



August 20, 2022

EMNRD/OCD
Attn: Victoria Venegas
South St. Francis Dr.
Santa Fe, NM 87505

Re: Centennial Resource Development, Inc.
Burrata Containment and Recycle Facility

Dear Mrs. Venegas,

Cold Peak Environmental, LLC, on behalf of Centennial Resource Development, Inc., submits the attached C-147 registration.

Thank you for allowing Centennial to promote water reuse in the State of New Mexico. Please find attached the C-147 form with accompanying documentation for the Burrata Containment and Recycle Facility.

The package follows the order of Form C-147 for easier review by OCD.

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

Sincerely,

A handwritten signature in blue ink, appearing to read "G. Kelley", with a long horizontal flourish extending to the right.

Galan Kelley
Cold Peak Environmental, LLC
Chief Executive Officer

C-147 Registration Package for Burrata Containment and Recycle Facility

Section 29, Township 21-S, Range 32-E, Lea County

**Prepared for:
Centennial Resource Development, Inc.
500 W. Illinois Avenue, Suite 500
Midland, TX 79701**

**Prepared by:
Cold Peak Environmental, LLC
15 Smith Road, Suite 2008
Midland, TX 79705**

**Galan Kelley
gkelley@coldpeakenviro.com
361.701.8465**

Form C-147

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: Centennial Resource Development, Inc. (For multiple operators attach page with information) OGRID #: 372165
Address: 500 W. Illinois Avenue, Suite 500, Midland, TX 79701
Facility or well name (include API# if associated with a well): Burrata Reuse Containment and Recycle Facility
OCD Permit Number: _____ (For new facilities the permit number will be assigned by the district office)
U/L or Qtr/Qtr SE / SE Section 29 Township 21S Range 32E County: Lea County
Surface Owner: ☒ Federal ☐ State ☐ Private ☐ Tribal Trust or Indian Allotment

2.

☒ **Recycling Facility:**

Location of recycling facility (if applicable): Latitude 32.444520° Longitude -103.690708° 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 32.443433° Longitude -103.690719° NAD83

☐ For multiple or additional recycling containments, attach design and location information of each containment

☒ Lined ☒ Liner type: Thickness 60 Primary mil ☐ LLDPE ☒ HDPE ☐ PVC ☐ Other _____
40 Secondary

☐ String-Reinforced

Liner Seams: ☒ Welded ☐ Factory ☐ Other _____ Volume: 618,729 bbl Dimensions: L 420' x W 545' x D 23'

☐ Recycling Containment Closure Completion Date: _____
**Two containments with common wall - volume & dimensions above is each
Total containment capacity for both 1,237,458 bbls (L=840' x W=545' x D=23')**

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 6-foot tall chain link fence w/ 3-strand barbwire on 45-degree toppers

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.

Variances:

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.

ALL CONSTRUCTION AND OPERATION VARIANCES HAVE BEEN PREVIOUSLY APPROVED BY NMOCD.

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): JD McGuire

Title: Water Resource Manager

Signature: 

Date: 8/15/2022

e-mail address: JD.McGuire@cdevinc.com

Telephone: 432-315-0136

11. OCD Representative Signature:

Approval Date:

Title:

OCD Permit Number:

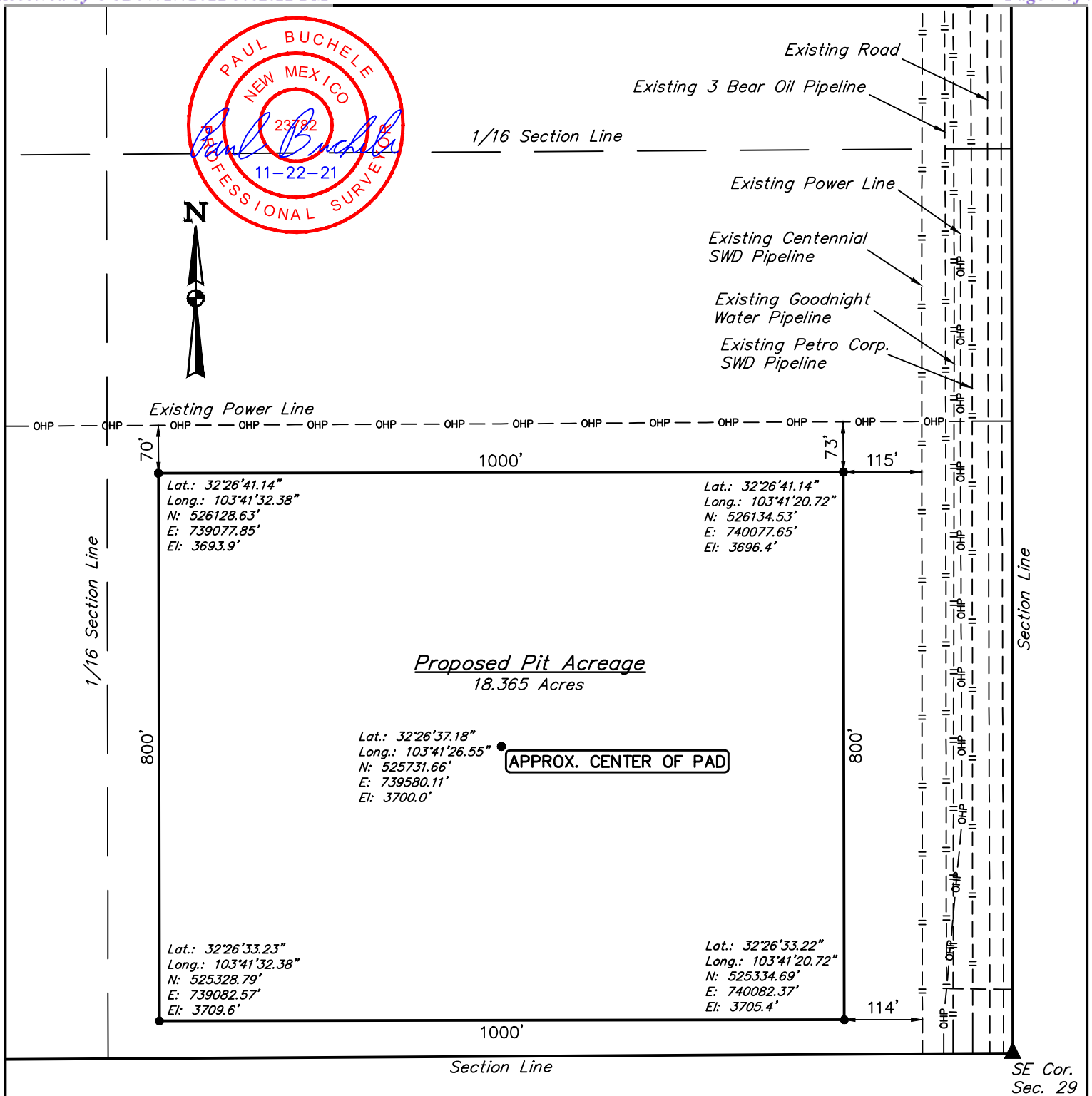
☐ OCD Conditions☐ Additional OCD Conditions on Attachment

Survey Plats

DESCRIPTION:



UINTAH
ENGINEERING & LAND SURVEYING

**Legend**

▲ = SECTION CORNERS LOCATED.

NOTES:

- Underground utilities shown on this sheet are for visualization purposes only, actual locations to be determined prior to construction.
- Latitude and Longitude Coordinates are NAD 83.
- Coordinates shown are New Mexico System of 1983 in U.S. Feet, East Zone
- Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of 103°53'00" (NAD 83)

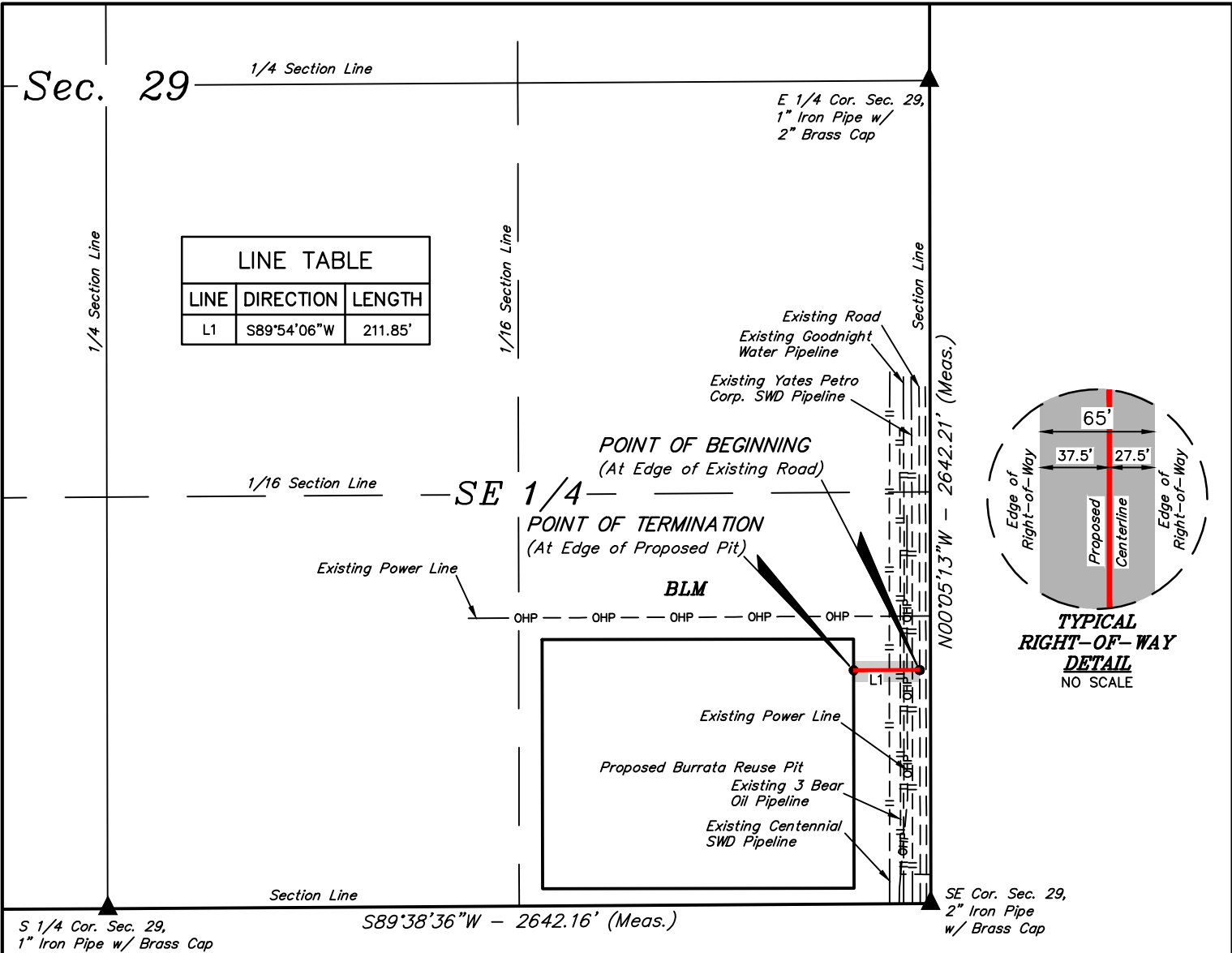
CENTENNIAL RESOURCE PRODUCTION, LLC

**BURRATA REUSE PIT
ON BLM LANDS IN
SECTION 29, T21S, R32E, N.M.P.M.
LEA COUNTY, NEW MEXICO**

SURVEYED BY	B.B., M.D.	11-12-21	SCALE
DRAWN BY	L.K.	11-16-21	1" = 200'
SITE PLAN			



UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017



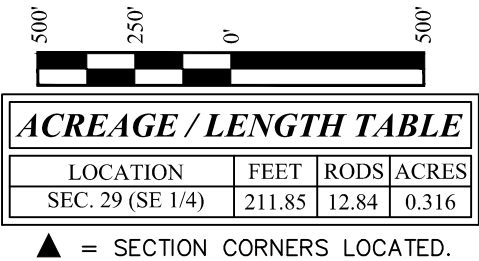
ROAD RIGHT-OF-WAY DESCRIPTION

A 65' WIDE RIGHT-OF-WAY 37.5' ON THE LEFT SIDE AND 27.5' ON THE RIGHT SIDE OF THE FOLLOWING DESCRIBED CENTERLINE.

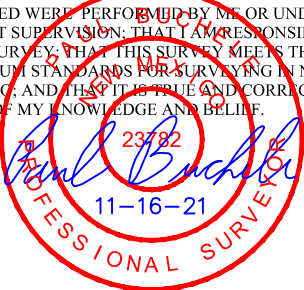
COMMENCING AT THE SOUTH 1/4 CORNER OF SECTION 29, T21S, R32E, N.M.P.M.; THENCE N89°38'36"E 2642.16' ALONG THE SOUTH LINE OF THE SE 1/4 OF SAID SECTION 29 TO THE SOUTHEAST CORNER OF SAID SECTION 29; THENCE N02°42'45"W 749.90' TO A POINT IN THE SE 1/4 SE 1/4 OF SAID SECTION 29 AND THE POINT OF BEGINNING; THENCE S89°54'06"W 211.85' TO A POINT IN THE SE 1/4 SE 1/4 OF SAID SECTION 29 AND THE POINT OF TERMINATION, WHICH BEARS N18°16'55"W 788.49' FROM THE SOUTHEAST CORNER OF SAID SECTION 29. THE SIDE LINES OF SAID DESCRIBED RIGHT-OF-WAY BEING SHORTENED OR ELONGATED TO MEET THE GRANTOR'S PROPERTY LINES. CONTAINS 0.316 ACRES MORE OR LESS.

POINT OF BEGINNING BEARS N02°42'45"W 749.90' FROM THE SOUTHEAST CORNER OF SECTION 29, T21S, R32E, N.M.P.M.

POINT OF TERMINATION BEARS N18°16'55"W 788.49' FROM THE SOUTHEAST CORNER OF SECTION 29, T21S, R32E, N.M.P.M.



CERTIFICATE
THIS IS TO CERTIFY THAT THIS EASEMENT PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.



NOTES:
• Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of 103°53'00" (NAD 83)



UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017



CENTENNIAL RESOURCE PRODUCTION, LLC

**BURRATA REUSE PIT
ON BLM LANDS IN
SECTION 29, T21S, R32E, N.M.P.M.
LEA COUNTY, NEW MEXICO**

SURVEYED BY	B.B., M.D.	11-12-21	SCALE
DRAWN BY	L.K.	11-16-21	1" = 500'
FILE	C-7475-A		

ACCESS ROAD R-O-W

C-147 Detail

Recycling Containment **Design Drawings**



C-147 Detail

Operator and Facility / Location Detail

The proposed reuse water containment facility & containment pit, referred to as the Burrata Containment and Recycle Facility, will be owned and operated by Centennial Resource Development, Inc. (Centennial) and located in Township 21 South, Range 32 East, and Section 29 in southcentral Lea County.

Recycling Facility Detail

The proposed containment pit will be located adjacent to the Burrata Water Recycling Facility and will hold treated water for use in Centennial hydraulic fracturing operations. 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

Centennial is proposing to construct a multi-liner dual containment pit utilizing leak detection systems to ensure an intact leak free barrier system. As depicted in the attached design plan and schematics, *Burrata Reuse Pit*, the proposed pits will incorporate standards that meet or exceed the required standards per 19.15.34.12 NMAC. The proposed recycle containment will be approximately 303 x 427 inside floor dimensions each with 3:1 inside and outside berm grades. Approximate wall height will average 10ft from outside ground level to ensure no surface water run-on will occur. The top of the 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 the onset of pit construction, all vegetative material and topsoil 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 consists of a 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, *Burrata Reuse Pit*, the proposed containment pit will include a center-aligned leak detection trough and collection sump completed with perforated pipe and pump casing allowing for the installation of a leak detection pump system. Both inlet and discharge manifold systems, depicted in *Burrata Reuse*

Pit, 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

Centennial Resource Development, Inc. will source and distribute reuse water for the Burrata Containment and Recycle Facility from wells solely operated by Centennial. Therefore, attached are the details of Bond Number LPM9260153 – State of New Mexico Land Office Oil and Gas Minerals Division.

Fencing

Please see Variance detail.

Signage

As shown in the attached example sign, Centennial 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.

Variances

Included are three variances as indicated in Section 7 of the C-147 registration form. All construction and operation variances have previously been approved by NMOCD.

1. Install two audible Mega Blaster Pro bird deterrents capable of covering up to 30 acres each.
2. Enclose the perimeter with a 6-foot galvanized chain link fence with 3 strands 45-degree barbed wire arm toppers.
3. Utilize 40-mil HDPE liner, in lieu of the 30-mil 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*.

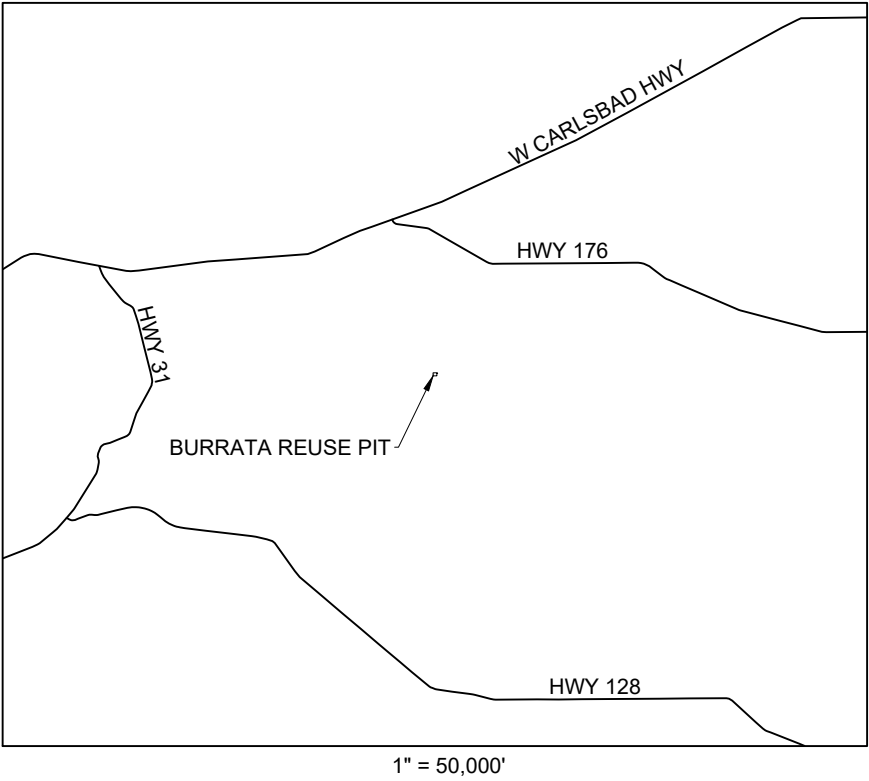
Recycling Facility and Containment Checklist

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.



CENTENNIAL RESOURCE DEVELOPMENT INC
BURRATA REUSE PIT
CONSTRUCTION PLAN
LEA COUNTY, NEW MEXICO

INDEX	
SHEET 1	COVER SHEET
SHEET 2	VICINITY MAP
SHEET 3	POND LAYOUT
SHEET 4	POND CALCULATIONS
SHEET 5	POND CROSS SECTION PROFILES
SHEET 6	DETAILS 1 OF 3
SHEET 7	DETAILS 2 OF 3
SHEET 8	DETAILS 3 OF 3



- GENERAL NOTES**
- COORDINATE INFORMATION ARE BASED ON STATE PLANES COORDINATE, NEW MEXICO EAST ZONE (2257), NAD 83. THE CONTRACTOR SHALL IDENTIFY ANY DISCREPANCIES PRIOR TO PROCEEDING WITH CONSTRUCTION.
 - 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.



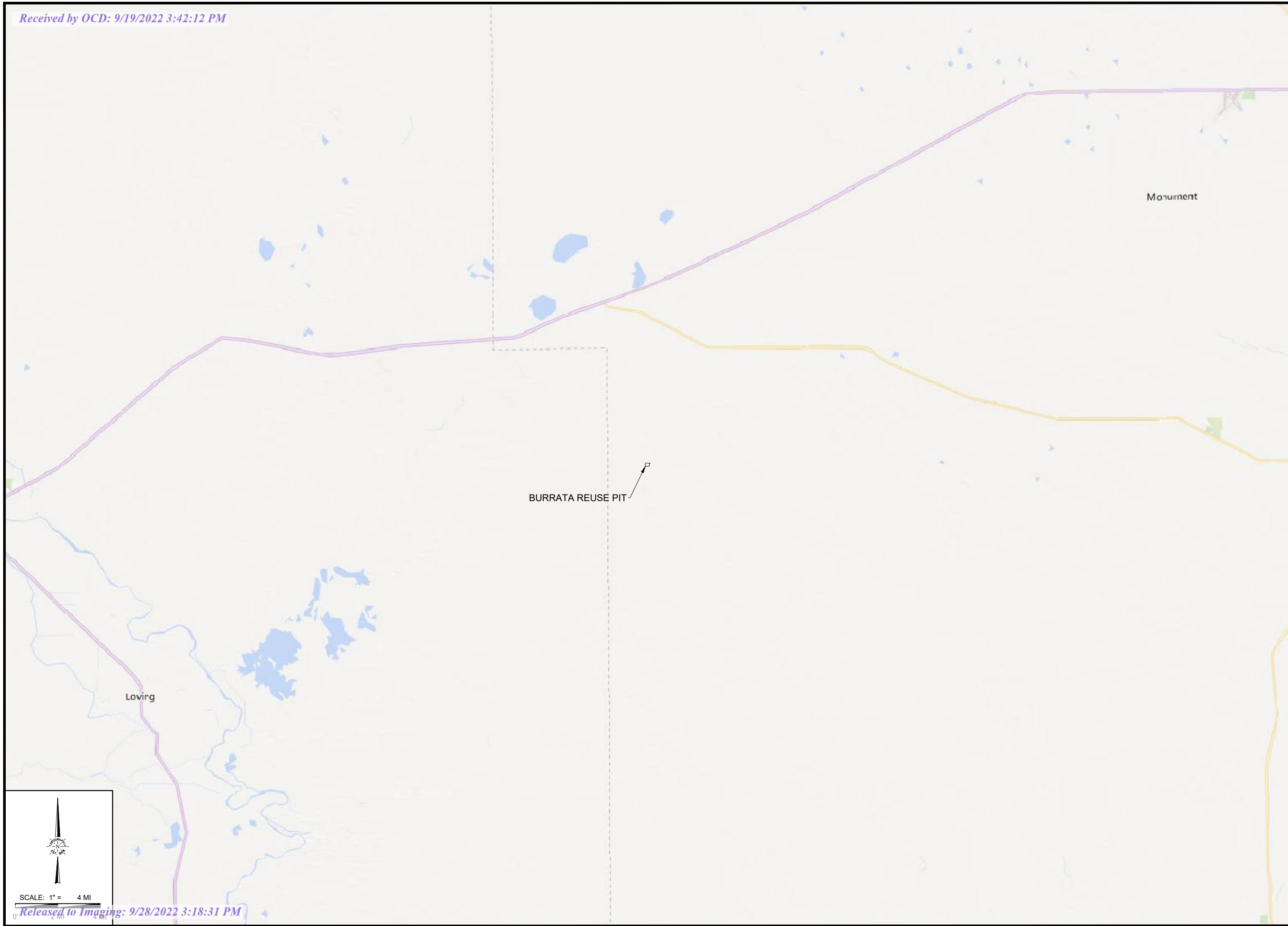
LOYALTY INNOVATION LEGACY

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

COVER SHEET
BURRATA REUSE PIT
CENTENNIAL RESOURCE DEVELOPMENT INC.



DATE: 04/26/22	DRAWN BY: ARG	REVIEWED BY: CCC	SCALE: AS SHOWN	SHEET: 1 OF 8	REVISION:	XXX	XXXX/XXXX	XXXX/XXXX	XXXX/XXXX
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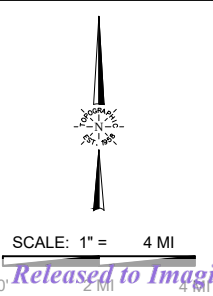
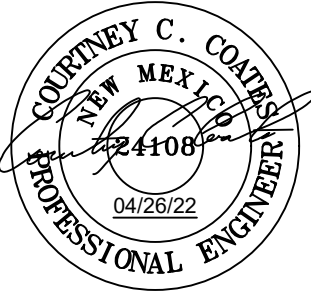


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TELEPHONE: (817) 744-7512
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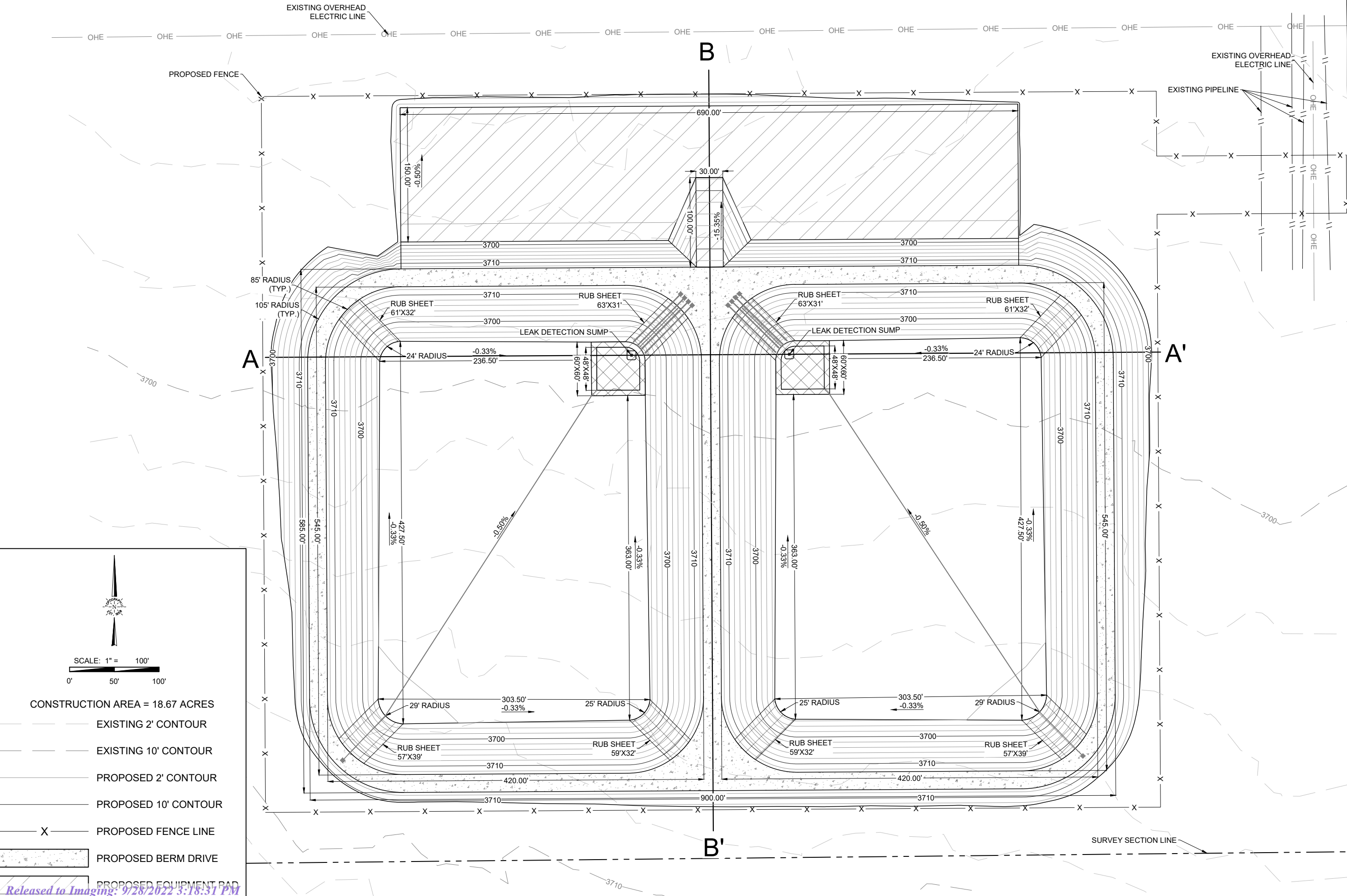
VICINITY MAP

BURRATA REUSE PIT

CENTENNIAL RESOURCE
DEVELOPMENT INC.



DATE:	04/26/22
DRAWN BY:	ARG
REVIEWED BY:	CCC
SCALE:	1" = 4MI
SHEET:	2 OF 8
REVISION:	
XXX	XXXX/XXXX
XXX	XXXX/XXXX
XXX	XXXX/XXXX



TOPOGRAPHIC
LOYALTY INNOVATION LEGACY

1400 EVERMAN PARKWAY, STE. 146
FORT WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512
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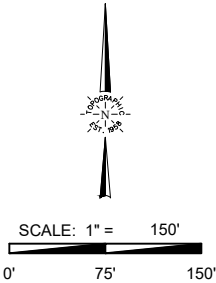
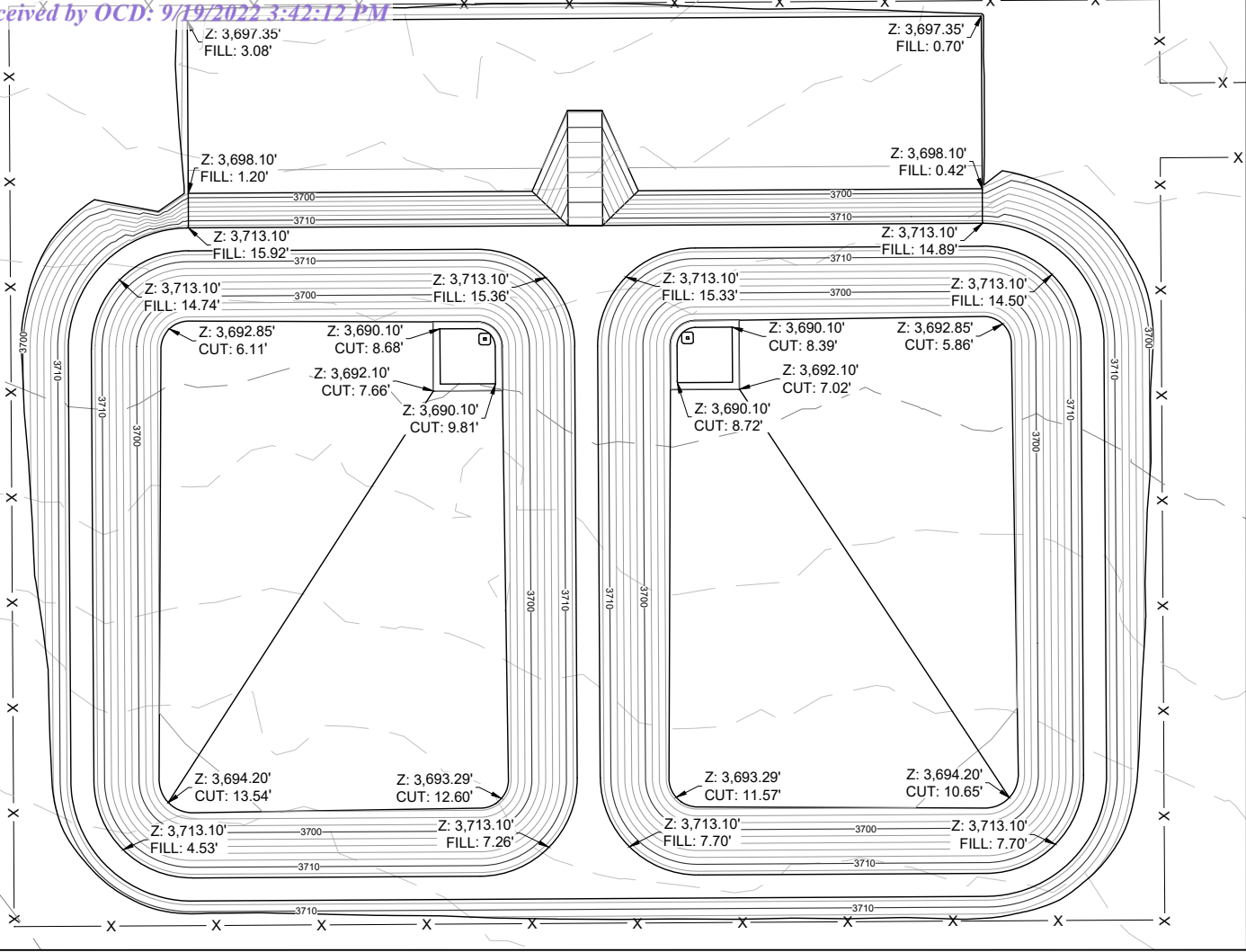
POND LAYOUT

BURRATA REUSE PIT

CENTENNIAL RESOURCE DEVELOPMENT INC.

COURTNEY C. COATES
NEW MEXICO
24108
04/26/22
PROFESSIONAL ENGINEER

DATE:	04/26/22
DRAWN BY:	ARG
REVIEWED BY:	CCC
SCALE:	1" = 100'
SHEET:	3 OF 8
REVISION:	
XXX	XXXXXXXXXX
XXX	XXXXXXXXXX
XXX	XXXXXXXXXX



Description	Unit Quantity	Unit
Liner Areas		
Out-Slope Area	115,175	SQ. FT.
Pond Area	480,870	SQ. FT.
Rub Sheet	24,540	SQ. FT.
Piping		
6" HDPE Casing Pipe	135	LN. FT.
4" HDPE Collection Pipe	1,010	LN. FT.
12" HDPE Suction line	625	LN. FT.
Roads		
Berm Drive (6" Gravel)	71,640	SQ. FT.
Fence		
5 Strand Barbed Wire Fence	4,025	LN. FT.
Mass Grading		
Clearing and Grubbing	16.24	ACRE
Grading	106,650.00	CU. YD.

EARTHWORK QUANTITIES

CUT VOLUME: 106,650 YD³

FILL VOLUME: 93,285 YD³

TOPSOIL (6" STOCKPILED): 13,100 YD³

TOTAL (EXPORT): 265 YD³

TOTAL GRADING AREA: 16.24 ACRES

*VOLUMES ASSUME A FILL FACTOR OF 1.15

POND SUMMARY

MAX VOLUME: 618,728.78 BBLS

MAX AREA: 5.11 ACRES

MAX ELEVATION OF POND: 3,713.10 FT

3' FREEBOARD ELEVATION: 3,710.10 FT

VOLUME AT FREEBOARD: 503,983.00 BBLS
INFORMATION ABOVE IS IDENTICAL PER POND

BURRATA REUSE PIT STAGE STORAGE						WEST POND	EAST POND
ELEV	DEPTH (FT)	AREA (ACRES)	VOLUME (BBLS)	VOLUME (ACRE FT)	VOLUME (CY)	SUB-GRADE VOLUME 144,127.08 BBLS - 18.58 ACRE-FT SHOWN GRAPHICALLY LEFT	SUB-GRADE VOLUME 138,731.41 BBLS - 17.88 ACRE-FT SHOWN GRAPHICALLY LEFT
3,690.10	0.00	0.02	0.00	0.00	0.00		
3,691.10	1.00	0.07	451.29	0.06	93.85	BREACH VOLUME 359,855.92 BBLS - 46.38 ACRE-FT SHOWN GRAPHICALLY LEFT	BREACH VOLUME 365,251.58 BBLS - 47.08 ACRE-FT SHOWN GRAPHICALLY LEFT
3,691.60	1.50	0.07	717.96	0.09	149.30		
3,692.10	2.00	0.08	1,014.13	0.13	210.89		
3,692.60	2.50	0.69	2,373.75	0.31	493.62		
3,693.10	3.00	1.63	6,801.72	0.88	1,414.40		
3,693.60	3.50	2.52	14,923.58	1.92	3,103.33		
3,694.10	4.00	2.98	25,731.44	3.32	5,350.80		
3,694.60	4.50	3.06	37,495.87	4.83	7,797.18		
3,695.10	5.00	3.11	49,465.68	6.38	10,286.28		
3,695.60	5.50	3.16	61,628.61	7.94	12,815.53		
3,696.10	6.00	3.21	73,985.91	9.54	15,385.20		
3,696.60	6.50	3.26	86,538.76	11.15	17,995.54		
3,697.10	7.00	3.31	99,288.38	12.80	20,646.80		
3,697.60	7.50	3.36	112,236.14	14.47	23,339.25		
3,698.10	8.00	3.42	125,383.40	16.16	26,073.20		
3,698.60	8.50	3.47	138,731.41	17.88	28,848.89		
3,698.80	8.70	3.49	144,127.08	18.58	29,970.90		
3,699.10	9.00	3.52	152,281.36	19.63	31,666.57		
3,699.60	9.50	3.57	166,034.62	21.40	34,526.53		
3,700.10	10.00	3.62	179,992.36	23.20	37,429.01		
3,700.60	10.50	3.68	194,155.83	25.03	40,374.27		
3,701.10	11.00	3.73	208,526.23	26.88	43,362.56		
3,701.60	11.50	3.79	223,104.79	28.76	46,394.14		
3,702.10	12.00	3.84	237,892.76	30.66	49,469.27		
3,702.60	12.50	3.89	252,891.42	32.60	52,588.21		
3,703.10	13.00	3.95	268,102.00	34.56	55,751.21		
3,703.60	13.50	4.00	283,525.77	36.54	58,958.55		
3,704.10	14.00	4.06	299,163.96	38.56	62,210.48		
3,704.60	14.50	4.11	315,017.85	40.60	65,507.26		
3,705.10	15.00	4.17	331,088.49	42.68	68,849.11		
3,705.60	15.50	4.23	347,376.39	44.77	72,236.14		
3,706.10	16.00	4.28	363,882.97	46.90	75,668.65		
3,706.60	16.50	4.34	380,609.83	49.06	79,146.96		
3,707.10	17.00	4.40	397,558.58	51.24	82,671.42		
3,707.60	17.50	4.46	414,730.78	53.46	86,242.34		
3,708.10	18.00	4.51	432,127.47	55.70	89,859.94		
3,708.60	18.50	4.57	449,749.68	57.97	93,524.44		
3,709.10	19.00	4.63	467,598.79	60.27	97,236.12		
3,709.60	19.50	4.69	485,676.12	62.60	100,995.26		
3,710.10	20.00	4.75	503,983.00	64.96	104,802.14		
3,710.60	20.50	4.81	522,520.80	67.35	108,657.03		
3,711.10	21.00	4.87	541,290.77	69.77	112,560.20		
3,711.60	21.50	4.93	560,294.39	72.22	116,511.97		
3,712.10	22.00	4.99	579,533.10	74.70	120,512.61		
3,712.60	22.50	5.05	599,008.90	77.21	124,562.56		
3,713.10	23.00	5.11	618,728.78	79.75	128,663.27		

STAGE STORAGE TABLE IS IDENTICAL PER POND



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

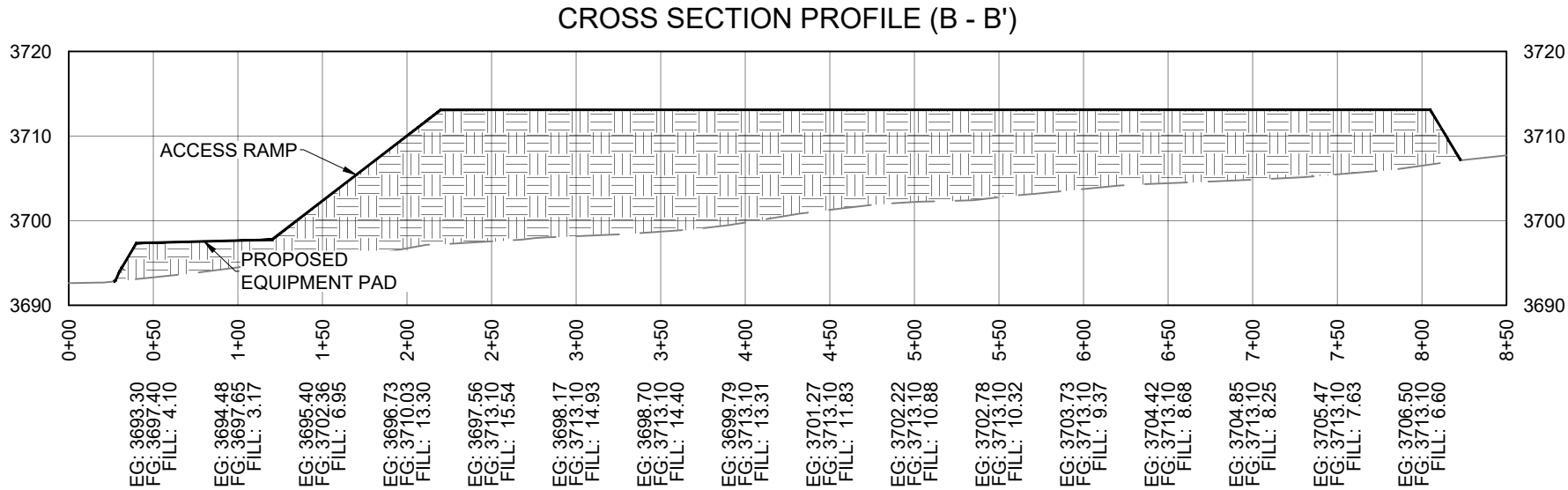
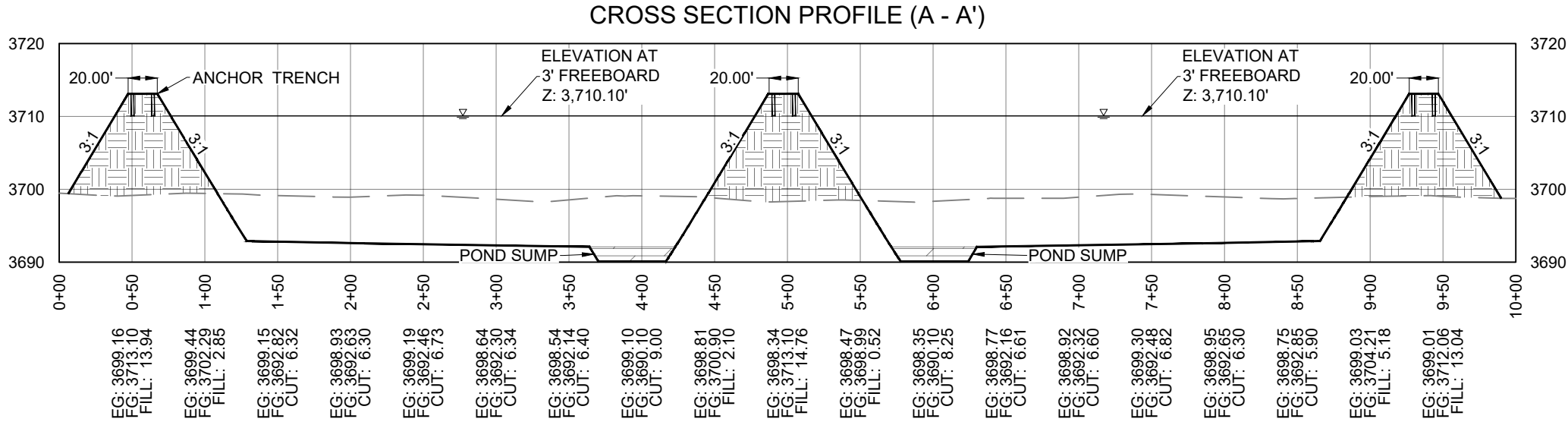
POND CALCULATIONS

BURRATA REUSE PIT

CENTENNIAL RESOURCE
DEVELOPMENT INC.

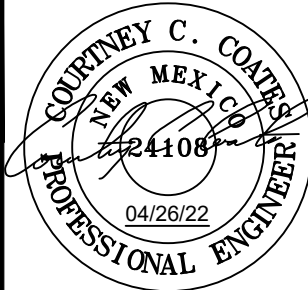


DATE:	04/26/22	DRAWN BY:	ARG	REVIEWED BY:	CCC	SCALE:	1" = 150'	SHEET:	4 OF 8	REVISION:	XXX	XXXXXXX	XXX	XXXXXXX	XXX	XXXXXXX
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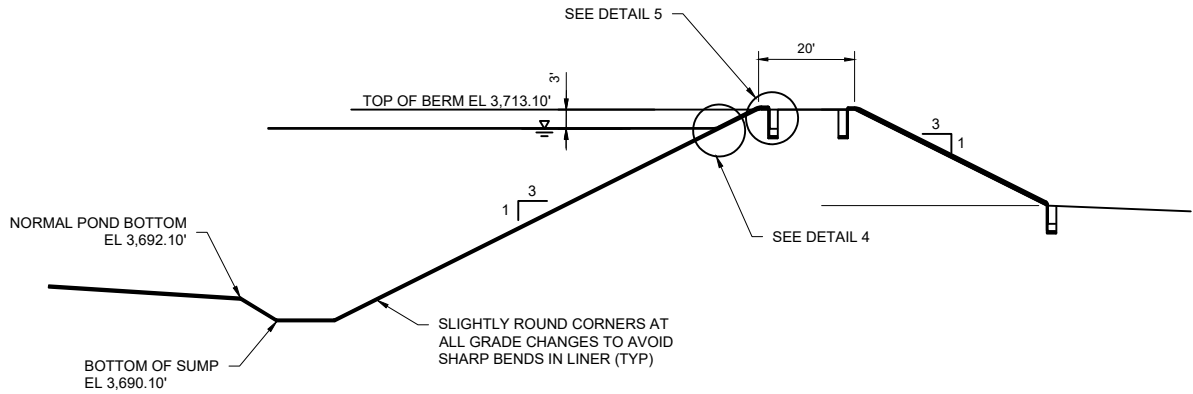


CROSS SECTION PROFILES

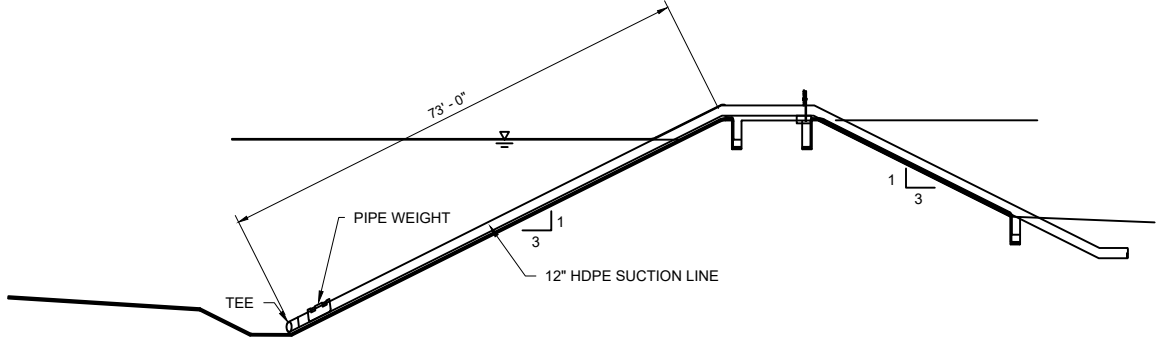
BURRATA REUSE PIT
CENTENNIAL RESOURCE
DEVELOPMENT INC.



DATE:	04/26/22
DRAWN BY:	ARG
REVIEWED BY:	CCC
SCALE:	1" = 100'
SHEET:	5 OF 8
REVISION:	
XXX	XXXX/XXXX
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XXX	XXXX/XXXX

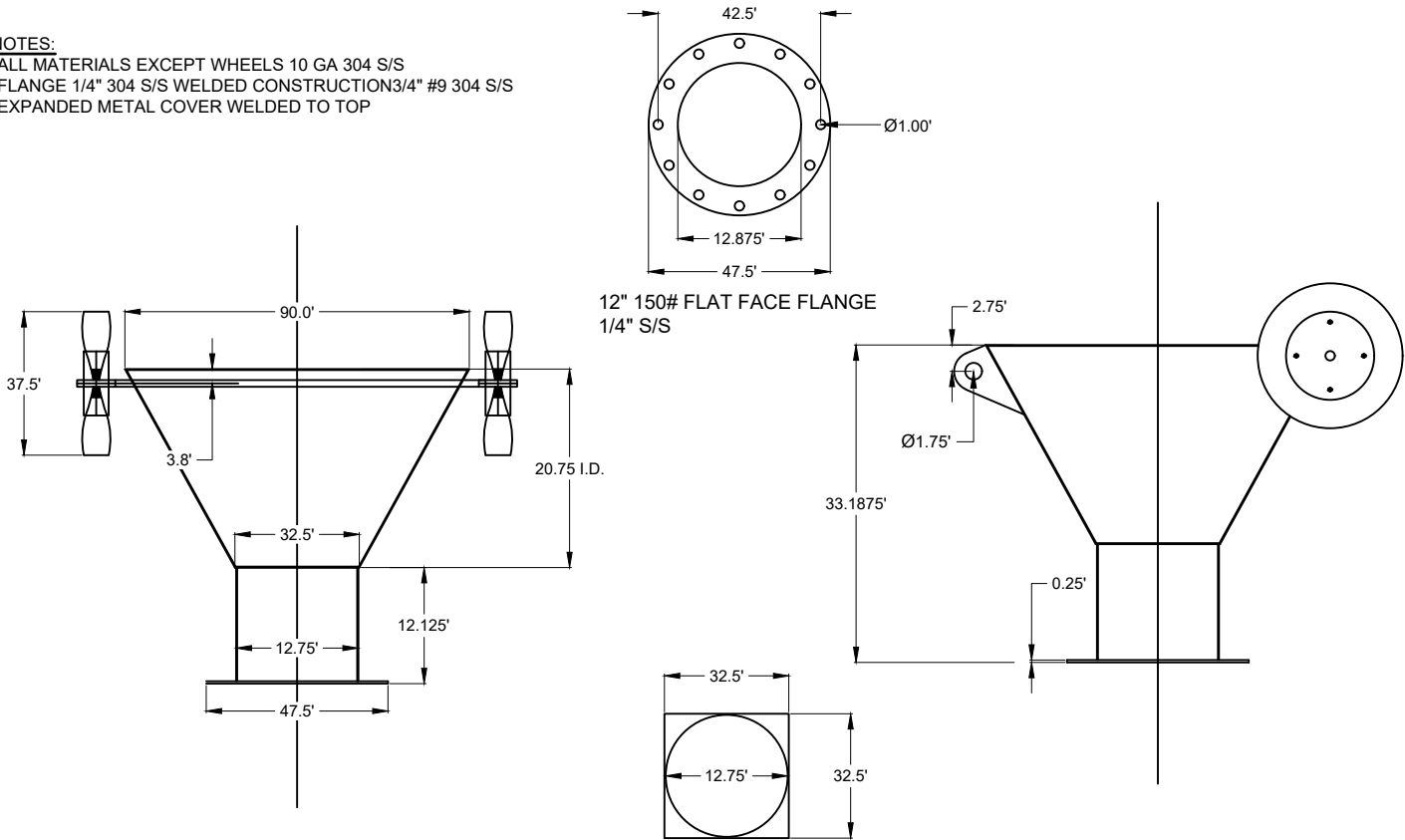


1 TYPICAL BERM SECTION
NTS

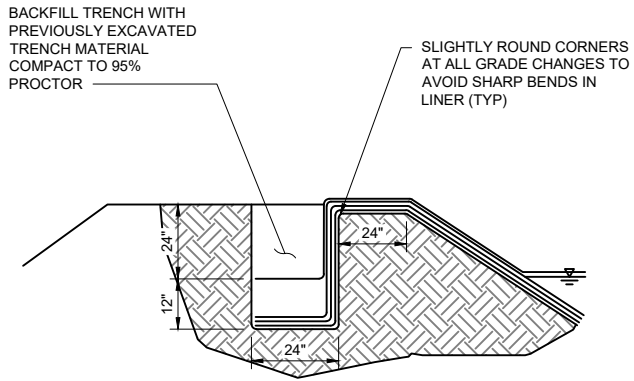


2 SUCTION PIPE SECTION
NTS

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

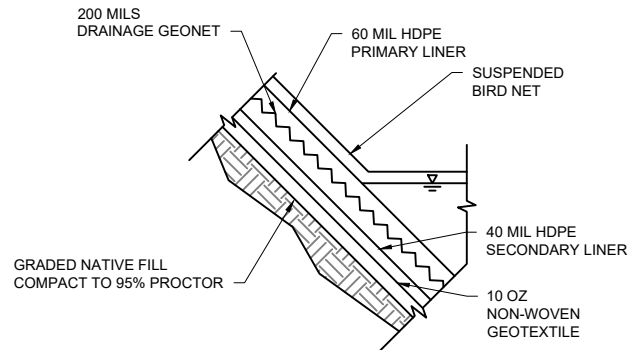


3 SUCTION FUNNEL
NTS

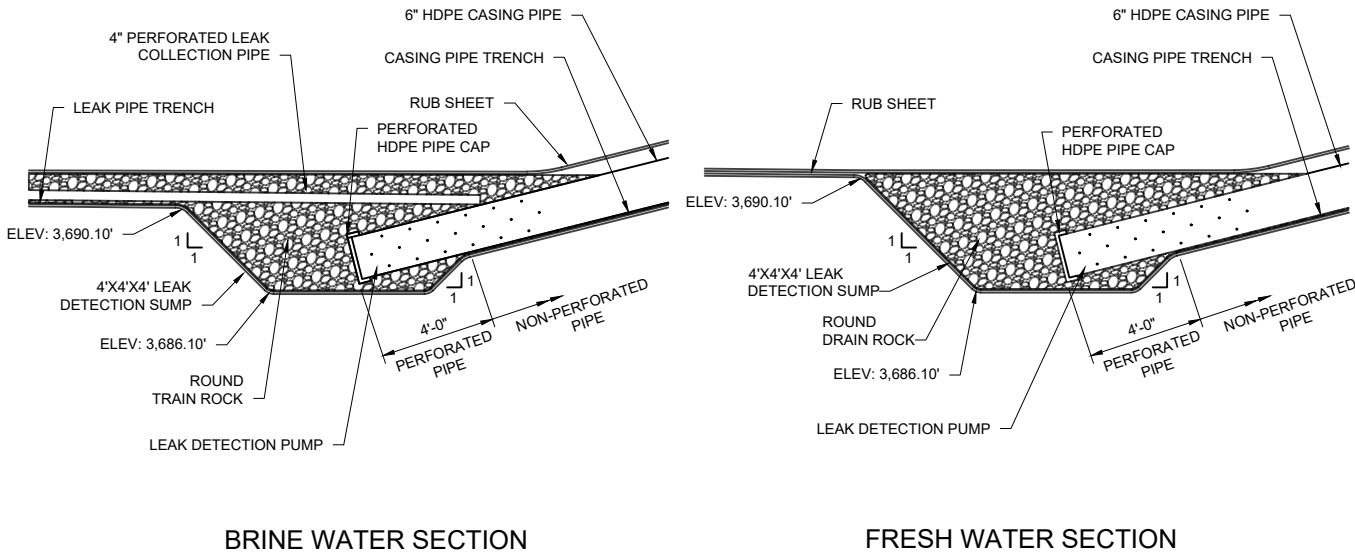


NOTES:
1. AMOUNT OF LAYERS WILL VARY BY POND TYPE AND WHERE A RUB SHEET IS UTILIZED.

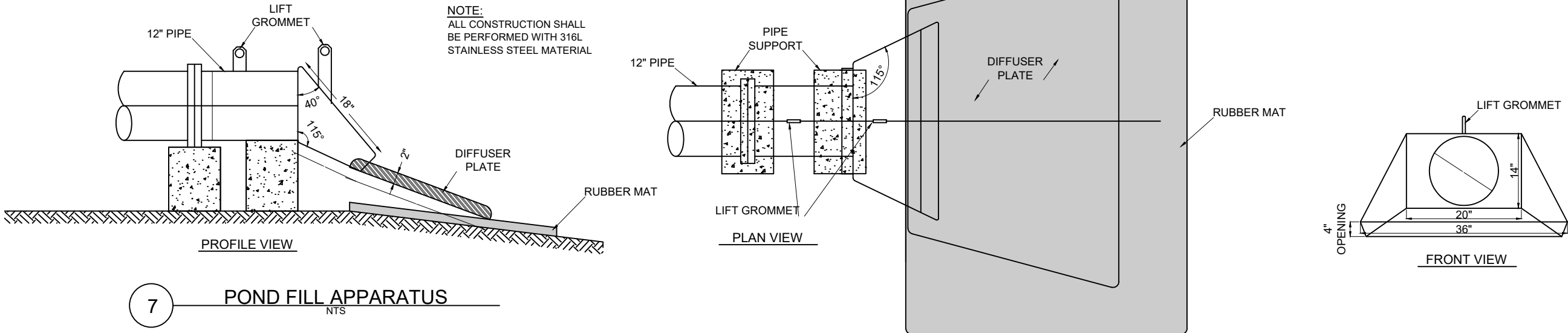
4 TYPICAL ANCHOR TRENCH
NTS



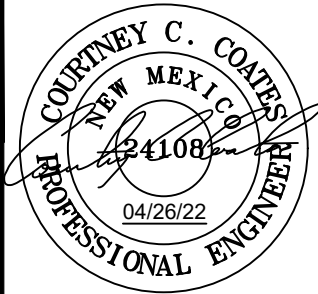
5 BRINE WATER LINER SYSTEM
NTS



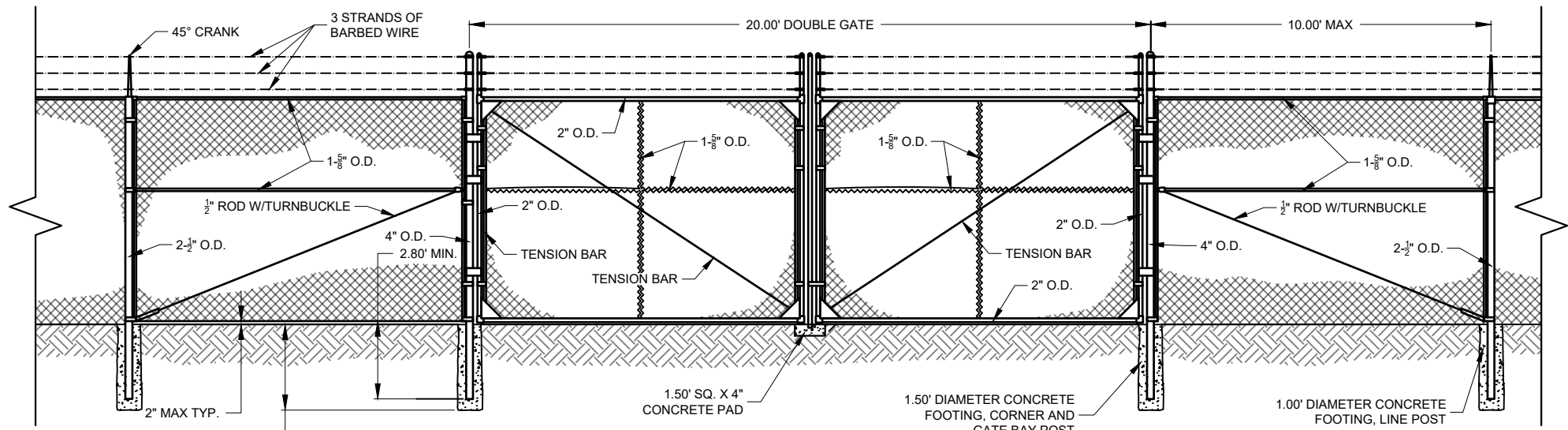
6 LEAK DETECTION SUMP
NTS



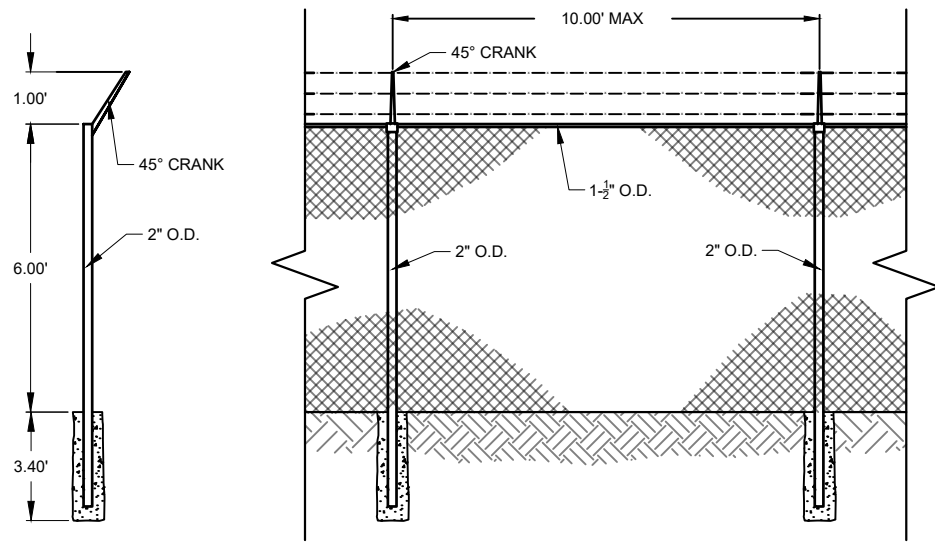
DETAILS (2 OF 3)
BURRATA REUSE PIT
CENTENNIAL RESOURCE
DEVELOPMENT INC.



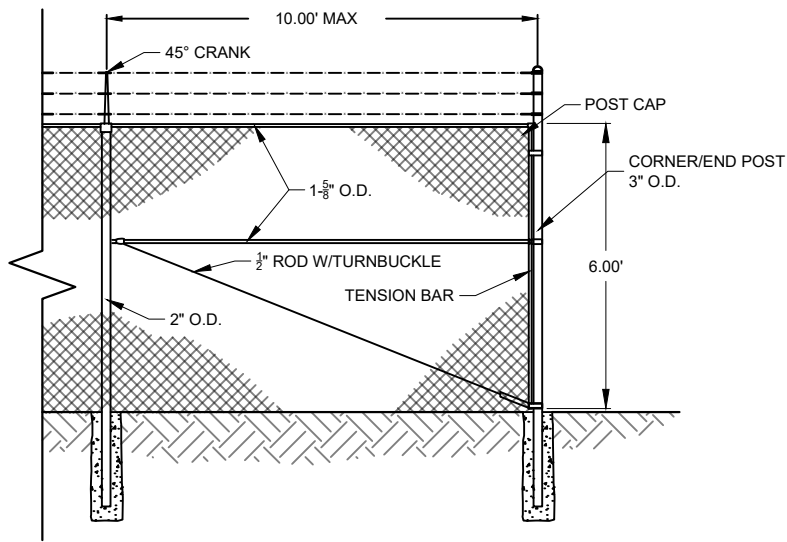
DATE:	04/26/22	DRAWN BY:	ARG	REVIEWED BY:	CCC	SCALE:	1" = 100'	SHEET:	7 OF 8	REVISION:	XXX	XXX	XXX
											XXXXXX	XXXXXX	XXXXXX



GATE



UNREINFORCED SECTION



CORNER SECTION

PERMANENT 6' CHAINLINK FENCE
WITH BARBED WIRE DETAIL

8

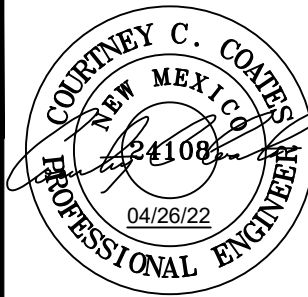
NTS



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

DETAILS (3 OF 3)

BURRATA REUSE PIT
CENTENNIAL RESOURCE
DEVELOPMENT INC.



DATE:	04/26/22
DRAWN BY:	ARG
REVIEWED BY:	CCC
SCALE:	1" = 100'
SHEET:	8 OF 8
REVISION:	
XXX	XXXX/XXXX
XXX	XXXX/XXXX
XXX	XXXX/XXXX

Liner Installation



Installation Procedure

(This is a “Layman’s” guide specific instructions follow as determined by IAGI)

1. Mobilize equipment and crew to location.
2. Once at location before any work is done complete a “JSA” and an equipment check list.
3. Inspect subgrade to determine if it is acceptable to begin work.
4. Begin excavation a 2’x2’ anchor trench around the pits perimeter once a line locate has been completed
5. Once subgrade is accepted and before liner is deployed pull samples from one of the rolls to be used and test welders and seam quality (samples will be kept for QAQC documentation).
6. Anytime the welders set for more than two hours or a notable change in temperature occurs, the welders must be retested (samples will be kept for QAQC documentation)
7. The deployment direction will be determined by the direction of the wind on the first day, panels will be deployed moving in the direction that puts the wind at the back of the installer so that it is less likely for wind to get under the material and create air pockets, and unnecessary wrinkles.
 - a. NOTE: You must also look at the forecast and consider any changing wind directions.
8. The first panel will be laid across the width of the pit five feet from the toe, the panel will be “squared” up with the pit and secured in place with the sand bags.
9. You then will begin end cap deployment. Panels will be pulled 3-5 feet past the first toe pull that was installed, corners will be “cut in” so that there are no perpendicular welds on the wall after end cap is completed.
10. Once the end cap is complete proceed with the floor installation.
 - a. Note: For each panel pull overlap and adjust from there for the welder tract
 - b. Note: Each pull will be pulled out to account for the current wind direction. Make sure that the end flap is not in the wind, if needed lift the flap of the installed panel and pull underneath it.
11. Complete the second end cap the same as in #8
12. If the pit is a “multi-layer” pit, or the customer has requested air channel testing you will now begin the QC and air test’s.
 - a. All extrusion welds will be Vacuum tested
 - b. All testing will be done in accordance to IAGI standards
13. Net will now be installed in the floor using zip ties every 6” to secure panels together
14. Secondary layer will be installed in the same manner as # 4-11
15. “Dump Pads” or “Rub Sheets” will be installed in the requested location of the customer and will be alternate in color to the main liner. They will be extruded fully.
16. Sand bags will be installed around the entire toe of the pit to ballast the pit until water is available.
17. Documentation will be done throughout the installation, noting the roll numbers, and length of each panel. All repairs will also be documented.

Patriot Environmental, LLC
220 W. Carl Hubbell Blvd. # 671
Meeker, OK 74855

Bonding

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.

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. LPM9260153
(For use of Surety Company)

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

Know all men by these presents

Centennial Resource Production, LLC., as Principal,
and Fidelity and Deposit Company of Maryland, as Surety, a corporation organized,
existing and doing business under and by virtue of the laws of the State of Maryland 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 \$375.00 Dollars.

In witness whereof we hereunto set our hands this 11th day of July, 20 17.

Centennial Resource Production, LLC.

Fidelity and Deposit Company of Maryland

PRINCIPAL
1001 17th St, Flr 18, DENVER, CO 80202

SURETY
1299 Zurich Way, Schaumburg, IL 60196

Address

Address

BY

BY

Signature

Attorney-in-Fact

Signature

CHIEF OPERATING OFFICER

Desiree E. Westmoreland

Title

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

(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 LIMITED LIABILITY COMPANY dx

STATE OF COLORADO)
 COUNTY OF DENVER) ss.

On this 13th day of JULY, 20 17

before me personally appeared SEAN S SMITH, to me personally known, who, being by me duly sworn, did say that s/ he is CHIEF OPERATING OFFICER of CENTENNIAL RESOURCE PRODUCTION LLC

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. LIMITED LIABILITY COMPANY

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

05-11-2018
My commission expires

Julie A. Hinkle
Notary Public name

Julie A. Hinkle
Signature notary

JULIE A HINKLE
Notary Public
State of Colorado
Notary ID 20064018287
My Commission Expires May 11, 2018

ACKNOWLEDGMENT FORM FOR CORPORATE SURETY

STATE OF Kansas)
 COUNTY OF Sedgwick) ss.

On this 11th day of July, 20 17

before me personally appeared Desiree E. Westmoreland, to me personally known, who, being by me duly sworn, did say that s/ he is Attorney-in-Fact of Fidelity and Deposit Company of Maryland

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.

1/11/21
My commission expires

Myriah Valdivia
Notary Public name

Myriah Valdivia
Signature, notary

(Notary Seal)

MYRIAH VALDIVIA
Notary Public - State of Kansas
My Appt. Expires 1/11/2021

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

**ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND
POWER OF ATTORNEY**

KNOW ALL MEN BY THESE PRESENTS: That the ZURICH AMERICAN INSURANCE COMPANY, a corporation of the State of New York, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, a corporation of the State of Maryland, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND a corporation of the State of Maryland (herein collectively called the "Companies"), by **GERALD F. HALEY, Vice President**, in pursuance of authority granted by Article V, Section 8, of the By-Laws of said Companies, which are set forth on the reverse side hereof and are hereby certified to be in full force and effect on the date hereof, do hereby nominate, constitute, and appoint **Bret S. BURTON, Tim H. HEFFEL, Desiree E. WESTMORELAND, Timothy Craig SMITH, David B. McKINNEY, Todd Alan RAMBO and Myriah A. VALDIVIA**, all of Wichita, Kansas, EACH 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 and undertakings**, and the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Companies, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the ZURICH AMERICAN INSURANCE COMPANY at its office in New York, New York., the regularly elected officers of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at its office in Owings Mills, Maryland., and the regularly elected officers of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at its office in Owings Mills, Maryland., in their own proper persons.

The said Vice President does hereby certify that the extract set forth on the reverse side hereof is a true copy of Article V, Section 8, of the By-Laws of said Companies, and is now in force.

IN WITNESS WHEREOF, the said Vice-President has hereunto subscribed his/her names and affixed the Corporate Seals of the said **ZURICH AMERICAN INSURANCE COMPANY, COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and FIDELITY AND DEPOSIT COMPANY OF MARYLAND**, this 7th day of March, A.D. 2017.

ATTEST:

**ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND**



By: _____

Eric D. Barnes

*Secretary
Eric D. Barnes*

State of Maryland
County of Baltimore

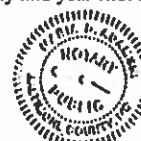
*Vice President
Gerald F. Haley*

On this 7th day of March, A.D. 2017, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, **GERALD F. HALEY, Vice President, and ERIC D. BARNES, Secretary**, of the Companies, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and acknowledged the execution of same, and being by me duly sworn, depose and saith, that he/she is the said officer of the Company aforesaid, and that the seals affixed to the preceding instrument are the Corporate Seals of said Companies, and that the said Corporate Seals and the signature as such officer were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporations.

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

Maria D. Adamski

Maria D. Adamski, Notary Public
My Commission Expires: July 8, 2019



Sign

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

48"x48"



BURRATA REUSE WATER PIT
SE/SE SEC. 29 – T21S-R32E
LEA COUNTY, NM
32.443670⁰, -103.690712⁰

CAUTION

**PPE
REQUIRED**

DANGER

**H₂S
MAY BE PRESENT**

DANGER

**NO
SMOKING**

NOTICE

**AUTHORIZED
PERSONNEL ONLY**

Variances

7.

Variances:

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.

ALL CONSTRUCTION AND OPERATION VARIANCES HAVE BEEN PREVIOUSLY APPROVED BY NMOCD.



Variance Request for Bird Deterrent

Re: Burrata Reuse Water Recycling Facility and Containment Pit

Centennial Resource Development, Inc. would like to request the OCD's approval for a variance regarding bird deterrents at the location described above. Centennial 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 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 Centennial proposes to utilize at the Burrata Water Recycling Facility and Containment Pit.



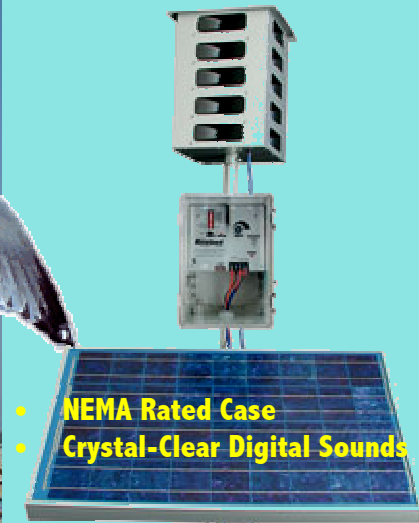
EFFECTIVE WIDE-AREA BIRD CONTROL!

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 help scare all the birds.



- NEMA Rated Case
- Crystal-Clear Digital Sounds

- Laughing Gull
- Ring-Billed Gull
- Herring Gull
- California Gull
- Black-Headed Gull
- Glaucous-Winged Gull
- Double Crested Cormorant
- Marsh Hawk

**Perfect for Landfills, Airfields, Fish Farms,
Farm Fields or any multi-acre facility.**

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 most any 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.

Mega Blaster PRO

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.

CONFIGURATIONS AVAILABLE:

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



The Bird Control 'X'-Perts

NOTE: This unit is capable of sound output up to 125 decibels. **HEARING PROTECTION IS RECOMMENDED.**



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.

Birds are stubborn and territorial, returning year after year. Mega Blaster Pro uses their memory against them and scares them away repeatedly so they learn not to return.

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

Uses: any multi-acre facility including landfills, airfields, fish farms, beaches, lakes, parks, large estates.

Configuration Options:

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

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.

Origin: Proudly made in the USA



ELECTRONIC SONIC DEVICES





Variance Request for Fencing

Re: Burrata Reuse Water Recycling Facility and Containment Pit

Centennial Resource Development, Inc. would like to request the OCD's approval for a variance regarding fencing at the location described above. Centennial 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 an 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 see the details below.



This is the typical configuration Centennial proposes to utilize at the Burrata Water Recycling Facility and Containment Pit.





Variance Request for Secondary Liner

Re: Burrata Reuse Water Recycling Facility and Containment Pit

Centennial Resource Development, Inc. would like to request the OCD's approval for a variance regarding the secondary liner at the location described above. Centennial proposes to utilize 40-mil HDPE for the secondary liner, in lieu of a 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 the 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.

RAVEN INDUSTRIES INC.
Statement of Performance

SUBJECT: Raven HD400 and HD600 geomembrane liners

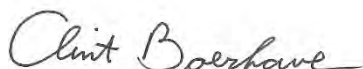
IN REFERENCE TO: Hydraulic conductivity rating

DATE: April 15, 2022

Raven Industries hereby certifies that our Hydraline HD40 and HD60 polyethylene membranes have hydraulic conductivity of less than 1×10^{-10} cm/sec.

Permeance is calculated from Water Vapor Transmission (WVT) data generated by test method ASTM E96 *Water Vapor Transmission of Materials* or F1249 *Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor*. Using this data, specific hydraulic conductivity rates for the two materials are as follows:

Hydraline HD40	2.10×10^{-12} cm/sec
Hydraline HD60	4.08×10^{-13} cm/sec



Clint Boerhave
Staff Quality Engineer
Raven Industries - Engineered Films Division

Siting Criteria for Recycling Containment

<p>8. Siting Criteria for Recycling Containment</p> <p><i>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.</i></p>	
<p><u>General siting</u></p> <p><u>Ground water is less than 50 feet below the bottom of the Recycling Containment.</u> NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells</p> <p>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</p> <p>Within the area overlying a subsurface mine. - Written confirmation or verification or map from the NM EMNRD-Mining and Minerals Division</p> <p>Within an unstable area. - Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; topographic map</p> <p>Within a 100-year floodplain. FEMA map</p> <p>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</p> <p>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</p> <p>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</p> <p>Within 500 feet of a wetland. - US Fish and Wildlife Wetland Identification map; topographic map; visual inspection (certification) of the proposed site</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>



18 May 2022

J. D. McGuire
Centennial Resource Development, Inc.
500 W. Illinois Avenue, Suite 500
Midland, Texas, 79701

**Re: Burrata Water Reuse Pit - Comprehensive Resource Review
Lea County, New Mexico**

Dear Mr. McGuire:

Goshawk Environmental Consulting, Inc. (Goshawk) conducted a comprehensive desktop resource review and limited field investigations for the Burrata Water Reuse Pit in Lea County, New Mexico. The work was conducted on behalf of our client, Centennial Resource Development, Inc. (Centennial). This resource review was conducted to meet the requirements of State of New Mexico Energy, Minerals, and Natural Resources Department (EMNRD) application form C-147, which pertains to the permitting of Recycling and Recycling Containment facilities. In particular, this review addresses the required attachments for box 8 of the application. Much of the included information goes beyond the scope of these requirements, however, and includes a comprehensive review of potential ecological and cultural resources that may be impacted by the proposed reuse pit.

INTRODUCTION

The Burrata Water Reuse Pit will include a double-lined water pit with leak detection, a tanker off load and storage area, and a reuse water treatment facility. The pit site is approximately 1,000 feet wide (east–west) and 800 feet long (north–south) and encompasses approximately 18.35 acres. The reuse pit would also entail the construction of a 212-foot-long by 65-foot-wide caliche capped access road. The proposed reuse pit is located in the southeast $\frac{1}{4}$ of the southeast $\frac{1}{4}$ of Section 29, Township 21 South, Range 32 East (Figure 1). The proposed pit is on land owned and managed by the Bureau of Land Management Carlsbad Field Office (BLM CFO) and is depicted on The Divide 7.5' United States Geological Survey (USGS) topographic quadrangle (Figure 2).

DESKTOP REVIEW

TOPOGRAPHIC MAP

The topographic quadrangle (Figure 2) indicates the Burrata Water Reuse Pit is entirely within grasslands (white background). The terrain is relatively flat, with elevations ranging from slightly above 3,690 feet above mean sea level (AMSL) to slightly below 3,710 feet AMSL. Drainage occurs by overland sheet flow in a generally north direction. Mapped waterbodies (dot-dash blue lines, blue shaded area, etc.) are likely to be considered as regulated Waters of the US (WATERS) by the U.S. Army Corps of Engineers (USACE). The presence of WATERS may trigger USACE oversight of a project. No mapped waterbodies, lakes, playas, or other significant water courses are indicated within the proposed reuse pit or surrounding area on the topographic map. The nearest mapped water feature is a playa shown 0.97 miles northwest of the proposed reuse pit. The Burrata Water Reuse Pit is within the Upper Pecos-Black River Watershed. The nearest direct line point to the Pecos River is approximately 22.97 miles southwest. There are no





improvements mapped within the reuse pit site. The nearest improvement mapped on the USGS topographic quadrangle is an unimproved road shown to be 0.59 miles northeast of the proposed reuse pit.

AERIAL ORTHOIMAGERY

The aerial orthoimagery (Figure 3) indicates the Burrata Water Reuse Pit is within relatively open rangeland, dominated by shrubs and short coppice dunes/blowouts. The unimproved road indicated in the topographic map is visible in the aerial orthoimagery as a two-track. Several more recent buried pipeline ROWs, caliche capped access roads, and caliche capped oil and gas pads are also visible.

GROUNDWATER REVIEW

Investigations to identify potential groundwater and its depth below the proposed Burrata Water Reuse Pit included a resource review and the drilling of a single monitoring well. Based on a search of the New Mexico Office of the State Engineer (NM OSE) online GIS tool, the project falls within the Carlsbad underground water basin. Based on the 2004 report "The Carlsbad Area Groundwater Flow Model", by Peggy Barroll, David Jordan, and Greg Ruskauff (Barroll et al.), there are two primary aquifers within the Carlsbad underground water basin. These include the alluvial aquifer of the Pecos River and its associated tributaries, and the Permian Capitan reef aquifer. While the Pecos River alluvial aquifer is primarily surficial, the Permian Capitan reef aquifer is primarily subterranean. The two aquifers share a direct connection in the form of the Carlsbad Spring, through which the Permian Capitan reef aquifer contributes water to the Pecos River. Flow within the Pecos River alluvial aquifer follows a general trend of northeast to southwest flow. Historical data reviewed in Barroll et al. indicates that groundwater levels have fluctuated by 40 feet or more over the past 60 years.

A review of the USGS topographic map and aerial orthoimagery indicates no surface water is present within or in the immediate vicinity of the proposed reuse pit (Figures 2 and 3). Based on the NM OSE Point of Diversion online report tool, the nearest extent water well to the proposed reuse pit is 2.57 miles away. The well, C03717, was drilled in 2014, reached a depth of 650 feet, and accessed water bearing stratifications between 55 and 72 feet below surface, and between 620 and 630 feet below surface. The well produced an estimated flow of two gallons per minute at the time of drilling. This well is too far from the proposed water reuse pit to provide accurate groundwater data.

Centennial contracted White Drilling to drill a 75-foot-deep groundwater monitoring well to determine the presence and depth of groundwater present below the proposed reuse pit (Figure 4). The well was left open for 48 hours, and no groundwater was detected (Appendix B). The well was drilled at just below 3,690 feet AMSL, and the proposed reuse pit will be built between 3,690 feet AMSL and 3,710 feet AMSL. As such, there will be no groundwater within 50 feet of the bottom of the proposed reuse pit.

NEARBY MUNICIPALITIES, RESIDENCES, OR SERVICE INSTITUTIONS

The proposed reuse pit does not fall within any municipal boundaries. The nearest municipalities are Carlsbad (30.0 miles west), Eunice (30.4 miles east), and Hobbs (34.5 miles northeast) (Figure 1). As previously discussed, the nearest water well is 2.57 miles away; as such, no municipal freshwater well fields will be impacted. A review of aerial orthoimagery indicates that the only improvements in the vicinity of the proposed reuse pit include caliche capped roads, buried pipeline ROWs, and oil and gas well and





facility pads. No residences, schools, hospitals, institutions, or churches exist within the vicinity of the proposed reuse pit. The nearest non-oil and gas related facilities to the proposed reuse pit are the Intrepid potash mine 6.71 miles northeast, and the Department of Energy's (DOE) Waste Isolation Pilot Plant (WIPP) 7.32 miles southwest.

SUBSURFACE MINES

A search of the New Mexico EMNRD Mining and Mineral Division (MMD) online database indicated that there are 132 known mines within Lea County and 213 known mines in nearby Eddy County. No mines, active or inactive, are registered within Section 29 of Township 21 South, Range 32 East. The EMNRD MMD Registered Mines Web Map indicates that the nearest mine to the proposed reuse pit is the Intrepid East Mine, which lies 6.71 miles northeast of the proposed reuse pit in Eddy County. The mine is shown as an active potash mine.

SOILS, SUBSURFACE GEOLOGY, AND STABILITY

The NRCS SSURGO spatial data (Figure 5) indicate the soil map units underlying the Burrata Water Reuse Pit are Pyote loamy fine sand (PT) and Pyote and Maljamar fine sands (PU). These soils consist of sandy eolian deposits derived from sedimentary rock. They are typically located on plains and are well-drained. Runoff is considered negligible for both, and both list their water tables as below 80 inches. Neither of the primary components of these soils are listed as hydric soils.

Based on GIS data derived from the New Mexico Bureau of Geology and Mineral Resources, the proposed reuse pit overlies Qep, or Holocene to Middle Pleistocene age eolian and piedmont deposits (Figure 6). These deposits formed along the eastern flank of the Pecos River valley, and are typically capped by thin eolian deposits. The same data indicates that there are no fault lines in Lea County. The nearest mapped fault is 25.9 miles southwest of the proposed reuse pit. The same fault is not shown on the USGS online Interactive Fault Map. The USGS Short-term and Long-term seismic hazard maps both show the proposed reuse pit to be in the lowest risk zone mapped.

GIS data derived from the BLM CFO indicates that proposed reuse pit is within a zone of low potential for the occurrence of karst (Figure 7). This means there are unlikely to be any subsurface voids below the proposed reuse pit.

Based on soil, geologic, and karst data, Goshawk considers the proposed reuse pit to be in a stable location.

PRECIPITATION

Data derived from the National Centers for Environmental Information indicated that mean annual precipitation in Lea County for the period of April 1900 to March 2021 was 15.0 inches. However, Lea County only received 8.7 inches of precipitation in the last 12 months (April 2020 to March 2021).

FEMA FLOODPLAIN

Floodplain management is regulated under the Federal Emergency Management Agency (FEMA); however, a local floodplain administrator is usually responsible for implementation within a community. A local floodplain administrator will operate under FEMA's minimum floodplain management standards or the state and/or local regulations, which provide standards for the purpose of flood damage prevention



and reduction. Floodplain management standards are based on FEMA floodplain maps, which identify special flood hazard areas.

Lea County would be the floodplain administrator for the proposed reuse pit. Although Lea County participates in the National Flood Program, FEMA floodplain maps have not been produced for rural portions of Lea County. The proposed project falls within FEMA flood hazard zone D, which indicates that the area has not been assessed for flood hazards by FEMA. The proposed project falls within panel 35025C1575D, which is listed as "Not Printed". The Burrata Water Reuse Pit can be developed without any correspondence with Lea County for purposes of floodplain consideration.

NATIONAL WETLANDS INVENTORY

GIS Data from the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) indicates that the nearest mapped wetland to the proposed reuse pit is 4,817 feet southeast. The potential wetland in question is listed as a riverine wetland and is not shown on the USGS topographic map of the area. The potential wetland will not be impacted by the proposed reuse pit.

THREATENED OR ENDANGERED SPECIES

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

The T/E species listed in the IPaC Trust Resource Report for Lea County (Appendix C) includes only the northern aplomado falcon (*Falco femoralis septentrionalis*), which has an experimental population in Lea County. Critical habitat for this species is not designated within the Burrata Water Reuse Pit or the immediate vicinity.

The state-listed T/E species on NMDGF BISON-M County List for Lea County dated 18 March 2022 (Appendix D) include: broad-billed hummingbird (*Cynanthus latirostris*), least tern (*Sternula antillarum*), bald eagle (*Haliaeetus leucocephalus*), northern aplomado falcon (*Falco femoralis septentrionalis*), peregrine falcon (*Falco peregrinus*), Bell's vireo (*Vireo bellii*), Baird's sparrow (*Centronyx bairdii*), and dunes sagebrush lizard (*Sceloporus arenicolus*). Fish and mollusks are also listed for Lea County; however, due to the nature of the reuse pit site and lack of potential habitat, these species would not occur at the reuse pit site.

The federally listed least tern is listed because of migratory routes. Although these species occasionally stop at points along the migration routes, use of the proposed Burrata 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 Lea 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 preclude the northern aplomado falcon from utilizing the site. 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 Lea 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 reuse pit site. The state-listed birds would have the ability to leave the reuse 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 dunes sagebrush lizard is more commonly found in portions of Lea County where large sand dunes exist. The reuse pit site lacks suitable habitat for the dunes sagebrush lizard. 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 AND HISTORIC PROPERTIES

Goshawk performed an archival review to evaluate the potential for historic properties present near the Burrata Water Reuse Pit. The Archaeological Records Management Section's (ARMS) New Mexico Cultural Resources Information System (NMCRIIS) 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.

According to NMCRIIS, the proposed Burrata Water Reuse Pit and surrounding area were subjected to archaeological survey under 15 different survey projects (Figure 8). NMCRIIS Activities 138075, 143592, 147478, and 149586 provide 100-percent archaeological survey coverage. Previous surveys have yielded largely negative results in the immediate vicinity of the proposed reuse pit (Table 1).

Table 1: Surveys Undertaken Within 1,640 feet (500 meters) of the Proposed Project

Activity Number	Organization Name	Lead Agency	Total Acres	Sites Visited	Date of Survey Start/End
13111	New Mexico Archaeological Services, Inc.	BLM Roswell District	12.99	0	13 to 15 Mar 1982
26924	New Mexico Archaeological Services, Inc.	BLM Roswell District	9.56	0	22 Aug 1989
39849	Archaeological Survey Consultants	BLM Roswell District and NM SLO	156.99	3	31 Jan to 19 Mar 1992
56235	Pecos Archaeological Consultants	BLM Roswell District	10.17	0	18 to 28 Mar 1997
74693	Pecos Archaeological Consultants	BLM CFO	11.04	0	30 Apr to 22 May 2001
112336	Boone Archaeological Services, LLC.	BLM CFO and NM SLO	48.37	1	1 to 5 Dec 2008
137350	Lone Mountain Archaeological Services	BLM CFO and NM SLO	39,453.25	324	27 Dec 2016 to 8 Sep 2017
138075	APAC	BLM CFO and NM SLO	789.69	3	23 Feb to 3 May 2017



Activity Number	Organization Name	Lead Agency	Total Acres	Sites Visited	Date of Survey Start/End
140343	APAC	BLM CFO	10.20	0	24 to 28 Apr 2018
141435	Boone Archaeological Services, LLC.	BLM CFO and NM SLO	145.19	0	6 Jul to 27 Aug 2018
142280	J. T. Rein Archaeology, LLC.	BLM CFO and NM SLO	64.51	0	5 Dec 2018 to 9 Jan 2019
143592	J. T. Rein Archaeology, LLC.	BLM CFO and NM SLO	110.42	0	25 Jun to 9 Jul 2019
144579	Double D Oil Field Services, LLC.	BLM CFO	10.90	0	9 Nov 2019
147478	Boone Archaeological Services, LLC.	BLM CFO and NM SLO	149.09	0	4 to 23 Feb 2021
149586	J. T. Rein Archaeology, LLC.	BLM CFO and NM SLO	23.35	0	18 to 25 Jan 2022

There are no previously documented archaeological sites within 1,640 feet of the proposed reuse pit. The nearest site, LA 125903, is 3,155 feet south southwest of the proposed Burrata Water Reuse Pit. Archaeological site LA 125903 was originally recorded in 1999 by Don Clifton, Consulting Archaeologist under NMCRIS Activity 62886. The site was documented as an Early to Late Pueblo Jornada Mogollon prehistoric artifact scatter. The artifact assemblage included lithic debitage, stone tool manufacturing components, ground stone tools, prehistoric Chupadero Black-on-white ceramics, and fire-cracked rock. Subsurface deposits were estimated to be present based on the eolian nature of the environment. The site was revisited in 2017 by Lone Mountain Archaeological Services. Both recorders, the BLM CFO, and the State Historic Preservation Office (SHPO) determined the site was eligible for listing on the National Register of Historic Places (NRHP).

No NRHP-listed properties have been recorded near the proposed site. According to the NMCRIS database, the nearest NRHP-listed property is the Carlsbad Irrigation District, which lies 26.65 miles southwest of the proposed reuse pit. The Carlsbad Irrigation District consists of a series of canals and drainage channels that link up throughout the Carlsbad area and were pivotal to early settling of the area.

FIELD INVESTIGATION

A field investigation was conducted on 28 April 2022 to assess the reliability of information gathered in the Desktop Review. 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*), shinnery oak (*Quercus havardii*), and broom snakeweed (*Gutierrezia*). Vegetative coverage within the site was approximately 70 percent.

Drainage occurs primarily by overland sheet flow toward the north. No evidence of an Ordinary High-Water Mark (OHWM) or standing water was found within the reuse pit site. Additionally, no flowing watercourse, lakebed, sinkhole, or playa exhibiting an OHWM were found within the reuse pit site or its vicinity. A search in the general vicinity of the reuse pit site did not reveal any seeps, springs, wetlands, or water wells within the reuse pit's vicinity. Additionally, no residences, hospitals, churches, or facilities



related to any function other than oil and gas production were observed in the area. Information gathered for the desktop review appeared to be accurate based on the field investigation.

Since the proposed reuse pit had already been subjected to archaeological survey, additional archaeological survey was not conducted during the field visit.

SUMMARY

Based on the results of the Comprehensive Resource Review, it is Goshawk's opinion that the construction of the Burrata Water Reuse Pit is unlikely to impact any sensitive natural resources, including WATERS, T/E species, groundwater, or cultural resources. If you have any questions or desire additional information, please contact our office.

Sincerely,

A handwritten signature in black ink, appearing to read "Zane Homesley".

Zane Homesley
President

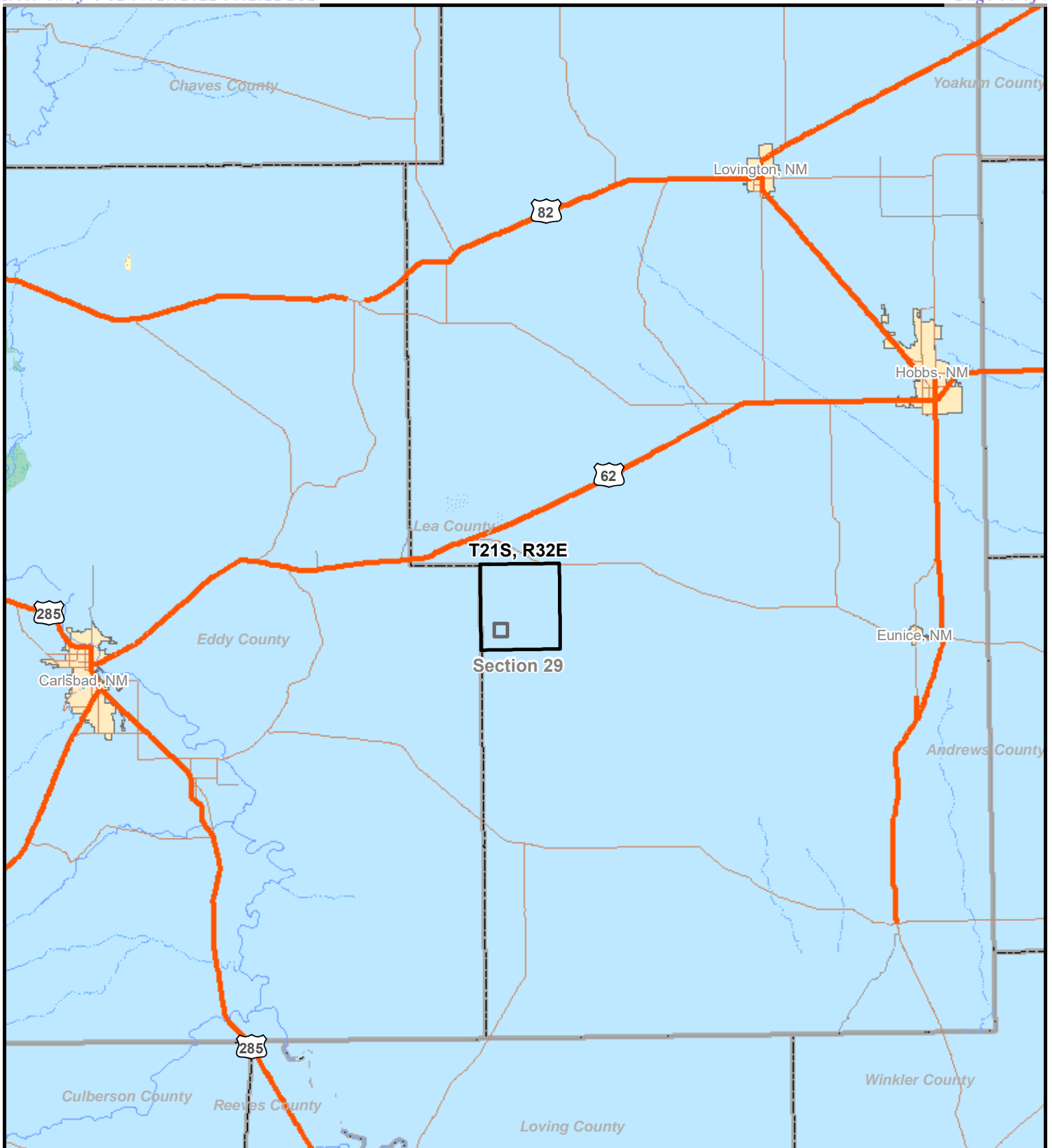
A handwritten signature in black ink, appearing to read "Steven Evans".

Steven Evans
Cultural Resources Manager

Cc: J. D. McGuire, Centennial Resource Development, Inc.
Galan Kelley, Cold Peak Environmental, LLC.



APPENDIX A FIGURES



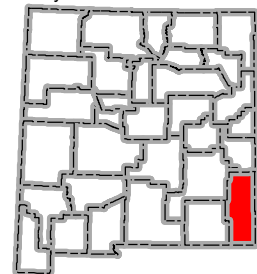
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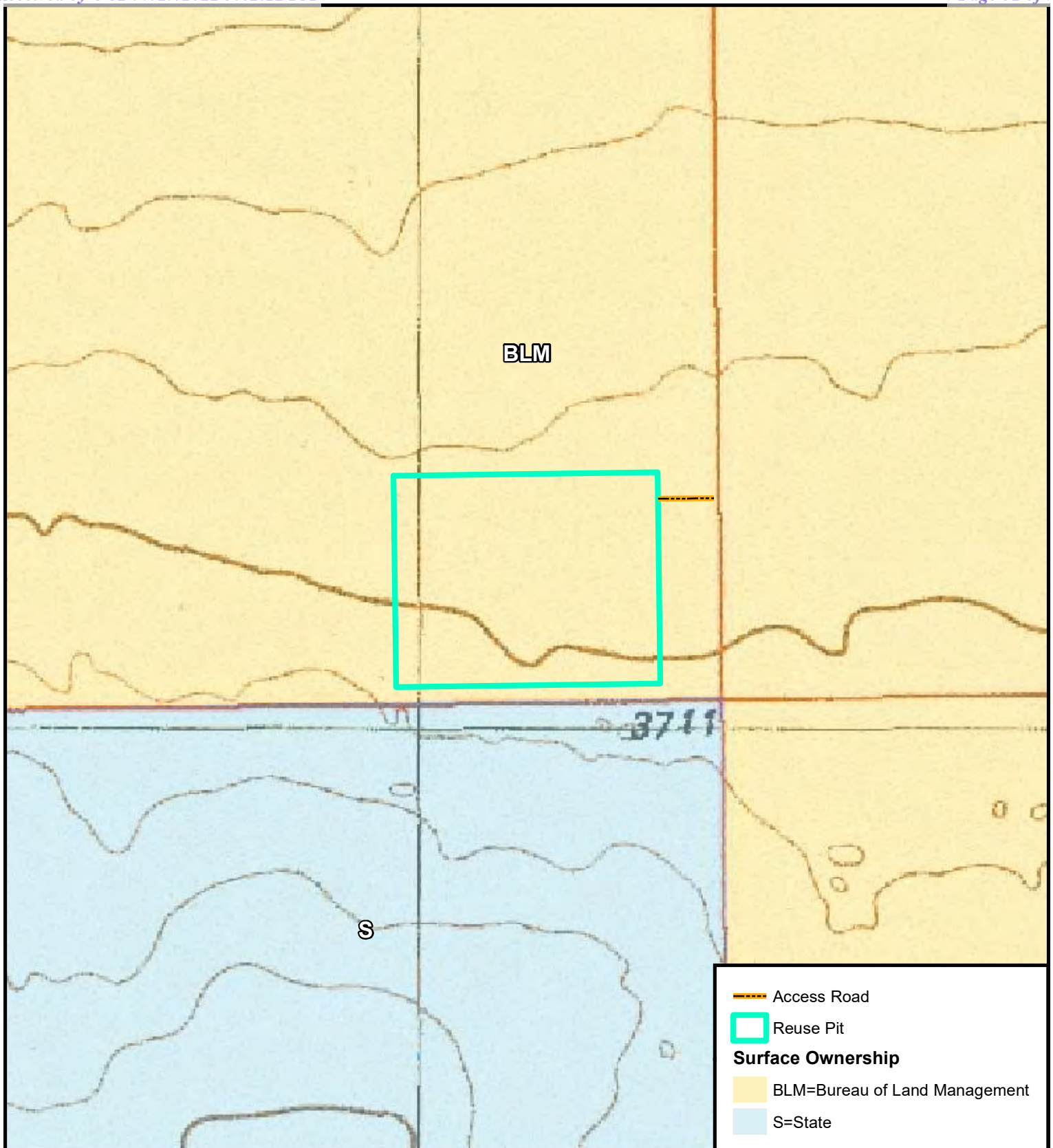
Date: 18 May 2022

0 5 10 Miles
0 8.5 17 Kilometers

Figure 1
Vicinity Map
Lea County, New Mexico

Burrata Water Reuse Pit
Township 21S; Range 32E; Section 29





Map Source: U.S. Bureau of Land Management -
New Mexico State Office - GIS Data Download;
USGS, The Divide, New Mexico Quadrangle.

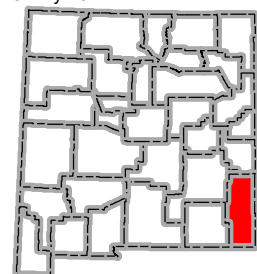
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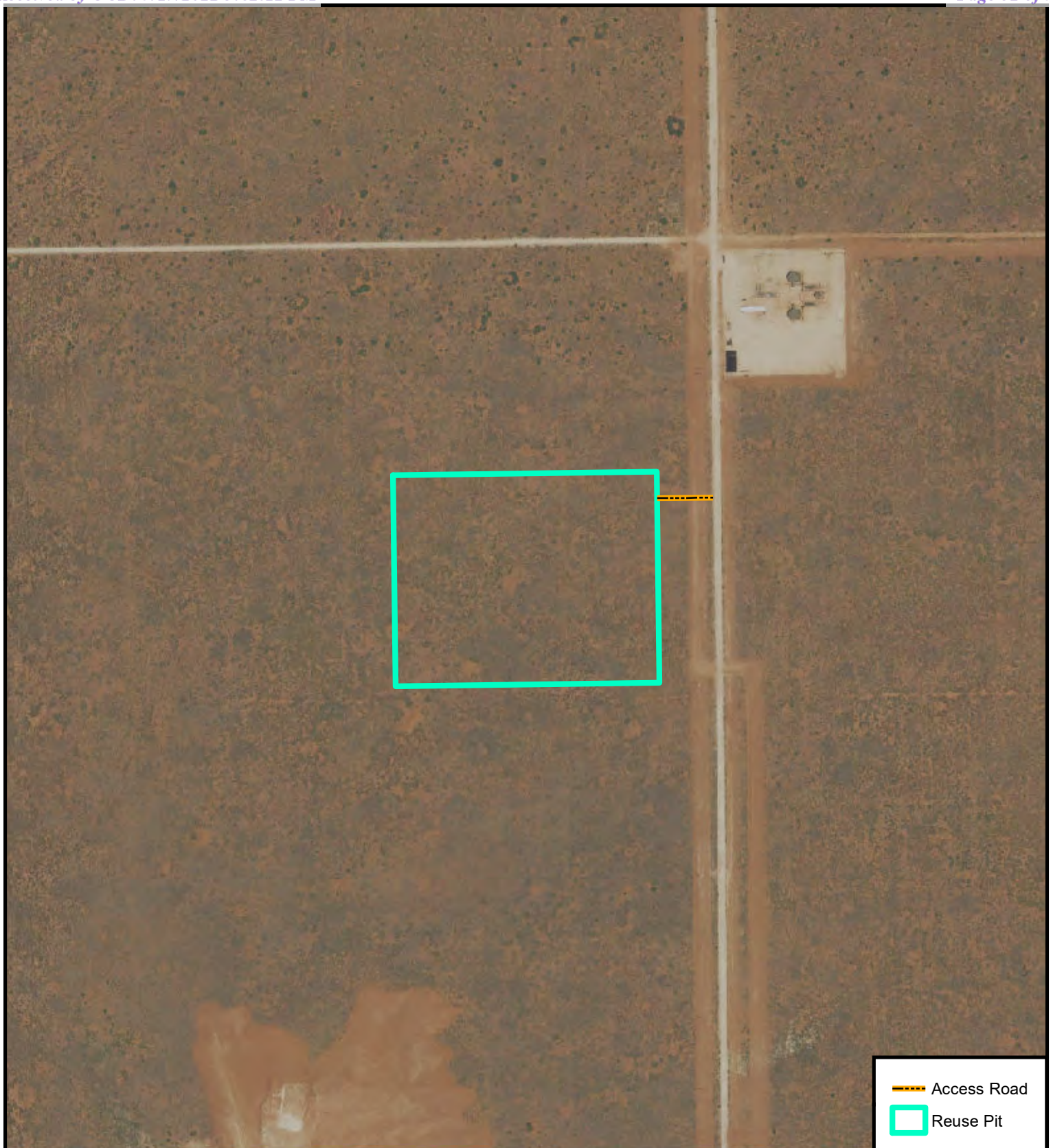


Figure 2
USGS Topographic Map
Lea County, New Mexico

Burrata Water Reuse Pit
Township 21S; Range 32E; Section 29

Date: 18 May 2022





Map Source: USDA, NAIP Natural Color Imagery of New Mexico, 2020.

0 250 500 Feet
0 80 160 Meters

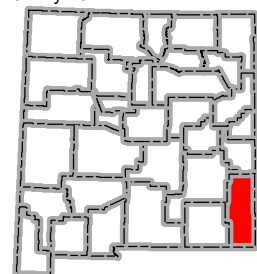


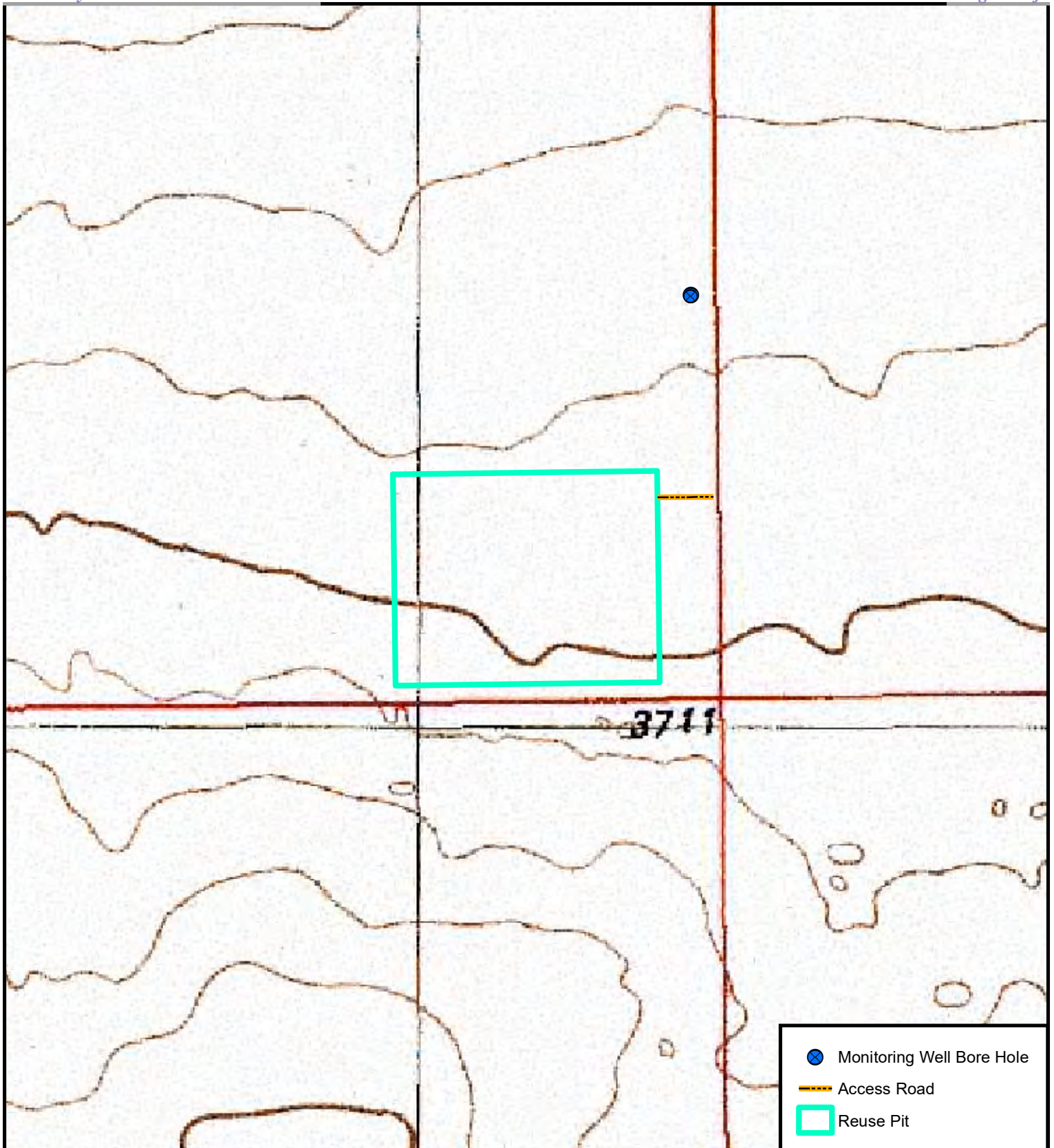
SPE

Figure 3
Aerial Orthoimagery
Lea County, New Mexico

Burrata Water Reuse Pit
Township 21S; Range 32E; Section 29

Date: 18 May 2022





Map Source: USGS, The Divide, New Mexico Quadrangle.

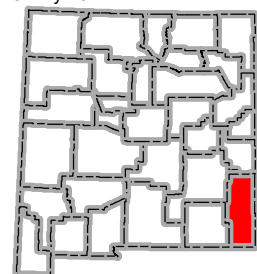
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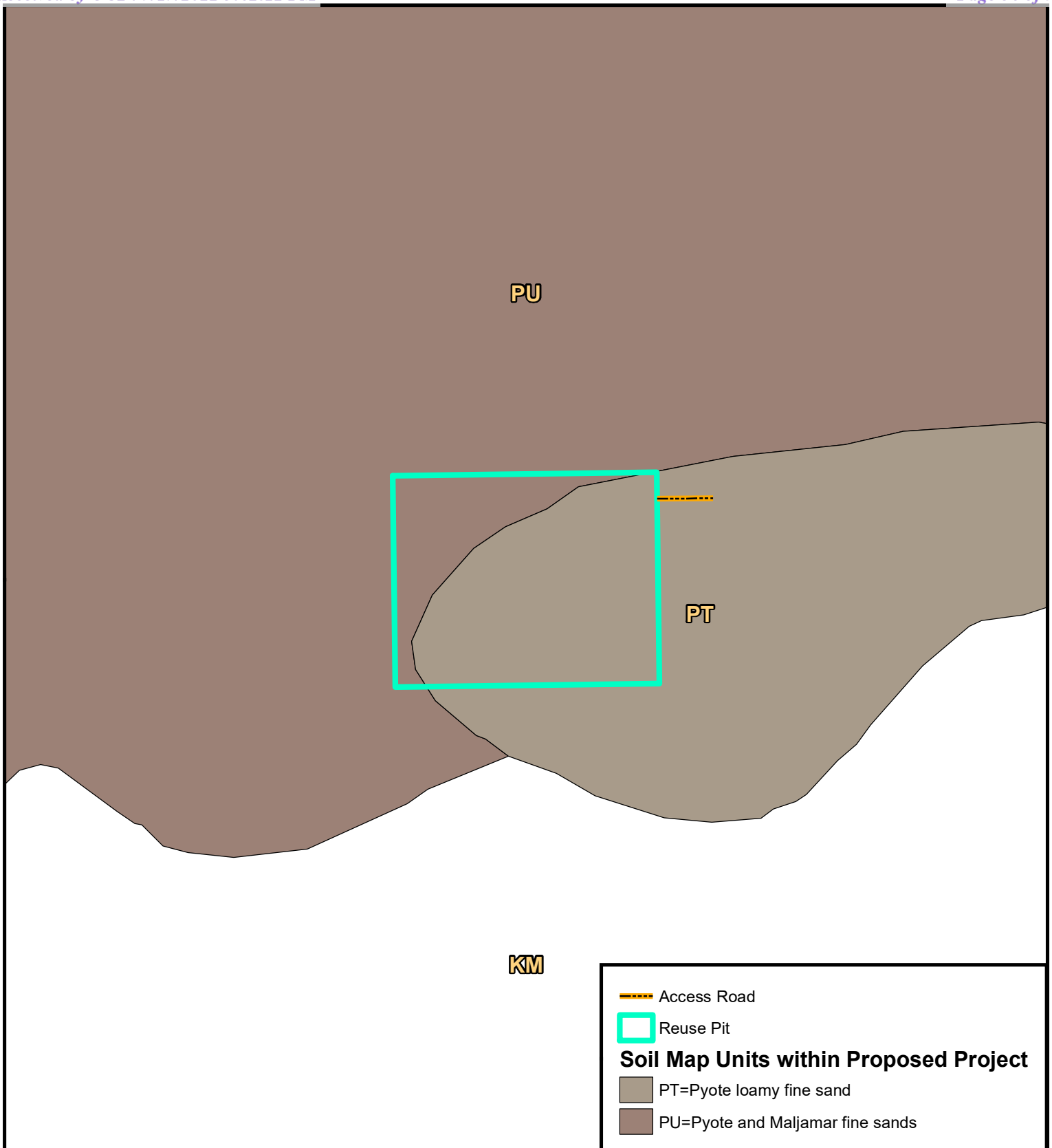


Figure 4
Groundwater Monitoring Well
Lea County, New Mexico

Burrata Water Reuse Pit
Township 21S; Range 32E; Section 29

Date: 18 May 2022





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

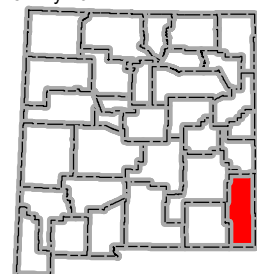
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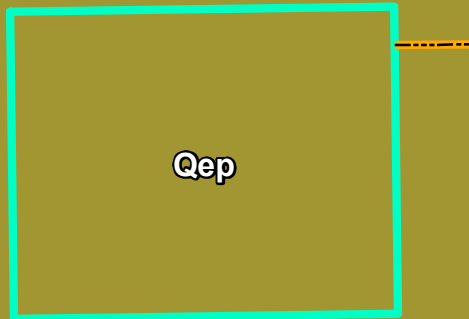



Figure 5
SSURGO Soil Data
Lea County, New Mexico

Burrata Water Reuse Pit
Township 21S; Range 32E; Section 29

Date: 18 May 2022



 Access Road Reuse Pit**Geologic Map Units** Qep

Map Source: New Mexico Bureau of Geology and Mineral Resources, 2003, Geologic Map of New Mexico, 1:500,000.

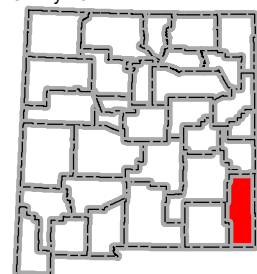
0 250 500 Feet
0 80 160 Meters

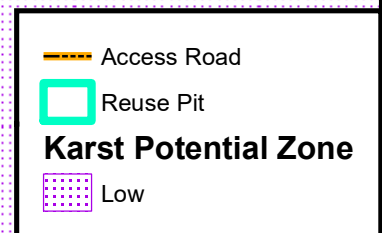
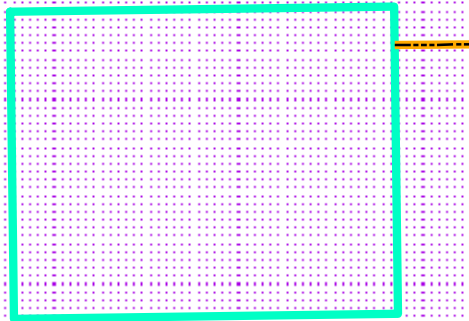


Figure 6
Geologic Map Units
Lea County, New Mexico

Burrata Water Reuse Pit
Township 21S; Range 32E; Section 29

Date: 18 May 2022





Map Source: U.S. Bureau of Land Management -
New Mexico State Office - GIS Data Download;

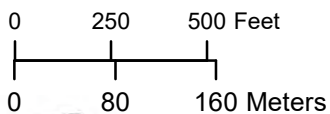
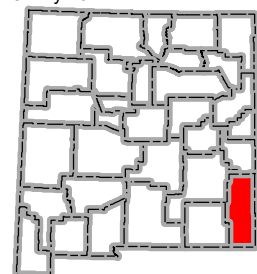
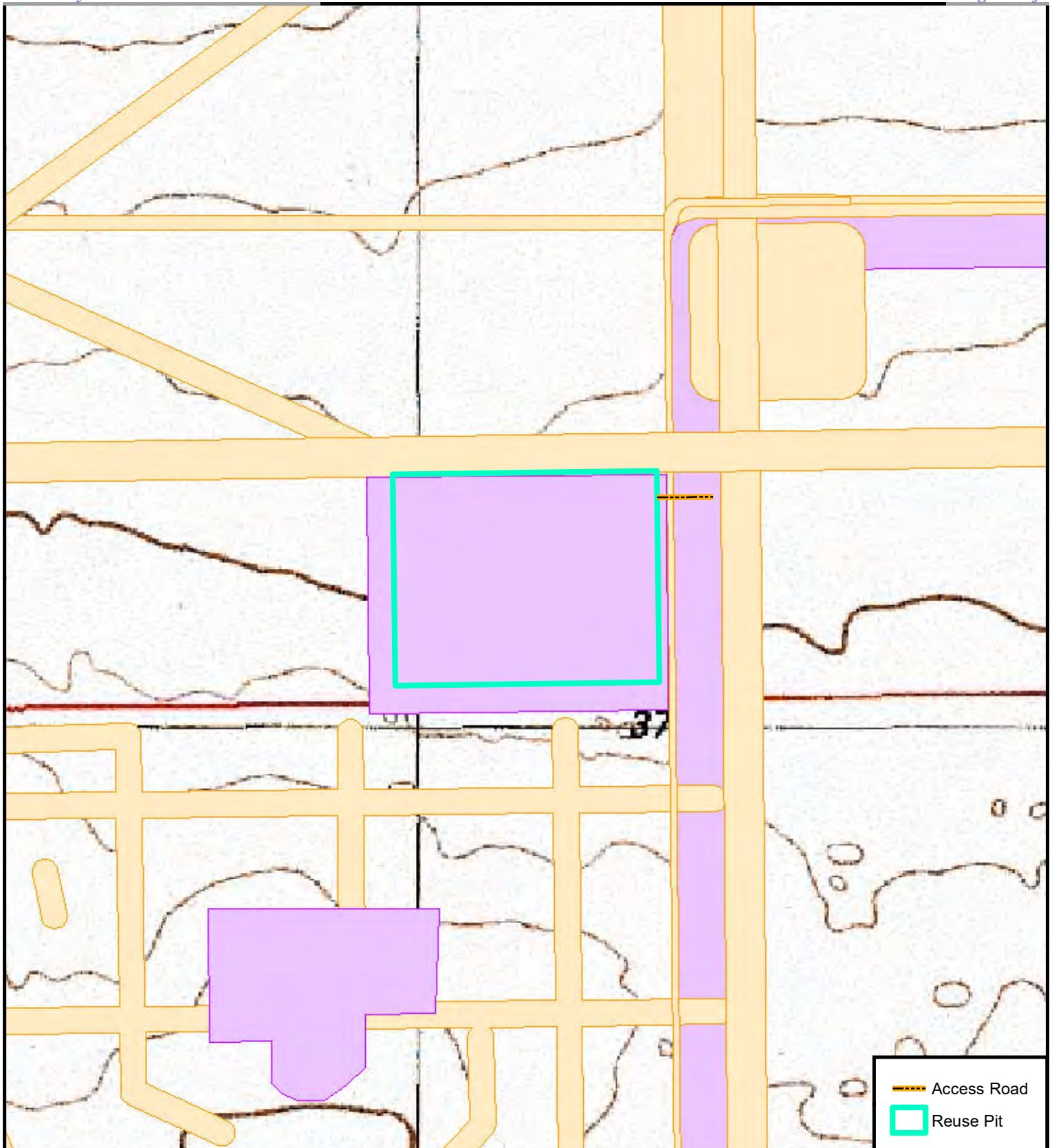


Figure 7
Karst Potential Map
Lea County, New Mexico

Burrata Water Reuse Pit
Township 21S; Range 32E; Section 29

Date: 18 May 2022





Map Source: Archaeological Records Management System (ARMS) New Mexico Cultural Resources Information System (NMCRIS) Remote Data Layer,

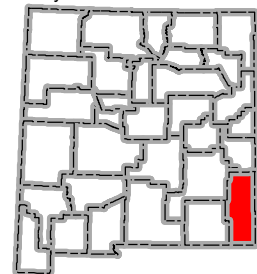
0 250 500 Feet
0 80 160 Meters



Figure 8
NMCRIS Data Layer
Lea County, New Mexico

Burrata Water Reuse Pit
Township 21S; Range 32E; Section 29

Date: 19 May 2022





APPENDIX B
SOIL BORING/MONITOR WELL LOG

SOIL BORING / MONITOR WELL LOGProject: **BURRATA REUSE PIT**Drilling Company: **WHITE DRILLING**Project Number: **—**Driller: **DALLAS RADAR**Client: **COLD PEAK ENVIRONMENTAL**Drilling Method: **AIR ROTARY**Boring / Well Number: **SB-1**Bore Hole Diameter: **5"**Total Depth: **75'**Screen: Diam. **—** Length **—** Slot Size **—**Surface Elevation: **N/A**Casing: Diam. **—** Length **—** Type **—**Geologist: **—**Date Drilled: **3-9-22**GPS: **32.446587, -103.688658**Drill Rig: **JEFCO SD 300**

DEPTH IN FEET	SYMBOL	SAMPLE	MATERIAL DESCRIPTION	N-BLOWS PER FOOT	TEXAS CONE PENETROMETER		Qp (tsf)	DEPTH SCALE
					1st 6"	2nd 6"		
5			TAN SAND					
10			TAN SANDY CALICHE					
20			TAN SILTY SAND					
30								
40			REDDISH BROWN CEMENTED SAND					
50								
60			RED SANDY SHALEY CLAY					
70								
75								
TOTAL DEPTH OF BORING 75 FEET								
NOTE NO GROUNDWATER WAS PRESENT DURING OR AT COMPLETION OF DRILLING ACTIVITIES.								

8256



APPENDIX C
USFWS IPAC RESOURCE TRUST REPORT

IPaC

U.S. Fish & Wildlife Service

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

Lea 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. IPaC only shows species that are regulated by USFWS (see FAQ).
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
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

Insects

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

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

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

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>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the [FAQ below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME

BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

Bald Eagle *Haliaeetus leucocephalus*

Breeds Oct 15 to Jul 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1626>

Cassin's Sparrow *Aimophila cassinii*

Breeds Aug 1 to Oct 10

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

<https://ecos.fws.gov/ecp/species/9512>

Chestnut-collared Longspur *Calcarius ornatus*

Breeds May 1 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Ferruginous Hawk *Buteo regalis*

Breeds Mar 15 to Aug 15

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

<https://ecos.fws.gov/ecp/species/6038>

Lesser Yellowlegs *Tringa flavipes*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9679>

Long-billed Curlew *Numenius americanus*

Breeds Apr 1 to Jul 31

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

<https://ecos.fws.gov/ecp/species/5511>

Long-eared Owl *asio otus*

Breeds Mar 1 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/3631>

Mccown's Longspur *Calcarius mccownii*

Breeds May 1 to Aug 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9292>

Red-headed Woodpecker *Melanerpes erythrocephalus*

Breeds May 10 to Sep 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Sprague's Pipit *Anthus spragueii*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/8964>

Virginia's Warbler *Vermivora virginiae*

Breeds May 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9441>

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

■ probability of presence ■ breeding season | survey effort — no data

SPECIES JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Bald Eagle

Non-BCC

Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



Cassin's Sparrow

BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



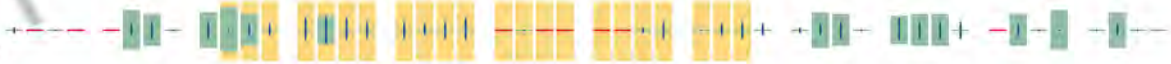
Chestnut-collared Longspur

BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Ferruginous Hawk

BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

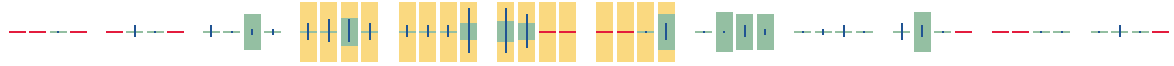


Lesser Yellowlegs

BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



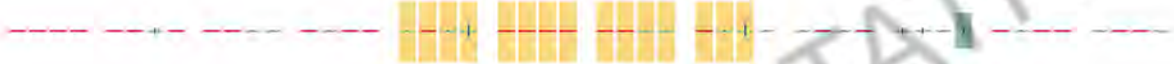
Long-billed Curlew
BCC - BCR (This is a
Bird of
Conservation
Concern (BCC) only
in particular Bird
Conservation
Regions (BCRs) in
the continental
USA)



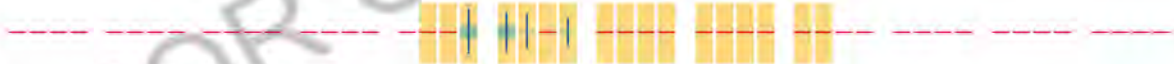
Long-eared Owl
BCC Rangewide
(CON) (This is a
Bird of
Conservation
Concern (BCC)
throughout its
range in the
continental USA
and Alaska.)



Mccown's
Longspur
BCC Rangewide
(CON) (This is a
Bird of
Conservation
Concern (BCC)
throughout its
range in the
continental USA
and Alaska.)



Red-headed
Woodpecker
BCC Rangewide
(CON) (This is a
Bird of
Conservation
Concern (BCC)
throughout its
range in the
continental USA
and Alaska.)



Sprague's Pipit
BCC Rangewide
(CON) (This is a
Bird of
Conservation
Concern (BCC)
throughout its
range in the
continental USA
and Alaska.)



Virginia's Warbler
BCC Rangewide
(CON) (This is a
Bird of
Conservation
Concern (BCC)
throughout its
range in the
continental USA
and Alaska.)



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](#) 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

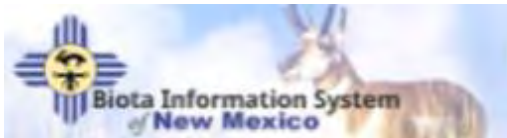
Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and 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 D
NMDGF BISON-M COUNTY LIST



All Species Lea

<u>Taxonomic Group</u>	<u># Species</u>	<u>Taxonomic Group</u>	<u># Species</u>
Amphibians	10	Birds	164
Coleoptera; beetles	17	Crustaceans	2
Fish	3	Lepidoptera; moths and butterflies	45
Mammals	45	Molluscs	8
Odonata; dragonflies	30	Orthoptera; grasshoppers & crickets	63
Reptiles	37	Spiders	3

TOTAL SPECIES: 427

<u>Common Name</u>	<u>Scientific Name</u>	<u>NMGF</u>	<u>US FWS</u>	<u>Critical Habitat</u>	<u>SGCN</u>	<u>Photo</u>
Virginia Opossum	Didelphis virginiana					View
Nine-banded Armadillo	Dasypus novemcinctus					View
Black-tailed Jackrabbit	Lepus californicus					View
Desert Cottontail Rabbit	Sylvilagus audubonii					View
Cave Myotis	Myotis velifer					No Photo
Coyote	Canis latrans					View
Common Gray Fox	Urocyon cinereoargenteus					View
Kit Fox	Vulpes macrotis					View
Swift Fox	Vulpes velox					View
Bobcat	Lynx rufus					View
Common Hog-nosed Skunk	Conepatus leuconotus					View
Striped Skunk	Mephitis mephitis					View
Western Spotted Skunk	Spilogale gracilis					View
American Badger	Taxidea taxus					View
Ringtail	Bassariscus astutus					View
Common Raccoon	Procyon lotor					View
Pronghorn	Antilocapra americana americana					View
Mule Deer	Odocoileus hemionus					View
White-tailed Deer (Texas)	Odocoileus virginianus texana					View
Feral Pig	Sus scrofa					No Photo
Collared Peccary	Peccari tajacu sonoriensis; angulatus					View
American Beaver	Castor canadensis					View

All Species Lea

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White-toothed woodrat	Neotoma leucodon					View
Southern Plains Woodrat	Neotoma micropus canescens					No Photo
Northern Grasshopper Mouse	Onychomys leucogaster					No Photo
White-footed Mouse	Peromyscus leucopus					View
Deer Mouse	Peromyscus maniculatus					No Photo
Hispid Cotton Rat	Sigmodon hispidus berlandieri; confinis; texianus					View
Western Harvest Mouse	Reithrodontomys megalotis megalotis; aztecus					No Photo
Plains Harvest Mouse	Reithrodontomys montanus					No Photo
Yellow-faced Pocket Gopher	Cratogeomys castanops					No Photo
Jones' Pocket Gopher	Geomys knoxjonesi					No Photo
Chihuahuan Pocket Mouse	Chaetodipus eremicus					No Photo
Desert Pocket Mouse	Chaetodipus penicillatus					No Photo
Merriam's Kangaroo Rat	Dipodomys merriami					View
Ord's Kangaroo Rat	Dipodomys ordii					View
Banner-tailed Kangaroo Rat	Dipodomys spectabilis baileyi; clarenci; spectabilis					No Photo
Plains Pocket Mouse	Perognathus flavescens					No Photo
Silky Pocket Mouse	Perognathus flavus flavus; hopiensis					No Photo
Norway Rat	Rattus norvegicus					No Photo
Black-tailed Prairie Dog	Cynomys ludovicianus ludovicianus				Y	View
Rio Grande Ground Squirrel	Ictidomys parvidens					View
Thirteen-lined Ground Squirrel	Ictidomys tridecemlineatus arenicola; blanca; hollisteri					View
Eastern Fox Squirrel	Sciurus niger rufiventer; limitis					View
Spotted Ground Squirrel	Xerospermophilus spilosoma					No Photo
Northern Pintail	Anas acuta					View
Northern Bobwhite Quail	Colinus virginianus					View
Scaled Quail	Callipepla squamata					View
Lesser Prairie-Chicken	Tympanuchus pallidicinctus		P		Y	View
Eared Grebe	Podiceps nigricollis				Y	View

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Band-tailed Pigeon	Patagioenas fasciata					View
Eurasian Collared-Dove	Streptopelia decaocto					View
Mourning Dove	Zenaida macroura					View
Greater Roadrunner	Geococcyx californianus					View
Yellow-billed Cuckoo (eastern pop)	Coccyzus americanus occidentalis					No Photo
Lesser Nighthawk	Chordeiles acutipennis					View
Common Nighthawk	Chordeiles minor				Y	View
Common Poorwill	Phalaenoptilus nuttalli					No Photo
Rufous Hummingbird	Selasphorus rufus					View
Broad-billed Hummingbird	Cynanthus latirostris	T			Y	View
Sandhill Crane	Antigone canadensis					View
American Avocet	Recurvirostra americana					View
Killdeer	Charadrius vociferus					View
Mountain Plover	Charadrius montanus				Y	View
Snowy Plover	Charadrius nivosus				Y	View
Long-billed Curlew	Numenius americanus				Y	View
Pectoral Sandpiper	Calidris melanotos					View
Spotted Sandpiper	Actitis macularius					View
Solitary Sandpiper	Tringa solitaria					View
Wilson's Phalarope	Phalaropus tricolor					View
Least Tern	Sternula antillarum	E			Y	View
American Bittern	Botaurus lentiginosus				Y	View
White-faced Ibis	Plegadis chihi					View
Turkey Vulture	Cathartes aura					View
Osprey	Pandion haliaetus					View
Northern Harrier	Circus hudsonius					View
Sharp-shinned Hawk	Accipiter striatus					View
Cooper's Hawk	Accipiter cooperii					View
Northern Goshawk	Accipiter gentilis					View
Bald Eagle	Haliaeetus leucocephalus	T			Y	View
Mississippi Kite	Ictinia mississippiensis					View

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Harris's Hawk	Parabuteo unicinctus					View
Red-shouldered Hawk	Buteo lineatus					View
Swainson's Hawk	Buteo swainsoni					View
Red-tailed Hawk	Buteo jamaicensis					View
Ferruginous Hawk	Buteo regalis					View
Flammulated Owl	Psilosops flammeolus				Y	View
Great Horned Owl	Bubo virginianus					View
Burrowing Owl	Athene cunicularia				Y	View
Belted Kingfisher	Megaceryle alcyon					View
Red-headed Woodpecker	Melanerpes erythrocephalus				Y	View
Williamson's Sapsucker	Sphyrapicus thyroideus				Y	View
Ladder-backed Woodpecker	Dryobates scalaris					View
American Kestrel	Falco sparverius					View
Aplomado Falcon	Falco femoralis	E	E		Y	View
Peregrine Falcon	Falco peregrinus	T			Y	View
Arctic Peregrine Falcon	Falco peregrinus tundrius					No Photo
Ash-throated Flycatcher	Myiarchus cinerascens					View
Great Crested Flycatcher	Myiarchus crinitus					No Photo
Great Kiskadee	Pitangus sulphuratus					View
Cassin's Kingbird	Tyrannus vociferans					View
Western Kingbird	Tyrannus verticalis					View
Scissor-tailed Flycatcher	Tyrannus forficatus					View
Olive-sided Flycatcher	Contopus cooperi				Y	View
Western Wood Pewee	Contopus sordidulus					View
Willow Flycatcher	Empidonax traillii brewsteri; adastus					View
Least Flycatcher	Empidonax minimus					View
Hammond's Flycatcher	Empidonax hammondii					View
Dusky Flycatcher	Empidonax oberholseri					View
Say's Phoebe	Sayornis saya					View
Loggerhead Shrike	Lanius ludovicianus				Y	View

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Bell's Vireo	Vireo bellii	T			Y	View
Cassin's Vireo	Vireo cassinii					View
Blue-headed Vireo	Vireo solitarius					View
Plumbeous Vireo	Vireo plumbeus					View
Warbling Vireo	Vireo gilvus					View
Red-eyed Vireo	Vireo olivaceus					View
Woodhouse's Scrub Jay	Aphelocoma woodhouseii					View
Chihuahuan Raven	Corvus cryptoleucus					View
Horned Lark	Eremophila alpestris					View
Northern Rough-winged Swallow	Stelgidopteryx serripennis					View
Barn Swallow	Hirundo rustica					View
Cliff Swallow	Petrochelidon pyrrhonota					View
Verdin	Auriparus flaviceps					View
Red-breasted Nuthatch	Sitta canadensis					View
Rock Wren	Salpinctes obsoletus					View
House Wren	Troglodytes aedon					View
Bewick's Wren	Thryomanes bewickii					View
Cactus Wren	Campylorhynchus brunneicapillus					View
Blue-gray Gnatcatcher	Poliophtila caerulea					View
Ruby-crowned Kinglet	Regulus calendula					View
Swainson's Thrush	Catharus ustulatus					View
Hermit Thrush	Catharus guttatus					View
Gray Catbird	Dumetella carolinensis					View
Curve-billed Thrasher	Toxostoma curvirostre					View
Brown Thrasher	Toxostoma rufum					View
Crissal Thrasher	Toxostoma crissale					View
Sage Thrasher	Oreoscoptes montanus					View
Northern Mockingbird	Mimus polyglottos					View
European Starling	Sturnus vulgaris					View
Phainopepla	Phainopepla nitens					View
House Sparrow	Passer domesticus					View

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American Pipit	Anthus rubescens					View
Sprague's Pipit	Anthus spragueii				Y	View
Evening Grosbeak	Coccothraustes vespertinus				Y	View
House Finch	Haemorhous mexicanus					View
Pine Siskin	Spinus pinus					View
Lesser Goldfinch	Spinus psaltria					View
American Goldfinch	Spinus tristis					View
Thick-billed Longspur	Rhynchophanes mccownii				Y	View
Cassin's Sparrow	Peucaea cassinii				Y	View
Grasshopper Sparrow	Ammodramus savannarum perpallidus					View
Black-throated Sparrow	Amphispiza bilineata					View
Lark Sparrow	Chondestes grammacus					View
Lark Bunting	Calamospiza melanocorys					View
Chipping Sparrow	Spizella passerina					View
Clay-colored Sparrow	Spizella pallida					View
Field Sparrow	Spizella pusilla					View
Brewer's Sparrow	Spizella breweri					View
White-crowned Sparrow	Zonotrichia leucophrys					View
Sagebrush Sparrow	Artemisiospiza nevadensis				Y	View
Vesper Sparrow	Pooecetes gramineus				Y	View
Baird's Sparrow	Centronyx bairdii	T			Y	View
Song Sparrow	Melospiza melodia					View
Lincoln's Sparrow	Melospiza lincolnii					View
Rufous-crowned Sparrow	Aimophila ruficeps					View
Green-tailed Towhee	Pipilo chlorurus					View
Spotted Towhee	Pipilo maculatus					View
Yellow-breasted Chat	Icteria virens					View
Yellow-headed Blackbird	Xanthocephalus xanthocephalus					View
Eastern Meadowlark	Sturnella magna					View
Western Meadowlark	Sturnella neglecta					View

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Orchard Oriole	Icterus spurius					View
Bullock's Oriole	Icterus bullockii					View
Baltimore Oriole	Icterus galbula					View
Red-winged Blackbird	Agelaius phoeniceus					View
Brown-headed Cowbird	Molothrus ater					View
Rusty Blackbird	Euphagus carolinus					View
Brewer's Blackbird	Euphagus cyanocephalus					View
Great-tailed Grackle	Quiscalus mexicanus					View
Ovenbird	Seiurus aurocapilla					No Photo
Northern Waterthrush	Parkesia noveboracensis					View
Black-and-white Warbler	Mniotilta varia					View
Prothonotary Warbler	Protonotaria citrea					No Photo
Orange-crowned Warbler	Leiothlypis celata					View
Nashville Warbler	Leiothlypis ruficapilla					View
Virginia's Warbler	Leiothlypis virginiae				Y	View
Macgillivray's Warbler	Geothlypis tolmiei					View
Common Yellowthroat	Geothlypis trichas					View
Hooded Warbler	Setophaga citrina					View
American Redstart	Setophaga ruticilla					View
Northern Parula	Setophaga americana					No Photo
Yellow Warbler	Setophaga petechia					View
Chestnut-sided Warbler	Setophaga pensylvanica					No Photo
Yellow-rumped Warbler	Setophaga coronata					View
Black-throated Gray Warbler	Setophaga nigrescens				Y	View
Black-throated Green Warbler	Setophaga virens					View
Wilson's Warbler	Cardellina pusilla					View
Hepatic Tanager	Piranga flava					View
Summer Tanager	Piranga rubra					View
Western Tanager	Piranga ludoviciana					View
Pyrrhuloxia	Cardinalis sinuatus					View
Rose-breasted Grosbeak	Pheucticus ludovicianus					View

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Black-headed Grosbeak	Pheucticus melanocephalus					View
Blue Grosbeak	Passerina caerulea					View
Lazuli Bunting	Passerina amoena					View
Indigo Bunting	Passerina cyanea					View
Painted Bunting	Passerina ciris					View
Dickcissel	Spiza americana					View
Ornate Box Turtle	Terrapene ornata					View
Red-eared Slider	Trachemys scripta					View
Yellow Mud Turtle	Kinosternon flavescens					View
Sonoran Mud Turtle	Kinosternon sonoriense sonoriense				Y	View
Eastern Collared Lizard	Crotaphytus collaris					View
Long-nosed Leopard Lizard	Gambelia wislizenii					View
Common Lesser Earless Lizard	Holbrookia maculata maculata; bunkerj; ruthveni					View
Texas Horned Lizard	Phrynosoma cornutum					View
Round-tailed Horned Lizard	Phrynosoma modestum					View
Dunes Sagebrush Lizard	Sceloporus arenicolus	E			Y	View
Central Fence Lizard	Sceloporus consobrinus					View
Common Side-blotched Lizard	Uta stansburiana					View
Chihuahuan Spotted Whiptail	Aspidoscelis exsanguis					View
Texas Spotted Whiptail	Aspidoscelis gularis					View
Woodland Striped Whiptail	Aspidoscelis inornata junipera					No Photo
Marbled Whiptail	Aspidoscelis marmorata					View
Prairie Racerunner	Aspidoscelis sexlineata					View
Common Checkered Whiptail	Aspidoscelis tessellata					View
Many-lined Skink	Plestiodon multivirgatus					View
Great Plains Skink	Plestiodon obsoletus					View
Texas Blind Snake	Rena dissecta					View
Glossy Snake	Arizona elegans					View
Coachwhip	Coluber flagellum					View
Ringneck Snake	Diadophis punctatus					View

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Plains Hog-nosed Snake	Heterodon nasicus					View
Chihuahuan Nightsnake	Hypsiglena jani					View
Milk Snake	Lampropeltis gentilis					View
Desert Kingsnake	Lampropeltis splendida					View
Gophersnake	Pituophis catenifer					View
Texas Long-nosed Snake	Rhinocheilus lecontei					View
Ground Snake	Sonora semiannulata					View
Plains Black-headed Snake	Tantilla nigriceps					View
Smith's Black-headed Snake	Tantilla hobartsmithi					View
Marcy's Checkered Gartersnake	Thamnophis marcianus					View
Western Diamond-backed Rattlesnake	Crotalus atrox					View
Prairie Rattlesnake	Crotalus viridis					View
Western Massasauga	Sistrurus tergeminus				Y	View
Tiger Salamander	Ambystoma mavortium mavortium; nebulosum					View
Plains Spadefoot	Spea bombifrons					View
New Mexico Spadefoot	Spea multiplicata					View
Great Plains Toad	Anaxyrus cognatus					View
Western Green Toad	Anaxyrus debilis					View
Texas Toad	Anaxyrus speciosus					View
Woodhouse's Toad	Anaxyrus woodhousii					View
Plains Leopard Frog	Lithobates blairi				Y	View
Bullfrog	Lithobates catesbeianus					View
Couch's Spadefoot	Scaphiopus couchii					View
Grass Carp	Ctenopharyngodon idella					No Photo
Rainbow Trout	Oncorhynchus mykiss					View
Largemouth Bass	Micropterus salmoides					View
Decollate Snail	Rumina decollata					View
Crested Snaggletooth Snail	Gastrocopta cristata					No Photo
Slim Snaggletooth Snail	Gastrocopta pellucida					No Photo
White-lipped Dagger Snail	Pupoides albilabris					No Photo

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Multirib Vallonia Snail	Vallonia gracilicosta					No Photo
Lovely Vallonia Snail	Vallonia pulchella					No Photo
Black-bodied Glass Snail	Oxychilus draparnaudi					No Photo
Brown Gardensnail	Helix aspersa					View
Brine Shrimp	Artemia franciscana				Y	View
Versatile Fairy Shrimp	Branchinecta lindahli				Y	View
Tiger Beetle	Amblycheila picolominii					No Photo
Tiger Beetle	Cicindela circumptica johnsoni					No Photo
Tiger Beetle	Cicindela debilis					No Photo
Big Sand Tiger Beetle	Cicindela formosa rutilovirescens					View
Tiger Beetle	Cicindela hornii					No Photo
Tiger Beetle	Cicindela lemniscata					No Photo
Dainty Tiger Beetle	Cicindela lepida					No Photo
Tiger Beetle	Cicindela marutha					No Photo
Tiger Beetle	Cicindela nigrocoerulea					No Photo
Tiger Beetle	Cicindela obsoleta obsoleta; santaclarae					No Photo
Tiger Beetle	Cicindela ocellata					No Photo
Tiger Beetle	Cicindela scutellaris scutellaris					No Photo
Tiger Beetle	Cicindela tenuisignata					No Photo
Tiger Beetle	Cicindela togata					No Photo
Tiger Beetle	Tetracha carolina					No Photo
Stag Beetle	Pseudolucanus mazama					No Photo
Long-horned Beetle	Trachyderes mandibularis					No Photo
Sleepy Duskywing Skipper	Erynnis brizo					View
Funereal Duskywing Skipper	Erynnis funeralis					View
Common Sootywing Skipper	Pholisora catullus					View
Common Checkered Skipper	Pyrgus communis					View
Dotted Roadside Skipper	Amblyscirtes eos					No Photo
Nysa Roadside Skipper	Amblyscirtes nysa					No Photo
Sachem Skipper	Atalopedes campestris					View

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Orange Skipperling Skipper	Copaeodes aurantiacus					View
Uncas Skipper	Hesperia uncas uncas					No Photo
Fiery Skipper	Hylephila phlyeus					View
Pipevine Swallowtail Butterfly	Battus philenor					View
Black Swallowtail Butterfly	Papilio polyxenes asterius					View
Cabbage White Butterfly	Pieris rapae					View
Checkered White Butterfly	Pontia protodice					View
Orange Sulphur Butterfly	Colias eurytheme					View
Western Common Sulphur Butterfly	Colias philodice					View
Little Yellow Butterfly	Eurema lisa					View
Mexican Yellow Butterfly	Eurema mexicanum					No Photo
Sleepy Orange Butterfly	Eurema nicippe					View
Lyside Sulphur Butterfly	Kricogonia lyside					View
Dainty Sulphur Butterfly	Nathalis iole					View
Cloudless Sulphur Butterfly	Phoebis sennae					View
Southern Dogface Butterfly	Zerene cesonia					View
Frank's Common Hairstreak Butterfly	Strymon melinus					View
Arizona Blue Butterfly	Celastrina ladon cinerea					No Photo
Reakirt's Blue Butterfly	Hemiargus isola					View
Marine Blue Butterfly	Leptotes marina					View
Melissa Blue Butterfly	Plebejus melissa					View
Texas Blue Butterfly	Plebejus acmon					View
Western Pygmy Blue Butterfly	Brephidum exile					View
Southern Snout Butterfly	Libytheana bachmanii					No Photo
Buckeye Butterfly	Junonia coenia					View
Mourning Cloak Butterfly	Nymphalis antiopa					View
Red Admiral Butterfly	Vanessa atalanta					View
Painted Lady Butterfly	Vanessa cardui					View
American Lady Butterfly	Vanessa virginiensis					View
Variegated Fritillary Butterfly	Euptoieta claudia					View
Crocale Patch Butterfly	Chlosyne lacinia					View

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Painted Crescent Butterfly	Phyciodes pictus					View
Pearl Crescent Butterfly	Phyciodes tharos Type A					View
Fulvia Checkerspot Butterfly	Thessalia fulvia					View
Goatweed Butterfly	Anaea andria					No Photo
Striated Queen Butterfly	Danaus gilippus					View
Monarch Butterfly	Danaus plexippus		C			View
Gulf Fritillary Butterfly	Agraulis vanillae					View
Plateau Spreadwing	Lestes alacer					View
Paiute Dancer	Argia alberta					No Photo
Powdered Dancer	Argia moesta					View
Blue-ringed Dancer	Argia sedula					View
Double-striped Bluet	Enallagma basidens					No Photo
Boreal Bluet	Enallagma boreale					No Photo
Tule Bluet	Enallagma carunculatum					View
Familiar Bluet	Enallagma civile					View
Plains Forktail	Ischnura damula					View
Black-fronted Forktail	Ischnura denticollis					No Photo
Rambur's Forktail	Ischnura ramburii					View
Common Green Darner	Anax junius					View
Blue-eyed Darner	Rhionaeschna multicolor					View
Russet-tipped Clubtail	Stylurus plagiatu					No Photo
Red-tailed Pennant	Brachymesia furcata					No Photo
Four-spotted Pennant	Brachymesia gravida					No Photo
Western Pondhawk	Erythemis collocata					No Photo
Eastern Pondhawk	Erythemis simplicicollis					View
Comanche Skimmer	Libellula comanche					View
Widow skimmer	Libellula luctuosa					View
Twelve-spotted Skimmer	Libellula pulchella					View
Flame Skimmer	Libellula saturata					View
Roseate Skimmer	Orthemis ferruginea					View
Blue Dasher	Pachydiplax longipennis					View

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Spot-winged Glider	Pantala hymenaea					View
Eastern Amberwing	Perithemis tenera					View
Common Whitetail	Plathemis lydia					View
Variegated meadowhawk	Sympetrum corruptum					View
Black Saddlebags	Tramea lacerata					View
Red Saddlebags	Tramea onusta					View
Jerusalem Cricket	Stenopelmatus mescaleroensis					No Photo
Lubber Grasshopper	Brachystola magna					View
Chihuahua Toad Hopper Grasshopper	Phrynotettix tsivavensis					No Photo
Green Fool Grasshopper	Acrolophitus hirtipes					No Photo
White Whiskers Grasshopper	Ageneotettix deorum					No Photo
Striped Slant-Faced Grasshopper	Amphitornus coloradus					No Photo
Elliott Grasshopper	Aulocara ellioti					No Photo
White Cross Grasshopper	Aulocara femoratum					No Photo
Black Males Grasshopper	Boopedon nubilum					View
Crenulated Grasshopper	Cordillacris crenulata					No Photo
Spotted Wing Grasshopper	Cordillacris occipitalis					No Photo
Velvet-Striped Grasshopper	Eritettix simplex					No Photo
Rufous Grasshopper	Heliaula rufa					No Photo
Pecos Clicker Grasshopper	Ligurotettix planum					No Photo
Mermiria Grasshopper	Mermiria bivittata					No Photo
Obscure Grasshopper	Opeia obscura					No Photo
Desert Toothpick Grasshopper	Paropomala pallida					No Photo
Wyoming Toothpick Grasshopper	Paropomala wyomingensis					No Photo
Four-Spotted Grasshopper	Phlibostroma quadrimaculatum					No Photo
Brown Spotted Range Grasshopper	Psoloessa delicatula					No Photo
Slant-Faced Grasshopper	Syrbula admirabilis					View
Speckled Rangeland Grasshopper	Arphia conspersa					No Photo
Red-Winged Grasshopper	Arphia pseudonietana					No Photo
Hayden's Grasshopper	Derotmema haydeni					No Photo
Carolina Grasshopper	Dissosteira carolina					No Photo

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High Plains Grasshopper	Dissosteira longipennis					No Photo
Dusky Grasshopper	Encoptolophus costalis					No Photo
Grasshopper	Hadrotettix magnificus					No Photo
Three-Banded Range Grasshopper	Hadrotettix trifasciatus					No Photo
Blue Winged Grasshopper	Leprus wheeleri					No Photo
Pard Grasshopper	Metator pardalinus					No Photo
Mottled Sand Grasshopper	Spharagemon collare					No Photo
Grasshopper	Spharagemon cristatum					No Photo
Say's Grasshopper	Spharagemon equale					No Photo
Kiowa Range Grasshopper	Trachyrhachys kiowa					No Photo
Toothed Field Grasshopper	Trimerotropis agrestis					No Photo
Broad-Banded Grasshopper	Trimerotropis latifasciata					No Photo
Black-Winged Grasshopper	Trimerotropis melanoptera					No Photo
Pallid-Winged Grasshopper	Trimerotropis pallidipennis					View
Barren Land Grasshopper	Trimerotropis pristrinaria					No Photo
Great Crested Grasshopper	Tropidolophus formosus					View
Red Shanks Grasshopper	Xanthippus corallipes					No Photo
Lined Bird Grasshopper	Schistocerca alutacea lineata					No Photo
Green Bird Grasshopper	Schistocerca alutacea shoshone					No Photo
Gray Creosotebush Grasshopper	Clematodes larreae					No Photo
Fuzzy Olive-Green Grasshopper	Campylacantha olivacea					No Photo
Painted Grasshopper	Dactylotum bicolor					View
Grasshopper	Hesperotettix speciosus					No Photo
Green Streak Grasshopper	Hesperotettix viridis					No Photo
Narrow-Winged Spur-Throat Grasshopper	Melanoplus angustipennis					No Photo
Arizona Spur-Throat Grasshopper	Melanoplus arizonae					No Photo
Bowditch's Spur-Throat Grasshopper	Melanoplus bowditchi					No Photo
Differential Grasshopper	Melanoplus differentialis					No Photo
Yellow Spur-Throat Grasshopper	Melanoplus flavidus					No Photo
Grasshopper	Melanoplus foedus					No Photo

All Species Lea

<u>Common Name</u>	<u>Scientific Name</u>	<u>NMGF</u>	<u>US FWS</u>	<u>Critical Habitat</u>	<u>SGCN</u>	<u>Photo</u>
Gladston's Spur-Throat Grasshopper	Melanoplus gladstoni					No Photo
Glaucous-Legged Grasshopper	Melanoplus glaucipes					No Photo
Grasshopper	Melanoplus lakinus					No Photo
Flabellate Grasshopper	Melanoplus occidentalis					No Photo
Packard's Grasshopper	Melanoplus packardi					No Photo
Regal Spur-Throat Grasshopper	Melanoplus regalis					No Photo
Lesser Migratory Grasshopper	Melanoplus sanguinipes					No Photo
Platte Range Grasshopper	Mestobregna plattei					No Photo
Southern Black Widow	Latrodectus mactans					View
Spider	Neoscona crucifera					No Photo
Brown Recluse Spider	Loxosceles reclusa					View

Operating and Maintenance Plan

Closure Plan

Operating and Maintenance Plan

BURRATA CONTAINMENT PIT

1. Overview

The attached plan details the operational requirements regarding the Burrata 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. The application of this plan will ensure the reuse water containment pit is operated in a manner that minimizes any risk to health, safety, and the 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 so 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 Centennial completion operations
- 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 is 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. Reporting, Monitoring, and Inspection Plan

- List of Weekly Reporting and Inspections to be completed:
 - Influent and Effluent Volume Reporting
 - Visually inspect the Facility and Containment Pit
 - Leak Detection test to ensure the integrity of the primary liner has not deteriorated
- List of Monthly Reporting and Inspections to be completed:
 - Monthly volume report via Form C-148
 - Leak Detection test
 - Visual inspection of the Facility and Containment Pit

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

BURRATA CONTAINMENT PIT

1. Overview

The attached plan details the requirements regarding the closure of the Burrata Containment Pit. In addition, the required sampling and reporting obligations are detailed.

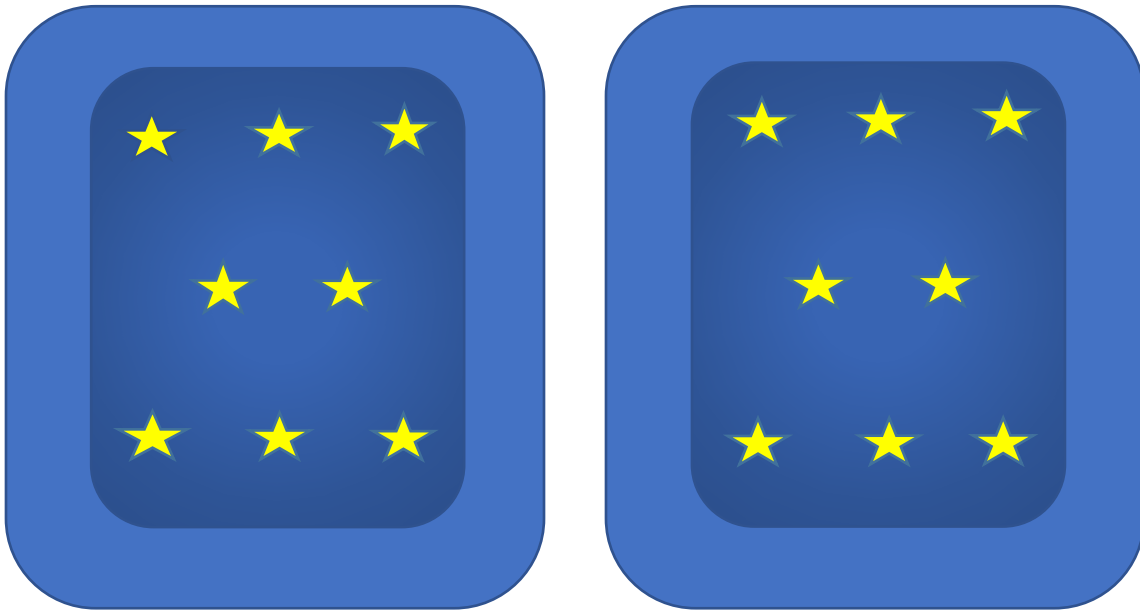
2. Purpose

The attached plan implements the closure requirement as outlined by NMOCD under 19.15.34.14 NMAC. The 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 the environment.

3. Closure Requirements

- Containment Pit Drainage
 - All reuse water remaining in the containment pit shall be removed from the impoundment within 60 days of operations cessation. The removed fluids will then be transferred to 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 a 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 to 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. Topsoil 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 the 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 ratio 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, Centennial 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 Centennial has complied with all applicable closure requirements and conditions specified in the division rules or directives
- Reclamation Notice
 - Centennial 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.

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Hobbs, New Mexico 88240

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Business Hours:
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Monday through Friday

6. Associated Forms

- List of Associated forms for containment pit closure
 - NA

District I

1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720

District II

811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720

District III

1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170

District IV

1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 144601

CONDITIONS

Operator: CENTENNIAL RESOURCE PRODUCTION, LLC 1001 17th Street, Suite 1800 Denver, CO 80202	OGRID: 372165
	Action Number: 144601
	Action Type: [C-147] Water Recycle Long (C-147L)

CONDITIONS

Created By	Condition	Condition Date
vvenegas	NMOCD has reviewed and approved the recycling containment permit application and related documents, submitted by [372165] CENTENNIAL RESOURCE PRODUCTION, LLC on September 19, 2022, for 1RF-493 - BURRATA REUSE CONTAINMENT AND RECYCLE FACILITY ID [fVV2227137236] in Unit Letter P, Section 29, Township 21S, Range 32E, Lea County, New Mexico	9/28/2022