TETRA TECH

March 1, 2022

Bradford Billings
Hydrologist/E.Spec.A
District 2 Artesia
1220 South St. Francis Drive
Oil Conservation Division
Santa Fe, NM 87505

Re: Release Characterization and Remediation Work Plan
ConocoPhillips
Heritage Concho
Miller B Federal #003 Flowline Release
Unit Letter A, Section 23, Township 17 South, Range 32 East
Lea County, New Mexico
Incident ID# nOY1704058292
1RP-4597

Mr. Billings,

Tetra Tech, Inc. (Tetra Tech) was contacted by ConocoPhillips to evaluate a Heritage Concho release and subsequent assessment activities performed at the Miller B Federal #003 Flowline Release site (API No. 30-025-31054). The release footprint is located in Public Land Survey System (PLSS) Unit Letter A, Section 23, Township 17 South, Range 32 East, in Lea County, New Mexico (Site). The approximate release point occurred at coordinates 32.8245583°, -103.7327499°, as shown on Figures 1 and 2.

BACKGROUND

According to the State of New Mexico Oil Conservation Division (NMOCD) C-141 Initial Report, the release was discovered on February 1, 2017. The C-141 reports that the release was caused by a ruptured poly flowline from the Miller B Federal #003 well due to a buildup of paraffin. Approximately 7 barrels (bbls) of crude oil and 3 bbls of produced water were released in pasture, of which approximately 6 bbls of oil and 1 bbl of produced water were recovered. The release occurred on Bureau of Land Management (BLM) land. The NMOCD approved the initial C-141 on February 2, 2017 and subsequently assigned the release the Incident ID nOY1704058292 and the remediation permit (RP) number 1RP-4597. The initial C-141 form is included in Appendix A.

SITE CHARACTERIZATION

A site characterization was performed and no sinkholes, residences, schools, hospitals, institutions, churches, springs, private domestic water wells, playa lakes, stream bodies, wetlands, incorporated municipal boundaries, subsurface mines, or floodplains are located within the distances specified in 19.15.29 New Mexico Administrative Code (NMAC). The Site is in an area of low karst potential.

There are no water wells listed in the New Mexico Office of the State Engineer (NMOSE) database located within approximately ½ mile (800 meters) of the site. According to data from three (3) water wells listed in the NMOSE database within approximately 1.86 miles (3,000 meters) of the site, the average depth to

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groundwater is 172 feet below ground surface (bgs), and the minimum depth to groundwater is 130 feet bgs.
The remediation action levels proposed for the site are largely dependent upon depth to groundwater. As such, the OCD focuses upon depth to water estimation. Thus, 19.15.11(A)(2) NMAC allows for various means of determining depth to groundwater.

For this release, as the water level information available in the NMOSE database was from a well further than ½ mile away from the Site, ConocoPhillips elected to reference a boring that was drilled to supplement the depth to groundwater determination at another former release Site. A licensed well drilling subcontractor was contracted by Tetra Tech to a drill a groundwater determination borehole at a nearby release site on March 23, 2020. The borehole (BH-4) was installed to a depth of 60 feet bgs at the MCA 123 Injection Line Release site, located approximately 1 mile from the Miller B #3 release Site at coordinates 32.810847°, -103.743217°. The borehole was dry upon completion, and soils were dry from surface to total depth. The depth to groundwater in the area was thus verified as greater than 60 feet bgs. The borehole was plugged with 3/8-inch bentonite chips on March 23, 2020. The site characterization data, including the MCA 123 Injection Line Release BH-4 boring log, are presented in Appendix B.

REGULATORY FRAMEWORK

Based upon the release footprint and in accordance with Subsection E of 19.15.29.12 NMAC, per 19.15.29.11 NMAC, the site characterization data was used to determine recommended remedial action levels (RRALs) for benzene, toluene, ethylbenzene, and xylene (collectively referred to as BTEX), total petroleum hydrocarbons (TPH), and chlorides in soil.

Based on the site characterization, established depth to groundwater, and in accordance with Table I of 19.15.29.12 NMAC, the RRALs for the Site are as follows:

Constituent	Site RRALs
Chloride	20,000 mg/kg
TPH	2,500 mg/kg
BTEX	50 mg/kg

Additionally, in accordance with the NMOCD guidance *Procedures for Implementation of the Spill Rule (19.15.29 NMAC)* (September 6, 2019), the following reclamation requirements for surface soils (0-4 ft bgs) outside of active oil and gas operations are as follows:

Constituent	Reclamation Requirements
Chloride	600 mg/kg
TPH	100 mg/kg
BTEX	50 mg/kg

INITIAL RESPONSE ACTIVITIES AND SITE ASSESSMENT

Following the release, Concho recovered freestanding fluids using a vacuum truck and replaced the ruptured section of the flowline. The release occurred west of the Miller B #003 well pad and migrated across a closed and previously reclaimed 3-cell reserve pit and into the pasture west of the reserve pit. The release footprint encompassed an area of approximately 50 feet by 160 feet, as shown on Figure 3.

On February 22, 2017, Concho personnel were onsite to evaluate and sample the release area. One (1) backhoe trench (T-1) was installed in the release area west of the reclaimed reserve pit area to a total depth of 12 feet bgs. Additionally, four (4) horizontal trenches (North, South, East, and West) were installed outside the reported release footprint to total depths of 2 feet bgs. Selected samples were sent to Xenco Laboratories in Midland, Texas and analyzed for TPH EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. The trench locations are shown on Figure 3.

SUMMARY OF SAMPLING RESULTS AND 2018 WORK PLAN

Analytical results from the 2017 assessment activities are summarized in Table 1. All analytical results associated with the north, south, and east trenches were below the applicable Site RRALs. Analytical results associated with the west trench were above applicable Site reclamation requirements down to 2 feet below the ground surface. Analytical results associated with samples from the T-1 trench location were above applicable Site RRALs for chloride, BTEX, and TPH down to 3 feet below the ground surface.

Tetra Tech prepared a Work Plan dated June 15, 2018 on behalf of Concho for the Site based on the results of the 2017 assessment activities and submitted it to the NMOCD for approval. Based on the analytical results and the release footprint, which migrated across a closed and reclaimed 3-cell reserve pit, Concho proposed to remove the impacted soils in the area of trench (T-1) to an approximate depth of 4 feet below surface. Resampling at the area of the horizontal trench (West) was also proposed to confirm the chloride results detected at 2 feet below surface. If confirmation samples indicated a deeper chloride impact, excavation of this area was proposed to a depth of 3-4 feet below surface and a 20-mil liner was proposed as a cap to prevent vertical migration of the deeper impact.

In addition, excavation of any hydrocarbon impact on top of the closed reserve pit was proposed to address the surficial staining in the area. However, no further evaluation was be performed on the closed reserve pit due to potential chloride impacts present in the closed pit. It was stated that the assessment (chlorides) of the pit would not be representative to the impact encountered in the pasture.

Email correspondence from NMOCD dated July 11, 2018 and correspondence from the BLM dated July 19, 2018 requested additional sampling at the site. In the same email, BLM also identified an additional spill path to the north of the main spill path in the reclaimed reserve pit. Copies of the June 15, 2018 Work Plan and the NMOCD and BLM email correspondence are presented in Appendix C.

VISUAL SITE INSPECTION

On behalf of ConocoPhillips, Tetra Tech conducted a visual inspection of the release Site on February 22, 2022. The purpose of the inspection was to document current Site conditions and evaluate vegetative growth in the pasture areas west of the pad. The Site is located in the Mescalero Sands region southeast of Maljamar, New Mexico, where the native landscape is composed of dune grasslands and mesquite scrub.

At the time of the inspection, the 3-cell reserve pit had been closed in accordance with 19.15.17.13(H)(3) NMAC. Tetra Tech personnel observed established vegetation in the reclaimed pit area that reflects a life-form ratio of plus or minus fifty percent of pre-disturbance levels, as indicated by the surrounding landscape. This vegetative stand appears sufficient to control erosion and non-native plant invasion and re-establish wildlife habitat or forage. However, indications of the former release flow path were observed during the visual inspection, most notably in the sandy low-lying area of sample location T-1. Based on the NMOCD and BLM correspondence, the northern extent of the flow path was identified within the reclaimed pit area, as indicated on Figure 3. Photographic documentation from the visual inspection is presented in Appendix D.

REMEDIATION WORK PLAN

Based on the analytical results and observations made during the February 2022 visual inspection, ConocoPhillips proposes to remove the impacted material as shown in Figure 4. The BLM will be notified prior to initiating any remedial action. Impacted soils in the area around sample location T-1 and the west trench will be excavated using heavy equipment (backhoes, hoe rams, and track hoes) to a maximum depth of 3 feet below the surrounding surface, and the area near the release point at the well pad will be excavated to a maximum depth of 4 feet below the surrounding surface or until a representative sample from the walls and bottom of the excavation is below the applicable Site reclamation requirements and/or RRALs. Any area containing pressurized lines will be hand-dug to a depth of 1 foot or the maximum extent practicable and heavy equipment will come no more than 4 feet from any pressurized lines.

Additionally, ConocoPhillips proposes to conduct surface remediation in the portions of the release extent that coincide with the reclaimed reserve pit area. These areas will be hand-dug or scraped to remove visibly impacted soils and then treated with a MicroBlaze© application. Micro-Blaze® Emergency Liquid Spill Control is used to aid in the degradation of residual hydrocarbon. These activities will be conducted with caution to avoid disturbing the existing established native vegetation.

Excavated soils will be transported offsite and disposed of at an NMOCD-approved or permitted facility. Confirmation bottom and sidewall samples will be collected for verification of remedial activities in the proposed 4 foot excavation (the area near the wellhead) and around the proposed 3 foot excavation (around sample location T-1), and analyzed for TPH, BTEX, and chlorides. Confirmation samples will be collected on either side of the reclaimed pit area to confirm the efficacy of the proposed remedial actions, while avoiding disturbing the underlying pit material. Once results are received, NMOCD will be notified, and the excavation will then be backfilled with clean material to surface grade. The estimated volume of material to be remediated is approximately 340 cubic yards.

ALTERNATIVE CONFIRMATION SAMPLING PLAN

In accordance with 19.15.29.12(D)(1)(b) NMAC, ConocoPhillips proposes the following alternative confirmation sampling plan to adhere with NMOCD requirements. The proposed confirmation sample locations are depicted in Figure 5. Three (3) confirmation floor samples and seven (7) confirmation sidewall samples are proposed for verification of remedial activities. The proposed 3-foot excavation encompasses a surface area of approximately 1,805 square feet, the proposed 4-foot excavation encompasses a surface area of approximately 395 square feet, and the proposed scrape within the reclaimed pit encompasses a surface area of approximately 2,090 square feet.

These confirmation sidewall and floor samples will be representative of no more than approximately 500 square feet of excavated area. Confirmation samples will be sent to an accredited laboratory for analysis of TPH (Method 8015 modified), BTEX (Method 8260B), and chloride (USEPA Method 300.0). Once results are received, NMOCD will be notified, and the excavation will then be backfilled with clean material to surface grade.

SITE RECLAMATION AND RESTORATION PLAN

Disturbed areas in pasture will be seeded in Spring 2022 (first favorable growing season) after the site has been satisfactorily prepared. Site preparation will include spreading topsoil to an adequate depth in backfilled areas, and may also include ripping, tilling, disking on contour, and dozer track-imprinting as needed. Based on the soils at the site, the New Mexico State Land Office (NMSLO) Sandy (S) Sites Seed Mixture will be used for seeding and will be planted in the amount specified in the pounds pure live seed (PLS) per acre. The BLM will be notified to determine if an additional seed mix is required for this area. The seed mixture will be spread by a drill equipped with a depth regulator or a hand-held broadcaster and raked. If a hand-held broadcaster is used for dispersal, the pounds pure live seed per acre will be doubled.

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

CONCLUSION

ConocoPhillips proposes to begin remediation activities at the Site within 120 days of the date of NMOCD approval of this submittal and concurrence from BLM. Upon completion of the proposed work, a final closure report detailing the remediation activities and the results of the confirmation sampling will be submitted to NMOCD.

Received by OCD: 3/1/2022 2:03:39 PM

If you have any questions concerning the soil assessment activities for the Site, please call me at (512) 217-7254 or Christian at (512) 338-2861.

Sincerely,
Tetra Tech, Inc.

Samantha K. Abbott, P.G.
Project Manager

Christian M, Llull, P.G.
Program Manager

cc:
Mr. Ike Tavarez, RMR – ConocoPhillips
Mr. Charles Beauvais, BU – ConocoPhillips
Ms. Shelly Tucker, BLM

Released to Imaging: 3/7/2022 1:32:43 PM

Received by OCD: 3/1/2022 2:03:39 PM

LIST OF ATTACHMENTS

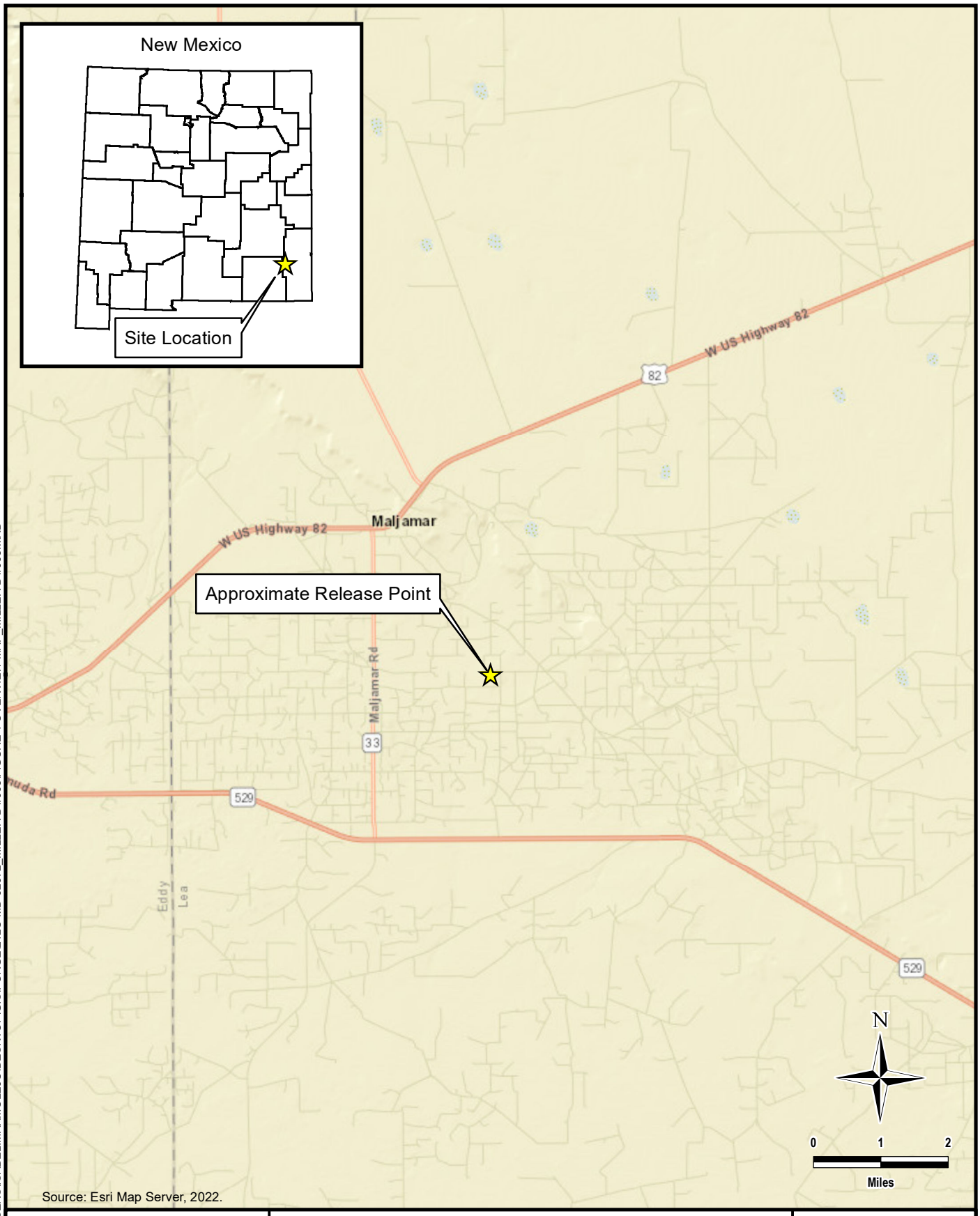
Figures:

Tables:

Appendices:

Released to Imaging: 3/7/2022 1:32:43 PM

FIGURES



Source: Esri Map Server, 2022.

DOCUMENT PATH: C:\USERS\ISABEL.MARMOLEJO\DESKTOP\GIS\FORGE\212C-MD-02672_MILLER B #003\FIGURE 1 OVERVIEW MAP_MILLER B #003.MXD

TETRA TECH
www.tetratech.com
901 West Wall Street, Suite 100
Midland, Texas 79701
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Fax: (432) 682-3946

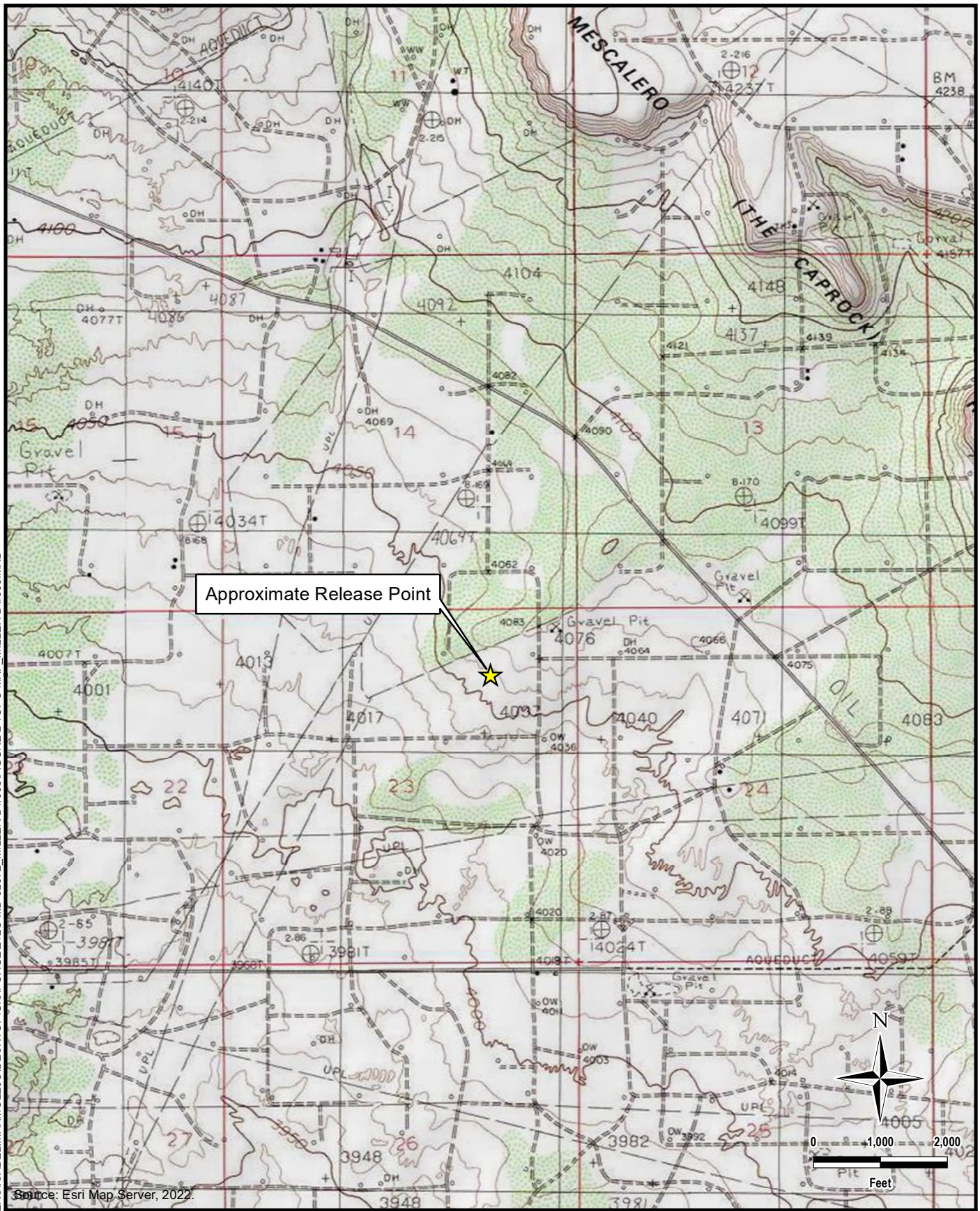
FORGE ENERGY II

(32.824558°, -103.732749°)
LEA COUNTY, NEW MEXICO

MILLER B #003 RELEASE
OVERVIEW MAP

PROJECT NO.:	212C-MD-02672
DATE:	FEBRUARY 22, 2022
DESIGNED BY:	IM

Figure No.
1



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DOCUMENT PATH: C:\USERS\ISABEL.MARMOLEJO\DESKTOP\GIS\FORGE\212C-MD-02672_MILLER B #003\FIGURE 2 TOPO MAP_MILLER B #003.MXD

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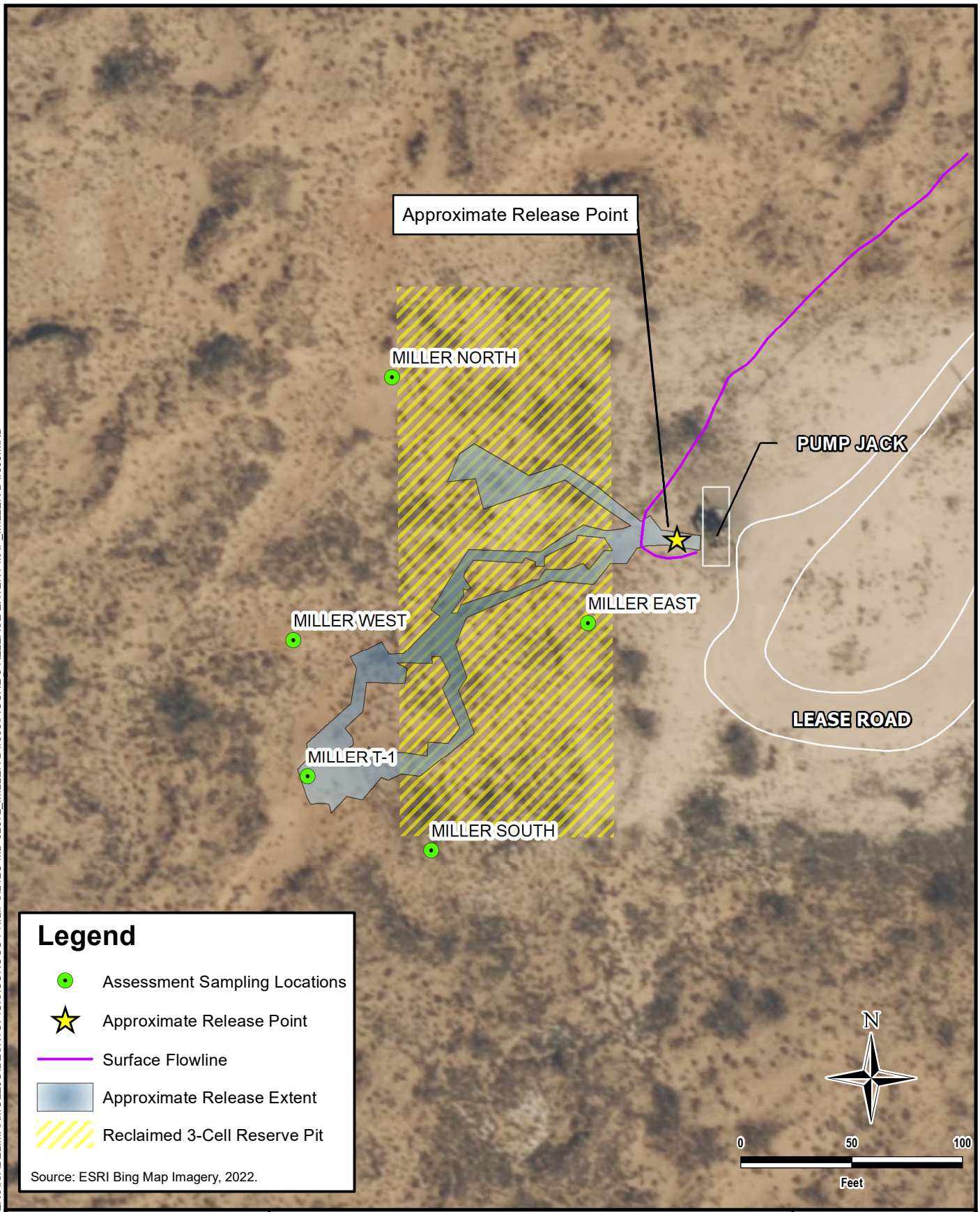
FORGE ENERGY II

(32.824558°, -103.732749°)
LEA COUNTY, NEW MEXICO

MILLER B #003 RELEASE
TOPOGRAPHIC MAP

PROJECT NO.:	212C-MD-02672
DATE:	FEBRUARY 22, 2022
DESIGNED BY:	IM

Figure No.
2



DOCUMENT PATH: C:\USERS\ISABEL.MARMOLEJO\DESKTOP\GIS\CONOCO PHILIPS\212C-MD-02672_MILLER B #003\FIGURE 3 RELEASE EXTENT MAP_MILLER B #003.MXD

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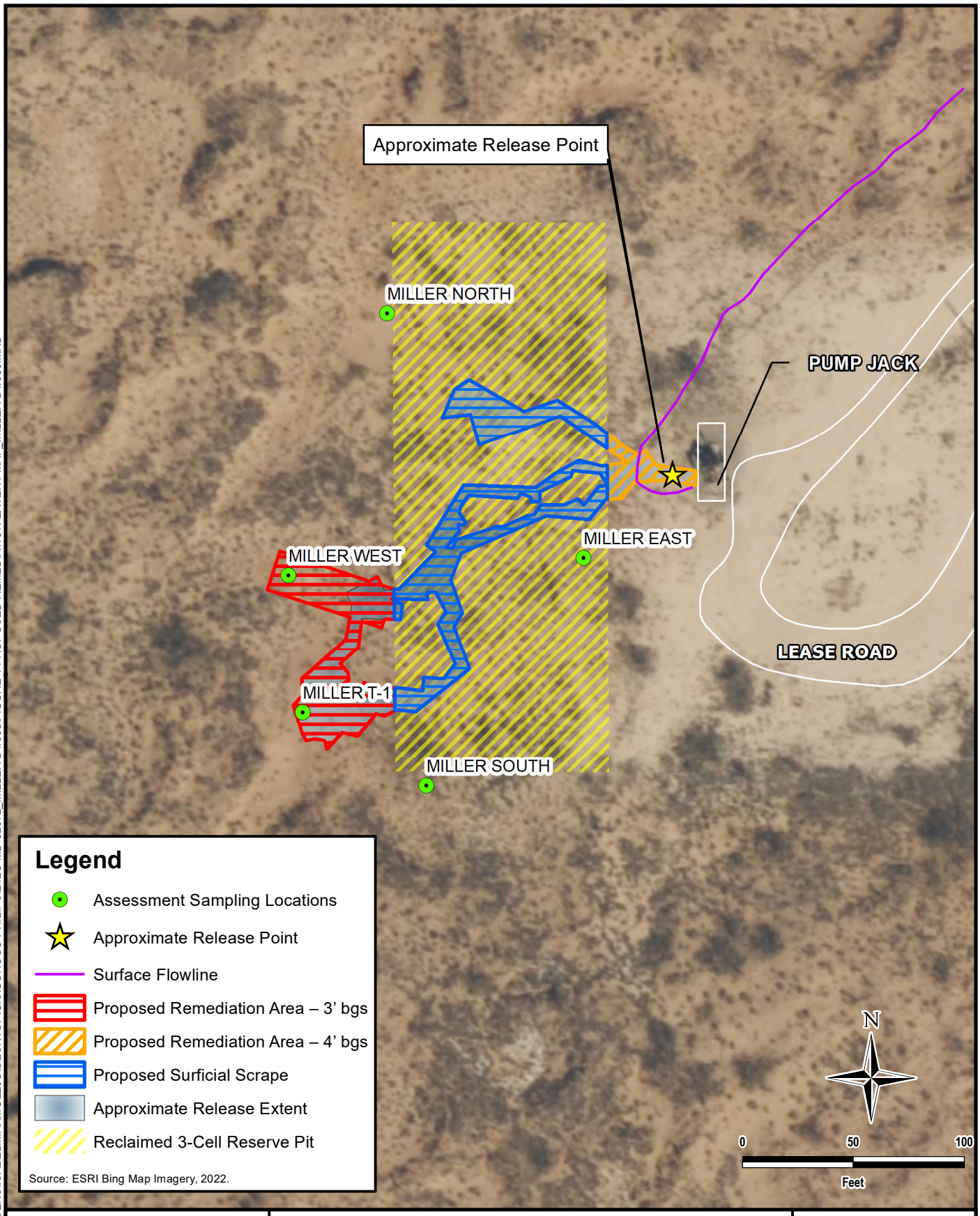
CONOCOPHILLIPS

HERITAGE CONCHO
(32.824558°, -103.732749°)
LEA COUNTY, NEW MEXICO

MILLER B #003 RELEASE
RELEASE EXTENT MAP

PROJECT NO.:	212C-MD-02672
DATE:	MARCH 01, 2022
DESIGNED BY:	IM

Figure No.
3



DOCUMENT PATH: C:\USERS\ISABEL.MARMOLEJO\DESKTOP\GIS\CONOCO PHILIPS\212C-MD-02672_MILLER B #003\FIGURE 4 PROPOSED REMEDIATION EXTENT MAP_MILLER B #003.MXD

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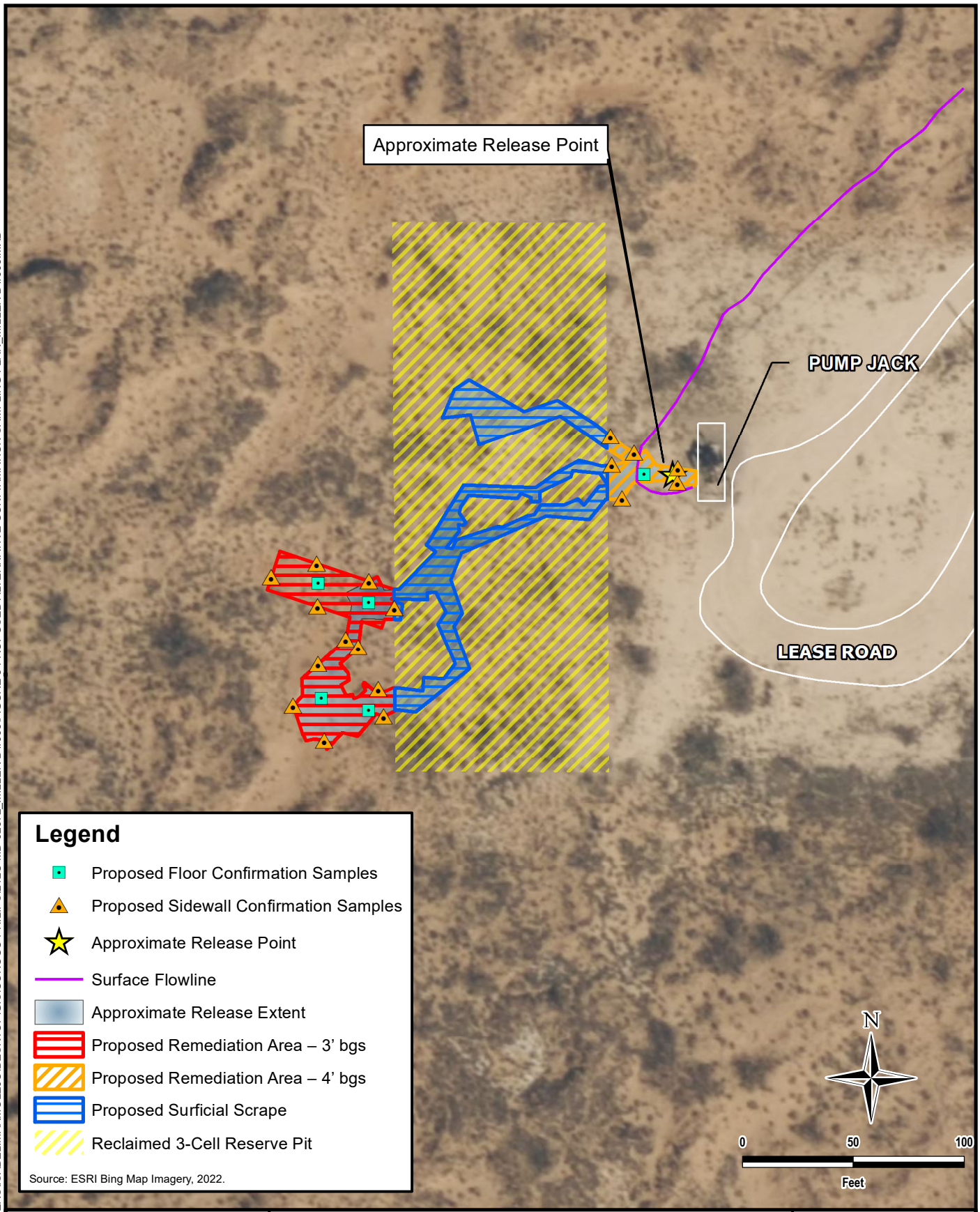
CONOCOPHILLIPS

HERITAGE CONCHO
(32.824558°, -103.732749°)
LEA COUNTY, NEW MEXICO

MILLER B #003 RELEASE
PROPOSED REMEDIATION EXTENT MAP

PROJECT NO.:	212C-MD-02672
DATE:	MARCH 01, 2022
DESIGNED BY:	IM

Figure No.
4



DOCUMENT PATH: C:\USERS\ISABEL.MARMOLEJO\DESKTOP\GIS\CONOCO PHILIPS\212C-MD-02672_MILLER B #003\FIGURE 5 PROPOSED ALTERNATIVE CONFIRMATION SAMPLING PLAN_MILLER B #003.MXD

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CONOCOPHILLIPS

HERITAGE CONCHO
(32.824558°, -103.732749°)
LEA COUNTY, NEW MEXICO

MILLER B #003 RELEASE
PROPOSED ALTERNATIVE CONFIRMATION SAMPLING PLAN MAP

PROJECT NO.:	212C-MD-02672
DATE:	MARCH 01, 2022
DESIGNED BY:	IM

Figure No.
5

TABLE

TABLE 1
SUMMARY OF ANALYTICAL RESULTS
INITIAL SOIL ASSESSMENT - 1RP-4957/NOY1704058292
HERITAGE CONCHO
MILLER B FEDERAL #003 FLOWLINE RELEASE
LEA COUNTY, NM

Sample ID	Sample Date	Sample Depth	Chloride[1]		BTEX[2]												TPH[3]							
					Benzene		Toluene		Ethylbenzene		m,p-Xylenes		o-Xylene		Total Xylenes		Total BTEX		GRO		DRO		MRO		Total TPH	
		ft. bgs	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q
T-1	2/22/2017	SURFACE	505		***28.9***		168		105		115		49.7		165		***467***		7,880		23,800		2,270		***34,000***	
		1	***6,480***		***26.9***		190		123		149		56.1		205		***545***		2,280		3,650		405		***6,340***	
		2	***4,380***		***20.9***		137		89.6		104		46.8		151		***398***		5,370		8,230		815		***14,400***	
		3	***3,740***		***28.8***		163		120		135		66.1		201		***513***		5,800		10,900		1,080		***17,800***	
		4	245		< 0.00149		< 0.00198		0.00366		0.00660		0.00759		0.0142		0.0179		29.4		168		16.8		214	
		5	19.5		< 0.00150		< 0.00200		< 0.00200		< 0.00200		< 0.00299		< 0.00200		< 0.00150		< 15.0		< 15.0		< 15.0		< 15.0	
		6	114		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A	
		8	191		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A	
		10	15.8		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A	
		12	13.2		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A	
NORTH	2/22/2017	SURFACE	6.34		< 0.00151		< 0.00202		< 0.00202		< 0.00202		< 0.00302		< 0.00202		< 0.00151		< 15.0		< 15.0		< 15.0		< 15.0	
		1	< 4.92		< 0.00728		< 0.00971		< 0.00971		< 0.00971		< 0.0146		< 0.00971		< 0.00728		< 14.9		< 14.9		< 14.9		< 14.9	
		2	< 4.89		< 0.00148		< 0.00197		< 0.00197		< 0.00197		< 0.00295		< 0.00197		< 0.00148		< 15.0		< 15.0		< 15.0		< 15.0	
EAST	2/22/2017	SURFACE	***654***		< 0.00148		< 0.00198		< 0.00198		< 0.00198		< 0.00296		< 0.00198		< 0.00148		< 15.0		19.9		< 15.0		19.9	
		1	***627***		< 0.00152		< 0.00202		< 0.00202		< 0.00202		< 0.00303		< 0.00202		< 0.00152		< 15.0		18.0		< 15.0		18.0	
		2	446		< 0.00151		0.00223		< 0.00201		0.00262		< 0.00301		0.00262		0.00485		< 15.0		< 15.0		< 15.0		< 15.0	
SOUTH	2/22/2017	SURFACE	7.04		< 0.00150		< 0.00200		< 0.00200		< 0.00200		< 0.00301		< 0.00200		< 0.00150		< 15.0		< 15.0		< 15.0		< 15.0	
		1	< 4.96		< 0.00150		< 0.00200		< 0.00200		< 0.00200		< 0.00299		< 0.00200		< 0.00150		< 15.0		< 15.0		< 15.0		< 15.0	
		2	< 4.90		< 0.00149		< 0.00198		< 0.00198		< 0.00198		< 0.00298		< 0.00198		< 0.00149		< 15.0		< 15.0		< 15.0		< 15.0	
WEST	2/22/2017	SURFACE	6.94		0.00152		0.00330		< 0.00203		< 0.00203		< 0.00304		< 0.00203		0.00482		< 15.0		< 15.0		< 15.0		< 15.0	
		1	59.8		< 0.00149		< 0.00199		< 0.00199		< 0.00199		< 0.00299		< 0.00199		< 0.00149		< 15.0		< 15.0		< 15.0		< 15.0	
		2	***1,310***		0.00168		0.00423		0.00258		0.00316		< 0.00297		0.00316		0.0117		< 15.0		< 15.0		< 15.0		< 15.0	

NOTES:

ft.	Feet
bgs	Below ground surface
mg/kg	Milligrams per kilogram
TPH	Total Petroleum Hydrocarbons
GRO	Gasoline range organics
DRO	Diesel range organics
MRO	Motor Oil range organics
N/A	Sample not analyzed for constituent
1	EPA Method 300.0
2	EPA Method 8021B
3	Method SW8015 Mod

Bold and italicized values indicate exceedance of proposed Remediation RRALs and/or Reclamation Requirements.

Shaded rows indicate intervals proposed for excavation.

APPENDIX A
C-141 Forms

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:	COG Operating LLC	Contact:	Robert McNeill
Address:	600 West Illinois Avenue, Midland TX 79701	Telephone No.	432-683-7443
Facility Name: Miller B #003		Facility Type:	Flowline

Surface Owner: Federal	Mineral Owner:	API No. 30-025-31054

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
A	23	17S	32E	990	North	1295	East	Lea

Latitude 32.8245583 **Longitude** -103.7327499

NATURE OF RELEASE

Type of Release: Oil and Produced Water	Volume of Release: 7 bbls Oil & 3 bbls PW	Volume Recovered: 6 bbls Oil & 1 bbls PW
Source of Release: Poly Flowline	Date and Hour of Occurrence: February 1, 2017 4:00 pm	Date and Hour of Discovery: February 1, 2017 4:00 pm
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.*

RECEIVED
By Olivia Yu at 4:09 pm, Feb 09, 2017

Describe Cause of Problem and Remedial Action Taken.*

Flowline rupture due to paraffin buildup. The section of flowline was replaced

Describe Area Affected and Cleanup Action Taken.*

The release was within a pasture. A vacuum truck was dispatched to remove all freestanding fluids. Concho will have the spill area sampled to delineate any possible impact from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation activities.

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: Rebecca Haskell

Printed Name: Rebecca Haskell

Title: Senior HSE Coordinator

E-mail Address: rhaskell@concho.com

Date: February 2, 2017 Phone: 432-683-7443

OIL CONSERVATION DIVISION

Approved by Environmental Specialist:

Approval Date: 2/9/2017 Expiration Date:

Conditions of Approval: see attached directive

Attached ☑

Attach Additional Sheets If Necessary

1RP-4597 nOY1704058292 pOY1704058468

Received by OCD: 3/1/2022 2:03:39 PM

Released to Imaging: 3/7/2022 1:32:43 PM

Operator/Responsible Party,

The OCD has received the form C-141 you provided on _2/2/2017_ regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number __1R-_4597_ 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 _3/9/2017__. 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

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:__ _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

Incident ID	
District RP	
Facility ID	
Application ID	

Remediation Plan

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

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

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

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

☐ Extents of contamination must be fully delineated.

☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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

Printed Name: _____ Title: _____

Signature: _____ Date: _____

email: _____ Telephone: _____

OCD Only

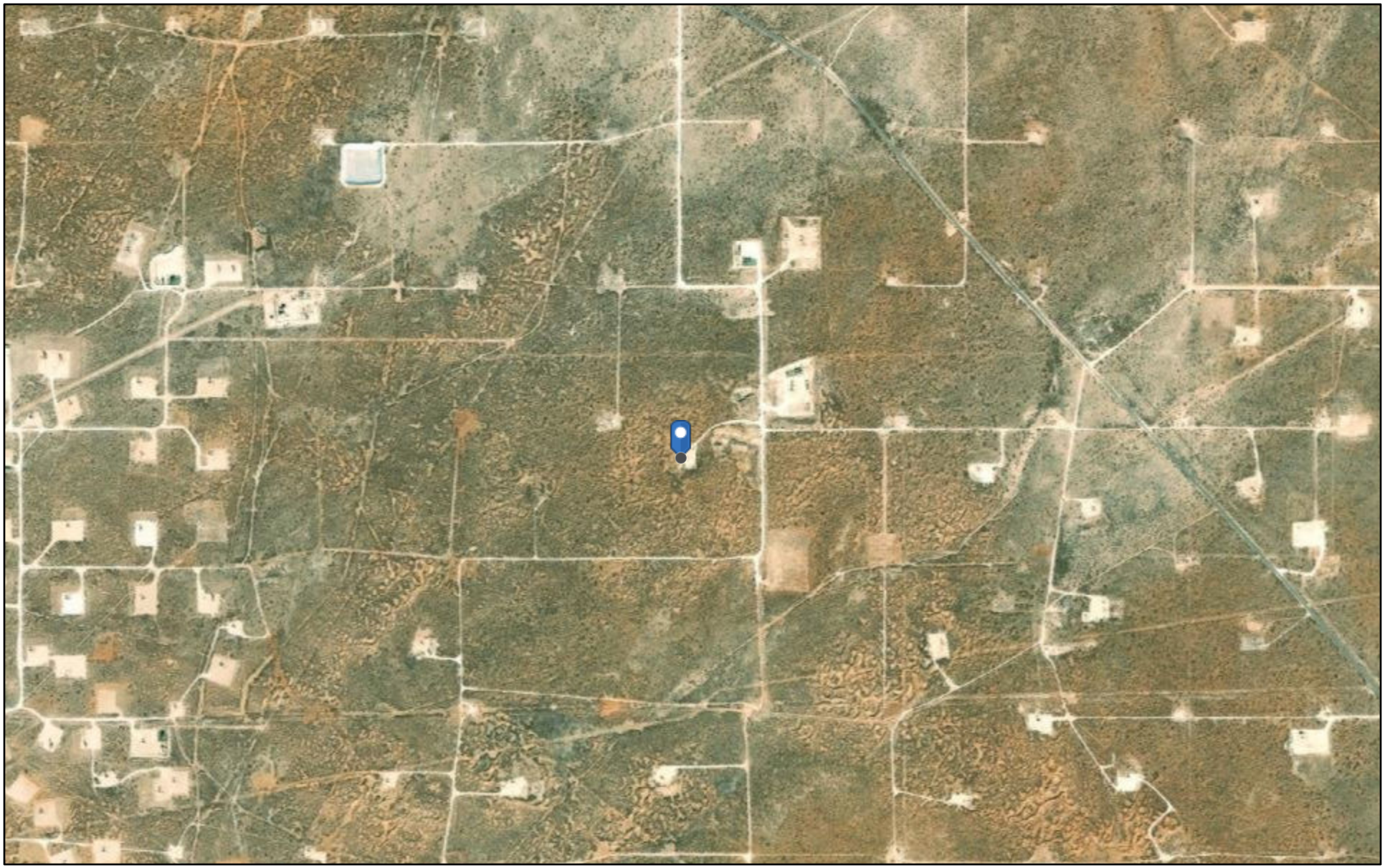
Received by: _____ Date: _____

☐ Approved ☐ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature: Bradford Billings Date: _____

APPENDIX B
Site Characterization Data

OCD Water Bodies



1/20/2022, 4:04:38 PM

OCD District Offices

OSE Water-bodies

PLJV Probable Playas

OSE Streams

1:18,056

0 0.13 0.25 0.5 mi

0 0.2 0.4 0.8 km

OCD, Maxar

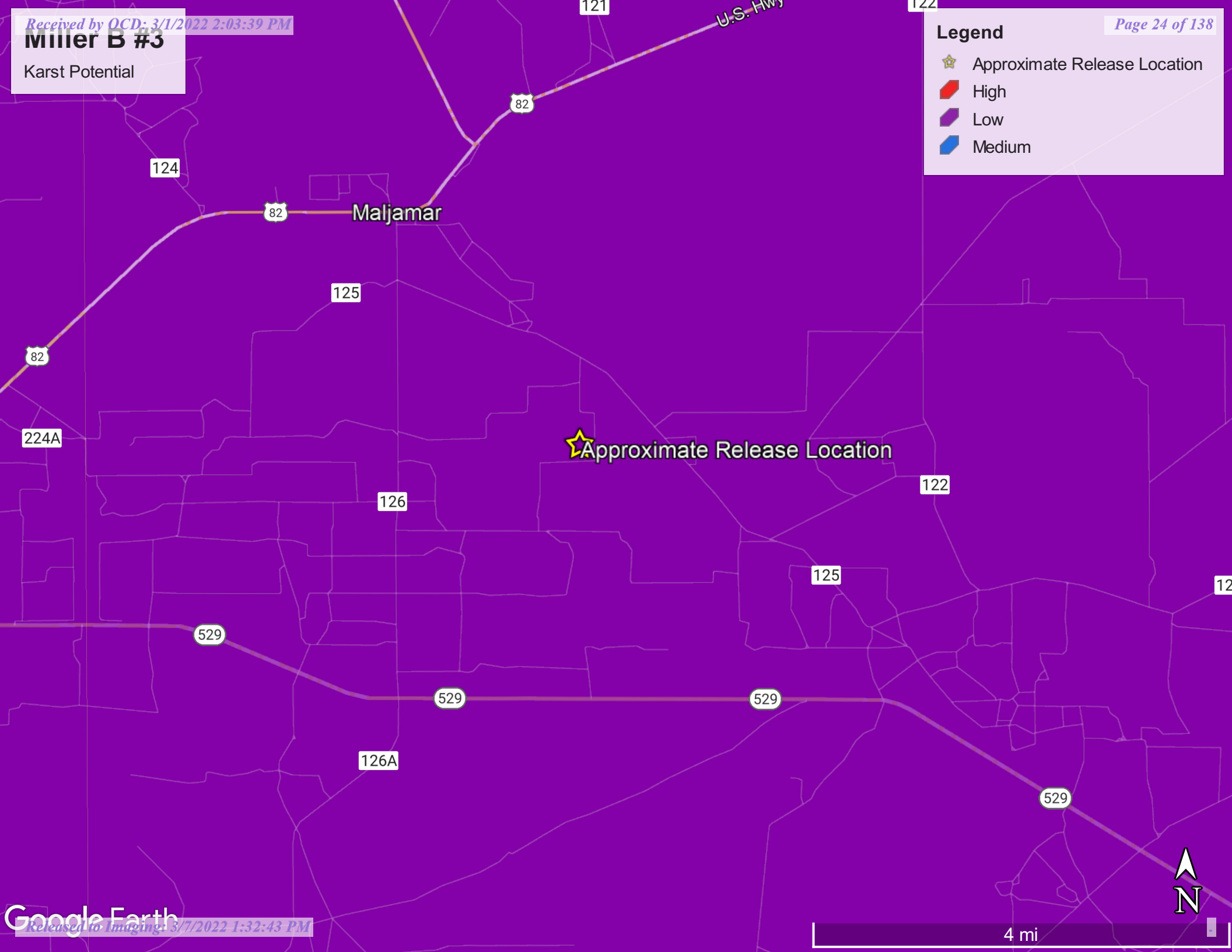
New Mexico Oil Conservation Division

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

Received by OCD: 3/1/2022 2:03:39 PM

Miller B #3

Karst Potential



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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	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
RA 11911 POD1		RA	LE	1	3	1	24	17S	32E	619192	3632296	625	35		
RA 11684 POD5		RA	LE	3	1	4	11	17S	32E	618353	3635047	2512	275		
RA 11957 POD1		RA	LE	3	4	1	19	17S	33E	621177	3632200	2581	55		
RA 11684 POD1		RA	LE	1	1	4	11	17S	32E	618216	3635124	2606	275		
RA 11936 POD1		RA	LE	1	4	1	19	17S	33E	621246	3632321	2636	92		
RA 11937 POD1		RA	LE	1	4	1	19	17S	33E	621244	3632281	2638	95		
L 12974 POD1		L	LE	3	4	3	18	17S	33E	621233	3632940	2642	140	130	10
RA 11684 POD2		RA	LE	1	1	4	11	17S	32E	618313	3635248	2716	275		
L 13047 POD1		L	LE				11	17S	32E	618187	3635254*	2739	140		
RA 11684 POD3		RA	LE	3	3	1	11	17S	32E	618262	3635371	2844	275		
L 02770 S2		L	LE	2	2	3	18	17S	33E	621338	3633583*	2908	214	184	30
L 02770 S3		L	LE	2	2	3	18	17S	33E	621338	3633583*	2908	220	202	18
RA 11684 POD4		RA	LE	1	3	2	11	17S	32E	618334	3635521	2985	275		

Average Depth to Water: **172 feet**
Minimum Depth: **130 feet**
Maximum Depth: **202 feet**

Record Count: 13

UTMNAD83 Radius Search (in meters):

Easting (X): 618619 **Northing (Y):** 3632549 **Radius:** 3000

***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.

1/20/22 3:10 PM

WATER COLUMN/ AVERAGE DEPTH TO WATER

212C-MD-02067	TETRA TECH	**LOG OF BORING BH-4**	Page 1 of 3

Project Name: MCA 123 Injection Line Release

Borehole Location: GPS: 32.810847°, -103.743217° | Surface Elevation: 3973 ft

Borehole Number: BH-4 | Borehole Diameter (in.): 8 | Date Started: 3/23/2020 | Date Finished: 3/23/2020

WATER LEVEL OBSERVATIONS

While Drilling ▽ DRY ft Upon Completion of Drilling ▼ DRY ft

Remarks:

DEPTH (ft)	OPERATION TYPE	SAMPLE	CHLORIDE FIELD SCREENING (ppm) ExStik	VOC FIELD SCREENING (ppm) PID	SAMPLE RECOVERY (%)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT LL	PLASTICITY INDEX PI	MINUS NO. 200 (%)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	REMARKS
			208	1.6								**-SM-** SILTY SAND; Brown, dense, dry, with no odor, with no staining.		BH-4 (0'-1')
			361	1.7										BH-4 (2'-3')
			657	1.9										BH-4 (3'-4')
													4	
5			2.0	2.1								**-SM-** SILTY SAND; Tan, dense, dry, with no odor, with no staining.		BH-4 (4'-5')
			2.03	1.9										BH-4 (6'-7')
10			1.95	2										BH-4 (9'-10')
													14	
15			9.45	3.1								**-SM-** SILTY SAND; Light brown, dense, dry, with no odor, with no staining.		BH-4 (14'-15')
20			3.75	3.2										BH-4 (19'-20')
25			2.81	1.4										BH-4 (24'-25')

Sampler Types: Split Spoon, Shelby, Bulk Sample, Grab Sample, Acetate Liner, Vane Shear, California, Test Pit

Operation Types: Mud Rotary, Continuous Flight Auger, Wash Rotary, Hand Auger, Air Rotary, Direct Push, Core Barrel

Notes:

Analytical samples are shown in the "Remarks" column.
Surface elevation is an estimated value.

Logger: Devin Dominguez | Drilling Equipment: Air Rotary | Driller: Scarborough Drilling

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212C-MD-02067	TETRA TECH	**LOG OF BORING BH-4**	Page 2 of 3

Project Name: MCA 123 Injection Line Release

Borehole Location: GPS: 32.810847°, -103.743217° | Surface Elevation: 3973 ft

Borehole Number: BH-4 | Borehole Diameter (in.): 8 | Date Started: 3/23/2020 | Date Finished: 3/23/2020

WATER LEVEL OBSERVATIONS

While Drilling ▽ DRY ft Upon Completion of Drilling ▼ DRY ft

Remarks:

DEPTH (ft)	SAMPLE	CHLORIDE FIELD SCREENING (ppm) ExStik	VOC FIELD SCREENING (ppm) PID	MATERIAL DESCRIPTION	DEPTH (ft)	REMARKS
					29	
30		1.87	1.7	**-SM-** SILTY SAND; Tan, dense, dry, with no odor, with no staining.		BH-4 (29'-30')
35						BH-4 (34'-35')
					39	
40		1.67	1.8	**-CL-** CLAYSTONE; Red, moderately hard, moist, with no odor, with no staining.		BH-4 (39'-40')
45						
50		587	1.7			BH-4 (49'-50')

SAMPLE RECOVERY (%) | MOISTURE CONTENT (%) | DRY DENSITY (pcf) | LIQUID LIMIT LL | PLASTICITY INDEX PI | MINUS NO. 200 (%) | GRAPHIC LOG

Sampler Types: Split Spoon, Shelby, Bulk Sample, Grab Sample, Acetate Liner, Vane Shear, California, Test Pit

Operation Types: Mud Rotary, Continuous Flight Auger, Wash Rotary, Hand Auger, Air Rotary, Direct Push, Core Barrel

Notes:
Analytical samples are shown in the "Remarks" column.
Surface elevation is an estimated value.

Logger: Devin Dominguez | Drilling Equipment: Air Rotary | Driller: Scarborough Drilling

212C-MD-02067 | TETRA TECH | **LOG OF BORING BH-4** | Page 3 of 3

Project Name: MCA 123 Injection Line Release

Borehole Location: GPS: 32.810847°, -103.743217° | Surface Elevation: 3973 ft

Borehole Number: BH-4 | Borehole Diameter (in.): 8 | Date Started: 3/23/2020 | Date Finished: 3/23/2020

WATER LEVEL OBSERVATIONS

While Drilling ▽ DRY ft Upon Completion of Drilling ▼ DRY ft

Remarks:

DEPTH (ft)	OPERATION TYPE	SAMPLE	CHLORIDE FIELD SCREENING (ppm) ExStik	VOC FIELD SCREENING (ppm) PID	SAMPLE RECOVERY (%)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT LL	PLASTICITY INDEX PI	MINUS NO. 200 (%)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	REMARKS
55														
60			491	1.4									60	BH-4 (59'-60')

Bottom of borehole at 60.0 feet.

Sampler Types: Split Spoon, Acetate Liner, Shelby, Vane Shear, Bulk Sample, California, Grab Sample, Test Pit

Operation Types: Hand Auger, Mud Rotary, Air Rotary, Continuous Flight Auger, Direct Push, Wash Rotary, Core Barrel

Notes:

Analytical samples are shown in the "Remarks" column.
Surface elevation is an estimated value.

Logger: Devin Dominguez | Drilling Equipment: Air Rotary | Driller: Scarborough Drilling

APPENDIX C
2016 Work Plan and Regulatory Correspondence

SITE INFORMATION

Report Type: Work Plan 1RP-4597

General Site Information:						
Site:	**Miller B #3**					
Company:	**COG Operating LLC**					
Section, Township and Range	**Unit A**	**Sec. 23**	**T 17S**	**R 32E**		
Lease Number:	**API No. 30-025-31054**					
County:	**Lea County**					
GPS:	**32.8245583º N**			**103.7327499º W**		
Surface Owner:	Federal					
Mineral Owner:						
Directions:	From the intersection of CR 126 (Maljamar Rd) and Mescalero Rd, travel east on Mescalero for 1.9 mi, turn south onto lease road and continue for 0.90 mi, turn west onto lease road for 0.10 mi to location.					

Release Data:	
Date Released:	2/1/2017
Type Release:	Oil & Produced Water
Source of Contamination:	Flowline
Fluid Released:	7 bbls oil & 3 bbls water
Fluids Recovered:	6 bbls oil & 1 bbl water

Official Communication:			
Name:	Rebecca Haskell		Ike Tavarez
Company:	COG Operating, LLC		Tetra Tech
Address:	One Concho Center		4000 N. Big Spring
	600 W. Illinois Ave.		Ste 401
City:	Midland Texas, 79701		Midland, Texas
Phone number:	(432) 686-3023		(432) 687-8110
Fax:	(432) 684-7137		
Email:	rhaskell@conchoresources.com		Ike.Tavarez@tetratech.com

Ranking Criteria		
Depth to Groundwater:	***Ranking Score***	***Site Data***
<50 ft	***20***	*48'*
50-99 ft	10	
>100 ft.	0	
WellHead Protection:	***Ranking Score***	***Site Data***
Water Source <1,000 ft., Private <200 ft.	*20*	
Water Source >1,000 ft., Private >200 ft.	***0***	*0*
Surface Body of Water:	***Ranking Score***	***Site Data***
<200 ft.	*20*	
200 ft - 1,000 ft.	10	
>1,000 ft.	***0***	*0*
Total Ranking Score:	***20***	

Acceptable Soil RRAL (mg/kg)		
Benzene	***Total BTEX***	***TPH***
10	50	100

TETRA TECH

June 15, 2018

Ms. Olivia Yu
Environmental Engineer Specialist
Oil Conservation Division, District 1
1625 North French Drive
Hobbs, New Mexico 88240

Re: Work Plan for the COG Operating LLC., Miller B #3, Unit A, Section 23, Township 17 South, Range 32 East, Eddy County, New Mexico.
1RP-4597.

Ms. Yu:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC., (COG) to prepare a work plan for a release that occurred at Miller B #3, Unit A, Section 23, Township 17 South, Range 32 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.8245583º, W 103.7327499º. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on February 1, 2017, and released approximately seven (7) barrels of oil and three (3) barrels of produced water due to a ruptured poly flowline. A vacuum truck was used to remove the freestanding fluids and recovered approximately six (6) barrels of oil and one (1) barrel of produced water. The release occurred in the pasture west of the pad and migrated across the reserve pit area and into the pasture west of the reserve pit. The release impacted an area measuring approximately 50' x 160'. The initial C-141 form is included in Appendix A.

Groundwater

No wells are listed within Section 23 in the New Mexico Office of the State Engineers database, the USGS National Water Information System or the Geology and Ground-Water Conditions in Southern Lea County, New Mexico (Report 6). The nearest well is listed on the USGS National Water Information System in Section 11, with a reported depth to groundwater of 48' below surface. According to the Chevron Texaco Groundwater Trend map, the average depth to groundwater in the area is between 50' and 75' below surface. The groundwater data is shown in Appendix B.

Tetra Tech
4000 North Big Spring, Suite 401, Midland, TX 79705
Tel 432.682.4559 Fax 432.682.3946 www.tetratech.com

TETRA TECH

Regulatory

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. 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 depth to groundwater, the proposed RRAL for TPH is 100 mg/kg.

Soil Assessment and Analytical Results

On February 22, 2017, COG personnel were onsite to evaluate and sample the release area. One (1) backhoe trench (T-1) was installed in the release area west of the reserve pit to a total depth of 12.0' below surface. Additionally, four (4) horizontal trenches (North, South, East, and West) were installed outside the release footprint to total depths of 2.0' below surface. Selected samples were 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 C. The sampling results are summarized in Table 1. The trench locations are shown on Figure 3.

Referring to Table 1, the area of trench (T-1) showed TPH, benzene, and total BTEX concentrations above the RRALs in the shallow soils. The area showed a TPH high of 34,400 mg/kg at surface, which declined with depth to 214 mg/kg at 4.0' and <15.0 mg/kg at 5.0' below surface. Additionally, benzene and total BTEX concentrations exceeded the RRALs from surface to 3.0' below surface; and showed concentrations of <0.00149 mg/kg (benzene) and 0.0179 mg/kg (BTEX) at 4.0' below surface.

Additionally, a chloride high of 6,480 mg/kg was detected at 1.0' below surface in the area of trench (T-1), which declined with depth to 245 mg/kg at 4.0' and showed a bottom trench concentration of 13.2 mg/kg at 12' below surface.

Referring to Table 1, none of the horizontal trenches (North, South, East, and West) showed TPH, benzene, or total BTEX concentrations above the RRALs. The area of trench (West) showed minimal chloride concentrations to the shallow soils, which spiked to 1,310 mg/kg at 2.0' below surface. The area of trench (East), which was installed along the eastern edge of the reserve pit, did show slightly elevated chlorides of 654 mg/kg at surface, which then declined with depth to below the 600 mg/kg threshold at 2.0' below surface. The remaining horizontal trenches (North and South) showed minimal chlorides to the shallow soils.

TETRA TECH

Work Plan

Based on the laboratory results and location of the release, which migrated across a closed reserve pit, COG proposes to remove the impacted soils in the area of trench (T-1) to an approximate depth of 4.0' below surface. The area of the horizontal trench (West) will be resampled to confirm the chloride concentration detected at 2.0' below surface. If confirmation samples show a deeper chloride impact, the area will be excavated to a depth of 3.0' to 4.0' below surface and capped with a 20-mil liner to prevent vertical migration of the deeper impact.

In addition, any hydrocarbon impact on top of the closed reserve pit will be excavated to address the surficial staining in the area. However, no further evaluation will be performed on the closed reserve pit due to potential chlorides present in the pit. The assessment (chlorides) of the pit would not representative to the impact encountered in the pasture.

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

Conclusion

Upon completion, a final report detailing the remediation activities will be submitted to the NMOCD. If you have any questions or comments concerning the assessment or the proposed remediation activities for this site, please call at (432) 682-4559.

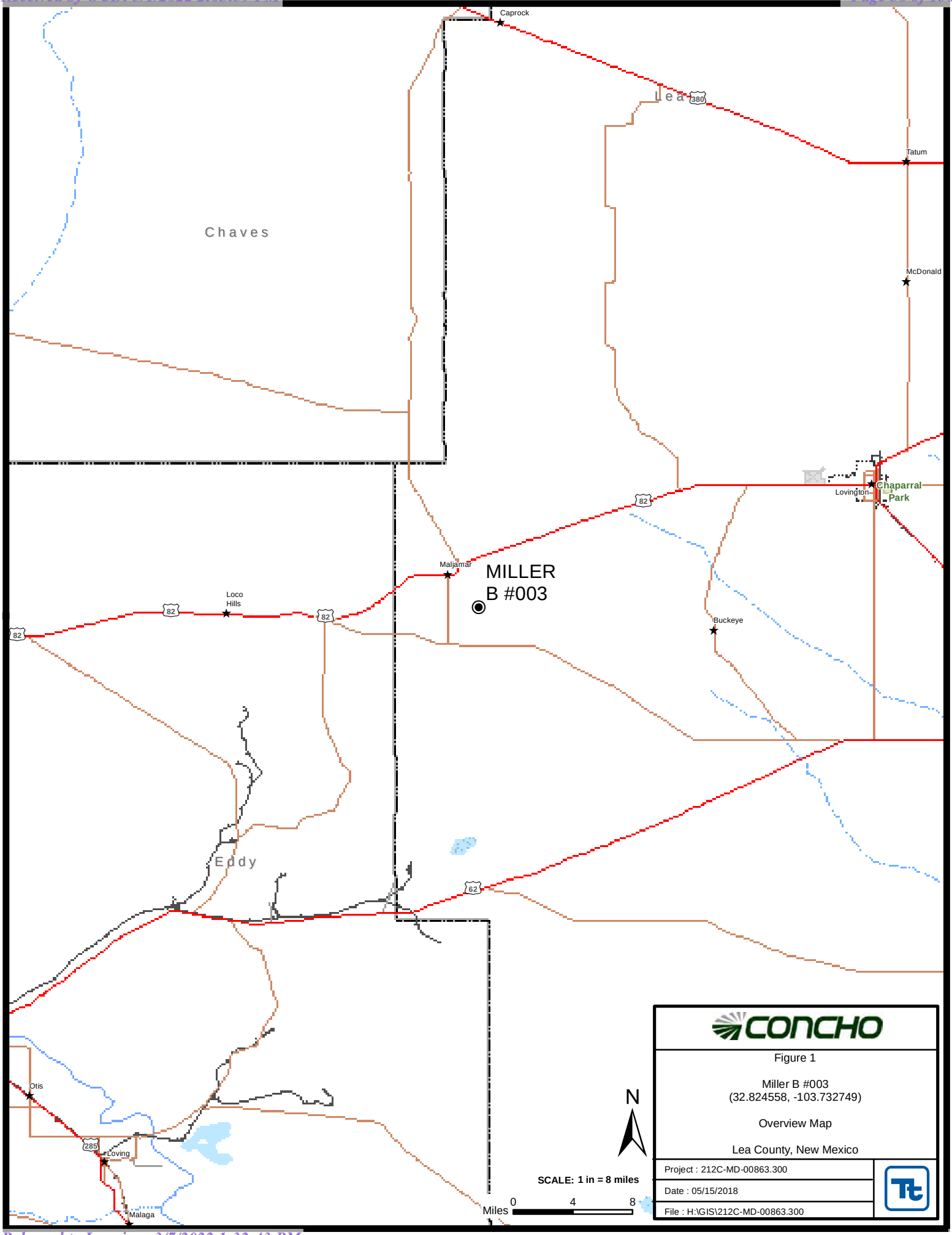
Respectfully submitted,
TETRA TECH

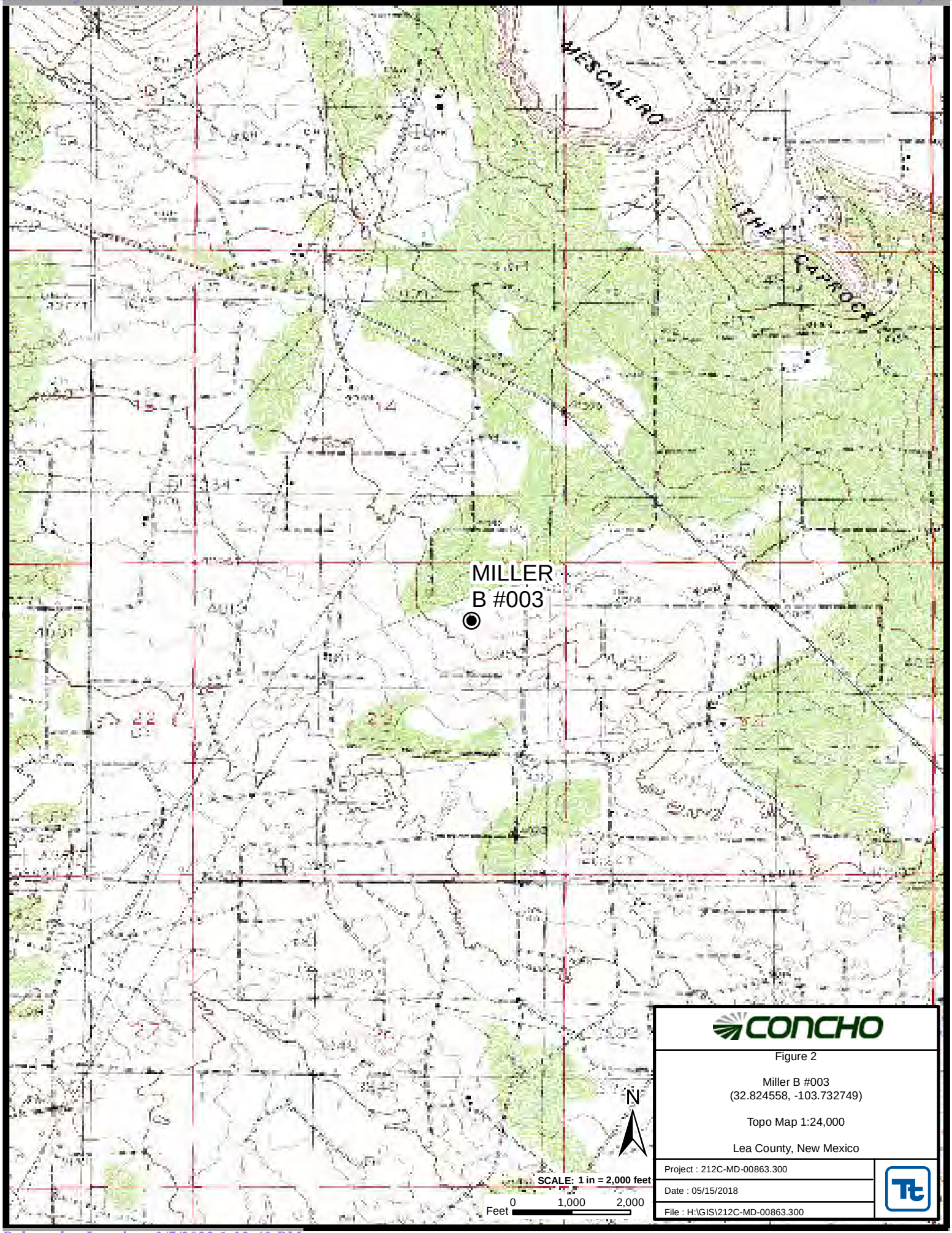
Clair Gonzales,
Project Manager

Ike Tavarez,
Senior Project Manager, P.G.

cc: Dakota Neel – COG
Rebecca Haskell – COG
Crystal Weaver - NMOCD
Shelly Tucker - BLM

Figures


Caprock
Lea
380
Tatum
Chaves
McDonald
Lovington
Chaparral Park
82
Maljamar
MILLER
B #003
Loco Hills
Buckeye
Eddy
62
Otis
285
Loving
Malaga
N
SCALE: 1 in = 8 miles
0
4
8
Miles
CONCHO
Figure 1
Miller B #003
(32.824558, -103.732749)
Overview Map
Lea County, New Mexico
Project : 212C-MD-00863.300
Date : 05/15/2018
File : H:\GIS\212C-MD-00863.300



CONCHO

Figure 2

Miller B #003
(32.824558, -103.732749)

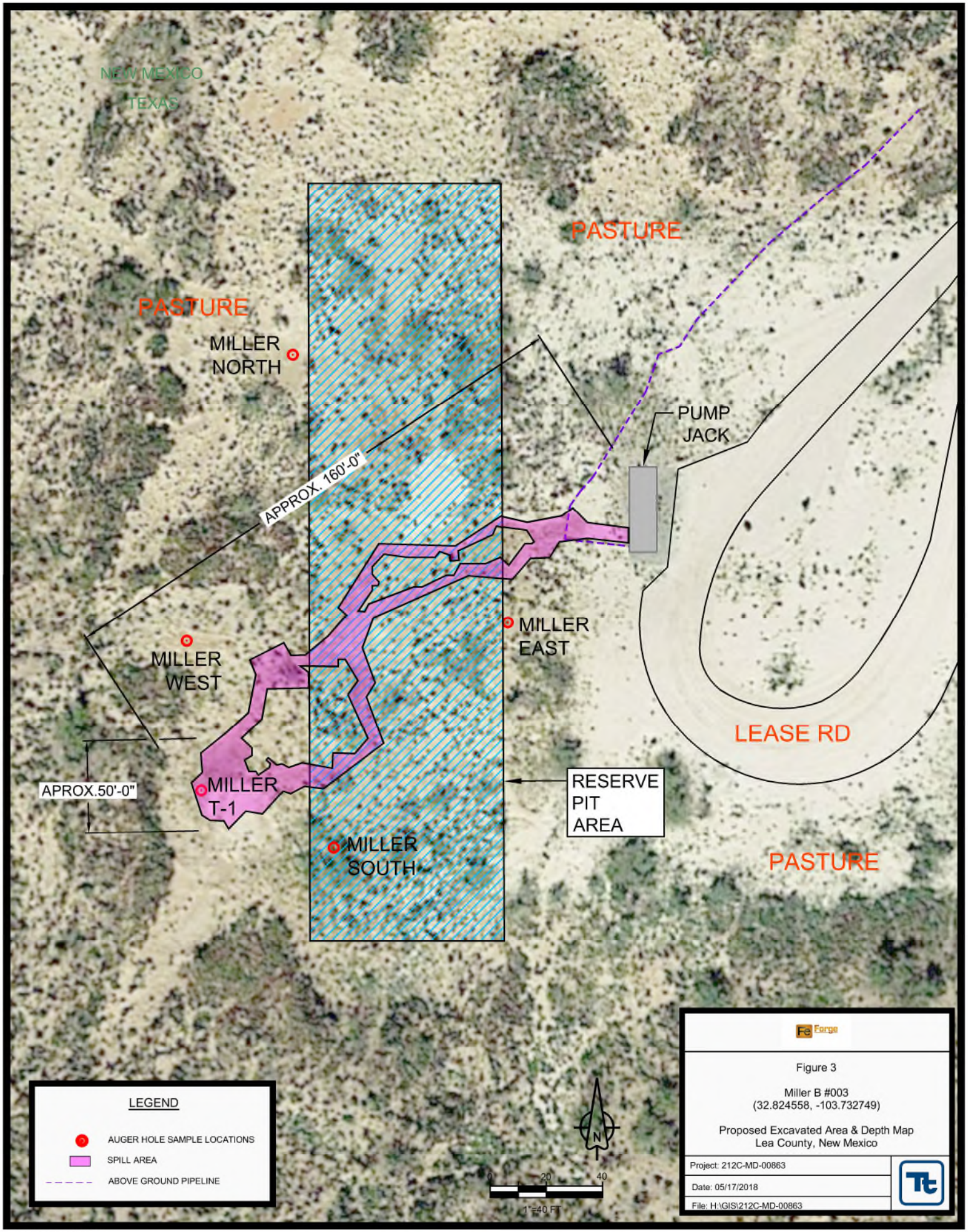
Topo Map 1:24,000

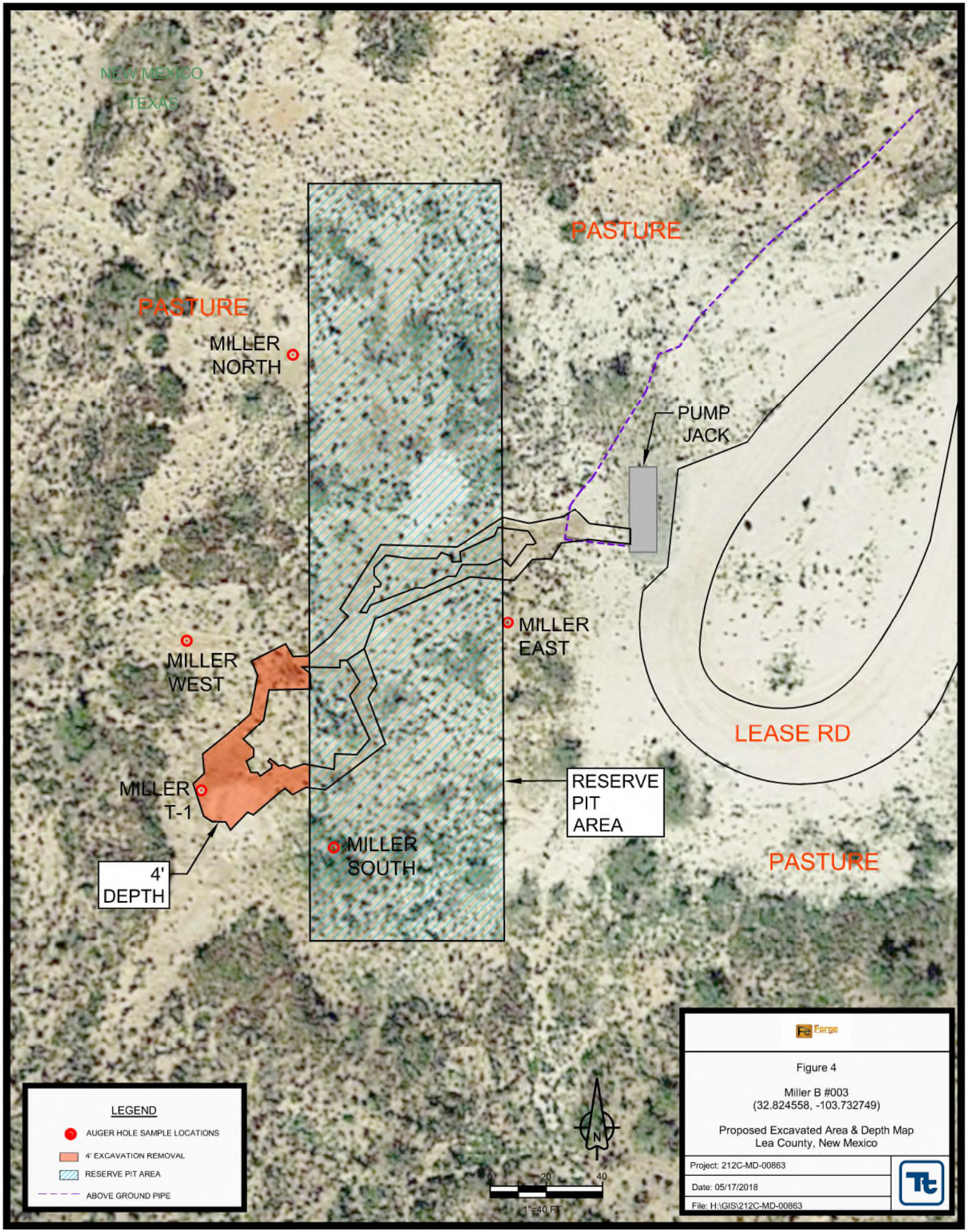
Lea County, New Mexico

Project : 212C-MD-00863.300

Date : 05/15/2018

File : H:\GIS\212C-MD-00863.300


NEW MEXICO
TEXAS
PASTURE
PASTURE
MILLER NORTH
PUMP JACK
APPROX. 160'-0"
MILLER EAST
MILLER WEST
LEASE RD
APROX.50'-0"
MILLER T-1
RESERVE PIT AREA
MILLER SOUTH
PASTURE
LEGEND
AUGER HOLE SAMPLE LOCATIONS
SPILL AREA
ABOVE GROUND PIPELINE
N
0
20
40
1"=40 FT
Forge
Figure 3
Miller B #003
(32.824558, -103.732749)
Proposed Excavated Area & Depth Map
Lea County, New Mexico
Project: 212C-MD-00863
Date: 05/17/2018
File: H:\GIS\212C-MD-00863
Drawn By: MISTI MORGAN


NEW MEXICO
TEXAS
PASTURE
PASTURE
MILLER NORTH
PUMP JACK
MILLER EAST
MILLER WEST
LEASE RD
MILLER T-1
RESERVE PIT AREA
MILLER SOUTH
4' DEPTH
PASTURE
LEGEND
AUGER HOLE SAMPLE LOCATIONS
4' EXCAVATION REMOVAL
RESERVE PIT AREA
ABOVE GROUND PIPE
N
0
20
40
1"=40 FT
Forge
Figure 4
Miller B #003
(32.824558, -103.732749)
Proposed Excavated Area & Depth Map
Lea County, New Mexico
Project: 212C-MD-00863
Date: 05/17/2018
File: H:\GIS\212C-MD-00863
Drawn By: MISTI MORGAN

Tables

Table 1
COG Operating LLC.
Miller B Federal #3
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	C6-C10	C10-C28	C28-C35	Total						
T-1	2/22/2017	Surface	X		7,880	23,800	2,270	**34,000**	**28.9**	168	105	165	**467**	505
	"	1	X		2,280	3,650	405	**6,340**	**26.9**	190	123	205	**545**	**6,480**
	"	2	X		5,370	8,230	815	**14,400**	**20.9**	137	89.6	151	**398**	**4,380**
	"	3	X		5,800	10,900	1,080	**17,800**	**28.8**	163	120	201	**513**	**3,740**
	"	4	X		29.4	168	16.8	**214**	<0.00149	<0.00198	0.00366	0.0142	0.0179	245
	"	5	X		<15.0	<15.0	<15.0	<15.0	<0.00150	<0.00200	<0.00200	<0.00200	<0.00150	19.5
	"	6	X		-	-	-	-	-	-	-	-	-	114
	"	8	X		-	-	-	-	-	-	-	-	-	191
	"	10	X		-	-	-	-	-	-	-	-	-	15.8
	"	12	X		-	-	-	-	-	-	-	-	-	13.2
North	2/22/2017	Surface	X		<15.0	<15.0	<15.0	<15.0	<0.00151	<0.00202	<0.00202	<0.00202	<0.00151	6.34
	"	1	X		<14.9	<14.9	<14.9	<14.9	<0.00728	<0.00971	<0.00971	<0.00971	<0.00728	<4.92
	"	2	X		<15.0	<15.0	<15.0	<15.0	<0.00148	<0.00197	<0.00197	<0.00197	<0.00148	<4.89
South	2/22/2017	Surface	X		<15.0	<15.0	<15.0	<15.0	<0.00150	<0.00200	<0.00200	<0.00200	<0.00150	7.04
	"	1	X		<15.0	<15.0	<15.0	<15.0	<0.00150	<0.00200	<0.00200	<0.00200	<0.00150	<4.96
	"	2	X		<15.0	<15.0	<15.0	<15.0	<0.00149	<0.00198	<0.00198	<0.00198	<0.00149	<4.90
East	2/22/2017	Surface	X		<15.0	19.9	<15.0	19.9	<0.00148	<0.00198	<0.00198	<0.00198	<0.00148	654
	"	1	X		<15.0	18.0	<15.0	18.0	<0.00152	<0.00202	<0.00202	<0.00202	<0.00152	627
	"	2	X		<15.0	<15.0	<15.0	<15.0	<0.00151	0.00223	<0.00201	0.00262	0.00485	446
West	2/22/2017	Surface	X		<15.0	<15.0	<15.0	<15.0	0.00152	0.00330	<0.00203	<0.00203	0.00482	6.94
	"	1	X		<15.0	<15.0	<15.0	<15.0	<0.00149	<0.00199	<0.00199	<0.00199	<0.00149	59.8
	"	2	X		<15.0	<15.0	<15.0	<15.0	0.00168	0.00423	0.00258	0.00316	0.0117	**1,310**

(-) Not Analyzed

Proposed Excavation Depths

212C-MD-00679.01
Cardinal Labs

Appendix A

Page 43 of 138

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:	COG Operating LLC	Contact:	Robert McNeill
Address:	600 West Illinois Avenue, Midland TX 79701	Telephone No.	432-683-7443
Facility Name: Miller B #003		Facility Type:	Flowline

Surface Owner: Federal	Mineral Owner:	API No. 30-025-31054

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
A	23	17S	32E	990	North	1295	East	Lea

Latitude 32.8245583 **Longitude** -103.7327499

NATURE OF RELEASE

Type of Release: Oil and Produced Water	Volume of Release: 7 bbls Oil & 3 bbls PW	Volume Recovered: 6 bbls Oil & 1 bbls PW
Source of Release: Poly Flowline	Date and Hour of Occurrence: February 1, 2017 4:00 pm	Date and Hour of Discovery: February 1, 2017 4:00 pm
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.*

Describe Cause of Problem and Remedial Action Taken.*

Flowline rupture due to paraffin buildup. The section of flowline was replaced

Describe Area Affected and Cleanup Action Taken.*

The release was within a pasture. A vacuum truck was dispatched to remove all freestanding fluids. Concho will have the spill area sampled to delineate any possible impact from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation activities.

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: Rebecca Haskell

Printed Name: Rebecca Haskell

Title: Senior HSE Coordinator

E-mail Address: rhaskell@concho.com

Date: February 2, 2017 Phone: 432-683-7443

OIL CONSERVATION DIVISION

Approved by Environmental Specialist:

Approval Date: Expiration Date:

Conditions of Approval: Attached ☐

Attach Additional Sheets If Necessary

Received by OCD: 3/1/2022 2:03:39 PM

Released to Imaging: 3/7/2022 1:32:43 PM

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - Miller B Federal #3
Lea County, New Mexico

16 South 31 East

6	5	4	3	2 290	1
7	8	9	10	11	12 288
18	17	16	15	14 113 314	13 299
19	20	21	22	23	24
30	29	28	27	26	25
31 290	32	33	34	35	36

16 South 32 East

6	5	4	3 65	2 265	1 265
7	8	9	10	11	12 215
18	17	16 221	15	14	13 215
19 220	20	21 210	22	23 210	24
30	29	28	27	26 243	25
31	32	33	34	35	36 260

16 South 33 East

6	5 180	4 150	3 130	2 148	1 142
7	8 200	9	10 182	11	12 142
18	17 182	16 180	15 175	14 143	13 110
19	20	21	22	23 120	24
30 191	29	28 190	27 130	26 143	25 120
31 190	32 168	33	34 160	35	36

17 South 31 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34 271	35	36

17 South 32 East

6	5	4 82 Maljamar	3 175	2 60	1 225
7	8	9	10 132	11 70 88 48	12 120
18	17	16	15	14	13
19	20	21	22	23 SITE	24
30 180 dry	29	28 81	27	26	25
31	32	33	34	35	36

17 South 33 East

6 90	5	4	3 155	2 158	1 150
7 167	8 173	9 161	10	11	12
18 188	17 180	16	15	14	13 165
19	20 190	21	22	23 115	24
30 69	29 60	28	27	26	25
31	32	33 120	34	35 155	36

18 South 31 East

6	5	4	3	2	1
7	8	9	10	11	12 400
18	17	16	15 98	14 317	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35 261	36

18 South 32 East

6	5	4 65	3	2	1
7 460 82	8	9	10	11	12
18	17	16 84	15	14	13
19	20 164	21	22 429	23	24
30	29	28	27	26	25
31	32	33	34 117	35	36

18 South 33 East

6	5	4	3 60	2	1
7	8 100	9	10 62	11 46	12 143 140
18	17 85	16	15	14 36	13 60
19 >140	20	21	22	23	24 195
30 35	29	28	27	26	25
31	32	33 177	34	35	36

88 New Mexico State Engineers Well Reports

105 USGS Well Reports

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

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

34 NMOCD - Groundwater Data

123 Tetra Tech installed temporary wells and field water level

143 NMOCD Groundwater map well location

New Mexico Office of the State Engineer

Water Column/Average Depth to Water

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

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

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

(NAD83 UTM in meters)

(In feet)

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
L 03980		L	LE	2	2	2	01	17S	32E	620466	3637594*	270	200	70
L 03980 S		L	LE	4	4	4	02	17S	32E	618870	3636170*	255	179	76
L 03980 S2		L	LE	3	2	3	01	17S	32E	619470	3636581*	225	175	50
L 04019		L	LE	4	3	4	02	17S	32E	618468	3636166*	182		
L 04020		L	LE	3	3	4	02	17S	32E	618268	3636166*	200		
L 04021	R	L	LE	3	4	4	02	17S	32E	618670	3636170*	190		
L 04021 POD3		L	LE		3	4	03	17S	32E	616761	3636252*	247		
L 04021 S		L	LE	2	4	4	03	17S	32E	617262	3636354*	260		
L 13047 POD1		L	LE				11	17S	32E	618187	3635254*	140		
L 13050 POD1		L	LE	2	2	1	10	17S	32E	616463	3635945*	156	132	24
RA 08855			LE	4	1	1	10	17S	32E	616061	3635742*	158		
RA 09505			LE	2	2	1	10	17S	32E	616462	3635944	147		
RA 09505 S			LE	2	2	1	10	17S	32E	616463	3635945*	144		
RA 10175			LE		2	1	28	17S	32E	614814	3631005*	158		
RA 11684 POD1			LE	1	1	4	11	17S	32E	618216	3635124	275		
RA 11684 POD2			LE	1	1	4	11	17S	32E	618313	3635248	275		
RA 11684 POD3			LE	3	3	1	11	17S	32E	618262	3635371	275		
RA 11684 POD4			LE	1	3	2	11	17S	32E	618334	3635521	275		
RA 11684 POD5			LE	3	1	4	11	17S	32E	618353	3635047	275		
RA 11734 POD1			LE	2	2	1	10	17S	32E	616556	3635929	165		
RA 11911 POD1			LE	1	3	1	24	17S	32E	619192	3632296	35		
RA 12020 POD1			LE	2	2	1	28	17S	32E	614828	3630954	120	81	39
RA 12042 POD1			LE	2	2	1	28	17S	32E	614891	3631181	400		

Average Depth to Water: **153 feet**
Minimum Depth: **81 feet**
Maximum Depth: **200 feet**

Record Count: 23

PLSS Search:

Township: 17S **Range:** 32E

***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.

Appendix C

Certificate of Analysis Summary 547697

COG Operating LLC, Artesia, NM

Project Name: Miller B Federal #3

Project Id:
Contact: Aaron Lieb
Project Location:

Date Received in Lab: Thu Mar-02-17 10:20 am
Report Date: 09-MAR-17
Project Manager: Liz Givens

Analysis Requested													
	Lab Id:	547697-001		547697-002		547697-003		547697-004		547697-005		547697-006	
	Field Id:	T1- Surface		T1- 1'		T1- 2'		T1- 3'		T1- 4'		T1- 5'	
	Depth:			1 ft		2 ft		3 ft		4 ft		5 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Feb-22-17 10:00		Feb-22-17 10:00		Feb-22-17 10:00		Feb-22-17 10:00		Feb-22-17 10:00		Feb-22-17 10:00	
BTEX by EPA 8021B	***Extracted:***	Mar-06-17 07:20		Mar-06-17 07:20		Mar-06-17 07:20		Mar-06-17 07:20		Mar-06-17 07:20		Mar-03-17 16:25	
	Analyzed:	Mar-06-17 12:52		Mar-06-17 13:10		Mar-06-17 14:50		Mar-06-17 14:33		Mar-06-17 15:29		Mar-04-17 15:10	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		28.9	0.753	26.9	0.746	20.9	7.59	28.8	7.52	<0.00149	0.00149	<0.00150	0.00150
Toluene		168	1.00	190	0.994	137	10.1	163	10.0	<0.00198	0.00198	<0.00200	0.00200
Ethylbenzene		105	1.00	123	0.994	89.6	10.1	120	10.0	0.00366	0.00198	<0.00200	0.00200
m_p-Xylenes		115	1.00	149	0.994	104	10.1	135	10.0	0.00660	0.00198	<0.00200	0.00200
o-Xylene		49.7	1.51	56.1	1.49	46.8	15.2	66.1	15.0	0.00759	0.00297	<0.00299	0.00299
Total Xylenes		165	1.00	205	0.994	151	10.1	201	10.0	0.0142	0.00198	<0.00200	0.00200
Total BTEX		467	0.753	545	0.746	398	7.59	513	7.52	0.0179	0.00149	<0.00150	0.00150
BTEX by EPA 8021B	***Extracted:***											Mar-03-17 16:25	
	Analyzed:											Mar-04-17 15:10	
	Units/RL:											mg/L	RL
MTBE												<0.00998	0.00998
Inorganic Anions by EPA 300/300.1	***Extracted:***	Mar-06-17 12:15		Mar-06-17 12:15		Mar-06-17 12:15		Mar-06-17 12:15		Mar-06-17 12:15		Mar-06-17 12:15	
	Analyzed:	Mar-06-17 13:42		Mar-06-17 14:04		Mar-06-17 14:12		Mar-06-17 14:19		Mar-06-17 14:26		Mar-06-17 14:49	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		505	4.87	6480	49.0	4380	25.0	3740	24.6	245	4.95	19.5	4.88
TPH By SW8015 Mod	***Extracted:***	Mar-06-17 07:00		Mar-06-17 07:00		Mar-06-17 07:00		Mar-06-17 07:00		Mar-06-17 07:00		Mar-06-17 07:00	
	Analyzed:	Mar-06-17 09:47		Mar-06-17 10:07		Mar-06-17 10:28		Mar-06-17 10:48		Mar-06-17 11:09		Mar-06-17 11:30	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
C6-C10 Gasoline Range Hydrocarbons		7880	74.9	2280	74.8	5370	74.9	5800	74.9	29.4	15.0	<15.0	15.0
C10-C28 Diesel Range Hydrocarbons		23800	74.9	3650	74.8	8230	74.9	10900	74.9	168	15.0	<15.0	15.0
C28-C35 Oil Range Hydrocarbons		2270	74.9	405	74.8	815	74.9	1080	74.9	16.8	15.0	<15.0	15.0
Total TPH		34000	74.9	6340	74.8	14400	74.9	17800	74.9	214	15.0	<15.0	15.0

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

Brandi Ritcherson
Project Manager

Final 1.000

Certificate of Analysis Summary 547697

COG Operating LLC, Artesia, NM

Project Name: Miller B Federal #3

Project Id:
Contact: Aaron Lieb
Project Location:

Date Received in Lab: Thu Mar-02-17 10:20 am
Report Date: 09-MAR-17
Project Manager: Liz Givens

Analysis Requested													
	Lab Id:	547697-007		547697-008		547697-009		547697-010		547697-011		547697-012	
	Field Id:	T1- 6'		T1- 8'		T1- 10'		T1- 12'		North-Surface		North-1'	
	Depth:	6 ft		8 ft		10 ft		12 ft				1 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Feb-22-17 10:00		Feb-22-17 10:00		Feb-22-17 10:00		Feb-22-17 10:00		Feb-22-17 11:00		Feb-22-17 11:00	
BTEX by EPA 8021B	***Extracted:***									Mar-03-17 16:25		Mar-03-17 16:25	
	Analyzed:									Mar-04-17 14:54		Mar-04-17 20:20	
	Units/RL:									mg/L	RL	mg/L	RL
MTBE										<0.0101	0.0101	<0.0485	0.0485
BTEX by EPA 8021B	***Extracted:***									Mar-03-17 16:25		Mar-03-17 16:25	
	Analyzed:									Mar-04-17 14:54		Mar-04-17 20:20	
	Units/RL:									mg/kg	RL	mg/kg	RL
Benzene										<0.00151	0.00151	<0.00728	0.00728
Toluene										<0.00202	0.00202	<0.00971	0.00971
Ethylbenzene										<0.00202	0.00202	<0.00971	0.00971
m_p-Xylenes										<0.00202	0.00202	<0.00971	0.00971
o-Xylene										<0.00302	0.00302	<0.0146	0.0146
Total Xylenes										<0.00202	0.00202	<0.00971	0.00971
Total BTEX										<0.00151	0.00151	<0.00728	0.00728
Inorganic Anions by EPA 300/300.1	***Extracted:***	Mar-06-17 12:15		Mar-06-17 12:15		Mar-06-17 12:15		Mar-06-17 12:15		Mar-06-17 12:15		Mar-06-17 12:15	
	Analyzed:	Mar-06-17 14:56		Mar-06-17 15:03		Mar-06-17 15:11		Mar-06-17 15:18		Mar-06-17 15:25		Mar-06-17 15:47	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		114	5.00	191	4.95	15.8	4.88	13.2	4.89	6.34	4.91	<4.92	4.92
TPH By SW8015 Mod	***Extracted:***									Mar-06-17 07:00		Mar-06-17 07:00	
	Analyzed:									Mar-06-17 12:35		Mar-06-17 12:56	
	Units/RL:									mg/kg	RL	mg/kg	RL
C6-C10 Gasoline Range Hydrocarbons										<15.0	15.0	<14.9	14.9
C10-C28 Diesel Range Hydrocarbons										<15.0	15.0	<14.9	14.9
C28-C35 Oil Range Hydrocarbons										<15.0	15.0	<14.9	14.9
Total TPH										<15.0	15.0	<14.9	14.9

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Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Brandi Ritcherson
Project Manager

Certificate of Analysis Summary 547697

COG Operating LLC, Artesia, NM

Project Name: Miller B Federal #3

Project Id:
Contact: Aaron Lieb
Project Location:

Date Received in Lab: Thu Mar-02-17 10:20 am
Report Date: 09-MAR-17
Project Manager: Liz Givens

Analysis Requested													
	Lab Id:	547697-013		547697-014		547697-015		547697-016		547697-017		547697-018	
	Field Id:	North-2'		South-Surface		South-1'		South-2'		East-Surface		East-1'	
	Depth:	2 ft				1 ft		2 ft				1 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Feb-22-17 11:00		Feb-22-17 11:00		Feb-22-17 11:00		Feb-22-17 11:00		Feb-22-17 11:00		Feb-22-17 11:00	
BTEX by EPA 8021B	***Extracted:***	Mar-03-17 16:25		Mar-03-17 16:25		Mar-03-17 16:25		Mar-03-17 16:25		Mar-03-17 16:25		Mar-03-17 16:25	
	Analyzed:	Mar-04-17 15:27		Mar-04-17 16:14		Mar-04-17 15:43		Mar-04-17 17:54		Mar-04-17 15:59		Mar-04-17 18:10	
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL
MTBE		<0.00984	0.00984	<0.0100	0.0100	<0.00998	0.00998	<0.00992	0.00992	<0.00988	0.00988	<0.0101	0.0101
BTEX by EPA 8021B	***Extracted:***	Mar-03-17 16:25		Mar-03-17 16:25		Mar-03-17 16:25		Mar-03-17 16:25		Mar-03-17 16:25		Mar-03-17 16:25	
	Analyzed:	Mar-04-17 15:27		Mar-04-17 16:14		Mar-04-17 15:43		Mar-04-17 17:54		Mar-04-17 15:59		Mar-04-17 18:10	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		<0.00148	0.00148	<0.00150	0.00150	<0.00150	0.00150	<0.00149	0.00149	<0.00148	0.00148	<0.00152	0.00152
Toluene		<0.00197	0.00197	<0.00200	0.00200	<0.00200	0.00200	<0.00198	0.00198	<0.00198	0.00198	<0.00202	0.00202
Ethylbenzene		<0.00197	0.00197	<0.00200	0.00200	<0.00200	0.00200	<0.00198	0.00198	<0.00198	0.00198	<0.00202	0.00202
m_p-Xylenes		<0.00197	0.00197	<0.00200	0.00200	<0.00200	0.00200	<0.00198	0.00198	<0.00198	0.00198	<0.00202	0.00202
o-Xylene		<0.00295	0.00295	<0.00301	0.00301	<0.00299	0.00299	<0.00298	0.00298	<0.00296	0.00296	<0.00303	0.00303
Total Xylenes		<0.00197	0.00197	<0.00200	0.00200	<0.00200	0.00200	<0.00198	0.00198	<0.00198	0.00198	<0.00202	0.00202
Total BTEX		<0.00148	0.00148	<0.00150	0.00150	<0.00150	0.00150	<0.00149	0.00149	<0.00148	0.00148	<0.00152	0.00152
Inorganic Anions by EPA 300/300.1	***Extracted:***	Mar-06-17 12:15		Mar-06-17 12:15		Mar-06-17 12:15		Mar-06-17 12:15		Mar-06-17 12:15		Mar-06-17 12:15	
	Analyzed:	Mar-06-17 15:55		Mar-06-17 16:17		Mar-06-17 16:24		Mar-06-17 16:31		Mar-06-17 16:39		Mar-06-17 16:46	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		<4.89	4.89	7.04	4.88	<4.96	4.96	<4.90	4.90	654	4.87	627	4.95
TPH By SW8015 Mod	***Extracted:***	Mar-06-17 07:00		Mar-06-17 07:00		Mar-06-17 07:00		Mar-06-17 07:00		Mar-06-17 07:00		Mar-06-17 07:00	
	Analyzed:	Mar-06-17 13:17		Mar-06-17 13:37		Mar-06-17 14:39		Mar-06-17 14:59		Mar-06-17 15:21		Mar-06-17 15:40	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
C6-C10 Gasoline Range Hydrocarbons		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0
C10-C28 Diesel Range Hydrocarbons		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	19.9	15.0	18.0	15.0
C28-C35 Oil Range Hydrocarbons		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0
Total TPH		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	19.9	15.0	18.0	15.0

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Brandi Ritcherson
Project Manager

Certificate of Analysis Summary 547697

COG Operating LLC, Artesia, NM

Project Name: Miller B Federal #3

Project Id:
Contact: Aaron Lieb
Project Location:

Date Received in Lab: Thu Mar-02-17 10:20 am
Report Date: 09-MAR-17
Project Manager: Liz Givens

Analysis Requested													
	Lab Id:	547697-019		547697-020		547697-021		547697-022					
	Field Id:	East-2'		West-Surface		West-1'		West-2'					
	Depth:	2 ft				1 ft		2 ft					
	Matrix:	SOIL		SOIL		SOIL		SOIL					
	Sampled:	Feb-22-17 11:00		Feb-22-17 11:30		Feb-22-17 11:30		Feb-22-17 11:30					
BTEX by EPA 8021B	***Extracted:***	Mar-03-17 16:25		Mar-03-17 16:25		Mar-03-17 16:25		Mar-03-17 16:25					
	Analyzed:	Mar-04-17 18:27		Mar-04-17 18:43		Mar-04-17 18:59		Mar-04-17 19:15					
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL				
MTBE		<0.0100	0.0100	<0.0101	0.0101	<0.00996	0.00996	<0.00990	0.00990				
BTEX by EPA 8021B	***Extracted:***	Mar-03-17 16:25		Mar-03-17 16:25		Mar-03-17 16:25		Mar-03-17 16:25					
	Analyzed:	Mar-04-17 18:27		Mar-04-17 18:43		Mar-04-17 18:59		Mar-04-17 19:15					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Benzene		<0.00151	0.00151	0.00152	0.00152	<0.00149	0.00149	0.00168	0.00149				
Toluene		0.00223	0.00201	0.00330	0.00203	<0.00199	0.00199	0.00423	0.00198				
Ethylbenzene		<0.00201	0.00201	<0.00203	0.00203	<0.00199	0.00199	0.00258	0.00198				
m_p-Xylenes		0.00262	0.00201	<0.00203	0.00203	<0.00199	0.00199	0.00316	0.00198				
o-Xylene		<0.00301	0.00301	<0.00304	0.00304	<0.00299	0.00299	<0.00297	0.00297				
Total Xylenes		0.00262	0.00201	<0.00203	0.00203	<0.00199	0.00199	0.00316	0.00198				
Total BTEX		0.00485	0.00151	0.00482	0.00152	<0.00149	0.00149	0.0117	0.00149				
Inorganic Anions by EPA 300/300.1	***Extracted:***	Mar-06-17 12:15		Mar-06-17 12:15		Mar-07-17 10:30		Mar-07-17 10:30					
	Analyzed:	Mar-06-17 16:53		Mar-06-17 17:01		Mar-07-17 11:13		Mar-07-17 11:35					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Chloride		446	4.98	6.94	4.89	59.8	4.92	1310	24.8				
TPH By SW8015 Mod	***Extracted:***	Mar-06-17 07:00		Mar-06-17 07:00		Mar-06-17 07:00		Mar-06-17 07:00					
	Analyzed:	Mar-06-17 16:00		Mar-06-17 16:21		Mar-06-17 16:41		Mar-06-17 17:01					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
C6-C10 Gasoline Range Hydrocarbons		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0				
C10-C28 Diesel Range Hydrocarbons		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0				
C28-C35 Oil Range Hydrocarbons		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0				
Total TPH		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0				

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

Brandi Ritcherson
Project Manager

Final 1.000

Analytical Report 547697

for

COG Operating LLC

Project Manager: Aaron Lieb

Miller B Federal #3

09-MAR-17

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215), Arizona (AZ0765), Florida (E871002), Louisiana (03054)
Oklahoma (9218)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400)
Xenco-San Antonio: Texas (T104704534)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

09-MAR-17

Project Manager: **Aaron Lieb**
COG Operating LLC
2407 Pecos Avenue
Artesia, NM 88210

Reference: XENCO Report No(s): **547697**
Miller B Federal #3
Project Address:

Aaron Lieb:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 547697. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 547697 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

Brandi Ritcherson
Project Manager

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Certified and approved by numerous States and Agencies.
A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America

Sample Cross Reference 547697

COG Operating LLC, Artesia, NM

Miller B Federal #3

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
T1- Surface	S	02-22-17 10:00		547697-001
T1- 1'	S	02-22-17 10:00	- 1 ft	547697-002
T1- 2'	S	02-22-17 10:00	- 2 ft	547697-003
T1- 3'	S	02-22-17 10:00	- 3 ft	547697-004
T1- 4'	S	02-22-17 10:00	- 4 ft	547697-005
T1- 5'	S	02-22-17 10:00	- 5 ft	547697-006
T1- 6'	S	02-22-17 10:00	- 6 ft	547697-007
T1- 8'	S	02-22-17 10:00	- 8 ft	547697-008
T1- 10'	S	02-22-17 10:00	- 10 ft	547697-009
T1- 12'	S	02-22-17 10:00	- 12 ft	547697-010
North-Surface	S	02-22-17 11:00		547697-011
North-1'	S	02-22-17 11:00	- 1 ft	547697-012
North-2'	S	02-22-17 11:00	- 2 ft	547697-013
South-Surface	S	02-22-17 11:00		547697-014
South-1'	S	02-22-17 11:00	- 1 ft	547697-015
South-2'	S	02-22-17 11:00	- 2 ft	547697-016
East-Surface	S	02-22-17 11:00		547697-017
East-1'	S	02-22-17 11:00	- 1 ft	547697-018
East-2'	S	02-22-17 11:00	- 2 ft	547697-019
West-Surface	S	02-22-17 11:30		547697-020
West-1'	S	02-22-17 11:30	- 1 ft	547697-021
West-2'	S	02-22-17 11:30	- 2 ft	547697-022

CASE NARRATIVE

Client Name: COG Operating LLC

Project Name: Miller B Federal #3

Project ID:
Work Order Number(s): *547697*

Report Date: *09-MAR-17*
Date Received: *03/02/2017*

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3011637 BTEX by EPA 8021B
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.
Lab Sample ID 547697-012 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD).
MTBE recovered below QC limits in the Matrix Spike. Outlier/s are due to possible matrix interference.
Samples in the analytical batch are: 547697-006, -011, -012, -013, -014, -015, -016, -017, -018, -019, -020, -021, -022.
The Laboratory Control Sample for MTBE is within laboratory Control Limits, therefore the data was accepted.

Batch: LBA-3011716 BTEX by EPA 8021B
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3011830 Inorganic Anions by EPA 300/300.1
Lab Sample ID 547697-011 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD).
Chloride recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 547697-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -011, -012, -013, -014, -015, -016, -017, -018, -019, -020.
The Laboratory Control Sample for Chloride is within laboratory Control Limits, therefore the data was accepted.

Certificate of Analytical Results 547697

COG Operating LLC, Artesia, NM

Miller B Federal #3

Sample Id:	**T1- Surface**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-001	Date Collected:	02.22.17 10.00		

Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MGO			% Moisture:	
Analyst:	MGO	Date Prep:	03.06.17 12.15	Basis:	Wet Weight
Seq Number:	3011830				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**505**	4.87	mg/kg	03.06.17 13.42		1

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	03.06.17 07.00	Basis:	Wet Weight
Seq Number:	3011763				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	**7880**	74.9	mg/kg	03.06.17 09.47		5
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	**23800**	74.9	mg/kg	03.06.17 09.47		5
C28-C35 Oil Range Hydrocarbons	PHCG2835	**2270**	74.9	mg/kg	03.06.17 09.47		5
Total TPH	PHC635	**34000**	74.9	mg/kg	03.06.17 09.47		5

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	123	%	70-135	03.06.17 09.47	
o-Terphenyl	84-15-1	97	%	70-135	03.06.17 09.47	

Certificate of Analytical Results 547697

COG Operating LLC, Artesia, NM

Miller B Federal #3

Sample Id:	**T1- Surface**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-001	Date Collected:	02.22.17 10.00		
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	03.06.17 07.20	Basis:	Wet Weight
Seq Number:	3011716				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**28.9**	0.753	mg/kg	03.06.17 12.52		500
Toluene	108-88-3	**168**	1.00	mg/kg	03.06.17 12.52		500
Ethylbenzene	100-41-4	**105**	1.00	mg/kg	03.06.17 12.52		500
m_p-Xylenes	179601-23-1	**115**	1.00	mg/kg	03.06.17 12.52		500
o-Xylene	95-47-6	**49.7**	1.51	mg/kg	03.06.17 12.52		500
Total Xylenes	1330-20-7	**165**	1.00	mg/kg	03.06.17 12.52		500
Total BTEX		**467**	0.753	mg/kg	03.06.17 12.52		500

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	112	%	80-120	03.06.17 12.52	
4-Bromofluorobenzene	460-00-4	109	%	80-120	03.06.17 12.52	

Certificate of Analytical Results 547697

COG Operating LLC, Artesia, NM

Miller B Federal #3

Sample Id:	**T1- 1'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-002	Date Collected:	02.22.17 10.00	Sample Depth:	1 ft

Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MGO			% Moisture:	
Analyst:	MGO	Date Prep:	03.06.17 12.15	Basis:	Wet Weight
Seq Number:	3011830				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**6480**	49.0	mg/kg	03.06.17 14.04		10

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	03.06.17 07.00	Basis:	Wet Weight
Seq Number:	3011763				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	**2280**	74.8	mg/kg	03.06.17 10.07		5
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	**3650**	74.8	mg/kg	03.06.17 10.07		5
C28-C35 Oil Range Hydrocarbons	PHCG2835	**405**	74.8	mg/kg	03.06.17 10.07		5
Total TPH	PHC635	**6340**	74.8	mg/kg	03.06.17 10.07		5

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	109	%	70-135	03.06.17 10.07	
o-Terphenyl	84-15-1	98	%	70-135	03.06.17 10.07	

Certificate of Analytical Results 547697

COG Operating LLC, Artesia, NM

Miller B Federal #3

Sample Id:	**T1- 1'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-002	Date Collected:	02.22.17 10.00	Sample Depth:	1 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	03.06.17 07.20	Basis:	Wet Weight
Seq Number:	3011716				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**26.9**	0.746	mg/kg	03.06.17 13.10		500
Toluene	108-88-3	**190**	0.994	mg/kg	03.06.17 13.10		500
Ethylbenzene	100-41-4	**123**	0.994	mg/kg	03.06.17 13.10		500
m_p-Xylenes	179601-23-1	**149**	0.994	mg/kg	03.06.17 13.10		500
o-Xylene	95-47-6	**56.1**	1.49	mg/kg	03.06.17 13.10		500
Total Xylenes	1330-20-7	**205**	0.994	mg/kg	03.06.17 13.10		500
Total BTEX		**545**	0.746	mg/kg	03.06.17 13.10		500

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	102	%	80-120	03.06.17 13.10	
4-Bromofluorobenzene	460-00-4	105	%	80-120	03.06.17 13.10	

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COG Operating LLC, Artesia, NM

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Sample Id:	**T1- 2'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-003	Date Collected:	02.22.17 10.00	Sample Depth:	2 ft

Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MGO			% Moisture:	
Analyst:	MGO	Date Prep:	03.06.17 12.15	Basis:	Wet Weight
Seq Number:	3011830				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**4380**	25.0	mg/kg	03.06.17 14.12		5

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	03.06.17 07.00	Basis:	Wet Weight
Seq Number:	3011763				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	**5370**	74.9	mg/kg	03.06.17 10.28		5
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	**8230**	74.9	mg/kg	03.06.17 10.28		5
C28-C35 Oil Range Hydrocarbons	PHCG2835	**815**	74.9	mg/kg	03.06.17 10.28		5
Total TPH	PHC635	**14400**	74.9	mg/kg	03.06.17 10.28		5

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	128	%	70-135	03.06.17 10.28	
o-Terphenyl	84-15-1	94	%	70-135	03.06.17 10.28	

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COG Operating LLC, Artesia, NM

Miller B Federal #3

Sample Id:	**T1- 2'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-003	Date Collected:	02.22.17 10.00	Sample Depth:	2 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	03.06.17 07.20	Basis:	Wet Weight
Seq Number:	3011716				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**20.9**	7.59	mg/kg	03.06.17 14.50		5000
Toluene	108-88-3	**137**	10.1	mg/kg	03.06.17 14.50		5000
Ethylbenzene	100-41-4	**89.6**	10.1	mg/kg	03.06.17 14.50		5000
m_p-Xylenes	179601-23-1	**104**	10.1	mg/kg	03.06.17 14.50		5000
o-Xylene	95-47-6	**46.8**	15.2	mg/kg	03.06.17 14.50		5000
Total Xylenes	1330-20-7	**151**	10.1	mg/kg	03.06.17 14.50		5000
Total BTEX		**398**	7.59	mg/kg	03.06.17 14.50		5000

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	89	%	80-120	03.06.17 14.50	
1,4-Difluorobenzene	540-36-3	103	%	80-120	03.06.17 14.50	

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Miller B Federal #3

Sample Id:	**T1- 3'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-004	Date Collected:	02.22.17 10.00	Sample Depth:	3 ft

Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MGO			% Moisture:	
Analyst:	MGO	Date Prep:	03.06.17 12.15	Basis:	Wet Weight
Seq Number:	3011830				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**3740**	24.6	mg/kg	03.06.17 14.19		5

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	03.06.17 07.00	Basis:	Wet Weight
Seq Number:	3011763				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	**5800**	74.9	mg/kg	03.06.17 10.48		5
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	**10900**	74.9	mg/kg	03.06.17 10.48		5
C28-C35 Oil Range Hydrocarbons	PHCG2835	**1080**	74.9	mg/kg	03.06.17 10.48		5
Total TPH	PHC635	**17800**	74.9	mg/kg	03.06.17 10.48		5

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	119	%	70-135	03.06.17 10.48	
o-Terphenyl	84-15-1	95	%	70-135	03.06.17 10.48	

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COG Operating LLC, Artesia, NM

Miller B Federal #3

Sample Id:	**T1- 3'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-004	Date Collected:	02.22.17 10.00	Sample Depth:	3 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	03.06.17 07.20	Basis:	Wet Weight
Seq Number:	3011716				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**28.8**	7.52	mg/kg	03.06.17 14.33		5000
Toluene	108-88-3	**163**	10.0	mg/kg	03.06.17 14.33		5000
Ethylbenzene	100-41-4	**120**	10.0	mg/kg	03.06.17 14.33		5000
m_p-Xylenes	179601-23-1	**135**	10.0	mg/kg	03.06.17 14.33		5000
o-Xylene	95-47-6	**66.1**	15.0	mg/kg	03.06.17 14.33		5000
Total Xylenes	1330-20-7	**201**	10.0	mg/kg	03.06.17 14.33		5000
Total BTEX		**513**	7.52	mg/kg	03.06.17 14.33		5000

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	92	%	80-120	03.06.17 14.33	
4-Bromofluorobenzene	460-00-4	94	%	80-120	03.06.17 14.33	

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Sample Id:	**T1- 4'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-005	Date Collected:	02.22.17 10.00	Sample Depth:	4 ft

Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MGO			% Moisture:	
Analyst:	MGO	Date Prep:	03.06.17 12.15	Basis:	Wet Weight
Seq Number:	3011830				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**245**	4.95	mg/kg	03.06.17 14.26		1

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	03.06.17 07.00	Basis:	Wet Weight
Seq Number:	3011763				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	**29.4**	15.0	mg/kg	03.06.17 11.09		1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	**168**	15.0	mg/kg	03.06.17 11.09		1
C28-C35 Oil Range Hydrocarbons	PHCG2835	**16.8**	15.0	mg/kg	03.06.17 11.09		1
Total TPH	PHC635	**214**	15.0	mg/kg	03.06.17 11.09		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	94	%	70-135	03.06.17 11.09	
o-Terphenyl	84-15-1	98	%	70-135	03.06.17 11.09	

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COG Operating LLC, Artesia, NM

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Sample Id:	**T1- 4'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-005	Date Collected:	02.22.17 10.00	Sample Depth:	4 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	03.06.17 07.20	Basis:	Wet Weight
Seq Number:	3011716				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00149	0.00149	mg/kg	03.06.17 15.29	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	03.06.17 15.29	U	1
Ethylbenzene	100-41-4	**0.00366**	0.00198	mg/kg	03.06.17 15.29		1
m_p-Xylenes	179601-23-1	**0.00660**	0.00198	mg/kg	03.06.17 15.29		1
o-Xylene	95-47-6	**0.00759**	0.00297	mg/kg	03.06.17 15.29		1
Total Xylenes	1330-20-7	**0.0142**	0.00198	mg/kg	03.06.17 15.29		1
Total BTEX		**0.0179**	0.00149	mg/kg	03.06.17 15.29		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	93	%	80-120	03.06.17 15.29	
1,4-Difluorobenzene	540-36-3	102	%	80-120	03.06.17 15.29	

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Sample Id:	**T1- 5'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-006	Date Collected:	02.22.17 10.00	Sample Depth:	5 ft

Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MGO			% Moisture:	
Analyst:	MGO	Date Prep:	03.06.17 12.15	Basis:	Wet Weight
Seq Number:	3011830				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**19.5**	4.88	mg/kg	03.06.17 14.49		1

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	03.06.17 07.00	Basis:	Wet Weight
Seq Number:	3011763				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	03.06.17 11.30	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	<15.0	15.0	mg/kg	03.06.17 11.30	U	1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	03.06.17 11.30	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	03.06.17 11.30	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	88	%	70-135	03.06.17 11.30	
o-Terphenyl	84-15-1	91	%	70-135	03.06.17 11.30	

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Sample Id:	**T1- 5'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-006	Date Collected:	02.22.17 10.00	Sample Depth:	5 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	03.03.17 16.25	Basis:	Wet Weight
Seq Number:	3011637				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00150	0.00150	mg/kg	03.04.17 15.10	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	03.04.17 15.10	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	03.04.17 15.10	U	1
m_p-Xylenes	179601-23-1	<0.00200	0.00200	mg/kg	03.04.17 15.10	U	1
o-Xylene	95-47-6	<0.00299	0.00299	mg/kg	03.04.17 15.10	U	1
MTBE	1634-04-4	<0.00998	0.00998	mg/L	03.04.17 15.10	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	03.04.17 15.10	U	1
Total BTEX		<0.00150	0.00150	mg/kg	03.04.17 15.10	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	95	%	80-120	03.04.17 15.10	
4-Bromofluorobenzene	460-00-4	85	%	80-120	03.04.17 15.10	

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Sample Id:	**T1- 6'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-007	Date Collected:	02.22.17 10.00	Sample Depth:	6 ft
Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MGO			% Moisture:	
Analyst:	MGO	Date Prep:	03.06.17 12.15	Basis:	Wet Weight
Seq Number:	3011830				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**114**	5.00	mg/kg	03.06.17 14.56		1

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Sample Id:	**T1- 8'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-008	Date Collected:	02.22.17 10.00	Sample Depth:	8 ft
Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MGO			% Moisture:	
Analyst:	MGO	Date Prep:	03.06.17 12.15	Basis:	Wet Weight
Seq Number:	3011830				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**191**	4.95	mg/kg	03.06.17 15.03		1

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Sample Id:	**T1- 10'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-009	Date Collected:	02.22.17 10.00	Sample Depth:	10 ft
Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MGO			% Moisture:	
Analyst:	MGO	Date Prep:	03.06.17 12.15	Basis:	Wet Weight
Seq Number:	3011830				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**15.8**	4.88	mg/kg	03.06.17 15.11		1

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COG Operating LLC, Artesia, NM

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Sample Id:	**T1- 12'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-010	Date Collected:	02.22.17 10.00	Sample Depth:	12 ft
Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MGO			% Moisture:	
Analyst:	MGO	Date Prep:	03.06.17 12.15	Basis:	Wet Weight
Seq Number:	3011830				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**13.2**	4.89	mg/kg	03.06.17 15.18		1

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Sample Id:	**North-Surface**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-011	Date Collected:	02.22.17 11.00		

Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MGO			% Moisture:	
Analyst:	MGO	Date Prep:	03.06.17 12.15	Basis:	Wet Weight
Seq Number:	3011830				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**6.34**	4.91	mg/kg	03.06.17 15.25		1

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	03.06.17 07.00	Basis:	Wet Weight
Seq Number:	3011763				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	03.06.17 12.35	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	<15.0	15.0	mg/kg	03.06.17 12.35	U	1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	03.06.17 12.35	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	03.06.17 12.35	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	94	%	70-135	03.06.17 12.35	
o-Terphenyl	84-15-1	95	%	70-135	03.06.17 12.35	

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Sample Id:	**North-Surface**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-011	Date Collected:	02.22.17 11.00		
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	03.03.17 16.25	Basis:	Wet Weight
Seq Number:	3011637				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00151	0.00151	mg/kg	03.04.17 14.54	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	03.04.17 14.54	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	03.04.17 14.54	U	1
m_p-Xylenes	179601-23-1	<0.00202	0.00202	mg/kg	03.04.17 14.54	U	1
o-Xylene	95-47-6	<0.00302	0.00302	mg/kg	03.04.17 14.54	U	1
MTBE	1634-04-4	<0.0101	0.0101	mg/L	03.04.17 14.54	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	03.04.17 14.54	U	1
Total BTEX		<0.00151	0.00151	mg/kg	03.04.17 14.54	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	102	%	80-120	03.04.17 14.54	
1,4-Difluorobenzene	540-36-3	104	%	80-120	03.04.17 14.54	

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Miller B Federal #3

Sample Id:	**North-1'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-012	Date Collected:	02.22.17 11.00	Sample Depth:	1 ft

Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MGO			% Moisture:	
Analyst:	MGO	Date Prep:	03.06.17 12.15	Basis:	Wet Weight
Seq Number:	3011830				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.92	4.92	mg/kg	03.06.17 15.47	U	1

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	03.06.17 07.00	Basis:	Wet Weight
Seq Number:	3011763				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<14.9	14.9	mg/kg	03.06.17 12.56	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	<14.9	14.9	mg/kg	03.06.17 12.56	U	1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<14.9	14.9	mg/kg	03.06.17 12.56	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	03.06.17 12.56	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	99	%	70-135	03.06.17 12.56	
o-Terphenyl	84-15-1	99	%	70-135	03.06.17 12.56	

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Sample Id:	**North-1'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-012	Date Collected:	02.22.17 11.00	Sample Depth:	1 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	03.03.17 16.25	Basis:	Wet Weight
Seq Number:	3011637				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00728	0.00728	mg/kg	03.04.17 20.20	U	1
Toluene	108-88-3	<0.00971	0.00971	mg/kg	03.04.17 20.20	U	1
Ethylbenzene	100-41-4	<0.00971	0.00971	mg/kg	03.04.17 20.20	U	1
m_p-Xylenes	179601-23-1	<0.00971	0.00971	mg/kg	03.04.17 20.20	U	1
o-Xylene	95-47-6	<0.0146	0.0146	mg/kg	03.04.17 20.20	U	1
MTBE	1634-04-4	<0.0485	0.0485	mg/L	03.04.17 20.20	U	1
Total Xylenes	1330-20-7	<0.00971	0.00971	mg/kg	03.04.17 20.20	U	1
Total BTEX		<0.00728	0.00728	mg/kg	03.04.17 20.20	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	116	%	80-120	03.04.17 20.20	
1,4-Difluorobenzene	540-36-3	98	%	80-120	03.04.17 20.20	

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COG Operating LLC, Artesia, NM

Miller B Federal #3

Sample Id:	**North-2'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-013	Date Collected:	02.22.17 11.00	Sample Depth:	2 ft

Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MGO			% Moisture:	
Analyst:	MGO	Date Prep:	03.06.17 12.15	Basis:	Wet Weight
Seq Number:	3011830				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.89	4.89	mg/kg	03.06.17 15.55	U	1

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	03.06.17 07.00	Basis:	Wet Weight
Seq Number:	3011763				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	03.06.17 13.17	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	<15.0	15.0	mg/kg	03.06.17 13.17	U	1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	03.06.17 13.17	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	03.06.17 13.17	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	83	%	70-135	03.06.17 13.17	
o-Terphenyl	84-15-1	82	%	70-135	03.06.17 13.17	

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COG Operating LLC, Artesia, NM

Miller B Federal #3

Sample Id:	**North-2'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-013	Date Collected:	02.22.17 11.00	Sample Depth:	2 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	03.03.17 16.25	Basis:	Wet Weight
Seq Number:	3011637				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00148	0.00148	mg/kg	03.04.17 15.27	U	1
Toluene	108-88-3	<0.00197	0.00197	mg/kg	03.04.17 15.27	U	1
Ethylbenzene	100-41-4	<0.00197	0.00197	mg/kg	03.04.17 15.27	U	1
m_p-Xylenes	179601-23-1	<0.00197	0.00197	mg/kg	03.04.17 15.27	U	1
o-Xylene	95-47-6	<0.00295	0.00295	mg/kg	03.04.17 15.27	U	1
MTBE	1634-04-4	<0.00984	0.00984	mg/L	03.04.17 15.27	U	1
Total Xylenes	1330-20-7	<0.00197	0.00197	mg/kg	03.04.17 15.27	U	1
Total BTEX		<0.00148	0.00148	mg/kg	03.04.17 15.27	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	92	%	80-120	03.04.17 15.27	
1,4-Difluorobenzene	540-36-3	103	%	80-120	03.04.17 15.27	

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COG Operating LLC, Artesia, NM

Miller B Federal #3

Sample Id:	**South-Surface**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-014	Date Collected:	02.22.17 11.00		

Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MGO			% Moisture:	
Analyst:	MGO	Date Prep:	03.06.17 12.15	Basis:	Wet Weight
Seq Number:	3011830				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**7.04**	4.88	mg/kg	03.06.17 16.17		1

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	03.06.17 07.00	Basis:	Wet Weight
Seq Number:	3011763				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	03.06.17 13.37	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	<15.0	15.0	mg/kg	03.06.17 13.37	U	1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	03.06.17 13.37	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	03.06.17 13.37	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	97	%	70-135	03.06.17 13.37	
o-Terphenyl	84-15-1	98	%	70-135	03.06.17 13.37	

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COG Operating LLC, Artesia, NM

Miller B Federal #3

Sample Id:	**South-Surface**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-014	Date Collected:	02.22.17 11.00		
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	03.03.17 16.25	Basis:	Wet Weight
Seq Number:	3011637				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00150	0.00150	mg/kg	03.04.17 16.14	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	03.04.17 16.14	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	03.04.17 16.14	U	1
m_p-Xylenes	179601-23-1	<0.00200	0.00200	mg/kg	03.04.17 16.14	U	1
o-Xylene	95-47-6	<0.00301	0.00301	mg/kg	03.04.17 16.14	U	1
MTBE	1634-04-4	<0.0100	0.0100	mg/L	03.04.17 16.14	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	03.04.17 16.14	U	1
Total BTEX		<0.00150	0.00150	mg/kg	03.04.17 16.14	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	85	%	80-120	03.04.17 16.14	
1,4-Difluorobenzene	540-36-3	106	%	80-120	03.04.17 16.14	

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COG Operating LLC, Artesia, NM

Miller B Federal #3

Sample Id:	**South-1'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-015	Date Collected:	02.22.17 11.00	Sample Depth:	1 ft

Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MGO			% Moisture:	
Analyst:	MGO	Date Prep:	03.06.17 12.15	Basis:	Wet Weight
Seq Number:	3011830				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.96	4.96	mg/kg	03.06.17 16.24	U	1

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	03.06.17 07.00	Basis:	Wet Weight
Seq Number:	3011763				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	03.06.17 14.39	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	<15.0	15.0	mg/kg	03.06.17 14.39	U	1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	03.06.17 14.39	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	03.06.17 14.39	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	98	%	70-135	03.06.17 14.39	
o-Terphenyl	84-15-1	98	%	70-135	03.06.17 14.39	

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COG Operating LLC, Artesia, NM

Miller B Federal #3

Sample Id:	**South-1'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-015	Date Collected:	02.22.17 11.00	Sample Depth:	1 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	03.03.17 16.25	Basis:	Wet Weight
Seq Number:	3011637				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00150	0.00150	mg/kg	03.04.17 15.43	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	03.04.17 15.43	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	03.04.17 15.43	U	1
m_p-Xylenes	179601-23-1	<0.00200	0.00200	mg/kg	03.04.17 15.43	U	1
o-Xylene	95-47-6	<0.00299	0.00299	mg/kg	03.04.17 15.43	U	1
MTBE	1634-04-4	<0.00998	0.00998	mg/L	03.04.17 15.43	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	03.04.17 15.43	U	1
Total BTEX		<0.00150	0.00150	mg/kg	03.04.17 15.43	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	95	%	80-120	03.04.17 15.43	
1,4-Difluorobenzene	540-36-3	103	%	80-120	03.04.17 15.43	

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COG Operating LLC, Artesia, NM

Miller B Federal #3

Sample Id:	**South-2'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-016	Date Collected:	02.22.17 11.00	Sample Depth:	2 ft

Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MGO			% Moisture:	
Analyst:	MGO	Date Prep:	03.06.17 12.15	Basis:	Wet Weight
Seq Number:	3011830				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.90	4.90	mg/kg	03.06.17 16.31	U	1

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	03.06.17 07.00	Basis:	Wet Weight
Seq Number:	3011763				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	03.06.17 14.59	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	<15.0	15.0	mg/kg	03.06.17 14.59	U	1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	03.06.17 14.59	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	03.06.17 14.59	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	97	%	70-135	03.06.17 14.59	
o-Terphenyl	84-15-1	96	%	70-135	03.06.17 14.59	

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COG Operating LLC, Artesia, NM

Miller B Federal #3

Sample Id:	**South-2'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-016	Date Collected:	02.22.17 11.00	Sample Depth:	2 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	03.03.17 16.25	Basis:	Wet Weight
Seq Number:	3011637				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00149	0.00149	mg/kg	03.04.17 17.54	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	03.04.17 17.54	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	03.04.17 17.54	U	1
m_p-Xylenes	179601-23-1	<0.00198	0.00198	mg/kg	03.04.17 17.54	U	1
o-Xylene	95-47-6	<0.00298	0.00298	mg/kg	03.04.17 17.54	U	1
MTBE	1634-04-4	<0.00992	0.00992	mg/L	03.04.17 17.54	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	03.04.17 17.54	U	1
Total BTEX		<0.00149	0.00149	mg/kg	03.04.17 17.54	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	111	%	80-120	03.04.17 17.54	
4-Bromofluorobenzene	460-00-4	102	%	80-120	03.04.17 17.54	

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COG Operating LLC, Artesia, NM

Miller B Federal #3

Sample Id:	**East-Surface**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-017	Date Collected:	02.22.17 11.00		

Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MGO			% Moisture:	
Analyst:	MGO	Date Prep:	03.06.17 12.15	Basis:	Wet Weight
Seq Number:	3011830				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**654**	4.87	mg/kg	03.06.17 16.39		1

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	03.06.17 07.00	Basis:	Wet Weight
Seq Number:	3011763				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	03.06.17 15.21	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	**19.9**	15.0	mg/kg	03.06.17 15.21		1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	03.06.17 15.21	U	1
Total TPH	PHC635	**19.9**	15.0	mg/kg	03.06.17 15.21		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	96	%	70-135	03.06.17 15.21	
o-Terphenyl	84-15-1	98	%	70-135	03.06.17 15.21	

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COG Operating LLC, Artesia, NM

Miller B Federal #3

Sample Id:	**East-Surface**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-017	Date Collected:	02.22.17 11.00		
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	03.03.17 16.25	Basis:	Wet Weight
Seq Number:	3011637				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00148	0.00148	mg/kg	03.04.17 15.59	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	03.04.17 15.59	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	03.04.17 15.59	U	1
m_p-Xylenes	179601-23-1	<0.00198	0.00198	mg/kg	03.04.17 15.59	U	1
o-Xylene	95-47-6	<0.00296	0.00296	mg/kg	03.04.17 15.59	U	1
MTBE	1634-04-4	<0.00988	0.00988	mg/L	03.04.17 15.59	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	03.04.17 15.59	U	1
Total BTEX		<0.00148	0.00148	mg/kg	03.04.17 15.59	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	97	%	80-120	03.04.17 15.59	
1,4-Difluorobenzene	540-36-3	111	%	80-120	03.04.17 15.59	

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Miller B Federal #3

Sample Id:	**East-1'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-018	Date Collected:	02.22.17 11.00	Sample Depth:	1 ft

Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MGO			% Moisture:	
Analyst:	MGO	Date Prep:	03.06.17 12.15	Basis:	Wet Weight
Seq Number:	3011830				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**627**	4.95	mg/kg	03.06.17 16.46		1

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	03.06.17 07.00	Basis:	Wet Weight
Seq Number:	3011763				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	03.06.17 15.40	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	**18.0**	15.0	mg/kg	03.06.17 15.40		1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	03.06.17 15.40	U	1
Total TPH	PHC635	**18.0**	15.0	mg/kg	03.06.17 15.40		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	109	%	70-135	03.06.17 15.40	
o-Terphenyl	84-15-1	114	%	70-135	03.06.17 15.40	

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COG Operating LLC, Artesia, NM

Miller B Federal #3

Sample Id:	**East-1'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-018	Date Collected:	02.22.17 11.00	Sample Depth:	1 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	03.03.17 16.25	Basis:	Wet Weight
Seq Number:	3011637				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00152	0.00152	mg/kg	03.04.17 18.10	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	03.04.17 18.10	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	03.04.17 18.10	U	1
m_p-Xylenes	179601-23-1	<0.00202	0.00202	mg/kg	03.04.17 18.10	U	1
o-Xylene	95-47-6	<0.00303	0.00303	mg/kg	03.04.17 18.10	U	1
MTBE	1634-04-4	<0.0101	0.0101	mg/L	03.04.17 18.10	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	03.04.17 18.10	U	1
Total BTEX		<0.00152	0.00152	mg/kg	03.04.17 18.10	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	95	%	80-120	03.04.17 18.10	
1,4-Difluorobenzene	540-36-3	118	%	80-120	03.04.17 18.10	

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Miller B Federal #3

Sample Id:	**East-2'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-019	Date Collected:	02.22.17 11.00	Sample Depth:	2 ft

Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MGO			% Moisture:	
Analyst:	MGO	Date Prep:	03.06.17 12.15	Basis:	Wet Weight
Seq Number:	3011830				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**446**	4.98	mg/kg	03.06.17 16.53		1

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	03.06.17 07.00	Basis:	Wet Weight
Seq Number:	3011763				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	03.06.17 16.00	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	<15.0	15.0	mg/kg	03.06.17 16.00	U	1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	03.06.17 16.00	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	03.06.17 16.00	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	95	%	70-135	03.06.17 16.00	
o-Terphenyl	84-15-1	95	%	70-135	03.06.17 16.00	

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Sample Id:	**East-2'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-019	Date Collected:	02.22.17 11.00	Sample Depth:	2 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	03.03.17 16.25	Basis:	Wet Weight
Seq Number:	3011637				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00151	0.00151	mg/kg	03.04.17 18.27	U	1
Toluene	108-88-3	**0.00223**	0.00201	mg/kg	03.04.17 18.27		1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	03.04.17 18.27	U	1
m_p-Xylenes	179601-23-1	**0.00262**	0.00201	mg/kg	03.04.17 18.27		1
o-Xylene	95-47-6	<0.00301	0.00301	mg/kg	03.04.17 18.27	U	1
MTBE	1634-04-4	<0.0100	0.0100	mg/L	03.04.17 18.27	U	1
Total Xylenes	1330-20-7	**0.00262**	0.00201	mg/kg	03.04.17 18.27		1
Total BTEX		**0.00485**	0.00151	mg/kg	03.04.17 18.27		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	86	%	80-120	03.04.17 18.27	
1,4-Difluorobenzene	540-36-3	111	%	80-120	03.04.17 18.27	

Certificate of Analytical Results 547697

COG Operating LLC, Artesia, NM

Miller B Federal #3

Sample Id:	**West-Surface**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-020	Date Collected:	02.22.17 11.30		

Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MGO			% Moisture:	
Analyst:	MGO	Date Prep:	03.06.17 12.15	Basis:	Wet Weight
Seq Number:	3011830				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**6.94**	4.89	mg/kg	03.06.17 17.01		1

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	03.06.17 07.00	Basis:	Wet Weight
Seq Number:	3011763				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	03.06.17 16.21	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	<15.0	15.0	mg/kg	03.06.17 16.21	U	1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	03.06.17 16.21	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	03.06.17 16.21	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	100	%	70-135	03.06.17 16.21	
o-Terphenyl	84-15-1	104	%	70-135	03.06.17 16.21	

Certificate of Analytical Results 547697

COG Operating LLC, Artesia, NM

Miller B Federal #3

Sample Id:	**West-Surface**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-020	Date Collected:	02.22.17 11.30		
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	03.03.17 16.25	Basis:	Wet Weight
Seq Number:	3011637				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**0.00152**	0.00152	mg/kg	03.04.17 18.43		1
Toluene	108-88-3	**0.00330**	0.00203	mg/kg	03.04.17 18.43		1
Ethylbenzene	100-41-4	<0.00203	0.00203	mg/kg	03.04.17 18.43	U	1
m_p-Xylenes	179601-23-1	<0.00203	0.00203	mg/kg	03.04.17 18.43	U	1
o-Xylene	95-47-6	<0.00304	0.00304	mg/kg	03.04.17 18.43	U	1
MTBE	1634-04-4	<0.0101	0.0101	mg/L	03.04.17 18.43	U	1
Total Xylenes	1330-20-7	<0.00203	0.00203	mg/kg	03.04.17 18.43	U	1
Total BTEX		**0.00482**	0.00152	mg/kg	03.04.17 18.43		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	109	%	80-120	03.04.17 18.43	
4-Bromofluorobenzene	460-00-4	86	%	80-120	03.04.17 18.43	

Certificate of Analytical Results 547697

COG Operating LLC, Artesia, NM

Miller B Federal #3

Sample Id:	**West-1'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-021	Date Collected:	02.22.17 11.30	Sample Depth:	1 ft

Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MGO			% Moisture:	
Analyst:	MGO	Date Prep:	03.07.17 10.30	Basis:	Wet Weight
Seq Number:	3011838				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**59.8**	4.92	mg/kg	03.07.17 11.13		1

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	03.06.17 07.00	Basis:	Wet Weight
Seq Number:	3011763				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	03.06.17 16.41	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	<15.0	15.0	mg/kg	03.06.17 16.41	U	1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	03.06.17 16.41	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	03.06.17 16.41	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	102	%	70-135	03.06.17 16.41	
o-Terphenyl	84-15-1	104	%	70-135	03.06.17 16.41	

Certificate of Analytical Results 547697

COG Operating LLC, Artesia, NM

Miller B Federal #3

Sample Id:	**West-1'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-021	Date Collected:	02.22.17 11.30	Sample Depth:	1 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	03.03.17 16.25	Basis:	Wet Weight
Seq Number:	3011637				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00149	0.00149	mg/kg	03.04.17 18.59	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	03.04.17 18.59	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	03.04.17 18.59	U	1
m_p-Xylenes	179601-23-1	<0.00199	0.00199	mg/kg	03.04.17 18.59	U	1
o-Xylene	95-47-6	<0.00299	0.00299	mg/kg	03.04.17 18.59	U	1
MTBE	1634-04-4	<0.00996	0.00996	mg/L	03.04.17 18.59	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	03.04.17 18.59	U	1
Total BTEX		<0.00149	0.00149	mg/kg	03.04.17 18.59	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	118	%	80-120	03.04.17 18.59	
4-Bromofluorobenzene	460-00-4	99	%	80-120	03.04.17 18.59	

Certificate of Analytical Results 547697

COG Operating LLC, Artesia, NM

Miller B Federal #3

Sample Id:	**West-2'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-022	Date Collected:	02.22.17 11.30	Sample Depth:	2 ft

Analytical Method:	Inorganic Anions by EPA 300/300.1			Prep Method:	E300P
Tech:	MGO			% Moisture:	
Analyst:	MGO	Date Prep:	03.07.17 10.30	Basis:	Wet Weight
Seq Number:	3011838				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**1310**	24.8	mg/kg	03.07.17 11.35		5

Analytical Method:	TPH By SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	03.06.17 07.00	Basis:	Wet Weight
Seq Number:	3011763				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
C6-C10 Gasoline Range Hydrocarbons	PHC610	<15.0	15.0	mg/kg	03.06.17 17.01	U	1
C10-C28 Diesel Range Hydrocarbons	C10C28DRO	<15.0	15.0	mg/kg	03.06.17 17.01	U	1
C28-C35 Oil Range Hydrocarbons	PHCG2835	<15.0	15.0	mg/kg	03.06.17 17.01	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	03.06.17 17.01	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	101	%	70-135	03.06.17 17.01	
o-Terphenyl	84-15-1	105	%	70-135	03.06.17 17.01	

Certificate of Analytical Results 547697

COG Operating LLC, Artesia, NM

Miller B Federal #3

Sample Id:	**West-2'**	Matrix:	Soil	Date Received:	03.02.17 10.20
Lab Sample Id:	547697-022	Date Collected:	02.22.17 11.30	Sample Depth:	2 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	ALJ			% Moisture:	
Analyst:	ALJ	Date Prep:	03.03.17 16.25	Basis:	Wet Weight
Seq Number:	3011637				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**0.00168**	0.00149	mg/kg	03.04.17 19.15		1
Toluene	108-88-3	**0.00423**	0.00198	mg/kg	03.04.17 19.15		1
Ethylbenzene	100-41-4	**0.00258**	0.00198	mg/kg	03.04.17 19.15		1
m_p-Xylenes	179601-23-1	**0.00316**	0.00198	mg/kg	03.04.17 19.15		1
o-Xylene	95-47-6	<0.00297	0.00297	mg/kg	03.04.17 19.15	U	1
MTBE	1634-04-4	<0.00990	0.00990	mg/L	03.04.17 19.15	U	1
Total Xylenes	1330-20-7	**0.00316**	0.00198	mg/kg	03.04.17 19.15		1
Total BTEX		**0.0117**	0.00149	mg/kg	03.04.17 19.15		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	96	%	80-120	03.04.17 19.15	
1,4-Difluorobenzene	540-36-3	113	%	80-120	03.04.17 19.15	

Flagging Criteria

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

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

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

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

F RPD exceeded lab control limits.

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

U Analyte was not detected.

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

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

K Sample analyzed outside of recommended hold time.

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

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

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

QC Summary 547697

COG Operating LLC

Miller B Federal #3

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Seq Number: 3011830 Matrix: Solid Date Prep: 03.06.17
MB Sample Id: 721086-1-BLK LCS Sample Id: 721086-1-BKS LCSD Sample Id: 721086-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<4.97	249	240	96	244	98	90-110	2	20	mg/kg	03.06.17 13:28	

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Seq Number: 3011838 Matrix: Solid Date Prep: 03.07.17
MB Sample Id: 721114-1-BLK LCS Sample Id: 721114-1-BKS LCSD Sample Id: 721114-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<4.95	248	242	98	240	97	90-110	1	20	mg/kg	03.07.17 10:58	

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Seq Number: 3011830 Matrix: Soil Date Prep: 03.06.17
Parent Sample Id: 547697-001 MS Sample Id: 547697-001 S MSD Sample Id: 547697-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	505	244	719	88	711	84	90-110	1	20	mg/kg	03.06.17 13:50	X

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Seq Number: 3011830 Matrix: Soil Date Prep: 03.06.17
Parent Sample Id: 547697-011 MS Sample Id: 547697-011 S MSD Sample Id: 547697-011 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	6.34	246	244	97	247	98	90-110	1	20	mg/kg	03.06.17 15:33	

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Seq Number: 3011838 Matrix: Soil Date Prep: 03.07.17
Parent Sample Id: 547697-021 MS Sample Id: 547697-021 S MSD Sample Id: 547697-021 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	59.8	246	298	97	297	96	90-110	0	20	mg/kg	03.07.17 11:20	

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P
Seq Number: 3011838 Matrix: Soil Date Prep: 03.07.17
Parent Sample Id: 547782-017 MS Sample Id: 547782-017 S MSD Sample Id: 547782-017 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	568	250	781	85	781	85	90-110	0	20	mg/kg	03.07.17 13:03	X

QC Summary 547697

COG Operating LLC

Miller B Federal #3

Analytical Method: TPH By SW8015 Mod — Prep Method: TX1005P
Seq Number: 3011763 — Matrix: Solid — Date Prep: 03.06.17
MB Sample Id: 721097-1-BLK — LCS Sample Id: 721097-1-BKS — LCSD Sample Id: 721097-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
C6-C10 Gasoline Range Hydrocarbons	<15.0	1000	1020	102	966	97	70-135	5	35	mg/kg	03.06.17 09:08	
C10-C28 Diesel Range Hydrocarbons	<15.0	1000	1000	100	950	95	70-135	5	35	mg/kg	03.06.17 09:08	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	115		108		104		70-135	%	03.06.17 09:08
o-Terphenyl	117		107		100		70-135	%	03.06.17 09:08

Analytical Method: TPH By SW8015 Mod — Prep Method: TX1005P
Seq Number: 3011763 — Matrix: Soil — Date Prep: 03.06.17
Parent Sample Id: 547697-006 — MS Sample Id: 547697-006 S — MSD Sample Id: 547697-006 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
C6-C10 Gasoline Range Hydrocarbons	<15.0	999	1050	105	939	94	70-135	11	35	mg/kg	03.06.17 11:51	
C10-C28 Diesel Range Hydrocarbons	<15.0	999	1040	104	954	95	70-135	9	35	mg/kg	03.06.17 11:51	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	108		101		70-135	%	03.06.17 11:51
o-Terphenyl	106		96		70-135	%	03.06.17 11:51

Analytical Method: BTEX by EPA 8021B — Prep Method: SW5030B
Seq Number: 3011637 — Matrix: Solid — Date Prep: 03.03.17
MB Sample Id: 721035-1-BLK — LCS Sample Id: 721035-1-BKS — LCSD Sample Id: 721035-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00151	0.100	0.0868	87	0.0842	83	70-130	3	35	mg/kg	03.04.17 01:48	
Toluene	<0.00201	0.100	0.0957	96	0.0904	90	70-130	6	35	mg/kg	03.04.17 01:48	
Ethylbenzene	<0.00201	0.100	0.0959	96	0.0918	91	71-129	4	35	mg/kg	03.04.17 01:48	
m_p-Xylenes	<0.00201	0.201	0.187	93	0.178	88	70-135	5	35	mg/kg	03.04.17 01:48	
o-Xylene	<0.00301	0.100	0.0962	96	0.0930	92	71-133	3	35	mg/kg	03.04.17 01:48	
MTBE	<0.0100	0.502	0.467	93	0.467	93	71-133	0	35	mg/L	03.04.17 01:48	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	99		107		99		80-120	%	03.04.17 01:48
4-Bromofluorobenzene	94		92		94		80-120	%	03.04.17 01:48

QC Summary 547697

COG Operating LLC

Miller B Federal #3

Analytical Method: BTEX by EPA 8021B | Prep Method: SW5030B
Seq Number: 3011716 | Matrix: Solid | Date Prep: 03.06.17
MB Sample Id: 721088-1-BLK | LCS Sample Id: 721088-1-BKS | LCSD Sample Id: 721088-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00151	0.101	0.0862	85	0.0872	86	70-130	1	35	mg/kg	03.06.17 07:56	
Toluene	<0.00201	0.101	0.0947	94	0.0962	95	70-130	2	35	mg/kg	03.06.17 07:56	
Ethylbenzene	<0.00201	0.101	0.0975	97	0.0967	96	71-129	1	35	mg/kg	03.06.17 07:56	
m_p-Xylenes	<0.00201	0.201	0.190	95	0.188	93	70-135	1	35	mg/kg	03.06.17 07:56	
o-Xylene	<0.00302	0.101	0.0998	99	0.100	99	71-133	0	35	mg/kg	03.06.17 07:56	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	111		106		104		80-120	%	03.06.17 07:56
4-Bromofluorobenzene	93		100		95		80-120	%	03.06.17 07:56

Analytical Method: BTEX by EPA 8021B | Prep Method: SW5030B
Seq Number: 3011716 | Matrix: Soil | Date Prep: 03.06.17
Parent Sample Id: 547700-012 | MS Sample Id: 547700-012 S | MSD Sample Id: 547700-012 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00150	0.100	0.0843	84	0.0834	84	70-130	1	35	mg/kg	03.06.17 08:29	
Toluene	<0.00200	0.100	0.0880	88	0.0896	90	70-130	2	35	mg/kg	03.06.17 08:29	
Ethylbenzene	<0.00200	0.100	0.0905	91	0.0882	88	71-129	3	35	mg/kg	03.06.17 08:29	
m_p-Xylenes	<0.00200	0.200	0.175	88	0.172	86	70-135	2	35	mg/kg	03.06.17 08:29	
o-Xylene	<0.00301	0.100	0.0887	89	0.0906	91	71-133	2	35	mg/kg	03.06.17 08:29	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	114		108		80-120	%	03.06.17 08:29
4-Bromofluorobenzene	104		107		80-120	%	03.06.17 08:29

Analytical Method: BTEX by EPA 8021B | Prep Method: SW5030B
Seq Number: 3011637 | Matrix: Soil | Date Prep: 03.03.17
Parent Sample Id: 547697-012 | MS Sample Id: 547697-012 S

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	Limits	Units	Analysis Date	Flag
Benzene	<0.00148	0.0988	0.0814	82	70-130	mg/kg	03.04.17 02:53	
Toluene	<0.00198	0.0988	0.0927	94	70-130	mg/kg	03.04.17 02:53	
Ethylbenzene	<0.00198	0.0988	0.109	110	71-129	mg/kg	03.04.17 02:53	
m_p-Xylenes	<0.00198	0.198	0.202	102	70-135	mg/kg	03.04.17 02:53	
o-Xylene	<0.00296	0.0988	0.118	119	71-133	mg/kg	03.04.17 02:53	
MTBE	<0.00988	0.494	<0.00988	0	71-133	mg/L	03.04.17 02:53	X

Surrogate	MS %Rec	MS Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	108		80-120	%	03.04.17 02:53
4-Bromofluorobenzene	105		80-120	%	03.04.17 02:53

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Phone No:
Project Contact: Aaron Lieb
Samplers's Name- Aaron Lieb

Project Information

Project Name/Number: Miller B Federal #3
Project Location:
Invoice To: COG Operating LLC
Attn: Robert Mcneill
600 W. Illinois
Midland TX 79701
PO Number:

Analytical Information

Matrix Codes

W = Water
S = Soil/Sed/Solid
GW =Ground Water
DW = Drinking Water
P = Product
SW = Surface water
SL = Sludge
OW =Ocean/Sea Water
WI = Wipe
O = Oil
WW= Waste Water
A = Air

No.	Field ID / Point of Collection	Collection: Sample Depth	Collection: Date	Collection: Time	Matrix	# of bottles	Number of preserved bottles: HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	BTEX	TPH	Chloride	Field Comments
1	T1-Surface	SURF	2/22/17	10:00AM											X	X	X	
2	T1-1'	1	2/22/17	10:00AM											X	X	X	
3	T1-2'	2	2/22/17	10:00AM											X	X	X	
4	T1-3'	3	2/22/17	10:00AM											X	X	X	
5	T1-4'	4	2/22/17	10:00AM											X	X	X	
6	T1-5'	5	2/22/17	10:00AM											X	X	X	
7	T1-6'	6	2/22/17	10:00AM													X	
8	T1-8'	8	2/22/17	10:00AM													X	
9	T1-10'	10	2/22/17	10:00AM													X	
10	T1-12'	12	2/22/17	10:00AM													X	

Turnaround Time (Business days)

- ☐ Same Day TAT
- ☐ 5 Day TAT
- ☐ Next Day EMERGENCY
- ☐ 7 Day TAT
- ☐ 2 Day EMERGENCY
- ☐ Contract TAT
- ☐ 3 Day EMERGENCY

TAT Starts Day received by Lab, if received by 5:00 pm

Data Deliverable Information

- ☐ Level II Std QC
- ☐ Level III Std QC+ Forms
- ☐ Level 3 (CLP Forms)
- ☐ TRRP Checklist
- ☐ Level IV (Full Data Pkg /raw data)
- ☐ TRRP Level IV
- ☐ UST / RG -411

Notes:

FED-EX / UPS: Tracking #

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1						
2						
3		3/1/17 11:47	3 Sid Butler 11:47 3-1-17 3.5	4	3/2/17 10:00	
5				Custody Seal #	Preserved where applicable	On Ice / Cooler Temp. 3.5°C / Thermo. Corr. Factor

Notice: Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable only for the losses or expenses incurred by the Client if such loses are due to circumstances beyond the control of Xenco. A minimum charge of $75 will be applied to each project. Xenco's liability will be limited to the cost of samples. Any samples received by Xenco b will be enforced unless previously negotiated under a fully executed client contract.

Temp: 1.7 IR ID:R-8
CF:+ 0.1
Corrected Temp: 1.8

Received by OCD: 3/1/2022 2:03:39 PM
Released to Imaging: 3/7/2022 1:32:43 PM
Final 1.000
Page 53 of 57

Page 101 of 138

XENCO LABORATORIES

Setting the Standard since 1990

Stafford,Texas (281-240-4200)

Dallas Texas (214-902-0300)

San Antonio, Texas (210-509-3334)

Midland, Texas (432-704-5251)

www.xenco.com

Phoenix, Arizona (480-355-0900)

CHAIN OF CUSTODY

Page 2 Of 3

Xenco Quote #

Xenco Job # 547697

Client / Reporting Information

Company Name / Branch: COG Operating LLC

Company Address: 2407 PECOS Avenue Artesia NM 88210

Email: alieb@concho.com dneel2@concho.com rhaskell@concho.com

Phone No:

Project Contact: Aaron Lieb

Samplers's Name- Aaron Lieb

Project Information

Project Name/Number: Miller B Federal #3

Project Location:

Invoice To: COG Operating LLC
Attn: Robert Mcneill
600 W. Illinois
Midland TX 79701

PO Number:

Analytical Information

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P = Product
SW = Surface water
SL = Sludge
OW =Ocean/Sea Water
WI = Wipe
O = Oil
WW= Waste Water
A = Air

No.	Field ID / Point of Collection	Collection: Sample Depth	Collection: Date	Collection: Time	Matrix	# of bottles	Number of preserved bottles: HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	BTEX	TPH	Chloride	Field Comments
1	North- Surface	SURF	2/22/17	11:00Am											X	X	X	
2	North - 1'	1'	2/22/17	11:00Am											X	X	X	
3	North - 2'	2'	2/22/17	11:00 Am											X	X	X	
4	South - Surface	Surf	2/22/17	11:00 Am											X	X	X	
5	South - 1'	1'	2/22/17	11:00 Am											X	X	X	
6	South - 2'	2'	2/22/17	11:00 Am											X	X	X	
7	East - Surface	Surf	2/22/17	11:00Am											X	X	X	
8	East - 1'	1'	2/22/17	11:00 Am											X	X	X	
9	East - 2'	2'	2/22/17	11:00 Am											X	X	X	
10			~~2/22/17~~	~~11:00Am~~														

Turnaround Time (Business days)

- [ ] Same Day TAT
- [ ] 5 Day TAT
- [ ] Next Day EMERGENCY
- [ ] 7 Day TAT
- [ ] 2 Day EMERGENCY
- [ ] Contract TAT
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Data Deliverable Information

- [ ] Level II Std QC
- [ ] Level IV (Full Data Pkg /raw data)
- [ ] Level III Std QC+ Forms
- [ ] TRRP Level IV
- [ ] Level 3 (CLP Forms)
- [ ] UST / RG -411
- [ ] TRRP Checklist

Notes:

FED-EX / UPS: Tracking #

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1						
2						
3		3/1/17 11:47	Received By: 11:47a 3-1-17		3/2/17 1020	
4						
5						

Custody Seal # | Preserved where applicable | On Ice | Cooler Temp. 3.5C | Thermo. Corr. Factor

Notice: Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable only for the cost of samples and shall not assume ... losses or expenses incurred by the Client if such loses are due to circumstances beyond the control of Xenco. A minimum charge of $75 will be applied to each project. Xenco's liability will be limited to the cost of samples. Any samples received by Xenco but ... will be enforced unless previously negotiated under a fully executed client contract.

Temp: 1.7 R ID:R-8
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Received by OCD: 3/1/2022 2:03:39 PM

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CHAIN OF CUSTODY

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Xenco Quote # | Xenco Job # 547697

Client / Reporting Information

Company Name / Branch: COG Operating LLC
Company Address: 2407 PECOS Avenue Artesia NM 88210
Email: alieb@concho.com dneel2@concho.com rhaskell@concho.com
Phone No:
Project Contact: Aaron Lieb
Samplers's Name- Aaron Lieb

Project Information

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1	West - Surface	Surf	2/22/17	11:30 AM											X	X	X	
2	West - 1'	1'	2/22/17	11:30 AM											X	X	X	
3	West - 2'	2'	2/22/17	11:30 AM											X	X	X	
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Turnaround Time (Business days)

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Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		1	2		2
Relinquished by: 3	Date Time: 3/1/17 11:47	Received By: 3 Sid Butler 11:47a 3-1-17 3.5	Relinquished By: 4	Date Time: 3/2/17 1028	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	Preserved where applicable	On Ice ☐

Cooler Temp. 3.5°C Thermo. Corr. Factor
Temp: 1.7 IR ID:R-8
CF:+ 0.1
Corrected Temp: 1.8

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Page 55 of 57
Received by OCD: 3/1/2022 2:03:39 PM
Released to Imaging: 3/7/2022 1:32:43 PM


Part # 156148-434 RRD 04/16
TRK# 0201 6606 3913 7980
THU - 02 MAR 10:30A
PRIORITY OVERNIGHT
41 MAFA
79701
TX-US LBB
FedEx Express
J15131508130luv
DEPT:
REF:
INV:
PO:
(432) 563-1800

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: COG Operating LLC

Date/ Time Received: 03/02/2017 10:20:00 AM

Work Order #: 547697

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

Temperature Measuring device used : R8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	1.8
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seal present on shipping container/ cooler?	**Yes**
#5 *Custody Seals intact on shipping container/ cooler?	**Yes**
#6 Custody Seals intact on sample bottles?	**Yes**
#7 *Custody Seals Signed and dated?	**Yes**
#8 *Chain of Custody present?	**Yes**
#9 Sample instructions complete on Chain of Custody?	**Yes**
#10 Any missing/extra samples?	**No**
#11 Chain of Custody signed when relinquished/ received?	**Yes**
#12 Chain of Custody agrees with sample label(s)?	**Yes**
#13 Container label(s) legible and intact?	**Yes**
#14 Sample matrix/ properties agree with Chain of Custody?	**Yes**
#15 Samples in proper container/ bottle?	**Yes**
#16 Samples properly preserved?	**Yes**
#17 Sample container(s) intact?	**Yes**
#18 Sufficient sample amount for indicated test(s)?	**Yes**
#19 All samples received within hold time?	**Yes**
#20 Subcontract of sample(s)?	**N/A**
#21 VOC samples have zero headspace?	**N/A**
#22 <2 for all samples preserved with HNO3,HCL, H2SO4? Except for samples for the analysis of HEM or HEM-SGT which are verified by the analysts.	**N/A**
#23 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	**N/A**

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

Analyst: PH Device/Lot#:

Checklist completed by: Jessica Kramer Date: 03/02/2017
Jessica Kramer

Checklist reviewed by: Holly Taylor Date: 03/02/2017
Holly Taylor

From: Price, Henryetta
To: Yu, Olivia, EMNRD
Cc: Gonzales, Clair; Hernandez, Christina, EMNRD; Tucker, Shelly; Rebecca Haskell; Dakota Neel; Sheldon Hitchcock; DeAnn Grant; Tavarez, Ike
Subject: Re: [EXTERNAL] RE: COG - Miller B#3 Work Plan Approval Request (1RP-4597)
Date: Thursday, July 19, 2018 4:13:04 PM

Good Afternoon,

After visiting the above site today, it is found that the spill path across the pit area will need to be characterized for impact. My suggestions is to do this carefully as we do not want to get into any pit material. There is vegetation present on the pit area which is good news, but vegetation might have been impacted in the immediate area due to possible runoff.

In the work plan, figure 3 shows the path of the spill, whereas aerial photos show a part of the spill that went NW and pooled in a low lying area. I am assuming that area was sampled as well since there is a pad of caliche where the fluids pooled. There is a patch of caliche at sample point T-1 and another mound of caliche where the possible pit area is identified and also coincides with the second path that was not mentioned in the work plan.

Please revise the work plan to include the path north of the main flow path, characterization of the impact over the pit, and background samples will be pulled at least 100 ft. from the impact area.

Please do not hesitate to contact me with any questions or issues.

Henryetta Price
Environmental Protection Specialist
Bureau Of Land Management
Hprice@blm.gov
Phone 575-234-5951
Cell 575-706-2780
Fax 575-234-5927

The **BLM acceptance/approval does not** relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that may pose a threat to groundwater, surface water, human health or the environment or if the location fails to reclaim properly. In such an event that the location does not revegetate, or future issues with contaminants are encountered, the operator will be asked to address the issues until the contaminant issues are fully mitigated and the location is successfully reclaimed. In addition, BLM approval does not relieve the operator of responsibility for compliance with any other federal, state or local laws/regulations.

Confidentiality Warning: This message along with any attachments are intended only for use of the individual or entity to which it is addressed and may contain information that is privileged or confidential and exempt from disclosure under applicable law. If the reader of this message is not the intended recipient or the employee or agent responsible for delivering this message to the intended recipient, you are hereby notified that any dissemination, distribution, or copying of this communication is strictly prohibited. If you have received this communication in error, please notify the sender immediately.

On Wed, Jul 11, 2018 at 7:05 PM, Price, Henryetta <hprice@blm.gov> wrote:

> Good Evening,
>
> I do not think that delineating the pit area will do any good. I do not think there will be any

significant impact than what is identified on either side of the pit. BLM reclamation objectives may be impacted if we begin to disturb the pit. BLM however, will request that at least the top 2-3 ft. of impacted material is removed (root zone) and the bottom of the pit is capped with an impermeable liner or material to prevent any pit contaminants from significantly impacting reclamation. The excavation will extend 2 ft. past the impact area on the pit.

I would also like to conduct a visual inspection of the excavated area prior to backfill.

Henryetta Price
Environmental Protection Specialist
Bureau Of Land Management
Hprice@blm.gov
Phone 575-234-5951
Cell 575-706-2780
Fax 575-234-5927

The **BLM acceptance/approval does not** relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that may pose a threat to groundwater, surface water, human health or the environment or if the location fails to reclaim properly. In such an event that the location does not revegetate, or future issues with contaminants are encountered, the operator will be asked to address the issues until the contaminant issues are fully mitigated and the location is successfully reclaimed. In addition, BLM approval does not relieve the operator of responsibility for compliance with any other federal, state or local laws/regulations.

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On Wed, Jul 11, 2018 at 2:12 PM, Yu, Olivia, EMNRD <Olivia.Yu@state.nm.us> wrote:

> Ms. Gonzales:
>
> The portion of the release area for 1RP-4597 that flowed over a reserve pit will need to be characterized/delineated as well.
>
> Thanks,
>
> Olivia
>
> ---
>
> **From:** Gonzales, Clair <Clair.Gonzales@tetratech.com>
> **Sent:** Friday, June 15, 2018 9:54 AM
> **To:** Yu, Olivia, EMNRD <Olivia.Yu@state.nm.us>; Hernandez, Christina, EMNRD <Christina.Hernandez@state.nm.us>

Cc: Tucker, Shelly <stucker@blm.gov>; hprice@blm.gov; Rebecca Haskell <RHaskell@concho.com>; Dakota Neel <DNeel2@concho.com>; Sheldon Hitchcock <SLHitchcock@concho.com>; DeAnn Grant <agrant@concho.com>; Tavarez, Ike <Ike.Tavarez@tetratech.com>
Subject: COG - Miller B#3 Work Plan Approval Request (1RP-4597)

Good Morning,

Attached is the work plan for the above referenced site located in Lea County, New Mexico. Once approved COG will implement the work plan.

Thank you,

Clair Gonzales

Clair Gonzales | **Project Manager**
Phone: 432.687.8123| Mobile 432.260.8634 | Fax:432.682.3946
clair.gonzales@tetratech.com

Tetra Tech | Complex World, CLEAR SOLUTIONS™
4000 N. Big Spring | Midland, TX 79705 | www.tetratech.com

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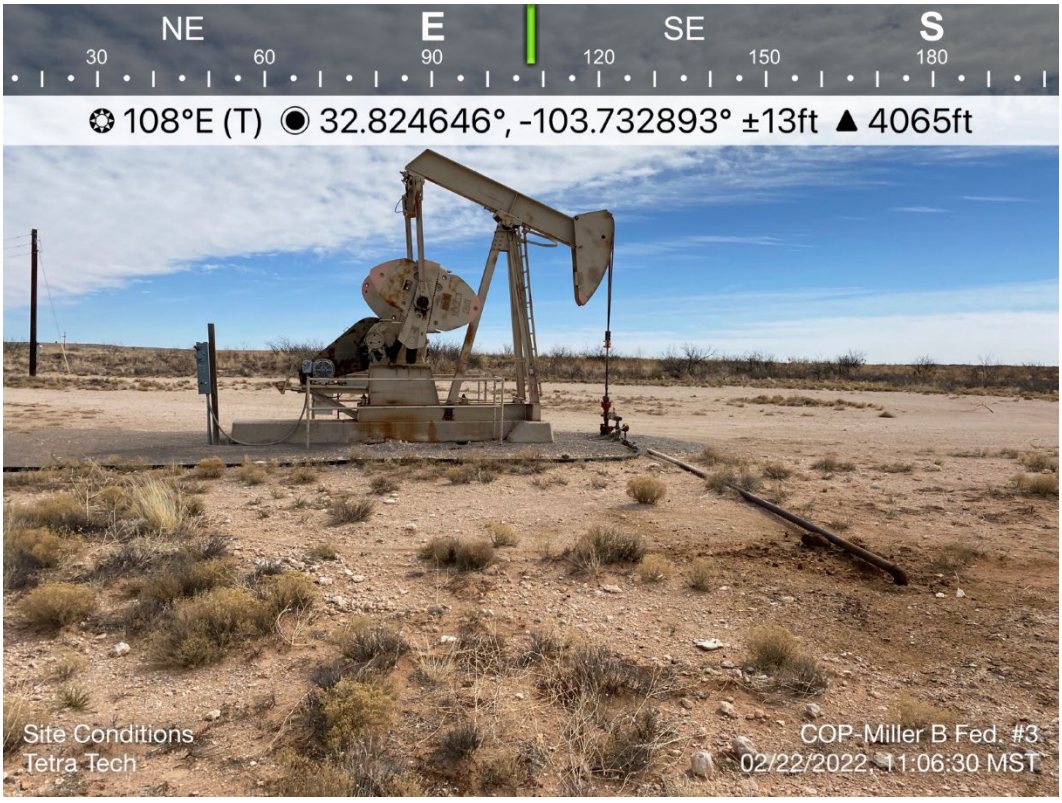
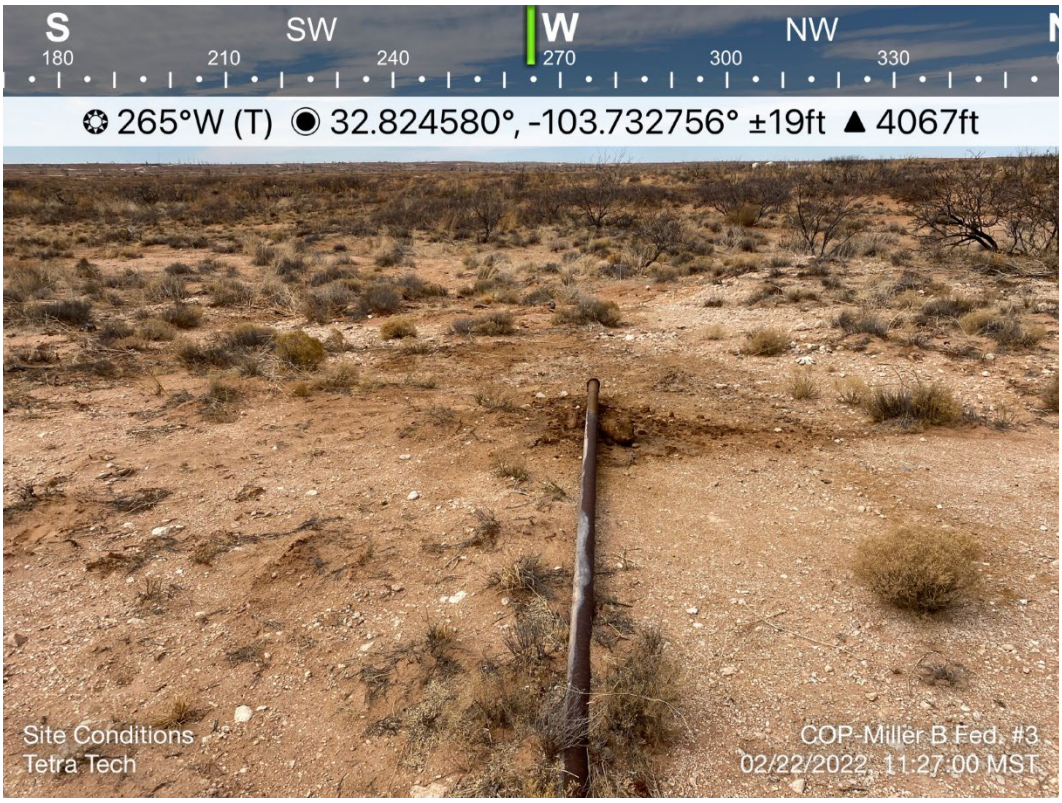
APPENDIX D
Photographic Documentation

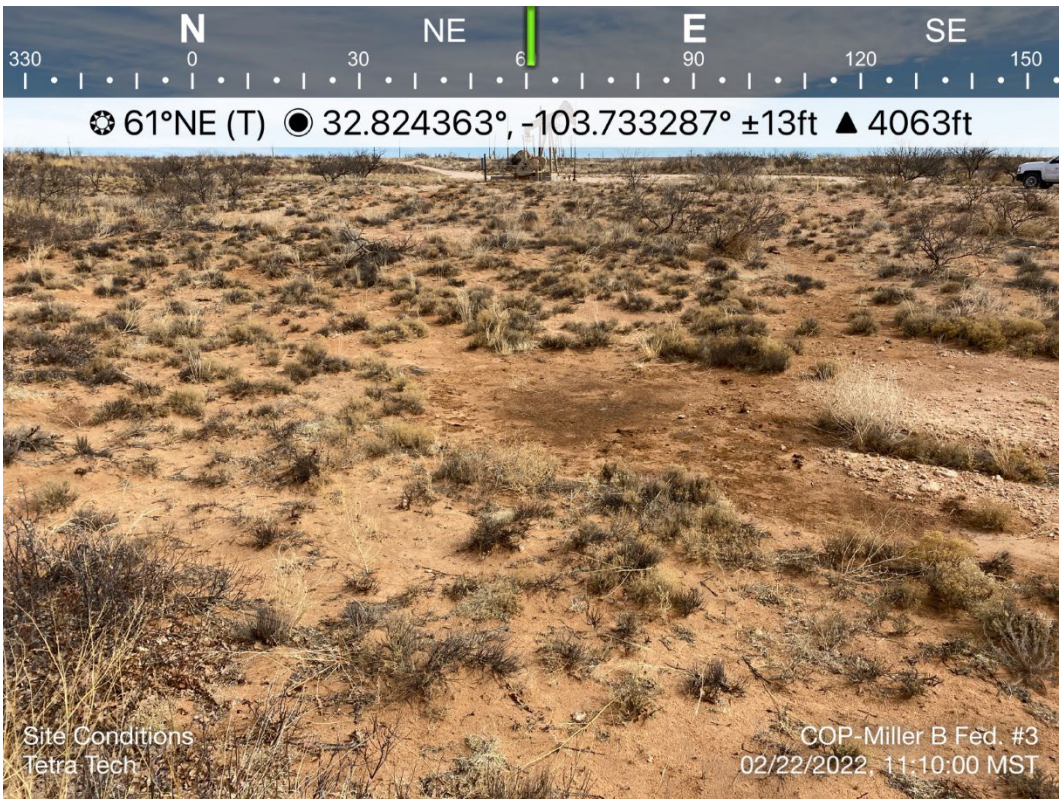
TETRA TECH, INC. PROJECT NO. 212C-MD-02672	DESCRIPTION	View west of Miller B Federal #003 signage.	1
	SITE NAME	Miller B Federal #003 Flowline Release	2/22/2022



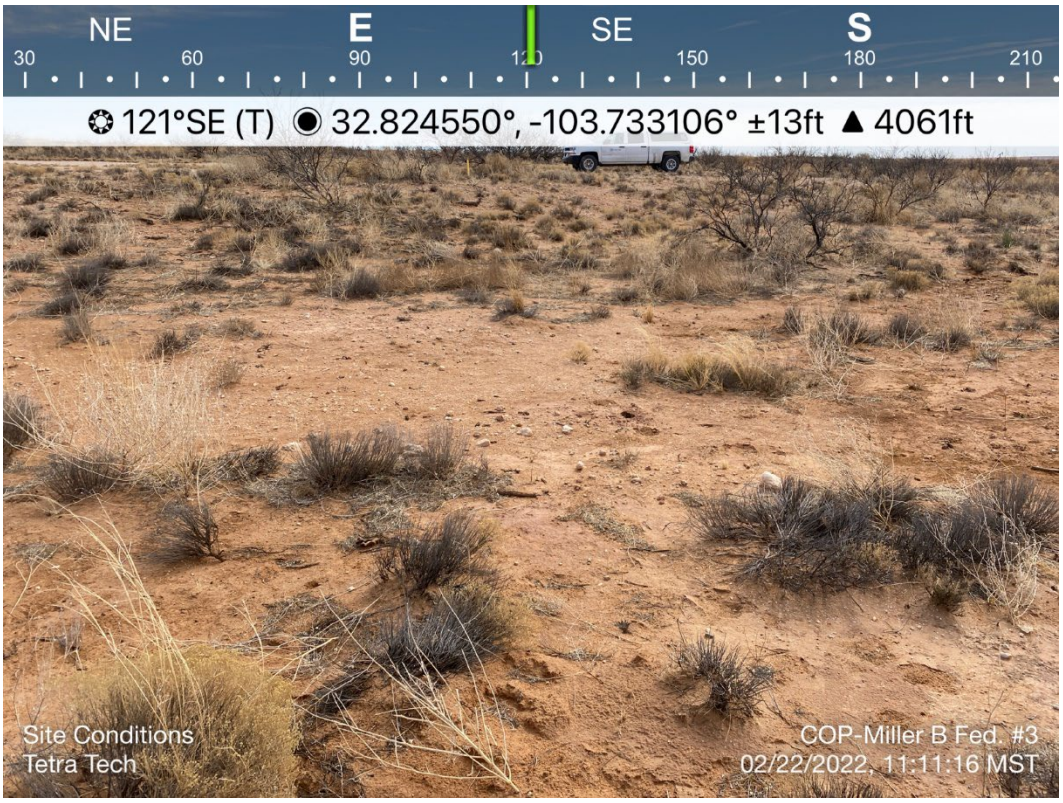
TETRA TECH, INC. PROJECT NO. 212C-MD-02672	DESCRIPTION	View east-southeast of Miller B Federal #003 well and flowline release point.	2
	SITE NAME	Miller B Federal #003 Flowline Release	2/22/2022



TETRA TECH, INC. PROJECT NO. 212C-MD-02672	DESCRIPTION	View west from the flowline release point across the reclaimed reserve pit.	3
	SITE NAME	Miller B Federal #003 Flowline Release	2/22/2022

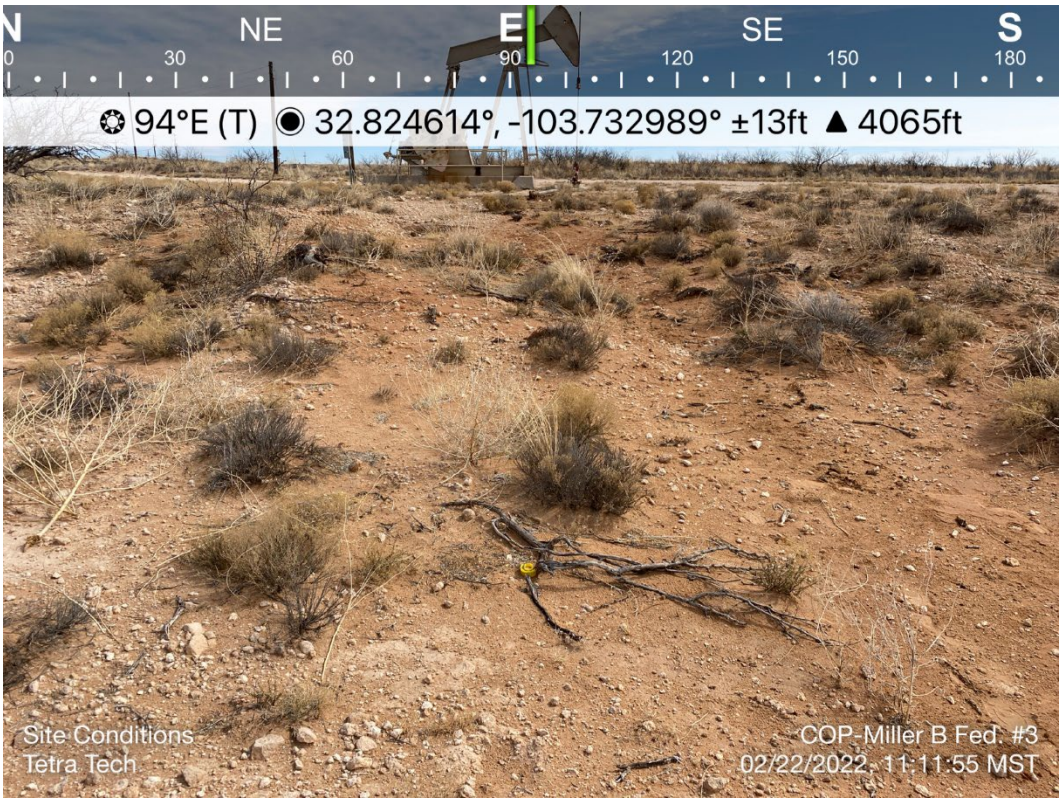


TETRA TECH, INC. PROJECT NO. 212C-MD-02672	DESCRIPTION	View northeast of release area across reclaimed reserve pit.	4
	SITE NAME	Miller B Federal #003 Flowline Release	2/22/2022



TETRA TECH, INC. PROJECT NO. 212C-MD-02672	DESCRIPTION	View east-southeast of the release area in reclaimed reserve pit.	5
	SITE NAME	Miller B Federal #003 Flowline Release	2/22/2022

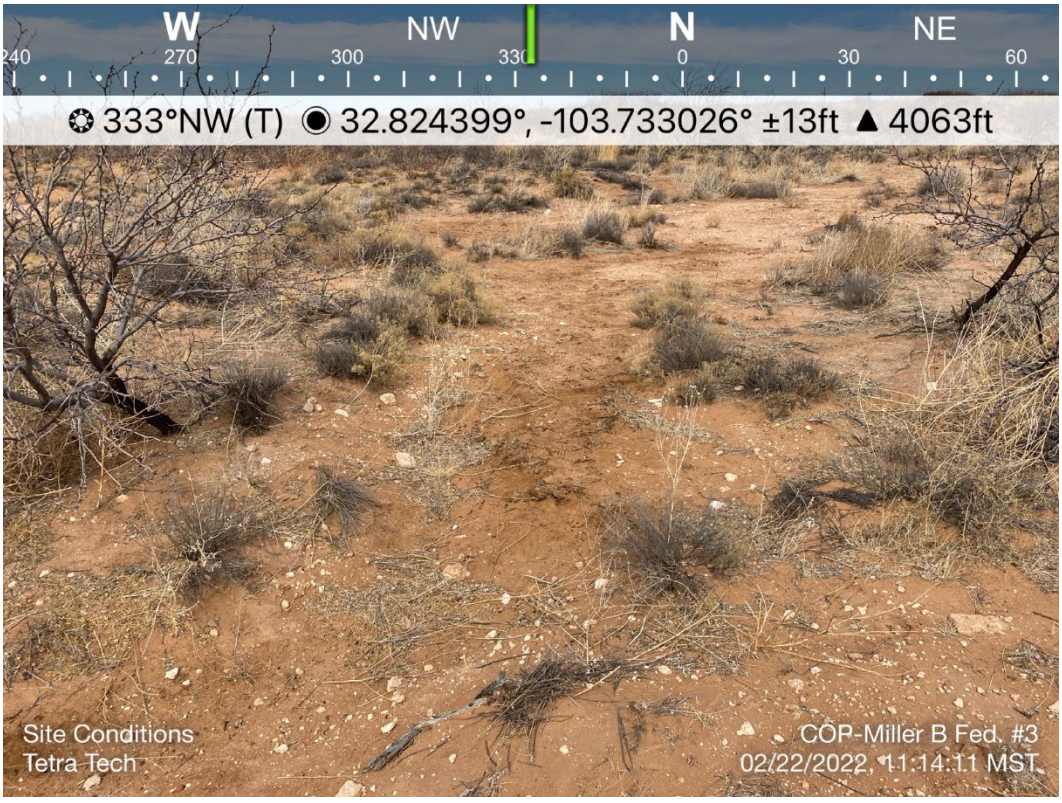
TETRA TECH, INC. PROJECT NO. 212C-MD-02672	DESCRIPTION	View southwest of the release area in the reclaimed reserve pit.	6
	SITE NAME	Miller B Federal #003 Flowline Release	2/22/2022



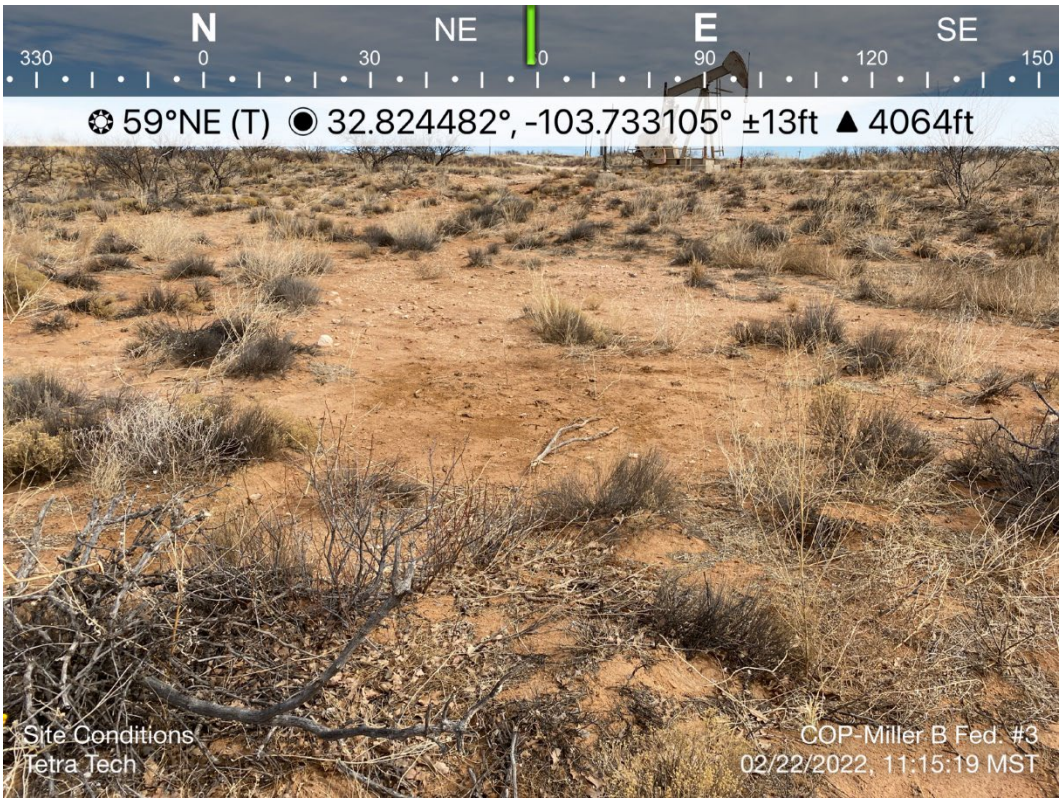
TETRA TECH, INC. PROJECT NO. 212C-MD-02672	DESCRIPTION	View east of the release area in the reclaimed reserve pit.	7
	SITE NAME	Miller B Federal #003 Flowline Release	2/22/2022

TETRA TECH, INC. PROJECT NO. 212C-MD-02672	DESCRIPTION	View southwest of the northern leg of the release area in the reclaimed reserve pit.	8
	SITE NAME	Miller B Federal #003 Flowline Release	2/22/2022

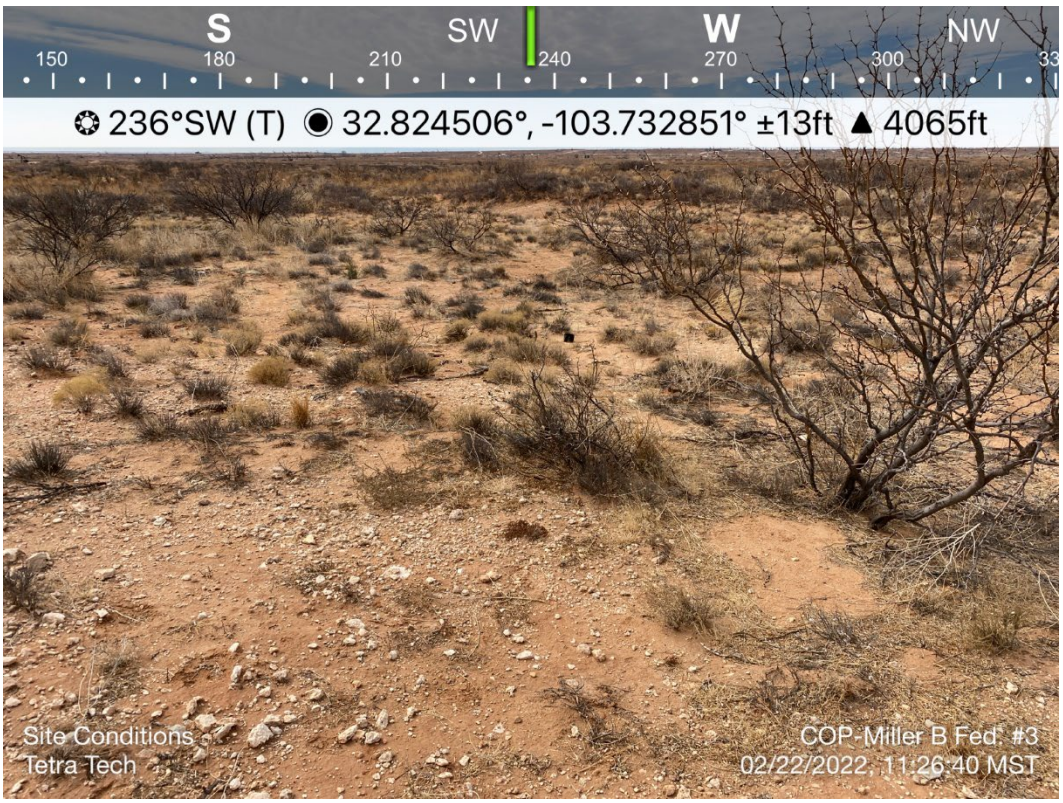
TETRA TECH, INC. PROJECT NO. 212C-MD-02672	DESCRIPTION	View southwest of the release area in the reclaimed reserve pit.	9
	SITE NAME	Miller B Federal #003 Flowline Release	2/22/2022



TETRA TECH, INC. PROJECT NO. 212C-MD-02672	DESCRIPTION	View north-northwest of the release path in the reclaimed reserve pit.	10
	SITE NAME	Miller B Federal #003 Flowline Release	2/22/2022



TETRA TECH, INC. PROJECT NO. 212C-MD-02672	DESCRIPTION	View northeast of the release area in the reclaimed reserve pit.	11
	SITE NAME	Miller B Federal #003 Flowline Release	2/22/2022



TETRA TECH, INC. PROJECT NO. 212C-MD-02672	DESCRIPTION	View southwest across the reclaimed reserve pit.	12
	SITE NAME	Miller B Federal #003 Flowline Release	2/22/2022

APPENDIX E
NMSLO Seed Mix Details

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Lea County, New Mexico

Miller B Federal #003

February 25, 2022

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Lea County, New Mexico
Survey Area Data: Version 18, Sep 10, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 7, 2020—May 12, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BH	Berino-Cacique association, hummocky	25.9	27.5%
PY	Pyote soils and Dune land	68.2	72.4%
SA	Sharvana loamy fine sand, dry	0.1	0.1%
Totals for Area of Interest		**94.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the

development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Lea County, New Mexico

BH—Berino-Cacique association, hummocky

Map Unit Setting

National map unit symbol: dmpg
Elevation: 3,000 to 4,400 feet
Mean annual precipitation: 10 to 13 inches
Mean annual air temperature: 60 to 62 degrees F
Frost-free period: 190 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition

Berino and similar soils: 50 percent
Cacique and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Berino

Setting

Landform: Plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy eolian deposits derived from sedimentary rock over calcareous sandy alluvium derived from sedimentary rock

Typical profile

A - 0 to 10 inches: fine sand
Btk - 10 to 60 inches: sandy clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: B
Ecological site: R042XC003NM - Loamy Sand
Hydric soil rating: No

Description of Cacique

Setting

Landform: Plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 7 inches: fine sand
Bt - 7 to 28 inches: sandy clay loam
Bkm - 28 to 38 inches: cemented material

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 20 to 40 inches to petrocalcic
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: C
Ecological site: R042XC004NM - Sandy
Hydric soil rating: No

Minor Components

Kermit

Percent of map unit: 4 percent
Ecological site: R042XC005NM - Deep Sand
Hydric soil rating: No

Maljamar

Percent of map unit: 3 percent
Ecological site: R077CY028TX - Limy Upland 16-21" PZ
Hydric soil rating: No

Palomas

Percent of map unit: 2 percent
Ecological site: R042XC003NM - Loamy Sand
Hydric soil rating: No

Dune land

Percent of map unit: 1 percent
Hydric soil rating: No

PY—Pyote soils and Dune land

Map Unit Setting

National map unit symbol: dmqr
Elevation: 3,000 to 4,400 feet
Mean annual precipitation: 10 to 15 inches
Mean annual air temperature: 60 to 64 degrees F
Frost-free period: 190 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Pyote and similar soils: 46 percent
Dune land: 44 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pyote

Setting

Landform: Depressions
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 30 inches: fine sand
Bt - 30 to 60 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: A
Ecological site: R042XC003NM - Loamy Sand
Hydric soil rating: No

Description of Dune Land

Setting

Landform: Dunes
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Sandy eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 6 inches: fine sand
C - 6 to 60 inches: fine sand

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Kermit

Percent of map unit: 5 percent
Ecological site: R042XC022NM - Sandhills
Hydric soil rating: No

Maljamar, fine sand

Percent of map unit: 3 percent
Ecological site: R042XC003NM - Loamy Sand
Hydric soil rating: No

Wink

Percent of map unit: 2 percent
Ecological site: R042XC003NM - Loamy Sand
Hydric soil rating: No

SA—Sharvana loamy fine sand, dry

Map Unit Setting

National map unit symbol: 2tw38
Elevation: 2,500 to 4,600 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Sharvana, dry, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sharvana, Dry

Setting

Landform: Playa rims, plains
Down-slope shape: Convex, linear
Across-slope shape: Linear
Parent material: Calcareous loamy eolian deposits

Typical profile

A - 0 to 7 inches: loamy fine sand
Bt - 7 to 18 inches: fine sandy loam
Bkkm - 18 to 28 inches: cemented material
BCkk - 28 to 80 inches: gravelly sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 8 to 22 inches to petrocalcic
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 90 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: R077DY049TX - Very Shallow 12-17" PZ
Forage suitability group: Unnamed (G077DH000TX)
Other vegetative classification: Unnamed (G077DH000TX)
Hydric soil rating: No

Minor Components

Eunice

Percent of map unit: 8 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R077DY049TX - Very Shallow 12-17" PZ
Hydric soil rating: No

Douro

Percent of map unit: 4 percent
Landform: Plains

Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R077DY046TX - Sandy 12-17" PZ
Hydric soil rating: No

Amarose

Percent of map unit: 3 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R077DY046TX - Sandy 12-17" PZ
Hydric soil rating: No

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1 REVEGETATION PLANS

The following Revegetation Plans were developed for revegetation of sites in southeastern New Mexico. To determine which revegetation plan is appropriate follow procedures in the section titled Determining the Revegetation Plan.

Revegetation Plans contain seed mixtures, as well as seed bed preparation and planting requirements. The detailed instructions for seedbed preparation and planting can be found in the section Revegetation Techniques.

Table 3 - Revegetation Plans, Codes, and Soil Types for Southeastern New Mexico

REVEGTATION PLANS	CODE	SOIL TEXTURES
Clay	C	Clay, Silty Clay, Stony Silty Clay, Clay Loam, Silty Clay Loam (including saline and sodic Clay soils)
Loam	L	Silty Loam, Cobbly Silt Loam, Stony Silt Loam, Silt, Loam, Sandy, Clay Loam
Sandy Loam	SL	Very Fine Sandy Loam, Fine Sandy Loam, Cobbly Fine Sandy Loam, Sandy Loam, Cobbly Sandy Loam, Gravelly Fine Sandy Loam, Very Gravelly Fine Sand Loam, Stony Fine Sandy Loam, Stony Sandy Loam
Shallow	SH	Rocky Loam, Cobbly Loam
Course	CS	Gravelly Loam, very Gravelly Loam, Gravelly Sandy Loam, Very Gravelly Sandy Loam, Stony Loam, Stony Sandy Loam
Sandy	S	Loamy Fine Sand, Loam Sand, Very Gravelly Loamy Fine Sand
Blow Sand	BS	Fine Sand, Sand, Coarse Sand
Mountain Meadow	MM	Clay, Loam
Mountain Upland	MU	Clay Loam, Loam

NMSLO Seed Mix Sandy (S)

SANDY (S) SITES SEED MIXTURE:

COMMON NAME	VARIETY	APPLICATION RATE (PLS/Acre)	DRILL BOX
Grasses:			
Sand bluestem	**Elida, VNS, So.**	**2.0**	**F**
Little bluestem	**Cimarron, Pastura**	**3.0**	**F**
Black grama	**VNS, Southern**	**1.0**	**D**
Sand dropseed	**VNS, Southern**	**4.0**	**S**
Plains bristlegrass	**VNS, Southern**	**2.0**	**D**
Forbs:			
Firewheel (Gaillardia)	**VNS, Southern**	**1.0**	**D**
Annual Sunflower	**VNS, Southern**	**1.0**	**D**
Shrubs:			
Fourwing Saltbush	**VNS, Southern**	**1.0**	**F**
	Total PLS/acre	**16.0**	

S = Small seed drill box, D = Standard seed drill box, F = Fluffy seed drill box
VNS = Variety Not Stated, PLS = Pure Live Seed

- Seed mixes should be provided in bags separating seed types into the three categories: small (S), standard (D) and fluffy (F).
- VNS, Southern – Seed should be from a southern latitude collection of this species.
- Double seed application rate for broadcast or hydroseeding.
- If one species is not available, contact the SLO for an approved substitute; alternatively the SLO may require other species proportionately increased.
- Additional information on these seed species can be found on the USDA Plants Database website at http://plants.usda.gov.

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

Operator: COG OPERATING LLC 600 W Illinois Ave Midland, TX 79701	OGRID: 229137
	Action Number: 85321
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
bbillings	Make sure off-pad to the West, not counting rip in Pit area, accommodates Section 13 mandates, as must the pad at P&A. 500 sq/ft for confirming samples is maximal approved. 120 days is allocated foe completion of remedial efforts.	3/7/2022