



EOG Resources, Inc.
5509 Champions Drive
Midland, Texas 79706

June 28, 2020

EMNRD/OCD
Attn: Jim Griswold
South St Francis Dr.
Santa Fe, NM 87505

Re: Form C-147 with accompanying documentation
Ross Draw East Reuse Water Facility and Containment Pit

Dear Mr. Griswold,

Thank you for allowing EOG to continue to promote water reuse in the State of New Mexico for our operations. Please find attached C-147 form with accompanying documentation for the Ross Draw East Reuse Water Facility and Containment Pit.

Please do not hesitate to contact me with any questions, comments, or concerns.

Sincerely,

A handwritten signature in blue ink that reads "Reese Martin". The signature is fluid and cursive, with a long horizontal line extending from the end.

Reese Martin
Water Resources Manager
EOG Resources, Inc.

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

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

Form C-147
Revised April 3, 2017

Recycling Facility and/or Recycling Containment

Type of Facility: Recycling Facility Recycling Containment*
Type of action: Permit Registration
 Modification Extension
 Closure Other (explain) _____

* At the time C-147 is submitted to the division for a Recycling Containment, a copy shall be provided to the surface owner.

Be advised that approval of this request does not relieve the operator of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations or ordinances.

1.
Operator: EOG Resources, Inc. (For multiple operators attach page with information) OGRID #: OGRID #7377
Address: 5509 Champions Dr. Midland, TX 79706
Facility or well name (include API# if associated with a well): Ross Draw East Reuse Water Recycling Facility and Containment Pit
OCD Permit Number: _____ (For new facilities the permit number will be assigned by the district office)
U/L or Qtr/Qtr NW / NW Section 16 Township 26S Range 31E County: Eddy
Surface Owner: Federal State Private Tribal Trust or Indian Allotment

2.
 Recycling Facility:
Location of recycling facility (if applicable): Latitude 32.046859° 32° 2'48.69"N Longitude -103.788007° 103°47'16.83"W NAD83
Proposed Use: Drilling* Completion* Production* Plugging*
**The re-use of produced water may NOT be used until fresh water zones are cased and cemented*
 Other, *requires permit for other uses. Describe use, process, testing, volume of produced water and ensure there will be no adverse impact on groundwater or surface water.*
 Fluid Storage
 Above ground tanks Recycling containment Activity permitted under 19.15.17 NMAC explain type _____
 Activity permitted under 19.15.36 NMAC explain type: _____ Other explain _____
 For multiple or additional recycling containments, attach design and location information of each containment
 Closure Report (required within 60 days of closure completion): Recycling Facility Closure Completion Date: _____

3.
 Recycling Containment:
 Annual Extension after initial 5 years (attach summary of monthly leak detection inspections for previous year)
Center of Recycling Containment (if applicable): Latitude 32.046856° 32° 2'48.68"N Longitude -103.789706° 103°47'22.94"W NAD83
 For multiple or additional recycling containments, attach design and location information of each containment
 Lined Liner type: Thickness 60 mil LLDPE HDPE PVC Other _____
 String-Reinforced
Liner Seams: Welded Factory Other _____ Volume: 1MM bbl Dimensions: L 600 x W 600 x D 16 (inside)
 Recycling Containment Closure Completion Date: _____

4.

Bonding:

- Covered under bonding pursuant to 19.15.8 NMAC per 19.15.34.15(A)(2) NMAC (These containments are limited to only the wells owned or operated by the owners of the containment.)
- Bonding in accordance with 19.15.34.15(A)(1). Amount of bond \$ _____ (work on these facilities cannot commence until bonding amounts are approved)
- Attach closure cost estimate and documentation on how the closure cost was calculated.

5.

Fencing:

- Four-foot height, four strands of barbed wire evenly spaced between one and four feet
- Alternate. Please specify: Please see attached Variance Request Detail

6.

Signs:

- 12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers
- Signed in compliance with 19.15.16.8 NMAC

7.

Variations:

Justifications and/or demonstrations that the proposed variance will afford reasonable protection against contamination of fresh water, human health, and the environment.

Check the below box only if a variance is requested:

- Variance(s): Requests must be submitted to the appropriate division district for consideration of approval. If a Variance is requested, include the variance information on a separate page and attach it to the C-147 as part of the application.
- If a Variance is requested, it must be approved prior to implementation.**

8.

Siting Criteria for Recycling Containment

Instructions: The applicant must provide attachments that demonstrate compliance for each siting criteria below as part of the application. Potential examples of the siting attachment source material are provided below under each criteria.

General siting

Ground water is less than 50 feet below the bottom of the Recycling Containment.

NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells

- Yes No
- NA

Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended.

- Written confirmation or verification from the municipality; written approval obtained from the municipality

- Yes No
- NA

Within the area overlying a subsurface mine.

- Written confirmation or verification or map from the NM EMNRD-Mining and Minerals Division

- Yes No

Within an unstable area.

- Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; topographic map

- Yes No

Within a 100-year floodplain. FEMA map

- Yes No

Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse, or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).

- Topographic map; visual inspection (certification) of the proposed site

- Yes No

Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.

- Visual inspection (certification) of the proposed site; aerial photo; satellite image

- Yes No

Within 500 horizontal feet of a spring or a fresh water well used for domestic or stock watering purposes, in existence at the time of initial application.

- NM Office of the State Engineer - iWATERS database search; visual inspection (certification) of the proposed site

- Yes No

Within 500 feet of a wetland.

- US Fish and Wildlife Wetland Identification map; topographic map; visual inspection (certification) of the proposed site

- Yes No

9.

Recycling Facility and/or Containment Checklist:

Instructions: Each of the following items must be attached to the application. Indicate, by a check mark in the box, that the documents are attached.

- Design Plan - based upon the appropriate requirements.
- Operating and Maintenance Plan - based upon the appropriate requirements.
- Closure Plan - based upon the appropriate requirements.
- Site Specific Groundwater Data -
- Siting Criteria Compliance Demonstrations –
- Certify that notice of the C-147 (only) has been sent to the surface owner(s)**

10.

Operator Application Certification:

I hereby certify that the information and attachments submitted with this application are true, accurate and complete to the best of my knowledge and belief.

Name (Print): Reese Martin Title: Water Resource Manager

Signature:  Date: 06/28/2020

e-mail address: Reese.Martin@eogresources.com Telephone: 432-686-3718

11.

OCD Representative Signature: _____ Approval Date: _____

Title: _____ OCD Permit Number: _____

- OCD Conditions _____
- Additional OCD Conditions on Attachment _____



Variance Request for Bird Deterrent

Re: Ross Draw East Reuse Water Recycling Facility and Containment Pit

EOG Resources, Inc. would like to request the OCD's approval for a variance regarding bird deterrents at the location described above. EOG proposes to utilize the Bird-X Mega Blaster Pro, creating intermittent distress calls to create a "danger zone" that frightens native and or migrating birds and wildlife from the water recycling facility and containment pit area. Two units would be installed, each containing 2 built-in high output amplifiers and houses 20 speakers, capable of producing up to 125 decibels and a frequency range from 2,000 – 10,000 Hz.

Please note that EOG Resources, Inc. is currently utilizing this same bird deterrent, which was approved on OCD Permit No. 12

Please see details below.

Mega Blaster Pro – Specs:

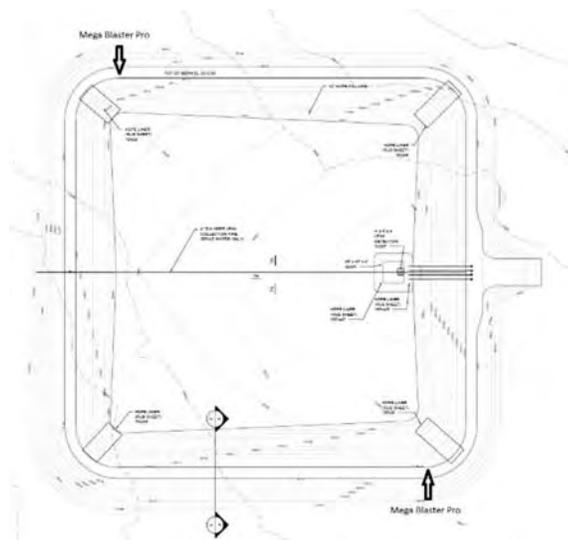
- Coverage: Up to 30 acres from single unit
- Box dimensions: Box 1: 23" x 18" x 16" (23 lbs., unit & speaker), Box 2: 32" x 24" x 5" (17 lbs., solar panel)
- Power Input: 12vDC (3 amps) via solar panel and battery
- Sound Pressure: up to 125 decibels
- Frequency: 2,000–10,000 Hz
- Library of predator calls



- Full customizable to the species of bird in our area of operation
- Compliance: UL & CE listed
- EPA Est. 075310-OR-001
- Included: Generating unit with two built-in high-output amplifiers, 20-speaker tower with audio cables, 40 watt solar panel, battery clips, & all mounting hardware
- The unit is typically mounted with a tripod pole setup. The tripod would be a typical sturdy tripod that would be used to support a large PA speaker. The pole that would fit into the top of the tripod that the speaker tower, control box and solar panel would mount to should be $\frac{3}{4}$ " diameter and be 6-12 feet tall. The taller the pole the greater the distance the sound will travel.
- The effective range of the Mega Blaster Pro is 30 acres, in a circular coverage pattern around the 20-speaker tower with a radius of about 666 feet. The 20-speaker tower features 5 speakers pointing in each direction to create the even dispersal



This is the typical configuration EOG Resources is currently utilizing at the Southern Red Hills Water Recycling Facility and Containment Pit.





Variance Request for Fencing

Re: Ross Draw East Reuse Water Recycling Facility and Containment Pit

EOG Resources, Inc. would like to request the OCD's approval for a variance regarding fencing at the location described above. EOG proposes to utilize a 6 foot galvanized chain link fence with 3 strands of barb wire on the top of the chain link fencing. The 3 strands of barb wire will be mounted on a galvanized barb bracket with a 45 degree angle pointing towards the outside of the location. Each post hole will be drilled via auger to ensure a consistent and accurate depth and will be set in concrete. Six 18" x 18" swinging gates will be installed at ground level for temporary waterlines to pass through. The gates will remain closed as depicted in the pictures below to ensure no wildlife can access the containment site when no waterlines are present.

Please note that EOG Resources, Inc. is currently utilizing this same fence design, which was approved on OCD Permit No. 12

Please see details below.



This is the typical configuration EOG Resources is currently utilizing at the Southern Red Hills Water Recycling Facility and Containment Pit.





Variance Request for Secondary Liner

Re: Ross Draw East Reuse Water Recycling Facility and Containment Pit

EOG Resources, Inc. would like to request the OCD's approval for a variance regarding secondary liner at the location described above. EOG proposes to utilize 40-mil HDPE for secondary liner, in lieu of 30-mil LLDPE string-reinforced liner. The standard LLDPE string-reinforced liner has a hydraulic conductivity no greater than 1×10^{-9} cm/sec and meets or exceeds the EPA SW-846 method 9090A per 19.15.34.12 NMAC.

The proposed 40-mil HDPE Geomembrane liner has a typical Hydraulic Conductivity no greater than 10^{-12} cm/sec, per attached letter from Solmax. This hydraulic conductivity of no greater than 10^{-12} cm/sec exceeds the standard 30-mil LLDPE string-reinforced liner and EPA SW-846 method 9090A.



Ross Draw East Reuse Water Recycling Facility and Containment Pit

NMOCD Submittal – C147 Registration Application

May 28, 2020

Table of Contents

I.	Introduction	2
II.	C-147 Detail	2
	Operator and Facility / Location Detail	
	Recycling Facility Detail	
	Recycling Containment Detail	
	Bonding	
	Fencing	
	Signage	
	Variances	
	Siting Criteria for Recycling Containment	
	Recycling Facility and Containment Checklist	
III.	List of Attachments	6
	Attachments and Supporting Documents	

Introduction

EOG Resources respectfully requests registration of the herein described Reuse Water Recycling Facility and Containment Pit located in Lea County, New Mexico. The enclosed/attached information will demonstrate compliance with all rules as outlined in 19.15.34 NMAC.

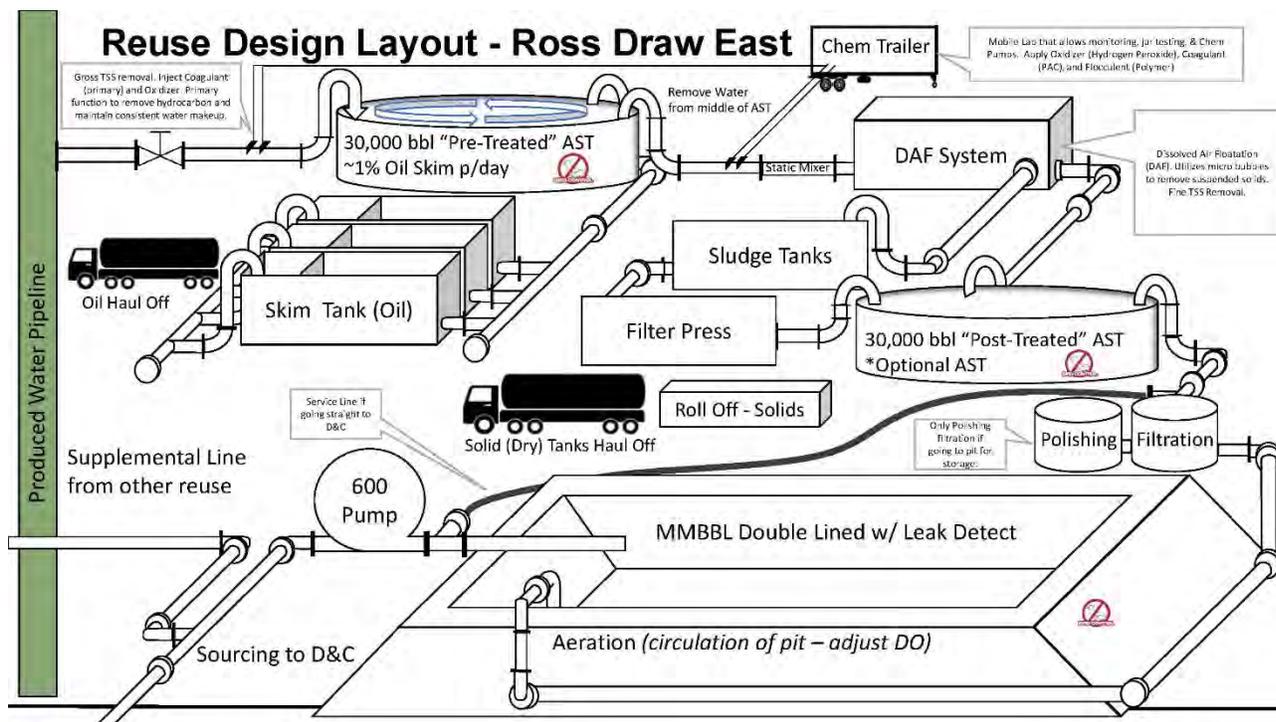
C-147 Detail

Operator and Facility / Location Detail

The proposed reuse water containment facility & containment pit, referred to as the Ross Draw East Reuse Water Recycling Facility and Containment Pit, will be owned and operated by EOG Resources, Inc. (EOG) and located in Township 26 South, Range 31 East, and Section 16 in southwestern Eddy County.

Recycling Facility Detail

The proposed containment pit will be located adjacent to the Ross Draw East Water Recycling Facility and will hold treated water for use in EOG hydraulic fracturing operations. As depicted in the attached schematic, the adjacent recycling facility will utilize advanced water treatment technologies to produce a clean brine effluent prior to storage and subsequent reuse. An oxidation and solids removal/filtering system will treat the incoming influent stream to internal standards sufficient for hydraulic fracturing reuse applications.



Recycling Containment Detail

EOG Resources is proposing to construct a multi-liner containment pit utilizing leak detection systems to ensure an intact leak free barrier system. As depicted in the attached design plan and schematics, *Ross Draw East Containment Pond*, the proposed pit will incorporate standards that meet or exceed the required standards per 19.15.34.12 NMAC. The proposed recycle containment will be approximately 600 x 600 inside floor dimensions with 4:1 inside and outside berm grades. Approximate wall height will average 11ft from outside ground level to ensure no surface water run on will occur. The top of levee shall be approximately 20ft wide 2% outside sloping grade to ensure no surface water run on will occur. The containment pit floor and wall preparation will include laser finished grade free of rocks, debris and sharp edges, compacted to a density to ensure an unyielding base. At onset of pit construction, all vegetative material and top soil will be removed and stockpiled at the outside toe of the levee slopes. The interior liner system of the containment pit will

consist of a 10 ounce geotextile felt base layer to protect the secondary geomembrane liner from any protruding floor irregularities. The secondary geomembrane liner will be composed of 40 mil HDPE. Between the secondary and primary liners will consist of 200 mil geonet sloping to the leak detection trough. The primary liner consist of 60 mil HDPE liner. All liners will meet or exceed EPA SW-846 method 9090A. All seams will be oriented vertically with 4-6 inch liner overlap and all seam testing shall exceed all guidelines. As depicted in the attached design plan, *Ross Draw East Containment Pond*, the proposed containment pit will include a center aligned leak detection trough and collection sump completed with perforated pipe and pump casing allowing for installation of a leak detection pump system. Both inlet and discharge manifold systems, depicted in *Ross Draw East Containment Pond*, will be installed to prevent any liner damage from water entrance velocity or hose installation. Two audible bird deterrents will be utilized to deter any native birds and wildlife from the containment pit area.

Bonding

EOG Resources will source and distribute reuse water for the Ross Draw East Reuse Water Recycling Facility and Containment Pit from wells solely operated by EOG. Therefore, attached are the details of Bond Number SUR0013939 – Megabond #OGB0959 – State of New Mexico Land Office Oil and Gas Minerals Division

Fencing

Please see Variance detail.

Signage

As shown in the attached example sign, EOG shall place the appropriate signage along the water recycling facility and containment pit perimeter that meets all guidelines established in 19.15.34.12 C NMAC.

See List of Attachments

Variations

EOG Resources is seeking three variances as indicated in Section 7 of the C-147 registration form, to install two audible Mega Blaster Pro bird deterrents capable of covering up to 30 acres each. The second request is to enclose the perimeter with a 6 foot galvanized chain link fence with 3 strand 45 degree barbed wire arm toppers. The third request is to utilize a 400-mil HDPE for secondary liner, in lieu of 30-mil LLDPE string-reinforced liner.

Siting Criteria for Recycling Containment

Enclosed within this submittal are comprehensive third party reports detailing conformity to siting criteria described in Section 8 of the C-147 registration form; a detailed list and description of these attachments can be found in the subsequent section: *List of Attachments*.

Recycling Facility and Containment Checklist

As indicated in Section 9 on the attached C-147 form, all the required attachments have been included on the submittal and certification of C-147 delivery to the landowner is acknowledged.

List of Attachments

Attachments and Supporting Documents

- Water Containment Design and Engineered Drawing
- Water Containment Liner / Leak Detection Detail
- Bond Detail
- Signage Sample



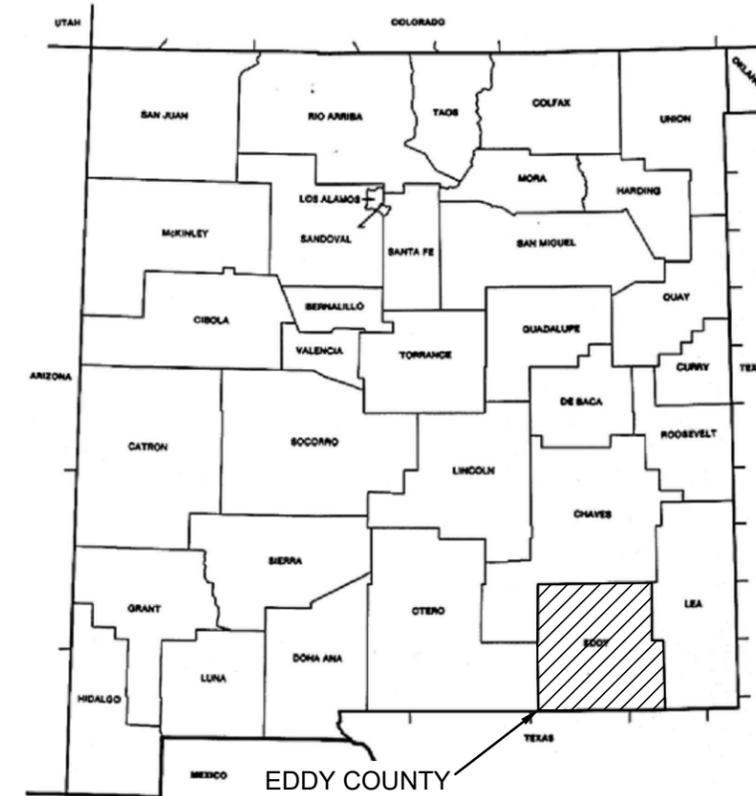
EOG RESOURCES

ROSS DRAW EAST CONTAINMENT POND CONSTRUCTION PLAN EDDY COUNTY, NEW MEXICO

<u>INDEX</u>	
SHEET 1	COVER SHEET
SHEET 2	VICINITY MAP
SHEET 3	SITE EXHIBIT
SHEET 4	SITE CALCULATIONS
SHEET 5	CUT/FILL 50' GRID
SHEET 6	SITE CROSS SECTION PROFILES
SHEET 7	DETAILS (1 OF 3)
SHEET 8	DETAILS (2 OF 3)
SHEET 9	DETAILS (3 OF 3)

GENERAL NOTES

1. COORDINATE INFORMATION ARE BASED ON STATE PLANES COORDINATE, NEW MEXICO EAST ZONE (4726), NAD 83. THE CONTRACTOR SHALL IDENTIFY ANY DISCREPANCIES PRIOR TO PROCEEDING WITH CONSTRUCTION.
2. THE CONTRACTOR SHALL IDENTIFY AND LOCATE UTILITY LINES, MONITORING WELLS, SURVEY MONUMENTS, AND OTHER NEARBY STRUCTURES PRIOR TO PERFORMING WORK. UTILITIES, MONITORING WELLS, SURVEY MONUMENTS AND OTHER NEARBY STRUCTURES SHALL BE PROTECTED FROM DAMAGE DURING THIS WORK. ANY DAMAGE TO UTILITY LINES, MONITORING WELLS, SURVEY MONUMENTS, AND OTHER NEARBY STRUCTURES DURING THE WORK SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. COSTS ASSOCIATED WITH THESE REPAIRS SHALL INCLUDE THE ACTUAL REPAIR COSTS AND ANY ENGINEER OR SURVEY COSTS NECESSARY TO COMPLETE THE REPAIR.

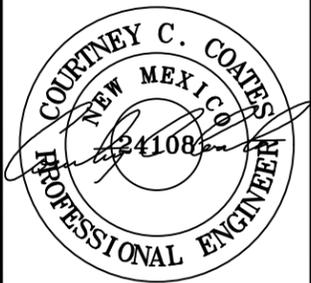


1400 EVERMAN PARKWAY, STE. 146
FORT WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512
FAX: (817) 744-7548
WWW.TOPOGRAPHIC.COM

COVER SHEET

ROSS DRAW EAST REUSE PIT

EOG RESOURCES



11/20/19

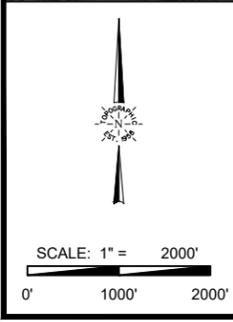
DATE:	11/20/19
DRAWN BY:	ARG
REVIEWED BY:	CCC
SCALE:	N/A
SHEET:	1 OF 9
REVISION:	
	XXX/XXX/XX
	XXX/XXX/XX
	XXX/XXX/XX



ROSS DRAW
EAST REUSE PIT

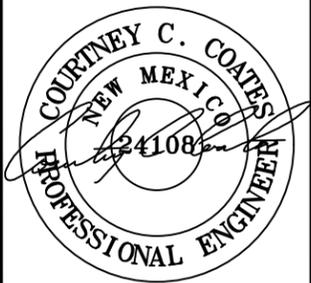
BUCK JACKSON RD

ORLA RD



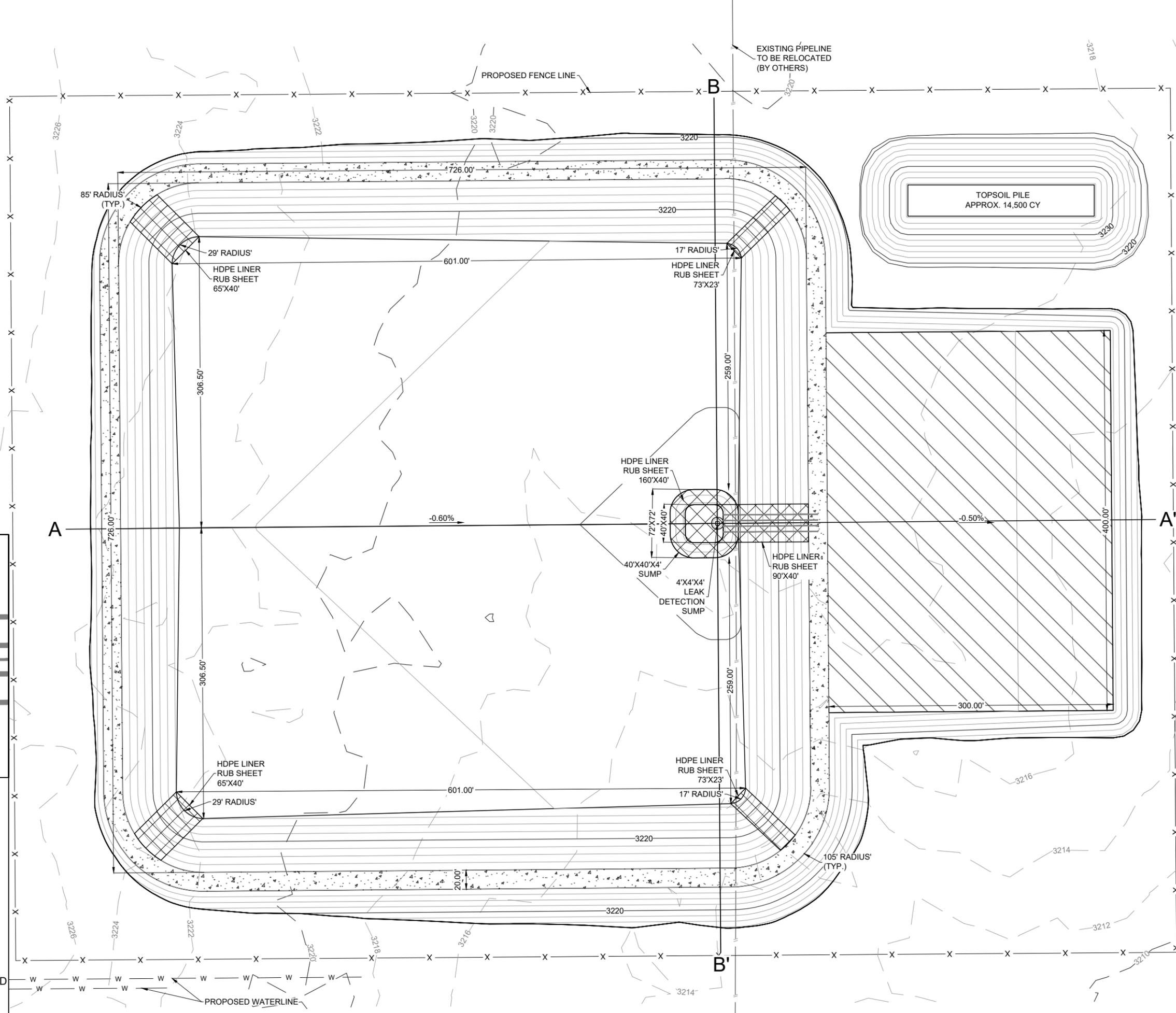
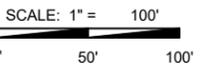
1400 EVERMAN PARKWAY, STE. 146
FORT WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512
FAX: (817) 744-7548
WWW.TOPOGRAPHIC.COM

VICINITY MAP
ROSS DRAW EAST REUSE PIT
EOG RESOURCES

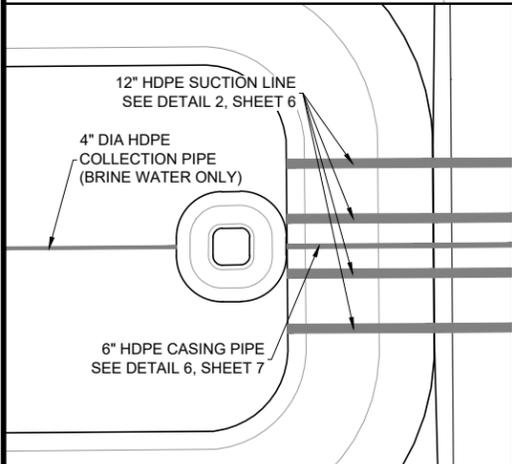


11/20/19

DATE:	11/20/19
DRAWN BY:	ARG
REVIEWED BY:	CCC
SCALE:	1" = 2,000'
SHEET:	2 OF 9
REVISION:	
	XXX XXXXXX
	XXX XXXXXX
	XXX XXXXXX



PIPE DETAIL
1" = 20'



CONSTRUCTION AREA = 25.59 ACRES

- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR
- PROPOSED 2' CONTOUR
- PROPOSED 10' CONTOUR
- FENCE LINE
- PROPOSED BERM DRIVE
- PROPOSED EQUIPMENT PAD
- PROPOSED RUB SHEET

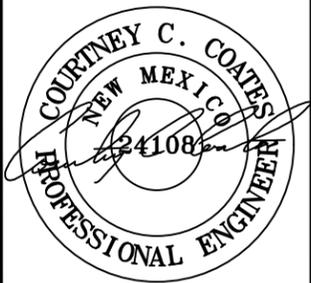
TOPOGRAPHIC
LOYALTY INNOVATION LEGACY

1400 EVERMAN PARKWAY, STE. 146
FORT WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512
FAX: (817) 744-7548
WWW.TOPOGRAPHIC.COM

SITE EXHIBIT

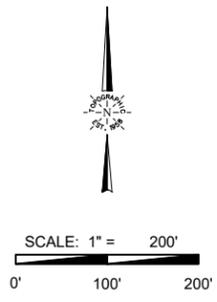
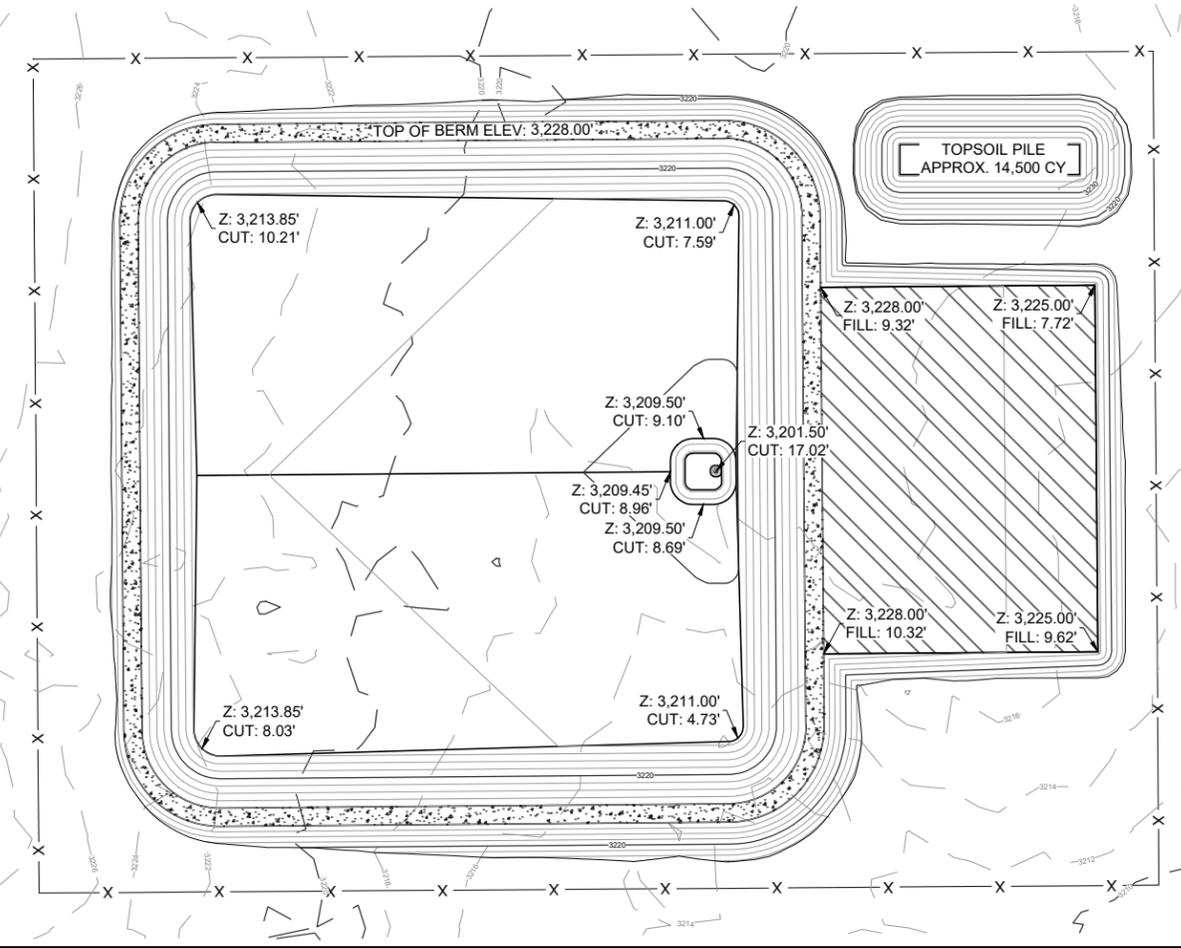
ROSS DRAW REUSE PIT

EOG RESOURCES



11/20/19

DATE:	11/20/19
DRAWN BY:	ARG
REVIEWED BY:	CCC
SCALE:	1" = 100'
SHEET:	3 OF 9
REVISION:	
	XXX/XXX/XX
	XXX/XXX/XX
	XXX/XXX/XX



SUMP BOTTOM

POND BOTTOM

ROSS DRAW EAST REUSE PIT STAGE STORAGE					
ELEV	DEPTH (FT)	AREA (ACRES)	VOLUME (BBLS)	VOLUME (ACRE FT)	VOLUME (CY)
3,205.50	0.00	0.02	4.85	0.00	1.01
3,206.00	0.50	0.04	98.92	0.01	20.57
3,206.50	1.00	0.05	237.13	0.03	49.31
3,207.00	1.50	0.06	420.24	0.05	87.39
3,207.50	2.00	0.07	644.45	0.08	134.01
3,208.00	2.50	0.08	911.15	0.12	189.47
3,208.50	3.00	0.10	1,223.85	0.16	254.50
3,209.00	3.50	0.12	1,601.25	0.21	332.98
3,209.50	4.00	0.15	2,077.44	0.27	432.00
3,210.00	4.50	0.62	3,355.27	0.43	697.72
3,210.50	5.00	1.47	7,272.08	0.94	1,512.21
3,211.00	5.50	2.64	15,119.43	1.95	3,144.05
3,211.50	6.00	3.94	27,846.21	3.59	5,790.56
3,212.00	6.50	5.23	45,597.65	5.88	9,481.93
3,212.50	7.00	6.50	68,321.54	8.81	14,207.31
3,213.00	7.50	7.53	95,615.95	12.32	19,883.12
3,213.50	8.00	8.24	126,235.36	16.27	26,250.36
3,214.00	8.50	8.59	158,979.47	20.49	33,059.43
3,214.50	9.00	8.74	192,580.64	24.82	40,046.71
3,215.00	9.50	8.86	226,681.56	29.22	47,137.92
3,215.50	10.00	8.98	261,225.60	33.67	54,321.28
3,216.00	10.50	9.09	296,210.58	38.18	61,596.33
3,216.50	11.00	9.21	331,638.03	42.75	68,963.39
3,217.00	11.50	9.33	367,507.99	47.37	76,422.46
3,217.50	12.00	9.45	403,828.34	52.05	83,975.20
3,218.00	12.50	9.56	440,591.07	56.79	91,619.93
3,218.50	13.00	9.68	477,802.84	61.59	99,358.03
3,219.00	13.50	9.80	515,467.45	66.44	107,190.30
3,219.50	14.00	9.92	553,585.55	71.35	115,116.88
3,220.00	14.50	10.05	592,164.20	76.33	123,139.22
3,220.50	15.00	10.17	631,204.30	81.36	131,257.52
3,221.00	15.50	10.30	670,709.67	86.45	139,472.58
3,221.50	16.00	10.44	710,686.27	91.60	147,785.62
3,222.00	16.50	10.57	751,140.13	96.82	156,197.91
3,222.50	17.00	10.71	792,084.96	102.09	164,712.30
3,223.00	17.50	10.86	833,528.44	107.44	173,330.38
3,223.50	18.00	11.04	875,503.75	112.85	182,059.05
3,224.00	18.50	11.24	918,066.92	118.33	190,909.96
3,224.50	19.00	11.50	961,354.32	123.91	199,911.48
3,225.00	19.50	11.75	1,005,494.33	129.60	209,090.30
3,225.50	20.00	11.88	1,050,267.68	135.37	218,400.82
3,226.00	20.50	11.91	1,095,261.52	141.17	227,757.18
3,226.50	21.00	11.93	1,140,331.85	146.98	237,129.46
3,227.00	21.50	11.94	1,185,459.83	152.80	246,513.72
3,227.50	22.00	11.95	1,230,623.40	158.62	255,905.38
3,228.00	22.50	11.95	1,275,803.05	164.44	265,300.39

- LEGEND:**
- EXISTING 2' CONTOUR
 - EXISTING 10' CONTOUR
 - PROPOSED 2' CONTOUR
 - PROPOSED 10' CONTOUR

EARTHWORK QUANTITIES

CUT VOLUME: 116,640 YD³

FILL VOLUME: 99,325 YD³

TOPSOIL (6" STOCKPILED): 14,500 YD³

TOTAL EXPORT: 2,815 YD³

TOTAL GRADING AREA: 17.97 ACRES

*VOLUMES ASSUME A FILL FACTOR OF 1.15

POND SUMMARY

MAX VOLUME: 1,275,803.05 BBLS

MAX AREA: 11.95 ACRES

MAX ELEVATION OF POND: 3,228.00 FT

3' FREEBOARD ELEVATION: 3,225.00 FT

VOLUME AT FREEBOARD: 1,005,494.33 BBLS

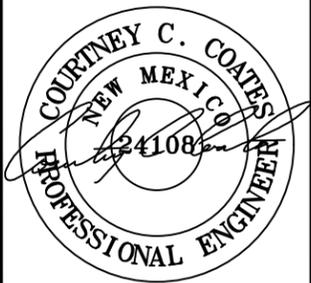
3' FREEBOARD

Description	Unit Quantity	Unit
Liner Areas		
Out-Slope Area	139,895	SQ. FT.
Pond Area	545,250	SQ. FT.
Rub Sheet	16,310	SQ. FT.
Piping		
6" HDPE Casing Pipe	95	LN. FT.
4" HDPE Collection Pipe	640	LN. FT.
12" HDPE Suction line	415	LN. FT.
Roads		
Berm Drive (6" Gravel)	56,345	SQ. FT.
Fence		
6' Chainlink Fence	4,270	LN. FT.
Mass Grading		
Clearing and Grubbing	17.97	ACRE
Grading	116,640.00	CU. YD.

SITE CALCULATIONS

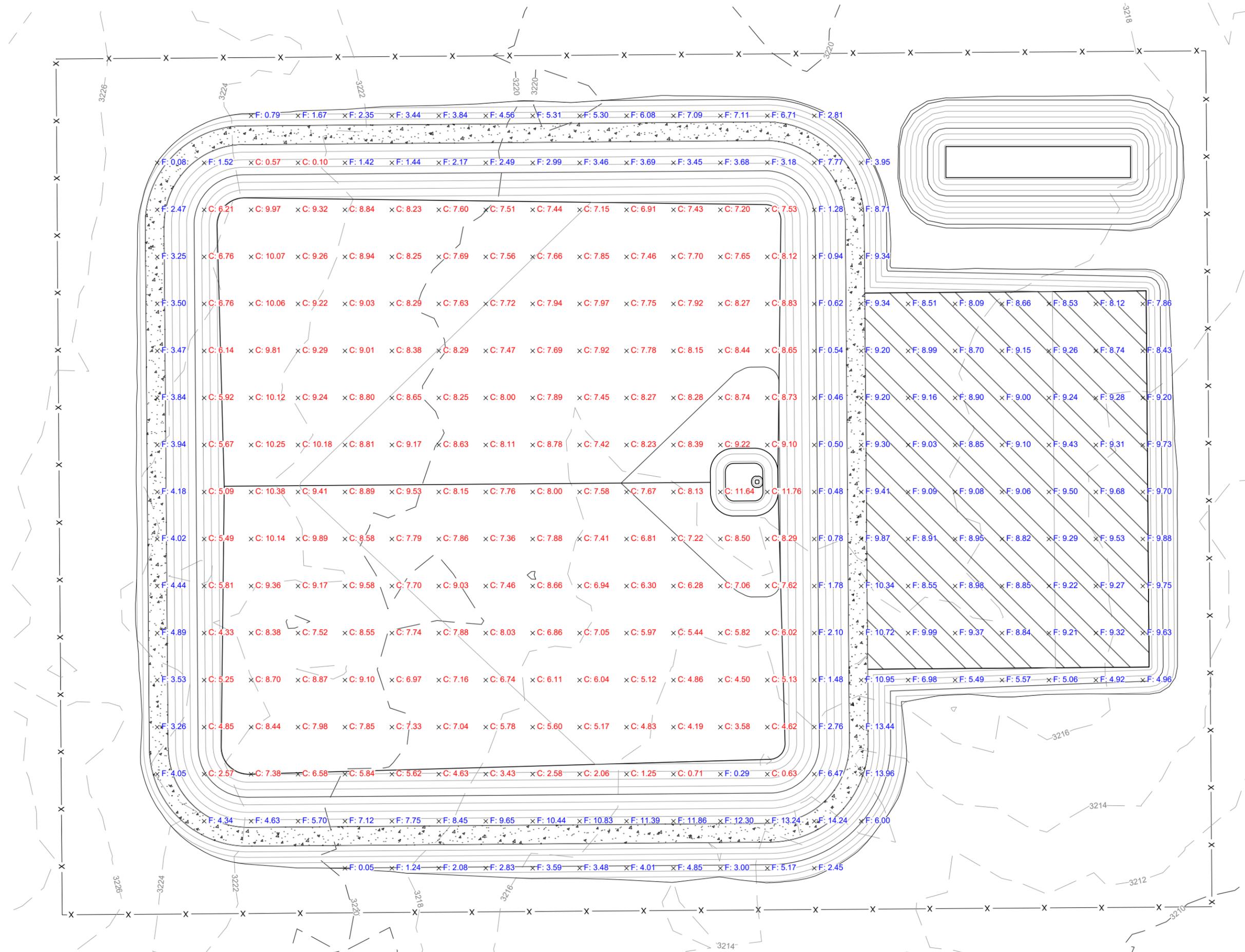
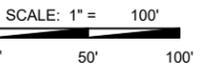
ROSS DRAW EAST REUSE PIT

EOG RESOURCES



11/20/19

DATE:	11/20/19
DRAWN BY:	ARG
REVIEWED BY:	CCC
SCALE:	1" = 200'
SHEET:	4 OF 9
REVISION:	
XXX	XXXXXX
XXX	XXXXXX
XXX	XXXXXX



CUT/FILL 50' GRID

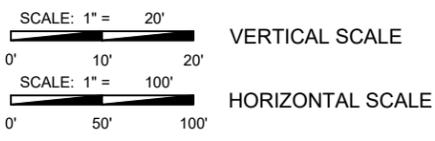
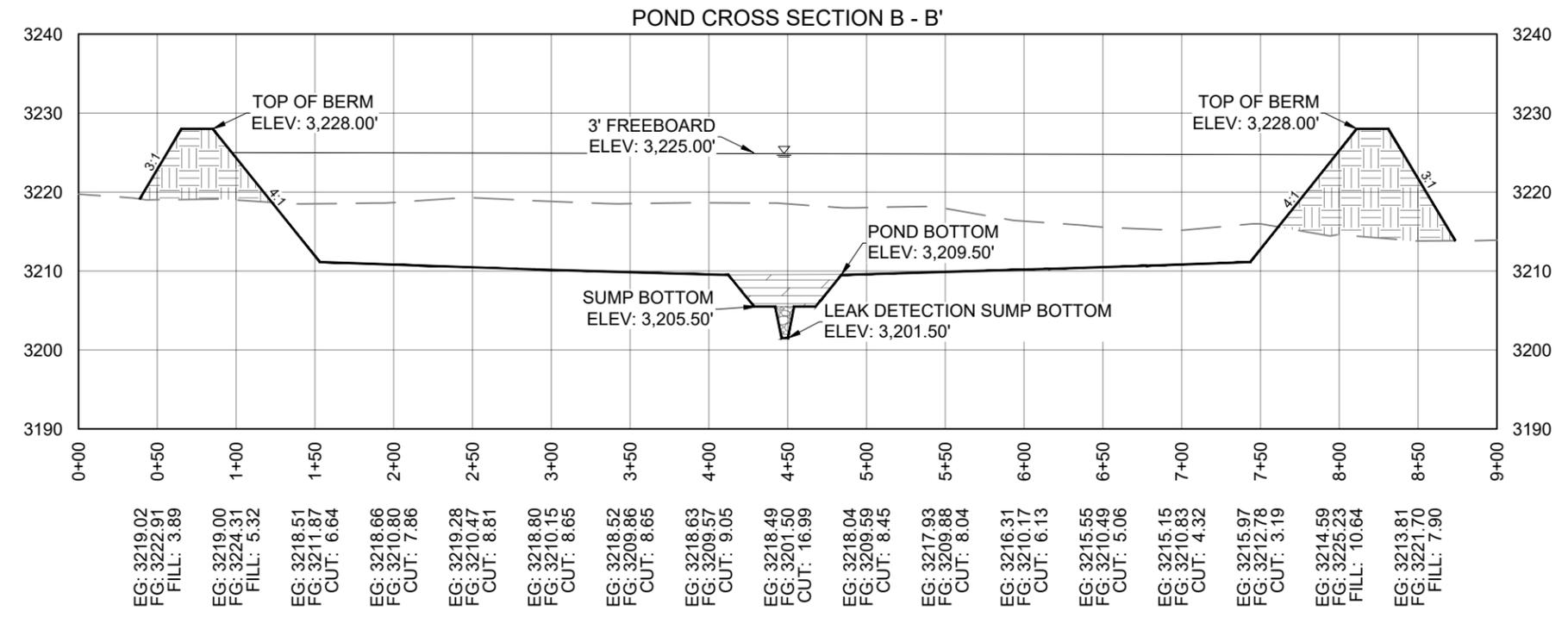
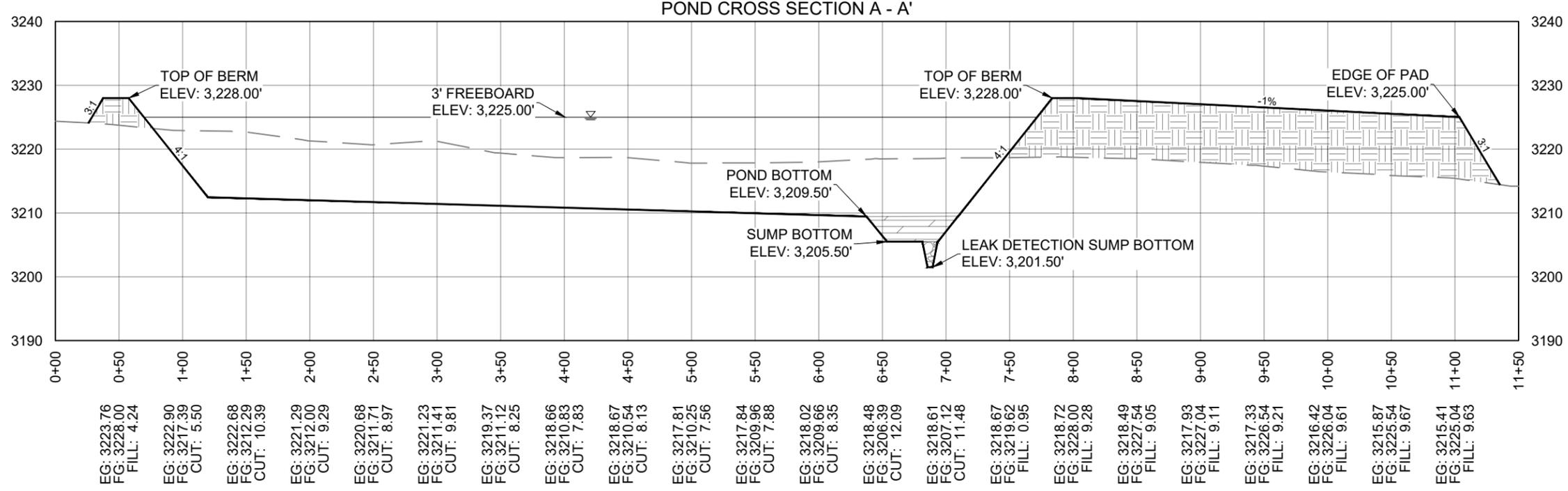
ROSS DRAW EAST REUSE PIT

EOG RESOURCES

COURTNEY C. COATES
 NEW MEXICO
 24108
 PROFESSIONAL ENGINEER

11/20/19

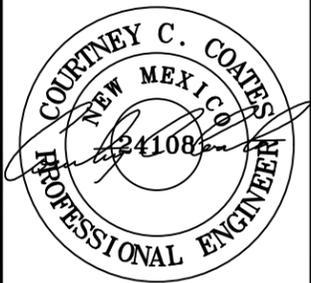
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DRAWN BY:	ARG
REVIEWED BY:	CCC
SCALE:	1" = 100'
SHEET:	5 OF 9
REVISION:	
XXX	XXXX/XX
XXX	XXXX/XX
XXX	XXXX/XX



SITE CROSS SECTION PROFILES

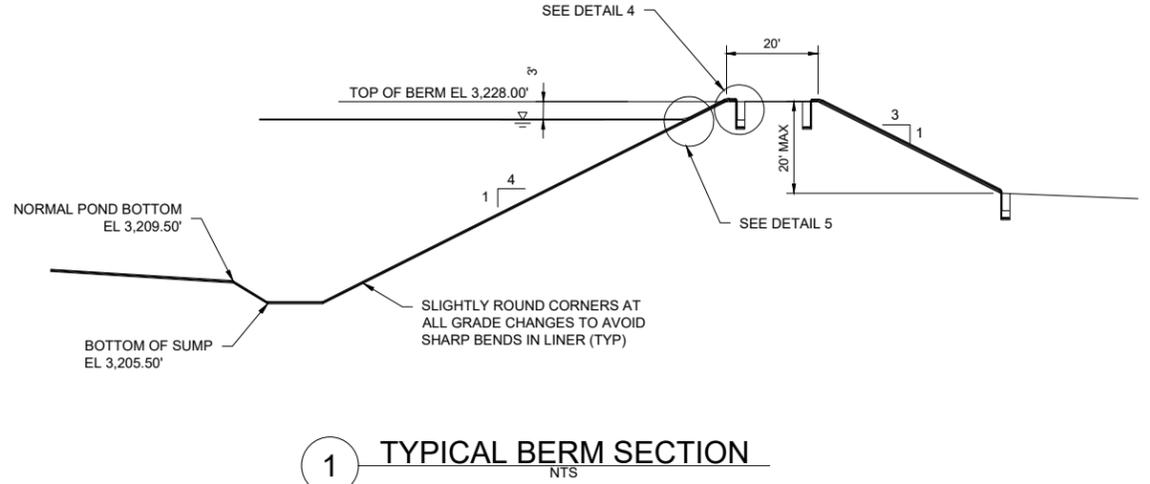
ROSS DRAW EAST REUSE PIT

EOG RESOURCES

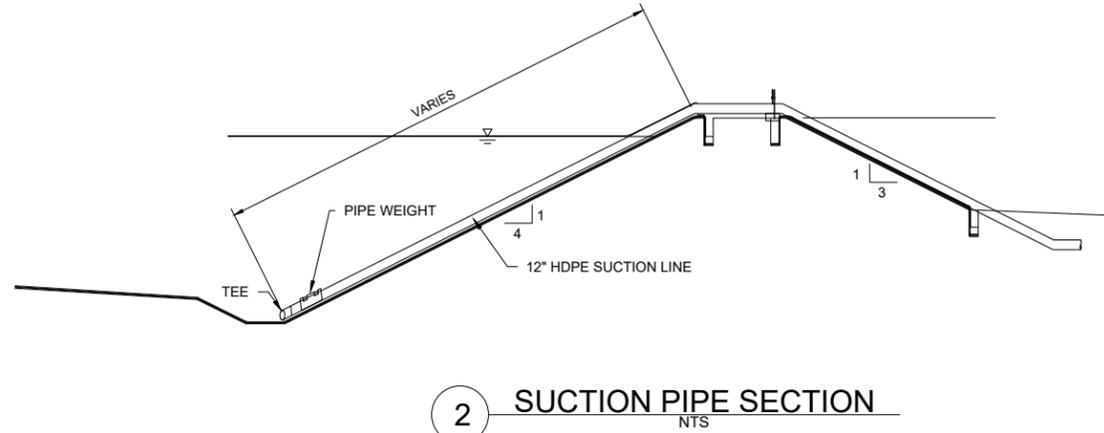


11/20/19

DATE:	11/20/19
DRAWN BY:	ARG
REVIEWED BY:	CCC
SCALE:	1" = 100'
SHEET:	6 OF 9
REVISION:	
	XXX XXX/XX/XX
	XXX XXX/XX/XX
	XXX XXX/XX/XX

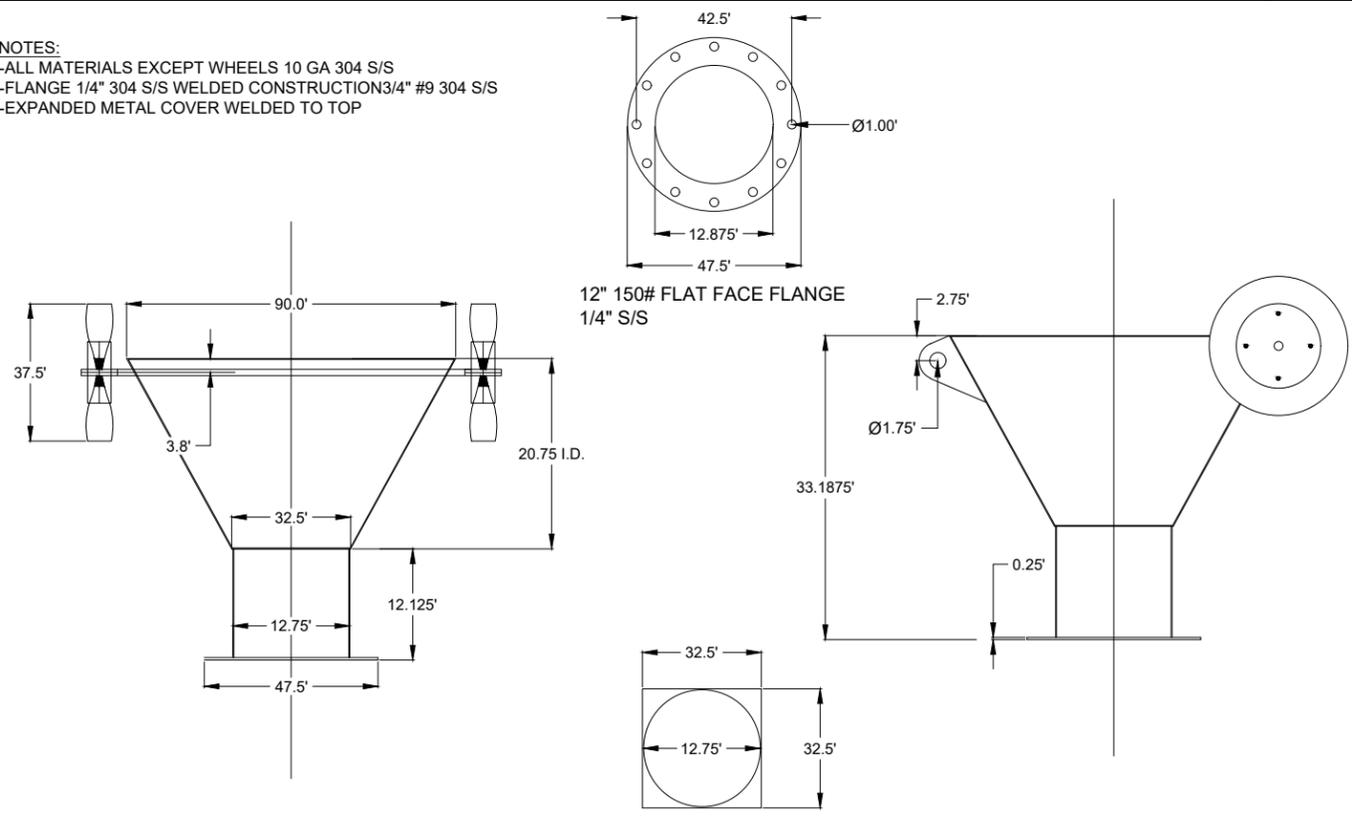


1 TYPICAL BERM SECTION
NTS

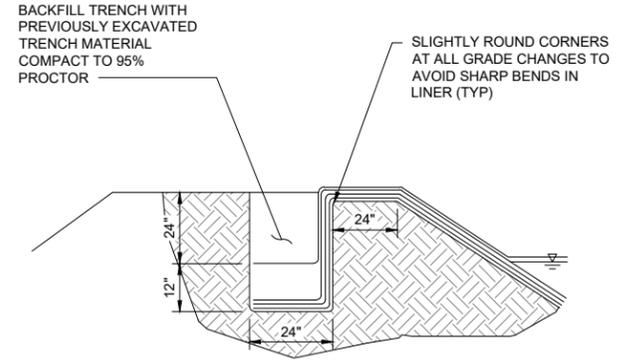


2 SUCTION PIPE SECTION
NTS

NOTES:
 -ALL MATERIALS EXCEPT WHEELS 10 GA 304 S/S
 -FLANGE 1/4" 304 S/S WELDED CONSTRUCTION 3/4" #9 304 S/S
 -EXPANDED METAL COVER WELDED TO TOP

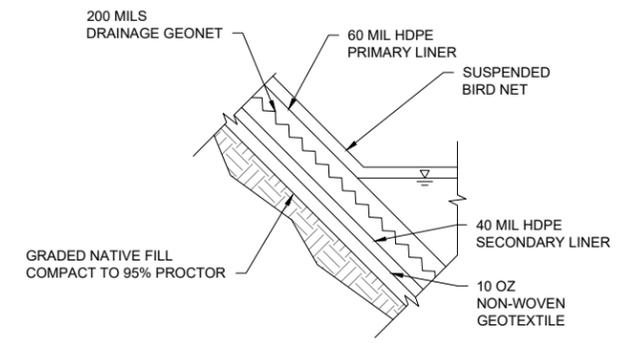


3 SUCTION FUNNEL
NTS



NOTES:
 1. AMOUNT OF LAYERS WILL VARY BY POND TYPE AND WHERE A RUB SHEET IS UTILIZED.

TYPICAL ANCHOR TRENCH
NTS

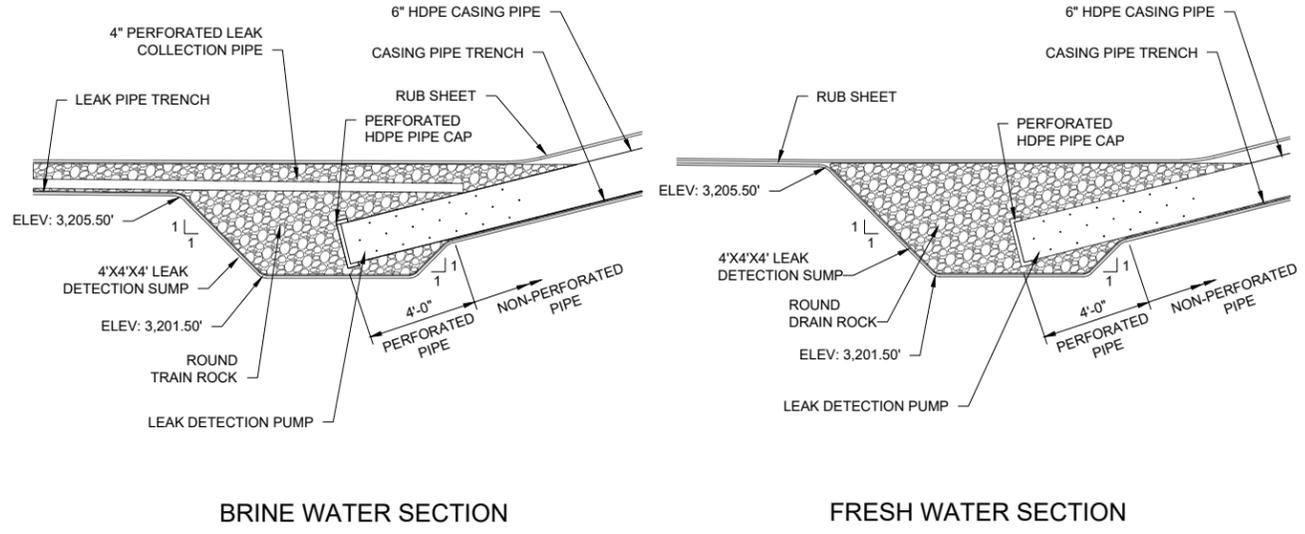


5 BRINE WATER LINER SYSTEM
NTS

DETAILS (1 OF 3)
 ROSS DRAW EAST REUSE PIT
 EOG RESOURCES

COURTNEY C. COATES
 NEW MEXICO
 PROFESSIONAL ENGINEER
 24108
 11/20/19

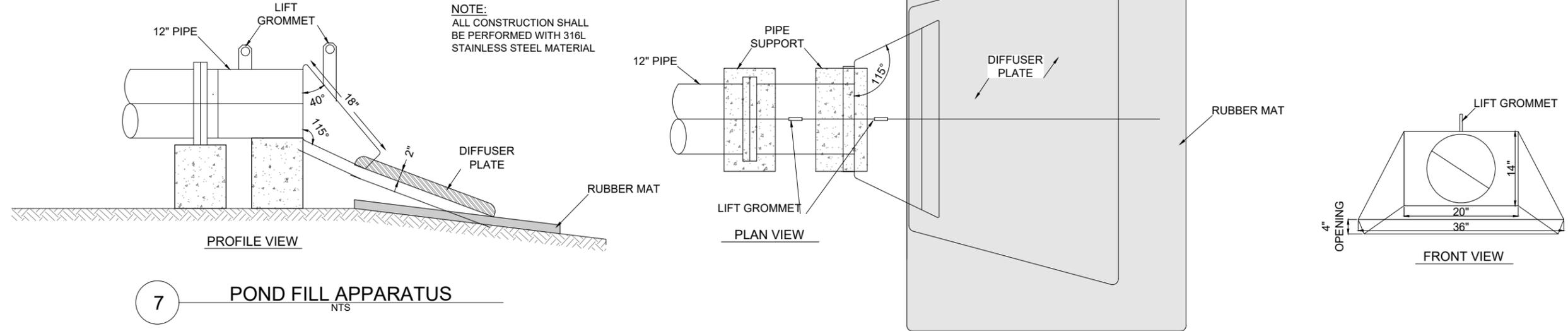
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DRAWN BY:	ARG
REVIEWED BY:	CCC
SCALE:	N/A
SHEET:	7 OF 9
REVISION:	
	XXXXXX
	XXXXXX
	XXXXXX



BRINE WATER SECTION

FRESH WATER SECTION

6 LEAK DETECTION SUMP
NTS



7 POND FILL APPARATUS
NTS

DETAILS (2 OF 3)

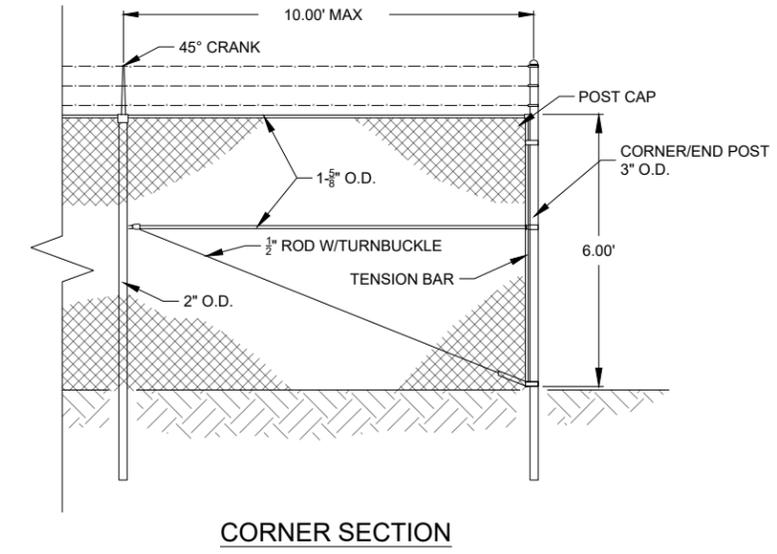
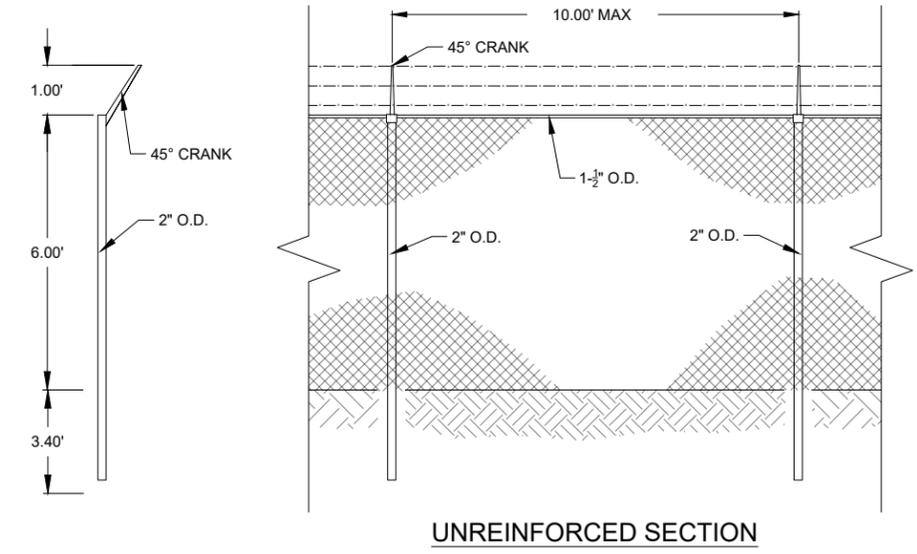
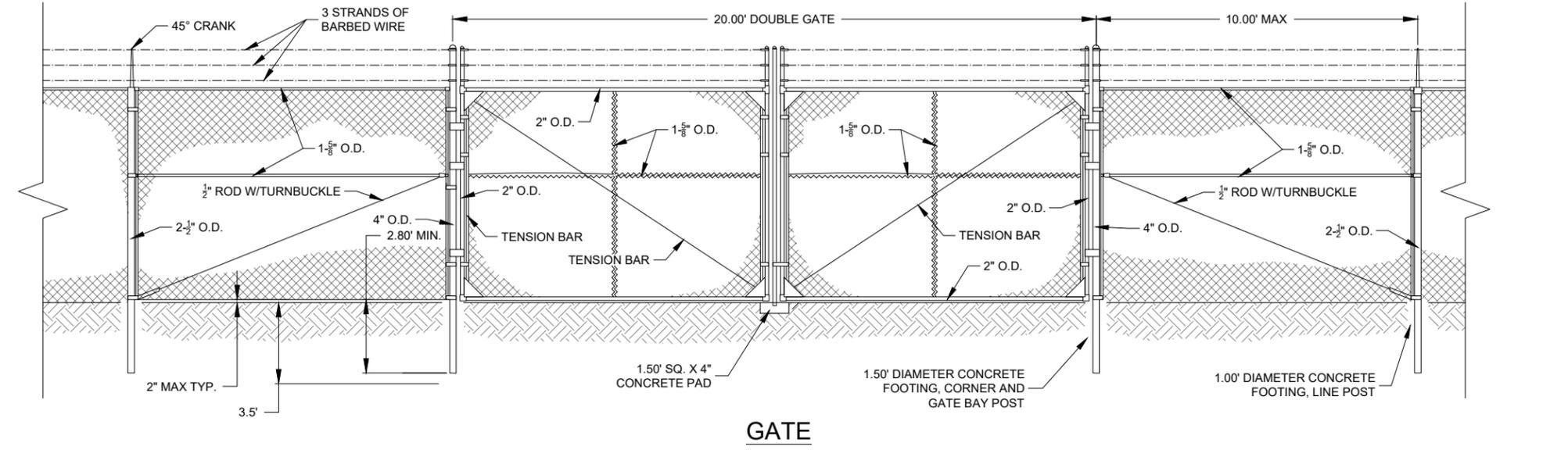
ROSS DRAW EAST REUSE PIT

EOG RESOURCES

COURTNEY C. COATES
NEW MEXICO
24108
PROFESSIONAL ENGINEER

11/20/19

DATE:	11/20/19
DRAWN BY:	ARG
REVIEWED BY:	CCC
SCALE:	N/A
SHEET:	8 OF 9
REVISION:	
	XXX/XXX/XX
	XXX/XXX/XX
	XXX/XXX/XX



PERMANENT 6' CHAINLINK FENCE WITH BARBED WIRE DETAIL

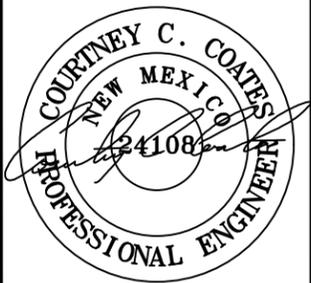
NTS

8

DETAILS (3 OF 3)

ROSS DRAW EAST REUSE PIT

EOG RESOURCES



11/20/19

DATE:	11/20/19
DRAWN BY:	ARG
REVIEWED BY:	CCC
SCALE:	N/A
SHEET:	9 OF 9
REVISION:	
XXX	XXXX/XX
XXX	XXXX/XX
XXX	XXXX/XX



- (1) Acceptance of pit construction for liner install:
 - a. Pit foundation and laterals properly compacted, smooth, and free of rocks/debris/sharp edges
 - b. Pit top wide enough to install an anchor trench, and provide adequate room for inspection/maintenance
 - c. Slope of interior subgrade, drainage lines and laterals per specs
- (2) Geomembrane Liner Layers
 - a. Geotextile
 - b. Secondary (lower) liner
 - c. Leak detection system
 - d. Primary (upper) liner
 - e. Anchor trench- Liner edges anchored in the bottom of a compacted earth-filled trench **>18"deep**
- (3) Geomembrane Properties
 - a. Primary: 60 mil HDPE, equivalent, or better
 - b. Secondary: 40 mil HDPE, equivalent, or better
 - c. Impervious, synthetic material resistant to UV, petroleum hydrocarbons, salts, and acidic and alkaline solutions
 - d. Comply with EPA SW-846 Method 9090A, or subsequent relevant publication
- (4) Geomembrane Install
 - a. Field- Welded Liner seams
 - i. Performed by Qualified Personnel
 - ii. Thermally seamed (hot wedge) with a double track weld to create air pocket
 - iii. **4-6" liner overlap**
 - iv. Number of seams minimized
 - v. Seams oriented seams up and down slopes
 - vi. **No horizontal seams <5' of the slope toe**
 - b. Geomembrane Testing
 - i. Performed by Qualified Personnel
 - ii. Non-destructive Air Channel Testing
 - iii. Destruct testing
 - iv. Vacuum Testing
 - v. Spark Testing

PO Box 1806
Aledo, TX 76008
P: (817) 441-1235
F: (817) 441-1270
www.mustangenergyservices.com

- (5) Other installed items
 - i. Vents
 - ii. Rub Sheets
 - iii. Boots
 - iv. Sump aggregate
 - v. Solid/perforated pipes
 - vi. Escape Ladders
 - vii. Height Markers
 - viii. Conductive Liner
- (6) Leak Detection System
 - a. 200 mil or greater Geonet or Geocomposite drainage liner
 - b. Installed between upper/lower geomembrane liners
 - c. Piping collection system
 - d. Drainage, collection, and removal system sloped to facilitate the earliest possible leak detection
 - e. Pipe to convey collected fluids to a collection/disposal system located outside the permanent **pit's perimeter**

PO Box 1806
Aledo, TX 76008
P: (817) 441-1235
F: (817)4411270
www.mustangenergyservices.com



RIDER

To be attached to and form part of Bond No. SUR0013939.

Issued on behalf of EOG Resources, Inc as Principal, and in favor of Commissioner of Public Lands, New Mexico State Land Office as Obligee.

It is agreed that:

Bond is changed to include the following EOG Subsidiaries under State Land Bond No. OGB0959:

EOG Resources & Meridian Oil, EOG Resources & Mitchell Energy, EOG Resources & Murchison O&G, EOG Resources & Nortex G&O Co., EOG Resources & Read & Stevens, EOG Resources Marketing, Inc., EOG Resources Inc, Enron Oil and Gas Co., Enron Oil & Gas, EOG Resources & Internorth Inc, EOG Resources & Meridian Oil, EOG Resources & Sun Operating, Enron Oil & Gas Company, & EOG Resources

This rider shall become effective as of February 13, 2012

PROVIDED, however, that the liability of the Surety under the attached bond as changed by this Rider shall not be cumulative.

Signed, sealed and dated February 13, 2012.

By: Argonaut Insurance Company

Gina Rodriguez
Attorney-in-Fact Gina Rodriguez

Accepted: Commissioner of Public Lands, New Mexico State Land Office

Obligee

EOG Resources, Inc

Principal

By: _____

By: Helen Y. Lim
Helen Y. Lim, VP & Treasurer

Argonaut Insurance Company
225 W. Washington, 6th Floor
Chicago, IL 60606

AS-0026046

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That the Argonaut Insurance Company, a Corporation duly organized and existing under the laws of the State of Illinois and having its principal office in the County of Cook, Illinois does hereby nominate, constitute and appoint:

Donald R. Gibson, Sandra Parker, Tannis Mattson, Melissa Haddick, Terri Morrison, Gina Rodriguez

its true and lawful agent and attorney-in-fact, to make, execute, seal and deliver for and on its behalf as surety, and as its act and deed any and all bonds, contracts, agreements of indemnity and other undertakings in suretyship provided, however, that the penal sum of any one such instrument executed hereunder shall not exceed the sum of:

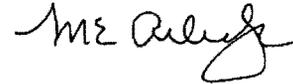
\$15,000,000.00

This Power of Attorney is granted and is signed and sealed under and by the authority of the following Resolution adopted by the Board of Directors of Argonaut Insurance Company:

"RESOLVED, That the President, Senior Vice President, Vice President, Assistant Vice President, Secretary, Treasurer and each of them hereby is authorized to execute powers of attorney, and such authority can be executed by use of facsimile signature, which may be attested or acknowledged by any officer or attorney, of the Company, qualifying the attorney or attorneys named in the given power of attorney, to execute in behalf of, and acknowledge as the act and deed of the Argonaut Insurance Company, all bond undertakings and contracts of suretyship, and to affix the corporate seal thereto."

IN WITNESS WHEREOF, Argonaut Insurance Company has caused its official seal to be hereunto affixed and these presents to be signed by its duly authorized officer on the 15th day of September, 2008.

Argonaut Insurance Company



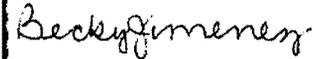
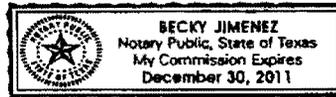
By: _____

Michael E. Arledge President

STATE OF TEXAS
COUNTY OF BEXAR SS:

On this 15th day of September, 2008 A.D., before me, a Notary Public of the State of Texas, in and for the County of Bexar, duly commissioned and qualified, came THE ABOVE OFFICER OF THE COMPANY, to me personally known to be the individual and officer described in, and who executed the preceding instrument, and he acknowledged the execution of same, and being by me duly sworn, deposed and said that he is the officer of the said Company aforesaid, and that the seal affixed to the preceding instrument is the Corporate Seal of said Company, and the said Corporate Seal and his signature as officer were duly affixed and subscribed to the said instrument by the authority and direction of the said corporation, and that Resolution adopted by the Board of Directors of said Company, referred to in the preceding instrument is now in force.

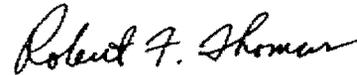
IN TESTIMONY WHEREOF, I have hereunto set my hand, and affixed my Official Seal at the County of Bexar, the day and year first above written.



(Notary Public)

I, the undersigned Officer of the Argonaut Insurance Company, Illinois Corporation, do hereby certify that the original POWER OF ATTORNEY of which the foregoing is a full, true and correct copy is still in full force and effect and has not been revoked.

IN WITNESS WHEREOF, I have hereunto set my hand, and affixed the Seal of said Company, on the 13th day of February 2012



Robert F. Thomas Vice President

ONLINE Version
NEW MEXICO STATE LAND OFFICE – Oil, Gas, and Minerals Division
BOND FOR CONTRACT PERFORMANCE AND SURFACE OR IMPROVEMENT DAMAGE
Surface Improvement Damage Megabond

BOND NO. SUR0013000
(For use of Surety Company)

BOND NO. _____
(For use of State Land Office)

Know all men by these presents

EOG Resources, Inc., P.O. Box 4362, Houston, TX 77210-4362, as **Principal**,
and Argonaut Insurance Company, as **Surety**, a corporation organized,

existing and doing business under and by virtue of the laws of the State of Illinois and
authorized to transact a surety business in the State of New Mexico, are held and firmly bound unto the New Mexico
Commissioner of Public Lands in the sum of **Twenty-five Thousand Dollars (\$25,000)** for the following uses:

1. For the use and benefit of the Commissioner, to secure the performance of said Principal as lessee under one or more state leases or permits for minerals, oil and gas, coal or geothermal resources or as holder under one or more state rights-of-way or easements which Principal has heretofore executed or may hereafter execute with the Commissioner; and

2. For the use and benefit of the Commissioner, state surface lessees, state land contract purchasers, state patentees, and their successors and assigns, to pay for damages to the surface of lands subject to a state lease or permit for minerals, oil and gas, coal or geothermal resources or a state right-of-way or easement held by Principal, or for damages to surface improvements located thereon, suffered by reason of Principal's operations under a state lease or permit for minerals, oil and gas, coal or geothermal resources or under a state right-of-way or easement.

For the payment of said sum, well and truly to be made, Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally.

The conditions of the foregoing obligations are:

1. If the above bound Principal or its successors or assigns shall well and truly perform and keep all terms, covenants, conditions, and requirements of all state leases for minerals, oil and gas, coal or geothermal resources and of all state rights-of-way and easements heretofore or hereafter executed by the Commissioner and Principal, including the payment of royalties when due and compliance with all established mining plans; and

2. If Principal or its successors or assigns shall in all respects make good and sufficient recompense, satisfaction or payment to the Commissioner of Public Lands for damages to the surface of lands subject to a state lease or permit for minerals, oil and gas, coal or geothermal resources or a state right-of-way or easement held by Principal and for damages to livestock, water, crops, tangible improvements or surface improvements of any kind located thereon suffered by reason of Principal's operations under such state lease, permit, right-of-way or easement heretofore or hereafter executed by the Commissioner and Principal;

THEN, the obligation to pay the sum of Twenty-five Thousand Dollars (\$25,000) shall be null and void.

If, however, Principal shall default or otherwise fail in performance under such state lease, permit, right-of-way or easement, including the failure to pay royalties when due or to comply with established mining plans, or if Principal shall fail or refuse to make good and sufficient recompense, satisfaction or payment to the Commissioner for damages to the surface of the above designated lands or to improvements located thereon, then the obligation to pay said sum shall remain in full force and effect.

The liability of Surety upon this bond shall not expire upon the termination of any state lease or permit or any

renewal or extension thereof for minerals, oil and gas, coal or geothermal resources or any state right-of-way or easement or any renewal or extension thereof which Principal or its successors or assigns has heretofore executed or may hereafter execute with the Commissioner, but shall be and remain in full force and effect until released in writing by the Commissioner of Public Lands.

Principal and Surety further agree that in the event an action is brought on this bond and a court of competent jurisdiction determines Principal or Surety is in breach of the agreements contained in this bond, Principal or Surety or both of them shall pay to the Commissioner the costs associated with the recovery of the amounts due hereunder, including reasonable attorneys' fees.

This bond is executed pursuant to the laws of the State of New Mexico, including Sections 19-8-24, 19-9-12, 19-10-26, 19-13-19, and 46-6-1 through -9, NMSA 1978.

The premium for which this bond is written is One Hundred Thirteen and No/100----- Dollars.

In witness whereof we hereunto set our hands this 30th day of January, 20 12.

EOG Resources, Inc.
PRINCIPAL
P.O. Box 4362, Houston, TX 77210-4362 **BB**
Address
BY [Signature]
Signature Helen Y. Lim, VP & Treasurer

Title
(Note: Principal, if corporation, affix
Corporate seal here.)

Argonaut Insurance Company
SURETY
225 W. Washington, 6th Floor, Chicago, IL 60606
Address
BY [Signature]
Attorney-in-Fact Signature
Gina Rodriguez

(Note: Corporate surety, affix
Corporate seal here.)

ACKNOWLEDGMENT FORM FOR NATURAL PERSONS

STATE OF _____)
) ss.
COUNTY OF _____)

On this _____ day of _____, 20____,
before me personally appeared _____, to me known to
be the person(s) described in and who executed the same as (his, her, their) free act and deed.

IN WITNESS WHEREOF, I have hereunto set my hand and seal on the day and year in this certificate first above written.

My commission expires Notary Public name Signature, notary

(Notary Seal)

ACKNOWLEDGMENT FORM FOR CORPORATION

STATE OF TEXAS)
) ss.
COUNTY OF HARRIS)

On this 19th day of January, 20 12,
before me personally appeared Helen Y. Lim, to me personally known, who, being by
me duly sworn, did say that s/ he is VP & Treasurer of EOG Resources, Inc.
and that this instrument was signed and sealed on behalf of said corporation by authority of its board of directors, and
acknowledged said instrument to be the free act and deed of said corporation.

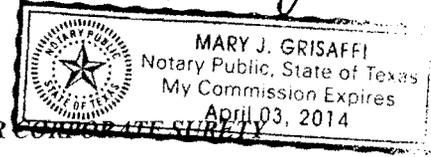
IN WITNESS WHEREOF, I have hereunto set my hand and seal on the day and year in this certificate first above written.

April 3, 2014
My commission expires

Mary J. Grisaffi
Notary Public name

Mary J. Grisaffi
Signature notary

(Notary Seal)



ACKNOWLEDGMENT FORM FOR CORPORATE SURETY

STATE OF TEXAS)
) ss.
COUNTY OF Harris)

On this 30th day of January, 20 12,
before me personally appeared Gina Rodriguez, to me personally known, who, being
by me duly sworn, did say that s/ he is Attorney-in-Fact of Argonaut Insurance Company
and that this instrument was signed and sealed on behalf of said corporation by authority of its board of directors, and
acknowledged said instrument to be the free act and deed of said corporation.

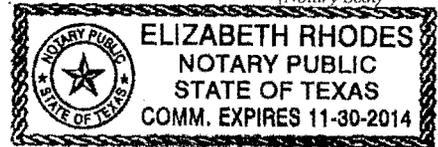
IN WITNESS WHEREOF, I have hereunto set my hand and seal on the day and year in this certificate first
above written.

11-30-2014
My commission expires

Elizabeth Rhodes
Notary Public name

Elizabeth Rhodes
Signature, notary

(Notary Seal)



Note: Corporate surety, attach power of attorney.

APPROVED this _____ day of _____, 20 _____.

COMMISSIONER OF PUBLIC LANDS

NOTE: File before development or operations are commenced, with:

Commissioner of Public Lands
New Mexico State Land Office, OGMD
P.O. Box 1148 or 310 Old Santa Fe Trail
Santa Fe, New Mexico 87504-1148 Santa Fe, NM 87501-2708

**Argonaut Insurance Company
225 W. Washington, 6th Floor
Chicago, IL 60606**

AS-0026041

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That the Argonaut Insurance Company, a Corporation duly organized and existing under the laws of the State of Illinois and having its principal office in the County of Cook, Illinois does hereby nominate, constitute and appoint:

Donald R. Gibson, Sandra Parker, Tannis Mattson, Melissa Haddick, Terri Morrison, Gina Rodriguez

its true and lawful agent and attorney-in-fact, to make, execute, seal and deliver for and on its behalf as surety, and as its act and deed any and all bonds, contracts, agreements of indemnity and other undertakings in suretyship provided, however, that the penal sum of any one such instrument executed hereunder shall not exceed the sum of:

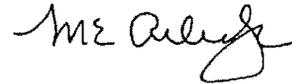
\$15,000,000.00

This Power of Attorney is granted and is signed and sealed under and by the authority of the following Resolution adopted by the Board of Directors of Argonaut Insurance Company:

"RESOLVED, That the President, Senior Vice President, Vice President, Assistant Vice President, Secretary, Treasurer and each of them hereby is authorized to execute powers of attorney, and such authority can be executed by use of facsimile signature, which may be attested or acknowledged by any officer or attorney, of the Company, qualifying the attorney or attorneys named in the given power of attorney, to execute in behalf of, and acknowledge as the act and deed of the Argonaut Insurance Company, all bond undertakings and contracts of suretyship, and to affix the corporate seal thereto."

IN WITNESS WHEREOF, Argonaut Insurance Company has caused its official seal to be hereunto affixed and these presents to be signed by its duly authorized officer on the 15th day of September, 2008.

Argonaut Insurance Company



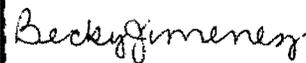
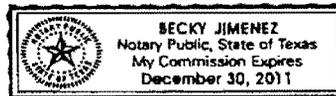
By: _____

Michael E. Arledge President

STATE OF TEXAS
COUNTY OF BEXAR SS:

On this 15th day of September, 2008 A.D., before me, a Notary Public of the State of Texas, in and for the County of Bexar, duly commissioned and qualified, came THE ABOVE OFFICER OF THE COMPANY, to me personally known to be the individual and officer described in, and who executed the preceding instrument, and he acknowledged the execution of same, and being by me duly sworn, deposed and said that he is the officer of the said Company aforesaid, and that the seal affixed to the preceding instrument is the Corporate Seal of said Company, and the said Corporate Seal and his signature as officer were duly affixed and subscribed to the said instrument by the authority and direction of the said corporation, and that Resolution adopted by the Board of Directors of said Company, referred to in the preceding instrument is now in force.

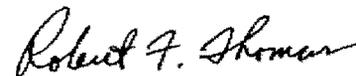
IN TESTIMONY WHEREOF, I have hereunto set my hand, and affixed my Official Seal at the County of Bexar, the day and year first above written.



(Notary Public)

I, the undersigned Officer of the Argonaut Insurance Company, Illinois Corporation, do hereby certify that the original POWER OF ATTORNEY of which the foregoing is a full, true and correct copy is still in full force and effect and has not been revoked.

IN WITNESS WHEREOF, I have hereunto set my hand, and affixed the Seal of said Company, on the 30th day of January 2012



Robert F. Thomas Vice President



EOG Resources, Inc.
1111 Bagby
Sky Lobby 2
Houston, Texas 77002

Date: 1-12-2012

P.O. Box 4362
Houston, Texas 77210-4362

Requestor: Roger Motley **Division:** Midland
Telephone: 432-686-3642 **Fax:** 432-686-3733

Principal (Name & Address of EOG Entity, if other than EOG Resources, Inc.):
EOG Resources, Inc.
P.O. Box 4362
Houston, TX 77210 4362

Obligee (Name & Physical Address of Party requiring bond) **Phone:**
Commissioner of Public Lands
New Mexico State Land Office – Right of Way Division
310 Old Santa Fe Trail
Santa Fe, New Mexico
Effective Date of Bond: 1-30-2012 **Date Bond Required:** 1-20-2012
Amount of Bond: \$25,000
Bond Type:
Performance _____
License/Permit _____
Road Crossing _____
Right of Way _____
Oil & Gas Drilling _____
Plugging & Surface Restoration _____
Other: Surface Improvement Damage Megabond
(If court bond, please provide a copy of judgment and bond form)

Bond Description: (Road, mileage, Well #, Location, County, etc)
This Megabond will cover all operations by EOG Resources, Inc. on our State of New Mexico leases.

Other Comments/Information:

Deliver completed Bonds by Fed Ex To:
Requestor Roger Motley, Midland Division Land Dept.
Obligee Nick Jaramillo, New Mexico State Land Office – Right of Way Division
310 Old Santa Fe Trail
Santa Fe, New Mexico 78501-2708



ROSS DRAW EAST REUSE PIT

NW4/ NW4 SEC. 16 - T26S-R31E

LEA COUNTY, NM

LAT: 32°02'48.69" LONG: -103°47'21.35"

EMERGENCY CONTACT:

575-392-3647

CAUTION

**PPE
REQUIRED**

DANGER

**H₂S
MAY BE PRESENT**

DANGER

**NO
SMOKING**

NOTICE

**AUTHORIZED
PERSONNEL ONLY**



Operating and Maintenance Plan

ROSS DRAW EAST REUSE WATER CONTAINMENT PIT

1. Overview

The attached plan details the operational requirements regarding the Ross Draw East Reuse Water Containment Pit. In addition, the required reporting and inspections as well as the appropriate actions/notifications are listed.

2. Purpose

The attached plan implements the operational requirement as outlined by NMOCD under 19.15.34 NMAC. Application of this plan will ensure the reuse water containment pit is operated in a manner that minimizes any risk to health, safety, and environment.

3. Operational Requirements

Below are the operational requirements that must be adhered to at all times. Deviation from these requirements is prohibited.

- Inlet flow
 - Recycling facility effluent stream water must meet all water quality norms before water is introduced into the containment pit. These norms are to include no detected oil in the stream.
 - Inlet water may only be introduced into the containment pit via the diffuser manifold as to not cause any stress or damage to the liner system.
 - A minimum of 3ft of freeboard will be maintained in the reuse water containment pit at all times.
- Effluent Flow
 - Effluent water may only exit the reuse water containment via the permanent discharge header system; no external hoses or pipes may be placed into the pit at any time
 - Effluent water may only be transferred to EOG Resources' completion operations; no transfer to 3rd parties is allowed
 - Effluent water may only be transferred through an EOG leak detection transfer system; all protocols and procedures regarding the automated leak detection system must be followed



- Volume Reporting
 - All influent and effluent volumes are to be logged daily. These volumes are to be tracked via inbound and outbound mag meters and tracked via paper and SCADA systems
- Site Inspection
 - The pit and surrounding area are to be inspected daily while water is contained within the pit. These inspections are to include all inlet/outlet piping, berms, exposed liner, surrounding grounds and fencing
- Leak Detection Testing
 - Leak detection testing shall be conducted daily. Testing shall include starting the leak detection sump pump to determine if any fluid has collected in the collection sump. The sump pump shall be run for a minimum of 5 minutes to allow for inlet flow. If any flow is detected the proper notification to the Hobbs NMOCD will occur and drainage will commence

4. Daily Reporting & Inspections

- List of Daily Reporting and Inspections to be completed:
 - Influent and Effluent Volume Reporting
 - Site and Containment Pit Inspection
 - Leak Detection

5. Notifications

In the event of a leak detection denoting a compromised liner below the water level, notice shall be provided to be the Hobbs division office of the NMCOD within 48 hours of detection.

District 1
1625 N. French Drive
Hobbs, New Mexico 88240
OFFICE: (575) 393-6161 FAX: (575) 393-0720
EMERGENCY NUMBER - MOBILE: (575) 370-3186
Business Hours:
7:00 AM-12:00 PM and 1:00 - 4:00 PM
Monday through Friday

6. Associated Forms

- List of Associated forms for Operating and Maintenance Plan
 - NA



Water Containment Closure Plan

ROSS DRAW EAST REUSE WATER CONTAINMENT PIT

1. Overview

The attached plan details the requirements regarding the closure of the Ross Draw East Reuse Water Containment Pit. In addition, the required sampling and reporting obligations are detailed.

2. Purpose

The attached plan implements the closure requirement as outlined by NMOCD under 19.15.34.14 NMAC. Application of this plan will ensure the reuse water containment pit is closed and reclamation is completed in a manner that minimizes any risk to health, safety, and environment.

3. Closure Requirements

- Containment Pit Drainage
 - All reuse water remaining in the containment pit shall be removed from the impoundment within 60 days operations cessation. The removed fluids will then be transferred a division approved disposal facility. Records of all removal, transfer and disposal activities shall be retained for inclusion in the final closure report submittal.
- Liner Material Removal and Disposal
 - Removal of the liner shall be conducted in manner that minimizes any risk of soil disturbance to the surface within and surrounding the containment. The removed liner material will then be transferred to and disposed of at a division approved disposal facility. Records of all removal, transfer and disposal activities shall be retained for inclusion in the final closure report submittal.
- Soil Sampling
 - Soil sampling shall be conducted at the locations depicted in the below schematic, Sampling Point Diagram, by a qualified third party contractor and analyzed at NELAC certified laboratory.
 - If any contaminant concentration is higher than the parameters listed in Table 1 in 19.15.34.14 NMAC, notice shall be provided the Hobbs NMOCD office before proceeding with closure.
 - If all sample concentrations are less than or equal to the parameters listed in Table 1 in 19.15.34.14 NMAC, then closure can proceed, backfilling with non-waste containing, uncontaminated, earthen material

- Sampling Diagram



- Site Reclamation and Re-vegetation
 - Following closure, reclamation of the containment's location can commence and ensure that it is returned to a safe and stable location that blends with the surrounding undisturbed area. Topsoils and subsoils shall be replaced to original positions and contoured to achieve erosion free long term stability and preservation of surface water flow patterns.
 - The disturbed area shall then be reseeded in the first favorable growing season following closure of the containment. The surface area shall be restored to the condition that existed prior to the construction of the containment



- Reclamation of all disturbed areas no longer in use shall be considered complete when all ground surface disturbing activities at the site have been completed and a uniform vegetative cover has been established that reflects a life form ration of +/- 50% of pre-disturbance levels and a total percent plant cover of at least 70% of pre-disturbance levels, excluding noxious weeds.

4. Closure and Reclamation Report Submittal / Notice

- Closure Report
 - Within 60 days of closure completion, EOG shall submit a closure report on form C-147 to the NMOCD Hobbs office, including required attachments, to document all closure activities including sampling results and the details of any backfilling, capping or covering.
 - The closure report shall certify that all information in the report and attachments is correct and that EOG has complied with all applicable closure requirements and conditions specified in the division rules or directives
 - Reclamation Notice
 - EOG shall notify the NMOCD Hobbs office when all reclamation and re-vegetation are complete

5. Notifications

In the event of any deviance from this closure plan or exceeding of a sampling constituent, notice shall be provided to the NMOC Hobbs office.

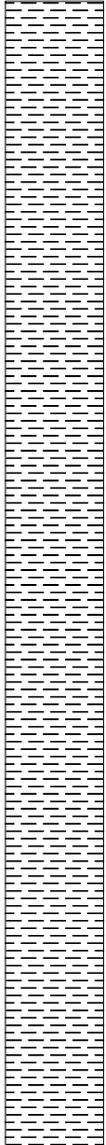
District 1
1625 N. French Drive
Hobbs, New Mexico 88240
OFFICE: (575) 393-6161 FAX: (575) 393-0720
EMERGENCY NUMBER - MOBILE: (575) 370-3186
Business Hours:
7:00 AM-12:00 PM and 1:00 - 4:00 PM
Monday through Friday

6. Associated Forms

- List of Associated forms for containment pit closure
 - NA

SOIL BORING / MONITORING WELL LOG

PROJECT: <u>Carlsbad, NM - Ross Draw</u>	DRILLING COMPANY: <u>Talon/LPE</u>
PROJECT NUMBER: <u>700438.232.01</u>	DRILLER: <u>Ronnie Rodriguez</u>
CLIENT: <u>EOG Resources</u>	DRILLING METHOD: <u>Hollow Stem Auger</u>
BORING / WELL NUMBER: <u>SB-1</u>	BORE HOLE DIAMETER: <u>7 7/8"</u>
TOTAL DEPTH: <u>75</u>	SCREEN: Diam. <u> </u> Length <u> </u> Slot Size <u> </u>
SURFACE ELEVATION: <u> </u>	CASING: Diam. <u> </u> Length <u> </u> Type <u> </u>
LOGGER: <u>Ronnie Rodriguez</u>	DATE DRILLED: <u>1/28/2020</u>
LATITUDE: <u> </u>	LONGITUDE: <u> </u>

DEPTH (FT.)	Soil Symbol	WELL CONSTRUCTION	Pt. Sample ID:	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	BLOW COUNT	DEPTH (FT.)
0									0
			SB1-1'		0'-5'		Dark to Light Brown Silty Sand w/ Caliche	2	2
								4	
5									5
			SB1-6'		5'-10'		Light Brown to White Sand w/ Caliche	6	21
								24	
10									10
			SB1-11'		10'-15'		Light Brown to White Sand w/ Caliche	26	28
								50	
15									15
		SB1-16'		15'-20'		Dark Brown Sand w/ Caliche	44	50	
20								1.5"	20
		SB1-21'		20'-25'		Dark Silty Sand w/ Caliche	19	22	
							33		
25								25	
		SB1-26'		25'-30'		Dark Brown Silty Caliche	21	30	
							50		
30								1.5"	30
							Dark Silty Caliche w/ Sand		

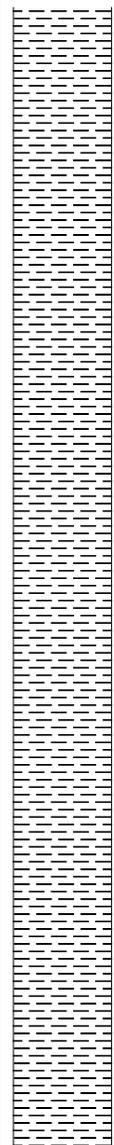
REMARKS:

THIS BORING LOG SHOULD NOT BE USED SEPERATE FROM THE ORIGINAL REPORT



SOIL BORING / MONITORING WELL LOG

PROJECT: <u>Carlsbad, NM - Ross Draw</u>	DRILLING COMPANY: <u>Talon/LPE</u>
PROJECT NUMBER: <u>700438.232.01</u>	DRILLER: <u>Ronnie Rodriguez</u>
CLIENT: <u>EOG Resources</u>	DRILLING METHOD: <u>Hollow Stem Auger</u>
BORING / WELL NUMBER: <u>SB-1</u>	BORE HOLE DIAMETER: <u>7 7/8"</u>
TOTAL DEPTH: <u>75</u>	SCREEN: Diam. <u> </u> Length <u> </u> Slot Size <u> </u>
SURFACE ELEVATION: <u> </u>	CASING: Diam. <u> </u> Length <u> </u> Type <u> </u>
LOGGER: <u>Ronnie Rodriguez</u>	DATE DRILLED: <u>1/28/2020</u>
LATITUDE: <u> </u>	LONGITUDE: <u> </u>

DEPTH (FT.)	Soil Symbol	WELL CONSTRUCTION	Pt. Sample ID:	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	BLOW COUNT	DEPTH (FT.)
			SB1-31'	█	30'-35'		Dark Silty Sand & Caliche	21 39 40	
35			SB1-36'	█	35'-40'		Dark Silty Sand & Caliche	15 28 36	35
40			SB1-41'	█	40'-45'		Dark Silty Sand & Caliche	15 22 27	40
45			SB1-46'	█	45'-50'		Dark Silty Sand	18 33 42	45
50			SB1-51'	█	50'-55'		Dark Brown Silty Sand & Caliche	20 37 31	50
55			SB1-56'	█	55'-60'		Dark Brown Silty Sand	20 27 35	55
60							Dark Brown Silty Sand	20 27 35	60

REMARKS:

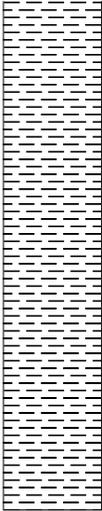
THIS BORING LOG SHOULD NOT BE USED SEPERATE FROM THE ORIGINAL REPORT



SOIL BORING / MONITORING WELL LOG

PROJECT: Carlsbad, NM - Ross Draw
 PROJECT NUMBER: 700438.232.01
 CLIENT: EOG Resources
 BORING / WELL NUMBER: SB-1
 TOTAL DEPTH: 75
 SURFACE ELEVATION: _____
 LOGGER: Ronnie Rodriguez
 LATITUDE: _____

DRILLING COMPANY: Talon/LPE
 DRILLER: Ronnie Rodriguez
 DRILLING METHOD: Hollow Stem Auger
 BORE HOLE DIAMETER 7 7/8"
 SCREEN: Diam. _____ Length _____ Slot Size _____
 CASING: Diam. _____ Length _____ Type _____
 DATE DRILLED: 1/28/2020
 LONGITUDE: _____

DEPTH (FT.)	Soil Symbol	WELL CONSTRUCTION	Pt. Sample ID:	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT.)
65			SB1-61'	60'-65'			Dark Brown Silty Sand & Caliche	20
								32
								44
70			SB1-66'	65'-70'			Dark Brown Silty Sand	65
								32
								44
75				70'-75'		75'		50
								70
								11
								22
								37
								75
80							Bottom of Hole	80
								85
85								90
								90

REMARKS:

THIS BORING LOG SHOULD NOT BE USED SEPERATE FROM THE ORIGINAL REPORT





22 December 2019

Mr. Galan Kelley
EOG Resources, Inc.
5509 Champions Drive
Midland, TX 79706

**Re: Comprehensive Resource Review – Ross Draw Water Reuse Pit
Eddy County, New Mexico**

Dear Mr. Kelley:

Goshawk Environmental Consulting, Inc. (Goshawk) conducted a comprehensive desktop resource review and limited field investigations for the Ross Draw Water Reuse Pit in Eddy County, New Mexico. This resource review included Waters of the US (WATERS), threatened or endangered (T/E) species, and cultural resources. The purpose of these investigations was to evaluate whether the proposed water reuse pit contained any protected resources, the approximate size and location of identified protected resources, and associated development constraints, if applicable. Goshawk also conducted a cultural resources archival review of the water reuse pit. All figures are in Appendix A.

INTRODUCTION

The Ross Draw Water Reuse Pit will include a double-lined water pit with leak detection, a tanker off load and storage area, a reuse water treatment facility, and freshwater blending system. The pit site is approximately 1,225 feet long (east–west) and 910 feet wide (north–south) and encompasses approximately 25.59 acres. The pit site is generally located in a very rural portion of Eddy County, where land use is primarily cattle ranching and oil/gas exploration and production.

WATERS REVIEW

REGULATORY BACKGROUND AND METHODOLOGY

Investigations to identify potential WATERS within the proposed Ross Draw Water Reuse Pit included a resource review, followed by a field investigation. The resource review included inspection of available United States Geological Survey (USGS) 7.5-minute topographic quadrangle for Phantom Banks, New Mexico; recent digital aerial orthoimagery; and the Natural Resource Conservation Service (NRCS) Soil Survey Geographic Database (SSURGO). Field investigations were performed in accordance with US Army Corps of Engineers (USACE) guidelines, utilizing the *Corps of Engineers Wetlands Delineation Manual – Technical Report Y-87-1* (January 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) – ERDC/EL TR-08-28* (September 2008).

The jurisdictional status of identified features was determined based on 33 CFR 328.3(a), along with the US Army Core of Engineers (USACE)–Environmental Protection Agency (EPA) joint guidance on Clean Water Act (CWA) jurisdiction, following the US Supreme Court’s decision in *Rapanos v. United States* and *Carabell v. United States*. Current guidance states that the USACE and EPA will assert jurisdiction over (1) traditionally navigable waters (TNWs) and all wetlands adjacent to TNWs; (2) relatively permanent waters (RPWs), which include non-navigable tributaries of TNWs that typically flow year-round or have continuous flow at least seasonally, and all wetlands that are directly abutting RPWs; and (3) other water bodies such as non-RPWs; wetlands adjacent to non-RPWs;



and wetlands adjacent to but not directly abutting an RPW that are analyzed and determined to have a significant nexus with a TNW. A significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or an insubstantial effect on the chemical, physical, and/or biological integrity of a TNW.

LITERATURE REVIEW

Topographic Map

The topographic quadrangle (Figure 1) indicates the Ross Draw Water Reuse Pit is entirely within grasslands (white background). The terrain is relatively flat, with elevations ranging from slightly below 3,230 feet above mean sea level (AMSL), to slightly below 3,210 feet AMSL. Drainage occurs by overland sheet flow in a generally southeast direction. No mapped waterbodies (dot-dash blue line) are indicated within the proposed pit or surrounding area. The Ross Draw Water Reuse Pit is within the Lower Pecos River Watershed. The nearest direct line point to the Pecos River is the Red Bluff Reservoir approximately 9.5 miles southwest. There are no improvements mapped within the pit site; however, a road and water tank are mapped/indicated to the east of the pit site.

Aerial Orthoimagery

The aerial orthoimagery (Figure 2) indicates the Ross Draw Water Reuse Pit is within relatively open rangeland, dominated by shrubs. The unimproved road indicated in the topographic map is evident in the aerial orthoimagery; however, no evidence of the water tank is apparent. Other oil/gas development (well pads, water pits, pipelines, etc.) is indicated in the vicinity (primarily along the unimproved road) of the proposed pit.

Soils

The NRCS SSURGO spatial data (Figure 3) indicate the soil map units underlying the Ross Draw Water Reuse Pit are the Simona-Bippus complex (SM) and the Tonuco loamy fine sands (TF). The primary soil components of these map units are Simona and Bippus gravelly fine sands, and Tonuco loamy fine sands. These soils are excessively drained and have very rapid permeability. Runoff for Simona and Tonuco soils is very high; Bippus soil runoff is very slow and negligible. None of the primary components of these soils are listed as hydric soils.

FIELD INVESTIGATION

A field investigation was conducted on 21 May 2019 to determine the presence of potential WATERS within the Ross Draw Water Reuse Pit. The water reuse pit was traversed on-foot. The conditions were generally consistent with those depicted on the topographic map and aerial orthoimagery described above. The area was relatively flat and dominated by shrubland vegetation, intermixed with grasses and bare ground. Vegetation within the area consisted primarily of honey mesquite (*Prosopis glandulosa*), Plains yucca (*Yucca glauca*), and broom snakeweed (*Gutierrezia sarothrae*).

Drainage occurs primarily by overland sheet flow toward the southeast. No evidence of an Ordinary High Water Mark (OHWM) or standing water was found within the pit site. Additionally, no flowing watercourse, lakebed, sinkhole, or playa exhibiting an OHWM were found within the pit site or within 300 feet of the pit. A search in the general vicinity of the pit site did not reveal any seeps, springs, wetlands, or water wells within 500 feet of the pit site.

REGULATORY DEVELOPMENT CONSTRAINTS

It is Goshawk's opinion that construction of the Ross Draw Water Reuse Pit will not impact any WATERS. It is important to note that only USACE has the authority to make a formal determination defining its jurisdictional



limits under the CWA. Approved jurisdictional determinations are made by the USACE in accordance with internal policies and procedures in place at that time, and on a case-by-case basis using information at its disposal (such as other permits in the local area and case law) that may not be readily available to the public. Therefore, Goshawk's opinion should not be considered authoritative, and cannot wholly eliminate uncertainty regarding the USACE's jurisdictional limits.

THREATENED OR ENDANGERED SPECIES

REGULATORY BACKGROUND AND METHODOLOGY

The Endangered Species Act prohibits any action that causes a "take" of any listed T/E species. A "Take" is defined as harm or harassment, including hunting, wounding, killing, trapping, and the capture or collection of individuals of listed species. The law also protects against the degradation or loss of vital habitat for listed species. The United States Fish and Wildlife Service (USFWS) and National Marine Fisheries Service are the regulatory authorities for federally listed T/E species.

State-listed T/E species are protected under New Mexico Wildlife Conservation Act (17-2-41). The New Mexico Department of Game and Fish (NMDGF) has the authority to establish a list of fish and wildlife species that are endangered or threatened. Unlike the federal act, the state's regulation makes no provision for the protection of wildlife species from indirect take (e.g., destruction of habitat or unfavorable management practices); rather, it protects from the unlawful killing, trade, or transportation of state-listed species. Therefore, the state-listed species are only a potential development constraint if listed species are determined to be currently occupying the pit site.

Literature and agency file searches were conducted to identify the potential occurrence of any federally and state-listed T/E species near the Ross Draw Water Reuse Site. An internet search of the USFWS *Information, Planning, and Conservation System* (IPaC) was conducted for Eddy County to identify federally listed T/E species "that should be considered as part of an effects analysis" for the pit site. Additionally, a report from the NMDGF Biota Information System of New Mexico (BISON-M) was obtained and reviewed for the Eddy County.

RESOURCE REVIEW

The T/E species listed in the IPaC Trust Resource Report for Eddy County (Appendix B) is the least tern (*Sterna antillarum*), Mexican spotted owl (*Strix occidentalis lucida*), northern aplomado falcon (*Falco femoralis septentrionalis*), piping plover (*Charadrius melodus*), southwestern willow flycatcher (*Empidonax traillii extemus*), yellow-billed cuckoo (*Coccyzus americanus*), Pecos bluntnose shiner (*Notropis simus pecosensis*), Pecos gambusia (*Gambusia nobilis*), and Texas hornshell (*Popenaias popeii*). Critical habitat for these species is not designated within the Ross Draw Water Reuse Pit or the immediate vicinity.

The state-listed T/E species on NMDGF BISON-M County List for Eddy County dated 22 December 2019 (Appendix C) include: least shrew (*Cryptotis parvus*), spotted bat (*Euderma maculatum*), common ground-dove (*Columbina passerine*), lucifer hummingbird (*Calothorax lucifer*), broad-billed hummingbird (*Cyananthus latirostris*), piping plover, least tern, neotropic cormorant (*Phalacrocorax brasilianus*), brown pelican (*Pelecanus occidentalis*), bald eagle (*Haliaeetus leucocephalus*), common black gawk (*Buteogallus anthracinus*), aplomado falcon, peregrine falcon (*Falco peregrinus*), northern beardless-tyrannulet (*Camptostoma imberbe*), thick-billed kingbird (*Tyrannus crassirostris*), southwestern willow flycatcher, Bell's vireo (*Vireo bellii*), gray vireo (*Vireo vicinior*), Baird's sparrow (*Centronyx bairdii*), varied bunting (*Passerina versicolor*), western river cooter (*Pseudemys gorzugi*), dunes sagebrush lizard (*Sceloporus arenicolus*), gray-banded kingsnake (*Lampropeltis*



alterna), plain-bellied water snake (*Nerodia erythrogaster*), arid land ribbon snake (*Thamnophis Proximus*), mottled rock rattlesnake (*Crotalus lepidus*), and western narrow-mouthed toad (*Gastrophryne olivacea*). Fish and mollusks are also listed for Eddy County; however, due to the nature of the pit site and lack of potential habitat, these species would not occur at the pit site.

DEVELOPMENT CONSTRAINTS

The federally listed least tern and piping plover are listed because of migratory routes. Although these species occasionally stop at points along the migration routes, use of the proposed Ross Draw Water Reuse Pit Site would be unlikely due to the lack of suitable habitat. The northern aplomado falcon is listed for many southeastern New Mexico counties (including Eddy County) within its historic range. Historically, the falcon utilized open desert grasslands and/or savannas, where scattered shrubs and trees provide roosting and nesting locations. Although the proposed site is within a shrubland, the land uses of this area (heavy cattle grazing and oil/gas production) likely precludes the northern aplomado falcon from utilizing the site. The Mexican spotted owl primarily utilizes old growth forests. The proposed water reuse pit site does not contain any habitat for the Mexican spotted owl. The southwestern willow flycatcher and yellow-billed cuckoo are typically found within riparian woodlands. The nearest potential habitat for these species would be along the Pecos River. The two listed fish and one mollusk would only be found in perennial aquatic habitats. No aquatic habitats exist within the water reuse pit site. No impacts are expected to any of the federally listed species.

State regulations prohibit the taking, possession, transportation, or sale of any state-listed T/E species. Because Eddy County has the potential to support state-listed T/E species, care should be taken to avoid direct impacts (including harassment, harm, killing, and/or collection) to any species that may inhabit the pit site. The state-listed birds would have the ability to leave the pit site during active construction to avoid impacts. However, slower-moving species (reptiles and amphibians) are ground-dwelling and relatively slow-moving, which makes them more likely to be impacted by construction activities than other state-listed species.

The western river cooter, plain-bellied water snake, arid land ribbon snake, and western narrow-mouthed toad would all be expected in riparian areas near perennial water. There is no perennial water within the water reuse pit site. The dunes sagebrush lizard is more commonly found in the northern and eastern portions of Eddy County where large sand dunes exist. The pit site lacks suitable habitat for the dunes sagebrush lizard. The gray-banded kingsnake and mottled rock rattlesnake prefer arid, rocky habitats. The predominantly sandy soils within the water reuse pit site likely preclude the gray-banded kingsnake and mottled rock rattlesnake. The lack of habitat for the state-listed species, coupled with the current land use, makes it highly unlikely that these listed species are utilizing the pit site. Care should be taken to avoid harassment, harm, killing, and/or collecting of these species, including slower-moving species. No further investigations relative to T/E species are recommended.

CULTURAL RESOURCES DESKTOP REVIEW

REGULATORY BACKGROUND AND METHODOLOGY

Section 106 of the National Historic Preservation Act (NHPA) of 1966 requires Federal agencies to consider the effects of their actions on historic properties and provide the State Historic Preservation Office (SHPO) and the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on their projects. Historic properties are defined as archaeological sites, standing structures, or other historic resources listed on or eligible for listing on the National Register of Historic Places (NRHP). The New Mexico Prehistoric and Historic Sites



Preservation Act and the New Mexico Cultural Properties Act provide protection of archaeological sites (prehistoric and historic) listed in the State Register of Cultural Properties or on the NRHP.

The regulatory process seeks to determine if a project will have an “effect” upon historic properties. The term “effect” is defined as an “alteration to the characteristics of historic property qualifying it for inclusion in, or eligibility for the National Register (of Historic Places).” An effect is “adverse” when it will endanger those qualities that make the property eligible for inclusion on the NRHP.

Goshawk performed an archival review to evaluate the potential for historic properties present near the Ross Draw Water Reuse Pit. The Archaeological Records Management Section’s (ARMS) New Mexico Cultural Resources Information System (NMCRIS) online database, geospatial data obtained from the US Bureau of Land Management (BLM) Carlsbad Field Office, and the Natural Resources Conservation Service Web Soil Survey were utilized for the review.

ARCHIVAL REVIEW

Archival Research

According to NMCRIS, the proposed Ross Draw Reuse Pit and surrounding area was subjected to archaeological survey under 14 different survey projects. NMCRIS Activity #139617 provides 100-percent archaeological survey coverage; the remaining previous surveys provide partial coverage. Previous surveys have yielded largely negative results in the immediate vicinity of the proposed Ross Draw Reuse Pit (Table 1).

Table 1: Surveys Undertaken Within 1,640 feet (500 meters) of the Proposed Ross Draw Reuse Pit

Activity Number	Organization Name	Lead Agency	Total Acres	Sites Visited	Date of Survey Start/End
36790	Pecos Archaeological Consultants	BLM-Roswell District & NM State Land Office	443.41	10	24 Jun to 8 Jul 1991
48771	Lone Mountain Archaeological Services	BLM-Roswell District & NM State Land Office	4,070.00	53	18 Mar to 18 Sep 1995
59846	Lone Mountain Archaeological Services	BLM-CFO & NM State Land Office	3,163.32	45	2 Feb to 4 May 1998
63400	Don Clifton, Consulting Archaeologist	BLM-CFO & NM State Land Office	16.20	0	11 to 18 Jan 1999
64530	Southern New Mexico Archaeological Services	BLM-CFO & NM State Land Office	60.80	1	9 to 19 Apr 1999
73960	Mesa Field Services	NM State Land Office	14.80	1	1 to 16 Mar 2001
127646	Lone Mountain Archaeological Services	BLM-CFO & NM State Land Office	5,469.59	35	1 Mar 2013 to 12 Jul 2014
133502	Boone Archaeological Services of New Mexico	BLM-CFO & NM State Land Office	78.92	2	29 May to 1 Jun 2015
137303	Goshawk Environmental Consulting	BLM-CFO & NM State Land Office	93.13	5	1 Dec 2016 to 4 Jan 2017
138711	Goshawk Environmental Consulting	BLM-CFO & NM State Land Office	26.30	0	21 Jul 2017
139617	Lone Mountain Archaeological Services	NM State Land Office	2,084.25	17	11 Dec 2017 to 5 Jan 2018
140015	Boone Archaeological Consultants, LLC.	BLM-CFO & NM State Land Office	847.18	12	14 Feb to 16 May 2018



Activity Number	Organization Name	Lead Agency	Total Acres	Sites Visited	Date of Survey Start/End
141138	Advanced Archaeological Solutions	BLM-CFO & NM State Land Office	174.60	0	17 Jul to 20 Sep 2018
142303	Stratified Environmental and Archaeological Services, LLC	Federal Energy Regulatory Commission	22,733.00	12	17 Jan 2019

Two archaeological sites have been documented within 500 meters (1,640 feet) of the Ross Draw Reuse Pit. The nearest site, LA #121166, was 551.5 feet (168.1 m) south of the proposed Ross Draw Reuse Pit. Archaeological site LA #121166 was originally recorded in 1998 by Lone Mountain Archaeological Services during NMCRIS Activity #59846. The site, which measured 410 by 338 feet (125 by 103 m), was documented as an undifferentiated prehistoric artifact scatter with features. The artifacts were found eroding from dunes and consisted of chert, chalcedony, and quartzite lithics; chipped stone tools; ground stone tools; and fire-cracked rock. Site features totaled six fire-cracked rock concentrations. Subsurface deposits were present to an estimated depth of 3.3 feet (1 m). Site LA #121166 has been revisited five times since 1998. Southern New Mexico Archaeological Services revisited the site in 1999 (NMCRIS Activity #64530), Mesa Field Services revisited the site in 2001 (NMCRIS Activity #73960), and Lone Mountain Archaeological Services revisited the site in 2013 and 2017 (NMCRIS Activities #127646 and #139617). In 2004, the recorder and the State Historic Preservation Office (SHPO) determined the site eligible for listing on the National Register of Historic Places (NRHP). In 2013, the recorder determined the site not eligible for listing, and the SHPO considered the site unevaluated for listing. In 2017, the recorder determined the site unevaluated for NRHP listing.

The next closest site, LA #182038, is 1,443.7 feet (440 m) northwest of the proposed Ross Draw Reuse Pit. The site was originally recorded in 2015 by Boone Archaeological Services of New Mexico (Boone) during NMCRIS Activity #133502. LA #182038 was recorded as a historic Anglo site that was occupied between 1945 AD and 2015 AD. Site artifacts consisted of lumber, metal sheets, metal pipes, and corrugated metal. Site features included two tanks, one pipeline, and one potential well. The site was revisited by Goshawk in 2017 (NMCRIS Activity #137303) and by Boone Archaeological Consultants, LLC in 2018 (NMCRIS Activity #140015). In 2015, the Boone recorder, the Bureau of Land Management (BLM), and the SHPO determined the site not eligible for listing on the NRHP. In 2016, the Goshawk recorder also determined the site not eligible for NRHP listing. The BLM and SHPO determined the site not eligible for NRHP listing again in 2017 and 2018.

National Register Properties

No NRHP-listed properties have been recorded near the proposed site. According to the NMCRIS database, the nearest NRHP-listed property is the Pope's Wells Site (LA# 69016). This site consists of the remains of a camp and well site that was part of efforts to establish a water well in the area in the 1850's. The Pope's Wells Site lies approximately 2.4 miles southwest of the proposed pit site.

Soils Analysis

Soils mapped within the proposed site consisted of Simona-Bippus complex and Tonuco loamy fine sand. The Simona and Tonuco series are shallow to very shallow soils. The Simona soils are fine sandy loams found on level to moderately undulating plains. These soils are well drained with slow runoff. The Tonuco series is comprised of brown to reddish brown sands. Runoff is negligible. These soils occur on gently undulating upland ridges and on broad, level plains. The Bippus series consists of deep clay loams found on level to gently sloping topography. The Bippus soils are found primarily along ephemeral streams. The primary use of all soil types is rangeland where



the vegetation is dominated by short and mid grasses; however, shrubs can become prevalent when overgrazed. Native vegetation is typically a mixture of sparse grasses and shrubs. The shallow and sandy nature of these soils indicates a low probability for the presence of temporally stratified cultural deposits. Considering the soils present, there is a low probability for the presence of significant cultural resources sites within the proposed Ross Draw Reuse Pit.

DEVELOPMENT CONSTRAINTS

The cultural resources archival review determined there is a low probability for the presence of significant prehistoric resources within the pit site. No impacts to cultural resources would be expected by the Ross Draw Water Reuse Pit.

SUMMARY

Based on the results of the Resource Review, it is Goshawk's opinion that the construction of the Ross Draw Water Reuse Site is unlikely to impact any sensitive natural resources, including WATERS and T/E species. Based on the negative results from previous cultural resources survey, it is Goshawk's opinion that the pit site is not likely to contain significant cultural resources. In the unlikely event that cultural resources (including human remains) are discovered, all construction or maintenance activities should be immediately halted, and a qualified archaeologist should be notified. If you have any questions or desire additional information, please contact our office.

Sincerely,



Bear Aspra
Project Manager/Ecologist



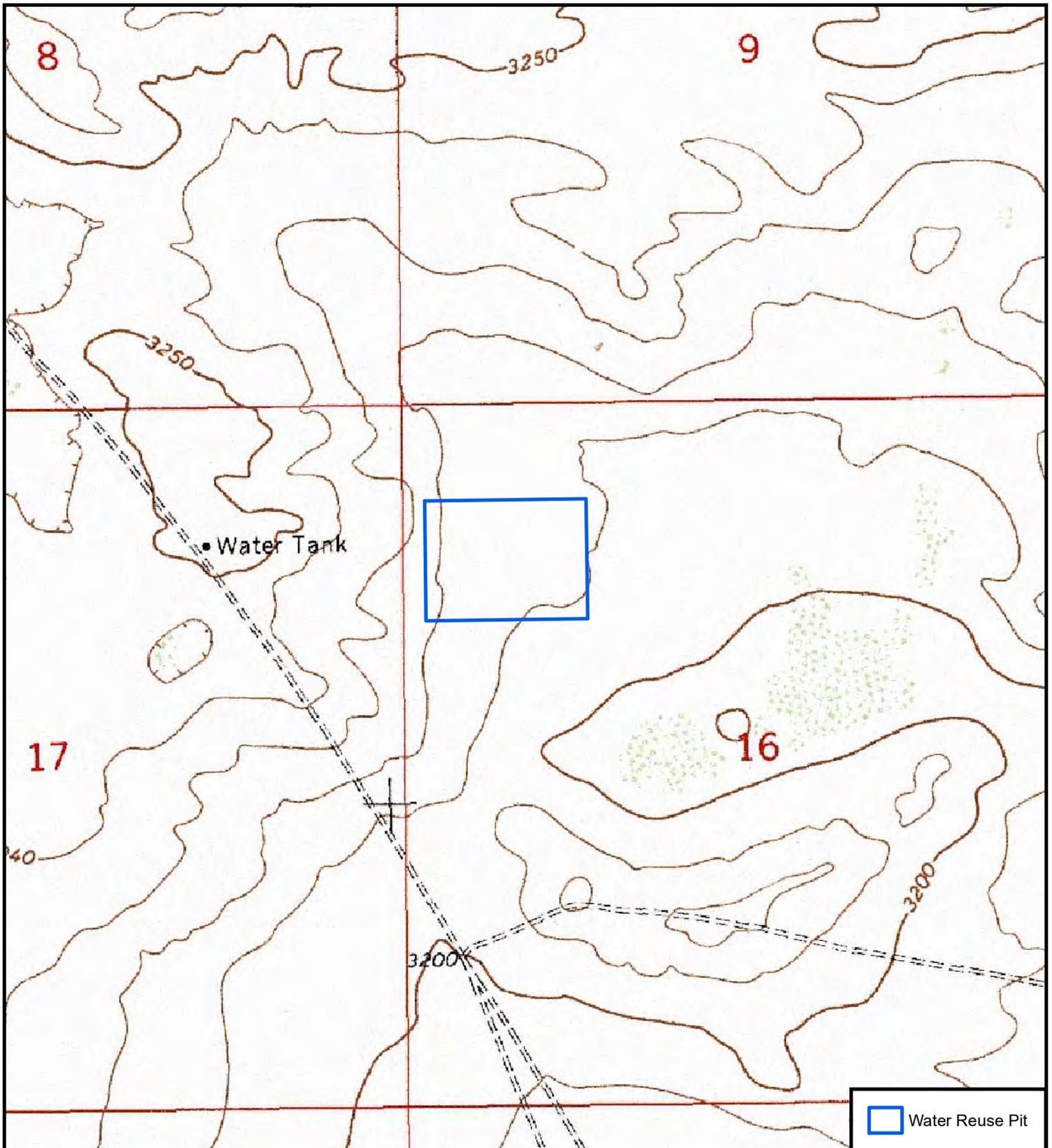
Steven Evans
Project Archaeologist

Cc: Dustin Kinder, EOG Resources, Inc.
Michael Yemm, EOG Resources, Inc.



APPENDIX A
FIGURES





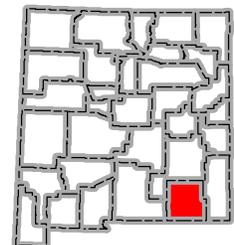
Map Source: USGS, Phantom Banks,
New Mexico Quadrangle.

Date: 22 December 2019

0 500 1,000 Feet

Figure 1
USGS Topographic Map
Eddy County, New Mexico

Ross Draw Water Reuse Pit
Township 26S; Range 31E; Section 16





Map Source: EOG's Spatial on Demand.
Global Imagery: DigitalGlobe Most Recent.

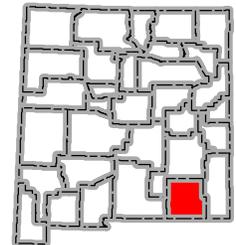
0 500 1,000 Feet

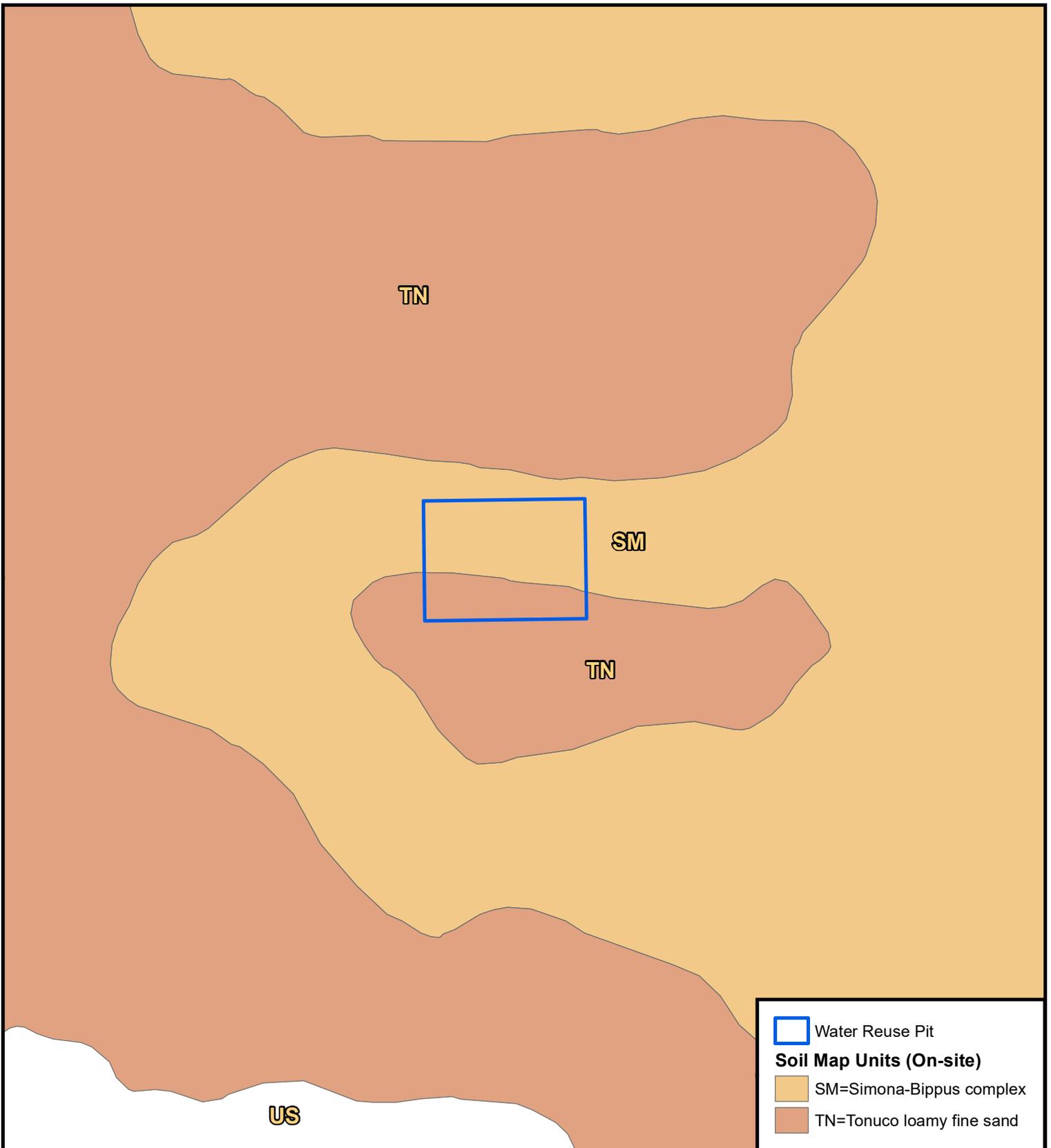


Figure 2
Aerial Orthoimagery
Eddy County, New Mexico

Ross Draw Water Reuse Pit
Township 26S; Range 31E; Section 16

Date: 22 December 2019





 Water Reuse Pit
Soil Map Units (On-site)
 SM=Simona-Bippus complex
 TN=Tonuco loamy fine sand

Map Source: USDA/NRCS - National Geospatial Center of Excellence. Soil Survey Geographic (SSURGO) Eddy County New Mexico

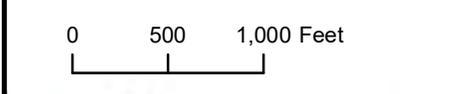
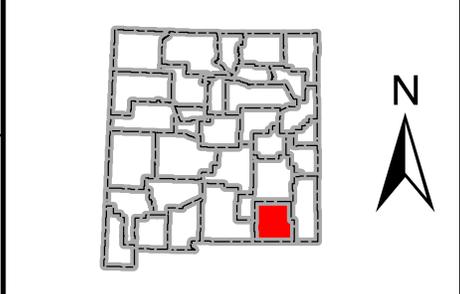


Figure 3
NRCS SSURGO Soil Map
Eddy County, New Mexico

Ross Draw Water Reuse Pit
Township 26S; Range 31E; Section 16

Date: 22 December 2019



APPENDIX B
USFWS IPAC RESOURCE TRUST REPORT

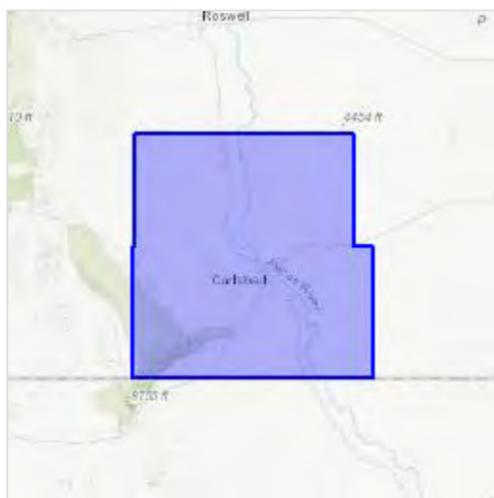
IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Eddy County, New Mexico



Local office

New Mexico Ecological Services Field Office

☎ (505) 346-2525

📅 (505) 346-2542

2105 Osuna Road Ne
Albuquerque, NM 87113-1001

<http://www.fws.gov/southwest/es/NewMexico/>

http://www.fws.gov/southwest/es/ES_Lists_Main2.html

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.
2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Birds

NAME	STATUS
Least Tern <i>Sterna antillarum</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8505	Endangered
Mexican Spotted Owl <i>Strix occidentalis lucida</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/8196	Threatened
Northern Aplomado Falcon <i>Falco femoralis septentrionalis</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1923	EXPN
Piping Plover <i>Charadrius melodus</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/6039	Threatened
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/6749	Endangered
Yellow-billed Cuckoo <i>Coccyzus americanus</i> There is proposed critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/3911	Threatened

Fishes

NAME	STATUS
------	--------

Pecos Bluntnose Shiner *Notropis simus pecosensis* Threatened
There is **final** critical habitat for this species. Your location overlaps the critical habitat.
<https://ecos.fws.gov/ecp/species/4362>

Pecos Gambusia *Gambusia nobilis* Endangered
No critical habitat has been designated for this species.
<https://ecos.fws.gov/ecp/species/460>

Clams

NAME	STATUS
Texas Hornshell <i>Popenaias popeii</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/919	Endangered

Flowering Plants

NAME	STATUS
Gypsum Wild-buckwheat <i>Eriogonum gypsophilum</i> There is final critical habitat for this species. Your location overlaps the critical habitat. https://ecos.fws.gov/ecp/species/7770	Threatened
Kuenzler Hedgehog Cactus <i>Echinocereus fendleri</i> var. <i>kuenzleri</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2859	Threatened
Lee Pincushion Cactus <i>Coryphantha sneedii</i> var. <i>leei</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2504	Threatened
Sneed Pincushion Cactus <i>Coryphantha sneedii</i> var. <i>sneedii</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4706	Endangered
Wright's Marsh Thistle <i>Cirsium wrightii</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8963	Candidate

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME	TYPE
Gypsum Wild-buckwheat <i>Eriogonum gypsophilum</i> https://ecos.fws.gov/ecp/species/7770#crithab	Final
Pecos Bluntnose Shiner <i>Notropis simus pecosensis</i> https://ecos.fws.gov/ecp/species/4362#crithab	Final

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>

- Nationwide conservation measures for birds
<http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

MIGRATORY BIRD INFORMATION IS NOT AVAILABLE AT THIS TIME

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) and/or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [AKN Phenology Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern \(BCC\)](#) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know

what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the [NWI map](#) to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

APPENDIX C
NMDGF BISON-M COUNTY LIST

Federal or State Threatened/Endangered Species

Eddy

<u>Taxonomic Group</u>	<u># Species</u>	<u>Taxonomic Group</u>	<u># Species</u>
Amphibians	1	Birds	20
Fish	8	Mammals	2
Molluscs	3	Reptiles	6

TOTAL SPECIES: 40

<u>Common Name</u>	<u>Scientific Name</u>	<u>NMGE</u>	<u>USFWS</u>	<u>Critical Habitat</u>	<u>SGON</u>	<u>Photo</u>
Least Shrew	<i>Cryptotis parvus</i>	T			Y	View
Spotted Bat	<i>Euderma maculatum</i>	T			Y	View
Common Ground-dove	<i>Columbina passerina</i>	E			Y	View
Lucifer Hummingbird	<i>Calothorax lucifer</i>	T			Y	View
Broad-billed Hummingbird	<i>Cyanthus latirostris</i>	T			Y	View
Piping Plover	<i>Charadrius melodus</i>	T	T			No Photo
Least Tern	<i>Sternula antillarum</i>	E	E		Y	View
Neotropic Cormorant	<i>Phalacrocorax brasilianus</i>	T			Y	View
Brown Pelican	<i>Pelecanus occidentalis</i>	E				View
Bald Eagle	<i>Haliaeetus leucocephalus</i>	T			Y	View
Common Black Hawk	<i>Buteogallus anthracinus</i>	T			Y	View
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>		T	Y	Y	View
Aplomado Falcon	<i>Falco femoralis</i>	E	E		Y	View
Peregrine Falcon	<i>Falco peregrinus</i>	T			Y	View
Northern Beardless-Tyrannulet	<i>Camptostoma imberbe</i>	E			Y	View
Thick-billed Kingbird	<i>Tyrannus crassirostris</i>	E			Y	View
Willow Flycatcher	<i>Empidonax traillii brewsteri</i> ; <i>adastus</i>		E			View
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	E	E	Y	Y	View
Bell's Vireo	<i>Vireo bellii</i>	T			Y	View
Gray Vireo	<i>Vireo vicinior</i>	T			Y	View
Baird's Sparrow	<i>Centronyx bairdii</i>	T			Y	View
Varied Bunting	<i>Passerina versicolor</i>	T			Y	View
Western River Cooter	<i>Pseudemys gorzugi</i>	T			Y	View
Dunes Sagebrush Lizard	<i>Sceloporus arenicolus</i>	E			Y	View

Federal or State Threatened/Endangered Species

Eddy

<u>Common Name</u>	<u>Scientific Name</u>	<u>NMGE</u>	<u>USFWS</u>	<u>Critical Habitat</u>	<u>SGCN</u>	<u>Photo</u>
Gray-banded Kingsnake	Lampropeltis alterna	E			Y	View
Plain-bellied Water Snake	Nerodia erythrogaster	E			Y	View
Arid Land Ribbonsnake	Thamnophis proximus	T			Y	View
Mottled Rock Rattlesnake	Crotalus lepidus lepidus	T			Y	View
Western Narrow-mouthed Toad	Gastrophryne olivacea	E			Y	View
Pecos Bluntnose Shiner	Notropis simus pecosensis	E	T	Y	Y	View
Blue Sucker	Cydeptus elongatus	E			Y	View
Gray Redhorse	Moxostoma congestum	E			Y	View
Mexican Tetra	Astyanax mexicanus	T			Y	View
Pecos Pupfish	Cyprinodon pecosensis	T			Y	View
Pecos Gambusia	Gambusia nobilis	E	E		Y	View
Greenthroat Darter	Etheostoma lepidum	T			Y	View
Bigscale Logperch (Native pop.)	Percina macrolepida	T			Y	View
Ovate Vertigo Snail	Vertigo ovata	T			Y	View
Pecos Springsnail	Pyrgulopsis pecosensis	T			Y	No Photo
Texas Hornshell	Popenaias popeii	E	E		Y	View



March 2, 2020

#5E29121

Mr. Galen Kelley
EOG Resources, Inc.
5509 Champions Drive
Midland, TX 79706

**Subject: C-147 Recycling Containment Permit's Section 8: Siting Criteria
Proposed for Ross Draw East Recycling Facility, Eddy County, New Mexico**

Dear Mr. Moss:

Souder, Miller & Associates (SMA) is pleased to submit the enclosed C-147 Siting Criteria Explanation and supporting documentations for the proposed Ross Draw East Recycling Facility, a Containment Pond (aka: Ross Draw Re-Use Pit) that is to be constructed in southeastern Eddy County, New Mexico.

The proposed facility is located in Township 26S, Range 31E, NW/4 of Section 16, it is approximately 36 miles southeast of Carlsbad. The proposed Ross Draw East Recycling Facility is to be a lined pond constructed within the surveyed area of 1,114,750 sq. Ft. (1,225 feet long x 910 feet, and 20 feet depth), with an approximate 3:1 calculated capacity of 3.5 million barrels.

Via U.S. Highway 285, 12.5 miles south of Malaga, turn ENE (left) on Whitehorn Rd, travel 4.14 miles, after crossing the Pecos River, jog NE to Pipeline Road. continue due E 11.5 miles. Turn right (South) on Buck Jackson Road, travel 1.82 miles (through the tank battery, Jackson Ranch HQ on right and past pit on left), the Ross Draw well's pad location road sharply forks left back to the N, in less than 0.5 miles, arrive at the Ross Draw Recycling Facility pit location, approximately 1.2 miles south of Pipeline Road.

Below are details of the C-147 Permit for the Siting Criteria of Section 8. Supporting documents are included in the Figures and/or Appendices indicated per each siting criteria explanation.

8.1 Groundwater is less than 50 feet below the bottom of the recycling containment

Figure 1 is the **Vicinity Map** of the proposed Ross Draw East (RDE) Facility on a USGS topographic map that includes nearby groundwater wells and associated groundwater depths as registered with the NMOSE and USGS. (Note: The well that records, No Data (N/D), adjacent to the proposed RDE Facility is the Talon borehole. Coordinates are: LAT N32.0468581, LONG W-103.7892634)

Talon Lithology Log, from recent Ross Draw East drilling activities (January 2020) that bored north of the facility site is provided in **Appendix A**, The boring confirms that groundwater is **> 50 feet** below the bottom of the recycling containment because groundwater was not encountered at depths above 75 feet below ground surface (bgs), the bore's total depth (TD). This indicates that the maximum groundwater elevation in the area is at least, no more than 3,148 feet above mean sea level (amsl). The proposed facility is located at an elevation of approximately 3,223 feet amsl, and the base of the containment pond will be installed to a maximum depth of 20 feet bgs, or an elevation of approximately 3,203 ft amsl. As such,

groundwater, where present, must be at an elevation > 55 feet below the bottom base of the proposed RDE Facility. Combined, the information shown in **Figure 1** and **Appendix A** support this conclusion.

8.2 Facility is located within municipal boundary or within a defined fresh water well field

The facility is located approximately 20.6 miles from the nearest municipality (Village of Malaga) in an area consisting predominantly of oil and gas development. The proposed facility is not within any defined freshwater field, as no municipal water wells are present near the facility location.

8.3 Facility is located within an area overlying a subsurface mine

Information from the USGS Topographic map covering the location of the facility, as well as, a map from the New Mexico Energy, Minerals, and Natural Resources Department (EMNRD) indicates that no subsurface mines or quarries are present within the facility boundaries. There are no quarries or subsurface mines within a one (1) mile radius of the facility boundaries. A map indicating the **Eddy County** locations of **Active Mines** from the NM EMNRD website is included as **Appendix B**.

8.4 Facility is located within an unstable area

The RDE Facility's native surface is in generally flat and brushy, of slightly sloping topography with no nearby mapped faults. The USGS Seismic Hazard Map places the region a low-risk area for potential earthquakes or other seismic hazards. As such, SMA believes the RDE facility is not located in an unstable area. The Inset Map (upper Right Corner) of **Figure 1** illustrates the location is further safe, being in a Low Karst area.

The RDE facility is in the Delaware Basin near the eastern flank of a small geologic surface expression feature called the Phantom Banks, a Permian Ochoa Series to Triassic-aged Dockum group remnant, a shallow sandy hill that is caliche hardened dominant. Formed in-situ secondarily by infilling of collapse structures that has resulted eroding a thick package of Quaternary alluvial sediments overlying sandy but low permeability regional poor quality aquifer sources, including the Dewey Lake and Pierce Canyon redbed units, Rustler and Chinle Formations and perhaps the Santa Rosa Sandstone. Near the proposed facility, the alluvium is thick (>500 feet) and not of the better-quality Pecos Valley Alluvium. Production from this county sector is often not desirable quality for domestic use because of its high chloride and sulfate content and access is relatively deep with marginal livestock sustaining yield. C.T. Ross in 1900 drilled the first recorded well of this Township @ T 26 S, R 31 E, Sec 8 NWSW to a depth of 338 feet, In May of 1949, another Ross well of Sec. 1 was USGS tested, confirming undesirable groundwaters of this regional sector of Eddy County. (Ground-Water Report 3: Geology and Ground-Water Resources of Eddy County, New Mexico. By, The United States Geological Survey, New Mexico Bureau of Mines & Mineral Resources, and the State Engineer of New Mexico, Hendrickson & Jones, 1952).

A **Geologic Map** of the area with no known faults is included as **Figure 2** and a **Seismic Hazards Map** is included as **Appendix C**.

An **Aerial Photograph** of the project area, approximate ½ mile Radius is included as **Figure 3**.

8.5 Facility is located within a 100-year floodplain

The facility is located within Federal Emergency Management Agency (FEMA) in a Low Risk area that is not colored on the printed Flood Maps. A screenshot of the proposed facility area that incorporates the

online FEMA Floodplain database is included of **Figure 4**. The figure indicates the nearest known 100-year floodplain present approximately 3 miles WNW of the RDE facility, at Tucker Draw. Shallow, dry playas pot-mark the area, with the nearest located 3,554 feet (0.67 miles) from the Ross Draw pit.

8.6 Facility is located within 300 feet of a continuously flowing watercourse or 200 feet of any other significant watercourse, lakebed, sinkhole, or playa lake

Figure 4 shows that the nearest continually flowing, perennial watercourse (Pecos River), as shown on the USGS Topographic and NM Wetlands / FEMA maps, is 15.67 miles west from the proposed facility boundary; the nearest named ephemeral watercourse (Tucker Draw) is 16,056 feet (3.04 mi.) west-northwest of the proposed facility. The nearest, dry playa lakebed is also WNW at 0.67 miles away and no sinkholes are identified within the facility proximity.

8.7 Facility is located within 1,000 feet of an existing residence, school, hospital, institution, or church at time of initial inspection

The facility geo-bore hole is located ~1 mile (5,270) from the nearest private residence, Buck Jackson Ranch). The closest facilities to the proposed facility. There are existing oil field tank batteries, well pads and small lined pond within 700 feet of the Jackson Ranch residence; much closer than RDE facility.

8.8 Facility is located within 500 feet of a spring or fresh water well in existence at time of initial inspection

The nearest freshwater, Jackson's domestic, well is registered with the NMOSE as C01777 and is located 4,667 feet (0.88 mile) to the northwest of the proposed RDE facility's Talon geo-bore. No springs are indicated on USGS topographic maps within 1,000 feet of the proposed facility. Supporting information from nearby NMOSE wells and the USGS monitoring wells is included as **Figure 1**.

8.9 Facility is located within 500 feet of a wetland

The nearest wetland as mapped by FEMA and the United States Fish and Wildlife Service is a dry, shallow playa approximately 0.67 mile from the proposed Ross Draw Re-Use Pit facility. A map prepared by the United States Fish and Wildlife Service (USFWS) online wetland database is included as **Figure 4**.

If you have any questions, please do not hesitate to call me at (307) 660-7891 or to e-mail me at bob.irwin@soudermiller.com.

Sincerely,

Souder, Miller and Associates



Robert H. (Bob) Irwin, P.G.
Senior Scientist II

Enclosures: SEE Next Page, for Figures and Appendixes Listings

Enclosures:

Figures

Figure 1: Vicinity Map: USGS Topo, Ground Water & Well Information (NMOSE, USGS)

Figure 2: Geologic Map of Proposed Facility Area

Figure 3: Proposed Location and Aerial Photo

Figure 4: Surface Water Protection Map: FEMA Floodplain Information
+ Wetlands & Critical Habitat Map (USFWS)

Appendixes

Appendix A: Talon – Lithology, Borehole Log – January 2020

Appendix B: Active Mine/Quarry Maps (NM EMNRD)

Appendix C: USGS Seismic Hazard Map

Appendix D: Geologic Atlas of Texas, Hobbs sheet



Figures

- 1** Vicinity Map: USGS Topo, Ground Water & Well Information (NMOSE, USGS)
- 2** Geologic Map of Proposed Facility Area
- 3** Proposed Ross Draw East Facility Location and Aerial Photo
- 4** Surface Water Protection Map: FEMA Floodplain Information
+ Wetlands & Critical Habitat Map (USFWS)

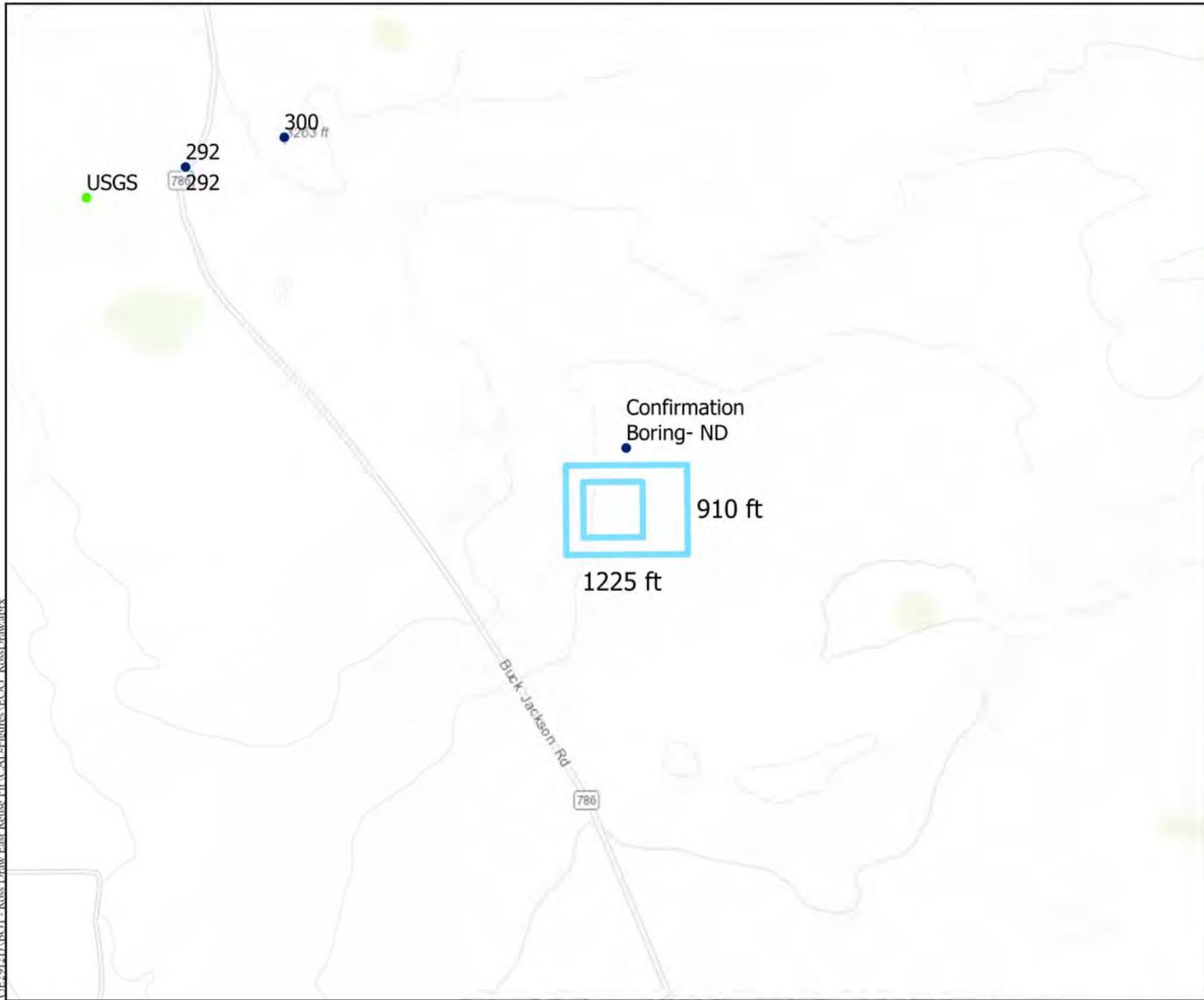
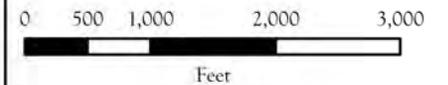


Figure 1 Water Wells

- OSE Depth to GW
- USGS GW Well

- Karst Potential
- Critical
 - High
 - Medium
 - Low

● Ross Draw Location



Vicinity Map of Wells & Proposed Facility on USGS Topo with Recorded GW Depths
 Ross Draw East Reuse Pit
 Sec NW/NW 16 T26S R31E, Eddy County, New Mexico

Figure 1

P:\5 EOG 2020\MSA On-Call Services (5E29121)\BG1 - Ross Draw East Reuse Pit\CAD\Figures\EOG - Ross Draw.wpd

Date Saved:
2/29/2020

By: _____	Date: _____	Descr: _____
By: _____	Date: _____	Descr: _____

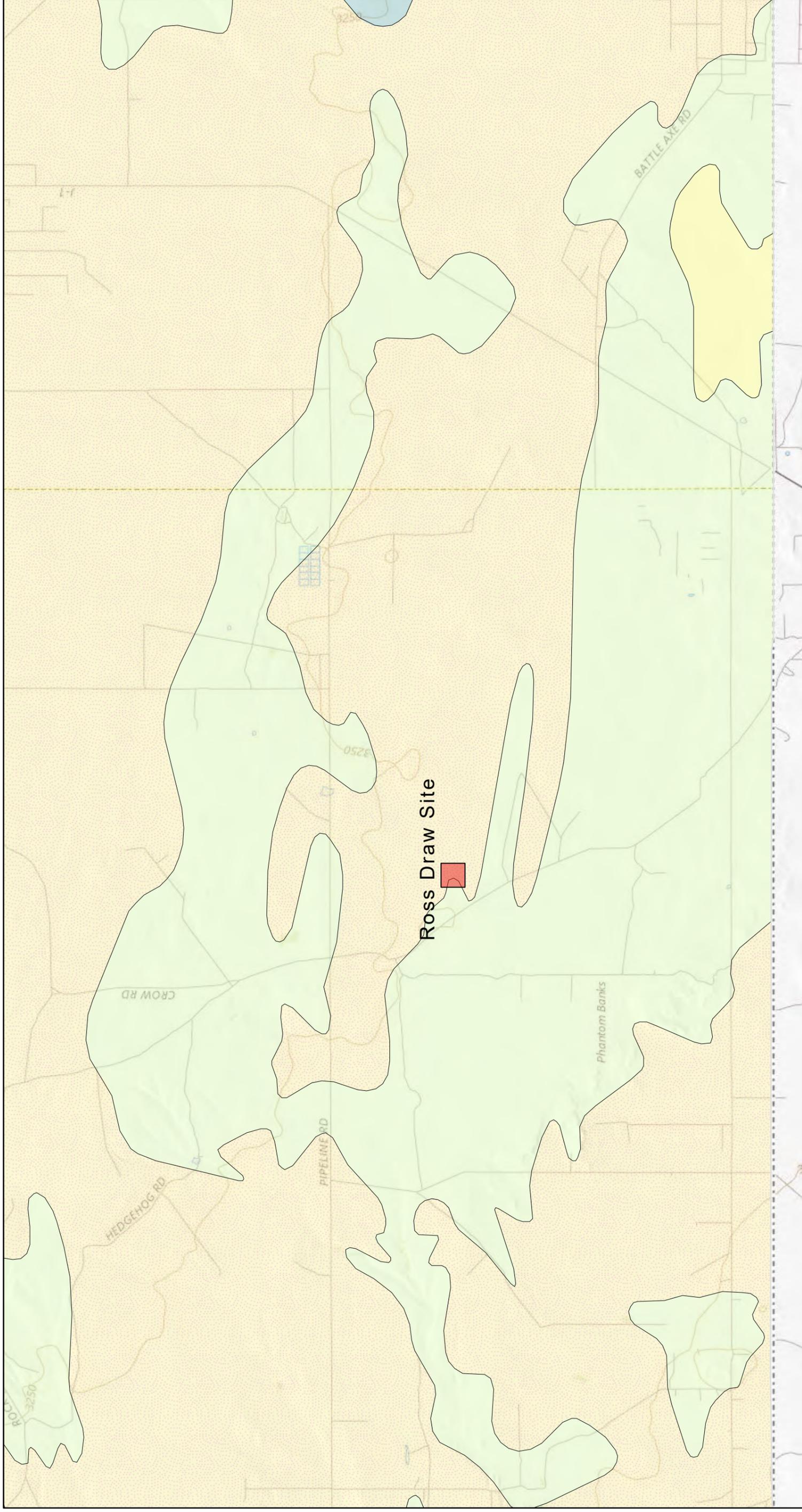
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Drawn	SO
Date	3/1/2020
Checked	_____
Approved	_____



201 South Halaguena Street
 Carlsbad, New Mexico 88221
 (575) 689-7040
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Figure 2: Geology Map



2/27/2020, 11:50:53 AM

■ Proposed Location

— Lithologic Contact

— Map Boundary

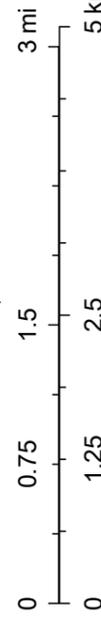
■ Quaternary Eolian Deposits

■ Quaternary Eolian and Piedmont Deposits

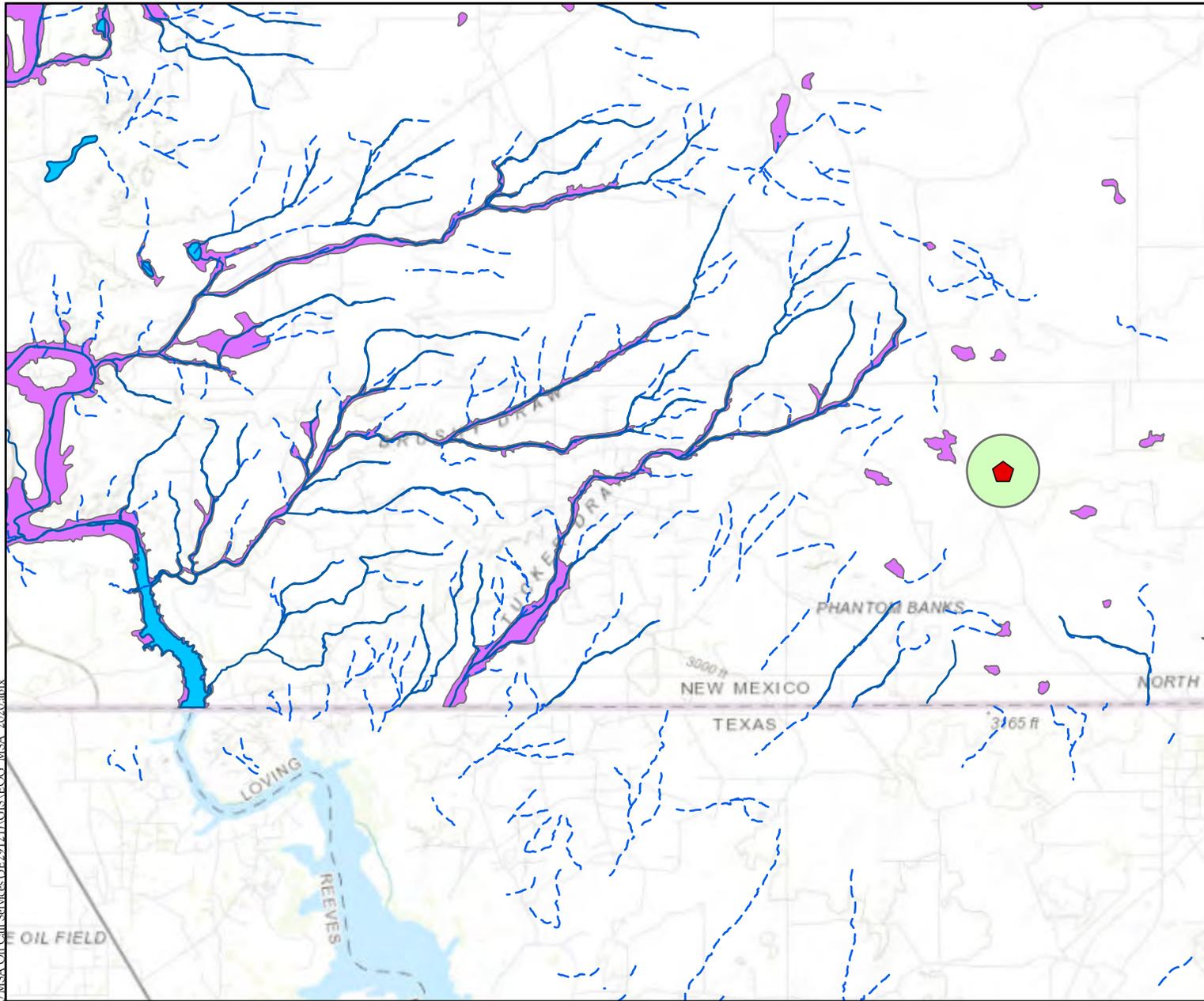
■ Quaternary Alluvium

■ Upper Chinle Group

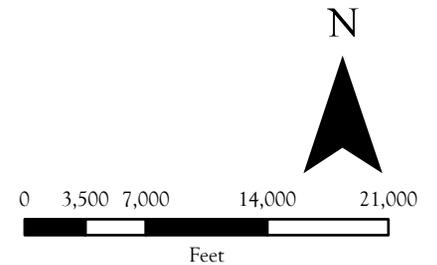
1:72,224



USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS



- Springs & Seeps
- Streams & Canals
- Rivers
- - - Flowlines SENM
- NM Wetlands
- Lakes
- FEMA Flood Zone/Playas
- ◆ Ross Draw E Recycling Pit
- 1/2 Mile Radius



Surface Water Protection Map
 Ross Draw E Recycling Pit - EOG Resources
 Eddy County, New Mexico

Figure 4

\\192.168.22.10\Projects\5-EOG\2020\MSA On Call Services\5E2917.DWG\5-EOG_MSA_2020.aprx
 Date Saved: 2/25/2020

Revisions		
By: _____	Date: _____	Descr: _____
By: _____	Date: _____	Descr: _____

Drawn	Lynn A. Acosta
Date	2/28/2020
Checked	_____
Approved	_____



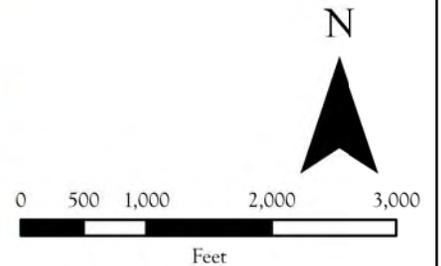
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RDE Reuse Pit

- Proposed Outlay
- Buck Jackson Rd.
- Confirmation Boring- ND
- OSE Depth to GW
- USGS GW Well



Proposed Location and Aerial Map
 Ross Draw East Reuse Pit
 Sec NW/NW 16 T26S R31E, Eddy County, New Mexico

Figure 3

PA 5 EUG 2020 MSA On Call Services (SE291210) BG1 - Ross Draw East Reuse Pit CAD Figures A EOG - Ross Draw East

Revisions		
By: _____	Date: _____	Descr: _____
By: _____	Date: _____	Descr: _____

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Drawn	SO
Date	3/1/2020
Checked	_____
Approved	_____



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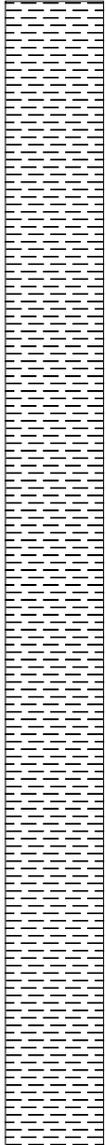


Appendix A

Talon - Lithology, Borehole Log – January 2020 Ross Draw

SOIL BORING / MONITORING WELL LOG

PROJECT: <u>Carlsbad, NM - Ross Draw</u>	DRILLING COMPANY: <u>Talon/LPE</u>
PROJECT NUMBER: <u>700438.232.01</u>	DRILLER: <u>Ronnie Rodriguez</u>
CLIENT: <u>EOG Resources</u>	DRILLING METHOD: <u>Hollow Stem Auger</u>
BORING / WELL NUMBER: <u>SB-1</u>	BORE HOLE DIAMETER: <u>7 7/8"</u>
TOTAL DEPTH: <u>75</u>	SCREEN: Diam. <u> </u> Length <u> </u> Slot Size <u> </u>
SURFACE ELEVATION: <u> </u>	CASING: Diam. <u> </u> Length <u> </u> Type <u> </u>
LOGGER: <u>Ronnie Rodriguez</u>	DATE DRILLED: <u>1/28/2020</u>
LATITUDE: <u> </u>	LONGITUDE: <u> </u>

DEPTH (FT.)	Soil Symbol	WELL CONSTRUCTION	Pt. Sample ID:	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	BLOW COUNT	DEPTH (FT.)
0									0
			SB1-1'		0'-5'		Dark to Light Brown Silty Sand w/ Caliche	2	2
								4	
5									5
			SB1-6'		5'-10'		Light Brown to White Sand w/ Caliche	6	21
								24	
10									10
			SB1-11'		10'-15'		Light Brown to White Sand w/ Caliche	26	28
								50	
15									15
		SB1-16'		15'-20'		Dark Brown Sand w/ Caliche	44	50	
20								1.5"	
		SB1-21'		20'-25'		Dark Silty Sand w/ Caliche	19	22	
							33		
25								25	
		SB1-26'		25'-30'		Dark Brown Silty Caliche	21	30	
							50		
30								1.5"	
								30	

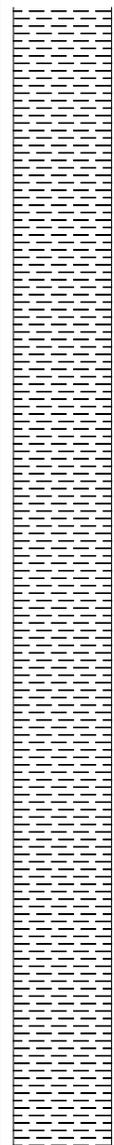
REMARKS:

THIS BORING LOG SHOULD NOT BE USED SEPERATE FROM THE ORIGINAL REPORT



SOIL BORING / MONITORING WELL LOG

PROJECT: <u>Carlsbad, NM - Ross Draw</u>	DRILLING COMPANY: <u>Talon/LPE</u>
PROJECT NUMBER: <u>700438.232.01</u>	DRILLER: <u>Ronnie Rodriguez</u>
CLIENT: <u>EOG Resources</u>	DRILLING METHOD: <u>Hollow Stem Auger</u>
BORING / WELL NUMBER: <u>SB-1</u>	BORE HOLE DIAMETER: <u>7 7/8"</u>
TOTAL DEPTH: <u>75</u>	SCREEN: Diam. <u> </u> Length <u> </u> Slot Size <u> </u>
SURFACE ELEVATION: <u> </u>	CASING: Diam. <u> </u> Length <u> </u> Type <u> </u>
LOGGER: <u>Ronnie Rodriguez</u>	DATE DRILLED: <u>1/28/2020</u>
LATITUDE: <u> </u>	LONGITUDE: <u> </u>

DEPTH (FT.)	Soil Symbol	WELL CONSTRUCTION	Pt. Sample ID:	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	BLOW COUNT	DEPTH (FT.)
			SB1-31'	█	30'-35'		Dark Silty Sand & Caliche	21 39 40	
35			SB1-36'	█	35'-40'		Dark Silty Sand & Caliche	15 28 36	35
40			SB1-41'	█	40'-45'		Dark Silty Sand & Caliche	15 22 27	40
45			SB1-46'	█	45'-50'		Dark Silty Sand	18 33 42	45
50			SB1-51'	█	50'-55'		Dark Brown Silty Sand & Caliche	20 37 31	50
55			SB1-56'	█	55'-60'		Dark Brown Silty Sand	20 27 35	55
60							Dark Brown Silty Sand	20 27 35	60

REMARKS:

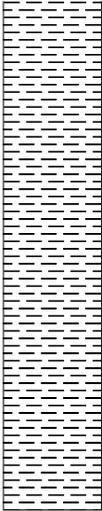
THIS BORING LOG SHOULD NOT BE USED SEPERATE FROM THE ORIGINAL REPORT



SOIL BORING / MONITORING WELL LOG

PROJECT: Carlsbad, NM - Ross Draw
 PROJECT NUMBER: 700438.232.01
 CLIENT: EOG Resources
 BORING / WELL NUMBER: SB-1
 TOTAL DEPTH: 75
 SURFACE ELEVATION: _____
 LOGGER: Ronnie Rodriguez
 LATITUDE: _____

DRILLING COMPANY: Talon/LPE
 DRILLER: Ronnie Rodriguez
 DRILLING METHOD: Hollow Stem Auger
 BORE HOLE DIAMETER 7 7/8"
 SCREEN: Diam. _____ Length _____ Slot Size _____
 CASING: Diam. _____ Length _____ Type _____
 DATE DRILLED: 1/28/2020
 LONGITUDE: _____

DEPTH (FT.)	Soil Symbol	WELL CONSTRUCTION	Pt. Sample ID:	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT.)
65			SB1-61'	60'-65'			Dark Brown Silty Sand & Caliche	20
								32
								44
70			SB1-66'	65'-70'				65
								32
								44
								50
75				70'-75'			Dark Brown Silty Sand	70
								11
								22
								37
						75'		75
							Bottom of Hole	
80								80
85								85
90								90

REMARKS:

THIS BORING LOG SHOULD NOT BE USED SEPERATE FROM THE ORIGINAL REPORT



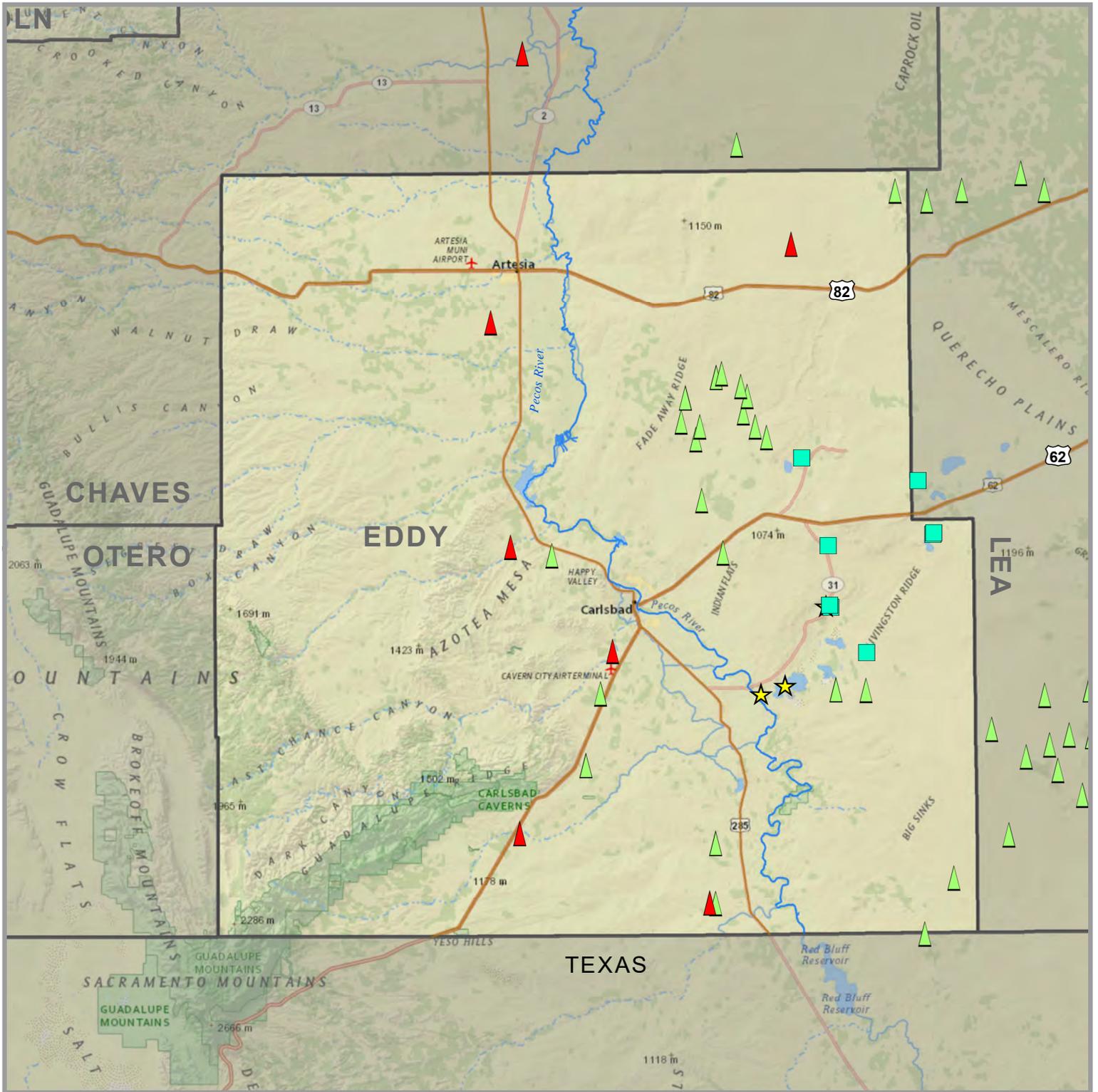


Appendix B

Active Mine/Quarry Maps (NM EMNRD) Eddy County



Active Mines in Eddy County, New Mexico, December 2017



Metals

- Coal
- Potash
- Copper / Molybdenum
- Gold & Silver
- Iron
- Uranium

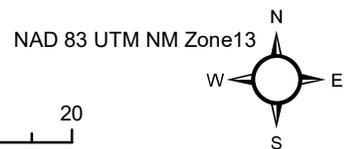
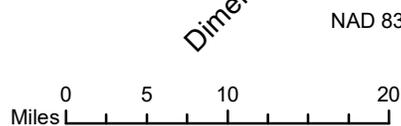
Industrial Minerals

- Calcite
- Gemstone
- Gypsum
- Humate
- Perlite
- Pumice
- Salt
- Silica / Flux / Silver
- Zeolites

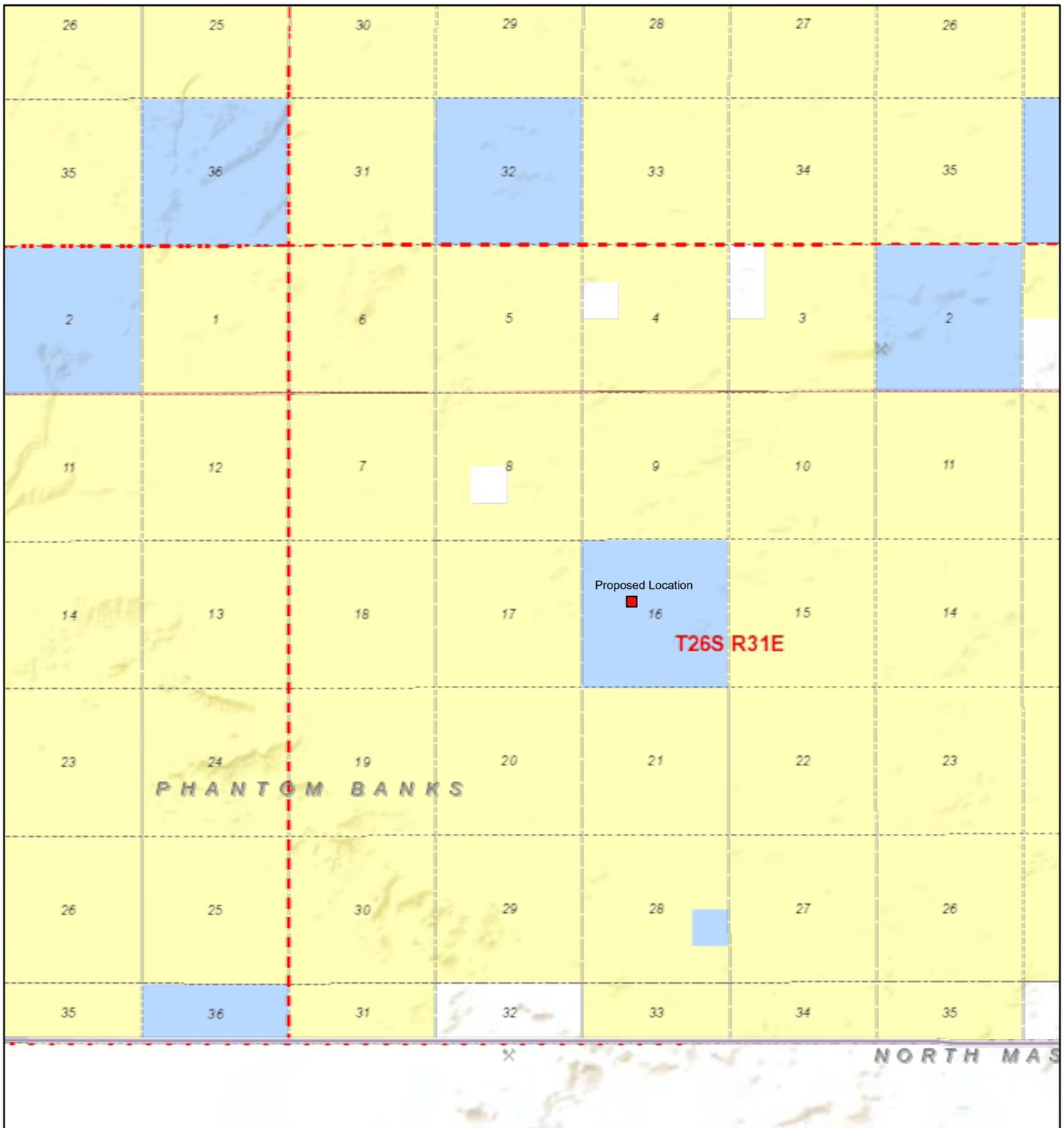
Aggregate & Stone

- Aggregate
- Caliche
- Clay & Shale
- Dimension & Flagstone
- Limestone
- Red Dog
- Scoria
- Travertine

Data: November 2018 database query, Mining & Minerals Division, Mine Registration, Reporting & Safeguarding Program.
 Basemap: Esri National Geographic. Map: Linda S. DeLay, GISP



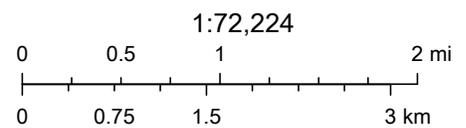
Active Mines in New Mexico



2/27/2020, 11:17:50 AM

Registered Mines

X Aggregate, Stone etc.



U.S. Bureau of Land Management - New Mexico State Office, Sources: Esri, USGS, NOAA, Sources: Esri, Garmin, USGS, NPS

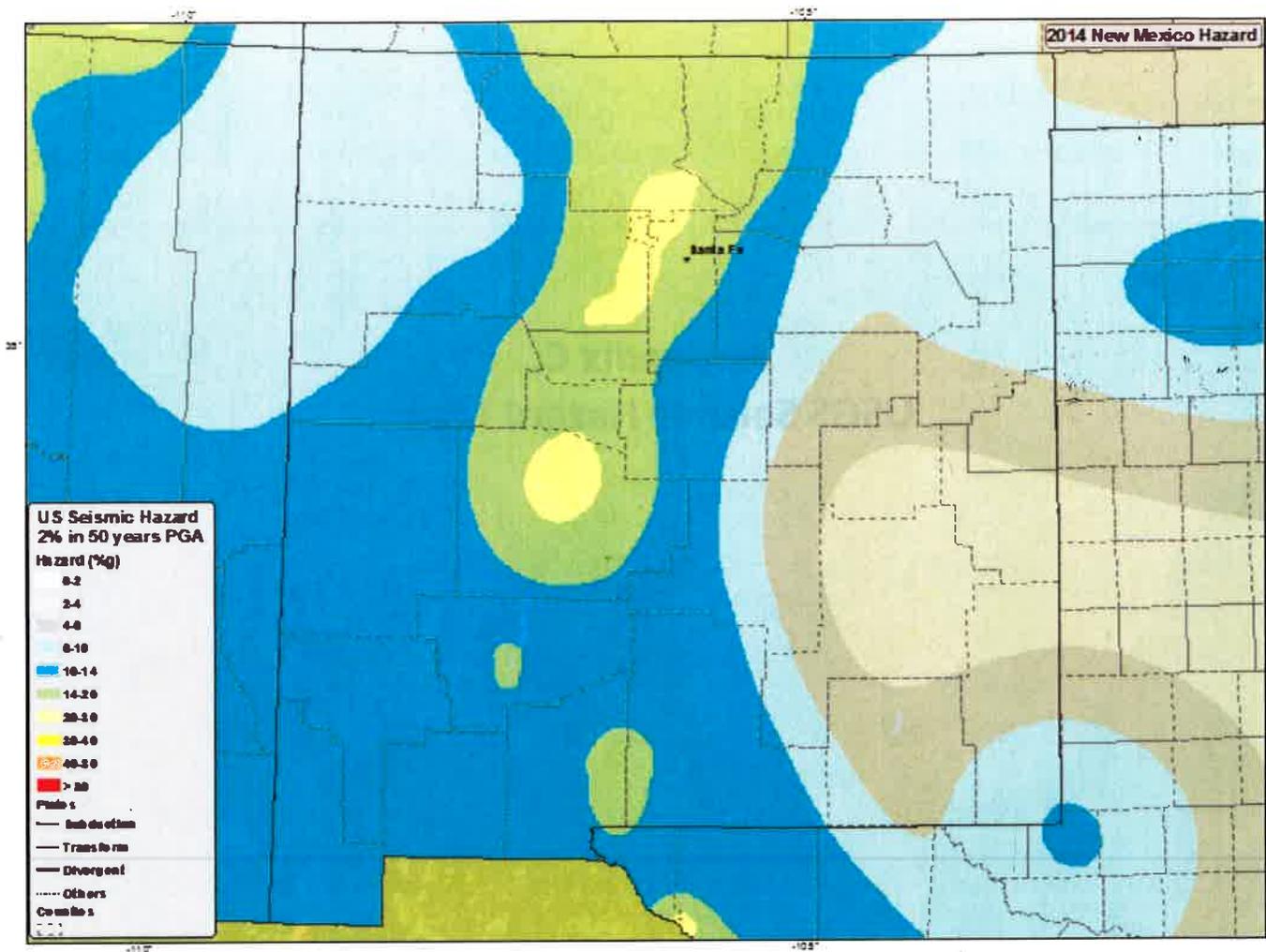


Appendix C

USGS Seismic Hazard Map (Regional)

Information by Region - New Mexico

2014 Seismic Hazard Map



[USGS National Seismic Hazard Maps](#)



Appendix D

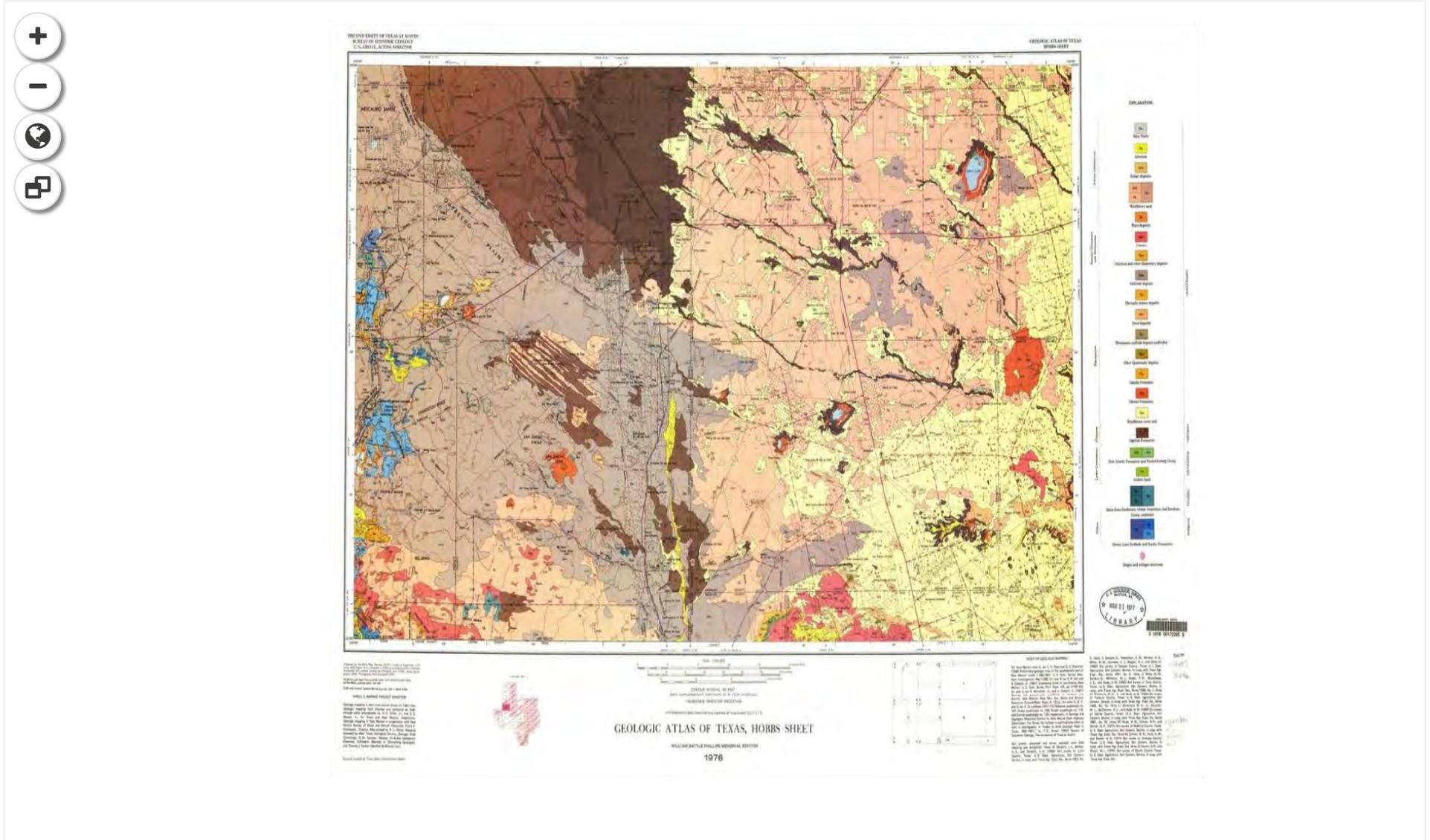
Geologic Atlas of Texas, Hobbs sheet (Regional)

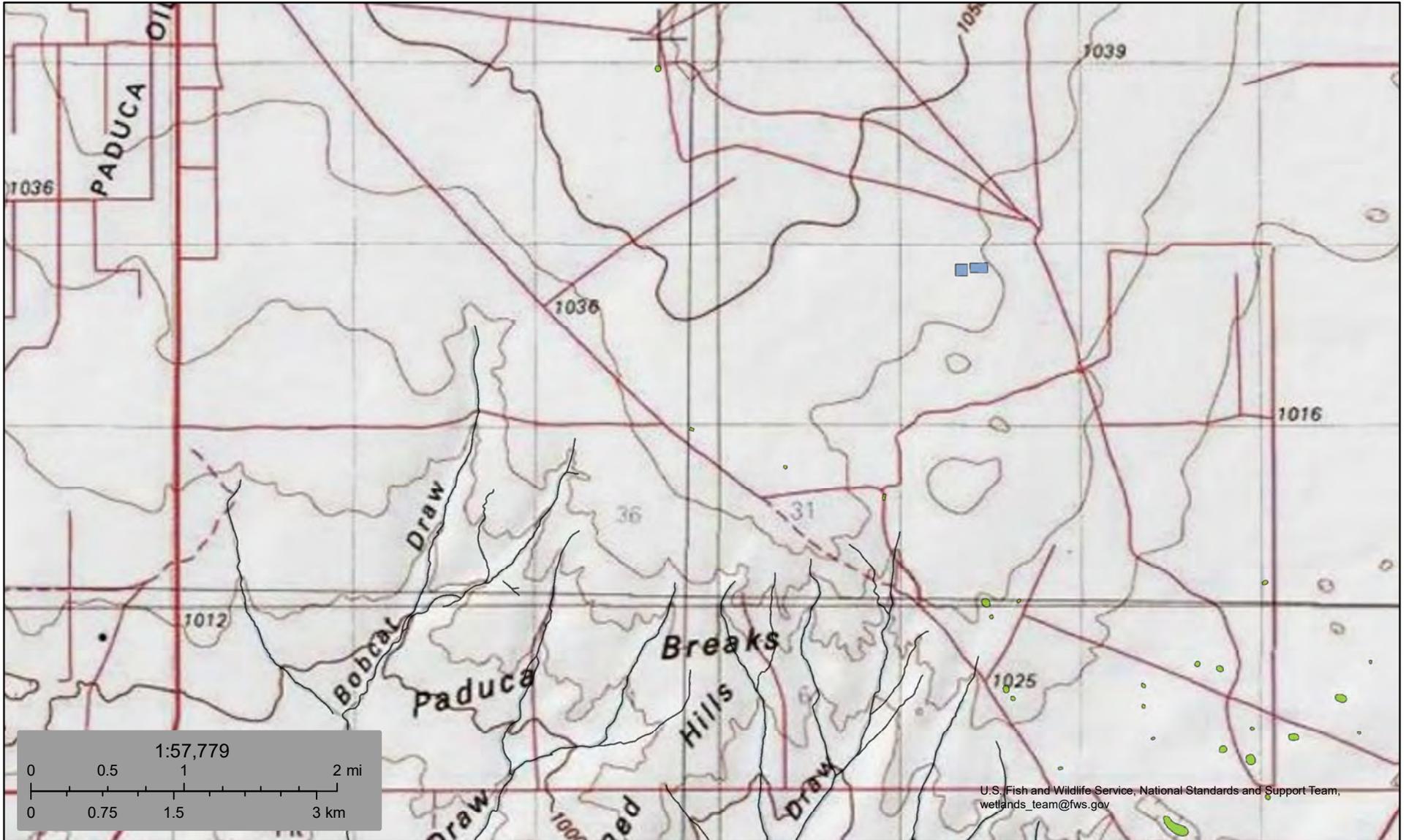
National Geologic Map Database

Preview

Barnes, VE, Eifler, GK, Reeves, CC, Kottlowski, FE, Norman, DM, Sherrod, CH, and Hansen, JJ, 1976, Geological atlas of Texas, Hobbs sheet : University of Texas at Austin, Bureau of Economic Geology, Geologic Atlas of Texas 17, scale 1: 250,000

Image provided by University of Texas at Austin, Bureau of Economic Geology





April 30, 2019

Wetlands

- | | | | | | |
|---|--------------------------------|---|-----------------------------------|---|----------|
|  | Estuarine and Marine Deepwater |  | Freshwater Emergent Wetland |  | Lake |
|  | Estuarine and Marine Wetland |  | Freshwater Forested/Shrub Wetland |  | Other |
| | |  | Freshwater Pond |  | Riverine |

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.



Variance Request for Secondary Liner

Re: Ross Draw East Reuse Water Recycling Facility and Containment Pit

EOG Resources, Inc. would like to request the OCD's approval for a variance regarding secondary liner at the location described above. EOG proposes to utilize 40-mil HDPE for secondary liner, in lieu of 30-mil LLDPE string-reinforced liner, per attached data sheet from Dura Skrim. The standard LLDPE string-reinforced liner has a hydraulic conductivity no greater than 1×10^{-9} cm/sec and meets or exceeds the EPA SW-846 method 9090A per 19.15.34.12 NMAC.

The proposed 40-mil HDPE Geomembrane liner has a typical Hydraulic Conductivity no greater than 10^{-12} cm/sec, per attached letter and data sheet from Solmax. This hydraulic conductivity of no greater than 10^{-12} cm/sec exceeds the standard 30-mil LLDPE string-reinforced liner and EPA SW-846 method 9090A.



EOG resources

September 14, 2020

Attn: Mr. Galan Kelley
Re: 40 mil HDPE Geomembrane – Hydraulic Conductivity

Dear Mr. Kelley:

Hydraulic Conductivity of HDPE geomembranes can be indirectly obtained through ASTM E96 method (Designing with Geosynthetics, page 437, fifth edition – Robert Koerner).

Based on our test results and the method pointed out in the above reference, it can be concluded that Solmax HDPE geomembranes have a typical Hydraulic Conductivity no higher than 10^{-12} cm/s

Should you need further information, please do not hesitate to contact us.

Sincerely,

Mauricio Ossa
Global Technical Engineering Manager
Houston- Texas

● T +1 800 435-2008



GSE ENVIRONMENTAL, LLC | A SOLMAX COMPANY
19103 GUNDLE ROAD, HOUSTON, TX 77073, USA

SOLMAX.COM

PROPERTY	TEST METHOD	FREQUENCY ⁽¹⁾	UNIT Imperial	
SPECIFICATIONS				
Thickness (min. avg.)	ASTM D5199	Every roll	mils	40.0
Thickness (min.)	ASTM D5199	Every roll	mils	36.0
Melt Index - 190/2.16 (max.)	ASTM D1238	1/Batch	g/10 min	1.0
Sheet Density (8)	ASTM D792	Every 10 rolls	g/cc	≥ 0.940
Carbon Black Content	ASTM D4218	Every 2 rolls	%	2.0 - 3.0
Carbon Black Dispersion	ASTM D5596	Every 10 rolls	Category	Cat. 1 & Cat. 2
OIT - standard (avg.)	ASTM D3895	1/Batch	min	100
Tensile Properties (min. avg.) (2)	ASTM D6693	Every 2 rolls		
Strength at Yield			ppi	88
Elongation at Yield			%	13
Strength at Break			ppi	162
Elongation at Break			%	700
Tear Resistance (min. avg.)	ASTM D1004	Every 5 rolls	lbf	28
Puncture Resistance (min. avg.)	ASTM D4833	Every 5 rolls	lbf	80
Dimensional Stability	ASTM D1204	Certified	%	± 2
Stress Crack Resistance (SP-NCTL)	ASTM D5397	1/Batch	hr	500
Oven Aging - % retained after 90 days	ASTM D5721	Per formulation		
HP OIT (min. avg.)	ASTM D5885		%	80
UV Res. - % retained after 1600 hr	ASTM D7238	Per formulation		
HP-OIT (min. avg.)	ASTM D5885		%	50
Low Temperature Brittleness	ASTM D746	Certified	°F	- 106

SUPPLY SPECIFICATIONS (Roll dimensions may vary ±1%)

NOTES

1. Testing frequency based on standard roll dimension and one batch is approximately 180,000 lbs (or one railcar).
2. Machine Direction (MD) and Cross Machine Direction (XMD or TD) average values should be on the basis of 5 specimens each direction.
8. Correlation table is available for ASTM D792 vs ASTM D1505. Both methods give the same results.

* All values are nominal test results, except when specified as minimum or maximum.

* The information contained herein is provided for reference purposes only and is not intended as a warranty of guarantee. Final determination of suitability for use contemplated is the sole responsibility of the user. SOLMAX assumes no liability in connection with the use of this information.

Solmax is not a design professional and has not performed any design services to determine if Solmax's goods comply with any project plans or specifications, or with the application or use of Solmax's goods to any particular system, project, purpose, installation or specification.

PRODUCT DESCRIPTION

DURA♦SKRIM® J30BD is a linear-low-density polyethylene geomembrane with an encapsulated polyester scrim reinforcement. In addition to excellent dimensional stability the tri-directional reinforcement provides exceptional tear and puncture resistance.

DURA♦SKRIM® J30BD is a versatile black/gray geomembrane. The gray outer layer minimizes thermal expansion while providing a cooler working surface. The black layer includes carbon black and thermal stabilizers to assure exposed longevity. Contrasting colors also provide a vital function for ease of damage detection during installation.

PRODUCT USE

DURA♦SKRIM® J30BD is used in applications that demand high tear strength and resistance to thermal expansion.

DURA♦SKRIM® J30BD is manufactured from a chemically-resistant, linear-low-density polyethylene with excellent environmental stress crack resistance.

SIZE & PACKAGING

DURA♦SKRIM® J30BD is available in a variety of widths and lengths to meet the project requirements. Large diameter mill rolls are available to assure an efficient seaming process. Factory welded panels are produced in a quality controlled environment and are accordion folded and tightly rolled on a heavy-duty core for ease of handling and time saving installation.



Irrigation Canal Liner

PRODUCT

PART

DURA♦SKRIM..... J30BD

APPLICATIONS

- | | |
|-----------------------|-------------------------|
| Waste Lagoon Liners | Interim Landfill Covers |
| Floating Covers | Remediation Covers |
| Daily Landfill Covers | Erosion Control Covers |
| Modular Tank Liners | Canal Liners |
| Tunnel Liners | Disposal Pit Liners |
| Remediation Liners | Water Containment Ponds |
| Earthen Liners | Heap Leach Liners |



DURA♦SKRIM® J30BD

SCRIM REINFORCED POLYETHYLENE

		DURA♦SKRIM® J30BD	
		TYPICAL	
PROPERTIES	TEST METHOD	IMPERIAL	METRIC
APPEARANCE		Black/Gray	
THICKNESS, NOMINAL	ASTM D5994	30 Mil	0.76 mm
WEIGHT	ASTM D751	125 lbs/MSF	610 g/m ²
CONSTRUCTION		Extrusion laminated with scrim reinforcement	
² GRAB TENSILE STRENGTH	ASTM D7004	150 lbs	667 N
² GRAB TENSILE ELONGATION	ASTM D7004	50 %	50 %
³ TONGUE TEAR	ASTM D5884	50 lbs	222 N
CBR PUNCTURE RESISTANCE	ASTM D6241	375 lbs	1668 N
WVTR	ASTM E96	0.011 grains/ft ² •hr	0.184 g/m ² •day
PERM RATING	ASTM E96	0.027 Perms	0.018 g/m ² •day•mm Hg
HYDRAULIC CONDUCTIVITY	ASTM E96	2.2x10 ⁻¹⁰ cm/sec	
MAXIMUM STATIC USE TEMPERATURE		180° F	82° C
MINIMUM STATIC USE TEMPERATURE		-70° F	-57° C

² Tests are an average of primary reinforcement directions.

³ Tests are an average of machine and transverse directions.



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Scan QR Code to download technical data sheets.

Note: To the best of our knowledge, unless otherwise stated, these are typical property values and are intended as guides only, not as specification limits. Chemical resistance, odor transmission, longevity as well as other performance criteria is not implied or given and actual testing must be performed for applicability in specific applications and/or conditions. RAVEN INDUSTRIES MAKES NO WARRANTIES AS TO THE FITNESS FOR A SPECIFIC USE OR MERCHANTABILITY OF PRODUCTS REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations and disclaims all liability for resulting loss or damage. Limited Warranty available at www.RavenEFD.com

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062817 EFD 1371



Variance Request for Bird Deterrent

Re: Ross Draw East Reuse Water Recycling Facility and Containment Pit

EOG Resources, Inc. would like to request the OCD's approval for a variance regarding bird deterrents at the location described above. EOG proposes to utilize the Bird-X Mega Blaster Pro, creating intermittent distress calls to create a "danger zone" that frightens native and or migrating birds and wildlife from the water recycling facility and containment pit area. Two units would be installed, each containing 2 built-in high output amplifiers and houses 20 speakers, capable of producing up to 125 decibels and a frequency range from 2,000 – 10,000 Hz.

Please note that EOG Resources, Inc. is currently utilizing this same bird deterrent, which was approved on OCD Permit No. 12

Please see details below.

Mega Blaster Pro – Specs:

- Coverage: Up to 30 acres from single unit
- Box dimensions: Box 1: 23" x 18" x 16" (23 lbs., unit & speaker), Box 2: 32" x 24" x 5" (17 lbs., solar panel)
- Power Input: 12vDC (3 amps) via solar panel and battery
- Sound Pressure: up to 125 decibels
- Frequency: 2,000–10,000 Hz
- Library of predator calls



- Full customizable to the species of bird in our area of operation
- Compliance: UL & CE listed
- EPA Est. 075310-OR-001
- Included: Generating unit with two built-in high-output amplifiers, 20-speaker tower with audio cables, 40 watt solar panel, battery clips, & all mounting hardware
- The unit is typically mounted with a tripod pole setup. The tripod would be a typical sturdy tripod that would be used to support a large PA speaker. The pole that would fit into the top of the tripod that the speaker tower, control box and solar panel would mount to should be $\frac{3}{4}$ " diameter and be 6-12 feet tall. The taller the pole the greater the distance the sound will travel.
- The effective range of the Mega Blaster Pro is 30 acres, in a circular coverage pattern around the 20-speaker tower with a radius of about 666 feet. The 20-speaker tower features 5 speakers pointing in each direction to create the even dispersal

BIRD-X



MegaBlaster Pro

Sonic bird repeller

Our most powerful system features two high-output amplifiers that drive our specially-designed 20 speaker tower. The intense sound output covers up to 30 acres (12 hectares). It features solid-state electronics mounted inside a NEMA-type control box, suitable for almost any large outdoor application. The generating unit mounts easily to a post or pole using the included hardware.

Mega Blaster PRO comes pre-recorded in four different configurations for the most common bird infestations. Choose any or all of the eight sounds, including predators to give birds even more of a sense of danger. Customize by choosing volume and silent time between sounds.

Effective wide-area bird control! The Mega Blaster PRO is our most powerful **sonic bird control system**. It covers up to 30 acres, broadcasting distress calls at up to 125 decibels that frighten infesting birds away for good. **PREDATOR** cries help scare all birds.



SPECIFICATIONS. MODEL #MEGA

Coverage: Up to 30 acres

Dimensions:

Box1- 23" x 18" x 16"(23lbs unit and speaker)

Box2- .32" x 24" x 5"(17lbs, solar panel)

12 VDC (3 amps) battery not included

Sound Pressure: up to 125 decibels

Frequency: 2,000-10,000 Hz

Compliance: UL & CE listed

EPA Est 075310-0R-001

Configuration Options:

Agricultural #MEGA-AG

Crow/Raven #MEGA-CROW

Woodpecker #MEGA-WP

Marine/Gull # MEGA-MAR

For more information about Bird-X, contact us at **800.662.5021** or go to www.bird-x.com to place your order and see a complete line of bird repellers

Mega Blaster Pro

Effective Wide-Area Bird Control:

Mega Blaster PRO sonic bird repeller covers 30 acres!

Mega Blaster PRO uses intermittent distress calls to create a "danger zone" that frightens infesting birds away for good.

PREDATOR cries scare all pest birds.

Our most powerful system features two high-output amplifiers that drive our specially-designed 20 speaker tower. The intense sound output covers up to 30 acres (12 hectares). It features solid-state electronics mounted inside a NEMA-type control box, suitable for almost any large outdoor application.

The generating unit mounts easily to a post or pole using the included hardware. The unit comes pre-recorded in four different configurations for the most common bird infestations. Choose any or all of the 8 sounds, including predators to give the birds even more of a sense of danger. Customize by choosing volume and silent time between sounds.

NOTICE: This unit is capable of sound output up to 125 decibels.

HEARING PROTECTION IS RECOMMENDED.



Coverage: up to 30 acres from single unit.

Pests: gulls and marine birds, crows, ravens, starlings, blackbirds, grackles, woodpeckers, ring-billed gull, herring gull, california gull, black-headed gull, glaucous-winged gull, double crested cormorant

MEGA BLASTER (MSRP \$2950) Configuration Options:

- Marine / Gull # MEGA-MAR
- Agricultural # MEGA-AG
- Crow / Raven # MEGA-CROW
- Woodpecker # MEGA-WP

SPECIFICATIONS:

Combined Shipping Weight: 26 pounds
Coverage: To 30 acres(12 hectares)
Power Input: 12VDC (3 AMPS) via Solar Panel and Battery
Sound Pressure: up to 125 decibels
Frequency: 2,000 - 10,000 Hz
Compliance: UL / CUL listed; EPA Est. 075310-OR-001
Included: Complete system includes the generating unit with two built-in high-output amplifiers, 20-speaker tower with audio cables, 40 watt solar panel, battery clips and all mounting hardware.



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