datum	NAVD88	North American Vertical Datum of 1988
Referenced vertical datum	NGVD29	National Geodetic Vertical Datum of 1929
Status	1	Static
Method of measurement	S	Steel-tape measurement.
Method of measurement	Z	Other.
Measuring agency		Not determined
Source of measurement		Not determined
Water-level approval status	A	Approved for publication -- Processing and review completed.

https://nwis.waterdata.usgs.gov/nm/nwis/gwlevels?site_no=321348103340401&agency_cd=USGS&format=html
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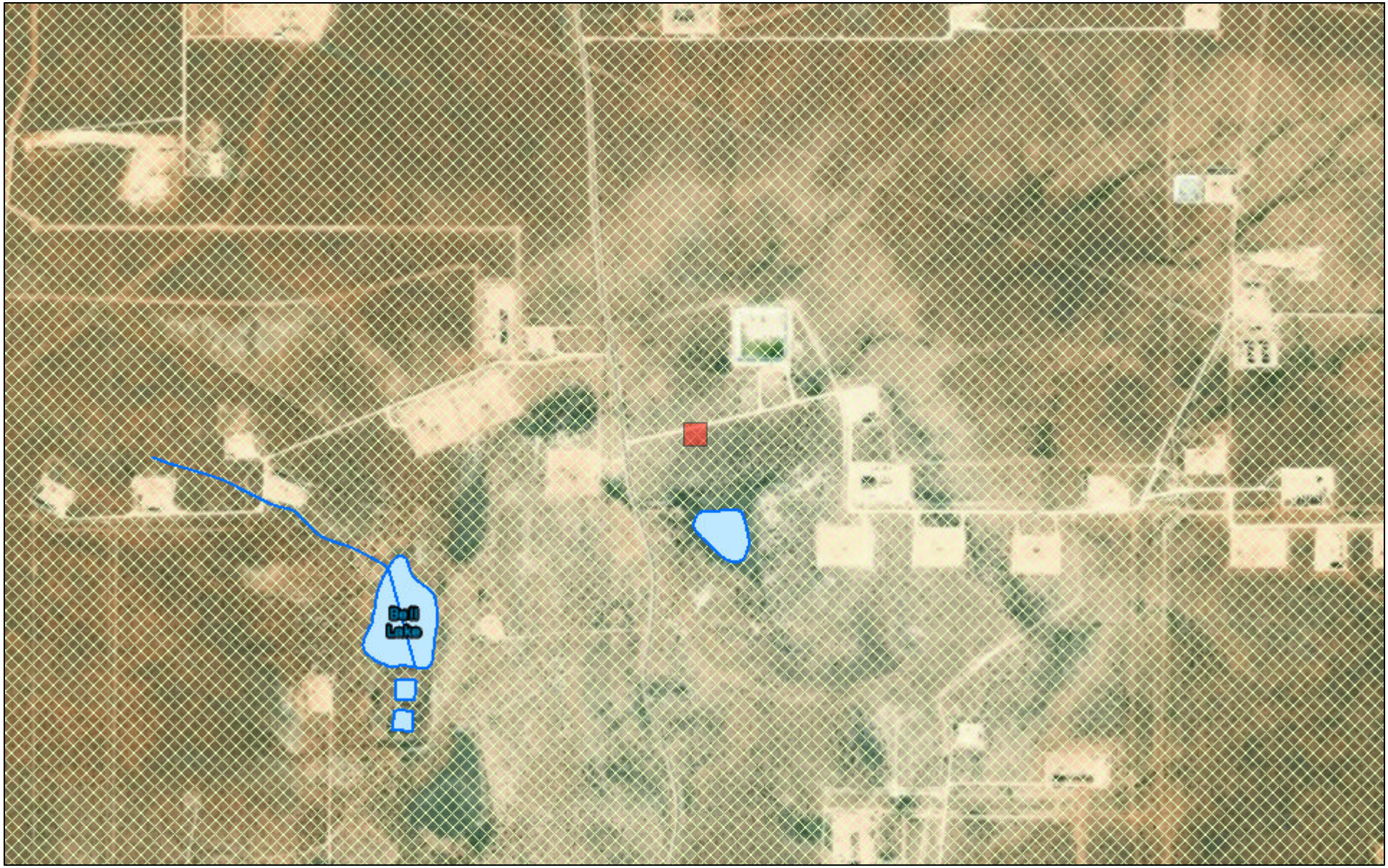
New Mexico NFHL Data



April 19, 2021

1:18,056

0 0.15 0.3 0.6 mi

0 0.25 0.5 1 km

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

nmflood.org is made possible through a collaboration with NMDHSEM, EDAC, and FEMA
This is a non-regulatory product for informational use only. Please consult your local floodplain administrator for further information.

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USGS science for a changing world

National Water Information System: Mapper

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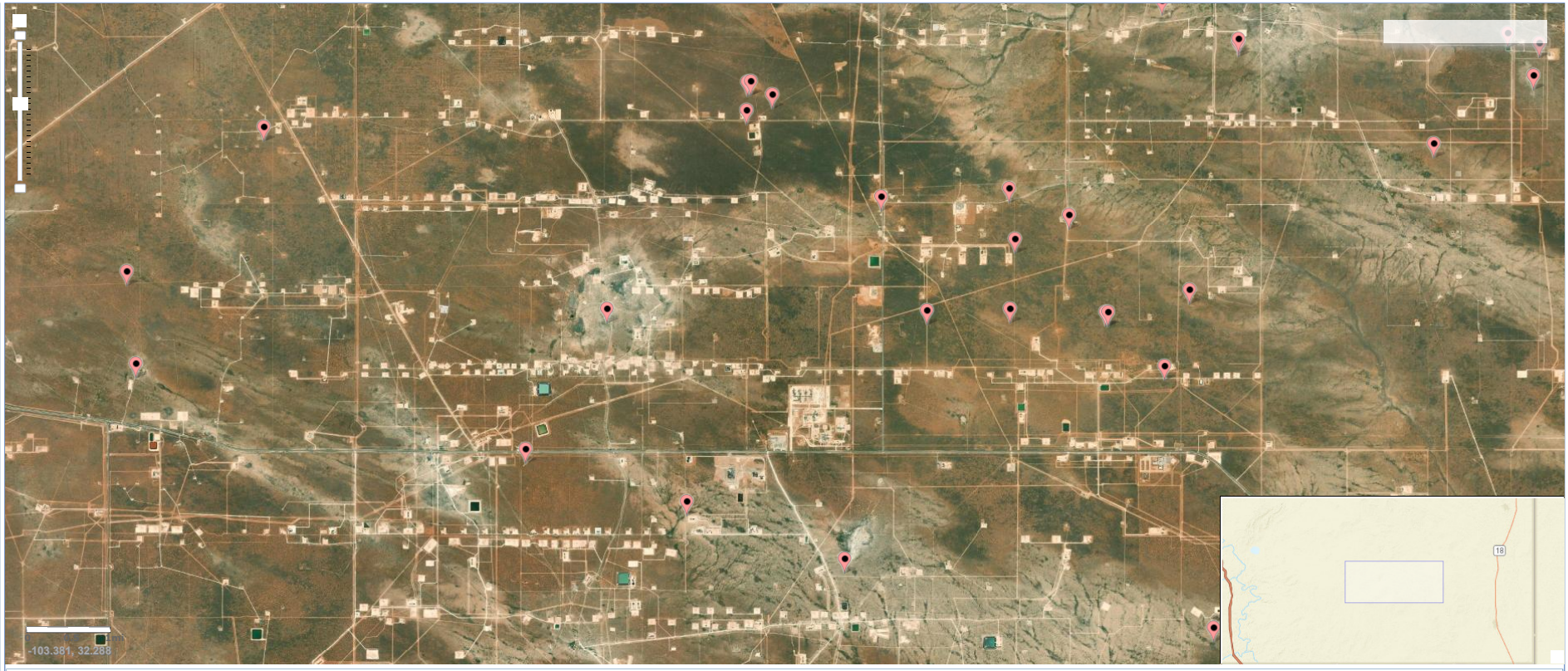
Help Info



Site Information

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Appendix C

February 7, 2019 Reference No. 088210-75

James Kennedy
Environmental Representative
5509 Champions Dr.
Midland, Texas 79706
Via E-Mail: James_Kennedyeogresources.com

Dear Mr. Kennedy:

Re: Assessment Summary Report
Mars 10 SC 506
1RP-5125
EOG Resources, Inc.
Site Location: Unit M, Sec. 3, T 24-S, R 33-E
(Lat 32.2414°, Long -103.5662°)
Lea County, New Mexico

GHD Services Inc. (GHD) is pleased to present this letter report for the above-referenced site. Assessment activities were performed at the Mars 10 SC 506 site (hereafter referred to as the "Site"), on July 16, 25, and 27, 2018 and December 10, 2018 by GHD. The Site is located within Unit M, Section 23, Township 24 South, Range 33 East, in Lea County, New Mexico, approximately 23 miles northwest of Jal, New Mexico (Figure 1). The surface owner of the Site is the New Mexico State Land Office (NMSLO).

1. Site Background

This Site assessment concerns the investigation of the impacts from a third party discharge of production fluids that occurred on or around July 9, 2018. The release was reported to the New Mexico Oil Conservation Division (NMOCD) by EOG Resources, Inc. (EOG) personnel on July 16, 2018. The Initial C-141 (Attachment 1) reported a release of 60 barrels (bbls) of produced water with no liquids recovered. The release occurred along an access road that leads to the Mars 10 CTB (see Attachment 2 for photographs).

2. Regulatory Framework

The nearest well to the Site, as determined by a well record search on the New Mexico Office of the State Engineer's (OSE) online database, is located approximately 0.5 mile from the Site with a listed depth to water of 20 feet below ground surface (ft bgs) (See Attachment 3). A playa exists within 200 feet of the southern end of the release and therefore, in accordance with 19.15.29, the closure criteria is based on a less than 50 foot depth to water beneath the Site (see Attachment 4). In accordance with Table 1 of 19.15.29 NMAC, soil closure criteria for chloride are 600 milligrams per kilogram (mg/kg); 100 mg/kg for total TPH (total petroleum hydrocarbons); 50 mg/kg for BTEX (benzene, toluene, ethylbenzene and xylenes) and 10 mg/kg for benzene. Table 2.1 of 19.15.29 NMAC is presented below:

Table 2.1 Table 1: Closure Criteria for Soils Impacted by Release

Depth below bottom of release to ground water less than 10,000 mg/l TDS	Constituent	Method*	Limit**
≤ 50 feet	Chloride***	EPA 300.0	600 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015M	100 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8015M	10 mg/kg
51 feet-100 feet	Chloride***	EPA 300.0	10,000 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015M	2,500 mg/kg
	GRO+DRO	EPA SW-846 Method 8015M	1,000 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg
Greater than 100 feet	Chloride***	EPA 300.0	20,000 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015M	2,500 mg/kg
	GRO+DRO	EPA SW-846 Method 8015M	1,000 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8015M	10 mg/kg

3. GHD Assessment Activities

Initial, pre-emptive spill response measures were conducted upon the approval of Ryan Mann with the NMSLO. The initial response consisted of mechanical scraping and excavation to minimize migration and spread of produced water to an unnamed playa lake approximately 200 feet to the south (see Figure 2).

GHD performed initial assessment activities on July 16, 2018 prior to the enactment of 19.15.29 NMAC. A total of four test pits utilizing a backhoe were dug to depths ranging from 0.5 to 6 ft bgs and two hand auger soil borings were advanced to depths ranging from 0.5 to 1 ft bgs. Collected soil samples were field screened for chloride content using HACH test strips. Selected samples were submitted to Hall Environmental Analysis Laboratory (HEAL) located in Albuquerque, New Mexico, for chloride analysis by EPA Method 300.0, BTEX by EPA method 8021 and for TPH (gasoline, diesel and oil range organics) by EPA method 8015.

Chloride field screening concentrations ranged from <120 to >2,560 milligrams per liter (mg/L). The highest concentrations were contained in soils from ground surface to 0.5 ft bgs. Chloride laboratory concentrations ranged from below the laboratory reporting limit (LRL) to 620 mg/kg. The sample collected from TP-2 at 4 ft bgs exceeded the Table 1 closure criteria of 600 mg/kg. All BTEX and TPH results were below the LRLs (non-detect).

Soil sample locations and analytical results are summarized on Figure 2 and in Table 1. The laboratory reports are included in Attachment 5.

GHD and SDR Enterprises LLC initiated contaminated soil scraping and excavation at the southern end of the release near the playa on July 25, 2018 after receiving authorization from Ryan Mann. Subsequently, on July 27, 2018, all work was stopped due to the potential presence of cultural materials.

A meeting with concerned parties was held at the NMSLO on November 16, 2018 to discuss the continuation of assessment/remediation activities in light of recognized archeological resources on the Site. As a result of that meeting, GHD performed an additional assessment under the supervision of a New Mexico permitted archaeologist on December 10, 2018 that included advancing eight additional hand auger borings (HA-12 through HA-19) and the TP-2 location was deepened to 5 ft bgs with a hand auger (HA-2). Soil samples were collected from 6 inches and 1 ft bgs in HA-12 through HA-19 and 5 ft bgs in HA-2.

The samples were submitted to HEAL for chloride analysis by EPA Method 300. Chloride concentrations ranged from below the LRL to 660 mg/kg. The sample collected from HA-2 at 5 ft bgs exceeded the Table 1 closure criteria and was collected at the third party release point. All remaining soil sample chloride concentrations were below the Table 1 closure criteria. All soils disturbed via the hand auger process were observed by an archeologist to evaluate for the presence of cultural resources. The results of the archeological analyses are presented under separate cover.

4. Summary and Conclusions

A release from a third party discharge occurred on or around July 9, 2018. Initial, pre-emptive spill response measures were conducted upon the approval of Ryan Mann with the NMSLO. The initial response consisted of mechanical scraping and excavation to minimize migration and spread of produced water to an unnamed playa lake. Confirmation core sampling was conducted to assess the vertical and horizontal extent of the spill.

One soil sample submitted to a laboratory for chloride analysis contained a chloride concentration of 620 mg/kg that exceeds the Table 1 closure criteria of 600. This sample was collected from TP-2 at a depth of 4 ft bgs. Initial excavation activities were ceased upon determining that the release was located in a cultural resource area. An additional assessment was performed on December 10, 2018 and one soil sample collected from TP-2 at 5 ft bgs contained a soil chloride concentration of 660 mg/kg. The December Site assessment was conducted in conjunction with NMSLO oversight to limit further disturbance of potential cultural resources.

Based on laboratory results, impacted soil concentrations slightly exceeding the Table 1 closure criteria exist at the TP-2 location. Soil in the TP-1, TP-3, HA-5, and HA-6 locations contained elevated field screening chloride levels at one half or 2 ft bgs, however, laboratory concentrations for samples collected at 1 ft bgs in HA-5 and HA-6 were below the Table 1 criteria. Potentially, based on the nature of the cultural resource area, the NMOCD and NMSLO may elect to initiate further assessment and remedial activities as necessary.

At the request of the NMSLO and NMOCD, further remedial activities, if any, would be initiated. Soils would be screened in the field to guide any excavation activities and soil samples would be collected for laboratory chloride analysis.

Should you have any questions, or require additional information regarding this submittal please feel free to contact Alan Brandon at (505) 884-0672.

Sincerely,

GHD

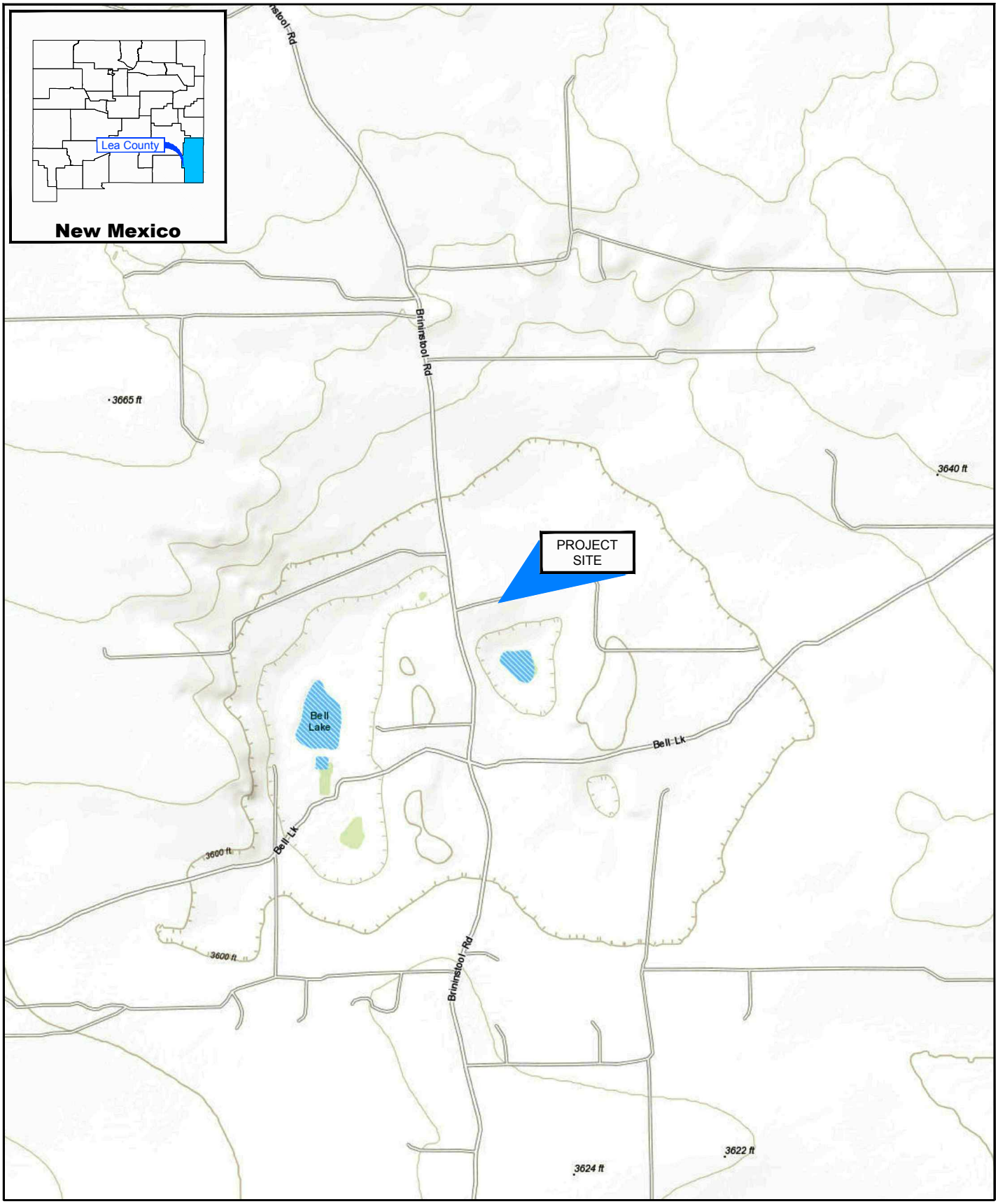
Jeff Walker
Geologist

Alan Brandon
Senior Project Manager

AB/mk/14

Encl. Figure 1 – Site Location Map
Figure 2 – Sample Location Map
Table 1 – Summary of Soil Analytical Data
Attachment 1 – June 16, 2018 C-141 Initial
Attachment 2 – Photographs
Attachment 3 – NMOSE Well Search
Attachment 4 – USGS ½ Mile Radius Water Resources Map
Attachment 5 – HEAL Laboratory Reports

Figures



Source: USGS 7.5 Minute Quad "Bell Lake and Tip Top Wells, New Mexico"

Lat/Long: 32.241455° North, 103.566235° West

0 1000 2000ft

Coordinate System:
NAD 1983 (2011) StatePlane-
New Mexico East (US Feet)

EOG RESOURCES, INC
LEA COUNTY, NEW MEXICO
MARS 10 SC 506

088210-75

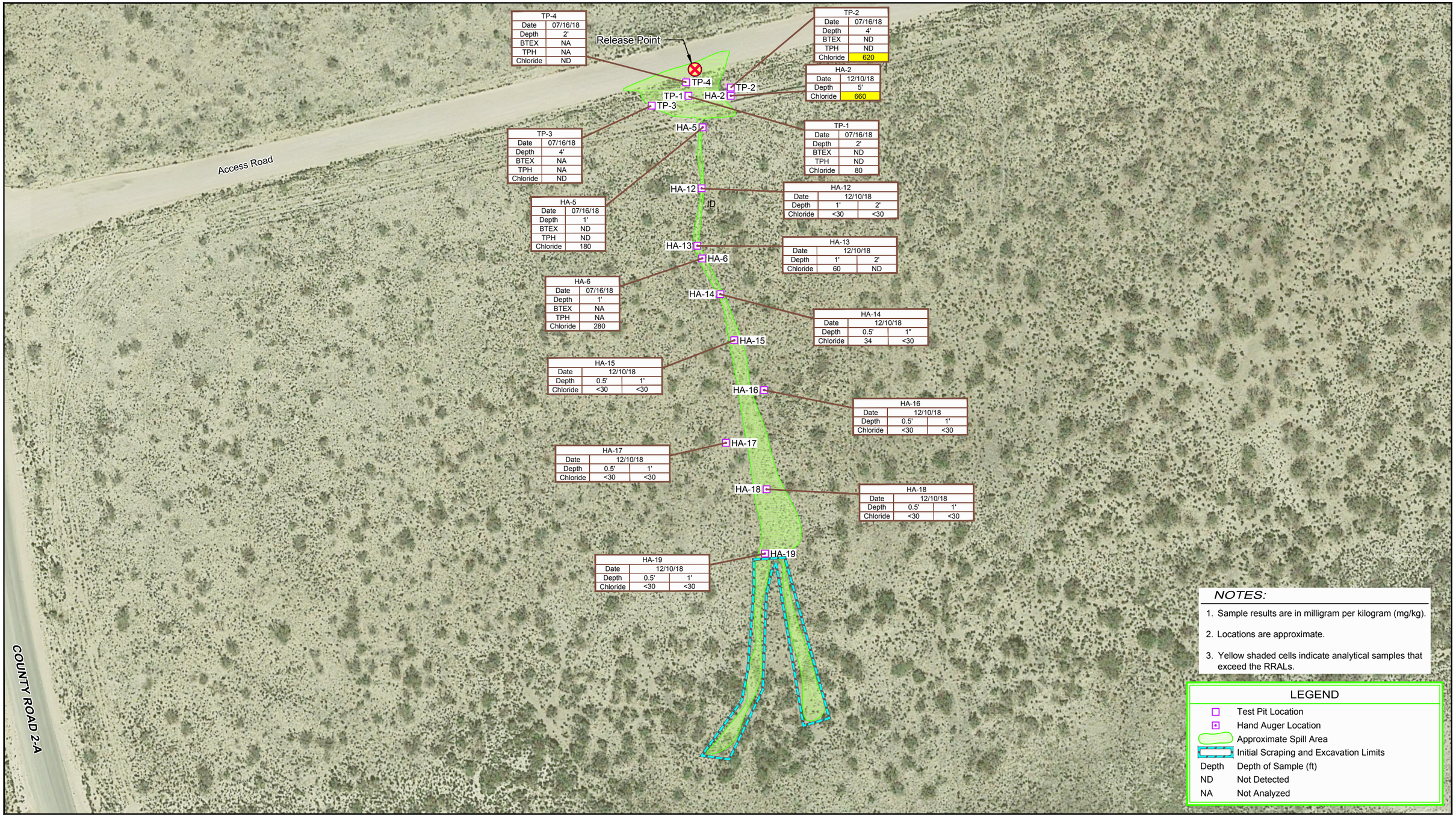
Nov 1, 2018

SITE LOCATION MAP

FIGURE 1

CAD File: I:\CAD\Files\08-----\088-----\088210-EOG-Madera Ridge 25-1\088210-75(000)GN-DL001.dwg

Page 38 of 141



Source: Image © 2017 Google - Imagery Date: November 2, 2017

Lat/Long: 32.241455° North, 103.566235° West

0 40 80ft

Coordinate System:
NAD 1983 (2011) StatePlane-
New Mexico East (US Feet)

GHD

EOG RESOURCES, INC
LEA COUNTY, NEW MEXICO
MARS 10 SC 506

088210-75

Feb 6, 2019

SAMPLE LOCATION MAP

FIGURE 2

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Tables

Table 1
Mars 10 SC 506
Summary of Soil Analytical Data

Sample ID	Depth (feet)	Date	Benzene	Toluene	Ethyl-benzene	Xylenes	BTEX	TPH (GRO)	TPH (DRO)	TPH (MRO)	Total TPH	Chloride
S-088210-75-071618-PL-TP-1-2	2	7/16/2018	<0.023	<0.047	<0.047	<0.094	<0.221	<4.7	<9.9	<50	<64.6	80
S-088210-75-071618-PL-TP-2-4	4	7/16/2018	<0.023	<0.046	<0.046	<0.092	<0.207	<4.6	<10	<50	<64.6	620
S-088210-75-121018-PL-HA-2-5	5	12/10/2018	NA	NA	NA	NA	--	NA	NA	NA	--	660
S-088210-75-071618-PL-TP-3-4	4	7/16/2018	NA	NA	NA	NA	--	NA	NA	NA	--	<30
S-088210-75-071618-PL-TP-4-2	2	7/16/2018	NA	NA	NA	NA	--	NA	NA	NA	--	<30
S-088210-75-071618-PL-HA-5-1	1	7/16/2018	<0.025	<0.049	<0.049	<0.098	<0.221	<4.9	<9.9	<50	<64.8	180
S-088210-75-071618-PL-HA-6-1	1	7/16/2018	NA	NA	NA	NA	--	NA	NA	NA	--	280
S-088210-75-121018-PL-HA-12-1	1	12/10/2018	NA	NA	NA	NA	--	NA	NA	NA	--	<30
S-088210-75-121018-PL-HA-12-2	2	12/10/2018	NA	NA	NA	NA	--	NA	NA	NA	--	<30
S-088210-75-121018-PL-HA-13-1	1	12/10/2018	NA	NA	NA	NA	--	NA	NA	NA	--	60
S-088210-75-121018-PL-HA-13-2	2	12/10/2018	NA	NA	NA	NA	--	NA	NA	NA	--	<30
S-088210-75-121018-PL-HA-14-6"	0.5	12/10/2018	NA	NA	NA	NA	--	NA	NA	NA	--	34
S-088210-75-121018-PL-HA-14-1	1	12/10/2018	NA	NA	NA	NA	--	NA	NA	NA	--	<30
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S-088210-75-121018-PL-HA-18-6"	0.5	12/10/2018	NA	NA	NA	NA	--	NA	NA	NA	--	<30
S-088210-75-121018-PL-HA-18-1	1	12/10/2018	NA	NA	NA	NA	--	NA	NA	NA	--	<30
S-088210-75-121018-PL-HA-19-6"	0.5	12/10/2018	NA	NA	NA	NA	--	NA	NA	NA	--	<30
S-088210-75-121018-PL-HA-19-1	1	12/10/2018	NA	NA	NA	NA	--	NA	NA	NA	--	<30
NMOCD Table 1 Closure Limits			**10**	**Total BTEX: 50**				**Total TPH: 100**				**600**

Notes:
All sample laboratory results are in milligrams per kilogram
NMOCD = New Mexico Oil Conservation Division
Table 1 Closure Limits = In accordance with 19.15.29 Release Rule
NA = Not Analyzed
BTEX =Benzene, Toluene, Ethylbenzene, Xylenes
TPH = Total Petroleum Hydrocarbons

GRO = Gasoline Range Organics
DRO = Diesel Range Organics
MRO = Motor Oil Range Organics
TP = Test Pit
HA = Hand Auger
BS = Bottom Sample
Highlighted = Exceeds NMOCD Limits

GHD-088210-75

Attachments

Attachment 1
June 16, 2018 C-141 Initial

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

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

Form C-141
Revised August 8, 2011

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

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☐ Final Report

Name of Company: EOG Resources, Inc	Contact: Jamon Hohensee
Address: 5509 Champions Dr, Midland TX, 7976	Telephone No.: 432-556-8074
Facility Name: Mars 10 SC 506	Facility Type: Production Facility

Surface Owner: State Lands	Mineral Owner: State	API No.

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
M	3	24S	33E					

Latitude 32.2414 **Longitude** -103.5662

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: 60bbls	Volume Recovered: 0
Source of Release: illegal dump	Date and Hour of Occurrence 7/9/18 at night	Date and Hour of Discovery 7/12/18 1300
Was Immediate Notice Given? ☐ Yes ☒ No ☐ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*
na

RECEIVED
By Olivia Yu at 11:02 am, Jul 17, 2018

Describe Cause of Problem and Remedial Action Taken.*
Illegal dump of approximately 60bbls of PW was found on lease road heading to the Mars 10 CTB on 7/12/18. No fluids were recovered.

Describe Area Affected and Cleanup Action Taken.*
Area will be delineated and remediated to regulatory standards. Contaminated soils will be transferred to an approved disposal facility. Site will be brought back to natural state with appropriate seed mixes for the area.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD 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 NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD 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.

Signature:

Printed Name: Jamon Hohensee

Title: Environmental Representative

E-mail Address: jamon_hohensee@eogresources.com

Date: 7-16-18 Phone: 432-556-8074

OIL CONSERVATION DIVISION

Approved by Environmental Specialist:

Approval Date: 7/17/2018 Expiration Date:

Conditions of Approval:
see attached directive

Attached ☐

* Attach Additional Sheets If Necessary

fOY1819840649 1RP-5125 nOY1819840745 pOY1819841663

Operator/Responsible Party,

The OCD has received the form C-141 you provided on _7/16/2018_ regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number _1RP-5125__ has been assigned. **Please refer to this case number in all future correspondence.**

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

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

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. **As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District _1_ office in __Hobbs____ on or before _8/17/2018_. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.**

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

● Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C_6 thru C_{36}), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.

● Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C_6 thru C_{36}), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.

● Nominal detection limits for field and laboratory analyses must be provided.

● Composite sampling is not generally allowed.

● Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

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

●Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

● If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

● Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

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

Jim Griswold
OCD Environmental Bureau Chief
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
505-476-3465
jim.griswold@state.nm.us

Attachment 2
Photographs

Photo 1 - Third party release point

Photo 2 - Looking south towards the playa

Site Photographs

Attachment 3
NMOSE Well Search

0.46 mile S, SW

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	Distance	Depth Well	Depth Water	Water Column
C 02308		CUB	LE	1	3	1	10	24S	33E	634953	3567364*	742	40	20	20

Average Depth to Water: **20 feet**

Minimum Depth: **20 feet**

Maximum Depth: **20 feet**

Record Count: 1

UTMNAD83 Radius Search (in meters):

Easting (X): 635079.72 **Northing (Y):** 3568095.8 **Radius:** 1000

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

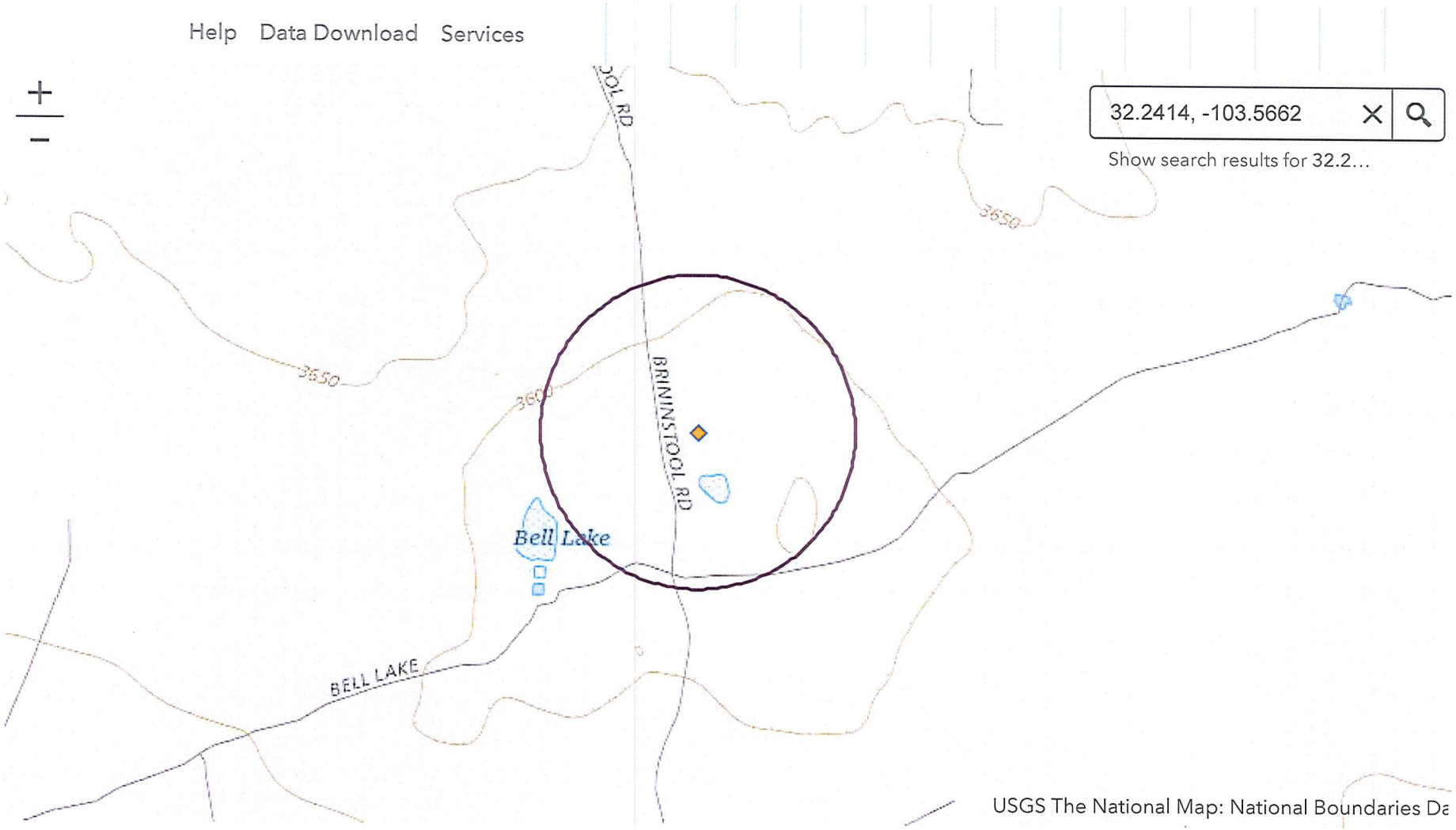
The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

10/30/18 1:51 PM

WATER COLUMN/ AVERAGE DEPTH TO WATER

Page 49 of 141
Received by OCD: 6/1/2023 12:44:31 PM
Released to Imaging: 6/30/2023 9:31:22 AM

Attachment 4
USGS ½ Mile Radius Water Resources Map


Help
Data Download
Services
32.2414, -103.5662
Show search results for 32.2...
3650
3650
3650
BRININSTOOL RD
Bell Lake
BELL LAKE
USGS The National Map: National Boundaries Da
Scale: 1:36,112
Zoom Level: 14
0.6mi
-103.550 32.241 Degrees

Attachment 5
HEAL Laboratory Report

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

July 30, 2018

Alan Brandon

GHD
6121 Indian School Road, NE #200
Albuquerque, NM 87110
TEL: (505) 884-0672
FAX

RE: Mars 10 CBT OrderNo.: 1807B53

Dear Alan Brandon:

Hall Environmental Analysis Laboratory received 6 sample(s) on 7/20/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order: **1807B53**
Date Reported: **7/30/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Lab Order:** 1807B53
Project: Mars 10 CBT

Lab ID: 1807B53-001 **Collection Date:** 7/16/2018 1:10:00 PM
Client Sample ID: S-088210-75-071618-PL-TP-1-2' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst:	**JRR**
Chloride	80	30		mg/Kg	20	7/26/2018 12:57:16 PM	39427
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**lrm**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	7/25/2018 8:27:34 PM	39361
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	7/25/2018 8:27:34 PM	39361
Surr: DNOP	108	50.6-138		%Rec	1	7/25/2018 8:27:34 PM	39361
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	7/25/2018 1:13:53 AM	39352
Surr: BFB	90.6	15-316		%Rec	1	7/25/2018 1:13:53 AM	39352
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.023		mg/Kg	1	7/25/2018 1:13:53 AM	39352
Toluene	ND	0.047		mg/Kg	1	7/25/2018 1:13:53 AM	39352
Ethylbenzene	ND	0.047		mg/Kg	1	7/25/2018 1:13:53 AM	39352
Xylenes, Total	ND	0.094		mg/Kg	1	7/25/2018 1:13:53 AM	39352
Surr: 4-Bromofluorobenzene	98.7	80-120		%Rec	1	7/25/2018 1:13:53 AM	39352

Lab ID: 1807B53-002 **Collection Date:** 7/16/2018 2:05:00 PM
Client Sample ID: S-088210-75-071618-PL-TP-2-4' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst:	**JRR**
Chloride	620	30		mg/Kg	20	7/26/2018 1:34:29 PM	39427
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**lrm**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	7/25/2018 8:52:18 PM	39361
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	7/25/2018 8:52:18 PM	39361
Surr: DNOP	103	50.6-138		%Rec	1	7/25/2018 8:52:18 PM	39361
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	7/25/2018 1:37:05 AM	39352
Surr: BFB	86.7	15-316		%Rec	1	7/25/2018 1:37:05 AM	39352
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.023		mg/Kg	1	7/25/2018 1:37:05 AM	39352
Toluene	ND	0.046		mg/Kg	1	7/25/2018 1:37:05 AM	39352
Ethylbenzene	ND	0.046		mg/Kg	1	7/25/2018 1:37:05 AM	39352
Xylenes, Total	ND	0.092		mg/Kg	1	7/25/2018 1:37:05 AM	39352
Surr: 4-Bromofluorobenzene	96.7	80-120		%Rec	1	7/25/2018 1:37:05 AM	39352

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit

Analytical Report
Lab Order: **1807B53**
Date Reported: **7/30/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Lab Order:** 1807B53
Project: Mars 10 CBT

Lab ID: 1807B53-003 **Collection Date:** 7/16/2018 2:14:00 PM
Client Sample ID: S-088210-75-071618-PL-TP-3-4' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **JRR**	
Chloride	ND	30		mg/Kg	20	7/26/2018 1:46:54 PM	39427

Lab ID: 1807B53-004 **Collection Date:** 7/16/2018 2:48:00 PM
Client Sample ID: S-088210-75-071618-PL-TP-4-2' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **JRR**	
Chloride	ND	30		mg/Kg	20	7/26/2018 1:59:19 PM	39427

Lab ID: 1807B53-005 **Collection Date:** 7/16/2018 3:54:00 PM
Client Sample ID: S-088210-75-071618-PL-HA-5-1' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **JRR**	
Chloride	180	30		mg/Kg	20	7/26/2018 2:11:43 PM	39427
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	7/25/2018 9:17:03 PM	39361
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	7/25/2018 9:17:03 PM	39361
Surr: DNOP	118	50.6-138		%Rec	1	7/25/2018 9:17:03 PM	39361
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/25/2018 2:00:19 AM	39352
Surr: BFB	88.6	15-316		%Rec	1	7/25/2018 2:00:19 AM	39352
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	7/25/2018 2:00:19 AM	39352
Toluene	ND	0.049		mg/Kg	1	7/25/2018 2:00:19 AM	39352
Ethylbenzene	ND	0.049		mg/Kg	1	7/25/2018 2:00:19 AM	39352
Xylenes, Total	ND	0.098		mg/Kg	1	7/25/2018 2:00:19 AM	39352
Surr: 4-Bromofluorobenzene	98.8	80-120		%Rec	1	7/25/2018 2:00:19 AM	39352

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit

Analytical Report
Lab Order: **1807B53**
Date Reported: **7/30/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Lab Order:** 1807B53
Project: Mars 10 CBT

Lab ID: 1807B53-006 **Collection Date:** 7/16/2018 4:20:00 PM
Client Sample ID: S-088210-75-071618-PL-HA-6-1' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **JRR**	
Chloride	280	30		mg/Kg	20	7/26/2018 2:24:07 PM	39427

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1807B53**
30-Jul-18

Client: GHD
Project: Mars 10 CBT

Sample ID	**MB-39427**	SampType:	**MBLK**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**PBS**	Batch ID:	**39427**	RunNo:	**52996**					
Prep Date:	**7/26/2018**	Analysis Date:	**7/26/2018**	SeqNo:	**1743207**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID	**LCS-39427**	SampType:	**LCS**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**LCSS**	Batch ID:	**39427**	RunNo:	**52996**					
Prep Date:	**7/26/2018**	Analysis Date:	**7/26/2018**	SeqNo:	**1743208**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	95.3	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1807B53**

30-Jul-18

Client: GHD

Project: Mars 10 CBT

Sample ID	**MB-39422**	SampType:	**MBLK**	TestCode:	**EPA Method 8015M/D: Diesel Range Organics**					
Client ID:	**PBS**	Batch ID:	**39422**	RunNo:	**52984**					
Prep Date:	**7/26/2018**	Analysis Date:	**7/26/2018**	SeqNo:	**1741732**	Units:	**%Rec**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	8.8		10.00		88.4	50.6	138			

Sample ID	**LCS-39422**	SampType:	**LCS**	TestCode:	**EPA Method 8015M/D: Diesel Range Organics**					
Client ID:	**LCSS**	Batch ID:	**39422**	RunNo:	**52984**					
Prep Date:	**7/26/2018**	Analysis Date:	**7/26/2018**	SeqNo:	**1741733**	Units:	**%Rec**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.3		5.000		86.1	50.6	138			

Sample ID	**MB-39361**	SampType:	**MBLK**	TestCode:	**EPA Method 8015M/D: Diesel Range Organics**					
Client ID:	**PBS**	Batch ID:	**39361**	RunNo:	**52953**					
Prep Date:	**7/24/2018**	Analysis Date:	**7/25/2018**	SeqNo:	**1741734**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.7		10.00		96.5	50.6	138			

Sample ID	**LCS-39361**	SampType:	**LCS**	TestCode:	**EPA Method 8015M/D: Diesel Range Organics**					
Client ID:	**LCSS**	Batch ID:	**39361**	RunNo:	**52953**					
Prep Date:	**7/24/2018**	Analysis Date:	**7/25/2018**	SeqNo:	**1741735**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	10	50.00	0	104	70	130			
Surr: DNOP	4.7		5.000		94.4	50.6	138			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1807B53**

30-Jul-18

Client: GHD

Project: Mars 10 CBT

Sample ID	**MB-39339**	SampType:	**MBLK**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**PBS**	Batch ID:	**39339**	RunNo:	**52947**					
Prep Date:	**7/23/2018**	Analysis Date:	**7/24/2018**	SeqNo:	**1740052**	Units:	**%Rec**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	920		1000		92.1	15	316			

Sample ID	**LCS-39339**	SampType:	**LCS**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**LCSS**	Batch ID:	**39339**	RunNo:	**52947**					
Prep Date:	**7/23/2018**	Analysis Date:	**7/24/2018**	SeqNo:	**1740053**	Units:	**%Rec**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1000		1000		103	15	316			

Sample ID	**MB-39352**	SampType:	**MBLK**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**PBS**	Batch ID:	**39352**	RunNo:	**52947**					
Prep Date:	**7/23/2018**	Analysis Date:	**7/24/2018**	SeqNo:	**1740075**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	950		1000		95.3	15	316			

Sample ID	**LCS-39352**	SampType:	**LCS**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**LCSS**	Batch ID:	**39352**	RunNo:	**52947**					
Prep Date:	**7/23/2018**	Analysis Date:	**7/24/2018**	SeqNo:	**1740076**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	28	5.0	25.00	0	112	75.9	131			
Surr: BFB	1000		1000		103	15	316			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1807B53**

30-Jul-18

Client: GHD

Project: Mars 10 CBT

Sample ID	**MB-39339**	SampType:	**MBLK**	TestCode:	**EPA Method 8021B: Volatiles**					
Client ID:	**PBS**	Batch ID:	**39339**	RunNo:	**52947**					
Prep Date:	**7/23/2018**	Analysis Date:	**7/24/2018**	SeqNo:	**1740111**	Units:	**%Rec**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.0		1.000		101	80	120			

Sample ID	**LCS-39339**	SampType:	**LCS**	TestCode:	**EPA Method 8021B: Volatiles**					
Client ID:	**LCSS**	Batch ID:	**39339**	RunNo:	**52947**					
Prep Date:	**7/23/2018**	Analysis Date:	**7/24/2018**	SeqNo:	**1740112**	Units:	**%Rec**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.0		1.000		103	80	120			

Sample ID	**MB-39352**	SampType:	**MBLK**	TestCode:	**EPA Method 8021B: Volatiles**					
Client ID:	**PBS**	Batch ID:	**39352**	RunNo:	**52947**					
Prep Date:	**7/23/2018**	Analysis Date:	**7/24/2018**	SeqNo:	**1740124**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.1		1.000		108	80	120			

Sample ID	**LCS-39352**	SampType:	**LCS**	TestCode:	**EPA Method 8021B: Volatiles**					
Client ID:	**LCSS**	Batch ID:	**39352**	RunNo:	**52947**					
Prep Date:	**7/23/2018**	Analysis Date:	**7/24/2018**	SeqNo:	**1740125**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.94	0.025	1.000	0	93.8	77.3	128			
Toluene	0.97	0.050	1.000	0	97.2	79.2	125			
Ethylbenzene	0.95	0.050	1.000	0	94.6	80.7	127			
Xylenes, Total	2.9	0.10	3.000	0	97.1	81.6	129			
Surr: 4-Bromofluorobenzene	1.0		1.000		102	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: GHD | Work Order Number: 1807B53 | RcptNo: 1

Received By: **Isaiah Ortiz** 7/20/2018 10:45:00 AM

Completed By: **Michelle Garcia** 7/20/2018 2:57:45 PM

Reviewed By: MW 7/20/18

Labeled By: JAB 07/20/18

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	Courier		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____ 07/20/18

Checked by: JAB

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.5	Good	Yes			

Released to Imaging: 6/30/2023 9:31:22 AM
Received by OCD: 6/1/2023 12:44:31 PM

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: GHD Services, Inc

Mailing Address: 6121 Indian School Rd, NE # 200 Albuquerque, NM 87110

Phone #: 505-884-0672

email or Fax#: alan.brandon@ghd.com

QA/QC Package: ☑ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time: 5 day ☐ Standard ☒ Rush

Project Name: Mars 10 CBT

Project #: 088210-75

Project Manager: Alan Brandon

Sampler: Phil Lorang

On Ice: ☒ Yes ☐ No

Sample Temperature: 2.5

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1807B53	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Chlorides	BTEX	TPH		Air Bubbles (Y or N)
7-16-18	13:10	Soil	S-088210-75-071618-PL-TP-1-2'	4oz. glass	Ice	001												X	X	X		
	14:05		S-088210-75-071618-PL-TP-2-4'			002												X	X	X		
	14:14		S-088210-75-071618-PL-TP-3-4'			003												X				
	14:48		S-088210-75-071618-PL-TP-4-2'			004												X				
	15:54		S-088210-75-071618-PL-HA-5-1'			005												X	X	X		
	16:20		S-088210-75-071618-PL-HA-6-1'			006												X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
7-19-18	08:31			7/19/18	0930
7/20/18	1900		courier	7/20/18	1045

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 17, 2018

Alan Brandon
GHD
6121 Indian School Road, NE #200
Albuquerque, NM 87110
TEL: (505) 884-0672
FAX

RE: Mars 10 OrderNo.: 1812656

Dear Alan Brandon:

Hall Environmental Analysis Laboratory received 17 sample(s) on 12/12/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order: **1812656**
Date Reported: **12/17/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Lab Order:** 1812656
Project: Mars 10

Lab ID: 1812656-001 **Collection Date:** 12/10/2018 9:10:00 AM
Client Sample ID: S-088210-75-121018-PL-HA-12-1' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	ND	30		mg/Kg	20	12/13/2018 7:40:14 PM	42094

Lab ID: 1812656-002 **Collection Date:** 12/10/2018 9:34:00 AM
Client Sample ID: S-088210-75-121018-PL-HA-12-2' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	ND	30		mg/Kg	20	12/13/2018 7:52:39 PM	42094

Lab ID: 1812656-003 **Collection Date:** 12/10/2018 10:04:00 AM
Client Sample ID: S-088210-75-0121018-PL-HA-13-1' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	60	30		mg/Kg	20	12/13/2018 8:05:04 PM	42094

Lab ID: 1812656-004 **Collection Date:** 12/10/2018 10:13:00 AM
Client Sample ID: S-088210-75-121018-PL-HA-13-2' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	30		mg/Kg	20	12/14/2018 12:53:34 PM	42115

Lab ID: 1812656-005 **Collection Date:** 12/10/2018 11:16:00 AM
Client Sample ID: S-088210-75-121018-PL-HA-14-6" **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	34	30		mg/Kg	20	12/14/2018 1:55:37 PM	42115

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit

Analytical Report
Lab Order: **1812656**
Date Reported: **12/17/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Lab Order:** 1812656
Project: Mars 10

Lab ID: 1812656-006 **Collection Date:** 12/10/2018 11:21:00 AM
Client Sample ID: S-088210-75-121018-HA-14-1' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	30		mg/Kg	20	12/14/2018 2:08:02 PM	42115

Lab ID: 1812656-007 **Collection Date:** 12/10/2018 11:31:00 AM
Client Sample ID: S-088210-75-121018-PL-HA-15-6" **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	30		mg/Kg	20	12/14/2018 2:20:26 PM	42115

Lab ID: 1812656-008 **Collection Date:** 12/10/2018 11:37:00 AM
Client Sample ID: S-088210-75-121018-PL-HA-15-1' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	30		mg/Kg	20	12/14/2018 2:32:50 PM	42115

Lab ID: 1812656-009 **Collection Date:** 12/10/2018 12:47:00 PM
Client Sample ID: S-088210-75-121018-PL-HA-16-6" **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	30		mg/Kg	20	12/14/2018 2:45:15 PM	42115

Lab ID: 1812656-010 **Collection Date:** 12/10/2018 12:53:00 PM
Client Sample ID: S-088210-75-121018-PL-HA-16-1' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	30		mg/Kg	20	12/14/2018 2:57:39 PM	42115

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit

Analytical Report
Lab Order: **1812656**
Date Reported: **12/17/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Lab Order:** 1812656
Project: Mars 10

Lab ID: 1812656-011 **Collection Date:** 12/10/2018 1:00:00 PM
Client Sample ID: S-088210-75-121018-PL-HA-17-6" **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	30		mg/Kg	20	12/14/2018 3:10:04 PM	42115

Lab ID: 1812656-012 **Collection Date:** 12/10/2018 1:09:00 PM
Client Sample ID: S-088210-75-121018-PL-HA-17-1' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	30		mg/Kg	20	12/14/2018 3:22:29 PM	42115

Lab ID: 1812656-013 **Collection Date:** 12/10/2018 1:12:00 PM
Client Sample ID: S-088210-75-121018-PL-HA-18-6" **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	30		mg/Kg	20	12/14/2018 3:34:53 PM	42115

Lab ID: 1812656-014 **Collection Date:** 12/10/2018 1:17:00 PM
Client Sample ID: S-088210-75-121018-PL-HA-18-1' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	30		mg/Kg	20	12/14/2018 3:47:17 PM	42115

Lab ID: 1812656-015 **Collection Date:** 12/10/2018 2:52:00 PM
Client Sample ID: S-088210-75-121018-PL-HA-19-6" **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	30		mg/Kg	20	12/14/2018 4:24:30 PM	42115

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit

Analytical Report
Lab Order: **1812656**
Date Reported: **12/17/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: GHD **Lab Order:** 1812656
Project: Mars 10

Lab ID: 1812656-016 **Collection Date:** 12/10/2018 2:56:00 PM
Client Sample ID: S-088210-75-121018-PL-HA-19-1' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	30		mg/Kg	20	12/14/2018 4:36:55 PM	42115

Lab ID: 1812656-017 **Collection Date:** 12/10/2018 3:18:00 PM
Client Sample ID: S-088210-75-121018-PL-HA-2-5' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	660	30		mg/Kg	20	12/14/2018 4:49:19 PM	42115

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1812656**

17-Dec-18

Client: GHD

Project: Mars 10

Sample ID	**MB-42094**	SampType:	**MBLK**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**PBS**	Batch ID:	**42094**	RunNo:	**56335**					
Prep Date:	**12/13/2018**	Analysis Date:	**12/13/2018**	SeqNo:	**1882791**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID	**LCS-42094**	SampType:	**LCS**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**LCSS**	Batch ID:	**42094**	RunNo:	**56335**					
Prep Date:	**12/13/2018**	Analysis Date:	**12/13/2018**	SeqNo:	**1882793**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.3	90	110			

Sample ID	**MB-42115**	SampType:	**MBLK**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**PBS**	Batch ID:	**42115**	RunNo:	**56356**					
Prep Date:	**12/14/2018**	Analysis Date:	**12/14/2018**	SeqNo:	**1884868**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID	**LCS-42115**	SampType:	**LCS**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**LCSS**	Batch ID:	**42115**	RunNo:	**56356**					
Prep Date:	**12/14/2018**	Analysis Date:	**12/14/2018**	SeqNo:	**1884869**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	98.0	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: GHD | Work Order Number: **1812656** | RcptNo: 1

Received By: **Victoria Zellar** **12/12/2018 8:40:00 AM** Victoria Zellar

Completed By: **Jazzmine Burkhead** **12/12/2018 11:38:42 AM**

Reviewed By: JV 12.12.18

Labeled by: JAB 12/12/18

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	Courier		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: JAB 12/12/18

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.8	Good	Yes			

Released to Imaging: 6/30/2023 9:31:22 AM
Received by OCD: 6/1/2023 12:44:31 PM

Chain-of-Custody Record

Client: GHD Services, Inc.

Mailing Address: 6121 Indian School Rd. NE, #200
Albuquerque, NM 87110

Phone #: 505-884-0672

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☐ Standard ☑ Rush 3-day

Project Name: Mars 10

Project #: 080210-75

Project Manager: Alan ~~Graf~~ Brandon

Sampler: Phil Lorang

On Ice: ☑ Yes ☐ No

Sample Temperature: 38°F (3.3°C) 1.0-2.8°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1812656	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)					Air Bubbles (Y or N)
12-10-18	09:10	Soil	S-088210-75-121018-PL-HA-12-1'	4oz. glass	Ice	-001								X								
	09:34		S-088210-75-121018-PL-HA-12-2'			-002								X								
	10:04		S-088210-75-121018-PL-HA-13-1'			-003								X								
	10:13		S-088210-75-121018-PL-HA-13-2'			-004								X								
	11:16		S-088210-75-121018-PL-HA-14-6"			-005								X								
	11:21		S-088210-75-121018-PL-HA-14-1'			-006								X								
	11:31		S-088210-75-121018-PL-HA-15-6"			-007								X								
	11:37		S-088210-75-121018-PL-HA-15-1'			-008								X								
	12:47		S-088210-75-121018-PL-HA-16-6"			-009								X								
	12:53		S-088210-75-121018-PL-HA-16-1'			-010								X								
	13:00		S-088210-75-121018-PL-HA-17-6"			-011								X								
	13:09		S-088210-75-121018-PL-HA-17-1'			-012								X								

Date:	Time:	Relinquished by:	Received by:	Date	Time
12-10-18	14:00			12/11/18	1400
Date:	Time:	Relinquished by:	Received by:	Date	Time
12/11/18	1900		Victoria Pellan	12/12/18	8:40

Remarks: Courier VVZ 12/12/18

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

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Project Name: Mars 10

Project #: 088210-75

Project Manager: Alan Brandon

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On Ice: ☑ Yes ☐ No

Sample Temperature: 38-(1F)1.0=2.8°C

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Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1812656	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO3,NO2,PO4,SO4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)					Air Bubbles (Y or N)
12-10-18	13:12	Soil	S-088210-75-121018-PL-HA-18-6"	4oz. glass	Ice	-013								X								
	13:17		S-088210-75-121018-PL-HA-18-1'			-014								X								
	14:52		S-088210-75-121018-PL-HA-19-6"			-015								X								
	14:56		S-088216-75-121018-PL-HA-19-1'			-016								X								
	15:18		S-088210-75-121018-PL-HA-2-5'			-017								X								

Date	Time	Relinquished by:	Received by:	Date	Time
12-10-18	14:00			12/11/18	1400
12/11/18	1900		Received by: Victoria Ballan	12/12/18	8:40

Remarks: Courier via 12/12/18 8:40

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

GOSHAWK
ENVIRONMENTAL CONSULTING, INC.

LIMITED TESTING PLAN FOR CONTAMINANT REMEDIATION EFFORTS WITHIN ARCHAEOLOGICAL SITE LA 43495

LEA COUNTY, NEW MEXICO

Plan Prepared by:
Goshawk Environmental Consulting, Inc.
P.O. Box 151525
Austin, Texas 78715

Principal Investigator:
Mark Willis

Lead Agency:
New Mexico State Land Office

Permits:
NM-18-290

April 2019

ADMINISTRATIVE SUMMARY

At the request of the New Mexico State Land Office, Goshawk Environmental Consulting, Inc., has developed this limited testing plan for proposed contaminant remediation activities within archaeological site LA 43495. Produced water was illegally dumped (released) by an unknown third party along the south side of an access road that serves the Mars State Com mineral lease in Lea County, New Mexico. Initial remediation efforts were halted due to the presence of LA 43495. A subsequent confirmation sampling effort revealed chlorides above the 600 mg/kg remediation threshold existed immediately adjacent to the lease road. Site LA 43495 is in the area that will require remediation of chlorides.

LA 43495 is located on state-owned land. The limited testing plan will allow a preliminary assessment of the portion of site LA 43495 that will be impacted by contaminant remediation efforts to determine whether potentially significant cultural features or deposits are present. If no potentially significant cultural materials are found within the remediation area, data recovery will not be necessary. The presence of potentially significant cultural deposits or features will trigger more detailed examination of the remediation area to recover data.

LA 43495 is part of a group of sites known as the Bell Lake Site Complex. LA 43495 was originally documented in 1973 by the Lea County Archaeological Society. The site was revisited in 1989 by Pecos Archaeological Consultants; in 2014 by Lone Mountain Archaeological Services, Inc.; in 2014 by Boone Archaeological Services of New Mexico, LLC; and in 2018 by APAC. The site was documented as an extensive Early Pueblo to Late Pueblo-Jornada Mogollon association site with a possible Archaic component containing approximately 5,000 artifacts, including temporally diagnostic prehistoric sherds and lithic tools. In 1989, the New Mexico SHPO determined the site eligible for listing on the National Register of Historic Places.

LA 43495 is located within a dune field in a semi-arid desert. The site is approximately 0.8 kilometer east of Bell Lake and 183 meters north of an unnamed playa. Several small drainages cross the site; some of the drainages feed into the unnamed playa to the south and others end in small ponding areas. The vegetative community consists of honey mesquite, broom snakeweed, soapweed yucca, and various desert grasses and forbs.

GOSHAWK ENVIRONMENTAL CONSULTING, INC.

CONTENTS

APPENDICES

GOSHAWK ENVIRONMENTAL CONSULTING, INC.

1.0 PROJECT BACKGROUND

EOG Resources, Inc. (EOG) identified the illegal dumping (release) of produced water by an unknown third party along the south side of an access road within the Mars State Com mineral lease. The illegal dumping was first identified on or around 9 July 2018. Initial contaminant remediation efforts commenced on 25 July 2018. A day later, after EOG became aware of the presence of archaeological site LA 43495, remediation activities were halted. After negotiations with the New Mexico State Land Office (NMSLO) and New Mexico Oil Conservation Division (NMOCD), EOG conducted a confirmation sampling effort on 10 December 2018. This was done in order to understand the extent of contamination within LA 43495. A single sample exceeded the remediation threshold for chlorides of 600 mg/kg. The sample was collected from an area adjacent to the access road and contained chloride levels of 620 mg/kg (Figure 1, Appendix A). No other samples contained vertical or horizontal chloride contamination above the remediation threshold.

An area around the contaminated sample will need to be remediated (contaminant remediation area). Soil will be excavated from the contaminant remediation area and hauled to an approved landfill. Although the exact area of chloride levels above the remediation threshold has not been specifically identified, soil removal is expected to be relatively limited. The remediation plan will excavate, utilizing a backhoe, an approximately 5-foot-by-5-foot (1.5-meter-by-1.5-meter) area centered on the contaminated sample (Figure 2, Appendix A). This area will be excavated to a depth of approximately 5 feet (1.5 meters [m]) for a total of approximately 4.6 cubic yards (3.5 m^3).

The potential presence of significant cultural deposits or features within the contaminant remediation area of site LA 43495 cannot be adequately assessed by surface examination alone. Previous surface impacts (oil and gas activities) have occurred within the contaminant remediation area, therefore, significant cultural deposits or features are not expected to exist. A 1-meter-by-2-meter test unit will be excavated within the contaminant remediation area to facilitate examination of subsurface deposits. If any potentially significant deposits and/or features are encountered during testing, work will be halted, and a recovery plan will be developed with the assistance of the NMSLO.

2.0 ENVIRONMENTAL SETTING

2.1 PHYSIOGRAPHIC CONTEXT

The proposed contaminant remediation area is within the Great Plains Physiographic Province (Fenneman and Johnson 1946). More specifically, it is within the Pecos Valley section, which is a long trough that has been eroded below the High Plains (Fenneman 1931). Precipitation levels of fewer than 20 inches per year are typical within the Great Plains; however, the southern portions, where the contaminant remediation area is located, typically experience even less rainfall. Increased temperatures and evaporation rates further stress the environment. This environment lacks the moisture typically needed to support lush vegetation.

2.2 GEOMORPHIC CONTEXT

The Geologic Map of New Mexico indicates that the contaminant remediation area is underlain by a small area of older alluvial deposits (Qoa), which is surrounded by a much larger area of eolian and piedmont deposits (Qep). Older alluvial deposits were formed on upland plains and piedmont areas of the High Plains. Eolian and piedmont alluvial deposits are associated with higher gradient tributaries bordering major stream valleys, alluvium from piedmont slopes, and alluvial fans. These areas include scattered lacustrine, playa, and alluvial sediments. Headward erosion of the present Pecos Valley appears to have begun with the earliest Pleistocene glacial advancement (Reeves 1972). Small lake basins appear to have formed along abandoned drainage channels within the Pecos Valley. The small basins may have provided ephemeral water to early populations.

2.3 SOILS

The Natural Resource Conservation Service (NRCS) Soil Survey Geographic Database (SSURGO) indicates the soil map unit underlying the contaminant remediation area is Kermit-Wink complex (KE). Kermit soils are very deep fine sands. Wink soils are very deep fine sandy loams. Both soils are common on uplands within relatively arid environments and are of eolian origin.

2.4 FLORAL AND FAUNAL COMMUNITIES

Southeastern New Mexico is within a transition zone between the arid West and Southern Great Plains ecosystems. Desert scrub generally dominates the arid West, while the Great Plains are dominated by grasses and forbs. Vegetation within the desert scrub and grassland communities is dominated by warm season, short, and mid-height grasses such as black grama, bush muhly, dropseeds, tobosa, and three-awns. Various bluestems, bristlegrass, lovegrasses, and hooded windmill grass are less common. Shrubs include creosote, honey mesquite, acacia, shinnery oak, sand sagebrush, broom snakeweed, and yucca. A variety of forbs occur, though production fluctuates greatly from year to year and season to season. Common forbs include bladderpod, dove weed, globemallow, annual buckwheat, and sunflower.

Aerial orthoimagery suggests the contaminant remediation area is in a disturbed area with very little vegetative cover. The surrounding area can be described as desert scrub. A caliche-surfaced road parallels the contaminant remediation area. Other oil/gas development and right-of-ways are in the general vicinity of the contaminant remediation area. The vegetative community observed at the site is consistent with that shown on the aerial orthoimagery. Vegetation is limited within the contaminant remediation area (Photo 1, Appendix B); shrubs and grasses are adjacent the contaminant

remediation area (Photo 2, Appendix B). Species observed include honey mesquite, broom snakeweed, dove weed, yucca, and purple three-awn.

Various mammal, bird, reptile, and invertebrate species inhabit this ecosystem in southeastern New Mexico. Herbivorous mammals include mule deer, pronghorn, and numerous rodent species. Bison were common in the area around 8,000−12,000 years ago (Dillehay 1974). Carnivores include coyote, bobcat, badger, striped skunk, and swift fox. Two upland game bird species, scaled quail and mourning dove, are prevalent throughout southeastern New Mexico. Many species of songbirds nest within this ecosystem; however, a greater diversity of birds utilize this habitat during migration or for non-nesting activities. Common avian predators include northern harrier, Swainson's hawk, red-tailed hawk, American kestrel, burrowing owl, and Chihuahuan raven. Numerous snake and lizard species also inhabit this ecosystem. Invertebrates, including grasshoppers, beetles, wasps, spiders, and scorpions, are abundant.

2.5 MODERN CLIMATE

Lea County has a sub-humid to dry climate with hot summers and mild winters. The average temperature is 63.7 degrees Fahrenheit, and the average annual high temperature is 79.3 degrees Fahrenheit (U.S. Climate Data 2019). Average precipitation is approximately 14 inches of rainfall and 3 inches of snow per annum (U.S. Climate Data 2019). Most rainfall occurs from late spring to early fall; evaporation rates are high. The growing season is just over 200 frost-free days on average. Warm temperatures, winds, high evaporation rates, and low rainfall accelerate soil erosion.

2.6 PALEOENVIRONMENT

Thousands of years ago, during the Pleistocene, the climate was more mesic with fewer temperature extremes and relatively lush vegetation. Megafauna thrived in this setting but were dependent upon streams and waterholes.

3.0 CULTURAL OVERVIEW OF THE EASTERN NEW MEXICO REGION

Lea County is within the Southeastern New Mexico Archaeological Region. Studies show that several cultures inhabited the area for the last 13,000 years (Abbott 2009; Jelinek 1967; and Railey 2013 and 2016). The following cultural/temporal periods are used to categorize those habitations: Paleoindian (ca. 11,500 to 7000 B.C.), Archaic (ca. 6000 B.C. to A.D. 500), Ceramic (ca. A.D. 500 to 1400), Post Formative Native American (ca. A.D. 1400 to present), and Historic Euro-American (ca. A.D. 1865 to present).

3.1 PREHISTORY

3.1.1 Paleoindian Period (ca. 11,500 to 7,000 B.C.)

Recent archaeological evidence indicates prehistoric people may have occupied this area prior to the Paleoindian Period. However, the controversial sites that show evidence of an earlier period of habitation have not yet been widely accepted by the archaeological community (Dillehay and Meltzer 1991). For this reason, the prehistoric period will begin with the Paleoindian Period. One radiocarbon date from the Lubbock Lake Landmark site firmly established Clovis occupation to 11,500 years ago or 9,500 B.C. in North Texas (Holliday 1987:22). Earlier dates have been secured from a Clovis site in northeastern New Mexico, where the lowest level was dated to 13,300 and 13,000 years ago (Haynes and Warnica 2012).

Coinciding with the decline of the Wisconsin glaciation, the Paleoindian Period is characterized by a relatively cool, moist climate that encouraged the development of now-extinct species of Pleistocene megafauna (Johnson and Holliday 2004). This period is sometimes called the Big Game Hunting Tradition (Willey 1966), due to a presumed reliance by Paleoindian peoples on megafauna as a food source. These conclusions are based on well-documented exploitation of megafauna in the western United States and evidence of the presence of similar species in New Mexico and North Texas between 11,000 and 9,000 years ago.

Excavations at the Aubrey site (41DN479) in North Texas indicated subsistence efforts did not focus on big game animals alone (Ferring 1989, 2001). The entire range of available fauna was utilized by the occupants of the site. Meat sources included bison, deer, rabbit, squirrel, fish, and turtle (Ferring 1989, 2001; Ferring and Yates 1997). Whether this pattern of a more generalized foraging subsistence system is characteristic of Clovis adaptations to this region remains to be documented. Ferring and Yates (1997) suggest that the Clovis people probably employed “very flexible adaptive strategies.”

Temporally diagnostic Paleoindian tool types include a variety of finely chipped, sometimes fluted, lanceolate projectile point styles, such as Clovis, Folsom, Plainview, and Scottsbluff (Prikryl 1990; Willey 1966). The Paleoindian projectile points transition from early Paleoindian to Early Archaic Period points. By the late Paleoindian period or Early Archaic, unfluted lanceolate projectile points such as Plainview, Golondrina, Meserve, Scottsbluff, and Angostura are more common (Story 1990; Hester 1980). Today these projectile points are most often found on the ground surface as isolated occurrences.

Overall population density was probably rather low during Paleoindian times. Early sites in New Mexico include Hermit's Cave, Burnet Cave, and Blackwater Draw locality 1 (Hanes and Warnica 2012; Stuart and Gauthier 1980; Sebastian and Larralde 1989:26; Tainter and Girrio 1980:28; and Cordell 1979).

3.1.2 Archaic Period (6000 B.C. to A.D. 500)

Following the close of the Pleistocene, eastern New Mexico experienced a trend toward a warmer and drier climate (Johnson and Holliday 1986). It has been postulated that this climate shift was partially responsible for the extinction of megafauna. The archaeological record of this period exhibits of a gradual diversification in subsistence patterns (Collins 1971). Although not well-defined in the region, studies indicate a dependence on hunting and gathering. From approximately 2,500 B.C. to A.D. 500, bison herds returned to the High Plains and must have held great appeal to Archaic hunters (Dillehay 1974). Agricultural pursuits, which were established in part in northwestern New Mexico by 1,000 B.C., were non-existent in the southeast (Stuart and Gauthier 1980). By the end of the Archaic, sea levels stabilized at current levels and the modern climatic regime was established (Aten 1983:157–159).

3.1.3 Ceramic Period (A.D. 500 to A.D. 1400-1450)

Ceramics first appeared in southeastern New Mexico around A.D. 900, later than in other parts of New Mexico (Leslie 1979). During this time, a trend toward sedentary group structure and population aggregation began. Horticulture began to support villages that were located within walking distance of water sources (Haskell 1977). Trade routes became more formalized as ceramics, such as Jornada Brownware, were imported from the west, and later from Mexico.

The Querecho phase, dated from A.D. 900 to A.D 1100, was characterized by gathering camps near water with Jornada Brownware the most common ceramic. Small villages, with small rectangular pit structures, became common toward the end of the phase (Leslie 1979). This was followed by the Maljamar phase, which lasted from A.D. 1100 to A.D. 1250, bringing with it larger pithouse villages and increased sedentism. Importation of ceramics increased dramatically. Partial abandonment followed, perhaps due to decreased rainfall and changing seasonality. Dillehay (1974) suggests an increase in the bison population from A.D. 1200 to A.D. 1300 brought returned reliance on megafauna as a food source.

Following the Maljamar phase, a new florescence called the Ochoa phase lasted from A.D. 1,300 to A.D. 1,450. This phase saw the introduction of above-ground adobe structures, a decreased reliance on corn and perhaps an increase in hunting (Miller et al., 2016:19). By the end of the Ochoa phase, there appears to have been only scattered remnants of a once congregated native population. Whether this was due to a return of drought conditions or the increased pressure of new migrations of Indian populations remains a mystery.

3.1.4 Post Formative Native American Period (A.D. 1450 to present)

After abandonment of prehistoric villages in the southern High Plains, nomadic bison hunters roamed the deserted plains of New Mexico. Apachean groups and Plains Indians began raiding the region as Spanish and later Anglo ranchers began to settle southeastern New Mexico. Sebastian and

Larraide (1989) present a comprehensive study of this settlement pattern, as do other researchers such as Railey (2016:134-136) and Miller et al. (2016:22).

3.2 Historic Period (A.D. 1864 to Present)

Spanish influence in southeastern New Mexico was minimal compared to the burgeoning settlements along the Rio Grande and the upper Pecos River (Russell 2010). First, conquistadors under Coronado, then Comancheros, then early Anglo hunters crossed the wide plains searching for gold, trade, and fortune. After the Pueblo Revolt in 1680, Comanche horse soldiers began raiding through the region on their way to the richer haunts of northern Mexico. After the Mexican Revolution in 1810, the new constitution (1824) spelled out governance in the northern territory. By 1850 with pressure from all sides, many Comanche were removed to rancherias and reservations in Oklahoma.

After the Mexican-American War (1846), the Treaty of Guadalupe Hidalgo (1848) ceded the southeast New Mexico territory to Texas. After the Compromise of 1850 the land was ceded to the federal government giving the United States governance over the New Mexico territory. The American military began waging continuous warfare by establishing military posts and forts throughout Texas. Indians gained ground somewhat during the hiatus caused by the American Civil War, but soon retreated as the military returned to the frontier. The Red River Wars culminating in Mackenzie's battle at Palo Duro Canyon in 1878 opened the way for cattle ranchers like Goodnight and Chisolm to establish large ranches in southeastern New Mexico. Battles to establish dominance led to fighting, such as the Lincoln County Wars, before governing forces could bring peace to the region.

The territory grew between 1880 and 1910 with railroads and ranching leading American and Mexican settlers into the area. The New Mexico Education Association of school teachers was organized in 1886. In 1889 small state colleges were established at Albuquerque, Las Cruces, and Socorro; and in 1891 the first effective public school law was passed. An irrigation project in the Pecos River Valley in 1889 marked the first of many projects to irrigate farms in the dry state. The 1890 discovery of artesian waters at Roswell gave farming and mining a boost. The power of the cattle barons faded as land was fenced in at the expense of open range. Cattle ranchers and sheep ranchers began tolerating one other. Coal mining developed during the 1890s, primarily to supply railroads. Oil was discovered in nearby Eddy County in 1909.

4.0 ARCHAEOLOGICAL SITE DESCRIPTIONS

As noted previously, archaeological site LA 43495 is situated in state-owned land in Lea County (Figure 3, Appendix A). More specifically, the centroid of the site is located at 103°33'54.508"W, 32°14'27.814"N (UTM 1983 Zone 13 X=635180.4 and Y=3568058.9 coordinates). Only a small portion of site LA 43495 will be affected by the contaminant remediation efforts. A detailed description of LA 43495 can be found in Section 4.2.

4.1 LA 43495

LA 43495 was first recorded in the 1970's by the Lea County Archaeological Society (LCAS). During this recording it was reported to be a dense artifact scatter consisting of lithic debitage, stone tools, projectile points, groundstone, ceramics, burnt bone, and mussel shell fragments. LCAS also reported that the site had "exposed layers of burned soil" but no defined features were described. The site was then updated in 1989 by Pecos Archaeological Consultants and was reported to have thousands of artifacts across the site (NMCRIS Activity 24728).

In 2014, Lone Mountain Archaeological Services, Inc. (Lone Mountain) visited LA 43495 and updated the site based on their in-field observations (NMCRIS Activity 129811). Lone Mountain reported the site to be approximately 150 m south of the BLM/Archaeological Records Management Section (ARMS) site boundary. Based on the distribution of artifacts observed, Lone Mountain placed the sites boundary at 399 m by 259 m with an area of 10.3 hectares (ha). Artifacts were reported to be estimated at over 5,000 artifacts across the site. Lone Mountain reported that no discrete features were identified. Lone Mountain reported LA 43495 as having two Cultural/Temporal Affiliations, an Archaic cultural affiliation with a temporal affiliation of Late Archaic (1600 BC to 200 AD) and a Jornada Mogollon cultural affiliation with a temporal affiliation of Early Pithouse to Late Pueblo (200 AD to 1500 AD).

Boone Archaeological Services of New Mexico, LLC (Boone) also visited the site in 2014 and agreed with LMAS's findings but did add a single burned caliche feature to the site (NMCRIS Activity 132837). Boone revisited the site on 1 August 2018. This revisit was largely concerned with recording the illegal dumping of produced water and the initial remediation activities. The site boundary during this visit was changed to match the in-field observations from Boone, which measured 455 m by 282 m with an area of 12.8 ha. It was also reported to have over 10,000 artifacts located across the site.

APAC conducted a revisit to LA 43495 in October 2018 to begin a preliminary assessment of possible impacts by the initial remediation activities (NMCRIS Activity 142336). Observations most similarly matched those recorded by Lone Mountain in 2014. The exceptions were additional diagnostics and a loci consisting of numerous artifacts in the southern portion of the site. Impacts to the loci were documented. Two projectile points were observed and recorded. One is from the Datil Cluster likely affiliated with Late Archaic to Early Pithouse periods (Justice 2002). The other is similar to a Tularosa Corner Notched from the Cienega Cluster. Temporal affiliation of the Cienega Cluster is Early Pithouse to Late Pithouse (Justice 2002). The artifact assemblage is still estimated to be in excess of 5000.

LA 43495 is believed to contain considerable data potential and is considered eligible for listing on the National Registry of Historic Places under criterion “d”.

4.2 Previous Research

Numerous NMCRIS-listed activities have been conducted in the vicinity of the proposed contaminant remediation. These include seismic surveys; well pad surveys; and road, pipeline, and other infrastructure surveys triggered by construction in the oil and gas industry. A list of the NMCRIS activities within 500 m of the site LA 43495 (N=7) is shown in Table 1.

Table 1: List of NMCRIS Activities within 500 m of the LA 43495

Activity Number	Organization Name	Lead Agency	Total Acres	Sites Visited	Date of Survey Start
129811	Lone Mountain Archaeological Services	BLM-CFO & NM State Land Office	22139.53	104	27 Jul 2013
135199	Boone Archaeological Services of New Mexico, LLC	NM State Land Office	69.95	0	13 Feb 2016
136481	Boone Archaeological Consultants, LLC	NM State Land Office	8.07	0	16 Aug2016
137377	Goshawk Environmental Consulting, Inc.	BLM-CFO	101.67	0	12 Dec 2016
138023	Goshawk Environmental Consulting, Inc.	NM State Land Office	1.05	0	8 May 2017
138352	Goshawk Environmental Consulting, Inc.	BLM-CFO & NM State Land Office	25.43	0	1 Aug 2017
142050	Goshawk Environmental Consulting, Inc.	NM State Land Office	4.71	0	5 Dec 2018

The nearest archaeological site to the contaminant remediation area other than LA 43495 is LA 178364. Site LA 178364 is approximately 305 m southwest of the contaminant remediation area. Lone Mountain originally documented the site during NMCRIS Activity #129811 in 2014. LA 178364 was recorded as a late archaic artifact scatter with diagnostic Mogollon artifacts/features. The artifact assemblage consisted of lithic debitage, chipped stone tools, diagnostic projectile points, and fire-cracked rock. The most recent revisit was performed by Boone, in 2015 under NMCRIS Activity #132837. However, NMCRIS Activity #132837 appears to have occurred approximately 37 kilometers to the northeast of LA 178364 in Eddy County. The data entry for NMCRIS Activity #132837 is still in progress.

5.0 TESTING METHODOLOGY

Prior to mechanical excavation of soils for contaminant remediation purposes, archaeologists will excavate a 1-meter-by-2-meter test unit (Figure 4, Appendix A). The unit will be centered on the contaminated sample location within the proposed contaminant remediation area. Prior to excavating the unit, a GPS will be used to establish a horizontal grid system in NAD 1983 projection. All corners of the unit will be recorded. Vertical levels (strata) will be maintained with a metric tape measure.

The unit will be excavated by hand at 10-centimeter intervals until sterile soils are encountered (no cultural artifacts found). All soils removed from the test unit will be systematically screened through ¼-inch hardwire mesh to collect any cultural resource artifacts that may be present. Archaeologists will have discretion to also use ⅛-inch hardwire mesh if determined necessary. All cultural material will be inventoried and assigned a field number. If botanical material is encountered, a sample will be collected for further analysis.

Recording forms will keep track of findings within each vertical level of the unit. Data recorded will include cultural materials by lot, soil composition, and soil color. Evidence of rock, botanicals, and previous disturbances will also be noted.

This effort will allow documentation of any cultural materials and possible features within the proposed contaminant remediation area. If significant cultural materials or features are encountered within the test unit, testing will be halted, and the NMSLO will be contacted for additional planning. Any features uncovered will not be bisected, and only macrobotanical samples from the matrix adjacent to the features will be collected for additional study. All artifacts recovered from the test units will be analyzed and curated with the Laboratory of Anthropology at the New Mexico Museum of Indian Arts and Culture.

The presence of human remains within the proposed testing area is highly unlikely. If human bone or funerary objects are found, the testing effort will be halted, and appropriate authorities contacted.

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ENVIRONMENTAL CONSULTING, INC.

APPENDIX A

FIGURES

Map Source: UAV Orthophoto, 2018.

0 25 50 Feet

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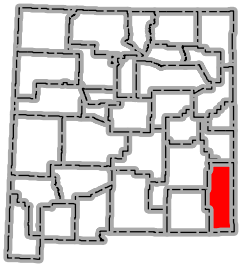
GOSHAWK ENVIRONMENTAL CONSULTING, INC.

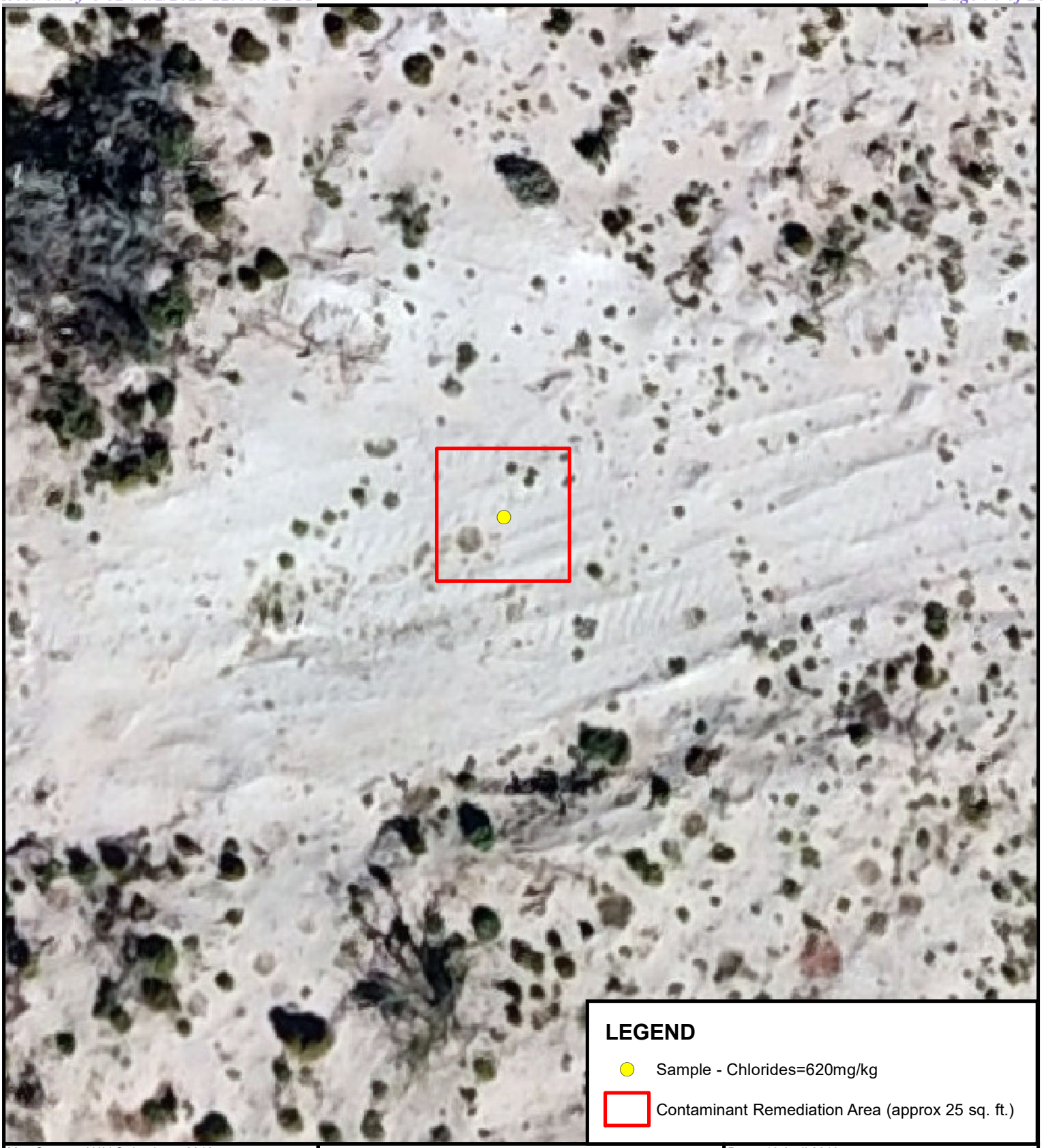
Figure 1
Soil Sample Location Map
Lea County, New Mexico

LA 43495 Testing Plan

Township 24S; Range 33E; Section 3

Date: 13 April 2019





Map Source: UAV Orthophoto, 2018.

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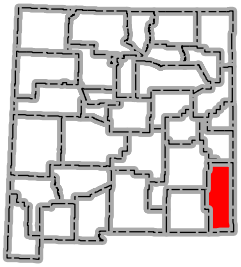
GOSHAWK ENVIRONMENTAL CONSULTING, INC.

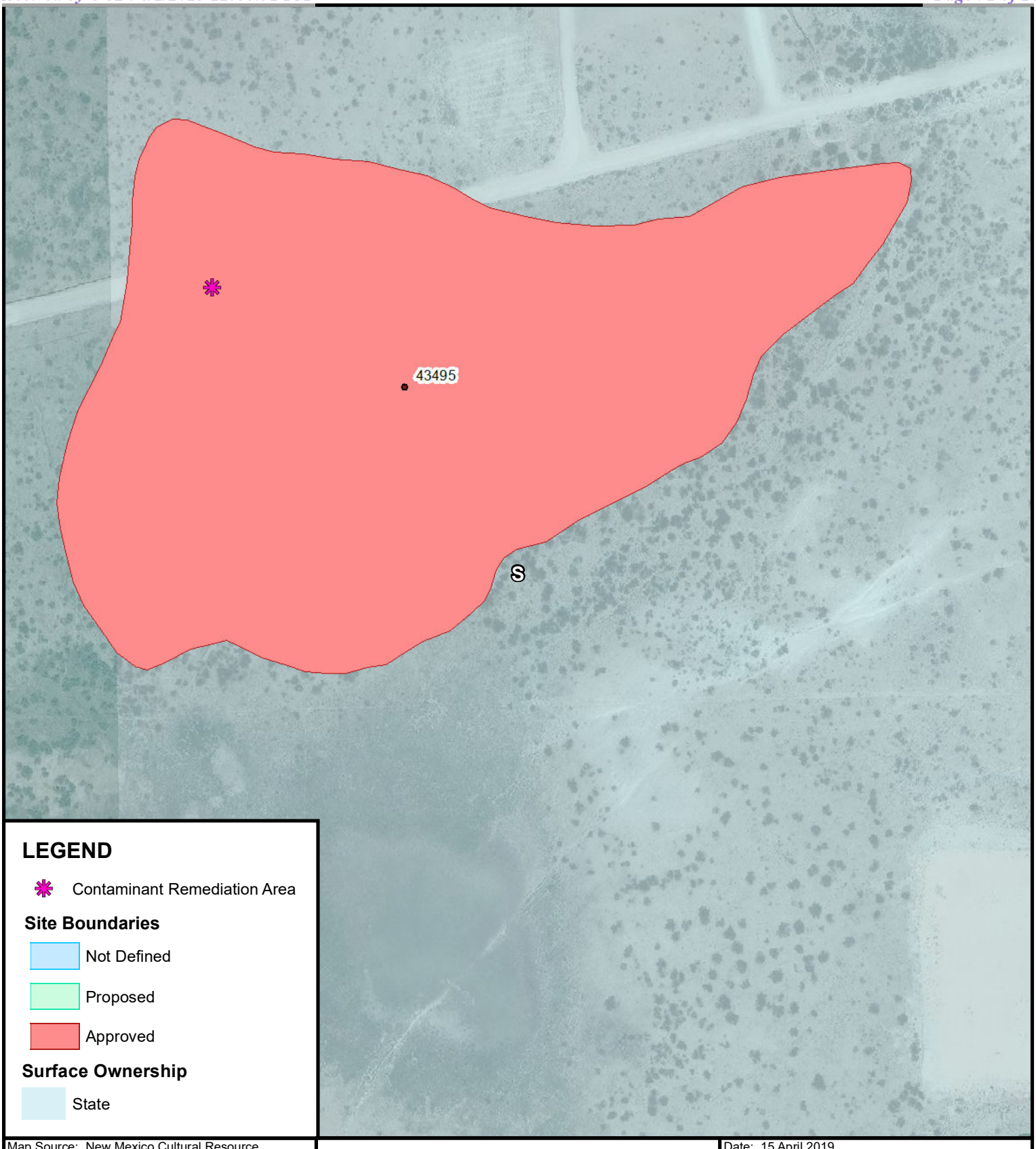
Figure 2
Contaminant Remediation Map
Lea County, New Mexico

LA 43495 Testing Plan

Township 24S; Range 33E; Section 3

Date: 13 April 2019





LEGEND

Contaminant Remediation Area

Site Boundaries

Not Defined

Proposed

Approved

Surface Ownership

State

Map Source: New Mexico Cultural Resource Information System (NMCRIS) Archaeological Records Management Section (ARMS), accessed 15 April 2019. EOG's Spatial on Demand Datadoors. Imagery:Global:Imagery:Digital Globe Most Recent.

0 100 200 Feet

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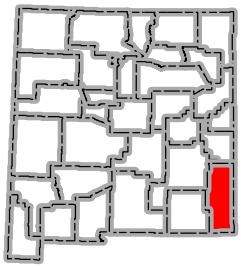
GOSHAWK ENVIRONMENTAL CONSULTING, INC.

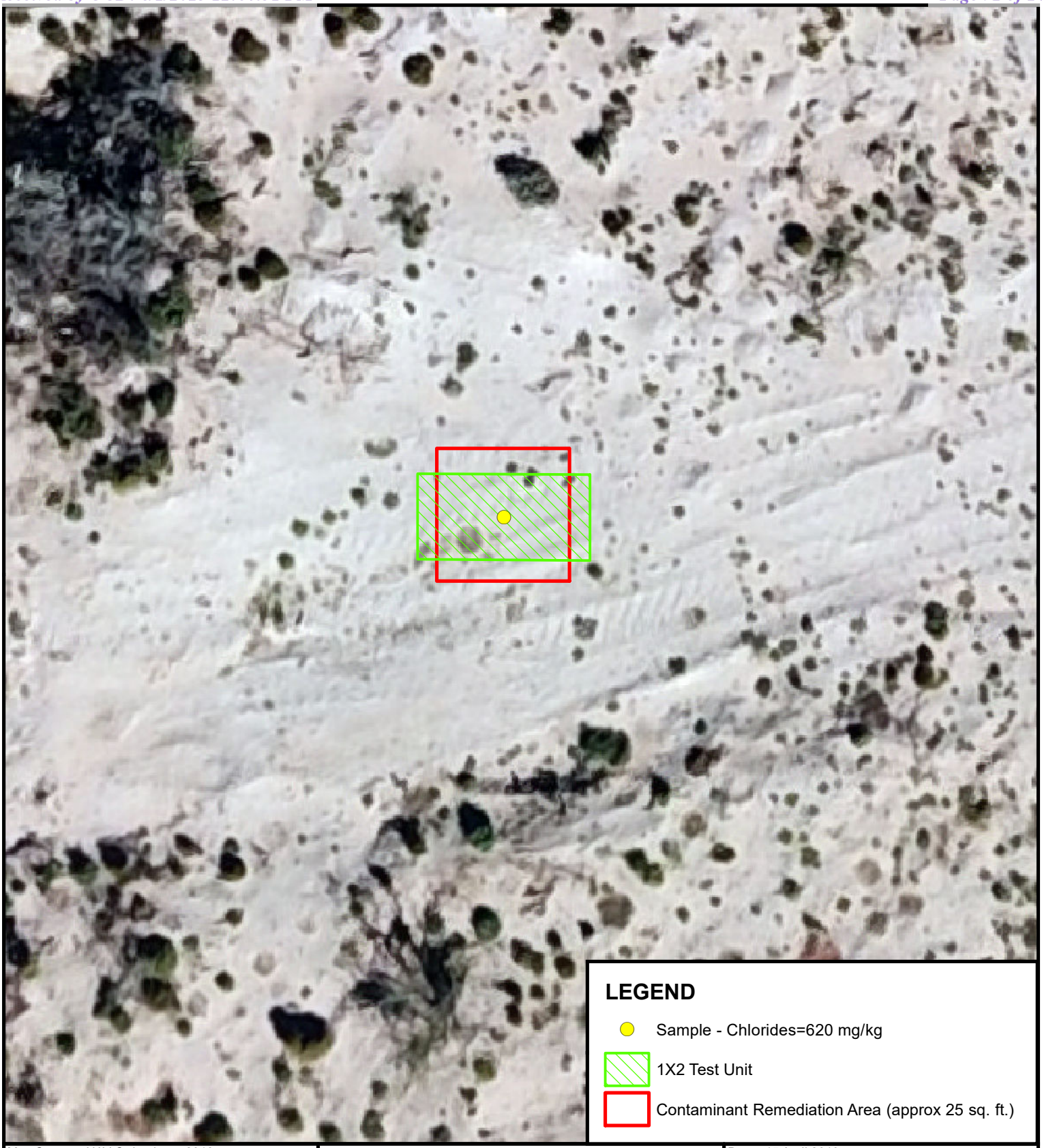
Figure 3
LA 43495 Map
Lea County, New Mexico

LA 43495 Testing Plan

Township 24S; Range 33E; Section 3

Date: 15 April 2019





Map Source: UAV Orthophoto, 2018.

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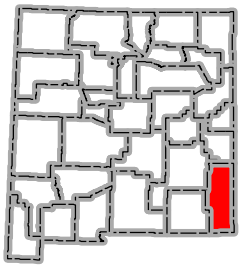
GOSHAWK ENVIRONMENTAL CONSULTING, INC.

Figure 4
Archaeological Test Unit Map
Lea County, New Mexico

LA 43495 Testing Plan

Township 24S; Range 33E; Section 3

Date: 15 April 2019



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APPENDIX B

PHOTOGRAPHS

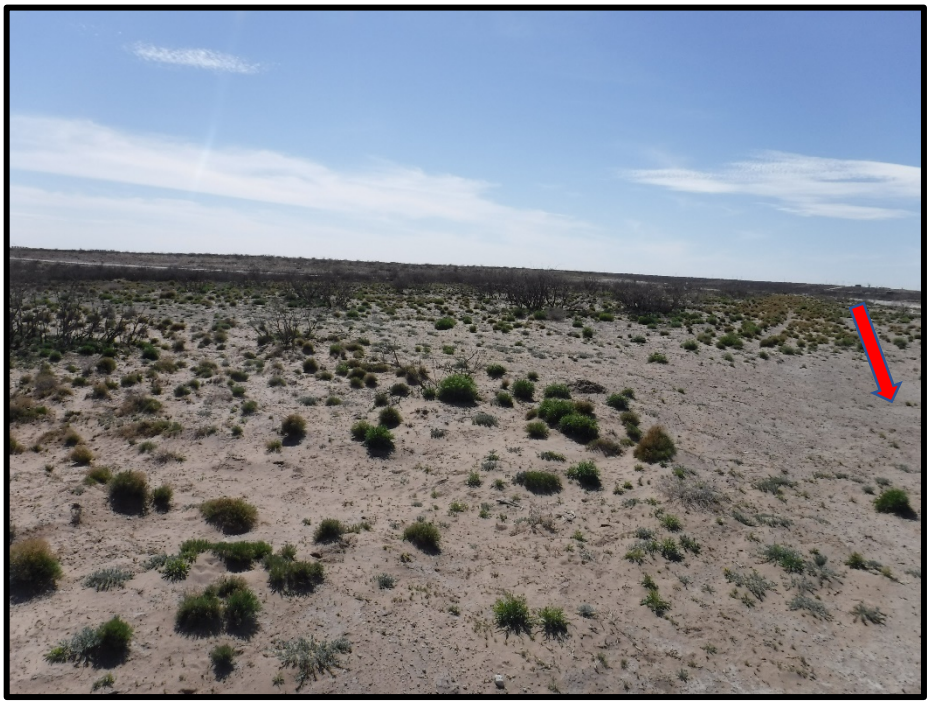
Photo #: 1	Date: 5 March 2019
Description: Very Little to No Vegetation, Contaminant Remediation Area in the Right-hand Portion of the Photograph	

Photo #: 2	Date: 5 March 2019
Description: Shrubs and Grasses Adjacent to Contaminant Remediation Area with Significant Bare Ground, Facing East	

GOSHAWK ENVIRONMENTAL CONSULTING, INC.

16 April 2019

Mr. William S. Barnes
Deputy Director
Field Operations Division
New Mexico State Land Office
310 Old Santa Fe Trail
P.O. Box 1148
Santa Fe, NM 87504

Mr. David C. Eck
Trust Land Archaeologist
Field Operations Division
New Mexico State Land Office
310 Old Santa Fe Trail
P.O. Box 1148
Santa Fe, NM 87504

Re: Remediation and Stabilization Plan, Mars State Com Site
Lea County, New Mexico

Dear Mr. Barnes and Mr. Eck:

Please allow this letter to serve as EOG Resources, Inc. (EOG) Remediation and Stabilization Plan for the Mars State Com Site. As you are aware, produced water was illegally dumped (released) by an unknown third party along the south side of an access road that serves the Mars 10 State Com lease. This letter outlines EOG's proposed cultural resources inventory to account for possible further impacts to archaeological resources due to necessary and required remediation activities. Additionally, this letter proposes stabilization controls within disturbed areas to help prevent further damage due to wind and water erosion.

CHRONOLOGY SUMMARY

EOG identified the illegal dumping on or about 9 July 2018. Initial remediation efforts commenced on 25 July 2018. A day later, after EOG became aware of the presence of archaeological site LA 43495, remediation activities were halted. After negotiations with the New Mexico State Land Office (NMSLO) and New Mexico Oil Conservation Division (NMOCD), EOG conducted a confirmation sampling effort on 10 December 2018. The sampling effort was completed to understand contamination levels in the disturbed areas of LA 43495. A single sample exceeded 600 mg/kg, the remediation threshold for chlorides. The sample was taken immediately adjacent to the access road and contained chloride levels of 620 mg/kg (Figure 1). No other samples contained vertical or horizontal chloride contamination above remediation thresholds.

CULTURAL RESOURCES INVENTORY

An archaeological damage assessment was conducted at site LA 43495. The damage assessment identified possible impacts to cultural deposits due to a northern blade scrape, two-track path, and a southern blade scrape (See Figure 1). The blade scrape areas were initially excavated in an attempt to remediate chlorides from the illegal dumping, while the two-track path was inadvertently created by mechanical equipment accessing the southern blade scrape. The northern blade scrape currently contains a spoil pile and is the remediation area where the chloride levels tested above remediation thresholds. Additional remediation efforts will be necessary within the northern blade scrape area.

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EOG will contract an archaeological consultant to conduct a cultural resources inventory for the remaining remediation activities. Both the spoil pile and remediation area will need to be assessed. A report of findings will be completed following the cultural resources inventory and submitted to the NMSLO for review.

Spoil Pile

Material within the spoil pile was excavated from the southern scrape area and "temporarily" stored at its current location (Photo 1). The spoil pile is approximately 26 feet (7.9 meters) long (Figure 2). The north end is circular and approximately 5 feet (1.5 meters) tall with a diameter of 15 feet (4.6 meters). The south end is 2.5 feet (0.8 meter) tall and 9 feet (2.7 meters) wide. The total estimated volume of the spoil pile is approximately 377 cubic feet (10.7 cubic meters). This spoil pile likely contains chloride levels above remediation thresholds; however, recent sampling has not been completed on the spoil pile.

Archaeologists will screen the entire spoil pile through ¼ inch mesh screen to collect any cultural resource artifacts that may have been removed during the initial remediation effort. Any artifacts found from the screening will be analyzed and curated. Screened soils will be deposited temporarily on plastic sheeting and a sample submitted to the lab for chloride analysis. If the spoil pile has chloride levels above remediation thresholds, the soils will be hauled off and disposed of in an approved landfill. However, if the soils contain chloride levels below remediation thresholds, the soils will be transported to and deposited within the southern scrape area.

Remediation Area

The remediation area will need to have soil excavated and hauled to an approved landfill. Although the exact area of chloride levels above remediation threshold limits has not been specifically identified, it is expected that soil removal will be relatively limited. The remediation plan will be to excavate, utilizing a backhoe, an approximately 5- by 5-foot (1.5- by 1.5-meter) area centered on the contaminated sample (Figure 3). This area will be excavated to a depth of approximately 5 feet (1.5 meters), for a total of approximately 4.6 cubic yards (3.5 cubic meters).

Prior to mechanical excavation of soils for remediation purposes, limited testing within LA 43495 will be conducted by archaeologists. A separate testing plan has been provided for review to the NMSLO, which outlines testing methodology within LA 43495.

After the limited testing plan is completed, EOG will provide an archaeological monitor to observe the mechanical excavation of contaminated soils. The archaeological monitor will have authority to direct excavation efforts and halt work if additional cultural materials or features are encountered.

STABILIZATION CONTROLS

The archaeological damage assessment also raised concerns about further degradation to site LA 43495 by wind and rainfall erosion. EOG proposes to implement secondary erosion and stabilization controls to minimize further impacts to the maximum extent practicable.

NORTHERN BLADE SCRAPE

Since further remediation will be necessary within the northern blade scrape, erosion and stabilization controls will be implemented following remediation activities. The northern blade scrape will be seeded utilizing the Bureau of Land Management's (BLM's) Seed Mixture #2 for sandy sites. Seeds will be distributed by hand and lightly raked into the soil. The seed and exposed soil will be covered with a netted, straw erosion control blanket. The erosion control blanket will be secured utilizing u-shaped sod staples. The erosion control blanket will help minimize rainfall impacts to exposed soil, slow water velocity during runoff, prevent seed predation, and limit seed loss due to runoff. The erosion control blanket will degrade over time, after the seed has had a chance to germinate and establish.

A natural, eroded, linear drainage is located immediately south of the northern blade scrape (Photos 2 and 3). This linear drainage feature will allow for increased water flow (volume and velocity) from stormwater runoff that may accumulate within the northern blade scrape. Wattles will be installed across the linear drainage at varying distances from the northern scrape area south toward the southern scrape area (Photo 4). Wattles will not be "trenched" into place as normally specified but will be placed on the ground surface and secured using small wooden laths. The wattles will reduce velocity within the linear drainage feature during heavy rainfall events.

Wattles will be constructed of a polypropylene netting (photodegradable) that is filled with either straw or aspen excelsior both of which are biodegradable. Aspen excelsior typically is much less palatable by livestock and will not typically be destroyed or consumed. After installation, the wattles will degrade over time and continue to reduce water velocity along the linear drainage.

TWO-TRACK PATH

Although much of the native vegetation along the two-track path was damaged during initial remediation efforts, some of the root structure continues to provide stabilization and the seed source has allowed vegetation to regrow (Photo 5). Preventing further access along this two-track path is critical. Large boulders will be strategically placed south of the access road at the edge of existing vegetation to serve as a "road" block. These boulders will be of a size that they can only be relocated using heavy equipment. Additionally, boulders will be spaced no more than 6 feet apart to prevent access to passenger vehicles and work trucks. Boulders will be place at least 50 feet on each side of the two-track path to discourage trespassers from trying to access the two-track path around the boulders (Figure 4).

The two-track path will also be seeded utilizing the BLM's Seed Mixture #2. Distributing seed along the path will establish additional seedlings to further minimize wind and water erosion. Erosion control blankets will be installed (following seed distribution) in areas that currently have minimal or no vegetative coverage (Photo 6). This will help prevent/minimize seed loss due to predation and/or wind and water erosion.

SOUTHERN BLADE SCRAPE

The southern blade scrape is an area where vegetation and topsoil has been removed for remediation purposes (Photos 7 and 8). The area can generally be described as an open, shallow

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"pit" or series of narrow linear excavations. This area is likely to experience very slow vegetative regrowth due to the loss of topsoil. EOG proposes to sample the spoil pile currently located within the northern blade scrape to determine if chloride levels are above remediation thresholds. If the soils within this pile are below remediation thresholds, the soil will be transported and deposited within the southern blade scrape. However, if the spoil pile contains chloride levels above remediation thresholds, EOG proposes to bring in topsoil from a nearby area to fill and level the southern scrape area. Topsoil will be obtained from a nearby well pad or from the state caliche pit located approximately 1 mile (1.6 kilometers) northwest of the remediation site. Following placement of topsoil, the area will be seeded utilizing BLM's Seed Mixture #2 and covered with an erosion control blanket. The erosion control blanket should help limit loss of seed from predation and erosion, as well as, provide some stabilization until vegetation regrowth occurs.

SUMMARY

EOG proposes to conduct stabilization activities and a cultural resources inventory at the Mars 10 State Com site to allow additional remediation and to attempt to minimize further impacts to archaeological site LA 43495. None of the proposed efforts described within this letter will be conducted until approval is granted from the NMSLO. Please review proposed stabilization and survey activities and provide feedback. If you have any questions or desire additional information, please feel free to contact myself at 512-203-0484 (zhomesley@goshawkenv.com) or Michael Yemm at 432-556-7258 (michael_yemm@eogresources.com).

Sincerely,

Zane N. Homesley
President

Cc: Michael Yemm, EOG Resources, Inc.
Doug Lowrie, EOG Resources, Inc.

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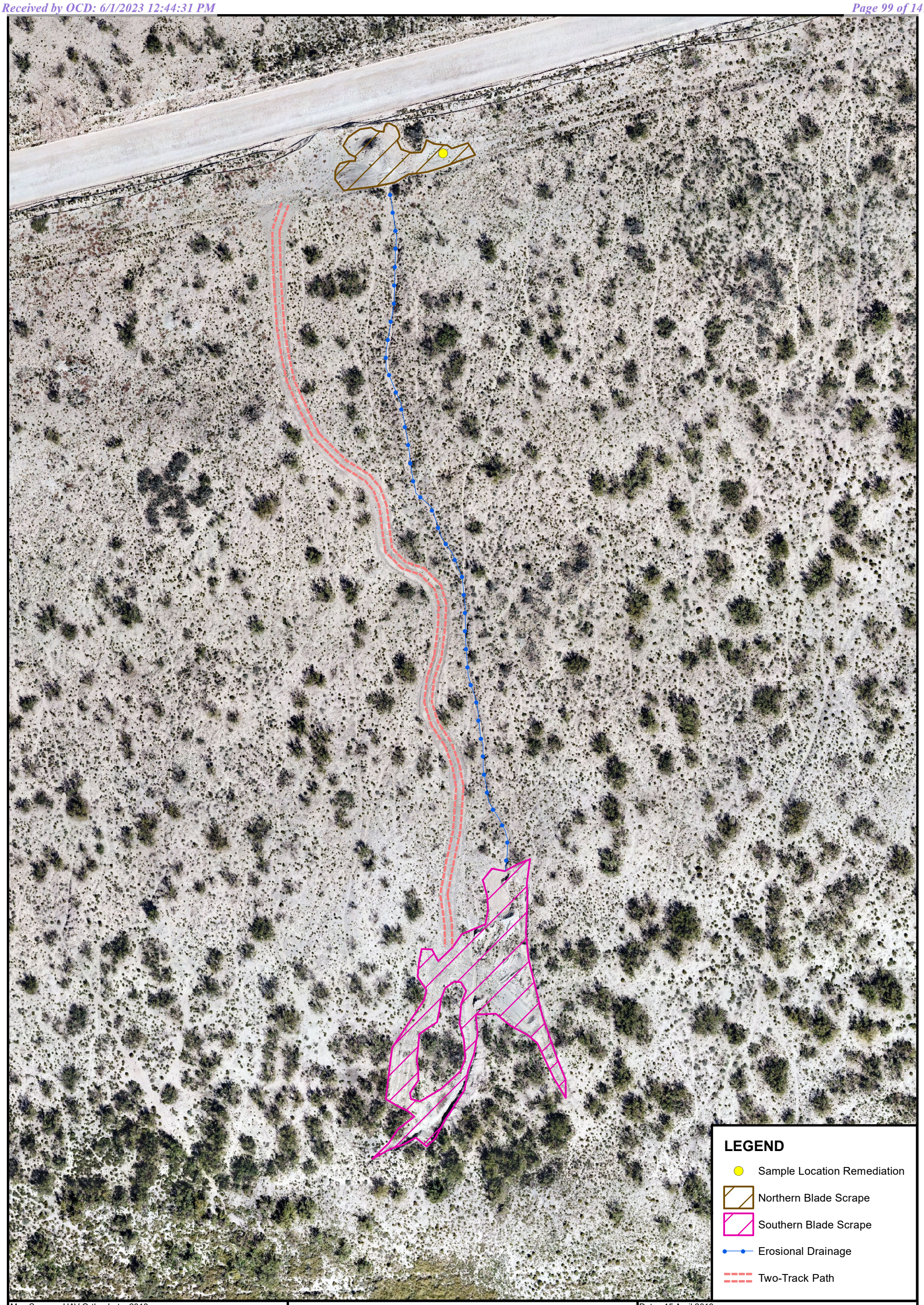

Map Source: UAV Orthophoto, 2018.

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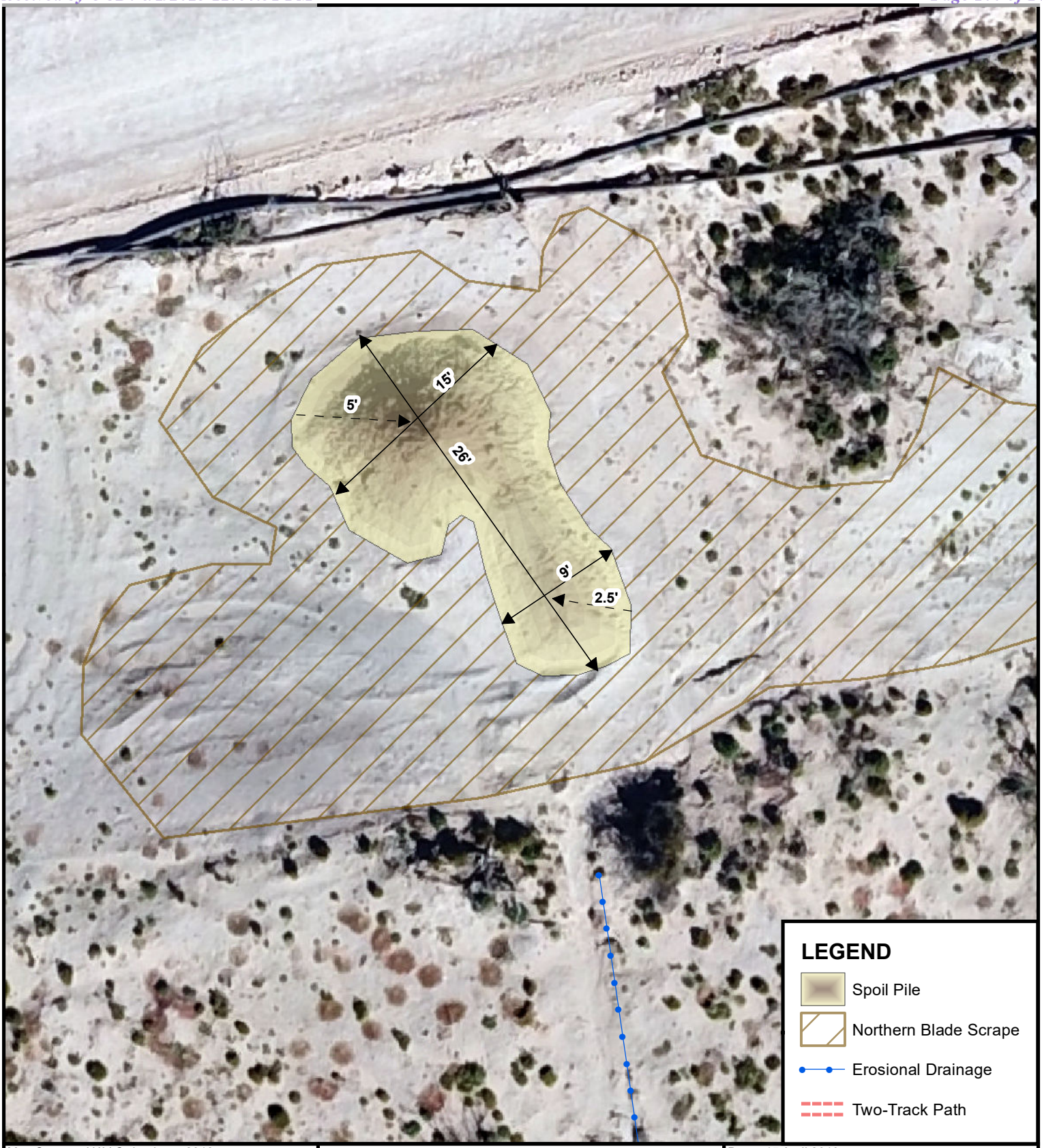
ENVIRONMENTAL CONSULTING, INC.

Figure 1
General Overview
Lea County, New Mexico

Mars State Com Release

Township 24S; Range 33E; Section 3

Date: 15 April 2019



Map Source: UAV Orthophoto, 2018.

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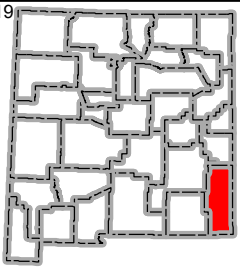
GOSHAWK ENVIRONMENTAL CONSULTING, INC.

Figure 2
Spoil Pile Map
Lea County, New Mexico

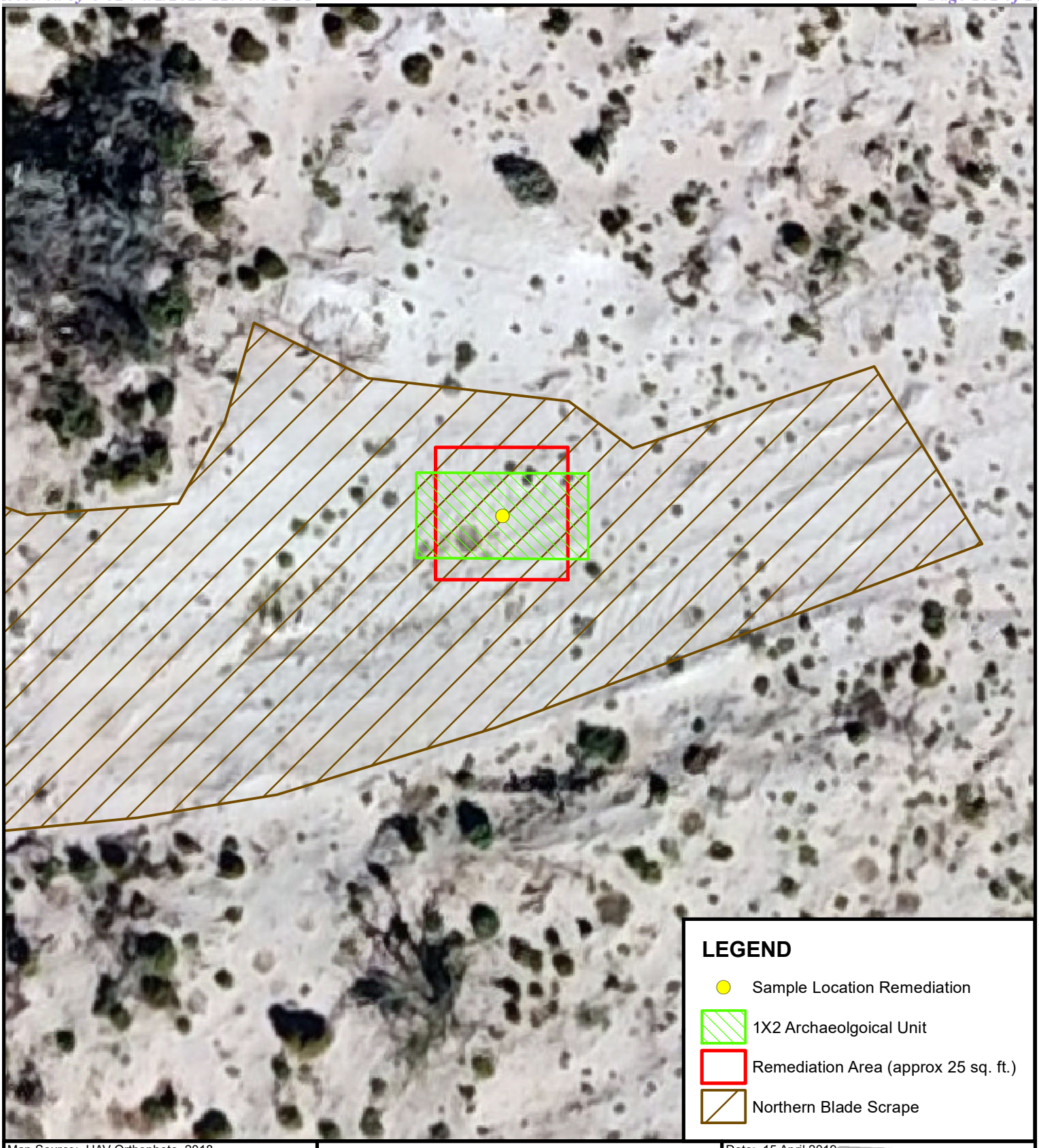
Mars State Com Release

Township 24S; Range 33E; Section 3

Date: 15 April 2019



eog resources



Map Source: UAV Orthophoto, 2018.

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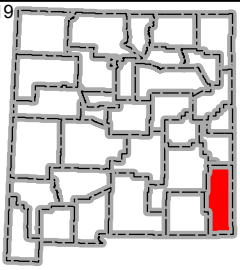
GOSHAWK ENVIRONMENTAL CONSULTING, INC.

Figure 3
Remediation Map
Lea County, New Mexico

Mars State Com Release

Township 24S; Range 33E; Section 3

Date: 15 April 2019



eog resources

Map Source: UAV Orthophoto, 2018.

0 15 30 Feet

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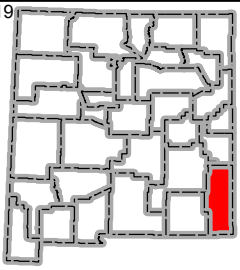
GOSHAWK ENVIRONMENTAL CONSULTING, INC.

Figure 4
Boulder Map
Lea County, New Mexico

Mars State Com Release

Township 24S; Range 33E; Section 3

Date: 15 April 2019



eog resources

GOSHAWK ENVIRONMENTAL CONSULTING, INC.

Mars State Com Site, Lea County, New Mexico

Photo #: 1	Date: 5 March 2019
Description: Spoil Pile Located along Lease Road, Facing East	

Photo #: 2	Date: 5 March 2019
Description: Erosional Drainage Located Immediately South of Northern Blade Scrape, Facing South	

Photo #: 3	Date: 5 March 2019
Description: Erosional Drainage Located Immediately South of Northern Blade Scrape, Facing North	

Photo #: 4	Date: 5 March 2019
Description: Wattles in Erosional Drainage: Concept	

Photo #: 5	Date: 5 March 2019
Description: Two-Track Path with Vegetation Regrowth, Facing South	

Photo #: 6	Date: 5 March 2019
Description: Concept: Erosion Control Blanket Covering Seeding Effort along Two-Track Path	

Photo #: 7	Date: 5 March 2019
Description: Southern Blade Scrape, Facing Southeast	

Photo #: 8	Date: 5 March 2019
Description: Southern Blade Scrape, Facing South	

Appendix D

CARDINAL Laboratories

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

May 10, 2019

MIKE CARMONA

TETRA TECH

901 WEST WALL STREET , STE 100

MIDLAND, TX 79701

RE: MARS 10

Enclosed are the results of analyses for samples received by the laboratory on 05/09/19 14:20.

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,

Celey D. Keene

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:	05/09/2019	Sampling Date:	05/09/2019
Reported:	05/10/2019	Sampling Type:	Soil
Project Name:	MARS 10	Sampling Condition:	Cool & Intact
Project Number:	212C-MD-01735	Sample Received By:	Jodi Henson
Project Location:	EOG-LEA CO., NM		

Sample ID: CALICHE PIT COMPOSITE (H901710-01)

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	05/10/2019	ND	2.00	100	2.00	6.09	
Toluene*	<0.050	0.050	05/10/2019	ND	2.35	117	2.00	0.0228	
Ethylbenzene*	<0.050	0.050	05/10/2019	ND	2.34	117	2.00	2.83	
Total Xylenes*	<0.150	0.150	05/10/2019	ND	6.37	106	6.00	1.71	
Total BTEX	<0.300	0.300	05/10/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *98.1 %* *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	05/10/2019	ND	400	100	400	0.00	QR-03

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	05/10/2019	ND	215	108	200	1.68	
DRO >C10-C28*	<10.0	10.0	05/10/2019	ND	202	101	200	0.304	
EXT DRO >C28-C36	<10.0	10.0	05/10/2019	ND					

Surrogate: 1-Chlorooctane *92.2 %* *41-142*

Surrogate: 1-Chlorooctadecane *102 %* *37.6-147*

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

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.
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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Page 111 of 141

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

Page 4 of 4

Client Name: EOG

Site Manager: Mike Carmona

Project Name: Mars 10

mike.carmona@tetratech.com

Project Location (county, state): Lea Co, NM

Project #: 212C-MD-01735

Invoice to: EOG - James Kennedy

Receiving Laboratory: CARDINAL

Sampler Signature: Conner Moehring

Comments:

H901710

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING DATE (YEAR: 2019)	SAMPLING TIME	MATRIX: WATER	MATRIX: SOIL	PRESERVATIVE METHOD: HCL	PRESERVATIVE METHOD: HNO_3	PRESERVATIVE METHOD: ICE	PRESERVATIVE METHOD: None	# CONTAINERS	FILTERED (Y/N)
1	~~PIT COMPOSITE~~ CALICHE PIT COMPOSITE	5/9/19			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 Sulfate TDS	Chloride	General Water Chemistry (see attached list)	Anion/Cation Balance			Hold
X		X												X						

Relinquished by: Conner Moehring Date: 5/9/19 Time:

Received by: Jodi Henson 5/9/19 14:20 Date: Time:

Relinquished by: Date: Time:

Received by: Date: Time:

Relinquished by: Date: Time:

Received by: Date: Time:

LAB USE ONLY

Sample Temperature 3.9°C #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

Received by OCD: 6/1/2023 2:44:31 PM

Released to Imaging: 6/30/2023 9:31:22 AM

CARDINAL Laboratories

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

May 31, 2019

MIKE CARMONA

TETRA TECH

901 WEST WALL STREET , STE 100

MIDLAND, TX 79701

RE: MARS 10

Enclosed are the results of analyses for samples received by the laboratory on 05/30/19 8:05.

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,

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:	05/30/2019	Sampling Date:	05/29/2019
Reported:	05/31/2019	Sampling Type:	Soil
Project Name:	MARS 10	Sampling Condition:	Cool & Intact
Project Number:	212C-MD-01735	Sample Received By:	Tamara Oldaker
Project Location:	EOG-LEA CO., NM		

Sample ID: NORTH 1 (4-4.5') (H901898-05)

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	05/30/2019	ND	1.87	93.7	2.00	4.54	
Toluene*	<0.050	0.050	05/30/2019	ND	1.98	99.0	2.00	4.64	
Ethylbenzene*	<0.050	0.050	05/30/2019	ND	1.90	94.9	2.00	5.51	
Total Xylenes*	<0.150	0.150	05/30/2019	ND	5.79	96.5	6.00	4.85	
Total BTEX	<0.300	0.300	05/30/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *108 %* *73.3-129*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**288**	16.0	05/30/2019	ND	400	100	400	3.92	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/30/2019	ND	191	95.7	200	4.18	
DRO >C10-C28*	<10.0	10.0	05/30/2019	ND	199	99.3	200	7.57	
EXT DRO >C28-C36	<10.0	10.0	05/30/2019	ND					

Surrogate: 1-Chlorooctane *89.3 %* *41-142*

Surrogate: 1-Chlorooctadecane *92.0 %* *37.6-147*

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Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

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

Received:	05/30/2019	Sampling Date:	05/29/2019
Reported:	05/31/2019	Sampling Type:	Soil
Project Name:	MARS 10	Sampling Condition:	Cool & Intact
Project Number:	212C-MD-01735	Sample Received By:	Tamara Oldaker
Project Location:	EOG-LEA CO., NM		

Sample ID: NORTH 1 (4.5-5') (H901898-06)

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	05/30/2019	ND	1.87	93.7	2.00	4.54	
Toluene*	<0.050	0.050	05/30/2019	ND	1.98	99.0	2.00	4.64	
Ethylbenzene*	<0.050	0.050	05/30/2019	ND	1.90	94.9	2.00	5.51	
Total Xylenes*	<0.150	0.150	05/30/2019	ND	5.79	96.5	6.00	4.85	
Total BTEX	<0.300	0.300	05/30/2019	ND					

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

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**160**	16.0	05/30/2019	ND	400	100	400	3.92	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/30/2019	ND	191	95.7	200	4.18	
DRO >C10-C28*	<10.0	10.0	05/30/2019	ND	199	99.3	200	7.57	
EXT DRO >C28-C36	<10.0	10.0	05/30/2019	ND					

Surrogate: 1-Chlorooctane *100 %* *41-142*

Surrogate: 1-Chlorooctadecane *105 %* *37.6-147*

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Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

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

Received:	05/30/2019	Sampling Date:	05/29/2019
Reported:	05/31/2019	Sampling Type:	Soil
Project Name:	MARS 10	Sampling Condition:	Cool & Intact
Project Number:	212C-MD-01735	Sample Received By:	Tamara Oldaker
Project Location:	EOG-LEA CO., NM		

Sample ID: EAST 2 (4-4.5') (H901898-11)

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	05/30/2019	ND	1.87	93.7	2.00	4.54	
Toluene*	<0.050	0.050	05/30/2019	ND	1.98	99.0	2.00	4.64	
Ethylbenzene*	<0.050	0.050	05/30/2019	ND	1.90	94.9	2.00	5.51	
Total Xylenes*	<0.150	0.150	05/30/2019	ND	5.79	96.5	6.00	4.85	
Total BTEX	<0.300	0.300	05/30/2019	ND					

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

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**352**	16.0	05/30/2019	ND	400	100	400	3.92	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/30/2019	ND	191	95.7	200	4.18	
DRO >C10-C28*	<10.0	10.0	05/30/2019	ND	199	99.3	200	7.57	
EXT DRO >C28-C36	<10.0	10.0	05/30/2019	ND					

Surrogate: 1-Chlorooctane *86.3 %* *41-142*

Surrogate: 1-Chlorooctadecane *91.8 %* *37.6-147*

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Analytical Results For:

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

Received:	05/30/2019	Sampling Date:	05/29/2019
Reported:	05/31/2019	Sampling Type:	Soil
Project Name:	MARS 10	Sampling Condition:	Cool & Intact
Project Number:	212C-MD-01735	Sample Received By:	Tamara Oldaker
Project Location:	EOG-LEA CO., NM		

Sample ID: EAST 2 (4.5-5') (H901898-12)

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	05/30/2019	ND	1.87	93.7	2.00	4.54	
Toluene*	<0.050	0.050	05/30/2019	ND	1.98	99.0	2.00	4.64	
Ethylbenzene*	<0.050	0.050	05/30/2019	ND	1.90	94.9	2.00	5.51	
Total Xylenes*	<0.150	0.150	05/30/2019	ND	5.79	96.5	6.00	4.85	
Total BTEX	<0.300	0.300	05/30/2019	ND					

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

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**336**	16.0	05/30/2019	ND	400	100	400	3.92	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/30/2019	ND	191	95.7	200	4.18	
DRO >C10-C28*	<10.0	10.0	05/30/2019	ND	199	99.3	200	7.57	
EXT DRO >C28-C36	<10.0	10.0	05/30/2019	ND					

Surrogate: 1-Chlorooctane *93.7 %* *41-142*

Surrogate: 1-Chlorooctadecane *96.0 %* *37.6-147*

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Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

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

Received:	05/30/2019	Sampling Date:	05/29/2019
Reported:	05/31/2019	Sampling Type:	Soil
Project Name:	MARS 10	Sampling Condition:	Cool & Intact
Project Number:	212C-MD-01735	Sample Received By:	Tamara Oldaker
Project Location:	EOG-LEA CO., NM		

Sample ID: WEST 2 (4-4.5') (H901898-17)

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	05/30/2019	ND	1.87	93.7	2.00	4.54	
Toluene*	<0.050	0.050	05/30/2019	ND	1.98	99.0	2.00	4.64	
Ethylbenzene*	<0.050	0.050	05/30/2019	ND	1.90	94.9	2.00	5.51	
Total Xylenes*	<0.150	0.150	05/30/2019	ND	5.79	96.5	6.00	4.85	
Total BTEX	<0.300	0.300	05/30/2019	ND					

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

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**368**	16.0	05/30/2019	ND	400	100	400	3.92	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/30/2019	ND	191	95.7	200	4.18	
DRO >C10-C28*	<10.0	10.0	05/30/2019	ND	199	99.3	200	7.57	
EXT DRO >C28-C36	<10.0	10.0	05/30/2019	ND					

Surrogate: 1-Chlorooctane *99.1 %* *41-142*

Surrogate: 1-Chlorooctadecane *106 %* *37.6-147*

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Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

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

Received:	05/30/2019	Sampling Date:	05/29/2019
Reported:	05/31/2019	Sampling Type:	Soil
Project Name:	MARS 10	Sampling Condition:	Cool & Intact
Project Number:	212C-MD-01735	Sample Received By:	Tamara Oldaker
Project Location:	EOG-LEA CO., NM		

Sample ID: WEST 2 (4.5-5') (H901898-18)

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	05/30/2019	ND	1.87	93.7	2.00	4.54	
Toluene*	<0.050	0.050	05/30/2019	ND	1.98	99.0	2.00	4.64	
Ethylbenzene*	<0.050	0.050	05/30/2019	ND	1.90	94.9	2.00	5.51	
Total Xylenes*	<0.150	0.150	05/30/2019	ND	5.79	96.5	6.00	4.85	
Total BTEX	<0.300	0.300	05/30/2019	ND					

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

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**480**	16.0	05/30/2019	ND	400	100	400	3.92	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/30/2019	ND	191	95.7	200	4.18	
DRO >C10-C28*	<10.0	10.0	05/30/2019	ND	199	99.3	200	7.57	
EXT DRO >C28-C36	<10.0	10.0	05/30/2019	ND					

Surrogate: 1-Chlorooctane *92.0 %* *41-142*

Surrogate: 1-Chlorooctadecane *88.9 %* *37.6-147*

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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Analytical Results For:

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

Received:	05/30/2019	Sampling Date:	05/29/2019
Reported:	05/31/2019	Sampling Type:	Soil
Project Name:	MARS 10	Sampling Condition:	Cool & Intact
Project Number:	212C-MD-01735	Sample Received By:	Tamara Oldaker
Project Location:	EOG-LEA CO., NM		

Sample ID: SOUTH 1 (4-4.5') (H901898-23)

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	05/30/2019	ND	1.87	93.7	2.00	4.54	
Toluene*	<0.050	0.050	05/30/2019	ND	1.98	99.0	2.00	4.64	
Ethylbenzene*	<0.050	0.050	05/30/2019	ND	1.90	94.9	2.00	5.51	
Total Xylenes*	<0.150	0.150	05/30/2019	ND	5.79	96.5	6.00	4.85	
Total BTEX	<0.300	0.300	05/30/2019	ND					

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

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**416**	16.0	05/30/2019	ND	400	100	400	3.92	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/30/2019	ND	191	95.7	200	4.18	
DRO >C10-C28*	<10.0	10.0	05/30/2019	ND	199	99.3	200	7.57	
EXT DRO >C28-C36	<10.0	10.0	05/30/2019	ND					

Surrogate: 1-Chlorooctane *94.2 %* *41-142*

Surrogate: 1-Chlorooctadecane *99.8 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

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Celey D. Keene

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:	05/30/2019	Sampling Date:	05/29/2019
Reported:	05/31/2019	Sampling Type:	Soil
Project Name:	MARS 10	Sampling Condition:	Cool & Intact
Project Number:	212C-MD-01735	Sample Received By:	Tamara Oldaker
Project Location:	EOG-LEA CO., NM		

Sample ID: SOUTH 1 (4.5-5') (H901898-24)

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	05/30/2019	ND	1.87	93.7	2.00	4.54	
Toluene*	<0.050	0.050	05/30/2019	ND	1.98	99.0	2.00	4.64	
Ethylbenzene*	<0.050	0.050	05/30/2019	ND	1.90	94.9	2.00	5.51	
Total Xylenes*	<0.150	0.150	05/30/2019	ND	5.79	96.5	6.00	4.85	
Total BTEX	<0.300	0.300	05/30/2019	ND					

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

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**368**	16.0	05/30/2019	ND	400	100	400	3.92	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/31/2019	ND	191	95.7	200	4.18	
DRO >C10-C28*	<10.0	10.0	05/31/2019	ND	199	99.3	200	7.57	
EXT DRO >C28-C36	<10.0	10.0	05/31/2019	ND					

Surrogate: 1-Chlorooctane *87.0 %* *41-142*

Surrogate: 1-Chlorooctadecane *87.8 %* *37.6-147*

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

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.
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

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Celey D. Keene, Lab Director/Quality Manager

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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: EOG	**Site Manager:** Mike Carmona
Project Name: Mars 10	
Project Location: (county, state) Lea Co, NM	**Project #:** 212C-MD-01735
Invoice to: EOG - James Kennedy	
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
H901898		YEAR: 2019																																	
1	North 1 (0-1')	5/29/2019			X				X			1	N																							X
2	North 1 (1-1.5')	5/29/2019			X				X			1	N																							X
3	North 1 (2-2.5')	5/29/2019			X				X			1	N																							X
4	North 1 (3-3.5')	5/29/2019			X				X			1	N																							X
5	North 1 (4-4.5')	5/29/2019			X				X			1	N	X		X													X							
6	North 1 (4.5-5')	5/29/2019			X				X			1	N	X		X													X							
7	East 2 (0-1')	5/29/2019			X				X			1	N																							X
8	East 2 (1-1.5')	5/29/2019			X				X			1	N																							X
9	East 2 (2-2.5')	5/29/2019			X				X			1	N																							X
10	East 2 (3-3.5')	5/29/2019			X				X			1	N																							X

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Conner Moehring	5/30/19	0805	Tamara Oldaker	5-30-19	0805
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

LAB USE ONLY

Sample Temperature
#97 T.
-3.8°c

REMARKS:

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

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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: EOG	Site Manager: Mike Carmona
Project Name: Mars 10	
Project Location: (county, state) Lea Co, NM	Project #: 212C-MD-01735
Invoice to: EOG - James Kennedy	
Receiving Laboratory: Cardinal	Sampler Signature: Conner Moehring
Comments:	

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY) H901898	SAMPLE IDENTIFICATION	SAMPLING 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
11	East 2 (4-4.5')	5/29/2019			X				X			1	N	X		X												X						
12	East 2 (4.5 - 5')	5/29/2019			X				X			1	N	X		X												X						
13	West 2 (0-1')	5/29/2019			X				X			1	N																					X
14	West 2 (1-1.5')	5/29/2019			X				X			1	N																					X
15	West 2 (2-2.5')	5/29/2019			X				X			1	N																					X
16	West 2 (3-3.5')	5/29/2019			X				X			1	N																					X
17	West 2 (4-4.5')	5/29/2019			X				X			1	N	X		X												X						
18	West 2 (4.5-5')	5/29/2019			X				X			1	N	X		X												X						
19	South 1 (0-1')	5/29/2019			X				X			1	N																					X
20	South 1 (1-1.5')	5/29/2019			X				X			1	N																					X

Relinquished by: Conner Moehring	Date: 0805	Time: 5/30/19	Received by: Tamara Oldaker 5-30-19 0805
Relinquished by:	Date:	Time:	Received by: Date: Time:
Relinquished by:	Date:	Time:	Received by: Date: Time:

LAB USE ONLY
Sample Temperature
#97 T.O.
-3.8°C

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

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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: EOG	Site Manager: Mike Carmona
Project Name: Mars 10	
Project Location: (county, state) Lea Co, NM	Project #: 212C-MD-01735
Invoice to: EOG - James Kennedy	
Receiving Laboratory: Cardinal	Sampler Signature: Conner Moehring
Comments:	

H901898

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
		YEAR: 2019																																	
21	South 1 (2-2.5')	5/29/2019			X				X			1	N																						X
22	South 1 (3-3.5')	5/29/2019			X				X			1	N																						X
23	South 1 (4-4.5')	5/29/2019			X				X			1	N	X		X												X							
24	South 1 (4.-5')	5/29/2019			X				X			1	N	X		X												X							

ANALYSIS REQUEST
(Circle or Specify Method No.)

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Conner Moehring	5/30/19	0805	Tamara Oldaker	5-30-19	0805
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

LAB USE ONLY

Sample Temperature
#97 Tp -
-3.8c

REMARKS:

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

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CARDINAL Laboratories

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

May 31, 2019

MIKE CARMONA

TETRA TECH

901 WEST WALL STREET , STE 100

MIDLAND, TX 79701

RE: MARS 10

Enclosed are the results of analyses for samples received by the laboratory on 05/30/19 14:25.

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,

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:	05/30/2019	Sampling Date:	05/30/2019
Reported:	05/31/2019	Sampling Type:	Soil
Project Name:	MARS 10	Sampling Condition:	Cool & Intact
Project Number:	212C-MD-01735	Sample Received By:	Tamara Oldaker
Project Location:	EOG-LEA CO., NM		

Sample ID: WEST 5 (4-4.5') (H901909-05)

BTEX 8260B mg/kg **Analyzed By: ms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.025	0.025	05/31/2019	ND	1.58	78.9	2.00	0.815	
Toluene*	<0.025	0.025	05/31/2019	ND	1.66	82.8	2.00	1.06	
Ethylbenzene*	<0.025	0.025	05/31/2019	ND	1.69	84.7	2.00	0.729	
Total Xylenes*	<0.075	0.075	05/31/2019	ND	5.34	89.0	6.00	1.35	
Total BTEX	<0.150	0.150	05/31/2019	ND					

Surrogate: Dibromofluoromethane	*102 %*	*90.4-111*
Surrogate: Toluene-d8	*99.0 %*	*85.3-114*
Surrogate: 4-Bromofluorobenzene	*97.0 %*	*80.1-121*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**288**	16.0	05/31/2019	ND	400	100	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	05/31/2019	ND	189	94.6	200	1.62	
DRO >C10-C28*	<10.0	10.0	05/31/2019	ND	195	97.5	200	1.42	
EXT DRO >C28-C36	<10.0	10.0	05/31/2019	ND					

Surrogate: 1-Chlorooctane	*88.1 %*	*41-142*
Surrogate: 1-Chlorooctadecane	*93.1 %*	*37.6-147*

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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:	05/30/2019	Sampling Date:	05/30/2019
Reported:	05/31/2019	Sampling Type:	Soil
Project Name:	MARS 10	Sampling Condition:	Cool & Intact
Project Number:	212C-MD-01735	Sample Received By:	Tamara Oldaker
Project Location:	EOG-LEA CO., NM		

Sample ID: WEST 5 (4.5-5') (H901909-06)

BTEX 8260B mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.025	0.025	05/31/2019	ND	1.58	78.9	2.00	0.815	
Toluene*	<0.025	0.025	05/31/2019	ND	1.66	82.8	2.00	1.06	
Ethylbenzene*	<0.025	0.025	05/31/2019	ND	1.69	84.7	2.00	0.729	
Total Xylenes*	<0.075	0.075	05/31/2019	ND	5.34	89.0	6.00	1.35	
Total BTEX	<0.150	0.150	05/31/2019	ND					

Surrogate: Dibromofluoromethane	*102 %*	*90.4-111*
Surrogate: Toluene-d8	*99.4 %*	*85.3-114*
Surrogate: 4-Bromofluorobenzene	*96.7 %*	*80.1-121*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**288**	16.0	05/31/2019	ND	400	100	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	05/31/2019	ND	189	94.6	200	1.62	
DRO >C10-C28*	<10.0	10.0	05/31/2019	ND	195	97.5	200	1.42	
EXT DRO >C28-C36	<10.0	10.0	05/31/2019	ND					

Surrogate: 1-Chlorooctane	*90.2 %*	*41-142*
Surrogate: 1-Chlorooctadecane	*95.4 %*	*37.6-147*

Cardinal Laboratories *=Accredited Analyte

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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

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Celey D. Keene, Lab Director/Quality Manager

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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: EOG	Site Manager: Mike Carmona
Project Name: ~~Diamond 31 Fed Com 3H~~ MARS 10	
Project Location: (county, state) Lea Co, NM	Project #: 212C-MD-01735 ~~212C-MD-01738~~
Invoice to: EOG - James Kennedy	
Receiving Laboratory: CARDINAL	Sampler Signature: Conner Moehring
Comments:	

H901909

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING DATE (YEAR: 2019)	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
1	WEST 5 (0-1')	5/30/19			X				X			1	2																						X
2	WEST 5 (1-1.5')	"			X				X			1	2																						X
3	WEST 5 (2-2.5')	"			X				X			1	2																						X
4	WEST 5 (3-3.5')	"			X				X			1	2																						X
5	WEST 5 (4-4.5')	"			X				X			1	2	X		X												X							
6	WEST 5 (4.5-5')	↓			X				X			1	2	X		X												X							

ANALYSIS REQUEST
(Circle or Specify Method No.)

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Conner Moehring	5/30/19	1425	Tamara Oldaker	5-30-19	14:25
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

LAB USE ONLY

Sample Temperature #97 TD. 5.9°C

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

Received by OCD: 6/1/2023 12:44:31 PM

Released to Imaging: 6/30/2023 9:31:22 AM

CARDINAL Laboratories

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

July 19, 2019

MIKE CARMONA

TETRA TECH

901 WEST WALL STREET , STE 100

MIDLAND, TX 79701

RE: MARS 10

Enclosed are the results of analyses for samples received by the laboratory on 07/18/19 16:10.

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,

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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Analytical Results For:

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

Received:	07/18/2019	Sampling Date:	07/18/2019
Reported:	07/19/2019	Sampling Type:	Soil
Project Name:	MARS 10	Sampling Condition:	Cool & Intact
Project Number:	212C-MD-01735	Sample Received By:	Tamara Oldaker
Project Location:	EOG-LEA CO., NM		

Sample ID: BOTTOM HOLE # 1 (5' BEB) (H902471-01)

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	07/19/2019	ND	1.97	98.4	2.00	0.950	
Toluene*	<0.050	0.050	07/19/2019	ND	1.99	99.6	2.00	1.84	
Ethylbenzene*	<0.050	0.050	07/19/2019	ND	1.85	92.6	2.00	3.86	
Total Xylenes*	<0.150	0.150	07/19/2019	ND	5.66	94.4	6.00	3.68	
Total BTEX	<0.300	0.300	07/19/2019	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	**112**	16.0	07/19/2019	ND	400	100	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	07/19/2019	ND	214	107	200	1.93	
DRO >C10-C28*	<10.0	10.0	07/19/2019	ND	202	101	200	3.59	
EXT DRO >C28-C36	<10.0	10.0	07/19/2019	ND					

Surrogate: 1-Chlorooctane *89.1 %* *41-142*

Surrogate: 1-Chlorooctadecane *93.1 %* *37.6-147*

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Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

TETRA TECH
MIKE CARMONA
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MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	07/18/2019	Sampling Date:	07/18/2019
Reported:	07/19/2019	Sampling Type:	Soil
Project Name:	MARS 10	Sampling Condition:	Cool & Intact
Project Number:	212C-MD-01735	Sample Received By:	Tamara Oldaker
Project Location:	EOG-LEA CO., NM		

Sample ID: BOTTOM HOLE # 2 (5' BEB) (H902471-02)

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	07/19/2019	ND	1.97	98.4	2.00	0.950	
Toluene*	<0.050	0.050	07/19/2019	ND	1.99	99.6	2.00	1.84	
Ethylbenzene*	<0.050	0.050	07/19/2019	ND	1.85	92.6	2.00	3.86	
Total Xylenes*	<0.150	0.150	07/19/2019	ND	5.66	94.4	6.00	3.68	
Total BTEX	<0.300	0.300	07/19/2019	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	07/19/2019	ND	400	100	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	07/19/2019	ND	214	107	200	1.93	
DRO >C10-C28*	<10.0	10.0	07/19/2019	ND	202	101	200	3.59	
EXT DRO >C28-C36	<10.0	10.0	07/19/2019	ND					

Surrogate: 1-Chlorooctane *78.1 %* *41-142*

Surrogate: 1-Chlorooctadecane *84.6 %* *37.6-147*

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Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

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MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	07/18/2019	Sampling Date:	07/18/2019
Reported:	07/19/2019	Sampling Type:	Soil
Project Name:	MARS 10	Sampling Condition:	Cool & Intact
Project Number:	212C-MD-01735	Sample Received By:	Tamara Oldaker
Project Location:	EOG-LEA CO., NM		

Sample ID: BOTTOM HOLE # 3 (5' BEB) (H902471-03)

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	07/19/2019	ND	1.97	98.4	2.00	0.950	
Toluene*	<0.050	0.050	07/19/2019	ND	1.99	99.6	2.00	1.84	
Ethylbenzene*	<0.050	0.050	07/19/2019	ND	1.85	92.6	2.00	3.86	
Total Xylenes*	<0.150	0.150	07/19/2019	ND	5.66	94.4	6.00	3.68	
Total BTEX	<0.300	0.300	07/19/2019	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	**96.0**	16.0	07/19/2019	ND	400	100	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	07/19/2019	ND	214	107	200	1.93	
DRO >C10-C28*	<10.0	10.0	07/19/2019	ND	202	101	200	3.59	
EXT DRO >C28-C36	<10.0	10.0	07/19/2019	ND					

Surrogate: 1-Chlorooctane *84.4 %* *41-142*

Surrogate: 1-Chlorooctadecane *89.8 %* *37.6-147*

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

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MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	07/18/2019	Sampling Date:	07/18/2019
Reported:	07/19/2019	Sampling Type:	Soil
Project Name:	MARS 10	Sampling Condition:	Cool & Intact
Project Number:	212C-MD-01735	Sample Received By:	Tamara Oldaker
Project Location:	EOG-LEA CO., NM		

Sample ID: BOTTOM HOLE # 4 (5' BEB) (H902471-04)

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	07/19/2019	ND	1.97	98.4	2.00	0.950	
Toluene*	<0.050	0.050	07/19/2019	ND	1.99	99.6	2.00	1.84	
Ethylbenzene*	<0.050	0.050	07/19/2019	ND	1.85	92.6	2.00	3.86	
Total Xylenes*	<0.150	0.150	07/19/2019	ND	5.66	94.4	6.00	3.68	
Total BTEX	<0.300	0.300	07/19/2019	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	**48.0**	16.0	07/19/2019	ND	400	100	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	07/19/2019	ND	214	107	200	1.93	
DRO >C10-C28*	<10.0	10.0	07/19/2019	ND	202	101	200	3.59	
EXT DRO >C28-C36	<10.0	10.0	07/19/2019	ND					

Surrogate: 1-Chlorooctane *81.6 %* *41-142*

Surrogate: 1-Chlorooctadecane *86.9 %* *37.6-147*

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

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MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	07/18/2019	Sampling Date:	07/18/2019
Reported:	07/19/2019	Sampling Type:	Soil
Project Name:	MARS 10	Sampling Condition:	Cool & Intact
Project Number:	212C-MD-01735	Sample Received By:	Tamara Oldaker
Project Location:	EOG-LEA CO., NM		

Sample ID: NORTH # 1 SIDEWALL (H902471-05)

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	07/19/2019	ND	1.97	98.4	2.00	0.950	
Toluene*	<0.050	0.050	07/19/2019	ND	1.99	99.6	2.00	1.84	
Ethylbenzene*	<0.050	0.050	07/19/2019	ND	1.85	92.6	2.00	3.86	
Total Xylenes*	<0.150	0.150	07/19/2019	ND	5.66	94.4	6.00	3.68	
Total BTEX	<0.300	0.300	07/19/2019	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	07/19/2019	ND	400	100	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	07/19/2019	ND	214	107	200	1.93	
DRO >C10-C28*	<10.0	10.0	07/19/2019	ND	202	101	200	3.59	
EXT DRO >C28-C36	<10.0	10.0	07/19/2019	ND					

Surrogate: 1-Chlorooctane *83.8 %* *41-142*

Surrogate: 1-Chlorooctadecane *87.7 %* *37.6-147*

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Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

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MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	07/18/2019	Sampling Date:	07/18/2019
Reported:	07/19/2019	Sampling Type:	Soil
Project Name:	MARS 10	Sampling Condition:	Cool & Intact
Project Number:	212C-MD-01735	Sample Received By:	Tamara Oldaker
Project Location:	EOG-LEA CO., NM		

Sample ID: EAST # 1 SIDEWALL (H902471-06)

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	07/19/2019	ND	1.97	98.4	2.00	0.950	
Toluene*	<0.050	0.050	07/19/2019	ND	1.99	99.6	2.00	1.84	
Ethylbenzene*	<0.050	0.050	07/19/2019	ND	1.85	92.6	2.00	3.86	
Total Xylenes*	<0.150	0.150	07/19/2019	ND	5.66	94.4	6.00	3.68	
Total BTEX	<0.300	0.300	07/19/2019	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	<16.0	16.0	07/19/2019	ND	400	100	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	07/19/2019	ND	214	107	200	1.93	
DRO >C10-C28*	<10.0	10.0	07/19/2019	ND	202	101	200	3.59	
EXT DRO >C28-C36	<10.0	10.0	07/19/2019	ND					

Surrogate: 1-Chlorooctane *82.8 %* *41-142*

Surrogate: 1-Chlorooctadecane *82.5 %* *37.6-147*

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Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

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

Received:	07/18/2019	Sampling Date:	07/18/2019
Reported:	07/19/2019	Sampling Type:	Soil
Project Name:	MARS 10	Sampling Condition:	Cool & Intact
Project Number:	212C-MD-01735	Sample Received By:	Tamara Oldaker
Project Location:	EOG-LEA CO., NM		

Sample ID: SOUTH # 1 SIDEWALL (H902471-07)

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	07/19/2019	ND	1.97	98.4	2.00	0.950	
Toluene*	<0.050	0.050	07/19/2019	ND	1.99	99.6	2.00	1.84	
Ethylbenzene*	<0.050	0.050	07/19/2019	ND	1.85	92.6	2.00	3.86	
Total Xylenes*	<0.150	0.150	07/19/2019	ND	5.66	94.4	6.00	3.68	
Total BTEX	<0.300	0.300	07/19/2019	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	<16.0	16.0	07/19/2019	ND	400	100	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	07/19/2019	ND	214	107	200	1.93	
DRO >C10-C28*	<10.0	10.0	07/19/2019	ND	202	101	200	3.59	
EXT DRO >C28-C36	<10.0	10.0	07/19/2019	ND					

Surrogate: 1-Chlorooctane *81.3 %* *41-142*

Surrogate: 1-Chlorooctadecane *82.7 %* *37.6-147*

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

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TETRA TECH
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Fax To: (432) 682-3946

Received:	07/18/2019	Sampling Date:	07/18/2019
Reported:	07/19/2019	Sampling Type:	Soil
Project Name:	MARS 10	Sampling Condition:	Cool & Intact
Project Number:	212C-MD-01735	Sample Received By:	Tamara Oldaker
Project Location:	EOG-LEA CO., NM		

Sample ID: WEST # 1 SIDEWALL (H902471-08)

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	07/19/2019	ND	1.97	98.4	2.00	0.950	
Toluene*	<0.050	0.050	07/19/2019	ND	1.99	99.6	2.00	1.84	
Ethylbenzene*	<0.050	0.050	07/19/2019	ND	1.85	92.6	2.00	3.86	
Total Xylenes*	<0.150	0.150	07/19/2019	ND	5.66	94.4	6.00	3.68	
Total BTEX	<0.300	0.300	07/19/2019	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	**176**	16.0	07/19/2019	ND	400	100	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	07/19/2019	ND	214	107	200	1.93	
DRO >C10-C28*	<10.0	10.0	07/19/2019	ND	202	101	200	3.59	
EXT DRO >C28-C36	<10.0	10.0	07/19/2019	ND					

Surrogate: 1-Chlorooctane *86.1 %* *41-142*

Surrogate: 1-Chlorooctadecane *89.4 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

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

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Celey D. Keene, Lab Director/Quality Manager

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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: EOG

Site Manager: MIKE CARMONA

Project Name: MARS 10

Project Location (county, state): LEA CO, NM

Project #: 212C-MD-01735

Invoice to: EOG - JAMES KENNEDY

Receiving Laboratory: CARDINAL

Sampler Signature: CONNER MOEHRING

Comments:

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
H902471																																			
1	Bottom Hole # 1 (5' BEB)	7/18/19			X				X		1	Z	X		X											X								
2	Bottom Hole# 2 (5' BEB)	7/18/19			X				X		1	Z	X		X											X								
3	Bottom Hole# 3 (5' BEB)	7/18/19			X				X		1	Z	X		X											X								
4	Bottom Hole# 4 (5' BEB)	7/18/19			X				X		1	Z	X		X											X								
5	North #1 Sidewall	7/18/19			X				X		1	Z	X		X											X								
6	EAST #1 Sidewall	7/18/19			X				X		1	Z	X		X											X								
7	South #1 Sidewall	7/18/19			X				X		1	Z	X		X											X								
8	West #1 Sidewall	7/18/19			X				X		1	Z	X		X											X								

ANALYSIS REQUEST (Circle or Specify Method No.)

Relinquished by: Conner Moehring Date: 7/18/19 Time: 1605

Received by: Tamara Oldaker Date: 7-18-19 Time: 16:10

Relinquished by: Date: Time:

Received by: Date: Time:

Relinquished by: Date: Time:

Received by: Date: Time:

LAB USE ONLY

Sample Temperature #97 3.1°C Corrected 3.5°C

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

Received by OCD: 6/4/2023 12:44:31 PM

Released to Imaging: 6/30/2023 9:31:22 AM

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 222860

CONDITIONS

Operator: EOG RESOURCES INC P.O. Box 2267 Midland, TX 79702	OGRID: 7377
	Action Number: 222860
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
jharimon	None	6/30/2023